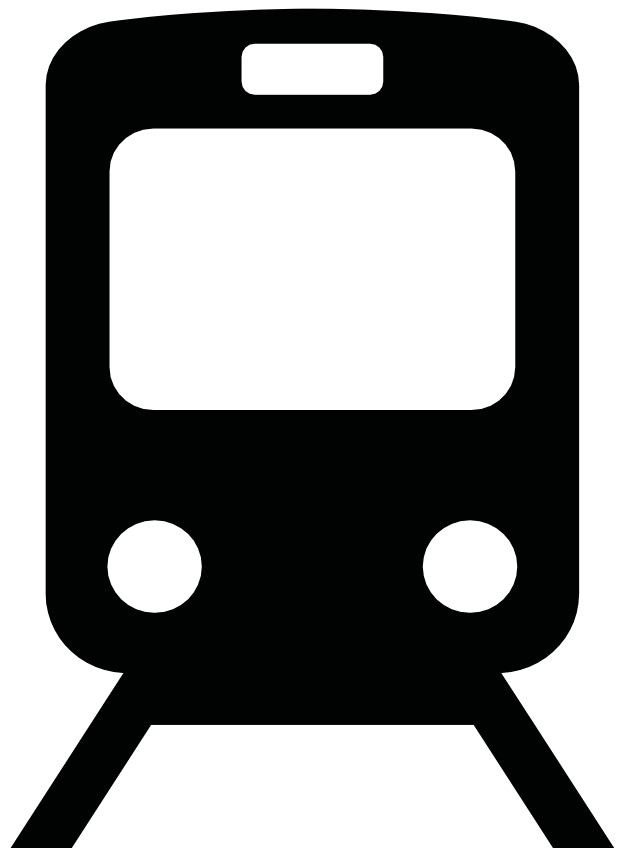

YONGE NORTH SUBWAY EXTENSION

UPDATED ENVIRONMENTAL PROJECT REPORT ADDENDUM

April 14, 2022





Gannett Fleming Canada ULC & IBI Group

Yonge North Subway Extension

Updated Environmental Project Report

Addendum

FOR

CONTRACTING AUTHORITY METROLINX IO

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April 14, 2022

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APPENDICES

Appendix A – Concept Design Mapping

Appendix B – Natural Environment Existing Conditions & Impact Assessment Report

Appendix C – Socio-Economic and Land Use Existing Conditions & Impact Assessment Report

Appendix D – Stage 1 Archaeological Assessment Report

Appendix E – Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment

Appendix F – Air Quality Existing Conditions & Impact Assessment Report

Appendix G – Noise & Vibration Existing Conditions & Impact Assessment Report

Appendix H – Transportation Existing Conditions & Impact Assessment Report

Appendix I – Consultation Record

ACRONYMS, ABBREVIATIONS, AND MEASUREMENT UNITS

Term	Definition
AAQC	Ambient Air Quality Criteria
407 ETR	407 Express Toll Route
AA	Archaeological Assessment
AC	Alternating Current
ADMGO	Guideline A-11: Air Dispersion Modelling Guideline for Ontario, Version 3.0, February 2017
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model (US EPA)
ALARA	As Low as Reasonably Achievable
ANSI	Area of Natural and Scientific Interest
AQMP	Air Quality Management Plan
AQSA	Air Quality Study Area
ARA	Aquatic Resource Area
ASI	Archaeological Services Inc.
Ave.	Avenue
B(a)P	Benzo(a)pyrene, used as a surrogate for total PAHs
BCI	Bat Conservation International
BHR	Built Heritage Resources
BRT	Bus Rapid Transit
BSC	Bird Studies Canada
CAA	<i>Conservation Authorities Act, 1990</i>
CAAQS	Canadian Ambient Air Quality Standards
CAC	Criteria Air Contaminant
CCME	Canadian Council of Ministers of the Environment
CH ₄	Methane
CHER	Cultural Heritage Evaluation Report
CHL	Cultural Heritage Landscapes
CHR	Cultural Heritage Resource
CHVI	Cultural Heritage Value or Interest
CLO	Cornell Lab of Ornithology
CN	Canadian National
CO	Carbon Monoxide

Term	Definition
Co.	Company
CO ₂	Carbon Dioxide
CO _{2e}	Carbon Dioxide Equivalent
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
CPTED	Crime Prevention Through Environmental Design
CSP	Corrugated Steel Pipe
CVHI	Cultural Heritage Value or Interest
DC	Direct Current
DFO	Department of Fisheries and Oceans. This agency has since been renamed Fisheries and Oceans Canada but continues to use DFO as an acronym.
DPM	Diesel Particulate Matter
EA	Environmental Assessment
EA Act	Environmental Assessment Act
EASR	Environmental Activity and Sector Registry
ECA	Environmental Compliance Approval
ECCC	Environment and Climate Change Canada
ECLRT	Eglinton Crosstown Light Rail Transit
Ecoplans Ltd.	Ecoplans Limited Environmental
EEB	Emergency Exit Building
ELC	Ecological Land Classification
EPA	Ontario Environmental Protection Act R.S.O. 1990, CHAPTER E.19
EPBM	Earth Pressure Balance Boring Machine
EPR	Environmental Project Report
ESA	Endangered Species Act
ESC	Erosion and Sediment Control
ESR	Environmental Study Reports
ETR	Express Toll Route
EW	Early Works
FFA	Fire Fighter's Access
FNAGS	Floating Negative Automatic Grounding Switch
FRTN	Frequent Rapid Transit Network
FTA	Federal Transit Administration

Term	Definition
FWCA	<i>Fish and Wildlife Conservation Act, 1997</i>
GGH	Greater Golden Horseshoe
GHG	Greenhouse Gas
GIS	Geographic Information Systems
GO Transit	Government of Ontario transit
Greenlands	Regional Greenlands System
GTA	Greater Toronto Area
GTHA	Greater Toronto and Hamilton Area
GWP	Global Warming Potential
HADD	Harmful alteration, disruption or destruction of fish habitat
HCD	Heritage Conservation District
HCM	Highway Capacity Manual
HIA	Heritage Impact Assessments
HOV Lanes	High Occupancy Vehicle Lane
HWY	Highway
I&E	Identification and Evaluation
IBC	Initial Business Case
IO	Infrastructure Ontario
km	Kilometre
L+	Introduced species, not native to the Toronto region
L3	Species of Regional Conservation Concern, generally less sensitive and more abundant than L1 and L2 ranked species;
L5	Species that are considered secure throughout the region
LGL	LGL Limited Environmental Research Associates
LIO	Land Information Ontario
LOS	Level of Service
LPAT	Local Planning Appeal Tribunal
L-Rank	As provided by TRCA's Fauna Ranks and Scores for TRCA Jurisdiction, 2020
LRT	Light Rail Transit
Ltd.	Limited
m	Metre
MBCA	<i>Migratory Birds Convention Act, 1994</i>
MECB	Minister of Environment, Conservation & Parks

Term	Definition
MECP	Ministry of the Environment, Conservation and Parks
MHSTCI	Ministry of Heritage, Sports, Tourism and Cultural Industries
MMAH	Ministry of Municipal Affairs and Housing
MNR	Ministry of Natural Resources (renamed to Ministry of Natural Resources and Forestry in 2014)
MNRF	Ministry of Natural Resources and Forestry
MOEE	Ministry of Environment and Energy
MOVES	Motor Vehicle Emission Simulator (US EPA)
MTO	Ontario Ministry of Transportation
MTSA	Major Transit Station Area
MUT	Multi-use Trail
MX	Metrolinx
N&V	Noise & Vibration
N ₂ O	Nitrous Oxide
NAPS	National Air Pollution Surveillance
NE	Northeast
NFPA	National Fire Protection Association
NHIC	Natural Heritage Information Centre
NHS	Natural heritage system
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides (predominantly NO+NO ₂)
NVIA	Noise and Vibration Impact Assessment
O. Reg	Ontario Regulation
OBBA	Ontario Breeding Bird Atlas
OHA	Ontario Heritage Act
OHT	Ontario Heritage Trust
OMB	Ontario Municipal Board
OPSS	Ontario Provincial Standard Specifications
ORAA	Ontario Reptile and Amphibian Atlas
PA	Project Agreement
PAH	Polycyclic aromatic hydrocarbons
Part A	The existing conditions portion of this report

Term	Definition
Part B	The impact assessment portion of this report
PBWP	Parkway Belt West Plan
pers. comm.	Personal communication (typically referring to email, phone, or in-person correspondence)
PHP	Provincial Heritage Property
PHPPS	Provincial Heritage Properties of Provincial Significance
PIF	Project Information Form
PM ₁₀	Particulate matter less than 10 microns in diameter
PM _{2.5}	Particulate matter less than 2.5 microns in diameter
PPS	Provincial Policy Statement
PPUDO	Passenger pick-up and drop-off
PSW	Provincially Significant Wetland
PTE	Permission to Enter
QLA	Quality Level A
QLB	Quality Level B
QLC	Quality Level C
QLD	Quality Level D
RC&S	Rail Cars & Shops Facility
RCD	Reference Concept Design
RER	Regional Express Rail
RHCT	Richmond Hill Centre Terminal
ROW	Right-of-Way
RTP	Regional Transportation Plan
S1	Committee on the Status of Species at Risk in Ontario designation for Critically Imperiled — meaning a critically imperiled species in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
S2	Committee on the Status of Species at Risk in Ontario designation for Imperiled — meaning an imperiled species in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
S3	Committee on the Status of Species at Risk in Ontario designation for Vulnerable — meaning a vulnerable species in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	Apparently Secure Species

Term	Definition
S5	Secure Species
SAR	Species at Risk
SARA	Species at Risk Act
SCHV	Statement of Cultural Heritage Value
SCP	Strategic Conservation Plan
SEM	Sequential Excavation Method
SO ₂	Sulphur Dioxide
SPM	Suspended Particulate Matter
S-Rank	The Natural Heritage provincial ranking system (provincial S-rank) is used by the MNRF to set protection priorities for rare species and natural communities.
St.	Street
STA	Stormwater Treatment Area
STBM	Slurry Tunnel Boring Machine
SUE	Subsurface Utility Engineering
SW	Southwest
SWH	Significant Wildlife Habitat
TBM	Tunnel Boring Machine
TDM	Transportation Demand Management
TEA	Toronto Entomologists' Association
TEL	Threshold Exposure Levels, Threshold Values Applicable to Metrolinx Construction Projects
TIA	Traffic Impact Assessment
TMC	Turning Movement Count
TMP	Transportation Master Plan
TOC	Transit Oriented Communities
TPAP	Transit Project Assessment Process
TPSS	Traction Power Substation
TPZ	Tree protection zone
TRCA	Toronto and Region Conservation Authority
TSF	Train Storage Facility
TSP	Total Suspended Particulate
TSS	Train Service Specification
TTC	Toronto Transit Commission

Term	Definition
UGC	Urban Growth Centre
USEPA	United States Environmental Protection Agency
V/C	Volume to capacity ratio
VOC	Volatile Organic Compound
VPR	Voluntary Project Review
YDSS	York Durham Sanitary Sewer
YNSE	Yonge North Subway Extension
York Region	Regional Municipality of York
YROP	York Region Official Plan, 2010
YRRTC	York Region Rapid Transit Corporation
YRT	York Regional Transit
YSE	Yonge Subway Extension
ZOI	Zone of Influence

GLOSSARY OF TERMS

Term	Definition
Air Dispersion Modelling	Dispersion models are computer simulations of how air contaminants disperse once emitted by a source. Based on how contaminants are released, local terrain, and local weather patterns, a dispersion model can be used to predict concentrations at selected downwind receptor locations.
Air Quality Management Plan (AQMP)	A Plan that describes how air emissions from construction and operation activities will be managed, including what control measures will be used and how air emissions will be monitored.
Air Toxics	Air toxics are hazardous air contaminants that may cause cancer or other serious health effects if there is enough exposure. Some examples include formaldehyde, acetaldehyde, acrolein, benzene, 1,3-butadiene, and benzo(a)pyrene.
Ambient Air Quality	The term “ambient air quality” is used when discussing the air quality in a community or area, and not specifically downwind of a major source of emissions.
Ambient Air Quality Criteria (AAQC)	In Ontario, there are Ambient Air Quality Criteria (AAQCs) that are protective against effects on health and the environment. AAQCs are used to assess general air quality. An AAQC is not a regulatory standard, but is a desirable concentration for a location, inclusive of all sources and background; if the air concentrations are within the AAQCs, the MECP do not expect adverse health or environmental effects to occur.
Area of Natural and Scientific Interest (ANSI)	An area of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study, or education.
Averaging Time	An averaging time is the duration of exposure to a contaminant; for a 1-hour averaging time, effects that may occur with exposure over 1 hour are evaluated. Some contaminants may have short-term (acute) effects, and averaging times of 10-minutes, 1-hour or 24-hours are considered. Health effects of other contaminants may occur at lower concentrations if exposure is for a long period of time, and for these contaminants an averaging period of 1-year is used for studies.
Built Heritage Resources	Means a building, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property’s cultural heritage value or interest as identified by a community, including an Indigenous community. Built heritage resources are located on property that may be designated under Parts IV or V of the Ontario Heritage Act, or that may be included on local, provincial, federal and/or international registers [Source: PPS 2020.]
Bus Loop	A non-public bus facility where operators can loop around according to their bus route, or where bus operators may also park and use the staff facilities.
Bus Terminal	A public bus facility where passengers can transfer to and from a bus. Bus platforms are unpaid areas and passengers are required to show proof of payment on the bus. Passengers shall use the fare gates to pay when entering the subway. A bus terminal may include staff and passenger facilities as well as expanded vehicle requirements related to the subway or bus operations (e.g., bus bays, layovers, staff parking, emergency vehicle parking, Traction Power Substation and/or other).

Term	Definition
Canadian Ambient Air Quality Standards (CAAQS)	As part of Canada's Air Quality Management System, standards known as CAAQS have been developed to drive the improvement of air quality across Canada. These are not regulatory standards but are air quality objectives under the Canadian Environmental Protection Act.
Carbon Dioxide Equivalent (CO ₂ e)	The total quantity of greenhouse gases (GHGs) emitted are reported in units of carbon dioxide equivalents, or CO ₂ e. There are dozens of individual GHGs identified, and each has a different potential to contribute to global warming. Using a global warming potential (GWP), all GHGs from a Project can be added together to one total GHG emission. CO ₂ has a GWP of 1, while methane has a GWP of 28 which means that one tonne of methane is equal to 28 tonnes of CO ₂ e.
Class Environmental Assessment (EA Act)	A document that sets out a standardized planning process for classes or groups of activities. It applies to projects that are carried out routinely and have predictable environmental effects that can be readily managed.
Comprehensive Predictable Worst-Case Analysis	A comprehensive predictable worst-case analysis explores the Project's potential impacts considering realistic daily variation in worst-case emissions relative to the same daily variation in meteorology (e.g., rather than assuming rush hour traffic emissions or peak construction emissions could happen any time of day, this type of analysis may use off-peak emissions during off-peak hours or assume construction at some sites is not occurring at night).
Construction Staging Area	A designated area for the storage of equipment and vehicles, stockpiles, waste bins, and other construction-related materials during the construction of a project.
Contaminants of Interest	The contaminants of interest are those air contaminants which are specifically selected by Metrolinx for air quality impact assessments. These contaminants are carbon monoxide (CO), nitrogen dioxide (NO ₂), fine particulate matter (PM _{2.5}), benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and benzo(a)pyrene, which are created when fuel is combusted in engines and released to the air as 'tailpipe' emissions.
Criteria Air Contaminant (CAC)	A subgroup of air contaminants that contribute to air quality issue such as smog and acid rain. CACs are released to the air when fuel is combusted for energy or to power vehicles. The CACs relevant to the transportation sector include particulate matter, oxides of nitrogen, carbon monoxide, and volatile organic compounds. CACs are regulated by both Environment and Climate Change Canada, and by the MECP.
Cultural Heritage Evaluation Report (CHER)	A property-specific study that is prepared by, or with advice from a qualified heritage professional, that is completed for a property with potential CHVI that has not yet been evaluated against the criteria in the Ontario Heritage Act, including O. Reg. 9/06 and 10/06. A CHER is an evaluation only and does not include mitigation measures or an impact assessment.
Cultural Heritage Landscapes	Means a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association. Cultural heritage landscapes may be properties that have been determined to have cultural heritage value or interest under the <i>Ontario Heritage Act</i> , or have been included on federal

Term	Definition
	and/or international registers, and/or protected through official plan, zoning by-law, or other land use planning mechanisms [Source: PPS 2020.]
Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (CHR)	A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (Cultural Heritage Report) is a report prepared in accordance with the MHSTCI 2019 guidance document titled MTCS Sample Tables and Language for “Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment” and Environmental Project Reports (EPR) under Transit Project Assessment Process (TPAP) for Proponents and their Consultants. The Cultural Heritage Report is prepared by a qualified heritage professional to determine the historical context of the Study Area, identify protected and potential built heritage resources and cultural heritage landscapes, and complete a preliminary impact assessment to identify anticipated impacts of the preferred alternative to identified heritage properties. Where impacts are anticipated, mitigation measures are prepared.
Cultural Heritage Resource (CHR)	A cultural heritage resource refers to real property that is of cultural heritage value or interest and may include a building, structure, landscape or other feature of real property. For the purposes of this report cultural heritage resources refers to either built heritage resources or cultural heritage landscapes.
Cultural Heritage Value of Interest (CHVI)	A resource can be said to be of cultural heritage value or interest if it meets one or more of the criteria set out in <i>O. Reg. 9/06</i> . Potential cultural heritage resources identified during background research and preliminary screening should be referred to as potential heritage resources until an evaluation against <i>O. Reg. 9/06</i> determines they are of cultural heritage value or interest.
Cumulative Effect	The cumulative air quality effect of a project on a local community includes not only the Project’s air quality impacts but also those of other sources of pollution affecting the locality (the background). This effect is estimated by adding the modelled Project effects and the background concentrations to look at the air concentrations people may be exposed to.
Culvert	A culvert is a structure that channels water past an obstacle or a subterranean waterway. Culverts are typically embedded so as to be surrounded by soil, and may be made from a pipe, reinforced concrete or other material.
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.
Diesel Particulate Matter (DPM)	DPM refers to the soot in diesel tailpipe emissions, which is made up primarily of carbon, ash, trace metals, sulfates, and silicates. Some organic carbon compounds, such as polycyclic aromatic hydrocarbons, adhere to these soot particles. There are no applicable air quality standards or criteria for DPM, therefore the PM _{2.5} from the engines can be assessed rather than DPM.
Ecological Land Classification (ELC)	A term used in Ontario to describe various systems to indicate natural regions based on ecological factors.
Emergency Exit Building (EEB)	An Emergency Exit Building (EEB) is a facility provided for emergency egress of persons from underground spaces.

Term	Definition
Emission Factor	An emission factor is used to estimate air emissions, in grams per second, based upon the size and type of engine, how long it runs, or the total distance driven. The usual units of emission factors are gram/horsepower-hour (for engines and equipment) and gram/km (for vehicles). Emission factors can also be used to estimate how much dust is released to the air from construction activities.
Emission Rate	An emission rate, typically in grams per second, is the amount of a contaminant that is released to the air. The emission rate is a key input in the air dispersion models that predict the air quality effects and the ambient air concentrations for the contaminants.
Environmental Project Report (EPR)	The proponent is required to prepare an EPR to document the TPAP 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.
Environmental Project Report (EPR) Addendum	If a proponent wishes to make a change to a transit project that is inconsistent with its previously approved EPR, this requires a reassessment of the impacts associated with the change the identification of potentially new mitigation measures, and potentially new monitoring systems in an EPR Addendum. The process and timelines for making objections and for the Minister to act with respect to the proposed change are essentially the same in the Addendum process as in the process leading to the Notice of Completion.
Environmentally Significant Area	These are natural areas which are particularly significant or sensitive requiring additional protection to preserve their environmental qualities and significance.
Exceedance	A concentration that is higher than a standard or criterion.
Extraction Shaft	The temporary shaft from which the Tunnel Boring Machines will be removed on completion of boring operations for the twin tunnels. These shafts may include Permanent Structure within the support of excavation limits.
Finch Transition Box Structure	The underground structure which provides the transition between the existing Finch Station tail track structure and the twin tunnels.
Frequent Rapid Transit Network	The full range of transit projects needed to meet growth as identified in the Metrolinx 2041 Regional Transportation Plan. [Source: 2041 Regional Transportation Plan, Metrolinx, 2018.]
Fugitive Dust	Particulate matter that is released from activities or open sources are referred to as fugitive dusts. Common sources of fugitive dust include unpaved roadways, aggregate storage piles, and heavy construction operations. PM ₁₀ may be assessed as a surrogate for total fugitive dust.
Future Build Scenario	The "future build" is a planning scenario which represents completion of the Project and the resulting traffic.
Future No Build Scenario	The "future no-build" is a planning scenario in which the proposed infrastructure is not built. It is used as a reference to the Future Build scenario to compare transportation consequences and related environmental impacts.

Term	Definition
Geographic Information System (GIS)	Systems that are designed to capture, store, visualize, manipulate, analyze, manage, and present spatial or geographical data.
Global Warming Potential (GWP)	GWPs were developed to allow for comparisons of the global warming impacts of different gases, and that GHG reporting can be done in units of carbon dioxide equivalents (CO ₂ e) that take into account all GHGs released from a Project. The GWPs are set by scientists working with the Intergovernmental Panel on Climate Change (IPCC).
Greater Golden Horseshoe	The geographic area identified as the Greater Golden Horseshoe growth plan area in <i>Ontario Regulation 416/05</i> under the Places to Grow Act, 2005. [Source: Growth Plan for the Greater Golden Horseshoe, 2019.]
Greenhouse Gases	Greenhouse gases are gaseous constituents of the atmosphere contribute to global warming. The GHGs can absorb and emit radiation from the Earth's surface, the atmosphere and by clouds. The man-made greenhouse gases of relevance to Metrolinx projects are carbon dioxide (CO ₂), methane (CH ₄) and nitrous oxide (N ₂ O).
Guideline A-11: Air Dispersion Modelling Guideline for Ontario	A document published by the MECP with guidance on how to perform air dispersion modelling in Ontario for studies or to determine compliance with <i>O.Reg.419/05 – Local Air Quality</i> .
Headwall	The support of excavation structure delineating the end walls of open excavations along the tunnel Alignment, including those for future open excavations that the Tunnel Boring Machines will mine through after the SOE structures are installed.
Heritage Attributes	Means the principal features or elements that contribute to a protected heritage property's cultural heritage value or interest, and may include the property's built, constructed, or manufactured elements, as well as natural landforms, vegetation, water features, and its visual setting (e.g., significant views or vistas to or from a protected heritage property) [Source: PPS 2020.]
Heritage Conservation District	As per Part V of the Ontario Heritage Act, a defined geographical area within a municipality that is protected under a local bylaw to ensure conservation of its existing heritage character. The focus of this type of designation is on the prevailing character of an area, particularly its contextual attributes- such as the variety of buildings and how they interrelate, the physical attributes including trees, landscapes, building setbacks, roads, street furniture and lighting. A district designation allows a municipal council to manage and guide future change in the district by adopting a district plan with policies and guidelines tailored to the area's conservation, protection and enhancement requirements. [Source: Ontario Heritage Trust, 2021.]
Heritage Conservation District (HCD)	A Heritage Conservation District (or HCD) – defined under Part V of the Ontario Heritage Act – is a geographically defined area within a municipality that is noted for its distinct heritage character.
Heritage Impact Assessment (HIA)	A Heritage Impact Assessment (HIA) evaluates the impact of a proposed development, building alteration or site alteration on a built heritage resource(s) or a cultural heritage landscape(s) and recommends mitigative measures or alternative development approaches to conserve the heritage attributes of that resource/landscape.

Term	Definition
Highway Capacity Manual (HCM)	Highway Capacity Manual (HCM) is a publication of Transportation Research Board (TRB) which contains concepts, guidelines and procedures for study of the quality of services and operations of various transportation facilities (e.g., highways, arterials, signalized/unsignalized intersections).
Hostler Platforms	Platforms raised above the track located in a service yard used by Train Operators (Hostlers) to safely level-board and alight the subway trains. Platforms are located at the transition point between the yard and mainline to facilitate the handover between Subway Yard Operator and mainline operators. The platforms are typically full train length, level with train floor, and provide safe and easy access for operating staff and cleaning staff.
Intergovernmental Panel on Climate Change (IPCC)	An intergovernmental body of the United Nations that is dedicated to providing the world with objective, scientific information relevant to understanding the scientific basis of the risk of human-induced climate change, its natural, political, and economic impacts and risks, and possible response options.
Launch Shaft	The entry portal for the horizontal launch of the tunnel boring machines and which will be used to service all boring operations for twin tunnel construction.
Level of Service (LOS)	LOS is a qualitative measure which implies a qualitative measure of traffic flow at an intersection. LOS ranges from A to F and is dependent upon vehicle delay at intersection approaches.
Local Planning Appeal Tribunal	An adjudicative tribunal that hears cases in relation to a range of land use matters, heritage conservation and municipal governance. Appeals that come before LPAT are identified through policies found in the Planning Act, Aggregate Act, Heritage Act, Municipal Act, Development Charges Act and Expropriations Act. These include matters such as official plans, zoning by-laws, subdivision plans, consents and minor variances, land compensations, development charges, electoral ward boundaries, municipal finances, aggregate resources and other issues assigned by numerous Ontario statutes. [Source: Ontario Land Tribunals, 2021.]
L-Rank	A ranking system used by the TRCA to assess the rarity of species found within their jurisdiction. Higher numbers indicate more common species, with L5 being the most common and L1 being the least. L+ species are introduced.
Maintenance Shaft	A temporary shaft for Tunnel Boring Machine maintenance and to provide an additional means of temporary access/egress to the tunnels. These shafts may include Permanent Structure within the support of excavation limits. Also known as a Drop Shaft.
Major Transit Station Area	The area including and around any existing or planned higher-order transit station within a settlement area, or the area including and around a major bus depot in an urban core. Major transit station areas generally are defined as the area within an approximate 500 metre radius of a transit station, representing about a 10 minute walk. [Source: Growth Plan for the Greater Golden Horseshoe, 2019.]
Migratory Bird	A bird protected under the <i>Federal Migratory Birds Convention Act</i> .
Ministry of the Environment, Conservation and Parks (MECP)	An Ontario governmental ministry responsible for protecting and improving the quality of the environment, as well as coordinating Ontario's actions on climate change.

Term	Definition
Mitigation Measure	An action taken to lessen or reduce the severity of potential adverse environmental affects to enhance positive environmental effects. These measures could include construction techniques, compensation or community enhancement.
Motor Vehicle Emission Simulator (US EPA) (MOVES)	A US EPA model that is used to estimate emissions from mobile sources for criteria air contaminants, greenhouse gases, and air toxics including on road vehicles and non-road construction equipment.
National Air Pollution Surveillance (NAPS)	The NAPS program is the federal government's air monitoring program that has been measuring air contaminant concentrations since 1969. There are more than 250 stations included in the program covering both rural, urban, and remote communities.
Nitric Oxide (NO)	One of the main oxides of nitrogen that are generated during fuel combustion.
Nitrogen Dioxide (NO ₂)	One of the main oxides of nitrogen that are generated during fuel combustion. There is an AAQC for NO ₂ , as there are known health effects associated with exposure at elevated concentrations. NO ₂ also contributes to smog, acid rain, and secondary particulate formation in the air.
Nitrogen Oxides (NO _x)	A generic term for the nitrogen oxides that are most relevant for air pollution (predominantly NO and NO ₂). NO _x contributes to the formation of smog and acid rain.
Nitrous Oxide (N ₂ O)	Although an oxide of nitrogen, N ₂ O is not considered to be a criteria air contaminant. It is a powerful greenhouse gas, having 265 times the GWP of carbon dioxide.
<i>O. Reg 10/06</i>	<p><i>O. Reg. 10/06</i> provides criteria to determine if a property has CHVI of provincial significance. The criteria for determining CHVI under <i>O. Reg. 10/06</i> includes:</p> <p>A property may be designated under section 34.5 of the Act if it meets one or more of the following criteria for determining whether it is of cultural heritage value or interest of provincial significance:</p> <ol style="list-style-type: none"> 1. The property represents or demonstrates a theme or pattern in Ontario's history. 2. The property yields, or has the potential to yield, information that contributes to an understanding of Ontario's history. 3. The property demonstrates an uncommon, rare or unique aspect of Ontario's cultural heritage. 4. The property is of aesthetic, visual or contextual importance to the province. 5. The property demonstrates a high degree of excellence or creative, technical or scientific achievement at a provincial level in a given period. 6. The property has a strong or special association with the entire province or with a community that is found in more than one part of the province. The association exists for historic, social, or cultural reasons or because of traditional use. 7. The property has a strong or special association with the life or work of a person, group or organization of importance to the province or with an event of importance to the province.

Term	Definition
	The property is located in unorganized territory and the Minister determines that there is a provincial interest in the protection of the property. <i>O. Reg. 10/06, s. 1 (2)</i> . [Source: Government of Ontario 2006a.]
<i>O. Reg 9/06</i>	<p><i>O. Reg. 9/06</i> provides criteria to determine the CHVI of a property at a local level. The criteria for determining CHVI under <i>O. Reg. 9/06</i> includes:</p> <ol style="list-style-type: none"> The property has design value or physical value because it, <ol style="list-style-type: none"> is a rare, unique, representative or early example of a style, type, expression, material or construction method, displays a high degree of craftsmanship or artistic merit, or demonstrates a high degree of technical or scientific achievement. The property has historical value or associative value because it, <ol style="list-style-type: none"> has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community, yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community. The property has contextual value because it, <ol style="list-style-type: none"> is important in defining, maintaining or supporting the character of an area, is physically, functionally, visually or historically linked to its surroundings, or is a landmark. [Source: Government of Ontario 1990.]
Official Plan	An Official Plan is a policy document that guides the short-term and long-term development in a community. It applies to all lands within the municipal boundary and the policies within it provide direction for the size and location of land uses, provision of municipal services and facilities, and preparation of regulatory bylaws to control the development and use of land.
Ontario Environmental Protection Act R.S.O. 1990, CHAPTER E.19 (EPA)	The key environmental legislation in Ontario, which prohibits discharge of any contaminants into the environment that cause, or are likely to cause, and adverse effects.
<i>Ontario Heritage Act</i> (OHA)	The <i>Ontario Heritage Act, R.S.O. 1990, c. O.18</i> , provides a framework for the protection of cultural heritage resources in the Province. It gives municipalities and the provincial government powers to protect heritage properties and archaeological sites. The Ontario Heritage Act includes two regulations for determining Cultural Heritage Value or Interest (CHVI): Ontario Regulation (<i>O. Reg.</i>) 9/06 and <i>O. Reg. 10/06</i> .
Ontario Municipal Board	The Ontario Municipal Board, now replaced by the Local Planning Appeal Tribunal, was an independent adjudicative tribunal that conducted hearings and made decisions on land use planning issues and other matters. [Source: Ontario Land Tribunals, 2021.]
<i>Ontario Planning Act</i>	The <i>Planning Act</i> is provincial legislation that sets out the ground rules for land use planning in Ontario. It describes how land uses may be controlled, and who may control them.

Term	Definition
Ontario Provincial Policy Statement (PPS)	The Provincial Policy Statement (PPS) is a consolidated statement of the government's policies on land use planning. It gives provincial policy direction on key land use planning issues that affect communities.
<i>Ontario Regulation (O. Reg.) 419/05</i>	<i>O. Reg. 419/05</i> is the regulation pertaining to local air quality. There are air quality standards for more than 100 pollutants, and air dispersion modelling and/or air monitoring is used to ensure that facilities and activities are operating in compliance with the regulation.
Overbuild	Any structure built above or over another structure, facility, trackwork or space.
Particulate matter less than 10 microns in diameter (PM ₁₀)	PM ₁₀ has a particle size range up to 10 µm in aerodynamic diameter. PM ₁₀ includes the smaller particles referred to as PM _{2.5} . In addition to the nuisance effects, there are possible health effects that may be attributed to PM ₁₀ . The interim AAQC is based upon these potential health effects.
Particulate matter less than 2.5 microns in diameter (PM _{2.5})	PM _{2.5} has a particle size range up to 2.5 µm in aerodynamic diameter. PM _{2.5} is the most important particle size range from a respiratory public health perspective. There is concern regarding the smaller size fractions, however current AAQCs and CAAQS have been established for PM _{2.5} that are protective of health. PM _{2.5} is released to the air as a by-product of fuel combustion and as fugitive dust.
Point of Impingement (POI)	A location where the concentration of contaminants is calculated by the model that is not within the Project footprint (e.g., concentrations are calculated at every point made by a 20 metre by 20 metre grids within the study area).
Polycyclic aromatic hydrocarbons (PAH)	Polycyclic aromatic hydrocarbons (PAHs) are a group of chemicals that are released to the air when coal, oil, gas, wood, garbage, and tobacco are burned. PAHs may also be released from the handling of creosote or asphalt, and from forest fires. Some PAHs are gases, but most are bound to small particles.
Portal Structure	A large reinforced concrete structure that holds earth in place to provide an opening for trains going in and out of the underground tunnel.
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.
Project Agreement	The executed contractual agreement that defines the obligations that the Contractor must adhere to as part of constructing and delivering a Project.
Protected Heritage Property	Means property designated under Parts IV, V or VI of the Ontario Heritage Act; property subject to a heritage conservation easement under Parts II or IV of the Ontario Heritage Act; property identified by the Province and prescribed public bodies as provincial heritage property under the Standards and Guidelines for Conservation of Provincial Heritage Properties; property protected under federal legislation, and UNESCO World Heritage Sites [Source: PPS 2020.]
Provincial Heritage Property (PHP)	A property, including buildings and structures on the property, that has cultural heritage value or interest that has been evaluated using the criteria found in Ontario Heritage Act O Reg. 9/06 and has been found to have cultural heritage value or interest of municipal/local significance.

Term	Definition
Provincial Heritage Property or 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 Policy Statement	A consolidated statement of the government's policies on land use planning, issued under section 3 of the Planning Act. According to the act, all decisions affecting planning matters shall be consistent with the Provincial Policy Statement. [Source: Ministry of Municipal Affairs and Housing, 2020.]
Provincially Significant Wetland (PSW)	Wetlands that have been evaluated using the Ontario Wetland Evaluation System by a certified wetland evaluator and that have satisfied the Ontario Wetland Evaluation System criteria for significance.
Rail Right-of-Way	Land that is reserved, usually through legal designation, for transportation purposes, such as for railway line. A right-of-way is often reserved for the maintenance or expansion of existing services.
Receptor	Something that could be adversely affected by a contaminant. Sensitive receptors, in term of air quality, are places such as residences, hospitals, long-term care facilities, and schools.
Right-of-Way (ROW)	Land that is reserved, usually through legal designation, for transportation and/or utility purposes, such as for a hydro corridor, rail line, street or highway. A right-of-way is often reserved for the maintenance or expansion of existing services. A permit or legal permission is generally required for any work or encroachment on a right-of-way.
Significant	In regard to the EPR Addendum process, if the proponent of the transit project is of the opinion that a proposed change is significant, they must publish a Notice of EPR Addendum in a local newspaper and online, circulate the notice to all applicable stakeholders, and consult with Indigenous Nations regarding the EPR Addendum.
	In regard to cultural heritage and archaeology, resources that have been determined to have cultural heritage value or interest. Processes and criteria for determining cultural heritage value or interest are established by the Province under the authority of the Ontario Heritage Act [Source: PPS 2020.]
Species at Risk (SAR)	A species, subspecies, variety or genetically or geographically distinct population of animal, plant or other organism, other than a bacterium or virus, that is native to Ontario. Species at Risk in Ontario are all the species that are classified by the Committee on the Status of Species at Risk in Ontario (COSSARO) or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as either extirpated, endangered, threatened, or special concern.
Species at Risk (SAR) Screening	The suitability of an area to support habitat preferred by SAR species is based on a combination of factors; including, but not limited to: a species' requirements for critical life stages and adaptability, seasonal temperatures, precipitation, soils, vegetation, aquatic conditions, existing disturbances and landform.
S-Rank	A ranking system used by the NHIC to assess the rarity of species found in Ontario. Higher numbers indicate more common species, with S5 being the most common and S1 being the least.

Term	Definition
Study Area	The area used in the EPR addendum to assess potential impacts from the Project; defined as all areas within 120 m of the proposed footprint.
Sulphur Dioxide (SO ₂)	Sulphur Dioxide (SO ₂) is released to the air from the combustion of fuels containing sulphur, and from industrial processes (cement manufacturing, petroleum refining). SO ₂ contributes to the formation of acid rain and secondary particulate matter in the atmosphere.
Slurry Tunnel Boring Machine (STBM)	The STBM is a sealed system that provides continuous pressure to the face of the excavation to balance active earth pressure and hydrostatic pressures in front of the STBM.
Suspended Particulate Matter (SPM)	SPM is regulated in Ontario based upon potential effects on visibility and includes all particles up to 44 µm in diameter (e.g., PM ₁₀ and PM _{2.5}). The assessment of SPM effects is related to potential nuisance effects and not health effects. SPM is often used interchangeably with TSP as it relates to the same types of emission sources and dispersion and deposition characteristics.
Tail Tracks	Special trackwork typically located beyond the terminal station and/or a storage facility and used for redirection of subway trains. Subway trains can switch between tracks or perform short turns to access the terminus platform.
Threshold Exposure Levels (TEL)	To address the concern over short-term exposure to higher concentrations of construction dust, Metrolinx devised 15-minute exposure criteria called TELs to avoid, or manage, temporary but higher concentrations of particulate matter.
Total Suspended Particulate (TSP)	In general, includes particles that are less than 100 micrometers (µm), with the larger particles more likely to settle quickly and close to where the dust is generated, or the particulate is released to the air. The potential exists for TSP to impair visibility and for deposition within the study area.
Transit Project Assessment Process (TPAP)	This process is defined in sections 6 through 17 in O. Reg 231/08. It consists of various steps and requirements. It is a focused impact assessment process that includes consultation, an assessment of potential positive and negative impacts, an assessment of measures to mitigate negative impacts, and documentation.
Tree Protection Zone (TPZ)	Tree Protection Zones are the minimum required distances where tree protection is to be put in place so that no construction activity of any kind will take place inside the Tree Protection Zone.
Tunnel Boring Machine (TBM)	TBMs are launched from a deep excavated shaft called a 'launch shaft' and bore a tunnel to an end location called an extraction shaft. The excess material removed by the TBM is extracted from the tunnel by a conveyor belt, loaded into rail cars and transported to the launch shaft and then transported away for disposal.
Turning Movement Count (TMC)	TMC indicates the directional volume of road user (auto, truck, bus, pedestrian and bike) passing through an intersection over a given period of time.
Urban Growth Centre	Existing or emerging downtown areas shown in Schedule 4 of the Growth Plan for the Greater Golden Horseshoe and as further identified by the Minister of Municipal Affairs and Housing on April 2, 2008. [Source: Growth Plan for the Greater Golden Horseshoe, 2019.]

Term	Definition
Volatile Organic Compound (VOC)	A large group of organic chemicals that evaporate at room temperature and are present as gases in ambient air. Sources of VOCs include fuel combustion, solvent use, painting, glues/sealants, and industrial processes.
Volume to Capacity Ratio (v/c)	The volume to capacity ratio (v/c) measures the level of congestion of a road or on approaches to an intersection by dividing the volume of traffic by the capacity of the roadway.
Wildlife Atlas	A publication or website that summarizes occurrence data for wildlife species across Ontario, providing information on species present in a particular region (often a 10 km x 10 km square).
Zone of Influence (ZOI)	The geographical area that could potentially experience exceedances of any of the ambient air quality standards, criteria or objectives, listed in Section 3 of the Metrolinx Environmental Guide, due to construction activities.

E. 1 Executive Summary

E.1.1 Background & Context

The Greater Toronto and Hamilton Area (GTHA) is one of North America's fastest growing regions, projected to grow by over 40% between 2016 and 2041. Most growth in the region is forecasted to take place outside Toronto, resulting in a significant increase in total trips.

To serve longer-distance trips, the Province of Ontario, through Metrolinx, is now investing more than \$20 billion in the GO Expansion program to expand the rail system, with faster and more frequent trains and the capacity to move significantly more passengers by 2041. This transit expansion is being developed in existing corridors with all trains running to or from Union Station.

It has been noted that the GO Rail system does not serve all parts of the Greater Toronto Area, nor does it serve many shorter distance trips. The GO Richmond Hill Corridor currently provides service to central York Region but is not part of the GO Expansion program that is being implemented on some other GO Rail corridors. As a result, Metrolinx is also working to implement other rapid transit investments to address the needs of the Greater Toronto Region. The Yonge North Subway Extension (YNSE) Project extends rapid transit service to other municipalities in the Region and provides a connection between destinations in these municipalities with destinations in Toronto.

A particular need that has been identified is that the existing Line 1 Yonge-University Subway attracts riders from points north of the existing terminus at Finch Station. As a result, these transit users must access the subway via surface bus routes that can be lengthy and subject to delay as they compete for space on crowded roads. This means that transit users in this area experience longer journey times and less reliability. It also impacts the attractiveness of transit in this part of the Region. The YNSE is one of four priority transit projects announced by the Province in 2019 for the GTHA and has a preliminary funding announcement of \$5.6 billion.

Following the Province's funding announcement in 2019, responsibility for the delivery of the YNSE Project was uploaded from Toronto Transit Commission (TTC) and York Region, York Region Rapid Transit Corporation (YRRTC) to Metrolinx. In March 2021, Metrolinx published the YNSE Initial Business Case (IBC). The IBC reviews potential investments at a high-level that respond to a problem and/or opportunity and conducts a detailed analysis of each option using quantified information and qualitative indicators. The IBC provides recommendations for next steps in the Metrolinx Business Case process. With respect to the YNSE IBC, three alternative alignments were examined as part of a comparative analysis, with Alignment Option 3 being identified as the preferred option. In addition, the IBC also undertook analysis of the two Complementary Urban Core Stations and the three Neighbourhood Stations. The IBC recommended advancing design of the YNSE and a more detailed analysis of the growth forecasts along the corridor through a Preliminary Design Business Case.

Planning work on the Yonge North Subway pre-dates 2007. When the YNSE is completed, it will represent a further investment in extending Toronto's subway network. The current YNSE Project builds on planning, design and environmental assessment work previously completed and entails carrying out additional analysis, preparation of updated engineering designs, public and stakeholder consultation, as well as completion of an Environmental Project Report (EPR) Addendum in accordance with the requirements of the Transit Project Assessment Process.

E.1.2 Key Benefits of the Project

The GTHA is experiencing unprecedented growth, which calls for corresponding expansion of its transportation network. The existing Line 1 Yonge-University Subway (Line 1) terminates at Finch Station. In the peak hour about 10,000 transit users access the subway at this station, over 70% of the customers reach the station after traveling significant distances by bus. Extending the subway north provides accessibility to rapid transit by bringing stations closer to existing transit users and, providing them with seamless transit service to/from downtown Toronto and all points in between. An extension would also improve the customer experience on Line 1 by reducing those journey times.

Key benefits of the YNSE Project include:

- The extension will save riders as much as 22 minutes on a trip from York Region to downtown Toronto;
- Bridge Station and High Tech Station will serve the highest density areas to make it faster for riders to use the subway, and better for supporting growth and curbing local traffic congestion. Bridge Station will connect two communities in Markham & Richmond Hill that are poised for growth;
- Improved access to transit - 26,000 more people within a 10 minute walk to transit;
- The Project will serve 94,100 riders each day by 2041, cutting the time spent commuting in Toronto and York Region by a combined 835,000 minutes daily; and
- Daily reductions in traffic congestion (7,700 km in vehicle kilometres traveled) resulting in approximately 4,800 tonnes of yearly reductions in greenhouse gas emissions.

E.1.3 Previous Environmental Assessment Studies

In 2009, York Region, York Region Rapid Transit Corporation (YRRTC), the City of Toronto and the Toronto Transit Commission (TTC) completed an Environmental Project Report (EPR) under Ontario Regulation (O. Reg.) 231/08 (Transit Projects and Metrolinx Undertakings) to identify potential effects and mitigation measures for a 6.8-kilometre subway extension from the existing Finch Station to Richmond Hill Centre. An Addendum to the 2009 EPR was undertaken in 2014 to assess design changes, which included an extension of the subway alignment approximately 1 km north of the previously approved Richmond Hill Centre Station, a below-grade train storage facility (TSF) required for subway operations, and two Emergency Exit Buildings associated with the TSF.

E.1.4 Study Purpose – Current EPR Addendum

Since the completion of the 2009 EPR and 2014 EPR Addendum, further changes to the proposed YNSE Project have been identified that will result in modifications to the plans presented in the previously approved 2009 EPR and 2014 EPR Addendum. Therefore, the purpose of the current 2022 EPR Addendum study is to assess the relevant changes to the Project based on the currently proposed conceptual design.

Since the completion of the 2009 EPR and 2014 EPR Addendum, further changes to the Project have been identified that will result in modifications to those plans. In accordance with *Section 15 of O. Reg. 231/08*, Metrolinx has assessed the significance of the following proposed Project changes and determined that completion of a significant EPR Addendum is required:

- Construction of an at-grade segment of the subway alignment from just south of Langstaff Road to the northern limit of the Train Storage Facility at Moonlight Lane were not assessed in the 2009 EPR or the 2014 EPR Addendum, which only assessed the below-grade portion of the alignment from Finch Station to just south of Langstaff Road;

- Construction of two (2) at-grade stations due to the change in proposed subway alignment that were not assessed in the 2009 EPR;
- Proposed stations and corresponding bus facilities including Cummer Station and bus loop, Steeles Station and bus terminal, Clark Station, Royal Orchard Station, Bridge Station and Bus Terminal, and High Tech Station have changed since the 2009 EPR to avoid utility conflicts, minimize property impacts, and/or as a result of the change in proposed subway alignment;
- Proposed ancillary features including Traction Power Substation (TPSS)-2, Emergency Exit Building (EEB)-2, TPSS-3, TPSS-4, EEB-3, EEB-4, EEB-5, the launch shaft, and the extraction shaft have changed since the original 2009 EPR to ensure consistency with design standards, support traction power requirements for subway system operations, and as a result of the change in proposed subway alignment;
- The engineering design for the required modifications at Finch Station and EEB-1 have changed since the 2009 EPR. Currently proposed modifications include upgrading existing storage (tail) track to support future revenue service; upgrading operational and support systems as required within the tail track area; an approximately 130 m long duct bank extending westerly along Hendon Avenue from the existing Finch Station; a new fire department connection/cabinet; and temporary transportation works to facilitate construction access, including construction of a temporary exit from the existing TTC parking lot to Blake Avenue/Talbot Road and associated temporary traffic signals. Work associated with the proposed temporary exit from the TTC Lot onto Talbot Road is a short term item and the land will be reinstated following completion of the Finch Station modifications;
- New Project components including three (3) additional TPSS and a bus terminal at Clark Station, are proposed to support traction power requirements for subway system operations, enhance transit integration, none of which were proposed or assessed in the 2009 EPR or 2014 EPR Addendum;
- The proposed at-grade Train Storage Facility which was previously envisioned to be below grade has changed since the 2014 EPR Addendum as a result of the change in proposed above ground subway alignment; and,
- Addition of a tunnel portal structure just south of Langstaff Road to bring the proposed subway alignment to grade from the subway tunnel.

Additionally, as per Section 16 of *O. Reg. 231/08*, if construction of the Project has not commenced within 10 years of the issuance of the Statement of Completion, the Proponent is required to re-examine existing conditions in the Study Area as well as potential environmental impacts and mitigation measures to ensure they are still valid and subsequently carry out additional environmental studies as appropriate.

Therefore, this document serves as an Addendum to the 2009 EPR to assess the above noted changes and to address the lapse of time since the Statement of Completion for the proposed YNSE Project.

E.1.5 Study Area

The Study Area for the current EPR Addendum begins at the existing Finch Station along the existing Line 1 (Yonge–University) in the City of Toronto and proceeds northerly through the City of Vaughan (to the west) and City of Markham (to the east), to Moonlight Lane in the City of Richmond Hill, York Region. For reporting purposes and to better characterize the findings of the various environmental and technical studies, the EPR Addendum Study Area was further sub-divided into three (3) geographic segments (see **Figure 0-1**).

As shown in the detailed mapping in **Appendix A**, the defined Study Area reflects the proposed location of the YNSE infrastructure components as well as a buffer zone that accounts for the area that may be

potentially impacted by future project design refinements and/or modifications. Such design changes (if applicable) will be further defined and confirmed as part of the subsequent detailed design stage of the Project.

For reporting purposes and to better characterize the findings of the various environmental and technical studies, the EPR Addendum Study Area was further sub-divided into three (3) geographic segments (see **Figure 0-1**).

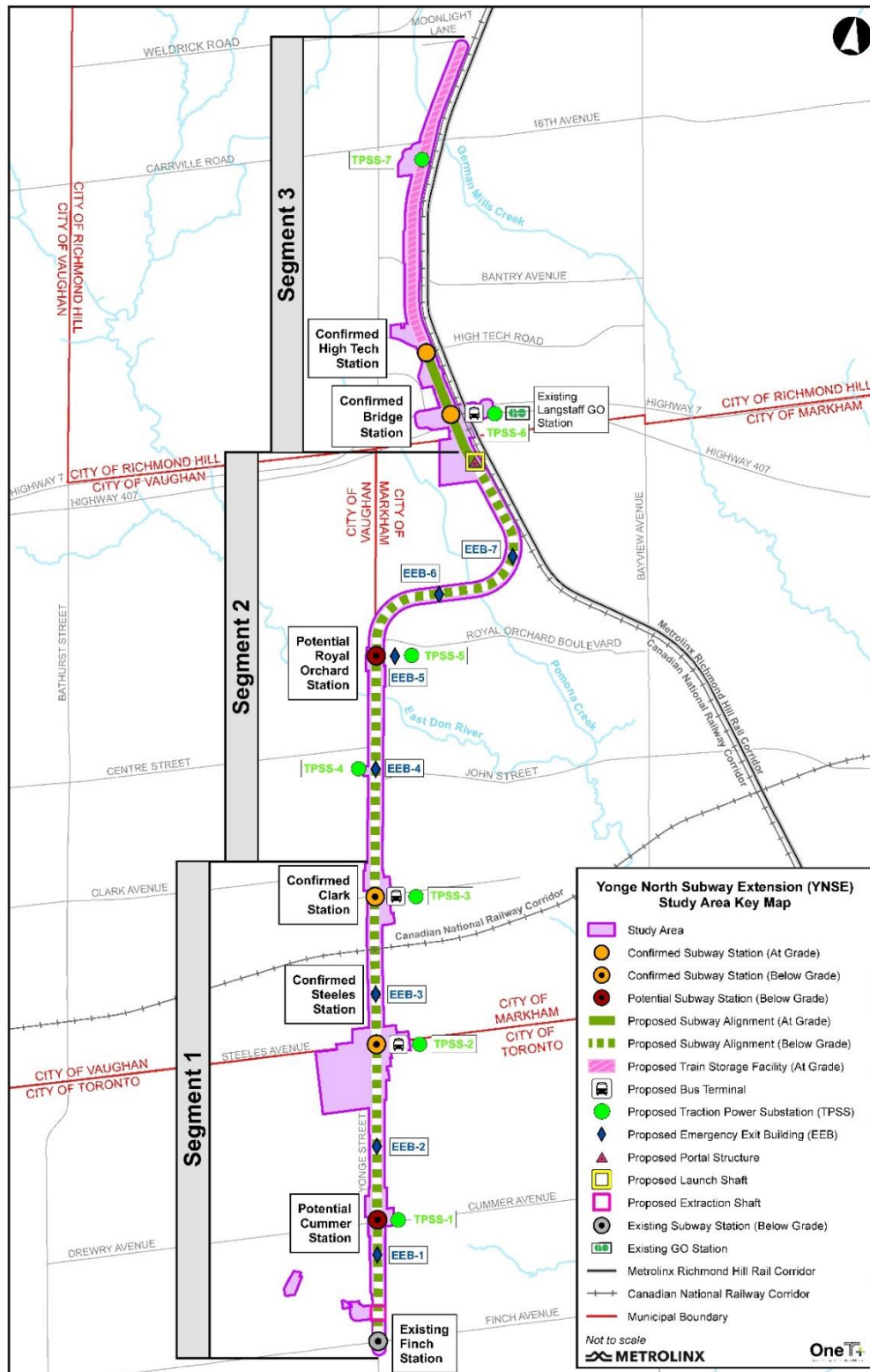


Figure 0-1 Yonge North Subway Extension TPAP Addendum Study Area

E.1.6 Summary of Project Design Changes

In accordance with Section 15 *O. Reg. 231/08*, the proposed project design changes that have been assessed within this EPR Addendum document are presented in the following table.

Table 0-1 Summary of YNSE Project Components, Changes & Rationale

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
1. Proposed Subway Horizontal Alignment	Approximately 6.8 km underground subway alignment from the existing Finch Station to the proposed Richmond Hill Center Station (in the vicinity of Highway 7 and Yonge St. in the City of Richmond Hill). From Finch Station to just south of the Holy Cross Catholic Cemetery, the alignment follows Yonge St. underground. North of the Holy Cross Catholic Cemetery, the subway alignment swings slightly eastward, crossing the northwest corner of the Langstaff development lands. The alignment then turns northward under Highway 407/Highway 7. North of the Richmond Hill Centre Station, the alignment terminates at the end of subway tail tracks in the transit corridor on the west side of the CN Bala Richmond Hill GO Line.	Extension of the subway alignment by approximately 1 km from previous terminus at Richmond Hill Centre Station to 16th Ave. in the City of Richmond Hill.	<p>The proposed YNSE subway alignment is approximately 9.5 km in total commencing at the existing Finch Station in the City of Toronto northerly to just beyond the limit of the proposed TSF (at Moonlight Lane) in the City of Richmond Hill. The proposed revenue portion of the alignment is approximately 8 km in length, while the remaining trackwork services the TSF.</p> <p>The proposed below grade portion of the subway alignment is approximately 6.5 km, beginning at Finch Station and extending to the proposed tunnel portal structure just south of Langstaff Road. Between Finch Station and Royal Orchard Blvd, the underground alignment is proposed to run under Yonge Street. It then curves to reach Bay Thorn Drive and continue to the east, before turning northwards where the alignment generally follows the existing CN Rail ROW until the proposed portal structure (just south of Langstaff Road) where the subway alignment emerges to at grade.</p> <p>The proposed at grade portion of the subway alignment is approximately 3 km in length beginning just south of Langstaff Road (from the proposed portal structure), with tracks located within and adjacent to the CN rail corridor ROW and terminating just beyond the limit of the proposed TSF (at Moonlight Lane) in the City of Richmond Hill. The at grade subway alignment generally follows the existing CN rail corridor ROW; however, the westernmost subway track is situated immediately outside the CN Rail ROW boundary for the majority of the at grade segment.</p>	While the YNSE was previously envisioned to terminate just north of Highway 7, the area to the north was identified by Metrolinx as an area where refinement could enhance Project benefits and reduce capital costs. The proposed alignment that forms the basis for this EPR Addendum specifically addresses the challenges and opportunities of serving these areas and their future residents and employees.
2. Proposed Subway Vertical Profile	Below grade vertical profile design with a crossing above grade (bridge) over the East Don River. Proposed station and alignment depths were not presented within the 2009 EPR.	N/A	The subway alignment vertical profile was designed to reduce the depth of the stations along the route, except at the potential Royal Orchard Station, which is located approximately 500 m north of the deep East Don River Valley. The depth of the station platform at this location ranges from approximately 40 to 50 m below the existing ground surface, to account for tunneling south of the station below the East Don River.	The current YNSE vertical profile changes from below grade to at grade south of Langstaff Road, thereby eliminating the above grade (bridge) crossing over the Don River. The currently proposed profile reduces the depth of the stations along the route (except at Royal Orchard Station), while meeting applicable tunnel grade requirements (e.g., TTC Design Manual DM-0204-04).
3. Tunnels	<p>Approximately 6.8 km underground tunneled alignment from the existing Finch Station to the proposed Richmond Hill Center Station in the vicinity of Highway 7 and Yonge St. in the City of Richmond Hill.</p> <ul style="list-style-type: none">For the purposes of determining the potential environmental effects of the Transit Project, the following approach was assumed within the 2009 EPR:<ul style="list-style-type: none">Richmond Hill Centre Station and surrounding area would provide sufficient space for the southbound launch of the TBM and as well as storage of tunnel liners and other tunnelling materials and equipment; andExisting surface parking in the southwest quadrant of the Yonge Street / Steeles Avenue intersection could also provide sufficient space for the southbound launch of the TBM and storage of tunnel	The underground Train Storage Facility assessed in the 2014 EPR Addendum would be located adjacent to the CN Rail corridor, beginning approximately 100m north of the Richmond Hill Centre Station. Cut and cover construction methodology was assumed for this work, during which the ground surface is opened (cut) a sufficient depth to construct the subway tunnel structure.	<p>The proposed conceptual design involves the construction of tunnels for the underground alignment portion of the current YNSE alignment with the following key parameters:</p> <ul style="list-style-type: none">Approximately 6 kms of twin 5.6 m internal diameter TBM tunnelsTwin tunnels run from Finch Transition Box Structure to proposed portal locationReference YNSE Alignment assumes all tunneling undertaken using two (2) TBMsLaunched at the North Portal Launch Shaft, located immediately west of CN/GO rail tracks and south of Langstaff RoadBoth TBM's are to be removed at the Finch Transition Box Structure where the extraction shaft is to be located	There is no change to the need for tunneling as part of the project. The currently proposed YNSE alignment still entails the construction of approximately 6 kms of tunnels; whereas the approximate length of tunnelling in the 2009 EPR was 6.8 km.

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	<p>liners; and other tunnelling materials and equipment.</p> <p>The 2009 EPR Identified the East Don River crossing as the TBM extracting shaft location (one at each end of the crossing). Cummer / Drewry Station was also identified as a potential location to remove the TBM in the 2009 EPR.</p> <p>The 2009 EPR assumed a twin-bored tunnelling method for the entire running structure from Finch Station to the Richmond Hill Centre Station, with the exception of the section between the existing Finch Station tail tracks and Cummer/Drewry Station and the approaches to the proposed East Don River bridge.</p>			
4. Finch Station Modifications	N/A	N/A	<p>Modifications to existing Finch Station as follows:</p> <ul style="list-style-type: none">• Upgrading existing tail track to support future revenue service;• Construction of the Finch Transition Box Structure, which is an underground structure that provides the transition between the existing Finch Station tail track structure and the new YNSE twin tunnels;• Upgrading operational and support systems (e.g., signal upgrades) within the existing tail track area;• Upgrade to the existing electrical and communication back-of-house room at the station;• Upgrade to the existing Hendon Avenue Traction Power Substation located approximately 130 m west of the station; and• An approximately 130 m long underground duct bank extending westerly along Hendon Avenue from the existing Finch Station.	<p>Modifications to the existing Finch Station and nearby/associated facilities such as the existing Hendon Avenue Traction Power Substation are required to enable YNSE project implementation and future revenue service beyond Finch Station.</p>
5. Stations	Total of six (6) below grade stations proposed.	No new or modified stations were proposed.	<p>Total of Four (4) below grade stations and two (2) at grade stations are proposed, as follows:</p> <ul style="list-style-type: none">• Cummer Station (below grade)• Steeles Station (below grade) and bus terminal• Clark Station (below grade) and bus terminal• Royal Orchard Station (below grade)• Bridge Station and bus terminal (at grade)• High Tech Station (at grade) <p>Specific infrastructure associated with each proposed station is further detailed within the rows below.</p>	<p>Two stations, Bridge and High Tech Stations, are proposed at grade due to change in proposed subway alignment (i.e., at grade). The current station alignment maximizes the benefits of the subway extension while achieving the lowest cost for the acceptable Project scope. Of all considered alignments, the currently proposed route is the only one that provides the opportunity for one Neighbourhood Station to be included in the Project scope while maintaining costs within the funding envelope.</p>

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	Cummer / Drewry Station: <ul style="list-style-type: none">Location: Yonge St. & Cummer / Drewry Ave., approximately 800 m north of Finch Station.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft, bus loop located at Drewry Ave.Four (4) pedestrian entrances:<ul style="list-style-type: none">Main entrances located at the Northeast and southwest quadrants of the intersection of Cummer Ave. and Yonge St.Southeast corner of Cummer Ave./ Drewry Ave. and Yonge St.East side of Yonge St at the north end of the station box.		Potential Cummer Station (below grade) <ul style="list-style-type: none">Location: Slight shift to the southwest. The proposed station is an in-line underground station located at the intersection of Cummer/Drewry Avenue and Yonge Street and includes a bus loop on Drewry Ave. west of Yonge St. with associated bus operators' facilities.Station components include:<ul style="list-style-type: none">A below grade, two-level station box with one central platform at track level and a public concourse level aboveUp to two (2) at-grade pedestrian entrances (locations to be determined as part of further design development)Up to two (2) Fire Fighter's Access Shafts (FFA)Secured bicycle storage	The proposed location shift is primarily to avoid utility conflicts. The reduced number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements.
	Steeles Ave. Station and bus terminal <ul style="list-style-type: none">Location: Yonge St and Steeles Ave, approx. 1.2 km north of Cummer/ Drewry Ave.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Five (5) pedestrian entrances:<ul style="list-style-type: none">Two (2) street entrances located north of the station box on each side of Yonge St.Two (2) street entrances located south of the station box on each side of Yonge St.One (1) entrance from median located on Steeles Ave.Underground bus terminal below Steeles Ave West.Passenger Pick-up and Drop-Off (PPUDO).Below grade bus terminal with three (3) bus access ramps and a bus platform for 25 buses.		Steeles Station (below grade) and bus terminal <ul style="list-style-type: none">Location: Yonge St. at the intersection with Steeles Ave, shifted south from 2009 EPR.Station components changes include:<ul style="list-style-type: none">Three (3) pedestrian entrances (locations to be determined as part of further design development):<ul style="list-style-type: none">One (1) FFASecuredbicycle storageAt grade bus terminal at the southwest quadrant of Yonge St and Steeles AvePotential road modifications to accommodate curbside bus platforms located at the Yonge St. and Steeles Ave. intersection	The bus terminal at Steeles Station is proposed to be an at grade terminal to avoid conflicts with the existing York Durham Sanitary Sewer. The reduced number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements.

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	Clark Ave. Station <ul style="list-style-type: none">Location: Yonge St. and Clark Ave approximately 1 km north of Steeles Ave.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Five (5) Pedestrian entrances:<ul style="list-style-type: none">One (1) main entrance southwest corner of Clark Ave. and Yonge St.One (1) main entrance northeast corner of Clark Ave. and Yonge St.One (1) north end of the station and on the west side of Yonge St.One (1) entrance at the east side of Yonge St.	No new stations were proposed.	Clark Station (below grade) and bus terminal <ul style="list-style-type: none">Location: No change, slight lateral expansion and shift southerly.Station components changes include:<ul style="list-style-type: none">Up to two (2) pedestrian entrances (locations to be determined as part of further design development)Addition of bus facility with associated bus operator facilities	The reduced number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements. The addition of a bus terminal further enhances transit system integration and improves transfers between transit modes.
	Royal Orchard Station <ul style="list-style-type: none">Location: intersection of Yonge St. and Royal Orchard Blvd., approximately 800 m north of Centre St.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Two (2) pedestrian entrances:<ul style="list-style-type: none">one (1) main entrance northeast corner of Royal Orchard Blvd. and Yonge St.one (1) entrance located southwest corner of Yonge St. and Thornhill Ave.		Potential Royal Orchard Station (below grade) <ul style="list-style-type: none">Location: Yonge Street, south of Royal Orchard Blvd.Station components changes include:<ul style="list-style-type: none">Up to two (2) pedestrian entrances (locations to be determined as part of further design development)A deeper station box due to proximity to the East Don River Valley topographic depression. This change eliminates the need for the Don River above grade crossing.Secured bicycle storage	Change to station location and depth as a result of changes in subway horizontal alignment and vertical profile. See rationale for alignment and profile change above.
	Langstaff / Longbridge Station <ul style="list-style-type: none">Location: between Longbridge Road and Langstaff Road, approximately 1km north of Royal Orchard Boulevard.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.PPUDOCommuter parkingTwo (2) pedestrian entrances:<ul style="list-style-type: none">One (1) on Hydro One property currently hosting a 230/500 kV transmission line south of Highway 407 and west of Yonge Street.One (1) located at the southeast corner of Yonge St. and Langstaff Road East		Bridge Station and bus terminal (at grade) <ul style="list-style-type: none">Location: west of the CN Rail Corridor and north of Highway 407 and Highway 7.Station components changes include:<ul style="list-style-type: none">Three (3) pedestrian entrances (locations to be determined as part of further design development)Bus terminalPassenger and service emergency exitSecured bicycle storage	The change in station location is in response to changes in the subway horizontal alignment and vertical profile discussed above. The reduction in number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements.

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	<p>Richmond Hill Centre Station – Transit Hub</p> <ul style="list-style-type: none">Location: east of Yonge St. traversing High Tech Road, west of the CN rail corridor and north of Highway 7, approximately 1 km north of Royal Orchard Boulevard.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Two (2) pedestrian entrances:<ul style="list-style-type: none">One (1) located at northeast corner of the station boxOne (1) located at the southeast corner of the station boxBus terminalPPUDOTransit Hub		<p>High Tech Station (at grade)</p> <ul style="list-style-type: none">Location: east of Yonge St. traversing High Tech Road, west of the CN rail corridor, and north of Highway 407 and Highway 7 and adjacent to Richmond Hill Centre Terminal.Station components changes include:<ul style="list-style-type: none">Two (2) pedestrian entrances (locations to be determined as part of further design development)Secured bicycle storageA revised PPUDO design to accommodate the revised station configuration	<p>The change in station location is in response to changes in the subway horizontal alignment and vertical profile discussed above. Similar to the previously envisioned Richmond Hill Centre Station, the currently proposed High Tech Station will accommodate transfers to GO train and GO bus services, as well as local transit, and will improve subway access to the Richmond Hill Centre and Langstaff Gateway development areas.</p>
6. Proposed Emergency Exit Buildings (EEBs)	<p>Six (6) Emergency Exit Buildings (EEBs):</p> <ol style="list-style-type: none">EEB 1: Private property on the east side of Yonge St. between Centre Ave. and Newton Drive;EEB 2: Private property on the west side of Yonge St. between Doncaster Ave. and the CN rail corridor);EEB 3: Within municipal right-of-way on the west side of Yonge St. opposite Arnold Ave.;EEB 4: Within municipal right-of-way on the east side of Yonge St. between Centre St. and the proposed East Don River Bridge;EEB 5: Private property on the east side of Yonge St. between Uplands Ave. and Kirk Drive; andEEB 6: Within municipal right-of-way on the north side of Highway 7 west of Garden Ave.	<p>Two (2) additional EEBs:</p> <ol style="list-style-type: none">EEB 7: Located at the proposed TSF parking lot, east of Coburg Crescent.EEB 8: Located west of the proposed alignment, south of Coburg Crescent.	<p>Seven (7) EEBs (precise locations to be determined as part of further design development):</p> <ol style="list-style-type: none">EEB-1: located approximately between the existing Finch Station and the potential Cummer StationEEB-2: located approximately between the potential Cummer Station and the confirmed Steeles StationEEB-3: located approximately between the confirmed Steeles Station and the confirmed Clark StationEEB-4: located approximately between the confirmed Clark Station and the potential Royal Orchard StationEEB-5: located approximately in the vicinity of the potential Royal Orchard StationEEB-6: located approximately north of Royal Orchard Station in the vicinity of Bay Thorn DriveEEB-7: located approximately north of the potential Royal Orchard Station and south of the portal structure	<p>The TTC Design Manual requires EEBs to be located such that the distance from any underground location to an EEB is not greater than 381 m – i.e., the spacing between EEBs or between EEBs and the closest station platform or portal entrance must be 762 m or less. Applying this standard to the currently proposed design has identified the need for a total of seven (7) EEBs.</p>

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
7. Traction Power Substations (TPSSs)	<p>Traction Power is provided by a live third rail that provides electric power through a conductor placed alongside the rail. In order to give the voltage a boost at regular intervals along the subway alignment, electrical substations (i.e., Traction Power Substations [TPSSs]) are required. Traction power requirements dictate that TPSSs are not spaced more than 2.5 km from one another; however, a 2 km separation between TPSS is more typical.</p> <p>Four (4) TPSSs locations were included within the 2009 EPR in the vicinity of Steeles Station, Clark Station, Royal Orchard Station and Richmond Hill Centre Station.</p>	N/A	<p>Seven (7) TPSSs at the following locations:</p> <ul style="list-style-type: none">• Three (3) TPSS in the approximate vicinity of Cummer, Steeles, and Clark Stations.• One (1) TPSS in the approximate vicinity of the potential Royal Orchard Station.• One (1) TPSS in the approximate vicinity of Bridge Station.• One (1) TPSS standalone building integrated with EEB-4 between the confirmed Clark Station and the potential Royal Orchard Station.• One (1) TPSS at the Train Storage Facility (TSF), immediately south of 16th Ave.	<p>The currently proposed subway alignment requires additional power compared to the alignment as presented in 2009 EPR due to its extended length (an approximate 6.8 km subway extension was assessed in 2009 compared to the approximate 9.5 km extension currently proposed). This has resulted in the need for additional TPSS facilities. The current EPR Addendum assess a total of seven (7) TPSSs locations.</p>
8. Proposed Portal Structure	N/A	N/A	<p>The tunnel portal structure will be located south of Langstaff Road, west of the CN corridor ROW. This concrete structure serves as entrance/exit to and from the subway tunnel, where the alignment transitions between below and at grade. Additional information concerning the portal structure is provided below this table and in Figure 2-3.</p>	<p>This structure is required to allow for the below-grade to at-grade transition of the subway alignment.</p>
9. Proposed Launch Shaft	<ul style="list-style-type: none">• For the purposes of determining the potential environmental effects of the Transit Project, the following approach was assumed within the 2009 EPR:• Richmond Hill Centre Station and surrounding area would provide sufficient space for the southbound launch of the TBM and as well as storage of tunnel liners and other tunnelling materials and equipment.• Existing surface parking in the southwest quadrant of the Yonge Street/Steeles Avenue intersection were also identified as providing sufficient space for the southbound launch of the TBM and storage of tunnel liners.	N/A	<p>The current launch shaft location corresponds to a parcel of land west of the existing CN tracks and proposed portal structure, between Holy Cross Cemetery and Langstaff Road. A construction staging area/worksites will also be prepared for the assembly of the TBM at this location. The launch shaft structure is expected to be approximately 130 m in length.</p>	<p>The currently proposed location of the launch shaft reduces potential property impacts by using vacant industrial properties near the CN Rail ROW, south of Langstaff Rd. and has sufficient space to meet the functional needs of TBM operations.</p>
10. Proposed Extraction Shaft	<p>The 2009 EPR Identified the East Don River crossing as the TBM extraction shaft location (one at each end of the crossing). Cummer/Drewry Station was also identified as a potential location to remove the TBM in the 2009 EPR.</p>	N/A	<p>The proposed extraction shaft for the TBM operations will be located within the boundaries of the Finch Transition Box Structure that will connect the existing Finch tail track with the new YNSE alignment running north.</p>	<p>A new extraction shaft location is required since an at grade crossing of the East Don River is no longer proposed. There is sufficient space at the Finch Transition Box Structure to permit the removal of the TBM.</p>

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
11. Proposed Modifications to Bridges/ Structures/ Culverts	<ul style="list-style-type: none">East Don River crossing above-grade for both Subway and Roadway. Includes replacement of an existing culvert.Proposed modifications to twin-box culvert located north of Highway 7 near Richmond Hill Centre Station.	N/A	<ul style="list-style-type: none">Design, construction, maintenance and removal of a temporary pedestrian bridge across the subway and CN rail corridors to replace the existing pedestrian bridge connecting Richmond Hill Centre (bus) Terminal and Langstaff GO Station.Demolition of the pedestrian overpass bridge at Richmond Hill Centre will occur once bus operations are shifted to Bridge Station.Crossing of East Down River is now below-grade, meaning a new structure at this location is no longer required.Langstaff Road East grade separationReplacement of the existing culvert conveying German Mills Creek north of 16th Avenue.A number of drainage culverts along the at grade portions of the alignment may be impacted (modified or replaced) to enable implementation of the Project. Any such culverts will be identified and addressed during future phases of design.Further details regarding the proposed modifications to bridges, culverts and other structures are provided below in Table 2-2.	<p>To provide for continuous access across the rail corridor and subway alignment, the existing pedestrian bridge at Richmond Hill Centre Terminal is proposed to be replaced with a temporary pedestrian bridge. Temporary pedestrian bridge will be in place until Bridge Station is complete, with the Bridge Station providing access across the corridor.</p> <p>A new structure to carry the subway over the East Don River is no longer required now that the subway is below grade at this location.</p> <p>The existing culverts conveying German Mills Creek needs to be replaced to accommodate the tail tracks for the proposed TSF.</p>
12. Proposed Train Storage Facility (TSF)	N/A	<p>Underground Train Storage Facility (TSF):</p> <ul style="list-style-type: none">Capacity: 14 trains; two (2) trains stored at Richmond Hill Centre Station and the remaining 12 trains stored at the TSFLocation: north of the Richmond Hill Centre StationMaintenance building for staff access to the proposed TSF east of Coburg Crescent, and associated 25-30 space employee parking lotA combined maintenance operators’ facility and Electrical Service BuildingA ventilation shaftA drop shaft (a type of maintenance shaft)	<p>At grade Train Storage Facility (TSF):</p> <ul style="list-style-type: none">Capacity: 15 trains for overnight storage.Location: in the vicinity of the CN corridor and 16th Ave., north of High Tech Station.Transportation facility near Bantry Ave.Rail Cars & Shops Facility (RC&S) south of 16th Ave., including parking spaces for staff and visitors. <p>Additional details for the proposed TSF have been provided following this table.</p>	<p>The current configuration for the proposed TSF was selected because it avoids reconstruction of overhead bridges (High Tech, Bantry, and 16th Avenue), promotes the consolidation of buildings to minimize impacts to City of Richmond Hill property, accommodates a future multi-use trail to be completed by the municipality, and because it meets functional TTC requirements. A drop shaft is no longer necessary now that the TSF is at grade.</p>

E.1.7 Environmental and Technical Supporting Studies

The following studies were undertaken in support of the EPR Addendum:

- Natural Environment Existing Conditions and Impact Assessment Report (**Appendix B**)
- Socio-Economic and Land Use Existing Conditions and Impact Assessment Report (**Appendix C**)
- Stage 1 Archaeological Assessment Report (**Appendix D**)
- Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (**Appendix E**)
- Air Quality Existing Conditions and Impact Assessment Report (**Appendix F**)
- Noise & Vibration Existing Conditions and Impact Assessment Report (**Appendix G**)
- Transportation Existing Conditions and Impact Assessment Report (**Appendix H**)

E.1.8 Existing Conditions

The existing environmental conditions in the Study Area described in the 2009 EPR and 2014 EPR Addendum were reviewed for applicability to conditions at the time of this Addendum and updated existing conditions studies were undertaken to document current conditions within the Study Area.

Natural Environment

Desktop and field studies were conducted to identify and update the natural environment existing conditions. A summary of key Study Area features is as follows:

- The YNSE Study Area is highly urbanized with limited natural vegetation cover present, associated mainly with the watercourses and parklands;
- The Study Area provides limited wildlife habitat with low connectivity to nearby natural features. The Study Area does not feature any provincially or locally significant wetlands or areas of natural and scientific interest. The woodlands and valleylands are designated in corresponding official plans as Natural Heritage Systems (NHS);
- Species of Special Concern including Common Nighthawk, Eastern Wood-pewee, Peregrine Falcon, Wood Thrush, Northern Map Turtle, Snapping Turtle, and Monarch; and Species at Risk including Barn Swallow, Chimney Swift, Butternut and Bat Species at Risk may occur; and,
- Fish habitat is limited to three watercourses within the YNSE Study Area: East Don River, Pomona Creek and German Mills Creek with all three watercourses identified as permanent features providing for warm, cool and coldwater fish communities. The assessed reaches provide habitat for migration, spawning, feeding and rearing.

Land Use/Socio-Economic

Generally, the Study Area is characterized by:

- Municipal Official Plans and Transportation Plans that identify planned land uses and transportation systems within the Study Area;
- Development applications (based on available information) within the Study Area were inventoried based on information received from municipalities to identify the changing built form within the Study Area. At the time of this report preparation, 42 development applications were identified;
- A mix of land-use designations, including residential, mixed-use areas, employment/industrial, intensification (increase in development and population), utilities/transportation, parks/open space/recreation areas, natural heritage system, and Parkway Belt West Plan.

- Segment 1 is comprised of high-density mixed residential uses, as well as several parks, parkettes, recreation areas and open spaces.
- Segment 2 consists of low and mid-rise apartments and condominiums as well as single-detached homes. This segment of also of low-density residential neighbourhoods. Commercial uses within this segment consist mainly of low-density commercial plazas.
- Segment 3 contains primarily low-density residential neighbourhoods, as well as a series of commercial plazas.
- Sensitive facilities, including childcare centres, schools, long term care centres, community centres, places of worship, and hospitals are present at various locations within the Study Area.

Stage 1 Archaeology

A Stage 1 Archaeological Assessment was completed as part of the Project, and determined that:

- Approximately 77.70 ha (85%) of the Study Area has low archaeological potential due to disturbance and requires no further archaeological assessment;
- Approximately 12.1 ha (13%) of the Study Area has been previously assessed, and requires no further archaeological assessment; and
- Approximately 1.39 ha (2%) of the Study Area retains archaeological potential, and Stage 2 Archaeological Assessments are warranted.

Cultural Heritage

The Cultural Heritage study undertaken as part of the Project documents the current existing conditions within the Study Area. The report identified a total of 86 potential, and protected heritage properties including Built Heritage Resources, Cultural Heritage Landscapes and Heritage Conservation Districts. Of these heritage properties, 20 are in Segment 1, 65 are located in Segment 2 and one is located in Segment 3 of the Study Area as summarized in **Table 0-2** below.

Table 0-2 Summary of Built Heritage Resources (BHR) and Cultural Heritage Landscapes (CHL) in the YNSE Study Area

Segment	CHR* No.	Type	Location	Heritage Recognition
Segment 1	S1-CHR1	<ul style="list-style-type: none"> ● Built Heritage Resource (BHR) ● Willowdale Baptist Church 	15 Olive Avenue, North York	<ul style="list-style-type: none"> ● Identified during field review
Segment 1	S1-CHR2	<ul style="list-style-type: none"> ● Cultural Heritage Landscape (CHL) ● Commercial Block/streetscape 	5643-5647 Yonge Street, North York	<ul style="list-style-type: none"> ● Identified during field review
Segment 1	S1-CHR3	<ul style="list-style-type: none"> ● BHR ● Former Civic Building 	5800 Yonge Street, North York	<ul style="list-style-type: none"> ● Identified during field review
Segment 1	S1-CHR4	<ul style="list-style-type: none"> ● BHR ● Residence 	51 Drewy Avenue, North York	<ul style="list-style-type: none"> ● Identified during field review
Segment 1	S1-CHR5	<ul style="list-style-type: none"> ● CHL 	70 Drewry Avenue, North York	<ul style="list-style-type: none"> ● Identified during field review

Segment	CHR* No.	Type	Location	Heritage Recognition
		<ul style="list-style-type: none"> School (Drewry Secondary School) 		
Segment 1	S1-CHR6	<ul style="list-style-type: none"> BHR Commercial Building 	5926 Yonge Street, North York	<ul style="list-style-type: none"> Listed on the City of Toronto Municipal Heritage Register
Segment 1	S1-CHR7	<ul style="list-style-type: none"> BHR Commercial Building 	5925 Yonge Street North York	<ul style="list-style-type: none"> Previously identified as potential built heritage resource by Unterman McPhail Associates (2009)
Segment 1	S1-CHR8	<ul style="list-style-type: none"> BHR Residence 	15 Patricia Avenue, North York	<ul style="list-style-type: none"> Listed on the City of Toronto Heritage Register
Segment 1	S1-CHR9	<ul style="list-style-type: none"> BHR Commercial Building 	6075 Yonge Street, North York	<ul style="list-style-type: none"> Identified during field review
Segment 1	S1-CHR10	<ul style="list-style-type: none"> BHR Residence 	12 Centre Avenue, North York	<ul style="list-style-type: none"> Identified during field review
Segment 1	S1-CHR11	<ul style="list-style-type: none"> CHL School (Newtonbrook Secondary School) 	155 Hilda Avenue, North York	<ul style="list-style-type: none"> Identified during field review
Segment 1	S1-CHR12	<ul style="list-style-type: none"> BHR Residence 	15 Athabaska, North York	<ul style="list-style-type: none"> Identified during field review
Segment 1	S1-CHR13	<ul style="list-style-type: none"> BHR Residence 	17 Athabaska North York	<ul style="list-style-type: none"> Identified during field review
Segment 1	S1-CHR14	<ul style="list-style-type: none"> CHL Commercial Block 	6301-6313 Yonge Street, North York	<ul style="list-style-type: none"> Identified during field review
Segment 1	S1-CHR15	<ul style="list-style-type: none"> CHL Commercial Streetscape 	7039-7071 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Identified during field review
Segment 1	S1-CHR16	<ul style="list-style-type: none"> CHL Residential Streetscape 	40-48 Hendon Avenue, North York	<ul style="list-style-type: none"> Identified During Field Review
Segment 1	S1-CHR17	<ul style="list-style-type: none"> CHL Public/Municipal Park 	50 Hendon Ave (Hendon Park), North York	<ul style="list-style-type: none"> Identified During Field Review
Segment 1	S1-CHR18	<ul style="list-style-type: none"> BHR Residence 	20 Abitibi Avenue, North York	<ul style="list-style-type: none"> Identified During Field Review
Segment 1	S1-CHR19	<ul style="list-style-type: none"> BHR Residence 	39 Highland Park Boulevard,	<ul style="list-style-type: none"> Identified During Field Review

Segment	CHR* No.	Type	Location	Heritage Recognition
			Thornhill, Markham	
Segment 1	S1-CHR20	<ul style="list-style-type: none"> BHR Historical Plaque 	Plaque located at 43 Drewry Avenue, North York	<ul style="list-style-type: none"> Identified During Field Review
Segment 2	S2-CHR1	<ul style="list-style-type: none"> CHL Heritage Conservation District (HCD) 	Thornhill, Markham Ontario	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as the Thornhill-Markham HCD
Segment 2	S2-CHR2	<ul style="list-style-type: none"> CHL HCD 	Thornhill, Vaughan Ontario	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as the Thornhill Vaughan HCD
Segment 2	S2-CHR3	<ul style="list-style-type: none"> CHL Market 	7509 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Identified during field review
Segment 2	S2-CHR4	<ul style="list-style-type: none"> BHR School (Thornhill Public School) 	7554 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR5	<ul style="list-style-type: none"> BHR Commercial Building 	7529 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Identified during field review
Segment 2	S2-CHR6	<ul style="list-style-type: none"> BHR Residence 	7616 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR7	<ul style="list-style-type: none"> BHR Former Residence 	7626 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR8	<ul style="list-style-type: none"> BHR Former Residence 	7636 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR9	<ul style="list-style-type: none"> BHR Former Residence 	7666 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR10	<ul style="list-style-type: none"> BHR Residence 	14 John Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a "Class A" property in the Thornhill-Markham HCD

Segment	CHR* No.	Type	Location	Heritage Recognition
Segment 2	S2-CHR11	<ul style="list-style-type: none"> BHR Commercial Building 	7562 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR12	<ul style="list-style-type: none"> BHR Commercial Building 	7582 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR13	<ul style="list-style-type: none"> BHR Commercial Building 	7584 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR14	<ul style="list-style-type: none"> BHR Commercial Building 	7620 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR15	<ul style="list-style-type: none"> BHR Commercial Building 	7646 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR16	<ul style="list-style-type: none"> BHR Historical Plaque 	Plaque located at the corner of John and Yonge, Thornhill, Markham	<ul style="list-style-type: none"> Located within the Thornhill Markham HCD
Segment 2	S2-CHR17	<ul style="list-style-type: none"> BHR Residence 	5 Elizabeth Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR18	<ul style="list-style-type: none"> BHR Residence 	7 Elizabeth Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR19	<ul style="list-style-type: none"> BHR Residence 	17 Old Jane Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR20	<ul style="list-style-type: none"> BHR Commercial Building 	7681 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR21	<ul style="list-style-type: none"> BHR Residence 	23 Elizabeth Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)

Segment	CHR* No.	Type	Location	Heritage Recognition
Segment 2	S2-CHR22	<ul style="list-style-type: none"> BHR Residence 	12 Old Jane Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR23	<ul style="list-style-type: none"> BHR Commercial Building 	7700 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR24	<ul style="list-style-type: none"> BHR Residence 	7699 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD
Segment 2	S2-CHR25	<ul style="list-style-type: none"> BHR Residence 	11 Colborne Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD
Segment 2	S2-CHR26	<ul style="list-style-type: none"> BHR Residence 	7714 Yonge Street; W.D. Stark House, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan’s Buildings of Architectural and Historic Value
Segment 2	S2-CHR27	<ul style="list-style-type: none"> BHR Commercial Building 	7707 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD
Segment 2	S2-CHR28	<ul style="list-style-type: none"> BHR Residence 	10 Colborne Street; The Ellen Ramsden House (Thornhill Village Library), Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part IV and V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD
Segment 2	S2-CHR29	<ul style="list-style-type: none"> BHR Commercial Building 	7724 Yonge Street (Francis Block), Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan’s Buildings of Architectural and Historic Value
Segment 2	S2-CHR30	<ul style="list-style-type: none"> BHR Commercial Building 	7711-7715 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> in the Thornhill-Markham HCD (non-contributing)
Segment 2	S2-CHR31	<ul style="list-style-type: none"> BHR Commercial Building 	7719, 7725 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> in the

Segment	CHR* No.	Type	Location	Heritage Recognition
				Thornhill-Markham HCD (non-contributing)
Segment 2	S2-CHR32	<ul style="list-style-type: none"> BHR Residence 	19 Centre Street; Robert Shuter House, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR33	<ul style="list-style-type: none"> BHR Commercial Building 	7738 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR34	<ul style="list-style-type: none"> BHR Historic Plaque 	Plaque near corner of Yonge and Centre Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Located within the Thornhill Vaughan HCD
Segment 2	S2-CHR35	<ul style="list-style-type: none"> BHR Commercial Building 	7751 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> in the Thornhill-Markham HCD (non-contributing)
Segment 2	S2-CHR36	<ul style="list-style-type: none"> BHR Residence 	18 Centre Street; Mason Cogswell House, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR37	<ul style="list-style-type: none"> BHR Residence 	12 Centre Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR38	<ul style="list-style-type: none"> CHL Public/Municipal Parkette 	Northwest intersection of Centre Street and Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR39	<ul style="list-style-type: none"> BHR Commercial Building 	7765 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> in the Thornhill-Markham HCD (non-contributing)
Segment 2	S2-CHR40	<ul style="list-style-type: none"> BHR Commercial Building 	7756 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR41	<ul style="list-style-type: none"> BHR 	7775/7771 Yonge Street; Robert A. West General Store,	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a "Class B"

Segment	CHR* No.	Type	Location	Heritage Recognition
		<ul style="list-style-type: none"> Commercial Building 	Thornhill, Markham	property in the Thornhill-Markham HCD
Segment 2	S2-CHR42	<ul style="list-style-type: none"> CHL Public/Municipal Park 	26 Old Yonge Street; Thornhill Park, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR43	<ul style="list-style-type: none"> BHR Residence 	7780 Yonge Street; Robert West House, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part IV and Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value Protected by an Ontario Heritage Trust (Trust) Heritage Conservation Easement Agreement (HCEA)
Segment 2	S2-CHR44	<ul style="list-style-type: none"> BHR Former Residence 	7787 Yonge Street, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a "Class A" property in the Thornhill-Markham HCD
Segment 2	S2-CHR45	<ul style="list-style-type: none"> BHR Thornhill Methodist Church 	7788 Yonge Street; Thornhill Methodist Church, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part IV and V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR46	<ul style="list-style-type: none"> BHR Residence 	7802 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR47	<ul style="list-style-type: none"> BHR Residence 	7808 Yonge Street; George Munroe House, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR48	<ul style="list-style-type: none"> BHR Residence 	7820 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR49	<ul style="list-style-type: none"> BHR Residence 	7822 Yonge Street, Seager Cottage, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR50	<ul style="list-style-type: none"> CHL 	42 Old Yonge Street; William Walton Armstrong	<ul style="list-style-type: none"> Designated under Part IV and Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD

Segment	CHR* No.	Type	Location	Heritage Recognition
		<ul style="list-style-type: none"> Residence and associated Outbuilding 	House, Thornhill, Vaughan	<ul style="list-style-type: none"> Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR51	<ul style="list-style-type: none"> CHL Golf Course 	7859 Yonge Street Toronto Ladies Golf Club, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a "Class A" property in the Thornhill-Markham HCD
Segment 2	S2-CHR52	<ul style="list-style-type: none"> BHR Residence 	10 Mill Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR53	<ul style="list-style-type: none"> CHL Public/Municipal Park 	7877 Yonge Street; Toronto Radial Railway stop #17, Thornhill, Markham	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as a "Class A" property in the Thornhill-Markham HCD
Segment 2	S2-CHR54	<ul style="list-style-type: none"> CHL Golf Course 	7994 Yonge Street (Mortimer House); 8000 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD Listed on the City of Vaughan's Buildings of Architectural and Historic Value
Segment 2	S2-CHR55	<ul style="list-style-type: none"> BHR Residence 	7951 Yonge Street "Edwardian House", Thornhill, Markham	<ul style="list-style-type: none"> Listed on the City of Markham's Heritage Registrar
Segment 2	S2-CHR56	<ul style="list-style-type: none"> CHL Holy Trinity Anglican Cemetery 	8004 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR57	<ul style="list-style-type: none"> BHR Thornhill Baptist Church 	8018 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR58	<ul style="list-style-type: none"> CHL Residential Complex 	8038 Yonge Street; Soules Inn, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part IV and V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD
Segment 2	S2-CHR59	<ul style="list-style-type: none"> BHR Former Residence 	8054 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR60	<ul style="list-style-type: none"> BHR Thornhill; Anglican Church Rectory 	8088 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD

Segment	CHR* No.	Type	Location	Heritage Recognition
Segment 2	S2-CHR61	<ul style="list-style-type: none"> • CHL • Commercial Building 	8100 Yonge Street, Thornhill, Vaughan	<ul style="list-style-type: none"> • Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)
Segment 2	S2-CHR62	<ul style="list-style-type: none"> • BHR • School 	201 Bay Thorn Drive; Baythorn Public School, 201 Bay Thorn Drive	<ul style="list-style-type: none"> • Identified during field review
Segment 2	S2-CHR63	<ul style="list-style-type: none"> • CHL • Public/Municipal Park 	110 Royal Orchard Boulevard, Thornhill, Markham	<ul style="list-style-type: none"> • Identified during field review
Segment 2	S2-CHR64	<ul style="list-style-type: none"> • BHR • School 	141 Kirk Drive; St. Anthony Catholic School, Thornhill, Markham	<ul style="list-style-type: none"> • Identified during field review
Segment 2	S2-CHR65	<ul style="list-style-type: none"> • CHL • Cemetery 	Holy Cross Cemetery, Thornhill, Markham	<ul style="list-style-type: none"> • Identified during field review
Segment 3	S3-CHR1	<ul style="list-style-type: none"> • CHL • Observatory 	23 Hillview Drive (David Dunlap Observatory Lands), Richmond Hill	<ul style="list-style-type: none"> • Designated under Part IV of the <i>Ontario Heritage Act</i> under By-law 100-09

Air Quality

Air quality conditions within the Study Area can be characterized as follows:

- Air quality is typical of urban areas in southern Ontario;
- Background concentrations of benzene, benzo(a)pyrene, fine dust particles, and nitrogen dioxide air concentrations are attributed to a variety of sources including industry and transportation.

Ambient air quality was monitored at three stations to establish the regional existing conditions or the Project, summarized in **Table 0-3**, below.

Table 0-3 Ambient Background Concentrations for the Air Contaminants of Interest

Contaminant	Station (NAPS ID)	Averaging Period	Year	Concentration Statistic ($\mu\text{g}/\text{m}^3$)				Background Concentration ($\mu\text{g}/\text{m}^3$) ^{1,2}	Ambient Air Quality Criterion ³ ($\mu\text{g}/\text{m}^3$)	% of Criterion
				Mean	Median	Maximum	90th Percentile			
PM _{2.5}	Downsview (60440)	1-hr	2017	7.4	6.0	58.0	15.0	15.0	NA	NA
			2018	7.6	6.0	62.0	15.0			
			2019	6.8	5.0	52.0	14.0			
		24-hr	2017	7.4	6.6	27.2	15.0	12.8	27 (CAAQS) ⁷	47%
			2018	7.6	6.5	34.0	15.0			
			2019	6.8	5.6	32.1	14.0			
		Annual	–	–	–	–	–	7.2	8.8 (CAAQS) ⁸	82%
PM ₁₀	Note 4	24-hr	–	–	–	–	–	23.7	50	47%
NO ₂	Downsview (60440)	1-hr	2017	21.0	16.0	98.0	44.0	44.0	400	11%
			2018	20.7	16.0	108.0	44.0		117 ⁶ (2020 CAAQS) ⁹	38%
			2019	21.3	16.0	140.0	44.0		82 (2025 CAAQS) ⁹	54%
		24-hr	2017	21.0	18.8	71.4	36.6	37.4	200	19%
			2018	20.7	17.7	60.3	38.1			
			2019	21.3	17.8	66.8	39.1			
		Annual	–	–	–	–	–	21.0	33 (2020 CAAQS) ¹⁰	64%

Contaminant	Station (NAPS ID)	Averaging Period	Year	Concentration Statistic (µg/m³)				Background Concentration (µg/m³) ^{1,2}	Ambient Air Quality Criterion ³ (µg/m³)	% of Criterion
				Mean	Median	Maximum	90th Percentile			
									23 (2025 CAAQS) ¹⁰	91%
CO	Downsview (60440)	1-hr	2017	267	241	1158	398	362	36200	1%
			2018	255	229	929	362			
			2019	263	229	8447	362			
	Note 5	8-hr	–	–	–	–	–	362	15700	2%
Benzene	Downsview (60440)	24-hr	2017	0.6	0.6	0.6	1.1	0.76	2.30	33%
			2018	0.5	0.5	1.1	0.7			
			2019	0.4	0.3	0.9	0.7			
		Annual	–	–	–	–	–	0.51	0.45	113%
1,3- Butadiene		24-hr	2017	0.03	0.03	0.03	0.05	0.44	10.0	4%
			2018	0.02	0.02	0.07	0.04			
			2019	0.02	0.02	0.05	0.04			
		Annual	–	–	–	–	–	0.024	2.0	1%
Acetalde- hyde	Toronto West (60438)	24-hr	2017	2.9	2.8	20.08	3.75	2.91	500	1%
			2018	1.9	1.9	3.61	2.60			
			2019	2.9	2.9	2.91	2.91			
		½ -hr	–	–	–	–	–	8.6	500	2%
Formalde- hyde		24-hr	2017	3.7	2.6	37.5	3.7	2.76	65	4%
			2018	1.7	1.7	3.1	2.4			

Contaminant	Station (NAPS ID)	Averaging Period	Year	Concentration Statistic ($\mu\text{g}/\text{m}^3$)				Background Concentration ($\mu\text{g}/\text{m}^3$) ^{1,2}	Ambient Air Quality Criterion ³ ($\mu\text{g}/\text{m}^3$)	% of Criterion
				Mean	Median	Maximum	90th Percentile			
Acrolein		24-hr	2019	2.6	2.6	2.6	2.6	0.08	0.40	20%
			2017	0.05	0.05	0.19	0.09			
			2018	0.03	0.02	0.12	0.06			
		2019	ND	ND	ND	ND	ND			
Benzo(a)-pyrene		1-hr	–	–	–	–	–	0.19	4.50	4%
		24-hr	2017	0.0634	0.0648	0.1480	0.1100	0.00011	0.00005	220%
			2018	0.0554	0.0501	0.1438	0.1100			
			2019	0.0488	0.0468	0.1646	0.1008			
		Annual	–	–	–	–	–	0.00006	0.00001	561%

Notes:
¹ For the 1-hr and 24-hr averaging times, the background concentration is the 90th percentile of the whole dataset.

² For the annual averaging times, the background concentration is the mean of the whole dataset.

³ AAQC unless otherwise noted.

⁴ $\text{PM}_{2.5}/\text{PM}_{10} = 0.54$ (Lall et. al, 2004)

⁵ Assumed to be equal to the 1-hr Background Concentration.

⁶ ppm/ppb concentrations were converted to $\mu\text{g}/\text{m}^3$ using 101.325 kPa and 15°C

⁷ The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

⁸ The 3-year average of the annual average of the daily 24-hour average concentrations

⁹ The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations

¹⁰ The average over a single calendar year of all 1-hour average concentrations

Noise & Vibration

Noise and vibration baseline monitoring was completed at a selection of representative sensitive receptors across the Study Area. The monitoring indicated that the ambient sound levels along the corridor range from:

- 58 to 73 dBA $L_{eq,16hr}$ during the daytime period (7 a.m. to 11 p.m.); and
- 52 to 68 dBA $L_{eq,8hr}$ during the nighttime period (11 p.m. to 7 a.m.).

The quietest hourly equivalent sound levels range from:

- 41 dBA $L_{eq,1hr}$ to 70 dBA $L_{eq,1hr}$ during the daytime; and
- 37 dBA $L_{eq,1hr}$ to 64dBA $L_{eq,1hr}$ during the nighttime.

These sound levels are consistent with sound levels typically occurring in developed areas. Dominant existing noise sources include major roadways (such as Yonge Street and Steeles Avenue), railways (including both the CN Bala and York subdivisions), and Highway 407.

Measured sound levels by receptor location and Study Area segments are summarized in **Table 0-4**, below.

Table 0-4 Summary of Measured Sound Levels

Receptor	Study Area Segment	Daytime Equivalent Sound Level (7 a.m. – 11 p.m.) $L_{eq,16hr}$	Nighttime Equivalent Sound Level (11 p.m. – 7 a.m.) $L_{eq,8hr}$	Quietest Hourly Sound Level	
				Daytime (dBA $L_{eq,1hr}$)	Nighttime (dBA $L_{eq,1hr}$)
N1	1	72	67	70	63
N2	1	72	64	70	63
N3	1	63	56	59	48
N4	1	72	67	70	63
N5	1	61	55	58	50
N6	1	73	68	69	64
N7	1	71	66	68	60
N8	1	58	52	51	46
N9	1	64	56	57	49
N10	1	67	60	60	55
N11	2	60	53	53	47
N12	2	63	56	54	47
N13	2	72	65	65	58
N14	2	60	52	52	44
N15	2	60	62	43	44
N16	3	61	60	51	43
N17	3	59	53	43	43
N18	3	65	63	56	50

Receptor	Study Area Segment	Daytime Equivalent Sound Level (7 a.m. – 11 p.m.) $L_{eq,16hr}$	Nighttime Equivalent Sound Level (11 p.m. – 7 a.m.) $L_{eq,8hr}$	Quietest Hourly Sound Level	
				Daytime (dBA $L_{eq,1hr}$)	Nighttime (dBA $L_{eq,1hr}$)
N19	3	67	60	60	53
N20	3	59	60	44	37
N21	3	62	62	41	37
N22	3	65	62	54	46

Vibration monitoring indicates that the existing vibration levels due to existing freight, passenger or commuter trains are well below the threshold of perception (0.10 mm/s RMS) at all surface rail locations. The vibration levels from existing TTC trains near Finch Station are above the threshold of perception. **Table 0-5** summarizes the measured vibration levels in the Study Area.

Table 0-5 Summary of Measured Vibration Levels

Location	Study Area Segment	Location Description	Average Measured Vibration Level (mm/s RMS)	Vibration Level Range (mm/s RMS)
V1	1	Ground near TTC Finch Station	0.14	0.05 – 0.28
V2	1	Ground near CN York Rail Subdivision	0.03	0.02 – 0.04
V3	2	Ground near CN Bala Rail Subdivision in Holy Cross Cemetery	0.09	0.02 – 0.09
V4	3	Ground near CN Bala Rail Subdivision and Ruggles Avenue	0.03	0.02 – 0.05
V5	3	Ground near CN Bala Rail Subdivision and High Tech Road	0.03	0.02 – 0.07
V6	3	Ground near CN Bala Rail Subdivision and King William Crescent	0.04	0.03 – 0.06
V7	3	Ground near CN Bala Rail Subdivision and Coburg Crescent	0.03	0.02 – 0.03

E.1.9 Impact Assessment

Based on the conceptual engineering design developed for the Project, potential impacts were assessed and mitigation measures and monitoring activities were identified (as appropriate) based on the following four-step approach:

- **Step 1** – Identify potential impacts resulting from the construction and operation of the Project;
- **Step 2** – Establish mitigation measures to eliminate or minimize potential negative effects, as well as monitoring activities to verify and validate that mitigation measures are functioning effectively (as required);
- **Step 3** – Carry out consultation with the public and stakeholders; update impact assessment results and/or proposed mitigation measures as appropriate; and
- **Step 4** – Document the impact assessment results.

For the purposes of differentiating the various types of potential environmental impacts related to the Project, impacts were characterized and grouped as follows:

- **Construction Impacts:** Potential temporary effects (e.g., disruption/disturbance) on existing features due to construction activities associated with the Project (e.g., construction of new tracks, storage facility, bridge modifications, etc.).
- **Operations and Maintenance Impacts:** Potential permanent effects on existing Study Area features due to operations and/or maintenance activities associated with the Project (e.g., operation of the new storage facility, stations, etc.).

Results of the impact assessment studies are documented in **Section 5.0**.

Table 0-6 through **Table 0-15** include comprehensive summaries of the potential impacts and associated mitigation and monitoring measures that have been identified for each environmental discipline.

E.1.9.1 Natural Environment

The following table summarizes the potential Natural Environment impacts, and commitments to mitigation measures and monitoring activities identified through the YNSE EPR Addendum process. Refer to **Section 4.2** for a comprehensive presentation of Natural Environment Existing Conditions within the Study Area, and **Section 5** for a discussion of potential impacts and associated mitigation.

Table 0-6 Summary of Potential Impacts, Mitigation Measures and Monitoring Activities: Natural Environment

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Natural Heritage Features	<ul style="list-style-type: none">Disturbance or destruction to natural heritage features.	<ul style="list-style-type: none">Prepare an Erosion and Sediment Control Plan (ESC Plan), in accordance with the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), as amended from time to time.Implement the ESC Plan during construction and maintain all ESC measures for the duration of construction to reduce the risk of erosion and sedimentation.Develop a Spill Prevention and Response Plan. Implement the Spill Prevention and Response Plan for the duration of construction. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and this Plan.Establish barriers (e.g., silt fencing around the perimeter of the site) to clearly delineate the construction areas and prevent accidental damage or intrusion to adjacent vegetation or vegetation communities. Maintain the barriers during construction.Ensure that machinery arrives on site in a clean condition (free of fluid leaks, invasive species, and noxious weeds) and will be handled in accordance with the Clean Equipment Protocol for Industry (Halloran et al, 2013).Reduce the size of construction areas, including staging and laydown areas and construction access, to the extent feasible.Stockpiled materials or equipment will be stored within the construction areas but shall be kept at least 30 m away from any wetland or watercourse to the extent feasible. If not feasible, install a heavy-duty silt fence and Silt Soxx (or equivalent) around the construction areas where within 30 m from a watercourse.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation and efficacy of mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.All erosion and sediment control measures should be inspected weekly, after every rainfall event and significant snow melt event, and daily during periods of extended rain or snow melt.All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection.
	Surface Water	<ul style="list-style-type: none">Removal or impacts to wetland, aquatic, and riparian vegetation.Erosion and sedimentation to surface water from construction.Risk of contamination to wetlands / waterbodies as a result of spills.	<ul style="list-style-type: none">Shorelines or banks disturbed by construction activities will be immediately stabilized to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.Stockpiled materials or equipment will be stored within the construction areas but shall be kept at least 30 m away from any wetland or watercourse to the extent feasible. If not feasible, install a heavy-duty silt fence and Silt Soxx (or equivalent) around the construction areas where within 30 m from a watercourse.Schedule construction activities immediately adjacent to waterbodies to avoid wet and rainy periods, to the extent feasible.Conduct in-water works in the dry during low flow condition, where feasible.Reduce the disturbance and removal of riparian vegetation, natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high-water mark.Where applicable to Project activities, in-water work should comply with the Ontario Provincial Standard Specifications (OPSS), including but not limited to OPSS 805 (Erosion and Sediment Control Measures), and OPSS 182 (Environmental Protection for Construction in Waterbodies and on Waterbody Banks).Refueling is to be undertaken at least 30 m from any watercourse or any other surface drainage feature (as indicated OPSS 182).Please refer to the Natural Heritage Features environmental component within this table for other applicable mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures.All erosion and sediment control measures should be inspected weekly, after every rainfall event and significant snow melt event, and daily during periods of extended rain or snow melt.All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection.
	Fish and Fish Habitat	<ul style="list-style-type: none">Potential for direct, in-water impacts to fish and fish habitat	<ul style="list-style-type: none">All requirements of the <i>Fisheries Act</i> will be met.If dewatering of isolated work areas is required, capture and relocate fish to suitable habitat outside of the work area under a License to Collect Fish for Scientific Purposes from the MNMNR prior to dewatering isolated work areas.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Any fish isolated in the work area shall be transferred (using appropriate capture, handling and release techniques to prevent harm and minimize stress) downstream or away from the construction area.Reduce the disturbance and removal of riparian vegetation, natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high-water mark.Shorelines or banks disturbed by construction activities will be immediately stabilized to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.To the extent feasible, schedule work to avoid wet, windy and rainy periods that may result in high flow volumes and/or increase erosion and sedimentation.Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.Fish screens, if required, will be used to avoid entrainment of fish in pumps and hoses as per the End-of-pipe fish protection screens for small water intakes in freshwater and Fisheries and Oceans Canada’s Interim Standard and Code of Practice.If in-water and/or near water construction works are required, appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities such as Fisheries and Oceans Canada.Erosion and Sediment Control (ESC) measures shall be used to contain/isolate the construction zone and to manage site drainage to prevent erosion and sedimentation to the waterbody. ESC measures will be installed prior to the start of construction, maintained and repaired in place until all areas are stabilized. Site-specific ESC plans should be developed for in-water and near-water work.All equipment shall be operated, stored, and maintained in a manner that prevents the entry of any deleterious substances to the waterbody. All refueling should occur beyond 30m from the watercourse, and a spill tray should be used when completing maintenance and refueling.Please refer to the Natural Heritage Features and Surface Water environmental component within this table for other applicable mitigation measures.	<ul style="list-style-type: none">Monitoring associated with any authorizations, permits, licenses and agreements to be completed as required.All erosion and sediment control measures should be inspected weekly, after every rainfall event and significant snow melt event, and daily during periods of extended rain or snow melt.All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection.
	Vegetation Communities	<ul style="list-style-type: none">Disturbance, and destruction of trees, plants and plant communities.	<ul style="list-style-type: none">Vegetation removal will be reduced and limited to within the construction areas.Construction activities will maintain the buffers established during the design phase to reduce potential impacts to the vegetation communities.Restore disturbed vegetated area with native species suitable for the site in adherence with the Metrolinx (2020) Vegetation Guideline, as amended from time to time. Plant species used for site restoration should be common to the region and appropriate for the site-specific soil moisture regime.Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the Emerald Ash Borer, <i>Agrilus planipennis</i> (Fairmaire) (2014), as amended from time to time. To comply with this Directive, all ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the Emerald Ash Borer Regulated Areas of Canada unless otherwise authorized by a Movement Certificate issued by the CFIA, moving these products out of the Regulated Area is prohibited. This is necessary to prevent the spread of the Emerald Ash Borer to un-infested areas in other part of Ontario and Canada. The Contractor must dispose of all wood at a registered waste facility.Provide compensation for the removal of vegetation in accordance with Metrolinx Vegetation guideline.An Arborist Report by an International Society of Arboriculture Certified Arborist will be prepared in accordance with the Ontario Forestry Act R.S.O. 1990, and other regulations and best management practices as applicable.Prior to the undertaking of tree removals, a tree removal strategy/Tree Preservation Plan will be developed during detailed design to document tree protection and mitigation measures that follow Metrolinx (2020) Vegetation	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<p>Guideline, as amended from time to time, and/or relevant municipal guidelines (i.e., the City of Toronto Tree Protection Policy and Specifications for Construction Near Tree Guidelines (2016)) and adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</p> <ul style="list-style-type: none">• Tree Protection Zone fencing will be established to protect and prevent tree injuries and Tree Protection Zones will be clearly staked prior to construction using barriers in accordance with local by-law requirements and/or in accordance with Metrolinx (2020) Vegetation Guideline, as amended from time to time.• Adhere to the local bylaws for tree protection as per Metrolinx (2020) Vegetation Guideline, as amended from time to time.• Please refer to the Natural Heritage Features environmental component within this table for other applicable mitigation measures.	
	Wildlife and Wildlife Habitat – General	<ul style="list-style-type: none">• Disturbance, displacement, or mortality of wildlife.	<ul style="list-style-type: none">• Prior to construction, investigate the construction areas for wildlife and wildlife habitat that may have established following the completion of previous surveys/site inspections, as appropriate.• On-site personnel should be provided with information (e.g., factsheets) regarding wildlife (including Special Concern wildlife species) that have potential to occur on site. This should include information related to the identification of the wildlife species and the procedure(s) to follow if wildlife are encountered or injured.• If wildlife is encountered, measures to avoid destruction, injury, or interference with the species, and/or its habitat should be implemented. For example, construction activities should cease or be reduced, and wildlife will be encouraged to move off site and away from the construction area on its own. As necessary, a qualified biologist should be consulted to define the appropriate buffer required for wildlife and/or its habitat.	<ul style="list-style-type: none">• Regular on-site inspection by on-site environmental workers or construction staff will occur within the construction area to ensure that no wildlife is trapped within the construction area.
	Migratory Breeding Birds and Nests	<ul style="list-style-type: none">• Disturbance or destruction of migratory birds and/or nests.	<ul style="list-style-type: none">• Works must adhere to the Migratory Birds Convention Act (MBCA), including the timing windows for the general nesting period (April 1 to August 31 in Ontario).• If activities, including tree/vegetation removal, are proposed to occur during the general nesting period, then a breeding bird and nest survey should be undertaken prior to commencement of the activities. Nest searches should be performed no more than 48 hours prior to vegetation removal. Nest searches should be performed by a biologist with experience conducting nest searches.• Nests (including ground nests) of migratory bird found outside of the general nesting period should still receive protection.• If an active nest is found, then a protective buffer area should be established around the nest. The extent of the buffer should be determined in consultation with a qualified biologist and if applicable, additional consultation with the agencies having jurisdiction (e.g., ECCC, MECP) may be required to determine extent of protection and mitigations.• Please refer to the Vegetation and Vegetation Communities and Wildlife and Wildlife Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">• Regular monitoring should be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
	Species at Risk – General	<ul style="list-style-type: none">• Habitat loss, disturbance and/or mortality to SAR.	<ul style="list-style-type: none">• All requirements of the ESA and/or SARA Species-specific mitigation measures will be implemented, in consultation with MECP as required.• Please refer to the Vegetation and Vegetation Communities, Surface Water, Wildlife and Wildlife Habitat and Fish and Fish Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">• Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Species at Risk - Barn/Bank Swallow	<ul style="list-style-type: none">Habitat loss, disturbance and/or mortality to Barn and/or Bank Swallow.	<ul style="list-style-type: none">Field surveys should be undertaken prior to construction to confirm the number of Barn and/or Bank Swallow nests present in known nest locations and whether the nests remain active.Where loss or disturbance cannot be avoided (e.g., due to work on bridges or banks) in confirmed Bank/Barn Swallow habitat, all requirements under the ESA will be met, including any registration, compensation, replacement structures and/or permitting requirements.Loose soil faces (including aggregate piles) should be graded at an angle of no greater than 75° to discourage Bank Swallow nesting.If construction activities that would cause disturbance to structures confirmed to provide Barn Swallow habitat and/or banks confirmed to provide Bank Swallow habitat are scheduled during the nesting season for Barn and/or Bank Swallow (April 1 to August 31), a nest search should be undertaken by a qualified biologist. The nest search should confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If feasible, exclusion measures will be installed in the area prior to the nesting season to dissuade use of these areas for nesting.Please refer to Wildlife and Wildlife Habitat environmental components within this table for other applicable general mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
	Species at Risk - Chimney Swift	<ul style="list-style-type: none">Habitat loss, disturbance and/or mortality to Chimney Swift.	<ul style="list-style-type: none">If repair, maintenance or demolition of buildings/structures with suitable roosting/nesting habitat (e.g., chimneys) is to take place, targeted surveys for Chimney Swift should be completed by a qualified biologist as per the Bird Studies Canada Chimney Swift Monitoring Protocol (2009).If required, repair, maintenance, or demolition of an identified confirmed roosting/nesting will meet all requirements of the ESA.Please refer to Wildlife and Wildlife Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
	Species at Risk -- Bats	<ul style="list-style-type: none">Habitat loss, disturbance and/or mortality to SAR Bats.	<ul style="list-style-type: none">Should removal of potential SAR bat habitat be required, SAR bat surveys will be completed by a qualified specialist in advance of the removal activities to confirm SAR bat habitat presence.If removal of confirmed SAR bat habitat is required, all requirements under the ESA will be met, including any registration, compensation, replacement structures and/or permitting requirements.Please refer to Wildlife and Wildlife Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
	Species at Risk - Butternut	<ul style="list-style-type: none">Disturbance and/or destruction of Butternut.	<ul style="list-style-type: none">All requirements of the Endangered Species Act will be met. Species-specific mitigation measures will be implemented, in consultation with MECP as required.	<ul style="list-style-type: none">Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
Operation	Natural Heritage Features - General	<ul style="list-style-type: none">No impacts are anticipated during the operation phase	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Surface Water	<ul style="list-style-type: none">Risk of contamination to wetlands / waterbodies as a result of spills.	<ul style="list-style-type: none">Refueling at least 30 m from any watercourse or any other surface drainage feature.	<ul style="list-style-type: none">NA
	Fish and Fish Habitat	<ul style="list-style-type: none">Risk of contamination to wetlands / waterbodies as a result of spills.	<ul style="list-style-type: none">Refueling at least 30 m from any watercourse or any other surface drainage feature.	<ul style="list-style-type: none">NA

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Vegetation Communities	<ul style="list-style-type: none">Removal of vegetation during operational vegetation maintenance activities, if applicableRemoval and/or damage to adjacent vegetation or ELC communities as a result of accidental intrusion during vegetation maintenance activities, if applicable	<ul style="list-style-type: none">Vegetation removal will be reduced to the extent possible and limited to the Project right-of-way.Herbicide applications will be administered subject to the Pesticides Act.	<ul style="list-style-type: none">On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions, if required. Corrective actions may include additional site maintenance and alteration of activities to reduce impacts.
	Wildlife and Wildlife Habitat – General	<ul style="list-style-type: none">Operations activities such as vegetation maintenance may cause disturbance or displacement of wildlife.	<ul style="list-style-type: none">Ensure routine maintenance of ROW fences as an exclusionary measure within the above ground portion of the Project.Operation maintenance activities will include nest searches and wildlife surveys prior to maintenance work commencing, as required.	<ul style="list-style-type: none">On-site inspection should be regularly undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
	Migratory Breeding Birds and Nests	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Wildlife - Barn/Bank Swallow	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Wildlife - Chimney Swift	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Species at Risk -- Bats	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Species at Risk - Butternut	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA

E.1.9.2 Hydrogeology/Groundwater

The following table summarizes the potential Hydrogeology/Groundwater impacts, and commitments to mitigation measures and monitoring activities identified through the YNSE EPR Addendum process. Refer to **Section 4.3** for a comprehensive presentation of Hydrogeology/Groundwater Existing Conditions within the Study Area, and **Section 5.2** for a discussion of potential impacts and associated mitigation.

Table 0-7 Summary of Potential Impacts, Mitigation Measures and Monitoring: Hydrogeology/Groundwater

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Groundwater Quantity and Quality	<ul style="list-style-type: none">• Potential impact to local groundwater levels:<ul style="list-style-type: none">◦ Dewatering efforts associated with tunneling, if any is ultimately required, may cause local and temporary drawdown of the water table;◦ If extensive dewatering is ultimately required, drawdown has the potential to impact the recharge of local wetlands or other natural surface water features, if within the zone of influence;◦ Construction activities may cause soil displacement which may result in ground movement and settlement;◦ Dewatering activities may cause soil subsidence/ settlement and other impacts in the zone of influence.◦ In addition, construction activities have the potential to expose contaminated materials and/or result in the spreading of contaminated materials.	<ul style="list-style-type: none">• Conduct further hydrogeologic assessments, as required, at locations requiring dewatering to estimate/confirm groundwater flow rates, refine impacts (such as lowering groundwater table and potential features that could be impacted) within the Zone of Influence (ZOI), and evaluate treatment/discharge options. These studies are also needed to support potentially required watering taking permits from MECP, including registration under MECPs Environmental Activity Sector Register (EASR) or Permit to Take Water (PTTW) applications.• Develop detailed site-specific mitigation plans, as required, prior to construction once the design has been finalized and to support EASRs or PTTW monitoring requirements as necessary.• A Groundwater Management and Dewatering/Unwatering Plan will be developed to guide the handling, management, and disposal of groundwater encountered during the works. The Groundwater Management and Dewatering/Unwatering Plan will be overseen by a Qualified Person (QP) and will comply with the Ontario Water Resources Act and O.Reg. 153/04 made under the Environmental Protection Act; Groundwater Management and Dewatering/Unwatering Plan will include, but not be limited to the following components:<ul style="list-style-type: none">◦ Description of handling, transfer, testing, monitoring, disposal of excess water, groundwater, and dewatering effluent generated as part of the works and in accordance with applicable regulatory requirements;◦ groundwater monitoring considerations during the works and provide guidance for groundwater monitoring following the works where considered applicable;◦ consider the potential impacts of groundwater dewatering on natural heritage features and functions;◦ describe the anticipated groundwater quantity and dewatering ZOI that will be encountered during the works, and if approvals are needed for the water taking; and◦ describe the storage, transfer, and disposal and or treatment of the groundwater collected during the works, and approvals for the water disposal, and/or treatment if applicable, based on the quantity and quality.• Groundwater disposal (where required) is anticipated to be to an existing storm or sanitary sewer. The conditions and resulting monitoring and reporting requirements will be the subject of a water disposal permit and monitoring will include sampling and analysis.• Provide water treatment prior to disposal, as required.• Contaminated groundwater will be managed in accordance with provincial legislation and regulations including the Ministry of Environment, Conservation and Park’s (formerly the Ministry of Environment) (MECP) Guidelines for Use at Contaminated Sites in Ontario (1997).	<ul style="list-style-type: none">• Groundwater disposal (where required) is anticipated to be to an existing storm or sanitary sewer. The conditions and resulting monitoring and reporting requirements will be the subject of a water disposal permit and monitoring will include sampling and analysis, as required.
	Soil Quantity and Quality	<ul style="list-style-type: none">• Construction activities can cause displacement of the soils and bedrock, resulting in ground subsidence and movement.• Construction activities (e.g., excavation) could expose contaminated materials and/or result in the spreading of contaminated materials.	<ul style="list-style-type: none">• Develop an Excavated Material Management Plan (EMMP) for the handling, management, and disposal of all excavated material (i.e., soil, rock, and solid waste, including contaminated materials) that is generated or encountered during construction. This plan must be in accordance with <i>O. Reg. 406/19</i> and <i>O. Reg. 347/90</i>, as amended.• Soil and groundwater investigations in the form of Environmental Site Assessments to assess the presence of contaminated soil and groundwater will be undertaken along the project alignment, as required.• Ensure that the EMMP provides direction for the handling, management and disposal of contamination discovered during construction.• Use tunneling equipment designed to reduce the potential for frac-out, ground loss and the associated potential for settlement.• Ensure a contingency plan is in place for frac-out to reduce the potential for a frac-out associated with tunneling activities.	<ul style="list-style-type: none">• The EMMP will include requirements for on-going monitoring and compliance inspections.• If required, develop and conduct a settlement monitoring program to verify construction effects, identify adverse trends and identify the need for additional mitigation measures.• Soil movement will be governed in full accordance with <i>O. Reg. 406/19</i>, including assessment of past uses, sampling and analysis plans, and soil tracking.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Consider ground treatment such as jet grouting to reduce the risk of ground loss.Third-party lands used during construction should be returned to existing or better conditions, and meet the requirements set out under <i>O. Reg. 153/04</i>.	
Operation	Groundwater Quantity and Quality	<ul style="list-style-type: none">Currently, on-going dewatering is not anticipated	<ul style="list-style-type: none">As no impacts are anticipated to groundwater quantity or quality during operations, no mitigation measures are recommended.	<ul style="list-style-type: none">As no impacts are anticipated to groundwater quantity or quality during operations, no monitoring activities are recommended.
	Soil Quality	<ul style="list-style-type: none">Contaminant impacts to soil quality are not anticipated during normal operation.	<ul style="list-style-type: none">None, as contaminant impacts to soil quality are not anticipated.	<ul style="list-style-type: none">None, as contaminant impacts to soil quality are not anticipated.

E.1.9.3 Land Use & Socio-Economic

The following table summarizes the potential socio-economic and land use impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process. Refer to **Section 4.4** for a comprehensive presentation of Socio-economic and Land Use existing conditions within the Study Area, and **Section 5.3** for a discussion of potential impacts and associated mitigation.

Table 0-8 Summary of Potential Impacts, Mitigation Measures and Monitoring: Land Use & Socio-Economic Environment

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Property Acquisition	Property acquisition – permanent and temporary	<ul style="list-style-type: none">Specific permanent property requirements associated with the Project infrastructure components, and temporary property requirements, such as those associated with construction staging and access, will be minimized to the extent feasible as planning progresses.	<ul style="list-style-type: none">None identified
	Land Use and Access Disruption	Nuisance effects from construction activities	<ul style="list-style-type: none">Mitigation measures related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration potential impacts, mitigation measures, and monitoring activities tables.An Erosion and Sediment Control Plan will be developed in accordance with the Greater Golden Horseshoe Area Conservation Authorities' <i>Erosion and Sediment Control Guideline for Urban Construction</i> (2019), as amended from time to time, that addresses sediment release to adjacent properties and roadways.	<ul style="list-style-type: none">Monitoring activities related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration potential impacts, mitigation measures, and monitoring activities tables.Erosion and sediment control monitoring to be conducted (e.g., on-site inspection of erosion and sediment control measures).
		Land use and access disruption	<ul style="list-style-type: none">Provide well connected, clearly delineated, and appropriately signed walkways and cycling route options, with clearly marked detours where required.Provide temporary walkways with a pedestrian clearway of 2.1 m, where possible. Temporary walkways required during construction will also meet Accessibility for Ontarians with Disabilities Act requirements for universal accessibility.Provide temporary lighting, as required, and wayfinding signs and cues for navigation around the construction site.Regular (existing) access to businesses during working hours will be maintained, where feasible. Where regular access cannot be maintained, alternative access and signage will be provided.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of temporary access paths, walkways, cycling routes and fencing to ensure effectiveness.
	Visual Characteristics	Visual effects from construction areas/activities	<ul style="list-style-type: none">A screened enclosure for the construction site(s) will be provided, as required, with particular attention to the waste disposal and material storage areas.Consideration will be given to providing temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows, and where necessary.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of construction visual effects mitigation measures to ensure effectiveness.
	Light Pollution	Light trespass, glare and light pollution effects	<ul style="list-style-type: none">The Constructor will perform the Works in such a way that any adverse effects of construction lighting are controlled or mitigated in such a way as to avoid unnecessary and obtrusive light with respect to adjoining residents, communities and/or businesses.Comply with all local applicable municipal by-laws and Ministry of Transportation practices for lighting in areas near or adjacent to highways and roadways regarding outdoor lighting for both permanent and temporary construction activities, and incorporate industry best practices provided in ANSI/IES RP-8-18 – Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting. Obtrusive light with respect to adjoining residents, communities, and/or businesses will be limited.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of light pollution mitigation measures to ensure effectiveness.
	Transportation	Construction may result in the need for temporary road or lane closures and potential impacts to cycling and pedestrian, transit and rail networks.	<ul style="list-style-type: none">Mitigation measures related to transportation effects are outlined in the Transportation Existing Conditions & Impact Assessment report.	<ul style="list-style-type: none">Monitoring activities related to transportation effects are outlined in the Transportation Existing Conditions & Impact Assessment report.
Operation	Property Acquisition	Property acquisition during the operation phase of the Project is not required.	<ul style="list-style-type: none">N/A	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Land Use and Access Disruption	Nuisance effects from operational activities	<ul style="list-style-type: none">Mitigation measures related to potential nuisance effects from Operations are outlined in the Noise and Vibration potential impacts, mitigation measures, and monitoring activities tables.	<ul style="list-style-type: none">Monitoring related to potential nuisance effects are outlined in the Noise and Vibration Assessment Impact Assessment Reports contained in the current EPR Addendum.
		The operational activities of the subway will not generate land use and access disruption	<ul style="list-style-type: none">N/A	<ul style="list-style-type: none">N/A
	Visual Characteristics	Visual effects from construction areas/activities	<ul style="list-style-type: none">Reduce visual effects of project structures by considering their location, building materials, architectural design, and surrounding landscape treatments.	<ul style="list-style-type: none">None identified
	Light Pollution	Light trespass, glare and light pollution effects	<ul style="list-style-type: none">Comply with all local applicable municipal by-laws and Ministry of Transportation practices for lighting in areas near or adjacent to highways and roadways regarding outdoor lighting for both permanent and temporary construction activities, and incorporate industry best practices provided in ANSI/IES RP-8-18 – Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting. Obtrusive light with respect to adjoining residents, communities, and/or businesses will be limited.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of light pollution mitigation measures to ensure effectiveness
	Transportation	Minimal short-term impacts associated with maintenance activities (e.g., temporary lane/sidewalk closures) may occur.	<ul style="list-style-type: none">Provide signage and detours in advance of temporary lane/sidewalk closures during maintenance activities, as required.	<ul style="list-style-type: none">N/A

E.1.9.4 Archaeological Resources

The following table summarizes the potential impacts to archaeological resources, and new commitments to mitigation measures, monitoring and future work identified through the review of the YNSE RCD Design Changes. Refer to **Section 4.5** for a comprehensive presentation of Archaeological conditions within the Study Area, and **Section 5.12.4** for a discussion of potential impacts and associated mitigation.

Table 0-9 Summary of Potential Impacts, Mitigation Measures and Monitoring: Archaeological Resources

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Archaeological Resources	Potential for the disturbance of unassessed or documented archaeological resources	<ul style="list-style-type: none">All work shall be performed in accordance with the recommendations from the Stage 1 Archaeological assessment report and any subsequent archaeological assessments as well as applicable guidelines and regulations, including but not limited to the Ontario Heritage Act, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCIS) Standards and Guidelines for Consultant Archaeologists (2011), and the MHSTCI document, Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario (2011).If limits of the Project Area assessed in this report are altered and fall outside of the assessed Study Area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to ground disturbing activities.For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist as early as practical in the detail design stage and well before the commencement of ground-disturbing activities.All Archaeological Assessment findings will be shared with Indigenous Nations that were engaged in the Stage 1 archaeological assessment.	<ul style="list-style-type: none">None identified. However, should the results of further Archaeological Assessments, if any required as per mitigation measures outlined in this table, identify the need for monitoring during construction, those monitoring activities will be implemented.
		Potential for the recovery of archaeological resources during construction	<ul style="list-style-type: none">In the event that archaeological resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the resources may be required. If it is determined that there is a potential for Indigenous artifacts, Metrolinx should be contacted and Applicable Law will be followed.If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act. If the human remains are determined to be of Indigenous origin, Metrolinx should be contacted and all Applicable Law must be adhered to.For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist as early as practical in the detail design stage and well before the commencement of ground-disturbing activities.All Archaeological Assessment findings will be shared with Indigenous Nations that were engaged in the Stage 1 archaeological assessment.	<ul style="list-style-type: none">None identified.
Operation		No impacts to archaeological resources are anticipated during Project operations	<ul style="list-style-type: none">No impacts to archaeological resources are anticipated during Project operations, therefore no mitigation is required.	<ul style="list-style-type: none">No impacts to archaeological resources are anticipated during Project operations, therefore no monitoring is required.

*Notes:
Regulations, standards and guidance documents referenced herein are current as of the time of writing and may be amended from time to time. If clarification is required regarding regulatory requirements, the Constructor is encouraged to consult with the appropriate regulatory agencies

E.1.9.5 Built Heritage Resources and Cultural Heritage Resources

The following table summarizes the potential impacts to built heritage resources and cultural heritage landscapes, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process. Refer to **Section 4.6** for a comprehensive presentation of Cultural Heritage Resources within the Study Area, and **Section 5.5** for a discussion of potential impacts and associated mitigation.

Table 0-10 Summary of Potential Impacts, Mitigation Measures and Monitoring: Built Heritage Resources and Cultural Heritage Landscapes

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Built Heritage Resources and Cultural Heritage Landscapes identified during the field review or previously identified in a cultural heritage study	<ul style="list-style-type: none">No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the property.	<ul style="list-style-type: none">N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred)		
		<ul style="list-style-type: none">Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. Consult with the local municipality to determine and obtain any approval or permit required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact B: Introduction of new physical elements and/or alterations without impacting the heritage attributes of the property	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes of the property, then the following is required: <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact C: Modification of the building to fit a new use.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes of the property. For option C, the following is required: <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	i. Preferred Option D: Avoidance - Design the Project to avoid the property. ii. Alternative Option D: If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required: <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration of the property (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
		<ul style="list-style-type: none">Direct Impact E: Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E: If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.</p> <ul style="list-style-type: none">If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved.Stabilize the interior and exterior of the building before relocation.Prepare the new site, i.e. construction of a new foundation, prior to relocation.During Design, incorporate commemoration signage in consultation the local municipality, to communicate the cultural heritage value of the relocated structure on the property to the public.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact F: Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.During design, incorporate commemoration signage in consultation with City of Toronto's Heritage Preservation Services, to communicate the cultural heritage value of the demolished structure on the property to the public.	<ul style="list-style-type: none">N/A
		2. Potential indirect adverse impact from the Project		
		<ul style="list-style-type: none">Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building/structure. The vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration.Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">N/A
Construction	Built Heritage Resource or Cultural Heritage Landscape listed on a municipal heritage register	<ul style="list-style-type: none">No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the property.	<ul style="list-style-type: none">N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred)		
		<ul style="list-style-type: none">Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option A: If avoidance of the whole property is not feasible, then design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:</p>	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Consult with the local municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option A.	
		<ul style="list-style-type: none">● Direct Impact B: Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	<ul style="list-style-type: none">i. Preferred Option B: Avoidance - Design the Project to avoid the property.ii. Alternative Option B: If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:<ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the building, (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">● N/A
		<ul style="list-style-type: none">● Direct Impact C: Modification of the building to fit a new use.	<ul style="list-style-type: none">i. Preferred Option C: Avoidance - Design the Project to avoid the property.ii. Alternative Option C: If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:<ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Consult with the local municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option C.○ Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">● N/A
		<ul style="list-style-type: none">● Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute	<ul style="list-style-type: none">i. Preferred Option D: Avoidance - Design the Project to avoid the property.ii. Alternative Option D: If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.○ Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">● N/A
		<ul style="list-style-type: none">● Direct Impact E: Relocation of all or part of the building.	<ul style="list-style-type: none">i. Preferred Option E: Avoidance - Design the Project to avoid the property.ii. Alternative Option E: If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved.	<ul style="list-style-type: none">● N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Stabilize the interior and exterior of the building before relocation.Prepare the new site, i.e. construction of a new foundation, prior to relocation.During Design, incorporate commemoration signage in consultation with the municipality, to communicate the cultural heritage value of the relocated structure on the property to the public.Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI, a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister's approval.	
		<ul style="list-style-type: none">Direct Impact F: Demolition of all or part of the building.	<ul style="list-style-type: none">i. Preferred Option F: Avoidance - Design the Project to avoid the property.ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.Complete an interpretation/commemoration Strategy framework in consultation with the municipality. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.	<ul style="list-style-type: none">N/A
		2. Potential indirect adverse impact from the Project		
		<ul style="list-style-type: none">Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: if vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">Documentation (review and establish) of the structural conditions of the building to determine if the structure is vulnerable to vibration impacts.Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration.Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">N/A
Construction	Property Designated under Part IV of the Ontario Heritage Act	<ul style="list-style-type: none">No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the property.	<ul style="list-style-type: none">N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred)		
		<ul style="list-style-type: none">Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid the property.ii. Alternative Option A: If avoidance of the whole property is not feasible, then design the Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option A.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
		<ul style="list-style-type: none">Direct Impact B: Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	<p>i. Preferred Option B: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option B: If avoidance of the property or Option A. is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option B.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact C: Modification of the building to fit a new use.	<p>i. Preferred Option C: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option C: If avoidance of the property and Option A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option C.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	<p>i. Preferred Option D: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option D: If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Consult with local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option D.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact E: Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E: If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Consult with local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval/consent for Option E.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order o inform what building component should be retained and conserved.Stabilize the interior and exterior of the building before relocation.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">○ Prepare the new site, i.e. construction of a new foundation, prior to relocation.○ During Design, incorporate commemoration signage in consultation with municipality, to communicate the cultural heritage value of the relocated structure on the property to the public.○ Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI, a Strategic Conservation Plan (SCP) for type ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Ministers approval.	
		<ul style="list-style-type: none">● Direct Impact F: Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:</p> <ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.○ Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option F.○ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.○ Complete an interpretation/Commemoration Strategy framework in consultation with the local municipality. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.	<ul style="list-style-type: none">● N/A
		2. Potential indirect adverse impact from the Project		
		<ul style="list-style-type: none">● Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">○ Documentation (review and establish) of the structural condition of the building to determine if the structure is vulnerable to vibration impacts.○ Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration.○ Implement vibration mitigating measures on the construction site and/or at the building.○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.○ Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measure in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">● N/A
Construction	Heritage Conservation District designated under Part V of the Ontario Heritage Act	<ul style="list-style-type: none">● No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the HCD.	<ul style="list-style-type: none">● N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred)		
		<ul style="list-style-type: none">● Direct Impact A: Encroachment into the HCD causing a physical impact, including introduction of new elements to the HCD, alterations to contributing property or diminishment in integrity of the HCD.	<p>i. Preferred Option A: Avoidance - Design the project to avoid the HCD.</p> <p>ii. Alternative Option A: While avoidance of the HCD altogether seems unlikely, the following mitigation measures are required:</p> <ul style="list-style-type: none">○ Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:<ul style="list-style-type: none">▪ Consult with the municipality regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as CHERs and HIAs.▪ Evaluate and document the existing conditions of a contributing property including the heritage attributes prior to designing alterations.▪ Record, repair and restore where possible, if elements of the HCD are impacted by the Project.	<ul style="list-style-type: none">● N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">▪ New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD.▪ If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines.▪ In addition, consult the HCD Design Guidelines and follow requirements for alterations to: heritage buildings, non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.▪ The heritage attributes of properties that are "listed" or designated under Part IV of the Ontario Heritage Act, as defined in their respective listing reports or designation by-laws, should be maintained and enhanced in any proposed alteration to the property.	
		2. Potential indirect adverse impact from the Project		
		<ul style="list-style-type: none">• Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage and include a sufficient buffer (within 250m) between Project components/activities and the buildings within the HCD. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration.○ Implement vibration mitigating measures on the construction site and/or at the building.○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">• N/A
		<ul style="list-style-type: none">• Indirect Impact B: Obstruction/alteration of views identified in the HCD.	<ul style="list-style-type: none">i. Preferred Option B: Design the Project to conserve and not obstruct views as identified in the HCD Plan.ii. Alternative Option B: If impact on identified views cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Consult with the local municipality regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.○ Limit Impact on identified view corridors by designing new features to blend with the architectural style and landscape aesthetic style of the HCD. Make new additions complimentary to, subordinate to, and distinguishable from the existing landscape (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">• N/A
Construction	Contributing Property within an HCD (Designated under Part V of the Ontario Heritage Act)	<ul style="list-style-type: none">• No anticipated impacts from the Project.	<ul style="list-style-type: none">i. Preferred Option: Continued Avoidance of the HCD. However, consult with the local municipality as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.	<ul style="list-style-type: none">• N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred)		
		<ul style="list-style-type: none">• Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid the property.ii. Alternative Option A: If avoidance of the whole property is not feasible, then design the Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes identified in the HCD Plan. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.	<ul style="list-style-type: none">• N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
		<ul style="list-style-type: none">Direct Impact B: Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes.	<p>i. Preferred Option B: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option B: If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact C: Modification of a building to fit a new use.	<p>i. Preferred Option C: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option C: If avoidance of the whole property or Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute	<p>i. Preferred Option D: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option D: If avoidance of the property or Options A, B, or C are not feasible, and if a physical impact to a heritage attribute cannot be avoided, the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact E: Relocation of all or part the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E: If avoidance of the property and Options A, B, C or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building components should be retained and conserved and/or restored.Stabilize the interior and exterior of the building before relocation.Prepare the new site, i.e. construction of a new foundation, prior to relocation.During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the local municipality. Incorporate commemoration signage to communicate the cultural heritage value of the relocated building on the property to the public.Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister approval.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact F: Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design Project to avoid the property.</p> <p>ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:</p>	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the local municipality. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.	
		2. Potential indirect adverse impact from the Project		
		<ul style="list-style-type: none">Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">Documentation (review and establish) of the structural condition of the building to determine if the structure is vulnerable to vibration impacts.Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration.Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measure in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">N/A
Construction	Non-Contributing Property within an HCD (Designated under Part V of the Ontario Heritage Act)	<ul style="list-style-type: none">No anticipated impacts from the Project.	<ul style="list-style-type: none">i. Preferred Option: Continued Avoidance of the HCD. However, consult with the local municipality as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.	<ul style="list-style-type: none">N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred)		
		<ul style="list-style-type: none">Direct Impact A: Encroachment or construction within a non-contributing property in the HCD that may cause a physical impact, including introduction of new elements to the HCD or diminishment in integrity of the HCD due to the introduction of new elements.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the project to avoid the HCD.ii. Alternative Option A: Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:<ul style="list-style-type: none">Consult with the local municipality regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as an HIA.New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD.If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines.In addition, consult the HCD Design Guidelines and follow requirements for alterations to: non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.	<ul style="list-style-type: none">N/A
Construction	Known (listed or designated) and potential (identified during the field review or previously identified) Built Heritage Resources and	<ul style="list-style-type: none">Vibration impacts to heritage buildings/structures related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration.Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.-Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Cultural Heritage Landscapes, including HCDs			
Operation	Known (listed or designated) and potential (identified during the field review or previously identified) Built Heritage Resources and Cultural Heritage Landscapes, including HCDs	<ul style="list-style-type: none">No impacts are anticipated during operations	<ul style="list-style-type: none">N/A	<ul style="list-style-type: none">N/A

E.1.9.6 Air Quality

The following summarizes the potential air quality impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process. Refer to **Section 4.7** for a comprehensive presentation of Air Quality conditions within the Study Area, and **Section 5.6** for a discussion of potential impacts and associated mitigation.

Table 0-11 Summary of Potential Impacts, Mitigation Measures and Monitoring: Air Quality

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Air Quality	<ul style="list-style-type: none">• Potential air quality impacts could include effects from diesel combustion and particulate emissions. Odour and visible dust may also cause public annoyance.• Tailpipe emissions from construction equipment may contribute to increased level of nitrogen oxides, and volatiles such as benzene and benzo(a)pyrene, which given their existing background concentrations can contribute to existing levels of provincial criteria exceedance.• Certain construction activities are likely to emit particulate in higher quantities, which include earthworks, demolition, unpaved surface with heavy equipment travel, and uncovered material storage piles.	<ul style="list-style-type: none">• Development of an Air Quality Management Plan (AQMP) prior to construction commencement• Develop a Communications Protocol that includes timely resolution of complaints.• The following measures should be considered in the management of air quality:<ul style="list-style-type: none">◦ Use of electricity from the grid over diesel generators wherever possible.◦ Retrofitting of combustion engines with specific exhaust emission control measures such as particulate traps.◦ If applicable, follow guidelines on hot mix asphalt outlined in the Ontario Hot Mix Producers Association’s Environmental Practices Guide: Ontario Hot Mix Asphalt Plants, Fifth Edition (Ontario Hot Mix Producers Association, 2015).• Implement applicable best practices identified in the Environment Canada document, <i>Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities</i> (2005) including but not limited to:<ul style="list-style-type: none">◦ All equipment complies with Canadian engine emission standards.◦ All equipment visually inspected prior to use and properly maintained.◦ Implementation of no-idling policies (unless necessary for equipment operation).◦ Temporary seeding or mulching of bare soil and storage piles.◦ Compression or covering of soil surfaces and storage piles to reduce erosion.◦ Confine storage pile activity to downwind side of piles.◦ Reduction of activities during high wind conditions.◦ Full or partial enclosure of demolition activities.◦ Wind screens or barriers where possible or necessary.◦ Scheduling certain construction activities (i.e., site preparation and earth works activities, demolition activities, unpaved surfaces with heavy equipment travel, and uncovered soil storage piles) to periods of time when exposure to dust is expected to be limited (e.g., avoid scheduling activities during dry, windy weather conditions).◦ Landscaping materials ordered close to time of use to reduce on-site storage.◦ Application of non-chloride soil stabilizers or dust control polymers where feasible.◦ Daily removal of accumulated mud, dirt and debris deposits on-site, and regular truck washing.◦ Paved and unpaved roadway cleaning, watering or application of a non-chloride dust suppressant.◦ Minimize drop height of materials on-site.◦ Methods and equipment for clean-up of accidental spill of dusty materials.◦ Limit travel speeds on-site to a maximum of 24 kilometres per hour.	<p>The following monitoring activities should be considered in the development of the Air Quality Management Plan:</p> <ul style="list-style-type: none">• On-site monitoring that includes real-time particulate monitoring representative of receptor impacts.• Siting of the monitors should generally follow the guidelines provided in the Ministry of the Environment, Conservation and Parks (MECP) Operations Manual for Air Quality Monitoring in Ontario (2018).• Baseline conditions should be established prior to construction for longer than one week to capture representative concentrations under varying meteorological conditions, particularly where large local sources of pollution, such as highways, directly affect the zone of influence of the Project.• Place monitors upwind and downwind of activities where possible.• Reporting detailing results of ongoing monitoring and mitigation activities.
Operation	Air Quality	<ul style="list-style-type: none">• As the air quality in the AQSA is anticipated to improve, no mitigation measures are required. Activities related to the operations and maintenance of the subway that may potentially require the development and implementation of Air Quality Management Plans will be the responsibility of the operating authority.	<ul style="list-style-type: none">• Not Applicable	<ul style="list-style-type: none">• Not Applicable

E.1.9.7 Noise and Vibration

The following summarizes the potential Noise/Vibration impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process. Refer to **Sections 4.8** and **4.9** for a comprehensive presentation of Noise/Vibration conditions within the Study Area, and **Sections 5.7** and **5.8** for a discussion of potential impacts and associated mitigation.

Table 0-12 Summary of Potential Impacts, Mitigation Measures and Monitoring: Noise and Vibration

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Construction Noise along the Alignment	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and disturb sleep and other activities.	<ul style="list-style-type: none">Establish and apply project specific noise criteria/limits.Complete updated Construction Noise Impact Assessment studies during subsequent design phases using most up-to-date information regarding construction methods, equipment and staging.Prior to commencement of construction, develop and submit a Construction Noise Management Plan.Develop a Communications Protocol which includes timely resolution of complaints.Construction noise impact mitigation measures to be considered to meet project specific noise criteria/exposure limits include but are not limited to the following:<ul style="list-style-type: none">Ensure the equipment meets specifications and ensure that modifications have not been made to the equipment’s silencing.Operate equipment with silencers/mufflers where required.Use construction equipment that meets provincial criteria in NPC-115.Ensure smooth surfaces throughout the construction zones to help reduce the tailgate banging of dump trucks and other impulsive noises.Develop construction staging plans that reduce noise at nearby sensitive receptors, to the extent feasible. This can include ensuring a minimum separating distance from stationary equipment (such as generators and compressors), selecting truck staging areas that are as far away from critical areas as possible, designing optimal truck routes that minimize on site movement (especially reversing) and that avoid traversing the quieter residential streets.Schedule noisy activities during the daytime periods, wherever feasible. If nighttime construction is necessary, the activities with the highest noise levels should be conducted during daytime periods where feasible.If construction will occur outside of normal daytime hours, inform local residents before construction, the type of construction and expected duration outside of daytime hours.Provide silencers for any ventilation fans and direct such fans away from sensitive receptors.Connect equipment to permanent power wherever feasible to reduce the use of portable generators.Erect temporary noise barriers or acoustic enclosures around noisy equipment such as concrete pumps, compressors, or generators, as required.Use of upgraded construction hoarding (considering requirements from Canadian Standards Association Z107.9 for noise barriers) between construction equipment and noise sensitive receivers.Erect temporary or semi-permanent noise barriers of sufficient height around long-term construction zones wherever feasible.Where feasible, provide a smooth and asphalt coated deck for any cut and cover excavation.Equipment should be provided with broadband backup alarms, where feasible.	<ul style="list-style-type: none">Noise levels will be monitored where the impact assessment indicates that noise limits may be exceeded, to identify if any additional mitigation is required and verify mitigation measure(s) effectiveness.Continuous noise monitoring should be completed at each geographically distinct active construction site associated with the Project with monitor(s) located strategically to capture the worst-case construction related noise levels at receiver locations based on planned construction activities, their locations, and the number, geographic distribution and proximity of noise sensitive receivers.Monitoring at locations where there are persistent complaints, as required.

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Where feasible, outfit shoring drill rigs with auger cleaner attachments. Where such attachments are not practical, manual cleaning of the attachments should be considered.Minimize simultaneous operation of equipment, where feasible.Implement a no idling policy on site (unless necessary for equipment operation).Limit the number of heavy trucks on site to the minimum required, where feasible.Undertake noise monitoring and regular reporting throughout the construction phase. Where noise level limits are exceeded, additional noise mitigation measures shall be implemented.Additional mitigation measures not listed above may be considered.	
Construction	Construction Vibration and Tunneling-generated Ground-Borne Noise along the Alignment	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.Without mitigation, vibration may cause damage to nearby structures, including heritage buildings.	<ul style="list-style-type: none">Establish and apply project-specific vibration limits.As project planning and design progress, conduct a review to identify any heritage structures and other vibration-sensitive structures/locations, buildings, or infrastructure vulnerable to vibration and/or vibration damage (e.g., sound recording studios), assess requirements and, if necessary, develop structure/location-specific mitigation measures.Prior to construction, complete updated Construction Vibration Impact Assessment studies during subsequent design phases that includes assessment of the vibration ZOI based upon refined site staging, construction areas/equipment, and building locations, as required.Develop and implement a Construction Vibration Management Plan.Complete pre-construction condition surveys for properties within the construction ZOI and at all potentially affected heritage structures and establish a baseline prior to any work beginning, as required.Increase setback distance between the construction vibration source and nearby buildings to the extent feasible.Schedule vibration intensive activities during the daytime periods wherever possible.Select construction methods and equipment with the least vibration impacts.Consideration should be given to using lower settings on hydraulic breakers and vibratory compactors to reduce the vibration levels.Where feasible, use equipment with lower vibration levels.Where feasible, saw cuts should be completed prior to demolition works to minimize vibration transfer.Ensure smooth surfaces throughout construction zones to reduce vibration.Implement vibration isolation solutions such as resilient fasteners for the temporary tracks used by the temporary service locomotives during tunneling or use of rubber-tired service vehicles, as required.Reduce the gaps between adjoining rail segments in the temporary tracks.Conduct regular inspection and maintenance of the temporary tracks, service trains and railway cars during tunneling operations.Develop communications protocol which includes timely resolution of complaints.Additional mitigation measures not listed above may be considered.	<ul style="list-style-type: none">Monitor vibration continuously at structures deemed to be within the construction ZOI to ensure compliance with applicable vibration limits, to verify mitigation measures effectiveness and to identify the need for additional mitigation if required.During TBM operations, vibration monitoring along the alignment is recommended.Monitoring at locations where there are persistent complaints, if required.

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Operation	Train Operations Noise along the At Grade Alignment	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and disturb sleep and other activities.If operations are projected to cause a 5-dB increase or greater in the average energy equivalent noise (referred to as “Leq”) relative to the existing noise level or the MECP objective of 55 dBA for daytime and 50 dBA for night-time, whichever is higher, then mitigation is required to be reviewed and implemented where feasible.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <u>Mitigation at the Source:</u> <ul style="list-style-type: none">Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below. <u>Mitigation Criteria:</u> <ul style="list-style-type: none">Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.
	Stationary Source Noise – Train Storage Facility	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and disturb sleep and other activities.If project operations are predicted to exceed 55 dBA Leq,1hr at any time, implement mitigation measures to meet the criterion level.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design.Accommodate a 5.5m tall noise barrier along the western extent of the train storage facility, subject to further detailed design.Implement quiet special trackwork such as moveable point frogs to reduce the impact noise from the tracks sufficient to meet the minimum criteria noted.As part of detailed design, complete a more detailed analysis to confirm any necessary noise control measures to meet NPC-300 criteria. Select mechanical and electrical equipment such that the sound levels meet NPC-300 criteria.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.
	Stationary Sources Noise - Stations, Traction Power Supply Substations, Bus Terminals/Loops, and Portal Structure	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and disturb sleep and other activities.All ancillary facilities, including stations, bus terminals, and traction power substations are to comply with NPC-300.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design.All tunnel ventilation fan systems are to be provided with silencers as required to reduce noise and comply with NPC-300 limits.Provide a 5.5m tall noise barrier at Clark Station’s bus terminal, where specific location, height and extent are subject to further detailed design.As part of detailed design, complete a more detailed analysis to confirm any necessary noise control measures to meet NPC-300 criteria. Select mechanical and electrical equipment such that the sound levels meet NPC-300 criteria.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed to minimize noise and vibration.
Operation	Train Operations Vibration along Underground Alignment	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <u>Mitigation per this Noise and Vibration Impact Assessment Report:</u> <ul style="list-style-type: none">Complete more detailed studies to predict ground-borne noise and vibration levels in order to meet the vibration criteria outlined in this report. <u>Mitigation at the Source:</u> <ul style="list-style-type: none">Implement mitigation measures such as floating slab track, ballast mats, resilient fasteners, moveable point frogs, etc. as needed to mitigate vibration levels.Implement regular vehicle and infrastructure maintenance to maintain compliance with the noise and vibration exposure criteria. <u>Mitigation Criteria:</u> <ul style="list-style-type: none">Meet the ground-borne noise and vibration criteria in the 1995 MOEE/TTC Transit Noise and Vibration Protocol and the ground-borne noise criteria in the 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual.Achieve ground-borne noise and ground-borne vibration levels of less than 30 dBA and 0.05 mm/s, respectively, in areas (Segment 2) where the alignment passes beneath low-rise residential buildings in an established neighborhood.	<ul style="list-style-type: none">Complete post-construction measurement of vibration levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
	Train Operations Vibration along the At Grade Alignment	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <u>Mitigation per this Noise and Vibration Impact Assessment Report:</u> <ul style="list-style-type: none">Complete more detailed studies to predict ground-borne noise and vibration levels in order to meet the vibration criteria outlined in this report. <u>Mitigation at the Source:</u> <ul style="list-style-type: none">Implement mitigation measures such as floating slab track, ballast mats, resilient fasteners, moveable point frogs, etc. as needed to mitigate vibration levels.Implement regular vehicle and infrastructure maintenance to maintain compliance with the noise and vibration exposure criteria. <u>Mitigation Criteria:</u> <ul style="list-style-type: none">Meet the ground-borne noise and vibration criteria in the 1995 MOEE/TTC Transit Noise and Vibration Protocol and the ground-borne noise criteria in the 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual.	<ul style="list-style-type: none">Complete post-construction measurement of vibration levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.
	Stationary Source Vibration – Train Storage Facility	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <u>Mitigation per this Noise and Vibration Impact Assessment Report:</u> <ul style="list-style-type: none">Complete more detailed studies to predict ground-borne noise and vibration levels in order to meet the vibration criteria outlined in this report. <u>Mitigation at the Source:</u> <ul style="list-style-type: none">Implement mitigation measures such as floating slab track, ballast mats, resilient fasteners, moveable point frogs, etc. as needed to mitigate vibration levels.Implement regular vehicle and infrastructure maintenance to maintain compliance with the noise and vibration exposure criteria. <u>Mitigation Criteria:</u> <ul style="list-style-type: none">Meet the ground-borne vibration criteria in the 1995 MOEE/TTC Transit Noise and Vibration Protocol and the ground-borne noise criteria in the 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed to minimize noise and vibration.During normal vehicle replacement, consider procuring vehicles that minimize noise and vibration.
	Stationary Sources Vibration - Stations, Traction Power Supply Substations, Bus Terminals/Loops, and Portal Structure	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<ul style="list-style-type: none">Ancillary facilities such as traction power supply substations, bus terminals/loops and portal structures are not significant sources of operational vibration. Mitigation measures are not required.	<ul style="list-style-type: none">None

E.1.9.8 Transportation & Traffic

The following table summarizes the potential transportation and traffic impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process. Refer to **Section 4.10** for a comprehensive presentation of Transportation conditions within the Study Area, and **Section 5.9** for a discussion of potential impacts and associated mitigation.

Table 0-13 Summary of Potential Impacts, Mitigation Measures and Monitoring: Transportation & Traffic

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Road Network and Pedestrian/Cycling Network	<ul style="list-style-type: none">• Potential for temporary road lane, sidewalk, or bike lane closures.• Potential re-alignment of road, sidewalk, or bike lanes in the area.• Potential changes to special traffic lanes (e.g., removal of HOV lanes).• Potential implementation of turn prohibitions at intersections.• Potential changes to on-street parking regulations in the area.	<ul style="list-style-type: none">• Traffic Control and Management Plan(s) will be developed prior to construction.• Access to nearby land uses will be maintained to the extent possible. Potentially affected residents, tenants and business owners will be notified of upcoming construction work and potential traffic impacts.• In the event closures of sidewalks or bike lanes are necessary, safe alternative paths and required signage will be provided.• Ensure public is notified of the changes to turn prohibitions at intersections via additional signage.• Ensure public is notified of changes to curbside lane regulations (e.g., parking, HOV lanes) via additional signage.• Ensure that access to existing parks, community recreation centers and trails (including multi-use paths) is maintained.	<ul style="list-style-type: none">• The effectiveness of the transit and traffic management plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
	Transit Network	<ul style="list-style-type: none">• Potential for access restrictions to local bus routes.• Potential changes to transit services schedules and routes.	<ul style="list-style-type: none">• Ensure that the public is notified in advance of any potential public transit service access restrictions and/or changes to service schedules and routes.	<ul style="list-style-type: none">• The effectiveness of the transit and traffic management plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
	Rail Network	<ul style="list-style-type: none">• Potential disruptions to rail services (e.g., CN Freight services) in the impacted area.	<ul style="list-style-type: none">• Consult with rail operators with current service along the rail corridor (i.e., Canadian National Railway) to assess how track closures, if necessary, would impact their service and co-ordinate temporary schedules to accommodate all rail services on the open tracks.	<ul style="list-style-type: none">• The effectiveness of the transit and traffic management plan(s) will be monitored throughout the construction period. Adjustments to the construction staging plans and transit and traffic management plan(s) will be made based on actual field observations, as needed.
Operation	Road Network	<ul style="list-style-type: none">• Minimal short-term impacts associated with maintenance activities (e.g., temporary lane/sidewalk closures) may occur.	<ul style="list-style-type: none">• Provide signage and detours in advance of temporary lane/sidewalk closures during maintenance activities, as required.	<ul style="list-style-type: none">• No monitoring is required during operations, beyond transit/transportation agencies regular operational/maintenance monitoring.
	Transit Network	<ul style="list-style-type: none">• Potential for modifications to the local transportation network, such as adjustments to transit service schedules.	<ul style="list-style-type: none">• Consult with local transit agencies regarding the potential changes to the local transportation network.	

E.1.9.9 Utilities

The following table summarizes the potential utility impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process. Refer to **Section 4.10** for a presentation of Utilities conditions within the Study Area, and **Section 5.10** for a discussion of potential impacts and associated mitigation.

Table 0-14 Summary of Potential Impacts, Mitigation Measures and Monitoring: Utilities

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Private and Public Utilities	Utility servicing to facilitate the YNSE project has the potential to affect/disrupt existing third-party utilities in the absence of mitigation.	<ul style="list-style-type: none">• Develop and implement a detailed Utility Infrastructure Relocation Plan that identifies all utilities anticipated to be impacted by the construction works, all relevant utility agencies and authorities, and outlines the approach to the utility relocation process. The Utility Infrastructure Relocation Plan will be developed in accordance with the Project Agreement.• Additional surveys shall be performed prior to construction to field locate and verify the existing utilities within the Project area and document their condition.• During detailed design, identify access requirements, construction methodology, mitigation measures, and any required restoration / compensation to support utilities relocation requirements.• Perform all work identified in the Utility Infrastructure Relocation Plan to protect, support, safeguard, remove, and relocate all Utility Infrastructure.• Obtain permits and consents from and with all Utility Companies with respect to the design, construction, installation, servicing, operation, repair, preservation, relocation, and or commissioning of Utility Infrastructure.• Where new utility crossings are proposed, application for a new utility crossing agreement will be required. Where modifications to an existing utility crossing takes place, updates to an existing utility crossing will be needed.• Post- construction inspections of the new utility infrastructure shall be undertaken for applicable works upon completion of the construction works to document condition.• Obtain as-built plans of the relocated infrastructure from utility agencies per as-built preparation standards CSA S250-11 – Mapping of Underground Utility Infrastructure (2011), as amended from time to time.• Design of all utility related works impacting municipal-owned infrastructure shall be in accordance with the applicable municipal Engineering Design Guideline or Standard.	<ul style="list-style-type: none">• During construction, utilities that will be protected in place may require monitoring and regular reporting, as determined by the requirements of each utility provider.
Operation	Private and Public Utilities	Potential impacts to utilities are not anticipated during operations.	<ul style="list-style-type: none">• No mitigation measures are identified as potential impacts to utilities are not anticipated during operations.	<ul style="list-style-type: none">• None identified

E.1.9.10 Hydrology, Stormwater Management and Drainage

The following table summarizes potential stormwater and drainage impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process. Refer to **Section 4.11** for a presentation of Utilities conditions within the Study Area, and **Section 5.12.10** for a discussion of potential impacts and associated mitigation.

Table 0-15 Summary of Potential Impacts, Mitigation Measures and Monitoring: Stormwater Management and Drainage

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Surface Water / Stormwater and Drainage	<p>Change in stormwater quality and quantity, including:</p> <ul style="list-style-type: none">Erosion of exposed soil and increased sediment loading which may impact receiving waterbodies and/or municipal stormwater drainage system; and,Increased surface water/stormwater runoff	<ul style="list-style-type: none">Prior to construction, a Stormwater Management Plan that will outline stormwater discharges management associated with construction activities, and an Erosion and Sediment Control plan will be developed. During construction, erosion and sediment control will be provided for all development sites.The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial, and federal requirements, as amended, and outlined in a Stormwater Management Report. Stormwater management design will consider guidance provided by the MECP, formerly the Ministry of the Environment and Climate Change Stormwater Management Planning and Design Manual (2003) and MTO Drainage Management Manual (2008), TRCA Stormwater Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation 2010), as required.The following stormwater management best management practices will be considered and implemented, as required:<ul style="list-style-type: none">Reduce clearing and amount of exposed soil;Install key sediment control before grading/land alterations begin;Sequence construction activities so that the soil is not exposed for long periods of times;Protect storm drain inlets to filter out debris; and,Stabilize all exposed soil areas as soon as land alterations have been completed.The applicable TRCAs Living City Policies will be followed during detailed design.The TRCAs Stormwater Management Criteria will be followed, including those policies related to impervious areas.	<ul style="list-style-type: none">Monitoring activities will be implemented as outlined in the Stormwater Management Plan and/or Erosion and Sediment Control Plan and may include regular inspections and reporting on the performance of implemented erosion and sediment control measures, best management practices, and other monitoring activities, as required.
	Floodplain	<ul style="list-style-type: none">Potential to impact flooding conditions in the Don River watershed and the German Mills Creek floodplain as a result of the proposed German Mills Creek culvert replacement; andPotential for flooding impacts on-site during construction associated with the proposed German Mills Creek culvert replacement	<ul style="list-style-type: none">Floodplain impact assessment will be conducted during detailed design following TRCA guidelines once detailed structural information is available. Design optimizations shall be considered to reduce hydraulic impacts.All temporary works will follow the Greater Golden Horseshoe’s Erosion and Sediment Control Guideline for Urban Construction (2006) and the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), to reduce the chance of flooding during the construction.TRCA will be consulted during detailed design to avoid potential infrastructure conflicts and impacts to flood protection measures/initiatives in the Study Area and/or adjacent areas, if any present.In addition, all necessary studies such as fluvial geomorphic process studies, meander belt and erosion studies, and geotechnical and slope stability assessments will be completed.Prior to construction, develop a Flood Contingency Plan with specific mitigation measures for any proposed works or temporary laydown and staging areas, as required. The Flood Contingency Plan may include risk mapping, and a monitoring strategy.Include construction site on TRCA flood warning system to prepare site in advance of possible flood events.	<ul style="list-style-type: none">Include a monitoring strategy in the Flood Contingency Plan to monitor surface water levels during construction activities, as required per the Flood Contingency Plan.
Operation	Surface Water / Stormwater and Drainage	<ul style="list-style-type: none">Potential impacts are not anticipated during operations	<ul style="list-style-type: none">As no impacts are anticipated during operations, no mitigation measures are recommended.	<ul style="list-style-type: none">As no impacts are anticipated during operations, no mitigation measures are recommended.
	Floodplain	<ul style="list-style-type: none">Potential impacts are not anticipated during operations	<ul style="list-style-type: none">As no impacts are anticipated during operations, no mitigation measures are recommended.	<ul style="list-style-type: none">As no impacts are anticipated during operations, no monitoring activities are recommended.

E.1.10 Overview of Consultation/Engagement Activities

An extensive consultation program was carried out by Metrolinx as part of the YNSE Project to engage members of the public, residents, stakeholders, government review agencies and Indigenous Nations and to seek feedback. **Section 4.0** of this EPR Addendum details the consultation methods used, key engagement activities, summaries of meetings, comments and feedback received, and how feedback was considered by Metrolinx.

An online public consultation process was used to share information and seek feedback on various aspects of the Project including: proposed engineering design, environmental studies, EPR Addendum process, potential impacts and mitigation, and next steps for construction and implementation.

The primary method used to engage the community was through a series of Virtual Open Houses, due to the ongoing COVID-19 pandemic. Seven (7) Virtual Open Houses were hosted by Metrolinx as part of the YNSE Project to date, as follows:

- April 7, 2021
- April 21, 2021
- May 5, 2021
- May 19, 2021
- October 20, 2021
- December 16, 2021
- January 5, 2022

Engagement activities have been carried through the following platforms:

- Project website (<http://www.metrolinx.com/YongeSubwayExtension>);
- Online via Metrolinx Engage (<https://www.metrolinxengage.com/en/yonge-north-subway-extension>);
- Online via Metrolinx News Blog posts (<https://blog.metrolinx.com/category/yonge-north-subway-extension>);
- Project email address (YongeSubwayExt@metrolinx.com);
- Regional Email (YorkRegion@metrolinx.com);
- Project phone number: (416)-202-7000;
- Social media posts and announcements on the following Project account:
 - Instagram: <https://www.instagram.com/yongesubwayext>;
 - Facebook: <https://www.facebook.com/yongesubwayext>; and
 - Twitter: <https://twitter.com/YongeSubwayEXT>.
- Notifications and email updates; and
- Postcard mailout.

A list of Project stakeholders/interested parties who were notified at key points of the Project and as part of the EPR Addendum process can be found in **Appendix I**.



In addition, several summary tables containing comments received throughout the Project and how they were responded to by Metrolinx are contained in **Section 6.0** of this report. For further details regarding all aspects of the consultation and engagement process, refer to Section 6 and the Record of Consultation contained in **Appendix I**.

Review of Draft EPR Addendum

As part of seeking comments and feedback prior to issuing the Notice of EPR Addendum, a copy of the Draft EPR Addendum, including copies of supporting technical studies (included as EPR Addendum Appendices) was circulated to approximately 40 federal, provincial, municipal review agencies comprising the Government Review Team (GRT), as well as Indigenous Nations in October 2021. The complete list of review agencies and Indigenous Nations who received a copy of the Draft EPR Addendum is contained in **Section 6.0**. Comments received and responses provided are contained in **Appendix I**.

E.1.11 Future Work and Project Implementation

Commitments to future work have been developed to satisfy the requirements of *O. Reg. 231/08*. The purpose of the commitments is to facilitate the implementation of the Project in accordance with the mitigation measures and monitoring activities described within this EPR Addendum. Commitments to future work include implementation of the mitigation measures and monitoring activities outlined in this report.

In addition, various permits and approvals will need to be obtained as part of constructing and implementing the Project. All applicable permits, licences, approvals shall be obtained by Metrolinx prior to implementation of the Project. In addition, any applicable conditions associated with permits/approvals that have been granted will be adhered to by Metrolinx.

E.1.11.1 EPR Addendum Approval Process

The following steps describe the next steps in EPR Addendum Process

- Make this EPR Addendum that identifies changes, updates environmental conditions and associated impact studies and documents public, stakeholder and Indigenous Nations consultation activities for a 30-day public review;
- Distribute a Notice of EPR Addendum;
- Public review of the EPR Addendum;
- Implement the Issues Resolution Process with Indigenous Nations, affected interested parties as applicable to resolve concerns raised by reviewers in a way that does not cause unreasonable delay to the implementation of the Project;
- Within 65 days of the issuance of the Notice of EPR Addendum, Metrolinx will update the EPR Addendum with a description of the Issues Resolution Process and how concerns raised by reviewers were addressed;
- Once the EPR Addendum has been updated, Metrolinx will issue a Notice of Updated EPR Addendum and post the updated Report to the Project website;
- Within 35 days after receipt of the Notice of Updated EPR Addendum, the Minister may issue a notice only if:
 - the Minister is of the opinion that the way in which Metrolinx addressed a concern raised during the Issues Resolution Process would cause unreasonable delay to the implementation of the Project, and the conditions in the Minister's notice modify the way in which the concern is addressed in the updated EPR Addendum without causing unreasonable delay to the implementation of the Project; or

- the Minister is of the opinion that the change may have an adverse impact on the existing aboriginal or treaty rights of the aboriginal peoples of Canada, and the conditions may prevent, mitigate or remedy the adverse impact.

The implementation of the transit project may proceed if no notice is received with the 35-day period, the Minister informs Metrolinx that no notice will be issued, or if the requirements of the Minister's notice have been satisfied.

1.0 Introduction

In 2009, the Regional Municipality of York, York Region Rapid Transit Corporation, the City of Toronto and the Toronto Transit Commission completed an Environmental Project Report (EPR) in accordance with the Transit Project Assessment Process (TPAP), to assess the potential environmental impacts of the proposed Yonge North Subway Extension (YNSE) Project. The study area was defined as Finch Avenue in the City of Toronto to Richmond Hill Centre Terminal at Highway 7 in the City of Richmond Hill, York Region. Notice to Proceed was given by the then Minister of Environment and Climate Change (now the Minister of Environment, Conservation & Parks [MECP]) and Statement of Completion was issued in April 2009.

In 2014, an EPR Addendum was carried out by the York Region Rapid Transit Corporation, in partnership with the Regional Municipality of York, Toronto Transit Commission (TTC), and the City of Toronto to assess the potential environmental impacts associated with the identified Train Storage Facility (TSF) location that would accommodate up to 14 trains within the vicinity of the Richmond Hill Centre. This EPR Addendum was completed in November 2014.

Subsequently in April 2019, the Government of Ontario announced a \$28.5 billion expansion to Ontario's transit network. This rapid transit project plan includes four key initiatives including: the Ontario Line, the Scarborough Subway Extension, Eglinton Crosstown West Extension, and the YNSE (**Figure 1-1**). The YNSE is an extension of TTC's Line 1 north from Finch Station to Richmond Hill.

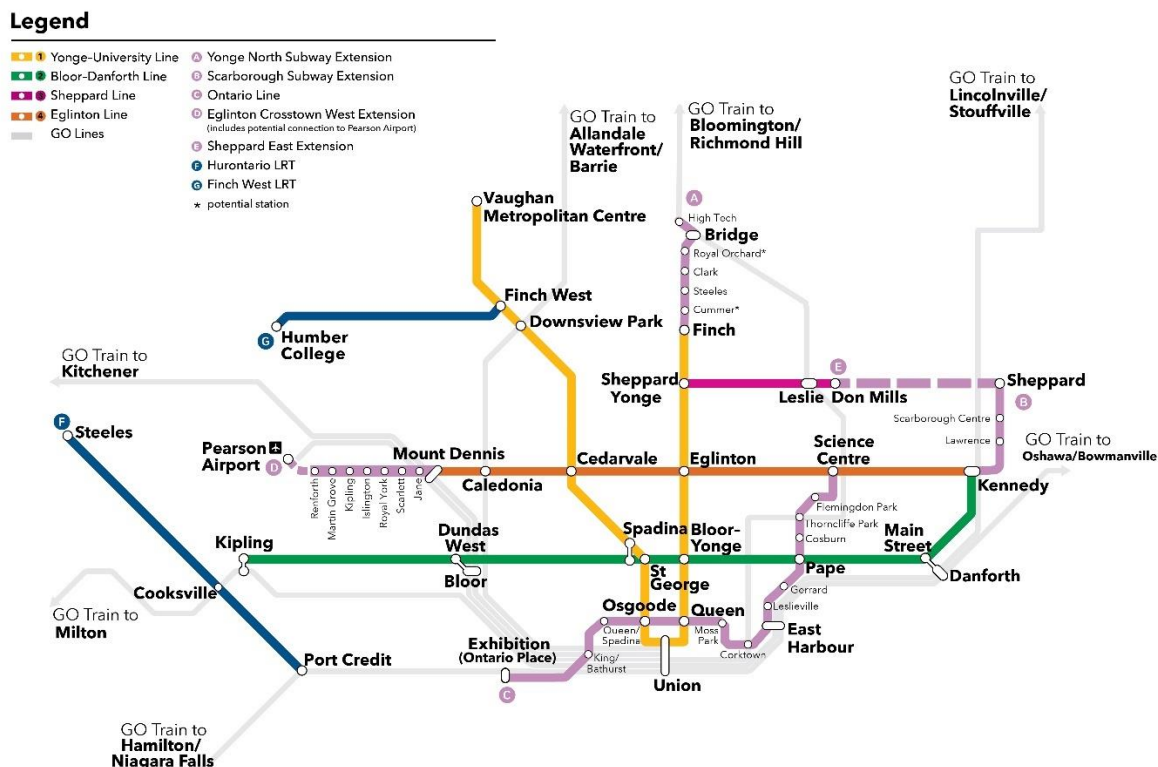


Figure 1-1 Ontario's Rapid Transit Expansion Plan (Source: Infrastructure Ontario - 2019)

1.1 Key Benefits of the Project

The existing Line 1 Yonge-University Subway (Line 1) terminates at Finch Station. In the peak hour about 10,000 transit users access the subway at this station. Over 70% of the customers reach the station after traveling significant distances by bus. Extending the subway north provides accessibility to rapid transit by bringing stations closer to existing transit users, providing them with seamless transit service to/from downtown Toronto and all points in between. An extension would also improve the customer experience on Line 1 by reducing those journey times.

The GTHA is experiencing unprecedented growth, which calls for corresponding expansion of its transportation network. Yonge Street remains a corridor for growth in the Region and is expected to continue to urbanize with greater densities. Population and employment growth both on and off the Yonge Street corridor in North York Centre, Markham, Richmond Hill and Vaughan will increase demand on the existing bus-based transit network. The Provincial Growth Plan, Regional Official Plan and municipal planning documents have outlined the urban vision for the Richmond Hill Centre and Langstaff Gateway development areas. Expanding the transit system through an extension of Line 1 is essential to not only respond to this growth but to also address the larger strategy to connect people to schools, jobs and their communities.

Residents of the central portion of York Region and the northern boundary of Toronto are already experiencing challenges accessing downtown Toronto and/or major employment hubs and destinations served by the subway network. Road traffic congestion is expected to worsen, and commute times are expected to become longer, with negative impacts to Ontario's quality of life, environment and economy. The YNSE will attract new transit riders to transit by providing the capacity necessary to offer safe, frequent, fast, and reliable service that is competitive with private automobile journeys. There is an opportunity to shift the transit mode share to match levels found in more urban areas of the Region.

Key benefits of the Yonge North Subway Extension Project identified on the basis of the Initial Business Case includes the following (also see **Figure 1-2**):

- The extension will save riders as much as 22 minutes on a trip from York Region to downtown Toronto;
- Bridge Station and High Tech Station will serve the highest density areas to make it faster for riders to use the subway, and better for supporting growth and curbing local traffic congestion. Bridge Station maximizes Transit Oriented Community opportunities by connecting two communities in Markham & Richmond Hill that are poised for growth;
- Improved access to transit - 26,000 more people within a 10 minute walk to transit;
- The Project will serve 94,100 riders each day by 2041, cutting the time spent commuting in Toronto and York Region by a combined 835,000 minutes daily; and,
- Daily reductions in traffic congestion (7,700 km in vehicle kilometres traveled) resulting in approximately 4,800 tonnes of yearly reductions in greenhouse gas emissions.

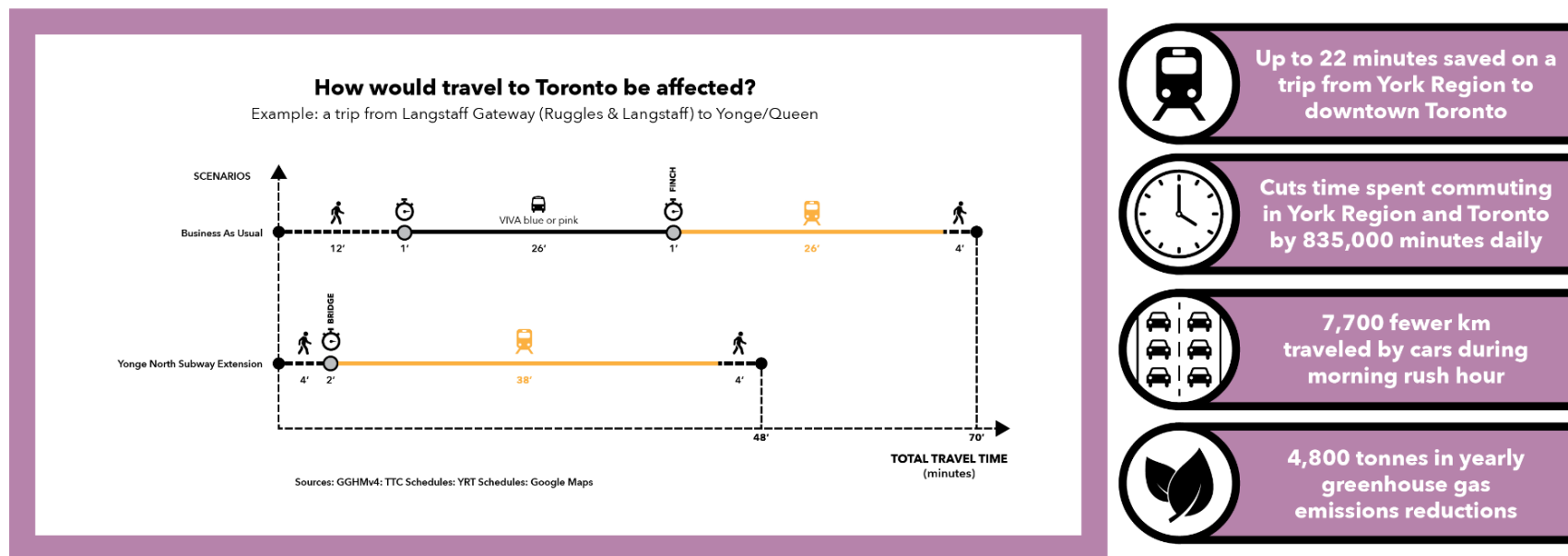


Figure 1-2 Key Benefits – YNSE Project

1.2 Background

1.2.1 2009 Environmental Project Report

The *Yonge Subway Extension - Finch Station to Richmond Hill Centre Transit Project Assessment- Environmental Project Report (2009)* included the assessment of approximately 6.8 km of subway alignment via twin-bored tunnel, six (6) subway stations, associated track work, one (1) major bus terminal, one (1) bus loop, four (4) traction power substations, five (5) emergency exit buildings (EEBs) and one (1) bridge structure. **Figure 1-3** provides a key map depicting the 2009 EPR scope (the red section of the proposed alignment is located in the City of the Toronto; the blue section is located in York Region).

In April 2009, MECP issued a Notice to Proceed in accordance with the proposed Project as documented in the 2009 EPR.



Figure 1-3 Finch Station to Richmond Hill Centre – 2009 EPR Scope

1.2.2 2014 EPR Addendum

Subsequent to the 2009 EPR, an EPR Addendum was undertaken in 2014 to assess the potential environmental impacts associated with the following design changes:

- Extension of the subway alignment to approximately 1 km north of the previously approved Richmond Hill Centre Station;
- Underground Train Storage Facility (TSF) for 14 trains (**Figure 1-4**) north of the previously approved Richmond Hill Centre Station; and
- Two (2) Emergency Exit Buildings associated with the TSF.

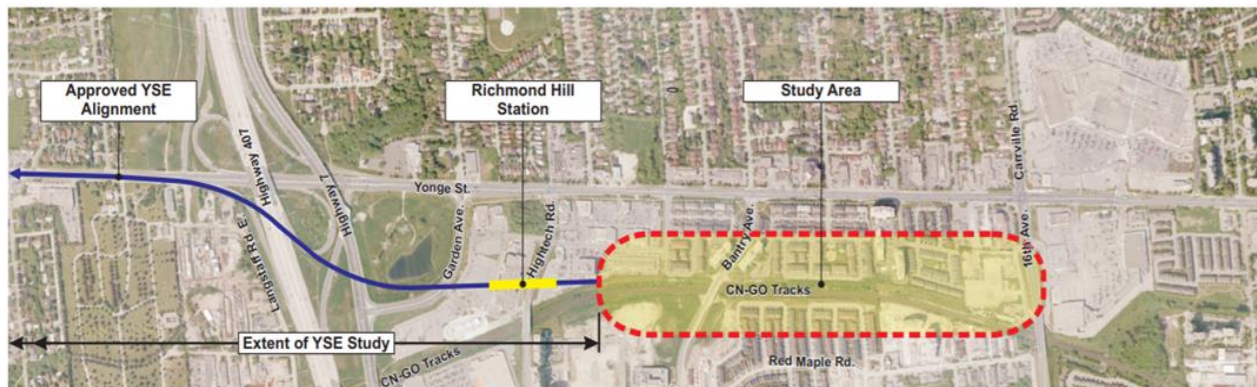


Figure 1-4 Proposed Train Storage Facility Location – 2014 EPR Addendum

1.2.3 Initial Business Case

Metrolinx published the Yonge North Subway Extension Initial Business Case (IBC) and accompanying supplementary analysis on March 18, 2021. The IBC demonstrates how the Yonge North Subway Extension will significantly reduce travel times, grow the number of people who use public transit and serve the heart of major growth centres in Toronto and York Region. The scope and key objectives of the IBC were as follows:

- Document the details of the Project, as contemplated at the time it was brought under the management of Metrolinx;
- Compare alternative alignments of the extension with a Business-As-Usual scenario;
- Investigate and evaluate options that might have additional transit benefits and/or reduced capital or operating costs; and
- Evaluate the performance of stations.

The Yonge North Subway Extension will bring higher-order rapid transit closer to a large number of residents and jobs in the intensification areas along the corridor, while providing a seamless connection between those areas. The business case introduces innovative design options in order deliver the most benefits possible within the funding envelope of \$5.6 billion.

The IBC generally provides recommendations for next steps in the Metrolinx Business Case process. The IBC notes:

- The Yonge North Subway Extension is one of four priority transit projects announced by the Government of Ontario, along with the Scarborough Subway Extension, the Ontario Line and the Eglinton Crosstown West Extension. The Ontario Line will provide relief to Line 1 by helping to spread demand across the transit network as it grows. The Yonge North Subway Extension will not come online until the Ontario Line goes into service.

- The extension will bring rapid transit closer to residents' destinations in the northern portions of Toronto and across York Region. The IBC highlights the need to prioritize access for bus passengers while focusing on walk-in access at each of the contemplated subway stations.
- Next steps will include refining the design of the selected alternative engineering to maximize benefits and address risks, developing a Preliminary Design Business Case, seeking required *Environmental Assessment Act* approvals and proceeding toward delivery.

1.2.3.1 Analysis of Alignment Options

Three alternative alignment options were examined as part of a comparative analysis in the IBC, with Alignment Option 3 identified as the preferred option. An overview of the key features of the three alignment options are provided in **Table 1-1**.

Table 1-1 Alternative Alignment Options

Option 1	Option 2	Option 3
Same alignment as approved 2009 EA, fully underground	Alignment curves east slightly to enable a different station placement, fully underground	Alignment curves east before turning again to run at-grade and within the CN/GO rail corridor
Funding envelope accommodates up to 3 stations	Funding envelope accommodates up to 3 stations	Funding envelope accommodates up to 4 stations

Option 3 was identified as the preferred Reference Alignment because it provides potential for the highest number of stations within the \$5.6 billion Project funding envelope.

1.2.3.2 Alignment Option 3 Refinement

As part of the IBC, Option 3 was identified as the preferred Reference Alignment because it simplifies property requirements for the Project by increasing the length of the infrastructure within the CN/GO railway corridor and avoiding the need to tunnel under Holy Cross Cemetery. Careful planning and project design will still be required, as this alignment will still travel at depth under residential properties before it reaches the portal to the surface north of Langstaff Road. Additional benefits of the selected Option 3 alignment include:

Potential for highest number of stations within \$5.6 billion Project funding envelope

- Primary Stations/Transit Hubs: Steeles Station and Bridge Station
- Complementary Urban Core Station: High Tech Station
- Neighbourhood Station: Clark Station

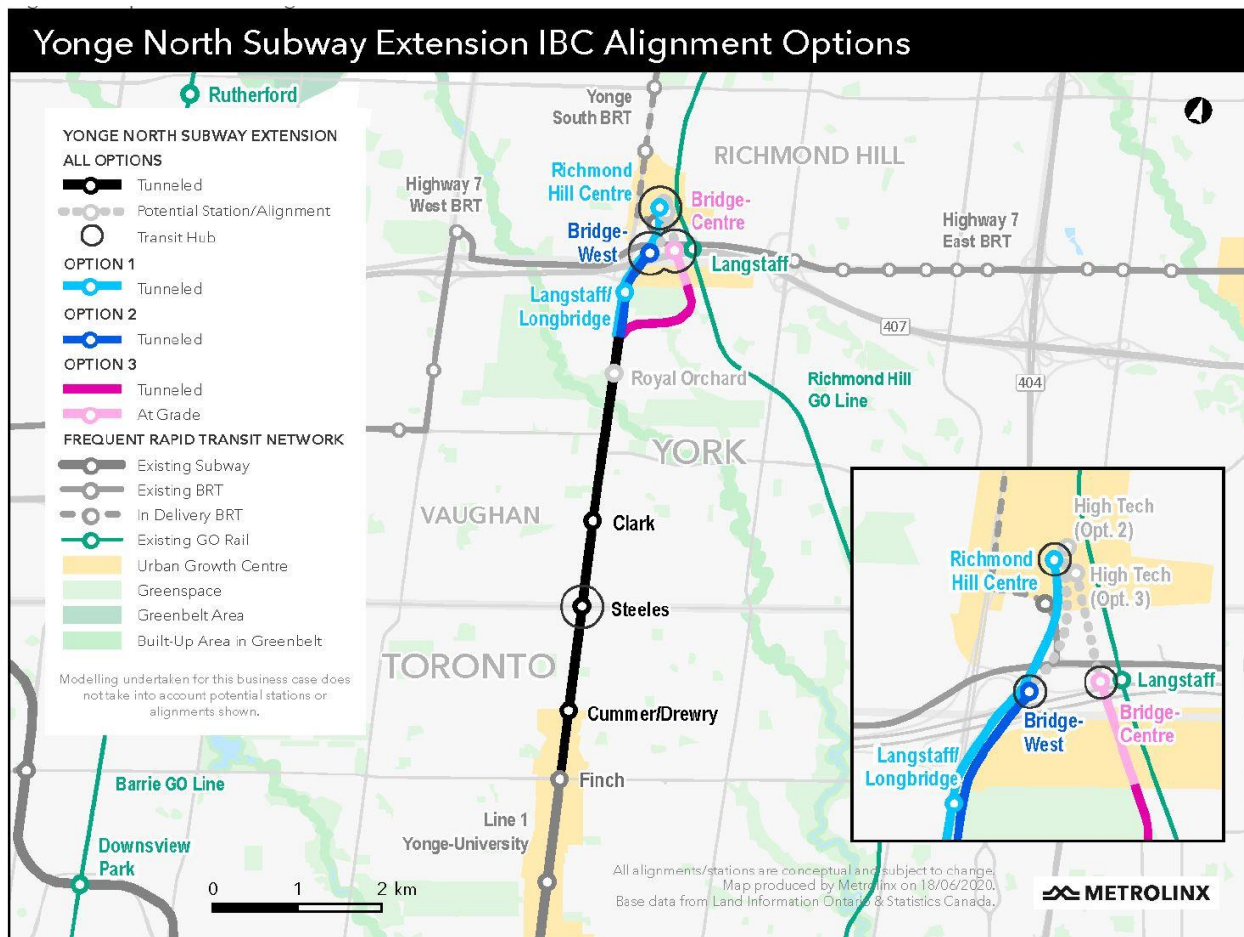


Figure 1-5 YNSE Alignment Options Examined as Part of IBC

1.2.3.3 Neighbourhood Stations Analysis

The preferred reference alignment includes three (3) categories of stations: Primary Stations/Transit Hubs, Complementary Urban Core Stations, and Neighbourhood Stations.

The Primary Station/Transit Hub designation was applied to stations where a high level of ridership is anticipated (over 5,000 average ridership in AM peak hour), particularly from bus transfers. Complementary Urban Core Stations are seen as complementary to primary stations in order to better serve the Richmond Hill Centre and Langstaff gateway development areas, while Neighbourhood Stations are intended to serve significant existing or future residential density and a mixed-use element on Yonge Street. These Neighbourhood Stations are anticipated to be less busy than the Primary Stations with a projected average ridership of less than 3,000 in the AM peak hour.

The preferred alignment within the Metrolinx IBC includes four (4) confirmed station locations as well as potential Neighbourhood Station locations, as follows:

- Four (4) below-grade stations:
 - **Cummer Station (potential Neighbourhood Station under analysis)** located at the intersection of Cummer/Drewry Avenue and Yonge Street.
 - **Steeles Station (confirmed Primary Station)** located at the intersection of Steeles Avenue and Yonge Street.

- Clark Station (potential Neighbourhood Station under analysis) located at the intersection of Clark Avenue and Yonge Street.
- Royal Orchard Station (potential Neighbourhood Station under analysis) located at Yonge Street just south of Royal Orchard Boulevard.
- Two (2) at-grade stations:
 - **Bridge Station (confirmed Primary Station)** nestled between Highway 7 and Highway 407 and intended to be a major transit hub with a bus terminal extending east-west on the upper level and subway and GO service extending north-south on the lower level.
 - **High Tech Station (confirmed Complementary Urban Core Station)** located at High Tech Road and west of the CN rail tracks.

1.3 Post IBC Analysis

The Option 3 alignment as presented in the IBC and described above saved on the costs of building tunnels and underground stations by leveraging an existing transportation corridor. The alignment is proposed to curve east of Yonge Street in the northern segment of the extension, pass under a portion of the Royal Orchard community and a small section of Holy Cross Cemetery, and emerge at the surface north of Langstaff Road to run parallel with CN/GO railway line. The proposed Bridge Station and the alignment and stations north of it will operate on the surface within the CN/GO rail corridor. Metrolinx recognizes there could be sensitivities associated with construction and operations on or near cemetery lands. With those sensitivities in mind, further analysis of the northern section of the Option 3 alignment was advanced immediately after the findings of the IBC were considered by the Metrolinx Board of Directors. The refined alignment proposal presented below, alongside the Initial Business Case will form part of the analysis that is presented in the Preliminary Design Business Case, which will guide the next phase of the project. It represents refinements to the Option 3 alignment to avoid tunneling under Holy Cross Cemetery and any associated land requirements.

1.3.1 Stations Update

Since the release of the IBC, Clark Station has been identified as a preferred Neighbourhood Station option and has since been confirmed. In addition to Clark Station, the remaining Neighbourhood Stations that were included within the IBC (Cummer Station and Royal Orchard Station) have also been assessed within this EPR Addendum, in the event that future funding becomes available as part of future Project phases.

1.3.2 Refined Reference Alignment

The refined Option 3 alignment advancing to the preliminary design phase of analysis is approximately 150 metres longer than what was presented in the IBC and thus offers longer travel time by approximately 42 seconds over a one-way trip. However, the impact on ridership is expected to be negligible. The alignment is assumed to attract 94,100 daily subway riders. Ridership modeling includes consideration of travel time on the choices that existing and prospective transit users might have. A high-level evaluation of the alignment reveals that, even with the slightly longer travel time, passengers still save 835,000 person-minutes per day compared to the Business-as-Usual scenario. This result is based on the number of people impacted by the longer trip multiplied by the additional travel time associated with the refined alignment.

Refinements made to the Option 3 alignment result in the location of the potential Royal Orchard Station shifting slightly to accommodate the alignment. It is important to note that the station is still well-located to provide reasonable access for walk-in transit users from the local area and is generally consistent with previously identified sites for a station to serve this community. Station design should ensure that transfers from buses are properly accommodated. There is a possibility that the revised station location would offer slightly improved access for the Housing York (Thornhill Green) subsidized housing complex with its location

east of Inverlochy Boulevard. It is expected the potential Royal Orchard Station would have similar levels of passenger usage as in the alignments explored in the IBC. Royal Orchard has reasonable levels of walk-in usage, and relatively low passenger transfers from bus. It is notable that Royal Orchard Station is not expected to have significant levels of egress in the morning peak period, suggesting that access to employment is not a key function of the station. The refined Option 3 alignment simplifies property requirements for the project by increasing the length of the infrastructure within the CN/GO railway corridor and avoiding the need to tunnel under Holy Cross Cemetery.

On December 8, 2021, Metrolinx issued a statement on the refined route for Yonge North Subway Extension through the project webpage and [Metrolinx News Blog](#) that noted members of the community have shared concerns about updated plans that shift the route of the subway extension off of Yonge Street in the northern segment of the line, and have asked how Metrolinx will make sure that the new subway service does not become a disruption to the community. In response to that feedback, Metrolinx refined plans for the subway extension that will result in deeper tunnels and a route that travels under far fewer residential properties in the Royal Orchard community than the previous route. The changes mean the subway tunnels will follow a route that travels mostly under Bay Thorn Drive once they turn east from Yonge Street to connect with the rail corridor. The previous route went under 40 homes and an additional 23 properties, whereas the new route goes under 20 homes and 15 additional properties.

The updated reference alignment that forms the basis for the development of the project's Reference Concept Design is shown below in **Figure 1-6**.



Figure 1-6 Current YNSE Reference Alignment

2.0 Update to the Project Description

This section provides a detailed description of the changes to the YNSE Project since completion of the 2009 EPR and 2014 EPR Addendum. **Figure 2-1** provides a high-level schematic depicting the 2009 EPR project components, 2014 EPR Addendum project components, and currently proposed project components for comparison purposes. In addition, detailed mapping of the project design elements is contained in **Appendix A**.

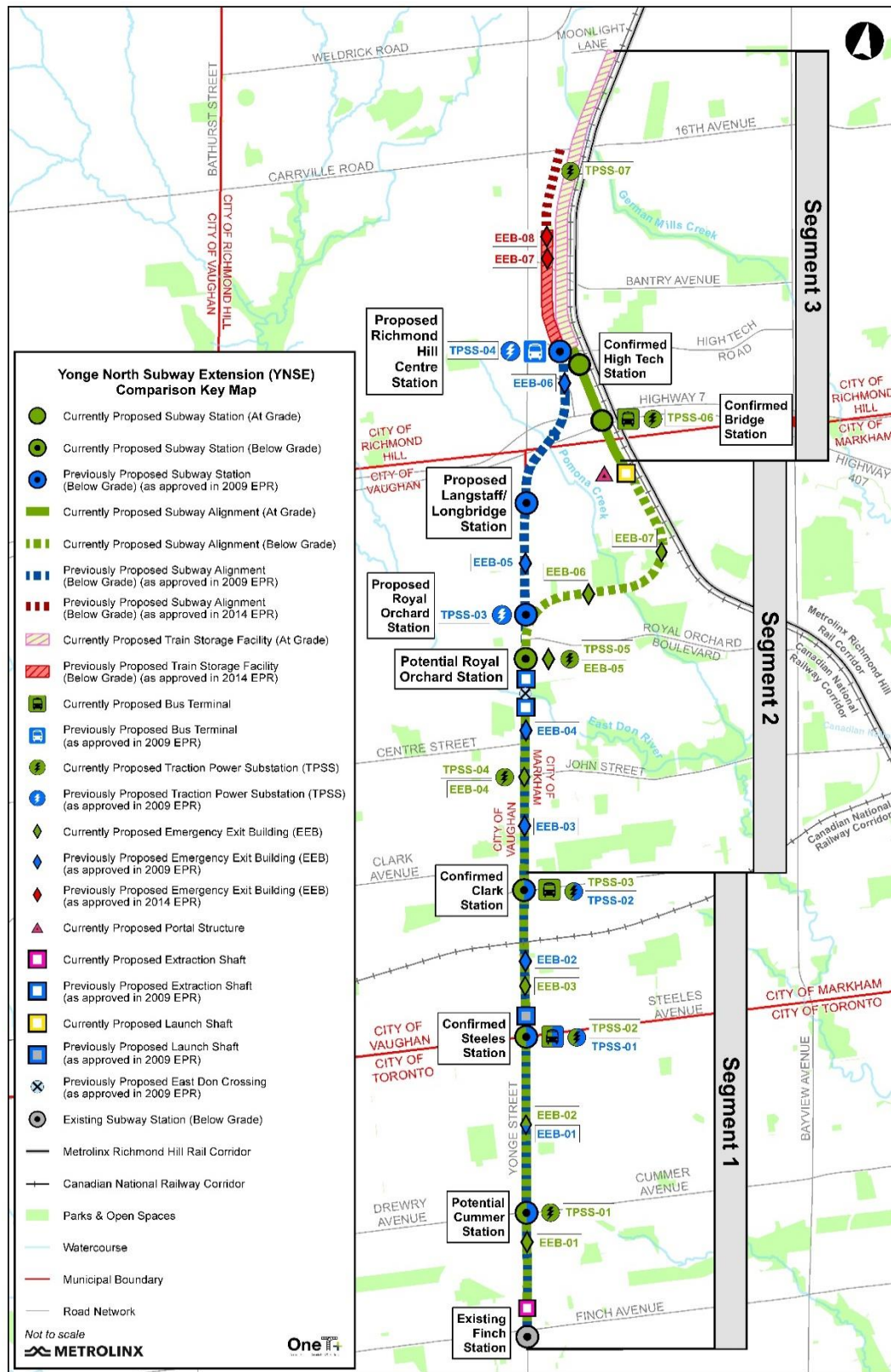


Figure 2-1 Comparison of Project Components: 2009 EPR, 2014 EPR Addendum, Current EPR Addendum

2.1 Summary of Project Components and Design Changes

Since the completion of the 2009 EPR and 2014 EPR Addendum, further changes to the proposed YNSE Project have been identified that will result in modifications to the plans presented in the previously approved 2009 EPR and 2014 EPR Addendum. Therefore, the purpose of the current EPR Addendum study is to assess the relevant changes to the Project based on the currently proposed conceptual design. Aspects of the design that have been subject to change and which are assessed within this EPR Addendum document include the following:

- **Subway Alignment** - The currently proposed YNSE subway alignment is approximately 9.5 km in length, commencing at the existing Finch Station in the City of Toronto and extending northerly to just beyond the limit of the proposed TSF (at Moonlight Lane) in the City of Richmond Hill. *The alignment previously terminated at the then-proposed Richmond Hill Centre Terminal Station in the vicinity of High Tech Road, per the 2009 EPR. The proposed revenue portion of the alignment is approximately 8 km in length, while the remaining trackwork services the TSF.*
- **Tunnels** - The current conceptual design involves the construction of tunnels for the underground alignment portion of the YNSE alignment, including approximately 6 kms of twin 5.6-metre internal diameter TBM tunnels. *The approximate length of underground alignment entailing tunnel construction was approximately 6.8 kms per the 2009 EPR.*
- **Addition of at-grade alignment / tracks** - The current conceptual design includes approximately three (3) km of at-grade alignment. *The 2009 vision for the YNSE was a fully underground alignment that terminated at the proposed Richmond Hill Centre Terminal Station with no at-grade component.*
- **Stations and Bus Facilities** - A total of four (4) below grade stations and two (2) at grade stations have been assessed within this EPR Addendum, as follows: Cummer Station (below grade) and bus loop; Steeles Station (below grade) and bus terminal; Clark Station (below grade) and bus terminal; Royal Orchard Station (below grade); Bridge Station and bus terminal (at grade); and High Tech Station (at grade). Cummer Station and Royal Orchard Station are not confirmed at this time but have been assessed in the event future funding is secured to support their implementation. *The previous 2009 EPR included the following below-grade stations: Cummer Station, Steeles Station, Clark Station, Royal Orchard Station, Langstaff Station, and Richmond Hill Centre Terminal Station.*
- **Finch Station Modifications** - Modifications/works at existing Finch Station planned as part of the current conceptual design include upgrades to the existing tracks, as well as various components of the operational, safety and support systems to enable future revenue service beyond this station. Further details are provided in **Table 2-1**. *These modifications were not previously proposed or assessed in the 2009 EPR.*
- **Emergency Exit Buildings** - An Emergency Exit Building (EEB) is a facility provided for emergency egress of persons from underground spaces. Proposed EEB locations have changed from what was previously proposed. Currently there are seven (7) EEBs proposed which have been assessed in this Addendum, locations shown in **Figure 2-1**. *There were six (6) EEBs proposed as part of the 2009 EPR, which were generally situated in different locations along the alignment (also shown in **Figure 2-1**).*
- **Traction Power Substations** - Traction power is provided to the subway system by a live third rail that provides electric power through a conductor placed alongside the rail. A Traction Power Substation (TPSS) converts commercial alternative current electricity into the direct current power used by the subway system. In order to give the voltage a boost at regular intervals along the subway alignment, TPSSs are required. Proposed TPSS quantity and locations have changed from what previously assessed. There are currently seven (7) TPSS locations proposed, locations shown in **Figure 2-1**. *There were four (4) TPSS locations proposed in the 2009 EPR, which were generally situated in different locations along the alignment (also shown in **Figure 2-1**).*

- **Bridges and Structures** - Structural work to enable the project includes demolishing the existing pedestrian bridge at Richmond Hill Centre Bus Terminal (after bus operations are transferred to the newly-built Bridge Station), modifications or replacement of existing culverts along the alignment, as described in **Table 2-2**. *These works were not previously envisioned or assessed in the 2009 EPR or 2014 EPR Addendum, which focused on crossings of the East Don River and Pomona Creek. In addition, it is noted that Metrolinx is no longer proposing a new crossing structure over the East Don River, as presented within the 2009 EPR. Instead, the current EPR Addendum assessed a tunnel crossing beneath this watercourse.*
- **Train Storage Facility** - An at-grade Train Storage Facility (TSF) is currently proposed in the vicinity of 16th Avenue and Northern Heights Drive, Richmond Hill, consisting of three (3) storage tracks configured to run parallel with the existing CN tracks, as well as a tail track extending approximately 185 metres to the north. Storage tracks will accommodate storage of up to 15 trains. Tail tracks provide temporary parking space for subway trains while they are not taking riders to and from their destinations. *The 2009 EPR assessed a tail track immediately north of the Richmond Hill Centre Station, but no dedicated TSF. This feature was later added and assessed in the 2014 EPR Addendum and at that time consisted of underground storage of 12 trains on the YSE alignment north Richmond Hill Centre Station.*
- **Addition of a tunnel portal structure** - A tunnel portal structure will be located south of Langstaff Road, west of the CN corridor ROW. This concrete structure serves as entrance/exit to and from the subway tunnel, where the subway transitions from below grade to at grade and vice versa. *Although the 2009 EPR and 2014 EPR Addendum included discussion/assessment of Tunnel Boring Machine launch and removal, a specific assessment of a dedicated tunnel portal structure was not included as the entire alignment was underground.*
- **Construction** - Includes the following notable changes to the construction approach:
 - **Change to TBM Launch Shaft location:** TBM tunnelling operations will take place from the launch shaft (proposed to be located immediately west of CN/GO rail tracks and south of Langstaff Road), where the machine is assembled. *The 2009 EPR assumed that the exact TBM launch location will be determined during the detailed design phase of the project; however, for the purposes of determining the potential environmental effects of the Transit Project, the following approach was assumed:*
 - *Richmond Hill Centre Station and surrounding area would provide sufficient space for the southbound launch of the TBM and as well as storage of tunnel liners and other tunnelling materials and equipment; and*
 - *Existing surface parking in the southwest quadrant of the Yonge Street / Steeles Avenue intersection could also provide sufficient space for the southbound launch of the TBM and storage of tunnel liners; and other tunnelling materials and equipment.*
 - The 2014 EPR Addendum did not speak to launch shaft locations.
 - **Change to TBM Extraction Shaft location:** The proposed extraction shaft for the TBM operations (TBM removal site) is proposed to be located north of the existing Finch Station. *The 2009 EPR Identified the East Don River crossing as the TBM extracting shaft location (one at each end of the crossing). Cummer/Drewry Station was also identified as a potential location to remove the TBM in the 2009 EPR.*

Table 2-1 provides a detailed comparison summary of YNSE design components as presented in the 2009 EPR, 2014 EPR Addendum and within this current EPR Addendum as well as the rationale for the currently proposed design changes. It should be noted that “N/A” in the table means that the project component is *not applicable* because this particular project component was not previously included or assessed in the specific EPR document as noted.

Table 2-1 Summary of YNSE Project Components, Changes & Rationale

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
1. Proposed Subway Horizontal Alignment	Approximately 6.8 km underground subway alignment from the existing Finch Station to the proposed Richmond Hill Center Station (in the vicinity of Highway 7 and Yonge St. in the City of Richmond Hill). From Finch Station to just south of the Holy Cross Catholic Cemetery, the alignment follows Yonge St. underground. North of the Holy Cross Catholic Cemetery, the subway alignment swings slightly eastward, crossing the northwest corner of the Langstaff development lands. The alignment then turns northward under Highway 407/Highway 7. North of the Richmond Hill Centre Station, the alignment terminates at the end of subway tail tracks in the transit corridor on the west side of the CN Bala Richmond Hill GO Line.	Extension of the subway alignment by approximately 1 km from previous terminus at Richmond Hill Centre Station to 16th Ave. in the City of Richmond Hill.	<p>The proposed YNSE subway alignment is approximately 9.5 km in total commencing at the existing Finch Station in the City of Toronto northerly to just beyond the limit of the proposed TSF (at Moonlight Lane) in the City of Richmond Hill. The proposed revenue portion of the alignment is approximately 8 km in length, while the remaining trackwork services the TSF.</p> <p>The proposed below grade portion of the subway alignment is approximately 6.5 km, beginning at Finch Station and extending to the proposed tunnel portal structure just south of Langstaff Road. Between Finch Station and Royal Orchard Blvd, the underground alignment is proposed to run under Yonge Street. It then curves to reach Bay Thorn Drive and continue to the east, before turning northwards where the alignment generally follows the existing CN Rail ROW until the proposed portal structure (just south of Langstaff Road) where the subway alignment emerges to at grade.</p> <p>The proposed at grade portion of the subway alignment is approximately 3 km in length beginning just south of Langstaff Road (from the proposed portal structure), with tracks located within and adjacent to the CN rail corridor ROW and terminating just beyond the limit of the proposed TSF (at Moonlight Lane) in the City of Richmond Hill. The at grade subway alignment generally follows the existing CN rail corridor ROW; however, the westernmost subway track is situated immediately outside the CN Rail ROW boundary for the majority of the at grade segment.</p>	While the YNSE was previously envisioned to terminate just north of Highway 7, the area to the north was identified by Metrolinx as an area where refinement could enhance Project benefits and reduce capital costs. The proposed alignment that forms the basis for this EPR Addendum specifically addresses the challenges and opportunities of serving these areas and their future residents and employees.
2. Proposed Subway Vertical Profile	Below grade vertical profile design with a crossing above grade (bridge) over the East Don River. Proposed station and alignment depths were not presented within the 2009 EPR.	N/A	The subway alignment vertical profile was designed to reduce the depth of the stations along the route, except at the potential Royal Orchard Station, which is located approximately 500 m north of the deep East Don River Valley. The depth of the station platform at this location ranges from approximately 40 to 50 m below the existing ground surface, to account for tunneling south of the station below the East Don River. The conceptual vertical profile is shown in Figure 2-2 directly below this table.	The current YNSE vertical profile changes from below grade to at grade south of Langstaff Road, thereby eliminating the above grade (bridge) crossing over the Don River. The currently proposed profile reduces the depth of the stations along the route (except at Royal Orchard Station), while meeting applicable tunnel grade requirements (e.g., TTC Design Manual DM-0204-04).
3. Tunnels	<p>Approximately 6.8 km underground tunneled alignment from the existing Finch Station to the proposed Richmond Hill Center Station in the vicinity of Highway 7 and Yonge St. in the City of Richmond Hill.</p> <ul style="list-style-type: none">For the purposes of determining the potential environmental effects of the Transit Project, the following approach was assumed within the 2009 EPR:<ul style="list-style-type: none">Richmond Hill Centre Station and surrounding area would provide sufficient space for the southbound launch of the TBM and as well as storage of tunnel liners and other tunnelling materials and equipment; and	The underground Train Storage Facility assessed in the 2014 EPR Addendum would be located adjacent to the CN Rail corridor, beginning approximately 100m north of the Richmond Hill Centre Station. Cut and cover construction methodology was assumed for this work, during which the ground surface is opened (cut) a sufficient depth to construct the subway tunnel structure.	<p>The proposed conceptual design involves the construction of tunnels for the underground alignment portion of the current YNSE alignment with the following key parameters:</p> <ul style="list-style-type: none">Approximately 6 kms of twin 5.6 metre internal diameter TBM tunnelsTwin tunnels run from Finch Transition Box Structure to proposed portal locationReference YNSE Alignment assumes all tunneling undertaken using two (2) TBMsLaunched at the North Portal Launch Shaft, located immediately west of CN/GO rail tracks and south of Langstaff RoadBoth TBM's are to be removed at the Finch Transition Box Structure where the extraction shaft is to be located	There is no change to the need for tunneling as part of the project. The currently proposed YNSE alignment still entails the construction of approximately 6 kms of tunnels; whereas the approximate length of tunnelling in the 2009 EPR was 6.8 km.

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	<p>o Existing surface parking in the southwest quadrant of the Yonge Street / Steeles Avenue intersection could also provide sufficient space for the southbound launch of the TBM and storage of tunnel liners; and other tunnelling materials and equipment.</p> <p>The 2009 EPR Identified the East Don River crossing as the TBM extracting shaft location (one at each end of the crossing). Cummer / Drewry Station was also identified as a potential location to remove the TBM in the 2009 EPR.</p> <p>The 2009 EPR assumed a twin-bored tunnelling method for the entire running structure from Finch Station to the Richmond Hill Centre Station, with the exception of the section between the existing Finch Station tail tracks and Cummer/Drewry Station and the approaches to the proposed East Don River bridge.</p>			
4. Finch Station Modifications	N/A	N/A	<p>Modifications to existing Finch Station as follows:</p> <ul style="list-style-type: none">• Upgrading existing tail track to support future revenue service;• Construction of the Finch Transition Box Structure, which is an underground structure that provides the transition between the existing Finch Station tail track structure and the new YNSE twin tunnels;• Upgrading operational and support systems (e.g., signal upgrades) within the existing tail track area;• Upgrade to the existing electrical and communication back-of-house room at the station;• Upgrade to the existing Hendon Avenue Traction Power Substation located approximately 130 m west of the station; and• An approximately 130 m long underground duct bank extending westerly along Hendon Avenue from the existing Finch Station.	<p>Modifications to the existing Finch Station and nearby/associated facilities such as the existing Hendon Avenue Traction Power Substation are required to enable YNSE project implementation and future revenue service beyond Finch Station.</p>
5. Stations	Total of six (6) below grade stations proposed.	No new or modified stations were proposed.	<p>Total of Four (4) below grade stations and two (2) at grade stations are proposed, as follows:</p> <ul style="list-style-type: none">• Cummer Station (below grade)• Steeles Station (below grade) and bus terminal• Clark Station (below grade) and bus terminal• Royal Orchard Station (below grade)• Bridge Station and bus terminal (at grade)• High Tech Station (at grade) <p>Specific infrastructure associated with each proposed station is further detailed within the rows below.</p>	<p>Two stations, Bridge and High Tech Stations, are proposed at grade due to change in proposed subway alignment (i.e., at grade). The current station alignment maximizes the benefits of the subway extension while achieving the lowest cost for the acceptable Project scope. Of all considered alignments, the currently proposed route is the only one that provides the opportunity for one Neighbourhood Station to be included in the Project scope while maintaining costs within the funding envelope.</p>

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	Cummer / Drewry Station: <ul style="list-style-type: none">Location: Yonge St. & Cummer / Drewry Ave., approximately 800 m north of Finch Station.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft, bus loop located at Drewry Ave.Four (4) pedestrian entrances:<ul style="list-style-type: none">Main entrances located at the Northeast and southwest quadrants of the intersection of Cummer Ave. and Yonge St.Southeast corner of Cummer Ave./ Drewry Ave. and Yonge St.East side of Yonge St at the north end of the station box.		Potential Cummer Station (below grade) <ul style="list-style-type: none">Location: Slight shift to the southwest. The proposed station is an in-line underground station located at the intersection of Cummer/Drewry Avenue and Yonge Street and includes a bus loop on Drewry Ave. west of Yonge St. with associated bus operators’ facilities.Station components include:<ul style="list-style-type: none">A below grade, two-level station box with one central platform at track level and a public concourse level aboveUp to two (2) at-grade pedestrian entrances (locations to be determined as part of further design development)Up to two (2) Fire Fighter’s Access Shafts (FFA)Secured bicycle storage	The proposed location shift is primarily to avoid utility conflicts. The reduced number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements.
	Steeles Ave. Station and bus terminal <ul style="list-style-type: none">Location: Yonge St and Steeles Ave, approx. 1.2 km north of Cummer/ Drewry Ave.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Five (5) pedestrian entrances:<ul style="list-style-type: none">Two (2) street entrances located north of the station box on each side of Yonge St.Two (2) street entrances located south of the station box on each side of Yonge St.One (1) entrance from median located on Steeles Ave.Underground bus terminal below Steeles Ave. West.Passenger Pick-up and Drop-Off (PPUDO)Below grade bus terminal with three (3) bus access ramps and a bus platform for 25 buses.		Steeles Station (below grade) and bus terminal <ul style="list-style-type: none">Location: Yonge St. at the intersection with Steeles Ave, shifted south from 2009 EPR.Station components changes include:<ul style="list-style-type: none">Three (3) pedestrian entrances (locations to be determined as part of further design development):<ul style="list-style-type: none">One (1) FFASecured bicycle storageAt grade bus terminal at the southwest quadrant of Yonge St and Steeles AvePotential road modifications to accommodate curbside bus platforms located at the Yonge St. and Steeles Ave. intersection	The bus terminal at Steeles Station is proposed to be an at grade terminal to avoid conflicts with the existing York Durham Sanitary Sewer. The reduced number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements.
	Clark Ave. Station <ul style="list-style-type: none">Location: Yonge St. and Clark Ave approximately 1 km north of Steeles Ave.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Five (5) Pedestrian entrances:<ul style="list-style-type: none">One (1) main entrance southwest corner of Clark Ave. and Yonge St.One (1) main entrance northeast corner of Clark Ave. and Yonge St.One (1) north end of the station and on the west side of Yonge St.One (1) entrance at the east side of Yonge St.	No new stations were proposed.	Clark Station (below grade) and bus terminal <ul style="list-style-type: none">Location: No change, slight lateral expansion and shift southerly.Station components changes include:<ul style="list-style-type: none">Up to two (2) pedestrian entrances (locations to be determined as part of further design development)Addition of bus facility with associated bus operator facilities	The reduced number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements. The addition of a bus terminal further enhances transit system integration and improves transfers between transit modes.

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	Royal Orchard Station <ul style="list-style-type: none">Location: intersection of Yonge St. and Royal Orchard Blvd., approximately 800 metres north of Centre St.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Two (2) pedestrian entrances:<ul style="list-style-type: none">one (1) main entrance northeast corner of Royal Orchard Blvd. and Yonge St.one (1) entrance located southwest corner of Yonge St. and Thornhill Ave.		Potential Royal Orchard Station (below grade) <ul style="list-style-type: none">Location: Yonge Street, south of Royal Orchard Blvd.Station components changes include:<ul style="list-style-type: none">Up to two (2) pedestrian entrances (locations to be determined as part of further design development)A deeper station box due to proximity to the East Don River Valley topographic depression. This change eliminates the need for the Don River above grade crossing.Secured bicycle storage	Change to station location and depth as a result of changes in subway horizontal alignment and vertical profile. See rationale for alignment and profile change above.
	Langstaff / Longbridge Station <ul style="list-style-type: none">Location: between Longbridge Road and Langstaff Road, approximately 1km north of Royal Orchard Boulevard.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.PPUDOCommuter parkingTwo (2) pedestrian entrances:<ul style="list-style-type: none">One (1) on Hydro One property currently hosting a 230/500 kV transmission line south of Highway 407 and west of Yonge Street.One (1) located at the southeast corner of Yonge St. and Langstaff Road East		Bridge Station and bus terminal (at grade) <ul style="list-style-type: none">Location: west of the CN Rail Corridor and north of Highway 407 and Highway 7.Station components changes include:<ul style="list-style-type: none">Three (3) pedestrian entrances (locations to be determined as part of further design development)Bus terminalPassenger and service emergency exitSecured bicycle storage	The change in station location is in response to changes in the subway horizontal alignment and vertical profile discussed above. The reduction in number of station entrances minimizes potential property impacts while maintaining access and circulation in a way that accommodates future ridership requirements.
	Richmond Hill Centre Station – Transit Hub <ul style="list-style-type: none">Location: east of Yonge St. traversing High Tech Road, west of the CN rail corridor and north of Highway 7, approximately 1 km north of Royal Orchard Boulevard.Station components: below grade station box, concourse, bicycle facilities, ventilation shaft.Two (2) pedestrian entrances:<ul style="list-style-type: none">One (1) located at northeast corner of the station boxOne (1) located at the southeast corner of the station boxBus terminalPPUDOTransit Hub		High Tech Station (at grade) <ul style="list-style-type: none">Location: east of Yonge St. traversing High Tech Road, west of the CN rail corridor, and north of Highway 407 and Highway 7 and adjacent to Richmond Hill Centre Terminal.Station components changes include:<ul style="list-style-type: none">Two (2) pedestrian entrances (locations to be determined as part of further design development)Secured bicycle storageA revised PPUDO design to accommodate the revised station configuration	The change in station location is in response to changes in the subway horizontal alignment and vertical profile discussed above. Similar to the previously envisioned Richmond Hill Centre Station, the currently proposed High Tech Station will accommodate transfers to GO train and GO bus services, as well as local transit, and will improve subway access to the Richmond Hill Centre and Langstaff Gateway development areas.
6. Proposed Emergency Exit Buildings (EEBs)	Six (6) Emergency Exit Buildings (EEBs): 1. EEB 1: Private property on the east side of Yonge St. between Centre Ave. and Newton Drive;	Two (2) additional EEBs: 1. EEB 7: Located at the proposed TSF parking lot, east of Coburg Crescent.	Seven (7) EEBs (precise locations to be determined as part of further design development): 1. EEB-1: located approximately between the existing Finch Station and the potential Cummer Station	The TTC Design Manual requires EEBs to be located such that the distance from any underground location to an EEB is not greater than 381 m – i.e., the spacing between EEBs or between EEBs and the closest station

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
	<div>2. EEB 2: Private property on the west side of Yonge St. between Doncaster Ave. and the CN rail corridor);</div> <div>3. EEB 3: Within municipal right-of-way on the west side of Yonge St. opposite Arnold Ave.;</div> <div>4. EEB 4: Within municipal right-of-way on the east side of Yonge St. between Centre St. and the proposed East Don River Bridge;</div> <div>5. EEB 5: Private property on the east side of Yonge St. between Uplands Ave. and Kirk Drive; and</div> <div>6. EEB 6: Within municipal right-of-way on the north side of Highway 7 west of Garden Ave.</div>	<div>2. EEB 8: Located west of the proposed alignment, south of Coburg Crescent.</div>	<div>2. EEB-2: located approximately between the potential Cummer Station and the confirmed Steeles Station</div> <div>3. EEB-3: located approximately between the confirmed Steeles Station and the confirmed Clark Station</div> <div>4. EEB-4: located approximately between the confirmed Clark Station and the potential Royal Orchard Station</div> <div>5. EEB-5: located approximately in the vicinity of the potential Royal Orchard Station</div> <div>6. EEB-6: located approximately north of Royal Orchard Station in the vicinity of Bay Thorn Drive</div> <div>7. EEB-7: located approximately north of the potential Royal Orchard Station and south of the portal structure</div>	<div>platform or portal entrance must be 762 m or less. Applying this standard to the currently proposed design has identified the need for a total of seven (7) EEBs.</div>
7. Traction Power Substations (TPSSs)	<div>Traction Power is provided by a live third rail that provides electric power through a conductor placed alongside the rail. In order to give the voltage a boost at regular intervals along the subway alignment, electrical substations (i.e., Traction Power Substations [TPSSs]) are required. Traction power requirements dictate that TPSSs are not spaced more than 2.5 km from one another; however, a 2 km separation between TPSS is more typical.</div> <div>Four (4) TPSSs locations were included within the 2009 EPR in the vicinity of Steeles Station, Clark Station, Royal Orchard Station and Richmond Hill Centre Station.</div>	<div>N/A</div>	<div>Seven (7) TPSSs at the following locations:</div> <div><ul style="list-style-type: none">Three (3) TPSS in the approximate vicinity of Cummer, Steeles, and Clark Stations.One (1) TPSS in the approximate vicinity of the potential Royal Orchard Station.One (1) TPSS in the approximate vicinity of Bridge Station.One (1) TPSS standalone building integrated with EEB-4 between the confirmed Clark Station and the potential Royal Orchard Station.One (1) TPSS at the Train Storage Facility (TSF), immediately south of 16th Ave.</div>	<div>The currently proposed subway alignment requires additional power compared to the alignment as presented in 2009 EPR due to its extended length (an approximate 6.8 km subway extension was assessed in 2009 compared to the approximate 9.5 km extension currently proposed). This has resulted in the need for additional TPSS facilities. The current EPR Addendum assess a total of seven (7) TPSSs locations.</div>
8. Proposed Portal Structure	<div>N/A</div>	<div>N/A</div>	<div>The tunnel portal structure will be located south of Langstaff Road, west of the CN corridor ROW. This concrete structure serves as entrance/exit to and from the subway tunnel, where the alignment transitions between below and at grade. Additional information concerning the portal structure is provided below this table and in Figure 2-3.</div>	<div>This structure is required to allow for the below-grade to at-grade transition of the subway alignment.</div>
9. Proposed Launch Shaft	<div><ul style="list-style-type: none">For the purposes of determining the potential environmental effects of the Transit Project, the following approach was assumed within the 2009 EPR:<ul style="list-style-type: none">Richmond Hill Centre Station and surrounding area would provide sufficient space for the southbound launch of the TBM and as well as storage of tunnel liners and other tunnelling materials and equipment.Existing surface parking in the southwest quadrant of the Yonge Street/Steeles Avenue intersection were also identified as providing sufficient space for the southbound launch of the TBM and storage of tunnel liners.</div>	<div>N/A</div>	<div>The current launch shaft location corresponds to a parcel of land west of the existing CN tracks and proposed portal structure, between Holy Cross Cemetery and Langstaff Road. A construction staging area/worksite will also be prepared for the assembly of the TBM at this location. The launch shaft structure is expected to be approximately 130 m in length.</div>	<div>The currently proposed location of the launch shaft reduces potential property impacts by using vacant industrial properties near the CN Rail ROW, south of Langstaff Rd. and has sufficient space to meet the functional needs of TBM operations.</div>

Project Component	2009 EPR	2014 EPR Addendum	Current EPR Addendum	Rationale for Change
10. Proposed Extraction Shaft	The 2009 EPR Identified the East Don River crossing as the TBM extraction shaft location (one at each end of the crossing). Cummer/ Drewry Station was also identified as a potential location to remove the TBM in the 2009 EPR.	N/A	The proposed extraction shaft for the TBM operations will be located within the boundaries of the Finch Transition Box Structure that will connect the existing Finch tail track with the new YNSE alignment running north.	A new extraction shaft location is required since an at grade crossing of the East Don River is no longer proposed. There is sufficient space at the Finch Transition Box Structure to permit the removal of the TBM.
11. Proposed Modifications to Bridges/ Structures/ Culverts	<ul style="list-style-type: none">East Don River crossing above-grade for both Subway and Roadway. Includes replacement of an existing culvert.Proposed modifications to twin-box culvert located north of Highway 7 near Richmond Hill Centre Station.	N/A	<ul style="list-style-type: none">Design, construction, maintenance and removal of a temporary pedestrian bridge across the subway and CN rail corridors to replace the existing pedestrian bridge connecting Richmond Hill Centre (bus) Terminal and Langstaff GO Station.<ul style="list-style-type: none">Demolition of the pedestrian overpass bridge at Richmond Hill Centre will occur once bus operations are shifted to Bridge Station.Crossing of East Down River is now below-grade, meaning a new structure at this location is no longer required.Langstaff Road East grade separationReplacement of the existing culvert conveying German Mills Creek north of 16th Avenue.A number of drainage culverts along the at grade portions of the alignment may be impacted (modified or replaced) to enable implementation of the Project. Any such culverts will be identified and addressed during future phases of design.<ul style="list-style-type: none">Further details regarding the proposed modifications to bridges, culverts and other structures are provided below in Table 2-2.	<p>To provide for continuous access across the rail corridor and subway alignment, the existing pedestrian bridge at Richmond Hill Centre Terminal is proposed to be replaced with a temporary pedestrian bridge. Temporary pedestrian bridge will be in place until Bridge Station is complete, with the Bridge Station providing access across the corridor.</p> <p>A new structure to carry the subway over the East Don River is no longer required now that the subway is below grade at this location.</p> <p>The existing culverts conveying German Mills Creek needs to be replaced to accommodate the tail tracks for the proposed TSF.</p>
12. Proposed Train Storage Facility (TSF)	N/A	<p>Underground Train Storage Facility (TSF):</p> <ul style="list-style-type: none">Capacity: 14 trains; two (2) trains stored at Richmond Hill Centre Station and the remaining 12 trains stored at the TSFLocation: north of the Richmond Hill Centre StationMaintenance building for staff access to the proposed TSF east of Coburg Crescent, and associated 25-30 space employee parking lotA combined maintenance operators’ facility and Electrical Service BuildingA ventilation shaftA drop shaft (a type of maintenance shaft)	<p>At grade Train Storage Facility (TSF):</p> <ul style="list-style-type: none">Capacity: 15 trains for overnight storage.Location: in the vicinity of the CN corridor and 16th Ave., north of High Tech Station.Transportation facility near Bantry AveRail Cars & Shops Facility (RC&S) south of 16th Ave., including parking spaces for staff and visitors. <p>Additional details for the proposed TSF have been provided following this table.</p>	The current configuration for the proposed TSF was selected because it avoids reconstruction of overhead bridges (High Tech, Bantry, and 16th Avenue), promotes the consolidation of buildings to minimize impacts to City of Richmond Hill property, accommodates a future multi-use trail to be completed by the municipality, and because it meets functional TTC requirements. A drop shaft is no longer necessary now that the TSF is at grade.

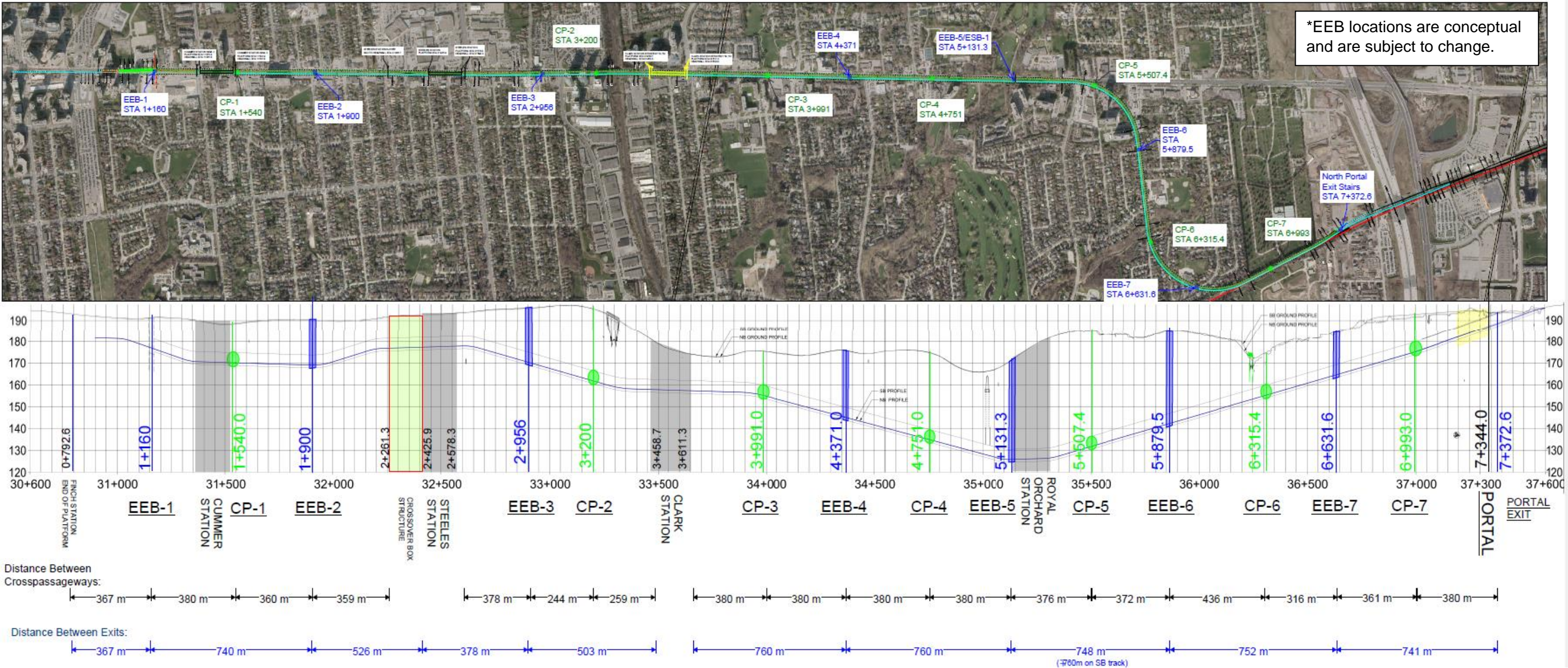


Figure 2-2 YNSE Conceptual Vertical Profile

Portal Structure

The portal structure is proposed to be situated approximately 180 m south of Langstaff Road, west of the CN corridor rail ROW. This concrete structure serves as entrance/exit to and from the subway tunnel, where the alignment transitions between below grade and at grade. **Figure 2-3** depicts a typical tunnel portal under construction.



Figure 2-3 Typical Portal Structure, Under Construction

Modifications to Bridges / Structures / Culverts

The proposed subway alignment will require modifications to certain existing pedestrian crossings and culverts. **Table 2-2** below provides a summary of the proposed modifications (refer to **Appendix A** for locations of affected bridges and structures along the alignment).

Table 2-2 Summary of Planned Structure & Culvert Modifications

Primary Structure Name	Location	Heritage Designation (if applicable)	Year of Construction	Type of Structure	Proposed Modifications?	Other Notes
Unnamed culvert	City of Markham	No known designations or heritage protections	Unknown	Corrugated Steel Pipe	Replacement and/or relocation may be required. To be confirmed during detailed design.	Culvert replacement and/or modification may be required to support project implementation activities in the vicinity of the Launch Shaft.
Richmond Hill Centre Bus Terminal Pedestrian Bridge	City of Richmond Hill	No known designations or heritage protections	2008	Bridge (Pedestrian)	The current pedestrian bridge is proposed to be replaced with a temporary pedestrian bridge, providing continuous access across the subway and CN corridor until Bridge Station construction is complete.	Design, construction, maintenance and removal of a temporary pedestrian bridge across the subway and CN rail corridors to replace the existing pedestrian bridge connecting Richmond Hill Centre (bus) Terminal and Langstaff GO Station. Demolition of the pedestrian overpass bridge at Richmond Hill Centre will occur once bus operations are shifted to Bridge Station.
German Mills Creek Culvert	City of Richmond Hill	No known designations or heritage protections	Unknown	Triple-cell Corrugated Steel Pipe	Replacement	A larger, open-bottom (with natural stream bed material) culvert is proposed that will increase hydraulic capacity, improve fish habitat and passage, and reduce erosion risk within the channel.

Train Storage Facility

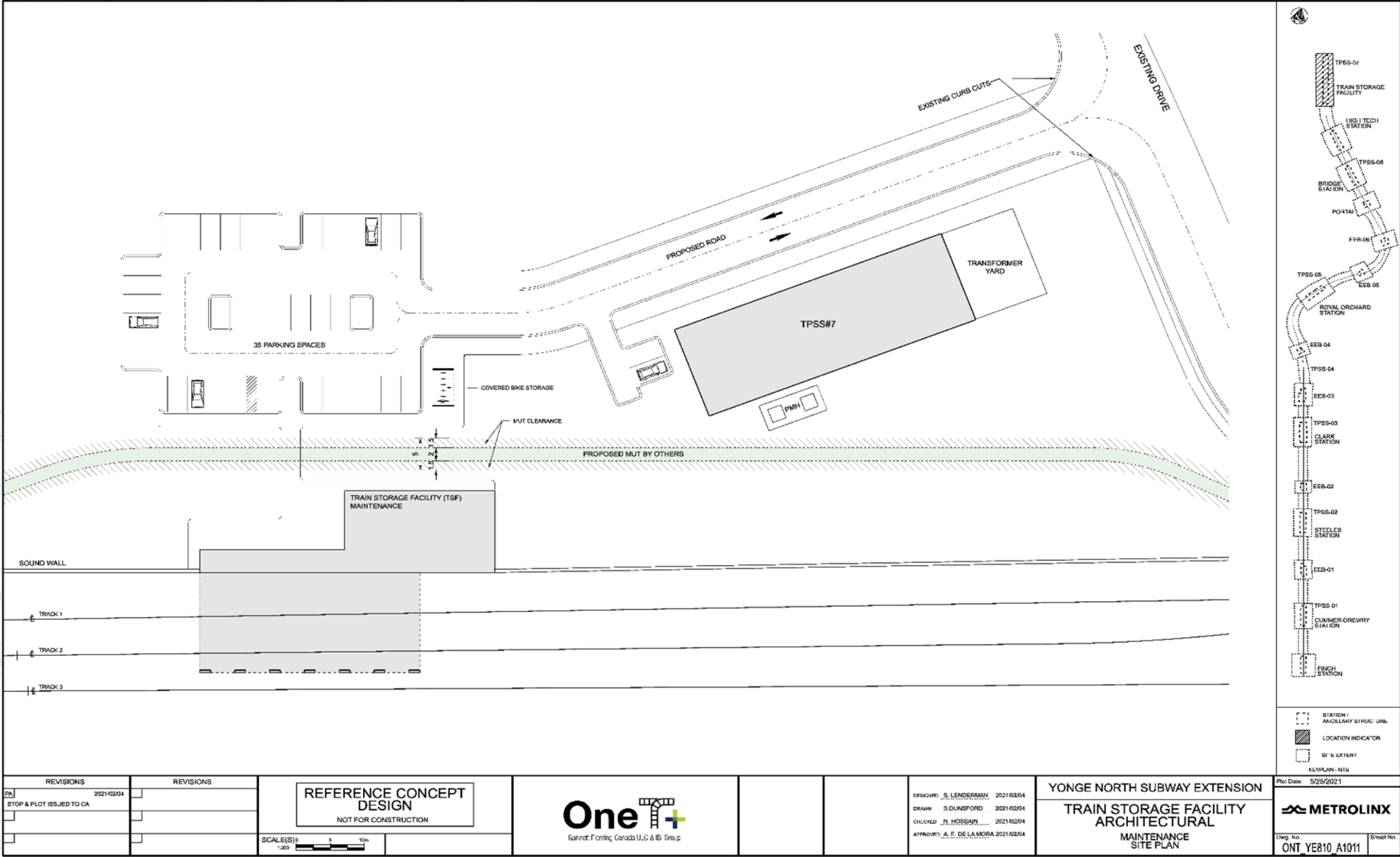
The proposed Train Storage Facility (TSF) is planned to be located along the west side of the CN corridor approximately 525 m north of the proposed location of High Tech Station, extending to approximately Moonlight Lane (see **Figure 2-4**). The purpose of the facility is to facilitate overnight storage, cleaning, and light maintenance/diagnostic activities (using hand tools) for the subway's rolling stock.

The current conceptual design proposes a double ended pocket track located between High Tech Station and Moonlight Lane leading to three (3) storage tracks configured to run parallel with the existing CN track, and a tail track to the north with the ability to switch between the storage tracks and the tail track. The TSF will accommodate the 15 6-car trainsets required for the subway extension.

The track alignment for the proposed TSF extends along the west side of the CN Rail right-of-way, over an existing culvert that conveys the flows of German Mills Creek (the culvert is currently located under the existing CN tracks and carries CN freight rail). It is anticipated that this culvert will require replacement and up-sizing to accommodate the TSF tail tracks (see **Table 2-2** for further details of this work).

The TSF will include three separate buildings: Transportation Facility, Rail Cars & Shops Facility (RC&S), and a Traction Power Substation.

- **Transportation Facility:** The Transportation Facility building is proposed to be constructed approximately 130 m north of Bantary Avenue and will provide operators with a waiting area where shift changes and handover operations with yard personnel occur. This facility may include supervisor offices, a lunchroom, washrooms, and/or change areas for staff.
- **RC&S Facility:** The RC&S Facility is proposed to be located approximately 125 m south of 16th Avenue and will be built above/over the TSF tracks based on available space. This facility will accommodate the administration, cleaning and maintenance personnel for the trains. This facility may include staff offices, change rooms, lunchroom, a yard control room, and/or small parts storage/tool room, and applicable mechanical and electrical rooms. Immediately west of the facility approximately 35 parking spaces for employees and visitors to the TSF is proposed.
- **TPSS:** The TPSS is a separate building to house the electrical and mechanical components required for the mainline and TSF traction power system.



2.2 Construction Activities and Methods

The potential construction activities, methods and associated equipment that may be implemented as part of the YNSE project have been summarized in **Table 2-3**. It should be noted that these methods, activities and associated equipment may be expanded, further refined, or found to be unnecessary as Project planning and design progress.

Table 2-3 YNSE Anticipated Construction Activities

Anticipated Construction Activity	Description/Methods	Associated Equipment
Tunnelling	<ul style="list-style-type: none"> The underground segment of the subway alignment is planned to be constructed as twin tunnels utilizing two TBMs (one per tunnel). The tunnel launch shaft is planned south of Langstaff Road and north of Holy Cross Cemetery, immediately west of CN Bala corridor where the TBMs will be launched and bore approximately 6.07 km tunnels each. The TBMs will be retrieved north of the existing Finch Station, south of Cummer Avenue where the extraction shaft is proposed to be located. There are currently two (2) potential tunnelling technologies identified that may be used for tunnel construction for the YNSE Project, to be confirmed as project planning and design progress: <ul style="list-style-type: none"> EPBM – Earth pressure balance boring machine STBM – Slurry tunnel boring machine 	<ul style="list-style-type: none"> TBMs Crawler excavators Loaders Air ventilators Dump trucks Concrete trucks
Excavation and Grading	<ul style="list-style-type: none"> Excavation and grading activities may involve earth-moving activities and stockpiling, as applicable. Excavated material will be accommodated on-site to the degree practicable, however, where necessary, surplus material will be disposed off-site to an approved facility. Any off-site disposal shall be done in compliance with applicable law, including as it relates to contaminated material that may be encountered. Any groundwater encountered will be managed and disposed of in accordance with applicable law. 	<ul style="list-style-type: none"> Site compaction equipment and general grading equipment, dump trucks, soil removal equipment Groundwater pumping equipment Excavation equipment, including backhoe, dump trucks, soil removal equipment, and jack hammers
Excess Soil Management	<ul style="list-style-type: none"> Excavated soils will be accommodated on-site to the degree practicable, however, where necessary, surplus material will be disposed of off-site to an approved facility. 	<ul style="list-style-type: none"> Loaders Excavators Dump Trucks
Construction of Buildings and Structures	<ul style="list-style-type: none"> YNSE underground facility structures including the Finch Transition Box Structure, Steeles Station, Cummer Station, Clark Station and Royal Orchard 	<ul style="list-style-type: none"> Groundwater pumping equipment Hand tools Cranes and hoists

Anticipated Construction Activity	Description/Methods	Associated Equipment
	<p>Station are proposed to be constructed using cut-and-cover methods.</p> <ul style="list-style-type: none"> Station construction may include, but is not limited to entrance shafts installation; waterproofing and installation of base slab; installation of walls, concourse slab, entrances, roof, architectural elements and electrical and mechanical equipment; and paving, landscaping and installation of station equipment. Construction of headwalls, underground support concrete walls located at the east and west ends of the underground stations and EEBs, will require grout plant(s) to be established nearby to pump a form of concrete, known as “grout”, to the headwall location. Structural size and layout of the structural elements will be determined in accordance with the applicable design codes and standards. All buildings and structures will be constructed using standard civil construction techniques. 	<ul style="list-style-type: none"> Grout plant(s) Foundation placement equipment Augered piles or rammed aggregate piers Drill rigs Concrete trucks, pumps and vibrators Hoe rams Backhoes Flatbed trucks, excavators, light equipment
Construction of Ancillary Facilities	<ul style="list-style-type: none"> Ancillary facilities may include electrical transformer/supply equipment, parking areas, and exterior facilities such as lighting. All ancillary facilities will be designed and constructed in accordance with applicable design standards. 	<ul style="list-style-type: none"> Flatbed trucks, cranes, concrete trucks. Backhoe, pavement excavation equipment Mobile cranes, hoists Concrete trucks, pumps and vibrators Hand tools
Track Work	<ul style="list-style-type: none"> Above-grade tracks installation, including for the purposes of potential temporary track diversion, will require: <ul style="list-style-type: none"> Grading, backfilling and compaction prior to installation as well as provision of drainage Relocation/installation of track, ties and fastenings. Clear delineation and protection between active rail service and Project construction work zones (e.g., via installation of a temporary separation barrier for the duration of construction). Trackwork within the tunnels will involve floating slabs, resiliently supported ties, high-resilience fasteners, and other track vibration mitigation, where appropriate. 	<ul style="list-style-type: none"> Backhoe, front-end loader Hi-rail excavator Hi-rail crane Flatbed Boom truck Concrete pouring equipment

Anticipated Construction Activity	Description/Methods	Associated Equipment
Site Preparation	<ul style="list-style-type: none"> • Mobilization of equipment and temporary facilities to the site. • Clearing and grubbing of vegetation, tree removal and protection. • Protection of trees & sensitive environmental features. • Erection of temporary and permanent fences. • Installation of environmental management features (e.g., erosion and sediment controls). • Dewatering works. • Preparation of temporary laydown areas including access roads, fencing and lighting. • Preparation of temporary access roads to construction sites including temporary shoring, access roads, fencing, signage, gate and lighting, as required. • Temporary closure of road curb lanes, as required. • Removal/modification of roadway, sidewalks, buildings and other structures impacted by temporary or permanent conditions, as required. 	<ul style="list-style-type: none"> • Site compaction equipment and grading equipment • Vegetation removal equipment • Excavation equipment • Haulage/dump trucks
Demolition of Buildings and Structures	<ul style="list-style-type: none"> • Removal of buildings and structures on properties acquired by Metrolinx that are required for the implementation of the YNSE project. 	<ul style="list-style-type: none"> • Demolition and excavation equipment including backhoe, dump trucks, soil removal equipment, and hoe arms
Site Servicing	<ul style="list-style-type: none"> • Railway signalling infrastructure and utilities such as sewers, water, electrical, communications, gas, and others will be constructed, relocated or protected to facilitate Project implementation, as required. 	<ul style="list-style-type: none"> • Excavation equipment including backhoe, dump trucks, soil removal equipment, jackhammers • Vacuum trucks
Temporary Road Closures	<ul style="list-style-type: none"> • Temporary road closures, as required. 	<ul style="list-style-type: none"> • Temporary traffic control devices such as signs, signals, barriers, traffic barrels
Stormwater Management	<ul style="list-style-type: none"> • All precipitation falling within the project site(s) will be managed as stormwater within a designed system of collection, conveyance, retention and discharge features, as required. The system will be designed and operated in compliance with applicable standards and regulatory requirements. Surface flows within the site will be managed within the site to ensure discharge to off-site receivers (i.e., municipal storm sewers) is appropriate in terms of water quantity and quality. 	<ul style="list-style-type: none"> • Site compaction equipment and general grading equipment. • Groundwater pumping equipment.

2.2.1 Construction Staging and Laydown Areas

Construction staging and laydown areas are used for the storage and assembly of construction equipment, storage of materials and other supplies, supporting activities (e.g., housing of equipment that forms concrete to support the installation of trackwork within the subway tunnels), and placement of office trailer(s), as required.

While the proposed locations of the construction staging and laydown areas associated with the TBM launch and extraction sites have been identified (see **Appendix A**), the specific locations of construction staging areas required to support the construction of other Project components will be identified as project planning and design progress. These areas will be selected such that the potential environmental impacts are reduced to the extent feasible.

3.0 EPR Addendum Process

Metrolinx is of the opinion that it is still appropriate to proceed with the YNSE transit project. Therefore, this Addendum is being carried out in accordance with *Ontario Regulation 231/08 (O. Reg. 231/08)*, made under the *Environmental Assessment Act*. *Section 15, O. Reg. 231/08* requires an Addendum process to be carried out to address any changes made to the transit project following the original Statement of Completion that are considered to be inconsistent with the original Environmental Project Report (EPR).

Furthermore, the introduction of *O. Reg. 342/20 (June, 2020)* amending *O. Reg. 231/08* resulted in the following changes to the requirements of the EPR Addendum process for the four priority subway extension projects (including the YNSE) (**Figure 3-1**):

- The proponent shall establish an issues resolution process to attempt to resolve:
 - a. any concerns raised by Indigenous Nations or interested persons in a way that does not cause unreasonable delay to the implementation of the transit project; and
 - b. any adverse impacts to the existing aboriginal or treaty rights of the aboriginal peoples of Canada, as recognized and affirmed in section 35 of the *Constitution Act, 1982*, related to the change. *O. Reg. 342/20, s. 12 (8)*"

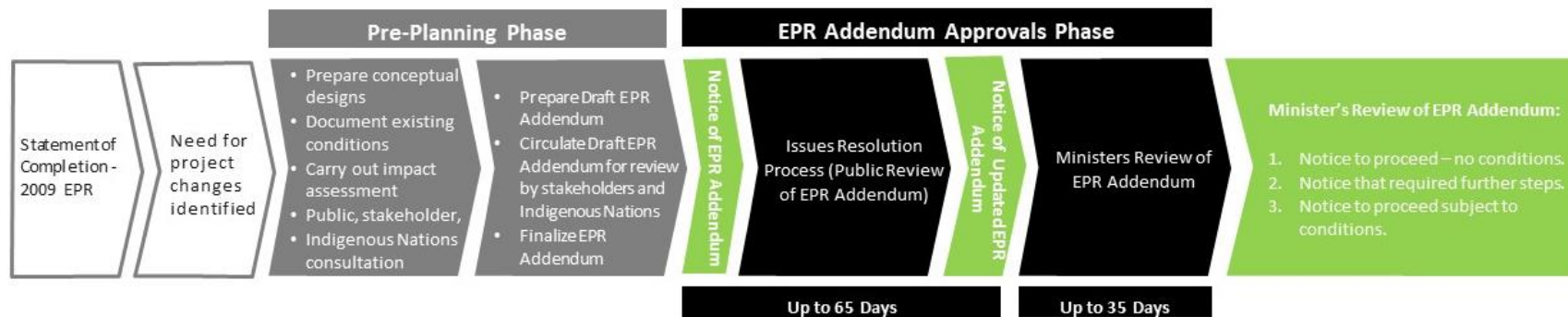


Figure 3-1 EPR Addendum Process – Priority Transit Subway Projects

In accordance with *Section 15, O. Reg. 231/08*, Metrolinx has determined that the changes to the Project (as described in **Section 2.0** of this document) are significant and therefore necessitate completion of an EPR Addendum to: evaluate and document the updates to the Project description, update existing conditions, carry out associated environmental impact assessment studies, identify mitigation and monitoring requirements, and undertake public, stakeholder and Indigenous Nations consultation.

Furthermore, as per *Section 16, O. Reg. 231/08*, since the construction of the Project has not commenced within 10 years of the issuance of the Statement of Completion (originally issued in 2009), Metrolinx is required to re-examine existing conditions as well as potential environmental impacts and mitigation measures documented in the previously approved EPR to ensure they are still valid and subsequently carry out additional environmental studies as appropriate.

Therefore, this EPR Addendum is structured to meet the requirements of *O. Reg. 231/08*, which have been outlined in **Table 3-1**.

Table 3-1 O. Reg. 231/08 Requirements and How Requirements Have Been Addressed

<i>O. Reg. 231/08 Subsection</i>	<i>O. Reg. 231/08 Requirement</i>	<i>How Requirement has been addressed by Metrolinx within this EPR Addendum</i>
15 (1)	If, after submitting a statement of completion of the transit project assessment process, the proponent wishes to make a change to the transit project that is inconsistent with the environmental project report referred to in that statement, the proponent shall prepare an addendum to the environmental project report that contains the following information:	N/A (refer to rows below)
15 (1)(1)	A description of the change.	Section 2.1, Section 2.2 and Section 3.1
15 (1)(2)	The reasons for the change.	Section 2.1 and Section 2.2
15 (1)(3)	The proponent's assessment and evaluation of any impacts that the change might have on the environment.	Section 5.0
15 (1)(4)	A description of any measures proposed by the proponent for mitigating any negative impacts that the change might have on the environment.	Section 5.0 and Section 6.12
15 (1)(5)	A statement of whether the proponent is of the opinion that the change is a significant change to the transit project, and the reasons for the opinion.	Section 3.1
16	If the project commencement date of a transit project does not occur within 10 years after the earliest date the proponent was permitted by subsection 14 (1) to submit statements of completion of the transit project assessment process, the proponent shall not proceed with the project unless	N/A (refer to rows below)
16 (a)	The proponent has prepared a review of the transit project that includes,	

<i>O. Reg. 231/08 Subsection</i>	<i>O. Reg. 231/08 Requirement</i>	<i>How Requirement has been addressed by Metrolinx within this EPR Addendum</i>
16 (a)(i)	An analysis of existing environmental conditions at the site of the transit project, and	Section 4.0
16 (a)(ii)	An analysis of whether any changes are required to the measures for mitigating any negative impacts that the transit project may have on the environment;	Section 5.0
16 (b)	The proponent has posted the review on its website, if any;	www.metrolinxengage.com/en/yonge-north-subway-extension
16 (c)	the proponent has complied with section 15 with respect to any changes to the transit project; and	Refer to applicable rows above.
16 (d)	the proponent is of the opinion that it is still appropriate to proceed with the transit project.	Section 3.0

3.1 EPR Addendum Steps

The following steps were undertaken by Metrolinx as part of completing the YNSE EPR Addendum process:

- Identify changes to the proposed transit project;
- Update existing environmental conditions and carry out environmental impact assessment studies;
- Carry out public, stakeholder and Indigenous Nations consultation as required;
- Prepare and make available for review an EPR Addendum for 30-day public review;
- Prepare and distribute a Notice of EPR Addendum;
- Public review of the EPR Addendum;
- Implement the Issues Resolution Process with Indigenous Nations and/or affected Interested Parties to attempt to resolve any concerns raised by reviewers, in a way that does not cause unreasonable delay to the implementation of the Project;
- Within 65-days of the issuance of the Notice of EPR Addendum, Metrolinx will update the EPR Addendum:
 - With a description of the issues resolution process;
 - What Metrolinx did to address any concerns raised by reviewers; and,
 - Any impacts to the timeline for implementation of the Project as a result of how concerns have been addressed.
- Once the EPR Addendum has been updated, Metrolinx will issue a Notice of Updated EPR Addendum and post the updated Report to the Project website.

- Within 35-days after receipt of the Notice of Updated EPR Addendum, the Minister may issue a notice only if:
 - the Minister is of the opinion that the way in which Metrolinx addressed a concern raised during the issues resolution process would cause unreasonable delay to the implementation of the Project, and the conditions in the Minister's notice modify the way in which the concern is addressed in the updated EPR Addendum without causing unreasonable delay to the implementation of the Project; or
 - the Minister is of the opinion that the change may have an adverse impact on the existing aboriginal or treaty rights of the aboriginal peoples of Canada, and the conditions may prevent, mitigate or remedy the adverse impact.

The implementation of the transit project may proceed if no notice is received with the 35-day period, the Minister informs Metrolinx that no notice will be issued, or if the requirements of the Minister's notice have been satisfied.

3.2 Study Area

The YNSE EPR Addendum Study Area (refer to key map presented in **Figure 3-2**) generally encompasses the proposed project components (i.e., subway alignment, Stations, Train Storage Facility, launch and extraction shafts, and related ancillary components) and extends approximately 9 kms in length, commencing at the existing Finch Station along the existing Line 1 Yonge–University in the City of Toronto, and extends northerly through the City of Vaughan (to the west) and City of Markham (to the east), to Moonlight Lane (just north of the proposed TSF) in the City of Richmond Hill, York Region.

With reference to the more detailed project mapping found in **Appendix A**, the defined Study Area reflects the proposed location of the YNSE infrastructure components as well as a buffer zone that accounts for the area that may be potentially impacted by future project design refinements and/or modifications. Such design changes (if applicable) will be further defined and confirmed as part of the subsequent detailed design stage of the Project.

3.2.1 Study Area Segments

For reporting purposes and to better characterize the findings of the various environmental and technical studies, the Study Area was further sub-divided into three (3) geographic segments (see **Figure 3-2**).

3.2.1.1 Segment 1 – Finch Station to Clark Station (Below Grade)

Segment 1 starts at the existing Finch Station and extends northward to the proposed Clark Station. It should be noted that this segment is inclusive of the proposed Clark Station and the proposed Cummer Station, Cummer Station bus loop, Steeles Station, and Steeles Station bus terminal. The entirety of this segment will be below grade. At Steeles Avenue, the Project Study Area crosses the boundary between the City of Toronto and York Region, for which Yonge Street serves as a boundary between the City of Vaughan to the west and the City of Markham to the east.

3.2.1.2 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

Segment 2 starts immediately beyond the limits of the proposed Clark Station and extends northward to the proposed portal structure and launch shaft location, located south of Langstaff Road East within the City of Markham. This segment is inclusive of the entirety of the proposed portal and launch shaft footprint area, extending north to the proposed Bridge Station and west from the CN rail corridor towards Ruggles Avenue. It also includes the proposed Royal Orchard Station. This segment runs below grade until it reaches the tunnel portal, where it emerges to the surface. Segment 2 ends immediately north of Langstaff Road East, south of Highway 407 in the City of Richmond Hill within York Region.

3.2.1.3 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

Segment 3 starts immediately beyond the limits of the proposed portal and launch shaft location, near the proposed Bridge Station, and extends northward to Moonlight Lane which marks the northernmost Study Area limit. This segment, located within the City of Richmond Hill, includes the proposed High Tech Station and proposed TSF. The entirety of Segment 3 is planned to be at grade.

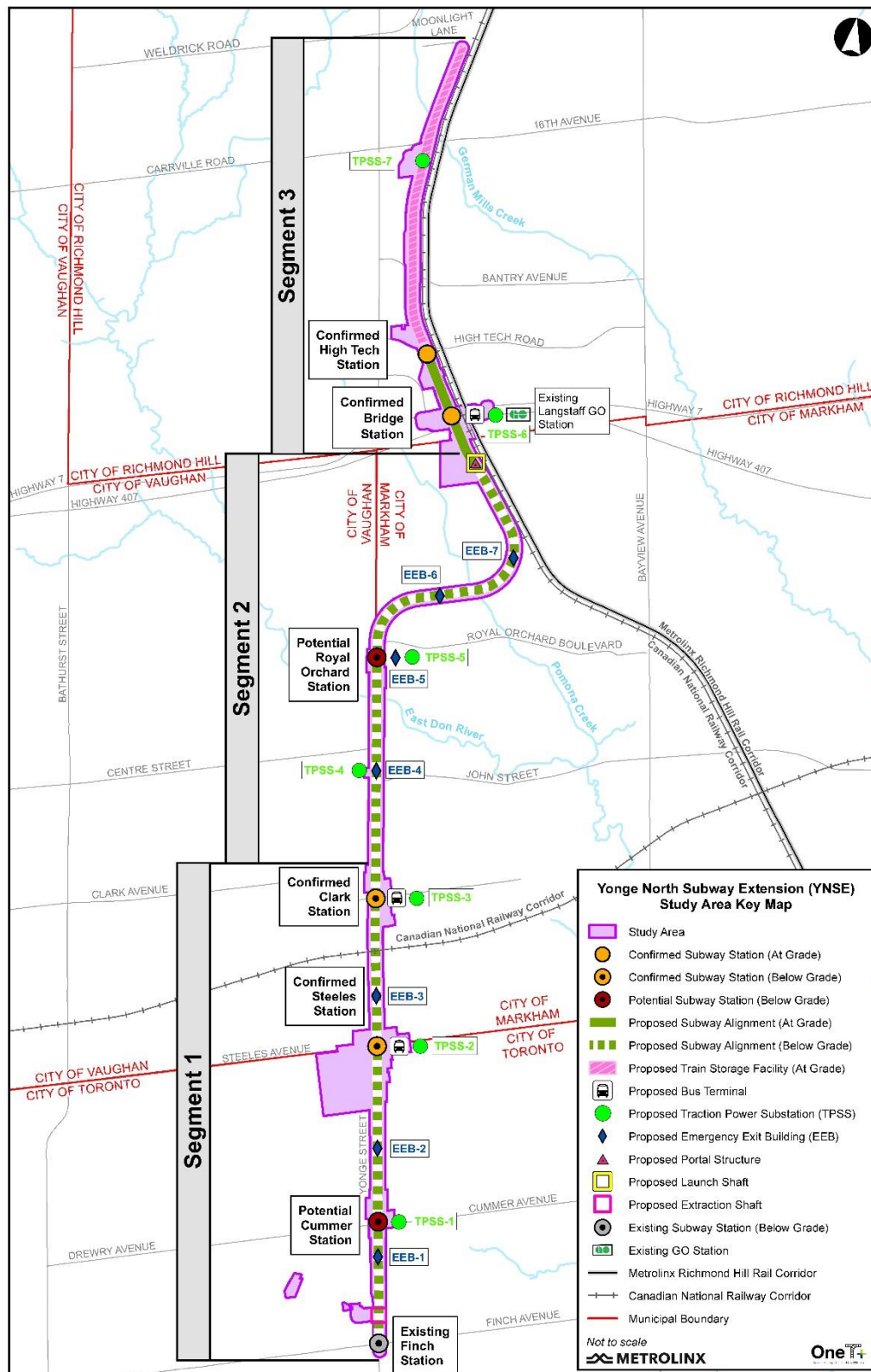


Figure 3-2 YNSE EPR Addendum Study Area Key Plan Map

3.3 Future Project Design Changes

This EPR Addendum is based on the conceptual engineering design available at the time of authoring this report. It is acknowledged that there is potential for further changes to the proposed design that may arise in the future as project planning and design progress. Such changes will be reviewed by Metrolinx in the context of applicable regulatory requirements and follow the applicable project changes process as described in *O. Reg 231/08*. Any resulting environmental assessment studies will be identified and carried out by Metrolinx, and any applicable permits/approvals will be obtained as appropriate prior to project implementation.

4.0 Existing Conditions

In accordance with *O. Reg. 231/08, s. 16*, this section provides a summary of existing conditions within the EPR Addendum Study Area. The existing environmental conditions described in the 2009 EPR and the 2014 EPR Addendum were reviewed for applicability to conditions at the time of writing this EPR Addendum and were updated (based on a combination of desktop study and field investigations) to describe current conditions wherever applicable.

4.1 Study Areas

A number of environmental studies were conducted in support of the EPR Addendum. Recognizing that each environmental discipline has different factors and guidelines to be considered, and the desire to establish conservative geographic parameters for collecting existing conditions data, the discipline specific Study Area limits as presented in **Table 4-1** were established. Note that Project footprint is defined as footprints of the proposed tunnel alignment, station boxes and other Project components as presented in **Appendix A** maps.

Table 4-1 Study Areas for Existing Conditions Data Collection

Environmental Discipline	Study Area	Rationale, Supporting Guideline Document
Natural Environment	<ul style="list-style-type: none"> 120m from the proposed Project footprint. 	Industry standard as defined in the Ministry of Natural Resources & Forestry (MNDMNRF)'s 2010 <i>Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement</i> . This buffer ensures that natural heritage features on "adjacent lands" as defined by the <i>Provincial Policy Statement</i> are identified and adequately protected from Project impacts, where possible.
Socio-Economic & Land Use	<ul style="list-style-type: none"> 250m around the centrepoin of the road intersection of each proposed station location. 150m from Project footprint elsewhere along the alignment. 	This buffer has been applied in socio-economic studies for approved transit project environmental assessments of similar scope.
Archaeology	<ul style="list-style-type: none"> 50m from the EPR Addendum Study Area. 	Exceeds the Ministry of Heritage, Tourism, Sport, and Culture Industry (MHSTCI)'s <i>Standards and Guidelines for Consultant Archaeologists (2011)</i> by encompassing land parcel data sufficient to cover all anticipated impacts to potential archaeological resources in areas associated with the Project footprint and beyond.
Cultural Heritage	<ul style="list-style-type: none"> Project Footprint. 25m Study Zone: Located immediately beside the anticipated physical Project footprint and has potential for direct impacts to identified Built Heritage 	Recommended by the Ontario Ministry of Transportation (MTO)'s <i>Environmental Guide for Built Heritage and Cultural Heritage Landscapes (2013)</i> and consistent with typical approaches taken for transit

Environmental Discipline	Study Area	Rationale, Supporting Guideline Document
	Resources (BHRs) and Cultural Heritage Landscapes (CHLs). <ul style="list-style-type: none"> 50m Study Zone: Located immediately beside the 25m Study Zone and includes lands where direct impacts are unlikely to occur but indirect impacts to BHRs and CHLs may be identified. 	projects as it considers both direct and indirect potential impacts to BHRs and CHLs.
Air Quality	<ul style="list-style-type: none"> 500m from the proposed Project footprint. 	This buffer has been applied in accordance with the Ministry of Transportation's Environmental Guide for Assessing and Mitigating the Air Quality Impact and Greenhouse Gases of Provincial Transportation Projects (Ministry of Transportation, 2020), which states that for major roads, a distance of 500 metres is expected to capture the maximum contaminant concentrations.
Noise and Vibration	<ul style="list-style-type: none"> 300m from the proposed Project footprint. 	Based on requirements from the U.S. Federal Transit Administration (FTA-VA-90-1003-06) and U.S. Federal Highway Administration (FHWA Highway Construction Noise Handbook, FHWA-HEP-06-015) guidance.
Transportation	A distinct Study Area was defined around each proposed station, as follows: <ul style="list-style-type: none"> Finch Station: bounded by Hendon Avenue/Bishop Avenue to the north, Kempford Boulevard to the south, and Finch Avenue to the east and west. Cummer Station: bounded by Patricia Ave. to the north, Turnberry Court to the south, Cummer Avenue to the east, and Drewry Avenue to the west. Steeles Station: bounded by Meadowview Avenue to the north, Athabaska Avenue to the south, and Steeles Avenue to the east and west. Clark Station: bounded by Arnold Avenue/Elgin Street to the north, Glen Cameron Road to the south, and Clark Avenue to the east and west. Royal Orchard Station: bounded by Uplands Avenue to the north, Centre Street/Thornhill Summit Drive to the south, and Royal Orchard Boulevard to the east. 	Inclusive of three (3) signalized intersections adjacent to each proposed station and the next signalized intersection in each direction. This facilitates necessary demand assessment, network circulation analysis, and inputs into microsimulation analysis tools.

Environmental Discipline	Study Area	Rationale, Supporting Guideline Document
	<ul style="list-style-type: none"> Bridge Station: bounded by Highway 7 Ramp/Garden Avenue to the north, Highway 407 East Ramp/Langstaff Road East to the south, and Highway 407 West Ramp to the west. High Tech Station: bounded by Scott Drive/Bantry Avenue to the north, High Tech Road to the South, and Westwood/Beresford Drive to the west. 	

4.2 Natural Environment

4.2.1 Methodology

The following section provides a summary of the methodology developed to collect and document natural environment existing conditions information within the Natural Environment Study Area. A more detailed overview of this methodology is provided in **Appendix B**, Natural Environment Existing Conditions & Impact Assessment Report.

4.2.1.1 Data Gap Analysis

A review of available background information was undertaken to identify any relevant data gaps. This data gap analysis identified areas where data was non-existent from previous studies, and/or new data needed to be collected, and/or existing available data required review and updates or augmentation.

A key finding of the data gap analysis undertaken was that the vast majority of data available from previously completed studies in the vicinity of the Study Area is outdated (i.e., greater than five (5) years old).

As a result, field investigations were completed as required. Field data is a primary source of information and will augment the older secondary source data presented within this report. Together, both the field data and data gathered from other desktop resources will inform the subsequent impact assessment phase of the Project.

4.2.1.2 Desktop Data Collection

Data was collected from the following sources and utilized for purposes of documenting existing conditions within the Natural Environment Study Area:

- Toronto and Region Conservation Authority (TRCA) data in the vicinity of the Project;
 - Flora and fauna records from TRCA field investigations, Ecological Land Classification (ELC) data, natural cover, and geology.
- Information related to Redside Dace provided by the Department of Fisheries and Oceans Canada (DFO 2021).
- Open source data from Municipal Official Plans:
 - The Regional Municipality of York Official Plan (as amended) (York Region 2019);
 - Richmond Hill Official Plan (as amended) (Richmond Hill 2010);
 - City of Markham Official Plan (as amended) (City of Markham 2014);
 - City of Vaughan Official Plan (as amended) (City of Vaughan 2010);
 - City of Toronto Official Plan (as amended) (City of Toronto 2019); and

- Richmond Hill Centre Secondary Plan (2021).
- Other open source data:
 - Land Information Ontario (LIO), including delineation of PSWs;
 - MND MNRF Natural Heritage Information Centre (NHIC) database (MNRF 2019; 1km x 1km grid delineated with identifications numbers in **Appendix B**;
 - MNDMNRF GeoHub LIO (LIO) Aquatic Resource Area (ARA) Database (Ministry of Northern Development, Mines, Natural Resources and Forestry, 2021);
 - TRCA Watershed Fish Community Datasets – Open Data Portal;
 - Ontario Breeding Birds Atlas (2001-2005) (BSC et al. 2008; 10km x 10km grid 17PJ25 and 17PJ24);
 - Ontario Reptile and Amphibian Atlas (Ontario Nature 2020; 10km x 10km grid 17PJ25 and 17PJ24);
 - Ontario Butterfly Atlas (TEA 2018; 10km x 10km grid 17PJ25 and 17PJ24);
 - Atlas of the Mammals of Ontario (Dobbyn 1994);
 - Bat Conservation International Inc. (BCI 2019);
 - Aquatic Species at Risk (SAR) Mapping (DFO 2020);
 - eBird (eBird 2020); and
 - iNaturalist (which includes observations reported on the Herps of Ontario website) (iNaturalist 2020).
- Environmental guides and reference manuals:
 - Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, Second Edition (MNR 2010);
 - Ecological Land Classification for Southern Ontario (Lee et al. 2009); and
 - Significant Wildlife Habitat Technical Guide (MNR 2000).
- Other online resources:
 - Endangered Species Act (ESA) Online Portal;
 - Species at Risk Act (SARA) Public Registry; and
 - Aerial photography/imagery.

4.2.1.3 Field Investigations

The completion of field investigations confirmed and supplemented desktop research and outdated data, as necessary. These field investigations included the following:

- Terrestrial field investigations, including targeted investigations for:
 - SAR occurrences and suitable SAR habitat;
 - Significant woodlands;
 - Vegetation surveys (e.g., ELC);
 - Wildlife surveys (e.g., breeding bird surveys); and
 - Surveys for natural heritage features.
- Fish and fish habitat assessments of the watercourses within the Study Area

4.2.2 Segment 1 – Finch Station to Clark Station (Below Grade)

4.2.2.1 Natural Heritage Features

The current physical environment associated with Segment 1 is entirely urban and dominated by residential and commercial buildings.



Figure 4-1 Physical Environment South of Proposed Clark Station

There is one small piece of a polygon designated as York Region Woodland within this segment. The provincial data lists this polygon as a hedgerow. Hedgerows, by definition, are planted shrubs and trees forming a ‘fence’.

4.2.2.2 Surface Water

There are no watercourses or waterbodies within Segment 1.

4.2.2.3 Fish and Fish Habitat

There are no watercourses or waterbodies within Segment 1.

4.2.2.4 Vegetation and Vegetation Communities

During 2021 OneT+ field investigation and a 2003 field investigation as reported by LGL Limited Environmental Research Associates (2005), a total of 100 vegetation species were recorded within Segment 1. Species are described by their L-rank, a ranking system used by the TRCA to assess the rarity of species found within their jurisdiction. Higher numbers indicate more common species, with L5 being the most common and L1 being the least. L+ species are introduced.

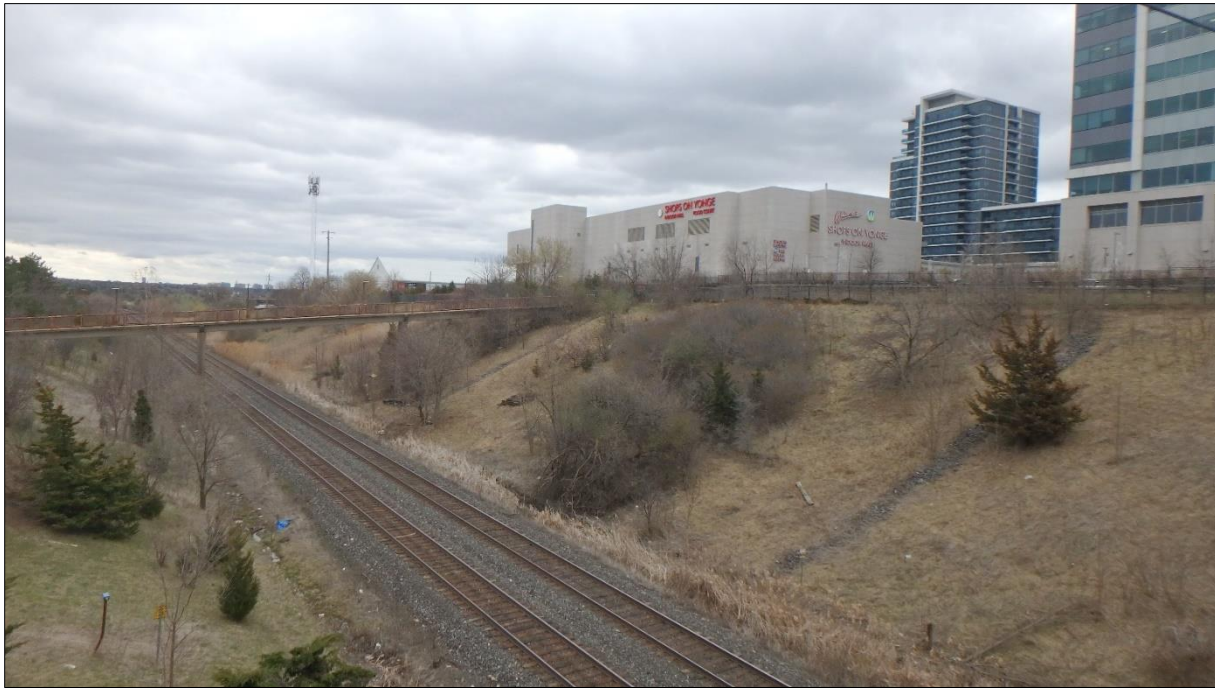


Figure 4-2 Vegetation Communities Near Proposed Clark Station

The following is a brief summary of the vegetation species recorded:

- The majority of the species (94) recorded were ranked L5 or L+; i.e., secure throughout the region or introduced, respectively, or were not identified to species level.
- Two (2) species, Flat-stemmed Spikerush and Mugo Pine, have not been assigned a L-Rank by TRCA, Greater Toronto Region, or York Region. The spikerush is widespread but local in southern Ontario, meaning that the species is locally abundant, typically in alvars (NHIC database). It is likely not assigned a rank by TRCA as appropriate habitat for the species does not occur in the watershed. While this species can be found along roadsides in certain locations, spikerush species can be difficult to identify, and this record may be a case of misidentification. Mugo Pine was noted as a planted tree during 2021 field investigations. This species is not assigned an L-Rank as it is not known to grow outside of cultivation in the area.
- Two (2) species, Ground Juniper and Tower-mustard, were ranked L3; i.e., species of regional conservation concern. Ground Juniper (reported as *Juniperus communis*) is abundant in the horticulture trade and frequently used as a shrub planting in gardens. As there are no natural heritage features within Segment 1, it is likely this species was not naturally occurring. Tower-mustard is provincially and globally secure and considered widespread in southern Ontario in roadsides and waste places. NHIC reports that this species is quite likely both native and introduced in Ontario.
- Two (2) species, Freeman's Maple and Broad-leaf Cattail are ranked L4; i.e., species of conservation concern within the urban area. Freeman's Maple was observed as a planted species, while Broad-leaf Cattail was observed in small ditch features.

A vegetation species list, compiled from multiple sources, is provided in **Appendix B**. As identified above, there are no ELC polygons reported within this segment. Where available, vegetation communities in Segment 1 were documented by desktop studies (**Figure 4-5**). Vegetation communities reported by OneT+ in the Study Area Segment 1 include the following:

- Cultural Woodland (CUW);
- Cultural Plantation (CUP); and
- Cultural Thicket (CUT).



Figure 4-3 Vegetation Communities Near Proposed Cummer Station



Figure 4-4 Vegetation Communities Near Proposed Clark Station

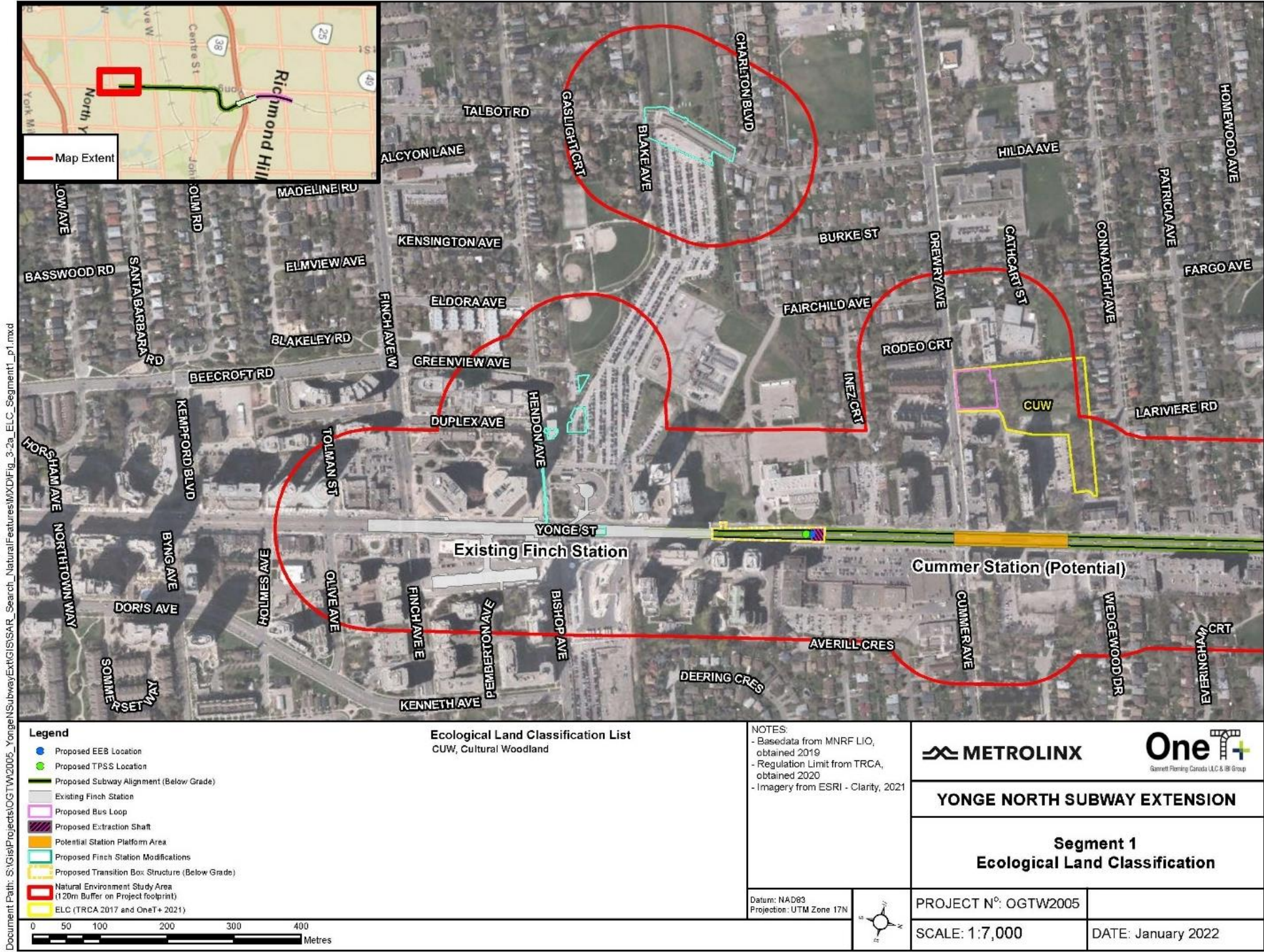


Figure 4-5 Segment 1 Ecological Land Classification



Figure 4-6 Segment 1 Ecological Land Classification

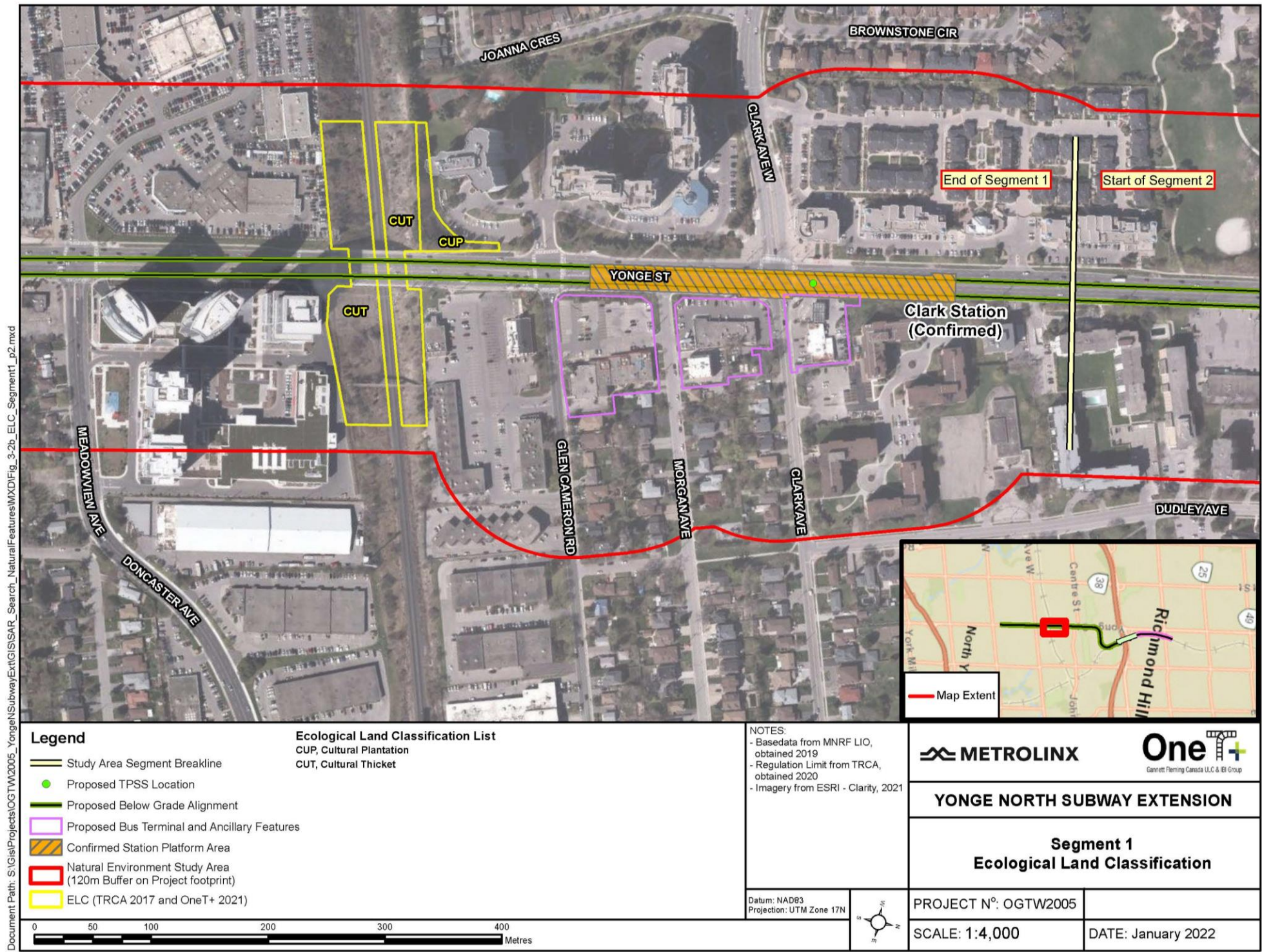


Figure 4-7 Segment 1 Ecological Land Classification

4.2.2.5 Wildlife and Wildlife Habitat

Terrestrial wildlife species that may be found within Segment 1 are primarily those that are common to the region and adapted to a disturbed urban environment (e.g., Grey Squirrel, Raccoon, and small rodents). Based on review of available background information, species of special concern that may be found within Segment 1 include Common Nighthawk, Eastern Wood Pewee, Monarch, and Peregrine Falcon. Species which have been reported in atlases for Segment 1 are compiled from multiple sources in **Appendix B**.

4.2.2.6 Species at Risk

The following seven (7) Threatened/Endangered SAR have been reported within the past 20 years in the vicinity of Segment 1, or (in the case of mammal species) their range and potential of occurrence extends into the wider Study Area and its vicinity. The probability of occurrence is indicated in **Table 4-2**. Bank Swallow, Bobolink and Eastern Meadowlark species have low probability of occurrence due to lack of suitable habitat. Species-specific details (including at risk status, source, preferred habitat) and probability of occurrence are summarized in **Appendix B**.

Table 4-2 SAR Species and Probability of Occurrence in Segment 1

Species	Latin Name	Classification	S-Rank	Probability of Occurrence	Source
Barn Swallow	<i>Hirundo rustica</i>	SARA: Threatened ESA: Threatened	S4B	High	OBBA, eBird
Butternut	<i>Juglans cinerea</i>	SARA: Endangered ESA: Endangered	S3	Moderate	iNaturalist, TRCA
Chimney Swift	<i>Chateura pelagica</i>	SARA: Threatened ESA: Threatened	S4B, S4N	High	OBBA, eBird, TRCA
Eastern Small-footed Myotis	<i>Myotis leibii</i>	SARA: No Status ESA: Endangered	S2S3	Moderate	BCI, Humphrey 2017
Little Brown Myotis	<i>Myotis lucifugus</i>	SARA: Endangered ESA: Endangered	S4	Moderate	BCI, Humphrey and Fotherby 2019
Northern Myotis	<i>Myotis septentrionalis</i>	SARA: Endangered ESA: Endangered	S3	Moderate	BCI, Humphrey and Fotherby 2019
Tri-colored Bat	<i>Perimyotis subflavus</i>	SARA: Endangered ESA: Endangered		Moderate	BCI, Humphrey and Fotherby 2019

4.2.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

4.2.3.1 Natural Heritage Features

Natural heritage features within Segment 2 include the following:

- York Region Woodland (derived from provincial mapping) and Greenland System;
- City of Markham Greenway (2014 Official Plan natural heritage system);

- City of Vaughan Core Features and the East Don River Branch is considered a Greenbelt Plan External Linkage;
- TRCA regulated areas;
- Two (2) watercourse crossings (i.e., East Don River Branch and Pomona Creek); and
- Greenbelt designation (i.e., Urban River Valley) associated with the East Don River Branch.

The natural heritage data from secondary sources is mapped in **Appendix B**.



Figure 4-8 Cricklewood Park South of Proposed Royal Orchard Station

4.2.3.2 Surface Water

The two primary surface watercourses that intersect the proposed YNSE alignment are the East Don River and Pomona Mills Creek. These watercourses are further described within the sub-sections that follow. There are also areas within Segment two where watercourses travel beneath Yonge Street through long, piped sections in the vicinity of John Street and Elgin Street crossings of Yonge Street.

4.2.3.2.1 East Don River

This watercourse crosses Yonge Street approximately 380m south of Royal Orchard Boulevard. A tributary of the East Don River flows underground (enclosed in a pipe) within the vicinity of Yonge Street. This tributary crosses Yonge Street south of John Street and eventually outlets to the Main Branch of the East Don River, at Steeles Avenue.

4.2.3.2.2 Pomona Mills Creek

This watercourse crosses Yonge Street just north of Highway 7. It flows through a culvert underneath Highway 7, at surface through the N-W Highway 7/407 ETR interchange loop and underneath the existing Highway 407 ETR and Langstaff Road through another culvert. A secondary tributary/drainage feature of Pomona Mills Creek also lies within this segment. This watercourse is within the vicinity of the large Stormwater Management Pond and hydro corridor north of Highway 7 and east of Yonge Street.



Figure 4-9 Pomona Mills Creek North of Royal Orchard Boulevard

4.2.3.3 Fish and Fish Habitat

Within Segment 2, fish habitat is present within Don River East Branch and Pomona Creek, which cross the Study Area near STA 5+000 and STA 6+200, respectively. A fish species list for the watershed, compiled from multiple sources, is provided in **Appendix B**.

The Don River East Branch supports a variety of warmwater and coldwater baitfish and sportfish species. Coldwater species that have been reported within the Don River East Branch include Mottled Sculpin, Brown Trout, and Rainbow Trout. The majority of the trout species sampled were found upstream, near Highway 407 and Bathurst Street (greater than 2.5km upstream of the crossing of Don River East Branch and the proposed Project alignment). However, in 2005, Rainbow Trout was sampled immediately upstream of Yonge Street. Redside Dace records also exist for the Don River East branch, with records from 2005 noted in the EPR (2009) indicating that Redside Dace have been collected at three stations within the Don River East Branch, all of which are located north of Highway 407 and are 4.3-6 km upstream of Yonge Street where the Project crosses under East Don River. Older records indicate Redside Dace was collected in the main East Don River in 1995 at a station located approximately 2.3 km upstream of Yonge Street. Downstream of Yonge Street, records do exist but date back to 1985 and 1949, at two stations located approximately 2.55 km downstream and 1.42 km downstream of Yonge Street respectively.

In addition, as reported in the 2009 EPR, the following species have been captured within the Don River East Branch within the past 20 years:

- Blacknose Dace
- Bluntnose Minnow
- Brook Stickleback
- Brown Trout
- Creek Chub
- Darter sp.
- Fathead Minnow
- Johnny Darter
- Longnose Dace
- Mottled Sculpin
- Pumpkinseed
- Rainbow Trout
- Redside Dace
- White Sucker

Within Study Area Segment 2, the Don River East Branch flows west to east under Yonge Street. Within the assessed upstream reach, the Don River East Branch is representative of a naturalized system with a morphology that primarily consists of runs with flat sections. At the time of field reconnaissance, the mean wetted width was approximately 10 m, and the mean wetted depth approximately > 1 m. Substrates were mainly comprised of cobble, gravel, sand and silt in order of dominance. Banks were slightly unstable and densely vegetated by trees and herbaceous species on the south bank and trees, herbaceous species and armour stone on the north bank. Riparian cover was low (5% cover) which consisted of primarily herbaceous vegetation and overhanging trees. Instream cover (5% total cover) was provided by submergent species (100%). Surrounding lands were observed to be forested and manicured areas with a large concrete storm sewer present on the upstream left bank.

Within the large arched culvert, the mean wetted width was approximately 13 m and the mean wetted depth approximately 0.4 m. Substrates were comprised of cobble, gravel, sand, and silt in order of dominance with the morphology consisting of flats.

The 200 m downstream section consisted of riffle and run sections, which at the time of field reconnaissance, the mean wetted width was approximately 6 m and the mean wetted depth approximately 0.2 m. Substrates consisted of cobble, gravel and sand and ranged in dominance within the different morphological sections. Banks were slightly unstable with signs of erosion in areas. Riparian cover was moderate (60% cover) which consisted of overhanging trees and herbaceous vegetation. Instream cover (40% total cover) was provided by cobble. Surrounding lands were observed to be forested areas.

No barriers to fish passage were identified within the investigated reach. Primary fish collection was not undertaken as secondary source records included fish community data that occurred within the last 10 years. Several fish species were observed during the field investigations including Leuciscidae, Salmonidae and White Sucker. The known fish community assemblage (see **Appendix B – Table B-6**) for this system is comprised of mixed warm, cool and coldwater species. The assessed reach provides habitat for migration, spawning, feeding and rearing and is generally non-limiting throughout (i.e., no sensitive, important or exceptional habitat was observed). No habitat classified as critical by the *Species at Risk Act* (SARA) was identified.

Pomona Creek

Although Pomona Creek is classified as coldwater, TRCA fisheries records (1949 database) for stations located approximately 780m downstream of Langstaff Road (the closest station to Project limits), captured only warmwater fish species. Data collected in 1984 is available for a fish station located closer to the Don River East Branch mouth, approximately 2.44km downstream of Langstaff Road. These records are considered historic and cannot be relied upon as an accurate representation of the current fish community within this segment. A review of MNDMNR's LIO GeoHub Aquatic Resource Area (ARA) line segment database for Pomona Creek provided more recent records (2019) including Blacknose Dace, Blacknose Shiner, Creek Chub, Northern Redbelly Dace, and White Sucker within close proximity to the Study Area.

Within the assessed upstream reach Pomona Creek flows north to south through the Study Area Segment 2 and is representative of a naturalized system with anthropogenically modified sections in the vicinity of the pedestrian bridge structure. The morphology consisted of flat, riffle and run sections. At the time of field reconnaissance, the mean wetted width was approximately 2.6 m and the mean wetted depth approximately 0.2 m. Substrates were comprised of gravel, cobble, sand, boulder, and silt in order of dominance. Banks were unstable with heavy erosion along the upstream left bank. Riparian cover was moderate (45% cover) which consisted of primarily herbaceous vegetation and overhanging trees. Instream cover (5% total cover) was provided by boulders (100%). Surrounding lands were observed to be forested and manicured areas with a pedestrian trail running parallel to the Creek.

Within the 200 m downstream section, similar anthropogenic modifications were observed in the way of armour stone placed along the right bank, and gabion baskets along the left bank. This reach consisted of flats, riffle, run, and pool sections, with the mean wetted width approximately 3.25 m and the mean wetted depth approximately 0.2 m. Substrates consisted of gravel cobble, sand, and clay. Banks were slightly unstable and with signs of erosion in areas. Riparian cover was moderate (75% cover) which consisted of overhanging trees and herbaceous vegetation. Instream cover (60% total cover) was provided by cobble, boulders, undercut banks and woody debris. Surrounding lands were observed to be forested areas with a pedestrian trail running parallel to the Creek.

No barriers to fish passage were identified within the investigated upstream reach; however, low flow impediments were observed within the downstream section. Primary fish collection was not undertaken as secondary source records included fish community data that occurred within the last 10 years with several Leuciscidae observed during the field investigations. The known fish community assemblage for this system is comprised of mixed warm and cool species. The assessed reach provides habitat for migration, spawning, feeding and rearing and is generally non-limiting throughout (i.e., no sensitive, important or exceptional habitat was observed). No habitat classified as critical by the Species at Risk Act (SARA) was identified.

4.2.3.4 Vegetation and Vegetation Communities

Information gathered during 2021 OneT+ field investigations, reported in the 2009 EPR, reported by LGL Limited Environmental Research Associates (2005), and data provided by TRCA through correspondence in 2020 was compiled to create a vegetation species list containing 134 species which is provided in **Appendix B**. With the exception of the data provided by TRCA, the specific location of these species within this segment is not available. Species are described by their L-rank, a ranking system used by the TRCA to assess the rarity of species found within their jurisdiction. Higher numbers indicate more common species, with L5 being the most common and L1 being the least. L+ introduced, non-native species.

The following is a brief summary of the vegetation species recorded:

- The majority of the species (121) recorded were ranked L5 or L+; i.e., secure throughout the region or introduced, respectively.
- One (1) species, Ginkgo, is not ranked by TRCA, as it is a horticultural plant not known to grow wild in the area.
- One (1) species, Red Pine, was ranked L1; i.e., species of regional conservation concern, regionally scarce due to either accidental occurrence or extreme sensitivity to human impacts. Red Pine (reported as *Pinus resinosa*) is a common forest tree in central Ontario but rare as a naturally growing tree in the Carolinian Zone. In Toronto, most populations are probably introduced as this tree is commonly planted due to its tolerance of dry rocky or sandy soils.
- One (1) species, White Spruce, was ranked L3; i.e., species of regional conservation concern, generally less sensitive and more abundant than L1 and L2 ranked species. White Spruce (reported as *Picea glauca*) is a widespread and locally dominant forest tree throughout most of the province. It is uncommon in the Carolinian Zone where most populations are probably introduced as it is commonly used in landscaping.
- Ten (10) species are ranked L4, i.e., species of urban conservation concern: Silver Maple, Loose-flowered Sedge, Silky Dogwood, Roundleaf Dogwood, Canada Wild-rye, American Beech, Bur Oak, Northern Red Oak, Pussy Willow and Broad-leaf Cattail. Most of these species were reported in background documents. Bur Oak was observed in the vicinity of the golf course south of Royal Orchard Boulevard.

Vegetation communities documented by OneT+ desktop and field studies and the TRCA in Segment 2 are mapped in **Appendix B, Table 4-10**, and **Table 4-11**. Vegetation communities in Study Area Segment 2 east of

Yonge Street have been delineated by the TRCA and two communities west of Yonge Street within the golf course have been delineated by OneT+. Vegetation communities include the following:

- Willow Shrub Riparian Bar (BBS1-2B)
- Exotic Cool-season Grass Graminoid Meadow (CUM1-b)
- Cultural Plantation (CUP)
- Black Walnut Deciduous Plantation (CUP1-3)
- Silver Maple Deciduous Plantation (CUP1-5)
- Restoration Deciduous Plantation (CUP1-A)
- Locust Deciduous Plantation (CUP1-c)
- Norway Maple – Conifer Mixed Plantation (CUP2-c)
- Horticultural Mixed Plantation (CUP2-h)
- Mixed Conifer Coniferous Plantation (CUP3-H)
- Native Deciduous Successional Savannah (CUS1-A1)
- Exotic Successional Savannah (CUS1-b)
- Native Deciduous Sapling Regeneration Thicket (CUT-A1)
- Native Deciduous Successional Woodland (CUW1-A3)
- Exotic Successional Woodland (CUW1-b)
- Deciduous Forest (FOD)
- Dry-Fresh Beech Deciduous Forest (FOD4-1)
- Dry-Fresh Exotic Deciduous Forest (FOD4-e)
- Dry-Fresh Sugar Maple Deciduous Forest (FOD5-1)
- Dry-Fresh Sugar Maple- Beech Deciduous Forest (FOD5-2)
- Gray Dogwood Cultural Thicket Type (CUT1-4)
- Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest (FOD5-7)
- Fresh-Moist Sugar Maple-Beech Deciduous Forest (FOD6-5)
- Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3)
- Fresh-Moist Black Walnut Lowland Deciduous Forest (FOD7-4)
- Fresh-Moist Manitoba Maple Lowland Deciduous Forest (FOD7-a)
- Fresh-Moist Hawthorn-Apple Deciduous Forest (FOD7-E)
- Dry-Fresh Hardwood-Hemlock Mixed Forest (FOM3-1)
- Fresh-Moist White Cedar-Sugar Maple Mixed Forest (FOM7-1)
- Fresh-Moist White Cedar-Hardwood Mixed Forest (FOM7-2)
- Forb Mineral Meadow Marsh (MAM2-10)
- Narrow-leaved Cattail Mineral Shallow Marsh (MAS2-1b)
- Reed Canary Grass Mineral Shallow Marsh (MAS2-d)
- Open Aquatic, unvegetated (OAO1)
- Silver Maple Mineral Deciduous Swamp (SWD3-2)
- Manitoba Maple Mineral Deciduous Swamp (SWD3-4)

- Willow Mineral Deciduous Swamp (SWD4-1)
- Fresh-Moist Tallgrass Prairie Planting (TPO2-A)



Figure 4-10 Example of Vegetation North of Proposed Clark Station

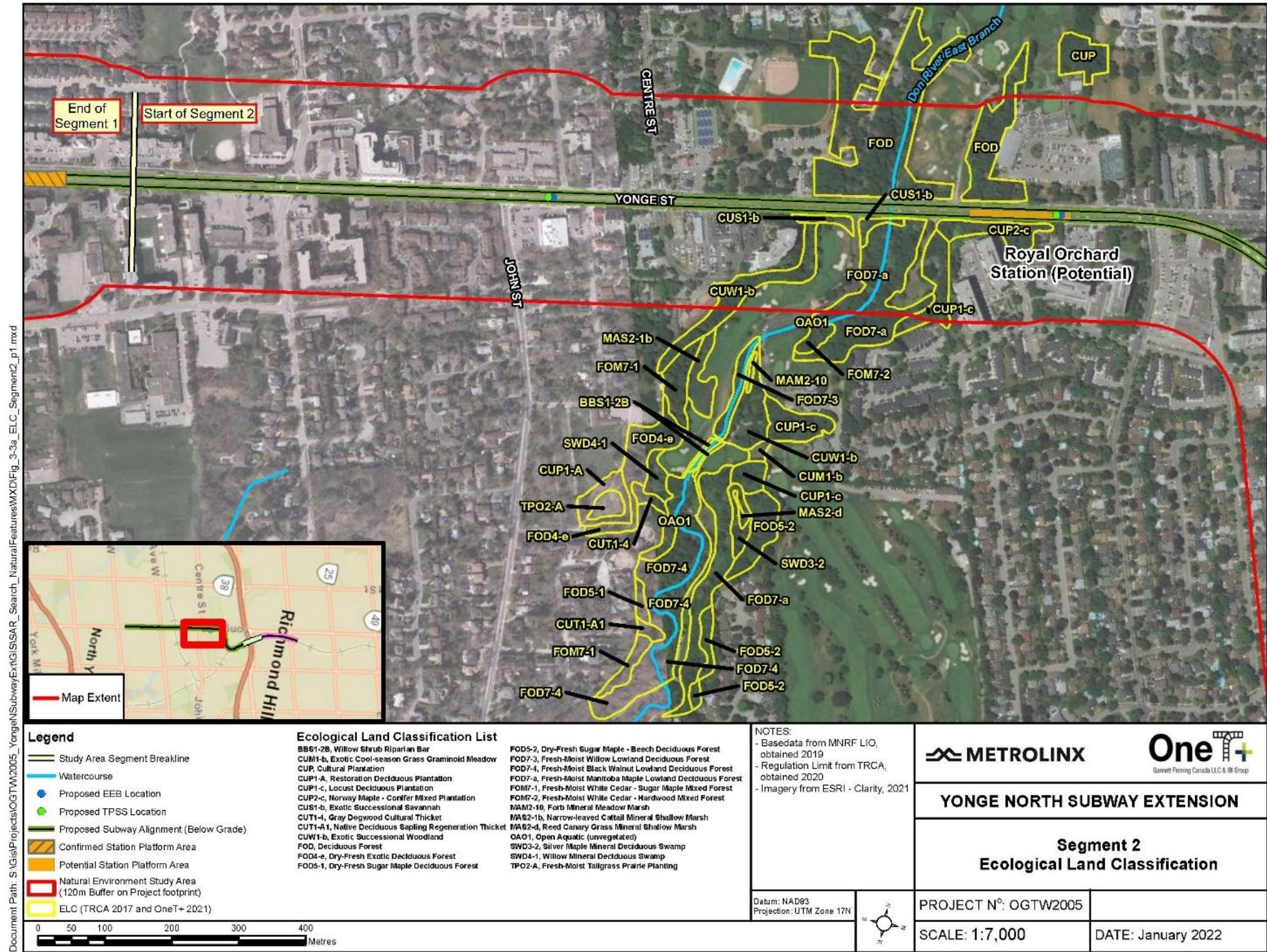


Figure 4-11 Segment 2 Ecological Land Classification

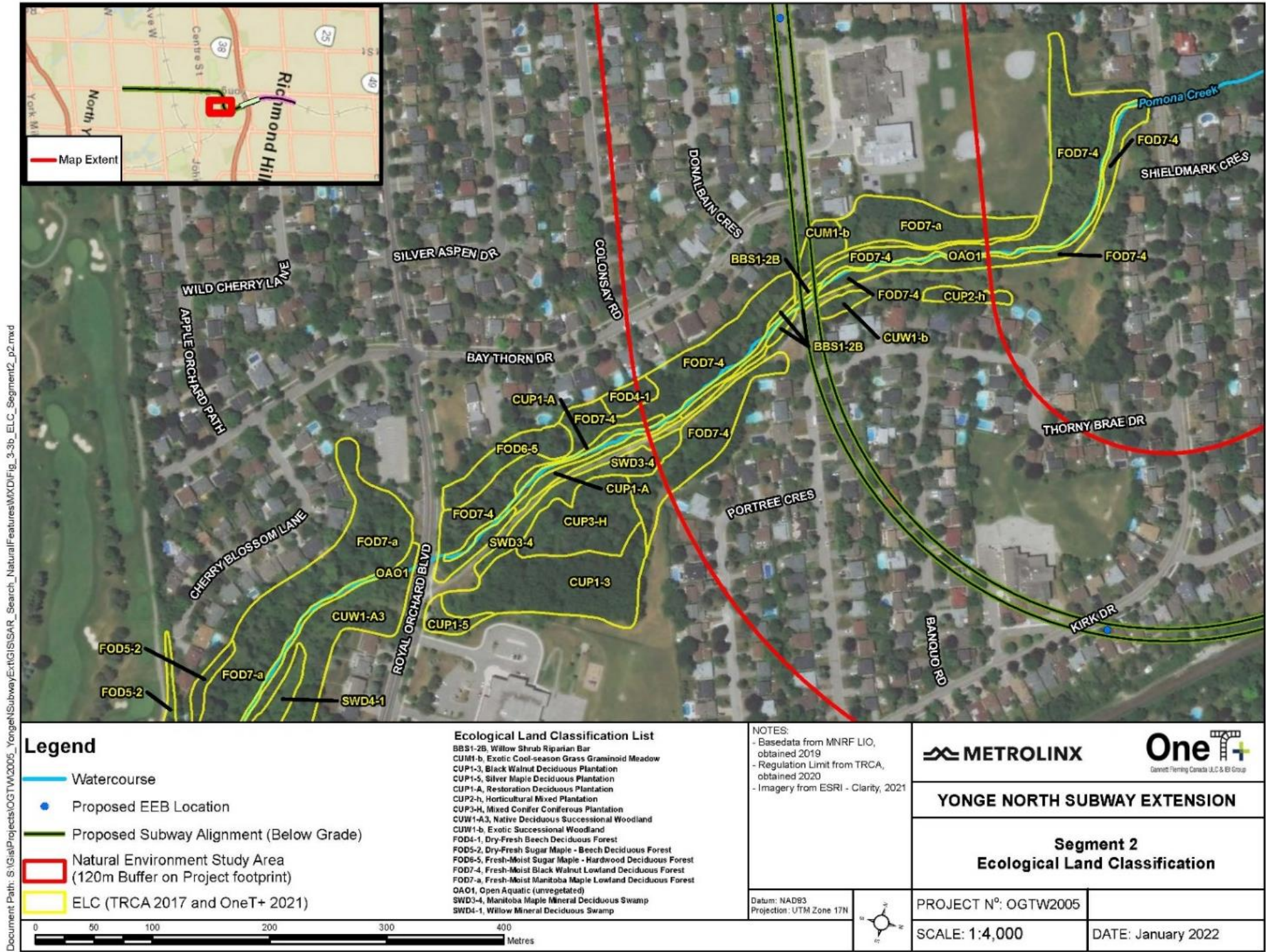


Figure 4-12 Segment 2 Ecological Land Classification (Continued)

4.2.3.5 Wildlife and Wildlife Habitat

The TRCA provided some location data for terrestrial wildlife species that may be found within Segment 2. Generally, most wildlife data are available from atlases that cover a relatively large and diverse area (i.e., within one of the 10km x 10km grid squares) or range mapping. Otherwise, terrestrial wildlife species that may be found are primarily those that are common to the region and adapted to a disturbed urban environment. Based on review of available background information, species of special concern that may be found within Segment 2 include Common Nighthawk, Eastern Wood-Pewee, Monarch, Peregrine Falcon, Wood Thrush, Northern Map Turtle, and Snapping Turtle.

Species that have been reported in the vicinity of this segment and those whose range extends into the Study Area are compiled from multiple sources in **Appendix B**. The TRCA data documents numerous L5 (i.e., secure throughout the region) and one L+ species (i.e., introduced). Four (4) L4 species (i.e., of urban concern) Gray Catbird, Red-breasted Nuthatch, Red-eyed Vireo, Green Frog were documented in Segment 2. These species breed throughout Ontario but could show declines if urban impacts are not mitigated.

4.2.3.6 Species at Risk

The following six (6) Threatened/Endangered SAR have been reported within the past 20 years in the vicinity of Segment 2, or (in the case of mammal species) their range extends into the Study Area, and have been identified as potentially occurring within the Study Area and its vicinity. The probability of occurrence is indicated in **Table 4-3**. Bank Swallow, Bobolink, Eastern Meadowlark, Redside Dace and Butternut species have low probability of occurrence due to lack of suitable habitat. Species-specific details, including at risk status, source, preferred habitat, and probability of occurrence conclusions are summarized in **Appendix B**.

Table 4-3 Species and Probability of Occurrence in Segment 2

Species	Latin Name	Classification	S-Rank	Probability of Occurrence	Source
Barn Swallow	<i>Hirundo rustica</i>	SARA: Threatened ESA: Threatened	S4B	Confirmed	OBBA, eBird
Chimney Swift	<i>Chateura pelagica</i>	SARA: Threatened ESA: Threatened	S4B, S4N	High	OBBA, eBird, TRCA
Eastern Small-footed Myotis	<i>Myotis leibii</i>	SARA: No Status ESA: Endangered	S2S3	Moderate	BCI, Humphrey 2017
Little Brown Myotis	<i>Myotis lucifugus</i>	SARA: Endangered ESA: Endangered	S4	Moderate	BCI, Humphrey and Fotherby 2019
Northern Myotis	<i>Myotis septentrionalis</i>	SARA: Endangered ESA: Endangered	S3	Moderate	BCI, Humphrey and Fotherby 2019
Tri-colored Bat	<i>Perimyotis subflavus</i>	SARA: Endangered ESA: Endangered	S3	Moderate	BCI, Humphrey and Fotherby 2019

4.2.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

4.2.4.1 Natural Heritage Features

Natural heritage features within Segment 3 include the following:

- York Region Woodland (derived from provincial mapping) and Greenland System;
- Richmond Hill Natural Core (as part of the NHS);
- TRCA regulated area; and
- One (1) watercourse crossing (i.e., German Mills Creek).

The natural heritage data from secondary sources is mapped in **Appendix B**.

4.2.4.2 Surface Water

4.2.4.2.1 German Mills Creek

German Mills Creek spans in the municipalities of Markham, Richmond Hill, Toronto and Vaughan in the Greater Toronto Area. It is part of the Great Lakes Basin and is a tributary of the East Branch Don River. It originates in Vaughan (near Bathurst Street and the King–Vaughan Town Line), flows south through Richmond Hill and Markham, and converges with the East Branch Don River in the East Don Parklands in Toronto, south of Steeles Avenue between Bayview Avenue and Leslie Street. It is part of a number of streams, swamps and swales located near the Oak Ridges Moraine. The creek's approximate length is 10 kilometres.

4.2.4.3 Fish and Fish Habitat

Within Segment 3, fish habitat is present within German Mills Creek, which crosses the Study Area. A fish species list for the watershed, compiled from multiple sources, is provided in **Appendix B**.

German Mills Creek supports a variety of warmwater, cool and coldwater species. Coldwater species that have been reported recently within German Mills Creek are limited to Mottled Sculpin; however historic records dating back to 1949 of other coolwater/coldwater baitfish species include Northern Redbelly Dace, Rainbow Darter and Redside Dace. The disappearance of these species is likely associated with shifts in the aquatic ecosystem structure and quality resulting from changes to the landscape and land use practices. The following species have been captured in the German Mills Creek subwatershed between 2002 and 2005:

- | | | |
|---------------------|------------------|-------------------|
| • Blacknose Dace | • Fathead Minnow | • Mottled Sculpin |
| • Bluegill | • Goldfish | • Pumpkinseed |
| • Bluntnose Minnow | • Johnny Darter | • White Sucker |
| • Brook Stickleback | • Longnose Dace | |
| • Creek Chub | | |

Within Study Area Segment 3, German Mills creek flows north to south and is representative of a highly anthropogenically modified system in the vicinity of both the rail crossing and large culvert structure under 16th Avenue. Within the assessed upstream 50 m section, the morphology consisted of pool, riffle and run sections. At the time of field reconnaissance, the mean wetted width was approximately 2.5 m and the mean wetted depth approximately 0.19 m. Substrates were comprised of gravel and cobble with increasing sand, silt, and clay towards the three large Corrugated Steel Pipes (CSP) under the rail corridor. Banks were unstable with signs of heavy erosion along the banks and debris pushed high up on the banks and against the CSPs with rock flow cobble check dams placed within the 20 m upstream of the culvert to slow flows. Riparian cover was low (25% cover) which consisted of primarily herbaceous vegetation, shrubs, and overhanging trees. Instream cover was low (25% total cover) and provided by cobble and algae. A storm

sewer outlets to the creek approximately 20 m upstream of the culverts. Surrounding lands were observed to be forested and commercial areas with the rail line perpendicular to the creek.

Within the 200 m downstream section, similar anthropogenic modifications were observed in the way of the creek being straightened, armour stone placed along the right bank, and gabion baskets along both banks. The three culverts are perched approximately 0.5 – 1.0 m making passage upstream unlikely for the small-bodied fish species recorded within the creek. The downstream reach consisted of flats, and pool sections. At the time of the field surveys, the mean wetted width was approximately 6 m and the mean wetted depth approximately 0.28 m. Substrates consisted of gravel, cobble, sand, and silt. Banks were unstable with signs of heavy flows and debris pushed high up on the banks and against the large four-barrel box culvert under 16th Avenue. Riparian cover was low (25% cover) which consisted of herbaceous vegetation, shrubs, and overhanging trees. Instream cover was low (25% total cover) and provided by cobble and algae. Surrounding lands were observed to be forested and residential areas.

No fish were observed during the field investigations; however, the known fish community assemblage (see **Appendix B**) for this system is comprised of mixed warm and cool species. The assessed reach provides habitat for migration, spawning, feeding and rearing and is generally non-limiting throughout (i.e., no sensitive, important or exceptional habitat was observed). No habitat classified as critical by the *Species at Risk Act* (SARA) was identified.

4.2.4.4 Vegetation and Vegetation Communities

Data relating to vegetation species collected during the 2021 OneT+ field investigations and provided by TRCA through correspondence in 2020 was compiled to create a vegetation species list (see **Appendix B**). The following is a brief summary of the vegetation species recorded:

- The majority of the species (133) recorded were ranked L5 or L+; i.e., secure throughout the region or introduced, respectively;
- One (1) species, Red Pine, was ranked L1; i.e., species of regional conservation concern, regionally scarce due to either accidental occurrence or extreme sensitivity to human impacts. Red Pine (reported as *Pinus resinosa*) is a common forest tree in central Ontario but rare as a naturally growing tree in the Carolinian Zone. In Toronto, most populations are probably introduced as this tree is commonly planted due to its tolerance of dry rocky or sandy soils;
- One (1) species, Yellow Indiangrass, was ranked L2. This species was observed growing in meadow areas at the extreme northern end of the Study Area, and was thought by field observers to be introduced at this location;
- Five (5) species, American Witch-hazel, Slippery Elm, Old Switch Panicgrass, Tamarack and White Spruce, were ranked L3; i.e., species of regional conservation concern, generally less sensitive and more abundant than L1 and L2 ranked species. The location of the Witch-hazel and Tamarack records is unknown; and
- Eight (8) species, Broad-leaf cattail, Peach-leaved willow, Northern Red Oak, Bur Oak, Eastern White Pine, Bitternut Hickory, Paper Birch and Silver Maple were ranked L4 and three (3) species Field Sow-thistle, European Beech and Belladonna are not ranked.



Figure 4-13 Vegetation Communities Near Proposed High Tech Station Location



Figure 4-14 Vegetation Communities Near Proposed Bridge Station Location

Vegetation communities documented by OneT+ desktop and field studies and the TRCA are mapped in **Table 4-14** to **Table 4-16**. Vegetation communities reported by TRCA in Segment 3 (roughly sorted from south to north) include the following:

- Cultural Meadow (CUM)
- Exotic Forb Meadow (CUM1-c)
- Cultural Thicket (CUT)
- Restoration Mixed Plantation (CUP2-A)
- Exotic Successional Woodland (CUW1-b)
- Open Aquatic, unvegetated (OAO1)
- Mineral Cultural Woodland Ecosite (CUW1)
- Fresh-Moist Poplar Deciduous Forest (FOD8-1)
- Deciduous Swamp (SWD)
- Cultural Woodland (CUW)
- Dry-Moist Old Field Meadow (CUM1-1)
- Scots Pine Coniferous Plantation (CUP3-3)

The area outside the rail corridor is private property and includes warehouses and commercial properties that have some manicured lawn with planted trees.

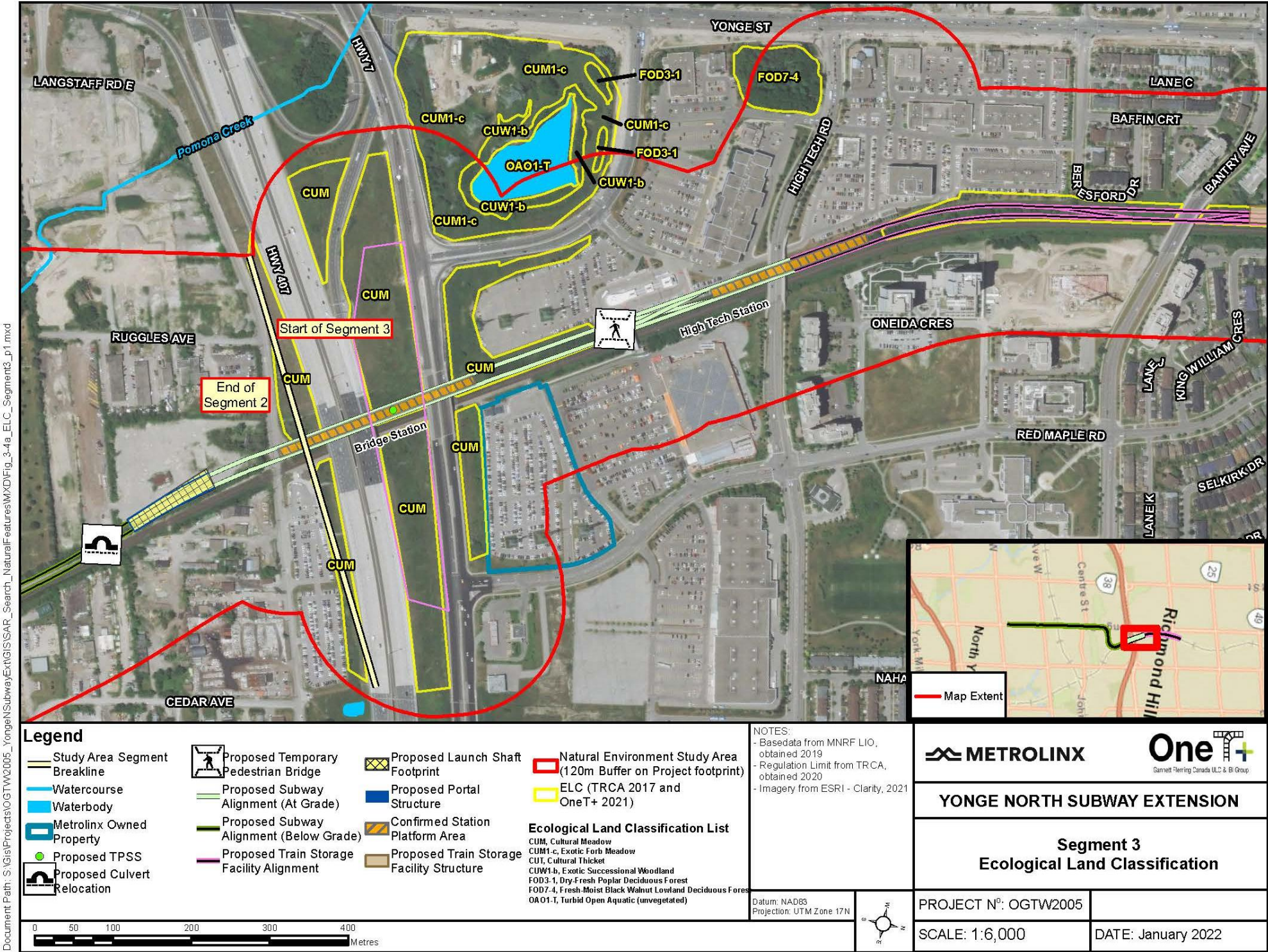


Figure 4-15 Segment 3 Ecological Land Classification

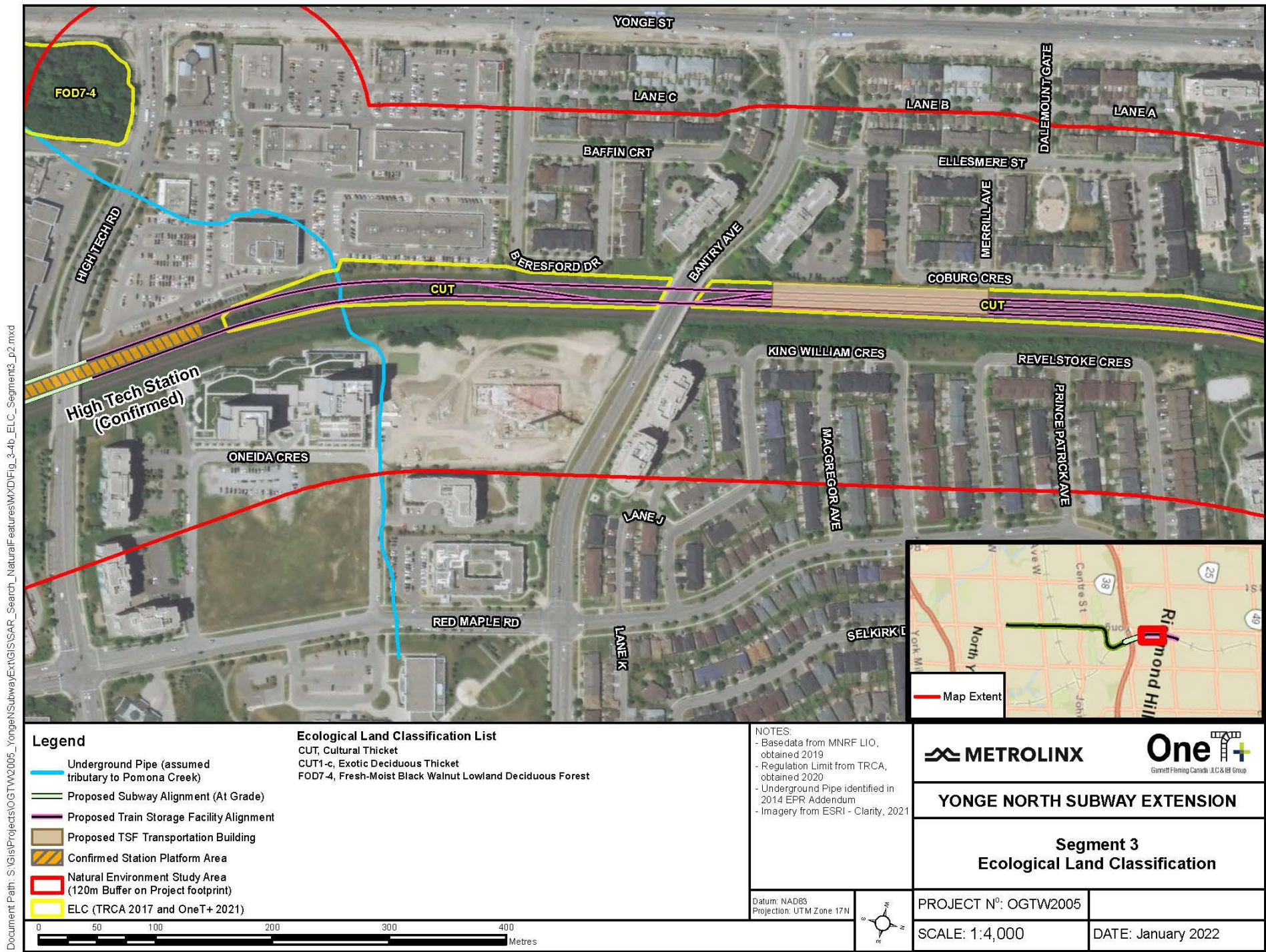


Figure 4-16 Segment 3 Ecological Land Classification (Continued)

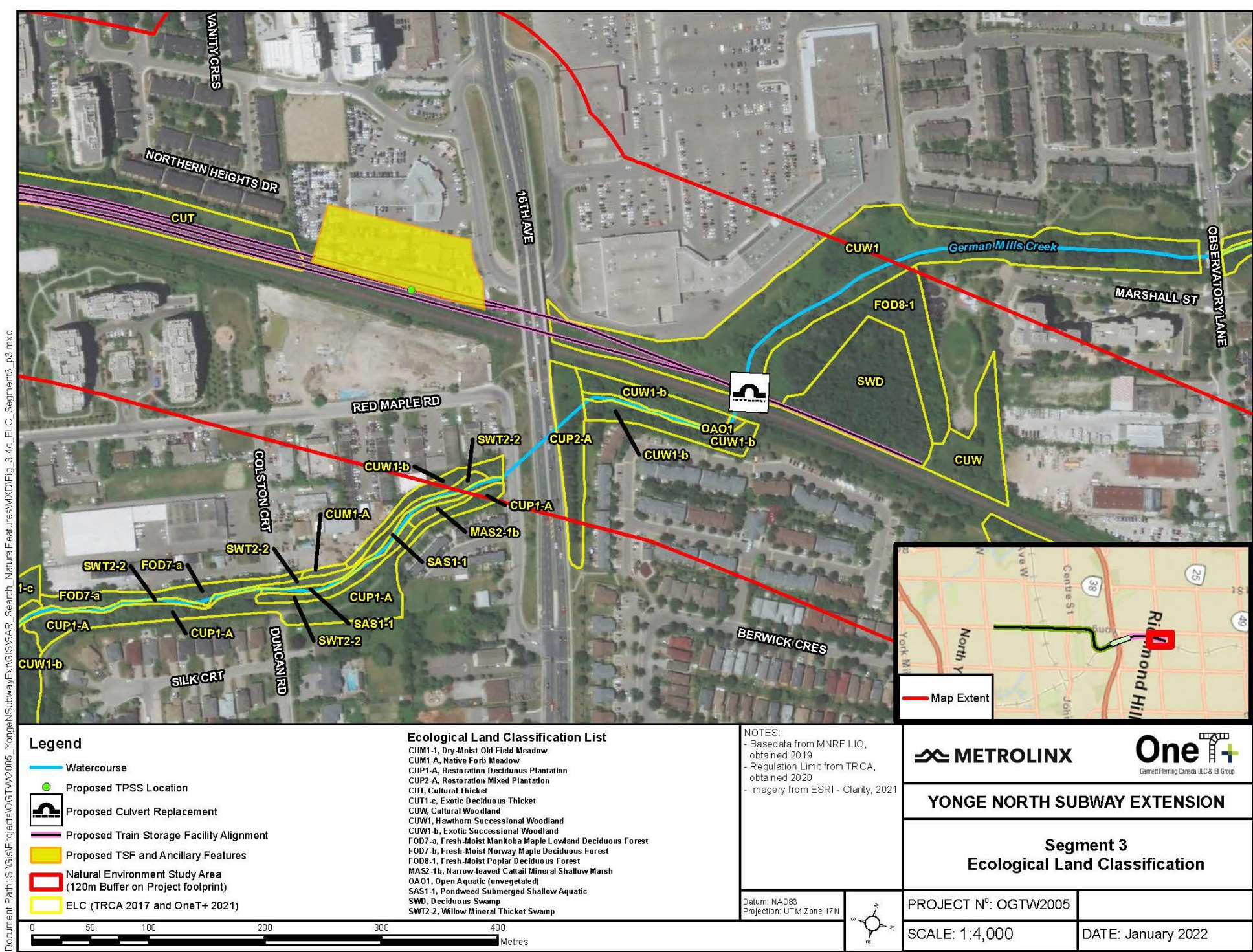


Figure 4-17 Segment 3 Ecological Land Classification (Continued)

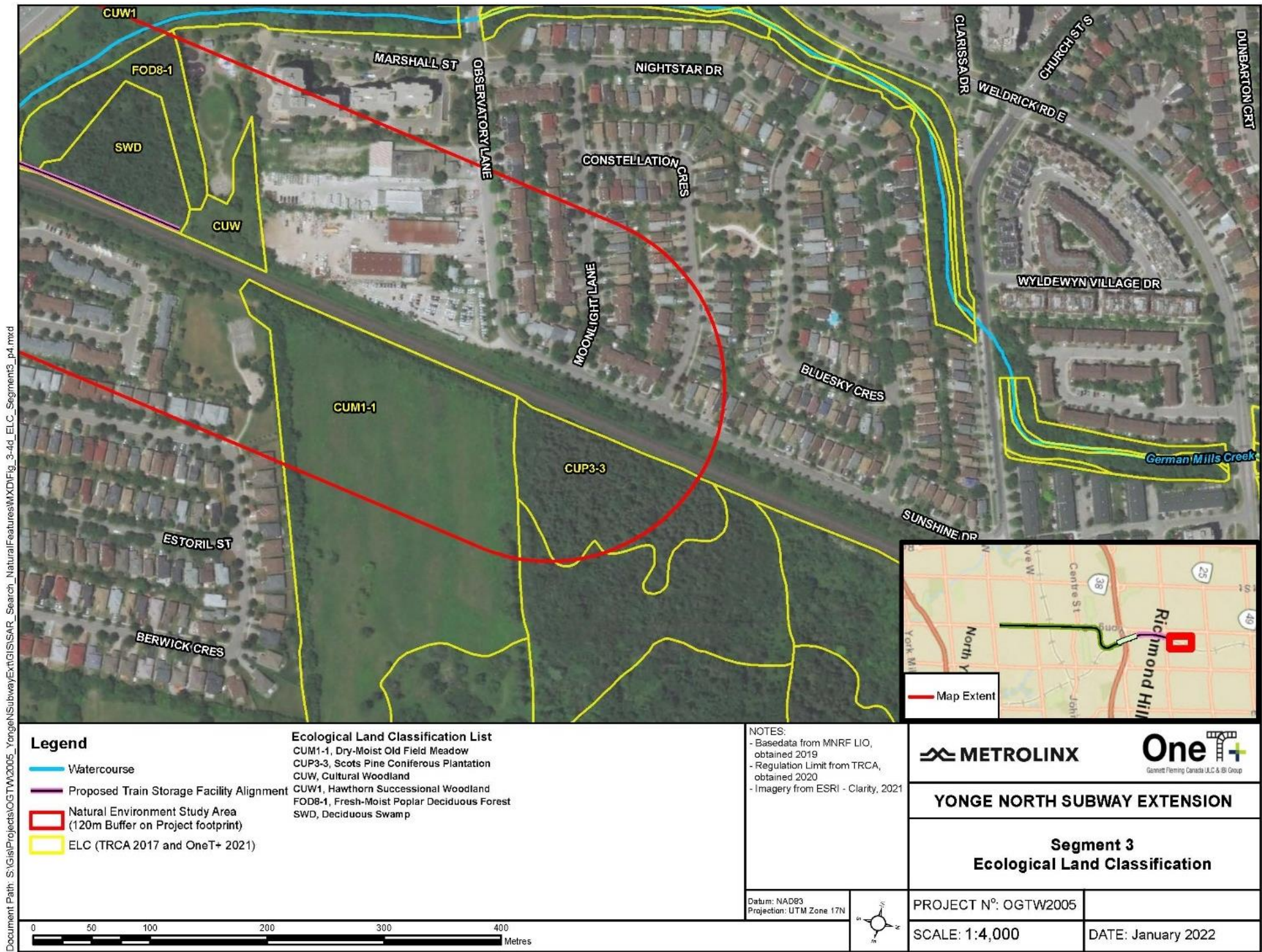


Figure 4-18 Segment 3 Ecological Land Classification (Continued)



Figure 4-19 Vegetation Communities near existing Richmond Hill Centre Pedestrian Bridge



Figure 4-20 Vegetation Communities within vicinity of proposed TSF location

4.2.4.5 Wildlife and Wildlife Habitat

Generally, most wildlife data are available from atlases that cover a relatively large and diverse area (i.e., within one of the 10km x 10km grid squares) or range mapping. Otherwise, terrestrial wildlife species that may be found are primarily those that are common to the region and adapted to a disturbed urban environment. OneT+ anuran call surveys completed on 13 May 2021 and 15 June 2021 reported no anurans. Species which have been reported in the vicinity of this segment and those whose range extends into the Study Area are compiled from multiple sources in **Appendix B**.

In terms of Wildlife Habitat, the remnant features around the train storage facility do provide limited habitat. While the communities are not large enough to necessarily provide Significant Wildlife Habitat the limited habitat coverage in the vicinity lends to local significance. The habitat along German Mills Creek may be bat habitat and it is also likely that the Richmond Hill David Dunlap Observatory contains bat habitat. Based on review of available background information, species of special concern that may be found within Segment 3 include Common Nighthawk, Eastern Wood-Pewee, Monarch, Peregrine Falcon, Wood Thrush, Northern Map Turtle, and Snapping Turtle

4.2.4.6 Species at Risk

The following seven (7) Threatened/Endangered SAR have been reported within the past 20 years in the vicinity of Segment 3 (**Table 4-4**), or (in the case of mammal species) their range and potential occurrence extends into the Study Area and its vicinity. Acadian Flycatcher, Bank Swallow, Bobolink, Eastern Meadowlark, Red Headed Woodpecker, Western Chorus Frog species have low probability of occurrence due to lack of suitable habitat. Species-specific details and probability of occurrence conclusions are summarized in **Appendix B**.

Table 4-4 SAR Species and Probability of Occurrence in Segment 3

Species	Latin Name	Classification	S-Rank	Potential of Occurrence	Source
Barn Swallow	<i>Hirundo rustica</i>	SARA: Threatened ESA: Threatened	S4B	Confirmed	OBBA, eBird
Butternut	<i>Juglans cinerea</i>	SARA: Endangered ESA: Endangered	S3	Confirmed	iNaturalist, TRCA
Chimney Swift	<i>Chateura pelagica</i>	SARA: Threatened ESA: Threatened	S4B, S4N	High	OBBA, eBird, TRCA
Eastern Small-footed Myotis	<i>Myotis leibii</i>	SARA: No Status ESA: Endangered	S2S3	Moderate	BCI, Humphrey 2017
Little Brown Myotis	<i>Myotis lucifugus</i>	SARA: Endangered ESA: Endangered	S4	Moderate	BCI, Humphrey and Fotherby 2019
Northern Myotis	<i>Myotis septentrionalis</i>	SARA: Endangered ESA: Endangered	S3	Moderate	BCI, Humphrey and Fotherby 2019
Tri-colored Bat	<i>Perimyotis subflavus</i>	SARA: Endangered ESA: Endangered	S3	Moderate	BCI, Humphrey and Fotherby 2019

4.3 Subsurface Conditions and Hydrogeology/ Groundwater

4.3.1 Methodology

A review of available information was conducted to establish subsurface hydrogeology and groundwater conditions within the Project Study Area. The available information included regional mapping, water well records and previous studies/investigations, where available.

Additional site-specific information collected consists of geotechnical borehole drilling and geological logging, manual and long-term groundwater level monitoring data and hydraulic conductivity values (measured using industry-standard methods) in select monitoring wells installed as part of the geotechnical investigation. In select areas where the conditions and planned construction warrant, pumping tests may be completed in specially installed wells.

Existing conditions characterization presented in the sections below is based upon secondary source data, subsurface conditions information, as well as site-specific data collected through field surveys available at the time of preparation of this report.

4.3.2 Available Regional Mapping

Available mapping reviewed for the alignment includes topography, surface water features, physiography, surficial geology, drift thickness, and bedrock geology.

Topography mapping is based on Ontario Digital Elevation Model (Imagery-Derived) Dataset published by the Ontario Ministry of Natural Resources and Forestry, August 29, 2019, under the Open Government Licence - Ontario, as shown in **Figure 4-21**.

Surface water mapping is based on TRCA Regulation Mapping Update - Toronto and Region Conservation Authority, revised Feb 22, 2021, as also shown in **Figure 4-21**.

Physiography mapping is based on the 2007 Physiography of Southern Ontario, Miscellaneous Release – Data 228, published by the Ontario Geological Survey, as shown in **Figure 4-22**.

Surficial geology mapping is based on the 2010 Surficial Geology of Southern Ontario Miscellaneous Release – Data 128 REV, published by the Ontario Geological Survey, as shown in **Figure 4-23**.

Drift Thickness mapping is based on the 2006 Drift Thickness data (of Southern Ontario), published by the Ontario Geological Survey, as shown in **Figure 4-24**.

Bedrock geology mapping is based on the 2011 1:250 000 scale Bedrock Geology of Ontario, Miscellaneous Release – Date 126 REV 1, published by the Ontario Geological Survey, as shown in **Figure 4-25**.

4.3.3 Segment 1 – Finch Station to Clark Station (Below Grade)

4.3.3.1 Geological Setting

Segment 1 is relatively flat, undulating slightly for approximately 2,315 m going north from Finch Station towards Clark Station, with elevations ranging between approximately Elevation (El.) 191 m and 196 m above sea level (mASL). The remaining approximately 800 m of this segment slopes downwards towards the north from approximately 195 to 176 mASL. There are no surface water features within Segment 1.

The segment is situated within the beveled till plains of the Peel Plain physiographic region as mapped by Chapman and Putnam (1984). The surficial soils of the project area within Segment 1 of the Peel Plain physiographic region consist of till soils, stone-poor, sandy silt to silty sand-textured till. Surficial geology for this portion of Toronto and York Region generally consists of till consisting of sandy silt to silty sand-textured

till on Paleozoic terrain. Recent alluvial deposits (sand, silt, gravel and organic material) should be expected in areas within the immediate vicinity of watercourses and their floodplains.

The drift thickness varies between approximately 70 m in the vicinity of Finch Station and 35 m to 36 m at the proposed Clark Station. The bedrock elevation ranges between Elevation (El.) 122 m near Finch Station and El. 140 m near Clark Station. The bedrock geology of the area consists of the Georgian Bay Formation. This formation consists of interbedded grey-green to dark grey shale and fossiliferous calcareous siltstone to limestone and dolostone.

The general characteristics of the surficial geology in Segment 1 is classified as glacial deposits, clayey silt to silt (3f) shown in **Figure 4-23**.

The results of the subsurface investigations to-date have been characterized primarily by soil type into categories based on the TTC's soil classification system. The encountered stratigraphy generally consisted of the following, in sequence:

- Surficial cover (asphalt/topsoil/concrete) over very loose to compact/very soft to stiff fill.
- Glacial Till – stiff to hard silty clay till and compact to very dense silty sand till/clayey silt till/silty sand till, with localized zones of stiff to hard silty clay and occasional very stiff to hard clay to generally El. 181 m to 184 m south of Centre Avenue. The glacial till extends deeper to minimum El. 154 m north of Centre Avenue. North of Highland Park Boulevard in Markham, till thickness increases to north to El. 157 to El. 158 m at Clark Station.
- Very dense silty sand to sandy silt and very dense/hard silt and clayey silt:
 - Finch Station to Steeles Station: Occasional and discontinuous layers of very dense sands or hard silty clay and clay to end of borehole (EOB) generally at El. 134 to El. 140 m. Sands continuous and dominant in the Steeles Station area.
 - Steeles Station to Highland Park Boulevard: as above except sands generally between El. 165 m to El. 175 m and underlain by hard silty clay and clay over very dense silty sand to sandy silt.
 - Highland Park Boulevard to Clark Station: silty sand to sandy silt predominates and is interlayered with two continuous to semi-continuous layers of silty clay to clay to EOB generally between El. 136 to 141 m.
- Shale bedrock encountered at El. 137 to El. 141 m north of Meadowview Avenue, Markham.

4.3.3.2 Hydrogeological Setting

For portions of this segment, the major hydrostatic units have been interpreted as part of an assessment of conditions at specific sites along the segment.

Table 4-5 provides a description of the soil and bedrock stratigraphy along with the geological units that make up the hydrostatic conditions at the site.

Table 4-5 Soil and Bedrock Hydrostratigraphy – Segment 1

Hydrostratigraphic Layer	Description & Corresponding Stratigraphic Category(s)
Poor / Moderate Aquitard	Fill (Sand with Gravel to Silty Sand) above discontinuous Till (Sandy Silty Clay/Silty Clay) with some Clay/Silty Clay
Upper Semi-Confined Aquifer	Silt/Sandy Silt/Silty Sand
Intermediate Discontinuous Aquitard	Clay/Silty Clay with some Sand and Gravel. some Till (Sandy Silty Clay/Silty Clay)
Lower Semi-Confined Aquifer	Silt/Sandy Silt/Silty Sand

Hydrostratigraphic Layer	Description & Corresponding Stratigraphic Category(s)
Lower Aquitard	Clay/Silty Clay with Till (Sandy Silty Clay/Silty Clay) and Sand and Gravel includes Bedrock shale/limestone (unweathered to weathered)

Groundwater is present in two (2) distinct units, in the upper semi-confined aquifer and the lower semi-confined aquifer. These aquifers are at times separate from each other, but this separating layer is discontinuous.

Groundwater flow is towards the east-northeast, towards the local groundwater discharge zone which is the East Don River watershed on a local scale. On a more regional scale, all groundwater flow is directed towards Lake Ontario to the south, which is the regional groundwater discharge feature.

4.3.3.3 Groundwater Resources

No active groundwater supply wells have been identified in the immediate vicinity of the segment. The surrounding area is municipally serviced, and municipal services are primarily sourced from surface water (Lake Ontario). York Region still operates some supply wells and includes groundwater in its municipal servicing, but there are no municipal supply wells in this area.

Active water takings in the area may consist of permanent drainage structures associated with underground parking structures in densely populated sections of the segment (where multi-level condominium and/or apartments are situated) or wherever other underground structures exist that require dewatering on a permanent basis. However, building permit drawings and/or as-built records have not been provided for all properties to confirm whether or not a permanent drainage system exists at specific buildings.

Given the urbanized nature of the local area, there are no known groundwater recharge zones in the vicinity of the segment. Groundwater discharge zones consist of the local surface water features, such as the East Don River and any tributaries and Lake Ontario.

4.3.4 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

4.3.4.1 Geological Setting

The topography within Segment 2 is undulating with ground surface elevations ranging between 175 to 176 m at Clark Station to about El. 166 m along Yonge Street at the East Branch of the Don River. The valley floor is near El. 157 m. North of the East Don River, the land steadily rises to El. 194 m at the proposed launch shaft, except at Pomona Creek where the creek bed is at about El. 168.5 m.

The segment is situated within the beveled till plains of the Peel Plain physiographic region as described previously in **Section 4.3.3.1**. The surficial soils between Clark Station and the launch shaft are mapped as till consisting of sandy silt to silty sand-textured till on Paleozoic terrain from Clark Avenue to John Street, and then again from Centre Street to Thornhill Avenue/Bay Thorn Drive; however, an approximately 200 m section starting approximately 225 m north of Centre Street is mapped as Modern alluvial deposits consisting of clay, silt, sand, gravel, and may contain organic remains. The remaining areas between John Street and Centre Street, as well as between Thornhill Avenue/Bay Thorn Drive and the launch shaft is mapped as fine-textured glaciolacustrine deposits which consist of silt and clay, minor sand and gravel and is described as massive to well laminated. Additionally, modern alluvial deposits should be expected along the East Branch of the Don River and Pomona Creek.

The mapped drift thickness varies from between 35 m to 36 m at Clark Station then rises to 46 m in the launch shaft area. The bedrock elevation generally increases to the north and is about El. 140 near Clark

Station, dips to about El. 133 near the intersection of Yonge and Elgin Streets, and then rises to about El. 148 m at the launch shaft.

The general characteristics of the surficial geology in Segment 2 is classified as glacial deposits, clayey silt to silt (3f) shown in **Figure 4-23**.

Based on the results of the subsurface investigations to-date, stratigraphy has been characterized primarily by soil type into categories based on the TTC's soil classification system. The encountered stratigraphy generally consisted of the following, in sequence:

- Surficial cover (asphalt/topsoil/concrete) over very loose to dense/soft to hard fill.
- Glacial Till: firm to hard silty clay till and very loose to very dense silty sand till/clayey silt till/silty sand till to El. 157 m at north end of Clark Station rising to El. 167 m at Cross Passage. North of this point, surficial glacial till is not continuously present beneath the fill and is generally found to have a base at El. 156 m to about El. 185 m.
- Silty Clay:
 - Up to 200 m north of Clark Station: firm to very stiff silty clay, becoming hard with depth to bedrock at El. 141 m to 142.5 m. Silty clay interlayered with an upper layer of dense to very dense sands and gravels with occasional dense sands and compact to very dense silty sand to sandy silt between El. 149 m and El. 151 m and a lower layer of very dense sands, and very dense silty sand to sandy silt between El. 141 m and El. 147 m.
 - From 200 m north of Clark Station to Centre Street/Thornhill Summit Drive: 2 to 10 m thick layer of hard silty clay to clayey silt between El. 134 m and El. 146 m.
 - From EEB-5 to Launch Shaft: The surficial fills and glacial till are generally underlain by hard silty clay to El. 155 m to El. 183 m.
- Silt to Clayey Silt:
 - From approximately 200 m north of Clark Station to Old Jane Street/Colbourne Street: The glacial till is underlain by compact to very dense silt and compact to dense silty sand and sandy silt.
 - From Old Jane Street/Colbourne Street to just south of EEB-5: Discontinuous layers of compact to very dense silt and very stiff to hard clayey silt to bedrock.
 - From just south of EEB-5 to Launch Shaft: The silty clay is underlain by very dense silt to bedrock at El. 145 m to El. 147 m south of Pomona Creek. Between Pomona Creek and the Holy Cross Catholic Cemetery, a generally 5 m thick layer of very dense silt lies between El. 146 m to 162 m.
 - Launch Shaft area: The silty clay is underlain by very dense silt and hard clayey silt interlayered with very dense sands and very dense silty sand to sandy silt to EOB at El. 159 to El. 164 m.
- Sandy Silt to Silty Sand: This soil type is interlayered with very dense sands, very dense/hard glacial till and hard silty clay mainly below El. 155 m south of Elgin Street/Arnold Avenue and below El. 165 m and below El. 170 m to Centre Street/Thornhill Summit Drive.
- Sands and Gravels and Sands: These very dense materials generally overlie bedrock between Elgin Street/Arnold Avenue and Royal Orchard Drive. They also are the predominant soils within the East Branch of the Don River valley.
- Shale Bedrock found between Clark Station and the south end of the alignment within the CN corridor at El. 122.5 m to El. 148 m.

The topography within Segment 2 is undulating with ground surface elevations ranging between 175 to 176 m at Clark Station to about El. 166 m along Yonge Street at the East Branch of the Don River. The valley floor is near El. 157 m. North of the East Don River, the land steadily rises to El. 194 m at the

proposed Launch Shaft. The only major interruption is Pomona Creek where the creek bed is at about El. 168.5 m.

4.3.4.2 Hydrogeological Setting

For portions of this segment, the hydrostratigraphy has been interpreted as part of an assessment of conditions at specific sites along the segment.

Table 4-6 provides a description of the soil and bedrock stratigraphy along with the geological units that make up the hydrostratigraphy.

Table 4-6 Soil and Bedrock Hydrostratigraphy – Segment 2

Hydrostratigraphic Layer	Description & Corresponding Stratigraphic Category(s)
Poor / Moderate Aquitard	Fill (Sand with Gravel to Silty Sand) above discontinuous Till (Sandy Silty Clay/Silty Clay) with some Clay/Silty Clay
Upper Semi-Confined Aquifer	Silt/Sandy Silt/Silty Sand
Intermediate Discontinuous Aquitard	Clay/Silty Clay with some Sand and Gravel. some Till (Sandy Silty Clay/Silty Clay)
Lower Semi-Confined Aquifer	Silt/Sandy Silt/Silty Sand
Lower Aquitard	Clay/Silty Clay with Till (Sandy Silty Clay/Silty Clay) and Sand and Gravel includes Bedrock shale/limestone (unweathered to weathered)

Groundwater is present in two (2) distinct units, in the upper semi-confined aquifer and the lower semi-confined aquifer. These aquifers are at times separate from each other, but this separating layer is discontinuous.

Groundwater flow is towards the east-northeast, towards the local groundwater discharge zone which is the East Don River watershed on a local scale. On a more regional scale, all groundwater flow is directed towards Lake Ontario to the south, which is the regional groundwater discharge feature.

4.3.4.3 Groundwater Resources

It is expected that there are no active groundwater supplies in the immediate vicinity of Segment 2. The surrounding area is municipally serviced, and municipal services are primarily sourced from surface water (Lake Ontario). York Region still operates some supply wells and includes groundwater in its municipal servicing, but there are no municipal supply wells in this area.

Active water takings in the area may consist of permanent drainage structures associated with underground parking structures in densely populated sections of the segment (where multi-level condominium and/or apartments are situated) or wherever other underground structures exist that require dewatering on a permanent basis.

Given the urbanized nature of the local area, there are no known groundwater recharge zones in the vicinity of the segment. And local groundwater discharge zones consist of the local surface water features, such as the East Don River and any associated tributaries as well as Lake Ontario as the regional groundwater discharge zone.

4.3.5 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

It should be noted that the exact nature of the subsurface through this area has been interpreted based on limited data available at one end of the segment. This information will be verified and refined as required as the field investigation progresses.

4.3.5.1 Geological Setting

The topography is undulating and generally rising to the north with ground surface elevations in the launch shaft area of 194 m to 195 m and increasing to 215 m at Moonlight Lane. A tributary of the Don River East Branch crosses the alignment approximately 150 m north of 16th Avenue.

The segment is situated within the beveled till plains of the Peel Plain physiographic region as described previously in **Section 4.3.3.1**. Segment 3 going north between the Launch Shaft and Moonlight Lane is mapped as fine-textured glaciolacustrine deposits which consists of silt and clay, minor sand and gravel and is described as massive to well laminated for approximately 240 m, and is then mapped as till consisting of sandy silt to silty sand-textured till on Paleozoic terrain for approximately 560 m. The next part of this segment, approximately 1,150 m, is then again mapped as being fine-textured glaciolacustrine deposits. The most northern section of this segment, approximately 375 m in length is mapped as being coarse-textured glaciolacustrine deposits consisting of sand, gravel, minor silt and clay as part of foreshore and basinal deposits.

Recent alluvial deposits (sand, silt, gravel and organic material) should be expected in areas within the immediate vicinity of watercourses like German Mills Creek and their flood plains.

The bedrock geology for the area is mapped as the Georgian Bay Formation bedrock. This formation consists of interbedded grey-green to dark grey shale and fossiliferous calcareous siltstone to limestone and dolostone. The bedrock elevation is mapped at El. 148 m in the Launch Shaft area and generally is between El. 140 m and El. 150 m within Segment 3. The drift thickness varies between 46 m in the launch shaft area to 70 m at the north end of the YNSE alignment.

The general characteristics of the surficial geology in Segment 3 is classified as glaciolacustrine, clay, silt (7) shown in **Figure 4-23**.

Based on nearby geotechnical investigations, the stratigraphy within Segment 3 is generally expected to consist of in sequence:

- Surficial cover (asphalt/topsoil/concrete) over fill. Fill depths are expected to be extensive in the area of the Highway 407 and Highway 7 embankments.
- Silty Clay to Clay (till-like) interlayered with hard/very dense glacial till (silty clay till), (silty sand till/clayey silt till/silty sand till) and very dense sandy silt to silty sand and sands with occasional layers of hard/very dense silt to clayey Silt and very dense sands.
- Shale bedrock was encountered between El. 148.1 and 151.7 m.

4.3.5.2 Hydrogeological Setting

For portions of this segment, the hydrostratigraphy has been interpreted as part of an assessment of conditions at specific sites along the segment.

Table 4-7 provides a description of the soil and bedrock stratigraphy along with the geological units that make up the hydrostratigraphy.

Table 4-7 Soil and Bedrock Hydrostratigraphy – Segment 3

Hydrostratigraphic Layer	Description & Corresponding Stratigraphic Category(s)
Poor / Moderate Aquitard	Fill (Sand with Gravel to Silty Sand) above discontinuous Till (Sandy Silty Clay/Silty Clay) with some Clay/Silty Clay
Upper Semi-Confined Aquifer	Silt/Sandy Silt/Silty Sand
Intermediate Discontinuous Aquitard	Clay/Silty Clay with some Sand and Gravel, some Till (Sandy Silty Clay/Silty Clay)
Lower Semi-Confined Aquifer	Silt/Sandy Silt/Silty Sand
Lower Aquitard	Clay/Silty Clay with Till (Sandy Silty Clay/Silty Clay) and Sand and Gravel includes Bedrock shale/limestone (unweathered to weathered)

Groundwater is present in two (2) distinct units, in the upper semi-confined aquifer and the lower semi-confined aquifer. These aquifers are at times separate from each other, but this separating layer is discontinuous.

Groundwater flow has been noted to be towards the local groundwater discharge zone which is the East Don River watershed on a local scale. On a more regional scale, all groundwater flow is directed towards Lake Ontario to the south, which is the regional groundwater discharge feature.

4.3.5.3 Groundwater Resources

It is expected that there are no active groundwater supplies in the immediate vicinity of the segment. The surrounding area is municipally serviced and municipal services are primarily sourced from surface water (Lake Ontario). York Region still operates some supply wells and includes groundwater in its municipal servicing, but there are no municipal supply wells in this area.

Active water takings in the area may consist of permanent drainage structures associated with underground parking structures in densely populated sections of the segment (where multi-level condominium and/or apartments are situated) or wherever other underground structures exist that require dewatering on a permanent basis.

Given the urbanized nature of the local area, there are no known groundwater recharge zones in the vicinity of the segment. And local groundwater discharge zones consist of the local surface water features, such as the East Don River and any associated tributaries as well as Lake Ontario as the regional groundwater discharge zone.

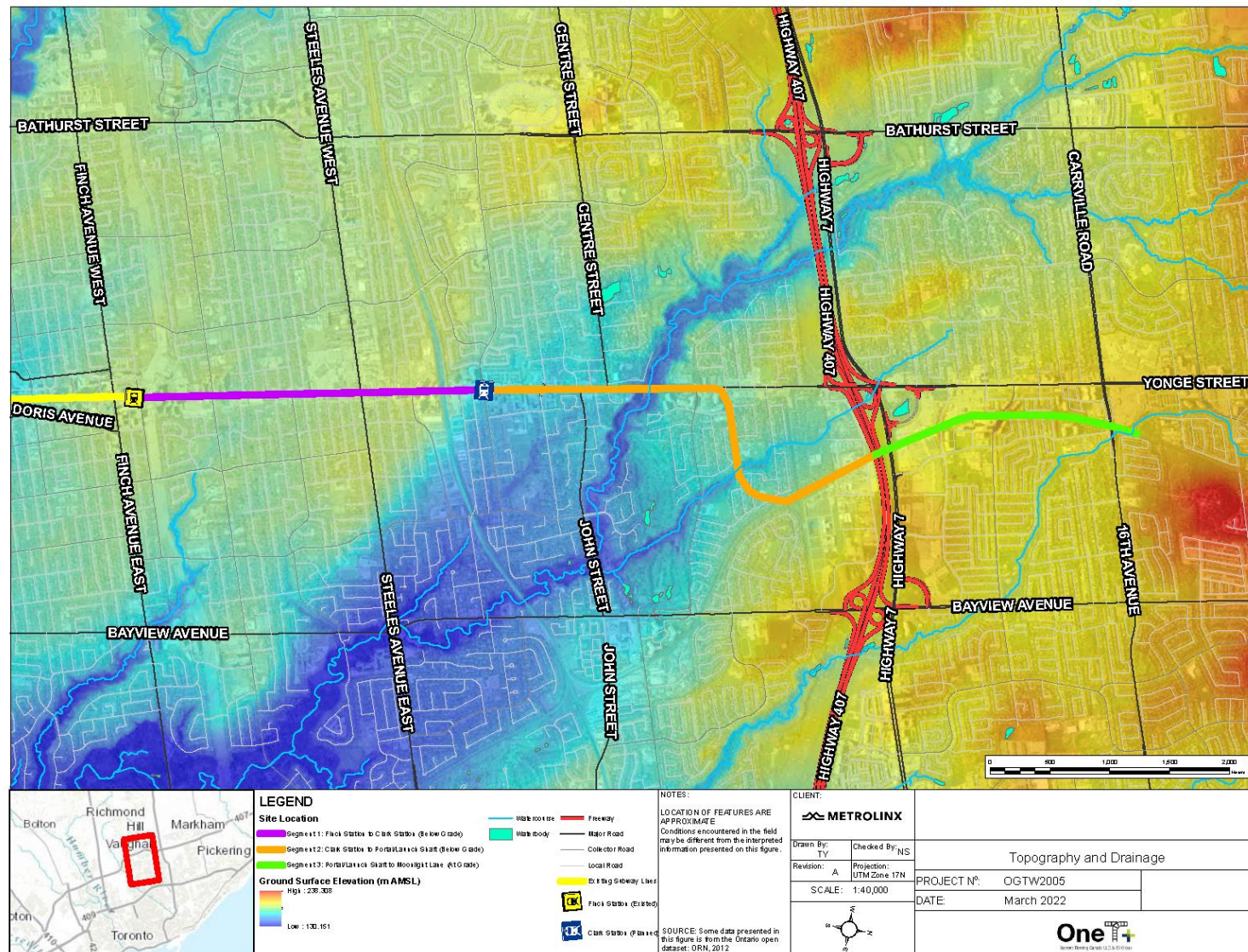


Figure 4-21 Topography and Drainage

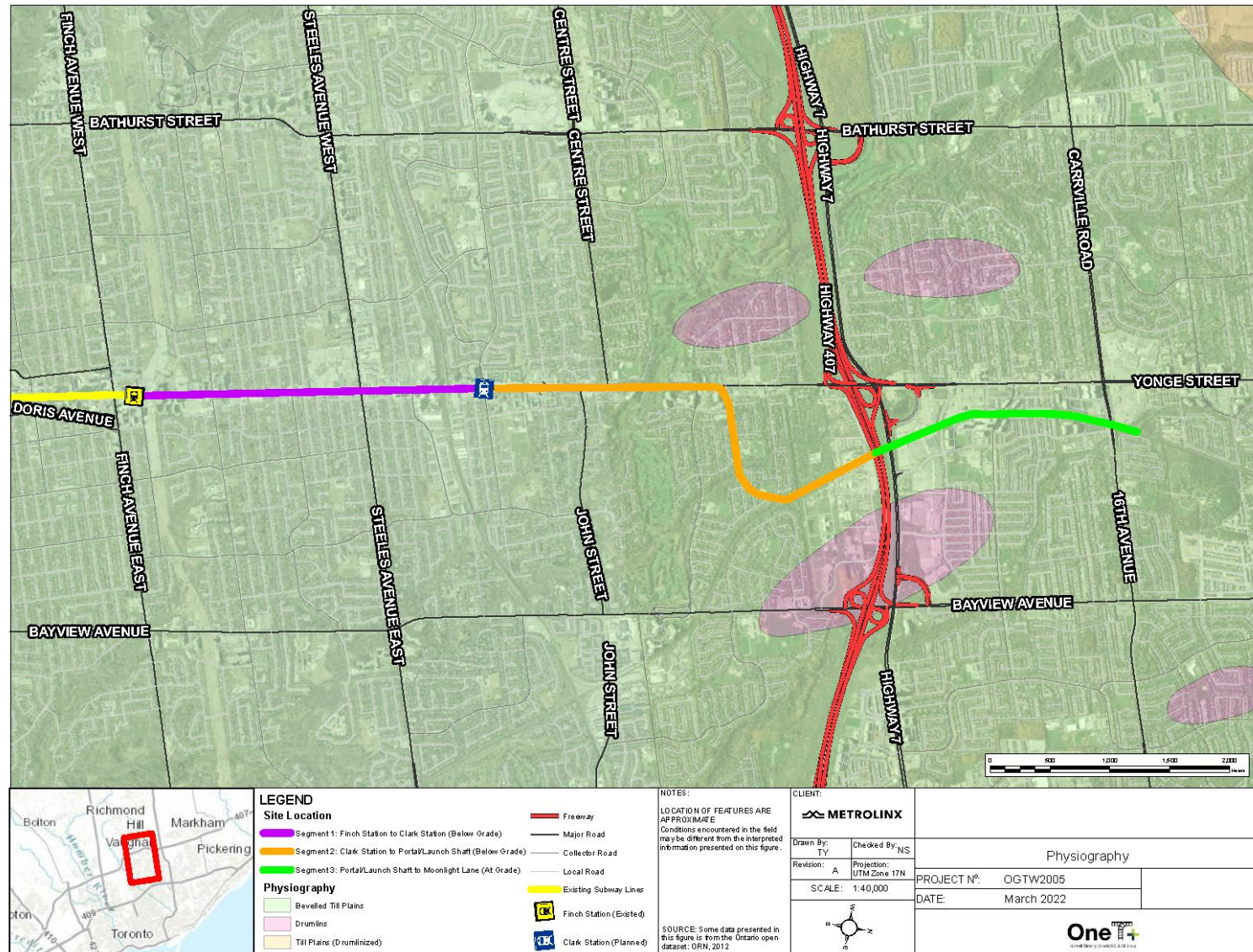


Figure 4-22 Physiography

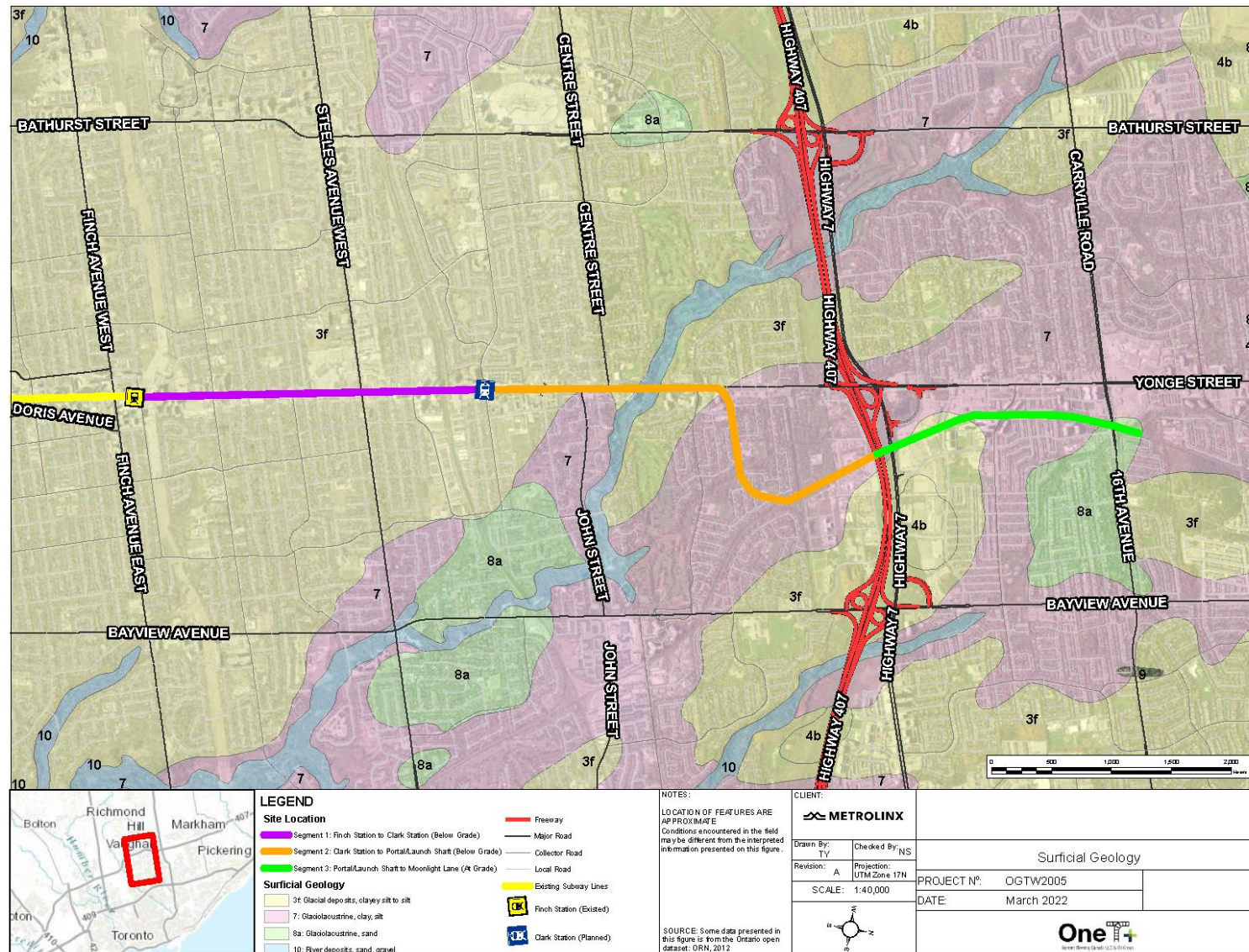


Figure 4-23 Surficial Geology

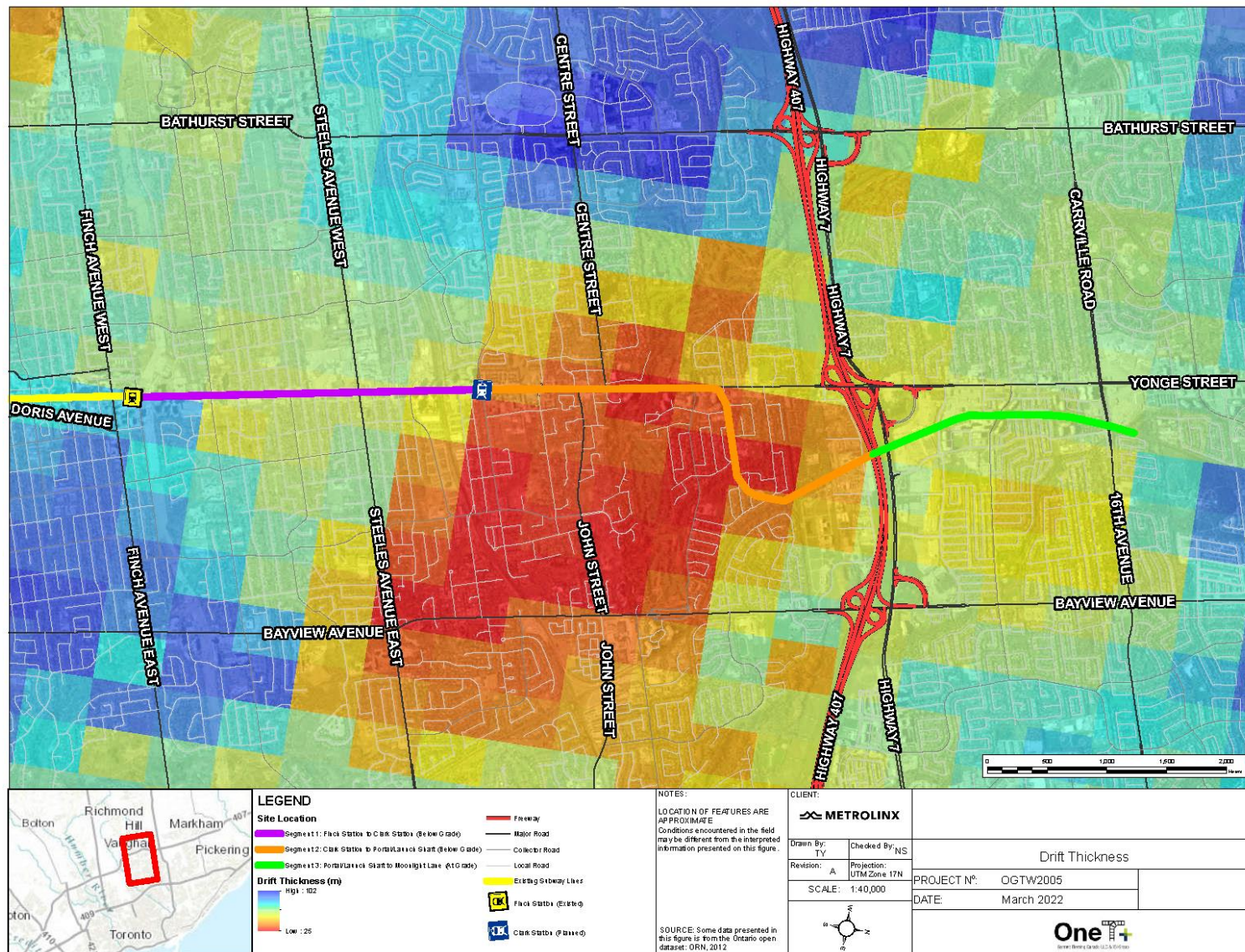


Figure 4-24 Drift Thickness

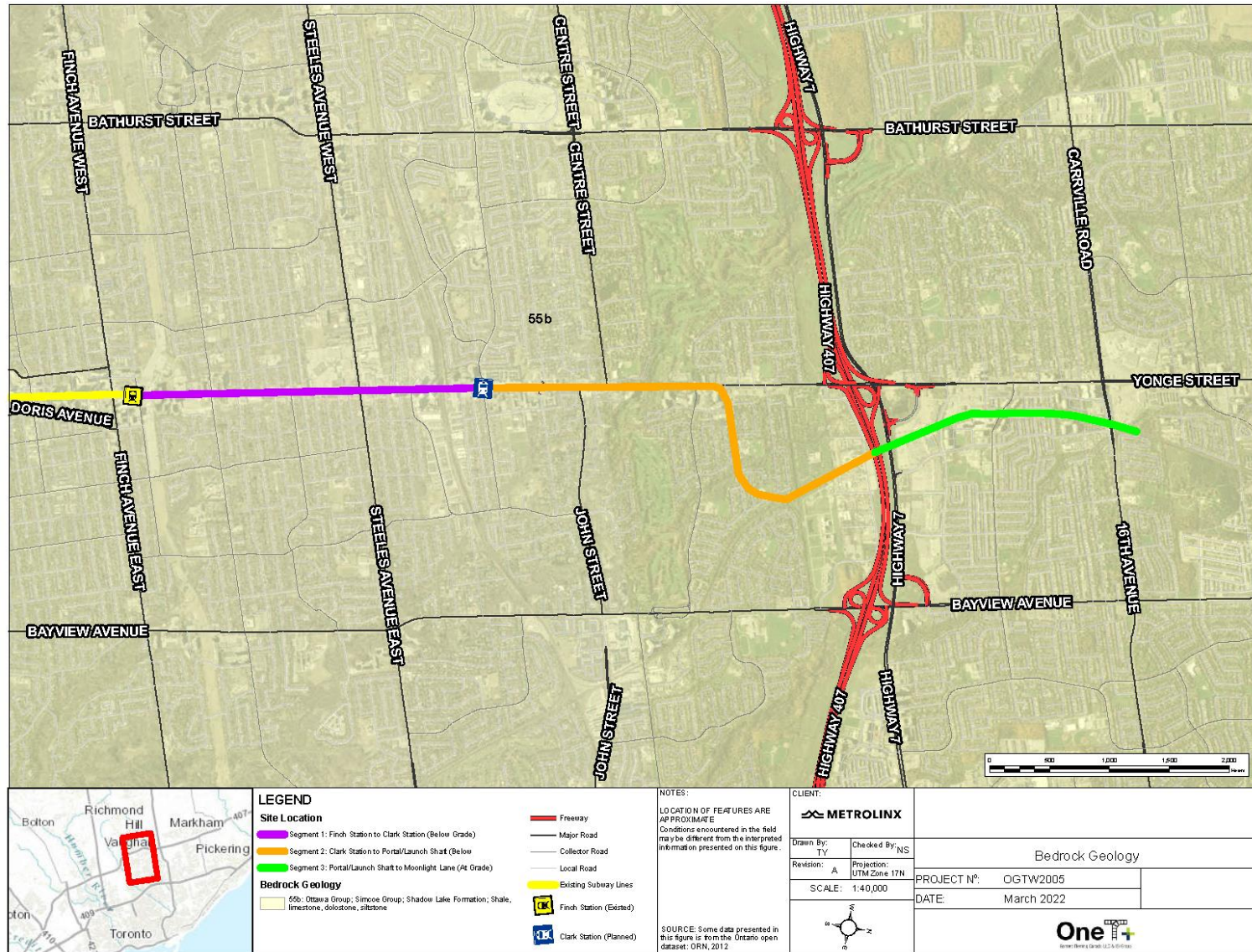


Figure 4-25 Bedrock Geology

4.4 Socio-Economic and Land Use

4.4.1 Methodology

The following sections provide a summary of the methodology developed to collect and document socio-economic and land use existing conditions information within the Socio-Economic and Land Use Study Area. A more detailed overview of this methodology is provided in **Appendix C**, Socio-Economic and Land Use Existing Conditions & Impact Assessment Report.

4.4.1.1 Data Gap Analysis

The purpose of the gap analysis is to review the previous socio-economic and land use assessments to identify information that is outdated, non-existent, or needs to be updated. The land use and socio-economic information contained in the 2009 YNSE EPR and the 2014 YNSE EPR Addendum was reviewed. It was determined that a number of Provincial Plans and policies were updated since 2014. As well, several municipalities have updated their Official Plans or are conducting updates to the Official Plans and/or related policies.

In addition to the changes to current policies, the YNSE alignment has been modified since the 2009 EPR and 2014 EPR Addendum as explained in **Section 1.2**.

4.4.1.2 Desktop Data Collection

The purpose of data collection is to characterize the existing and planned land use designations that apply to the Study Area, as well as the socio-economic characteristics of the Study Area neighbourhoods. The proposed YNSE alignment extends from Finch Station in the City of Toronto, and continues north into York Region, which is comprised of three lower tier municipalities: The City of Vaughan, the City of Markham, and the City of Richmond Hill. Data sources were reviewed from these three municipalities to identify planned land uses within the Socio-Economic and Land Use Study Area.

Data was collected from the following sources to characterize socio-economic and land use within the Study Area:

- **Aerial imagery** to document and inventory existing land uses;
- **Provincial Plans and Policy Documents**, including the Growth Plan, Greenbelt Plan, Parkway Belt West Plan, and the Provincial Policy Statement;
- **Regional and Municipal Policies and Plans** prepared by the Cities of Toronto, Markham, Vaughan, Richmond Hill, and York Region (i.e., Official Plans, Secondary Plans, Master Plans, Pedestrian and Cycling Plans, Trail/Active Transportation Master Plans, Recreational Plans, etc.);
- **Statistics Canada** 2016 Profile Census;
- Land Information Ontario (LIO);
- **Municipal open data**, where available (i.e., publicly available online GIS data created by municipalities pertaining to the location of sensitive facilities, such as childcare centres, schools, long term care centres, community centres, places of worship, and hospitals); and
- **YNSE Initial Business Case (2021) and Supplementary Analysis document (2021)**, prepared by Metrolinx, to obtain key facts regarding projected transit ridership and demographics.

Socio economic/land use data was collected within a Geographic Information Systems (GIS) database and detailed mapping was prepared for inclusion in this Socio Economic/Land Use Existing Conditions Report. Data requests for GIS files of municipal Official Plan schedules were used to update the figures in **Appendix C**.

4.4.1.3 Field Investigations

Field investigations were undertaken within the socio-economic and land use Study Area to collect primary source data as part of the existing conditions analysis. The following site visits were conducted to verify existing land uses, confirm the location of sensitive facilities, and take representative photographs of the Study Area:

- December 22, 2020 – Finch Avenue to John Street and High Tech Road to 16th Avenue
- June 21, 2021 – John Street to High Tech Road and 16th Avenue to Moonlight Lane

Appendix C presents photographs of the Study Area segments in the vicinity of proposed station locations.

4.4.1.4 Existing Conditions Characterization

The analysis of existing socio-economic characteristics of the Study Area neighbourhoods was performed by reviewing Statistics Canada data and Neighbourhood data available from municipal sources. Information such as population, housing types, and travel patterns are presented for each neighbourhood to characterize the area.

Land use designations were mapped and described, based on a review of applicable policies and plans from provincial and municipal sources. A description of the zoning that applies to the Study Area is also described based on the Zoning By-laws in effect at the time of writing this report.

The land use inventory identified “sensitive facilities”, which are defined as childcare centres, schools, long term care centres, community centres, places of worship, and hospitals within the Study Area (150 m around the proposed alignment and 250 m around the proposed stations, extending a further 50 m at the Cummer bus loop to accommodate the proposed infrastructure and nearby sensitive facilities). Due to the urbanized nature of the Study Area, schools were only included where a playground or outdoor amenity area was present. A number of private schools are located in urbanized areas, such as plazas along the study corridor, and have a similar operation as other commercial uses. As such, they were not identified as sensitive facilities. “Sensitive facilities” more generally are also defined in the Existing Conditions Reports for the other disciplines assessing socio-economic effects, which may include Air Quality, Noise and Vibration, Natural Environment, etc.

A list of active development applications that have been submitted for review by the municipalities within the Study Area has been prepared based on information received from the municipalities. The list of development applications is based on the information available at the time of writing this report.

4.4.1.5 Land Use Mapping

The land use mapping presents the following information:

- Study Area boundary, proposed YNSE alignment and infrastructure;
- Official Plan land use designations;
- Greenbelt Plan – Urban River Valley; and
- Sensitive facilities.

To provide more consistency among the land use designations, they were standardized across the various municipalities into eight (8) categories, based on land use type. A description of the land uses is summarized in **Table 4-8** below. A more detailed description of how the Official Plan designations were categorized as presented in **Appendix C**.

Table 4-8 Definitions of Generic Land Uses

Land Use Designation	Definition
Residential	Characterized by low density residential buildings that consist of single detached, semi-detached, duplexes, triplexes, townhouses, row houses, and walk-up apartments that are three storeys or less, as well medium and higher densities that include apartment and condominium buildings that are greater than three storeys in height.
Mixed-Use Area	Characterized by a mix of residential, commercial, institutional, and/or office uses. While density may vary from one location to another, there is a general presumption that these areas seek to encourage density relative to low density residential neighborhoods.
Employment/Industrial	Primarily characterized by office and light-to-heavy industrial uses and other facilities or structures necessary for their operation.
Intensification	Provides a development framework, land use policies, and design guidelines that encourage transit-oriented and mixed-use development.
Utilities/Transportation	Currently or planned to be used for the provision of utility or transportation infrastructure, or any ancillary use to the aforementioned.
Parks/Open Space/Recreation Area	Public or private lands where generally little development occurs aside from recreational or cultural facilities. Related land uses may include parks, sports fields, golf courses, cemeteries, open space corridors, and other recreational spaces.
Parkway Belt West Plan	Lands that are subject to the policies of the Parkway Belt West Plan (PBWP), which is a provincial plan that applies to large areas of land throughout the Greater Toronto Area. The objectives of the plan are to: separate and define the boundaries of urban areas; integrate the system of urban areas through the creation of corridors and the placement of utilities; reserve land for future flexibility for future linear facilities and unanticipated activities; and provide a linked open space framework.
Greenbelt Plan – Urban River Valley	Lands located within the Greenbelt Plan Area (Urban River Valley designation). The East Don River crosses the Study Area and is designated in the Greenbelt Plan as ‘Urban River Valley’.

4.4.2 Relevant Planning Policies, Studies and Documents

As part of the EPR Addendum study, applicable plans and policies were reviewed and have been briefly summarized below to provide background on the broader planning context for the proposed YNSE Project.

4.4.2.1 Provincial Policy Statement (2020)

The 2020 Provincial Policy Statement (PPS), issued under Section 3 of the *Planning Act*, contains a comprehensive set of policies that address matters of provincial interest, including the efficient use and management of land and infrastructure, ensuring the appropriate transportation, water, sewer and other infrastructure is available to accommodate current and future needs, and ensuring opportunities for economic development and job creation.

Policies applicable to the Project include, but are not limited to:

- “Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs” (Section 1.6.71);

- *Section 1.6.7.3: “As part of a multimodal transportation system, connectivity within and among transportation systems and modes should be maintained and, where possible, improved including connections with cross jurisdictional boundaries” (Section 1.6.7.3); and*
- *Section 1.6.7.4: “A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation” (Section 1.6.7.4)*

Section 1.1.1 of the PPS also contains policies promoting healthy, liveable, and safe communities through the integration of land use planning, growth management, transit-supportive development, intensification and infrastructure planning to achieve cost-effective development patterns, optimize transit investments and minimize land consumption and servicing costs.

4.4.2.2 A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019)

The Growth Plan for the Greater Golden Horseshoe (GGH) (“The Growth Plan”) was established in 2006 under the *Place to Grow Act, 2005* and was most recently updated in 2019, with a further amendment made in 2020. It is a long-term plan which builds upon the PPS 2020, and establishes the land use planning framework to support the achievement of complete communities, a thriving economy, a clean and healthy environment and social equity.

The Growth Plan identifies an approach to accommodating the forecasted growth for the GGH in complete communities, which are designed to provide a mix of jobs, services, transit, opportunities for active transportation and a full range of housing to support the needs of the community. To support the establishment of complete communities, the Plan identifies a system of strategic growth areas, including Urban Growth Centres, Priority Transit Corridors, and Major Transit Station Areas (MTSAs), that identify minimum intensification and density targets. These terms are defined as follows:

- **Urban Growth Centres:** is a type of strategic growth area within settlement areas, for accommodating intensification and higher density mixed uses in a compact built form.
- **Priority Transit Corridors:** those areas identified on Schedule 5 of the Growth Plan.
- **Major Transit Station Areas:** a type of strategic growth area that is approximately 500 to 800 m radius of an existing or planned high order transit station or stop within a settlement area, (i.e., 10-minute walk).

The Growth Plan for the GGH (2019) identifies two Urban Growth Centres (UGC) within the Study Area: the North York Centre UGC located along Yonge Street and Finch Avenue, as well as the Richmond Hill Centre/Langstaff Gateway UGC located in proximity to Highway 407 ETR and Yonge Street. The policies of the Growth Plan require minimum density targets of 400 residents and jobs combined per hectare for the North York Centre UGC, and 200 residents and jobs combined per hectare for the Richmond Hill/Langstaff Gateway UGC (MMAH, 2020).

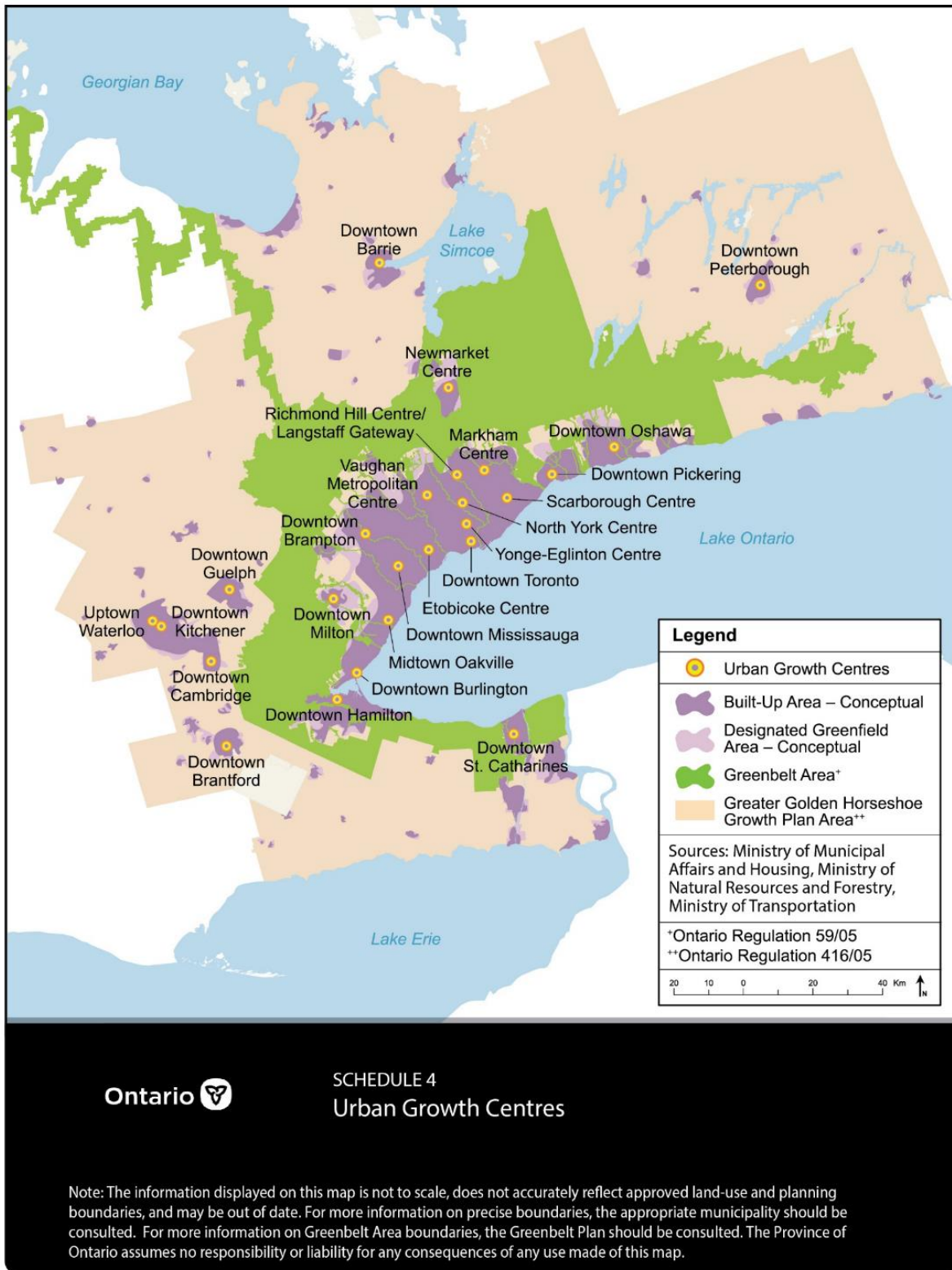


Figure 4-26 Urban Growth Centres from the Growth Plan (2019)

The Yonge Street corridor north of the existing Finch subway station is identified as a Priority Transit Corridor. The Growth Plan requires municipalities to complete detailed planning for MTSAs along Priority Transit Corridors, and to identify MTSAs in Official Plans and Zoning By-laws. In addition to the UGC density targets, the Plan also identifies a minimum density target of 200 residents and jobs combined per ha for MTSAs on Priority Transit Corridors that are served by subways. The City of Toronto and Region of York are currently undergoing a review of potential MTSAs within their municipalities. Lower tier municipalities will be required to implement the Region of York's MTSAs in their Official Plans.

4.4.2.3 Greenbelt Plan (2017)

The Greenbelt Plan was established in 2005 under the Greenbelt Act, and most recently updated in 2017. The Greenbelt Plan includes the Greenbelt Protected Countryside and Urban River Valley, and also includes the Niagara Escarpment Plan, Oak Ridges Moraine Conservation Plan, and Parkway Belt West Plan areas. Together with these plans, the Greenbelt Plan builds upon the PPS (2020) to provide a land use planning framework for the environmental and agricultural systems within the GGH. The Greenbelt Area and designations under the Greenbelt Plan are shown in **Table 4-20**.

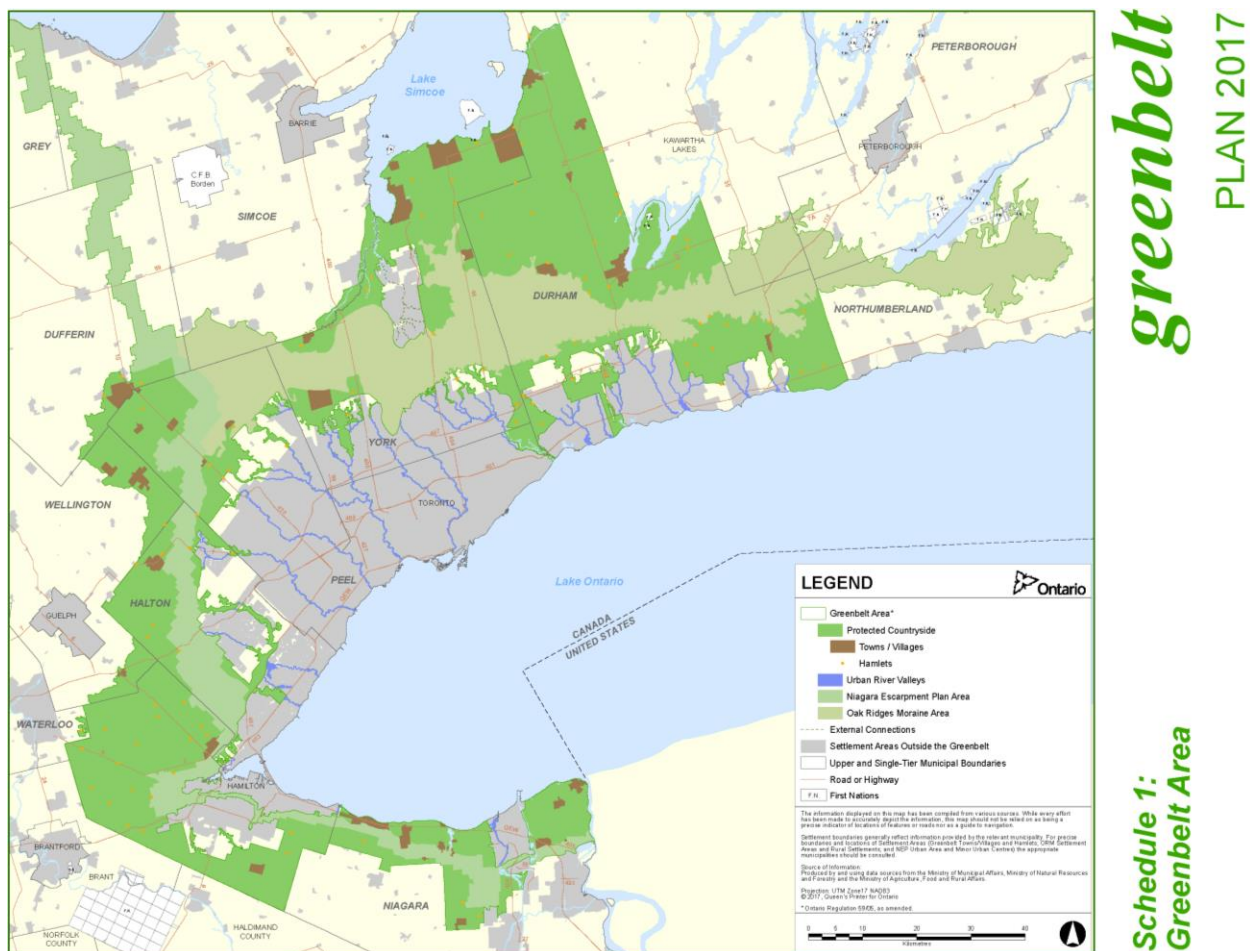


Figure 4-27 Greenbelt Plan Schedule 1: Greenbelt Area

Within the Study Area, an “Urban River Valley” is designated along the East Don River, north of Mill Street and south of the proposed Royal Orchard Station. Under Section 6 of the Greenbelt Plan, Urban River Valleys are key river valleys in urban areas that provide opportunities for expansion and integration of the Greenbelt and its system into urban areas. They are generally found along main corridors of river valleys connecting the

Greenbelt Area with the Great Lakes and inland lakes. The Plan identifies a set of Urban River Valley policies; however, it is noted that all existing, expanded or new infrastructure which is subject to and approved under the Environmental Assessment Act is permitted provided that it “*supports the needs of adjacent settlement areas or serves the significant growth and economic development expected in southern Ontario and supports the goals and objectives of the Greenbelt Plan*” (Policy 6.2.3 of the Greenbelt Plan)).

Lands designated as Urban River Valleys are subject to certain Greenbelt Plan policies that address stewardship, minimizing potential impacts to natural heritage systems, watershed-based planning, and the application of planning, design and construction practices that enhance the size, diversity, connectivity, and functions of key natural heritage features and key natural hydrologic features, and key hydrologic areas.

The following Greenbelt Plan policies are applicable to the Project across the Don River:

- “The lands are governed by the applicable Official Plan policies provided they have regard to the objectives of the Greenbelt Plan” (Section 5.2.2); and
- “All existing, expanded or new infrastructure which is subject to and approved under the Environmental Assessment Act, or which receives a similar approval, is permitted provided it supports the needs of adjacent settlement areas or serves the significant growth and economic development expected in southern Ontario and supports the goals and objectives of the Greenbelt Plan” (Section 6.2.3).

4.4.2.4 Parkway Belt West Plan (1978)

The Parkway Belt West Plan was established under the Ontario Planning and Development Act in 1978. First intended to protect lands for infrastructure, open spaces and separate urban areas, many amendments have taken place since that time, and the Plan area now protects lands for large scale infrastructure corridors.

The lands within the Study Area designated as part of the Parkway Belt West Plan are located along the Highway 407 ETR corridor within the City of Vaughan, City of Markham and City of Richmond Hill. Changes to the lands within the Parkway Belt West Plan area, or the related Minister’s Zoning Orders, may require approval from the Ministry of Municipal Affairs and Housing (MMAH).

4.4.2.5 Greater Golden Horseshoe Transportation Plan (Ongoing)

The Ontario Ministry of Transportation (MTO) is currently developing a long-term transportation plan for the GGH to ensure that the future transportation system in the area supports continued prosperity and quality of life until 2051. The GGH Transportation Plan will align with, and build upon, other provincial initiatives including the PPS, the Growth Plan, and the Greenbelt Plan.

The foundation for the study identified existing conditions, trends and outlooks that will influence the transportation needs of the GGH over the long-term. Goals and objectives were developed and refined through feedback received from stakeholders and the public. Potential future transportation gaps and strategic opportunities for improvements were then identified using modelling and technical analysis. The Province is now using input from the public survey, feedback from additional engagement efforts, and analysis results to develop the transportation plan and associated policies.

4.4.2.6 Metrolinx 2041 Regional Transportation Plan (2018)

Metrolinx’s 2041 Regional Transportation Plan (RTP) forms the policy basis for improving the transportation system within the GTHA to 2041. The 2041 RTP outlines the planned transit system including GO Expansion, subways, and Frequent Rapid Transit Network (FRTN) consisting of Priority Bus, Frequent Regional Express Bus, light rail transit and bus rapid transit projects. Key objectives of the plan are to complete the delivery of current regional transit projects, provide frequent rapid transit to enhance regional connections, optimize the transportation system, integrate transportation and land use, and prepare for an uncertain future.

The 2041 RTP includes the YNSE Project as a key rapid transit project that is under development to meet the needs of the region in the near term. An extension of the Line 1 Subway into York Region has been recognized as a priority “In Development” Project under the 2041 Regional Transportation Plan. It has been a priority by Metrolinx, York Region, and City of Toronto as a local and regional transit authority. Given the significance of the Project, the Province, City of Toronto, Region of York, and the TTC have dedicated resources to YNSE planning work.

Goals of the 2041 RTP that are applicable to the Project include, but are not limited to:

- Strong Connections: Connecting people to the places that make their lives better, such as homes, jobs, community services, parks and open spaces, recreation, and cultural activities;
- Complete Travel Experiences: Designing an easy, safe, accessible, affordable and comfortable door- to-door travel experience that meets the diverse needs of travelers; and
- Sustainable and Healthy Communities: Investing in transportation for today and for future generations by supporting land use intensification, climate resiliency and a low-carbon footprint, while leveraging innovation.



4.4.2.7 Ministry of Transportation Southern Highways Program (2017 to 2021)

The MTO Southern Highways Program is an annually published, five-year investment plan for highway construction in southern Ontario. It provides an overview of the Ontario government’s plan to repair and expand provincial highways and bridges, and planning studies to address long-term transportation and infrastructure needs in the area. There are currently no major planned transportation infrastructure projects underway by the MTO within the Study Area.

4.4.2.8 407 Transitway from East of Highway 400 to Kennedy Rd. EPR (2011)

In December 2010, MTO issued a Notice of Completion for the 407 Transitway TPAP from east of Highway 400 to Kennedy Road. This involved a planning and preliminary design study for the 23 km central segment of a transitway facility located along the Highway 407 corridor, which encompasses the City of Vaughan, the City of Markham, the City of Richmond Hill, and the Regional Municipality of York- all of which are located within the YNSE EPR Addendum Study Area. The project components proposed as part of the study include stations and an operations, maintenance and storage facility.

As currently planned, the Project will be implemented initially as bus rapid transit (BRT) and may be converted to light rail transit (LRT) in the future. The study notes that segments that provide improved access to the planned YNSE Project should be given priority, and sequencing should be responsive to the zones with highest ridership potential to maximize benefits and exposure of dedicated transitway service. The 407 Transitway’s planned Yonge/Richmond Hill Centre Station, as shown in **Table 4-21**, is intended to provide a direct connection to the YNSE Project.

The current proposed location of Bridge Station along the YNSE alignment does not intersect with the 2011 407 Transitway alignment; therefore, the transitway alignment will need to be modified accordingly if it is to accommodate the Bridge Station location. This may constitute a future Addendum to MTO's 2011 EPR; Metrolinx will therefore carry out continued consultation with MTO following the YNSE EPR Addendum process to ensure that YNSE and 407 Transitway project design requirements are coordinated, as applicable.

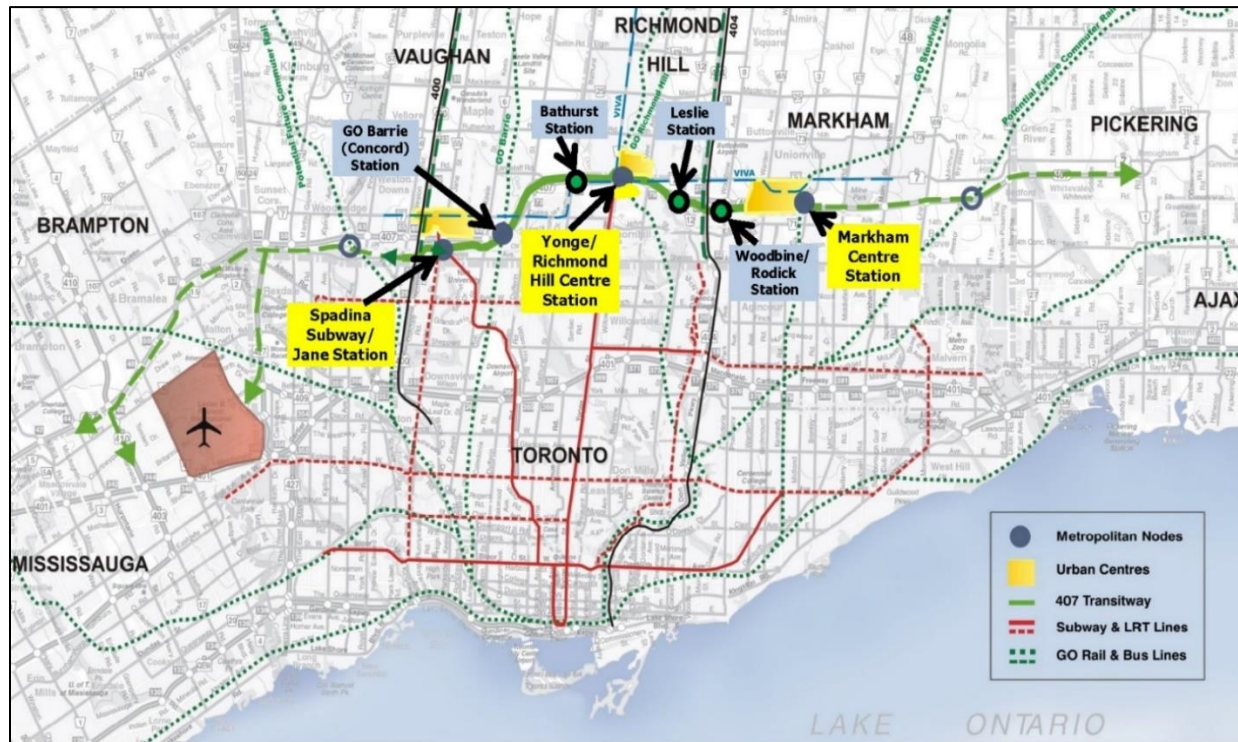


Figure 4-28 Transitway From East of Highway 400 to Kennedy Road 2010 EPR Scope

The proposed 407 Transitway aligns with municipal and provincial objectives, as identified in the official plans of the stakeholder municipalities, the Growth Plan for the GGH, and the Metrolinx RTP. Many of the key project objectives complement the goals of the YNSE Project and the overall planning of high-order rapid transit in the Study Area, including the following:

Transportation

- Offer a safe, high speed, more efficient way of moving people between GTA population and employment zones, north or south of the corridor;
- Improve connectivity and integration with the regional transportation network by promoting gateway opportunities with modal interchange facilities; and
- Enhance the ability to increase capacity to meet additional travel demand.

Land Use

- Improve accessibility to existing/planned major mixed-use urban centres/nodes in the corridor.

Natural and Social Environments

- Minimize adverse effects on the natural environment;
- Minimize adverse effects on the social environment; and,
- Reduce reliance on energy resources and reduce automobile dependence and gas emissions.

4.4.2.9 Regional/Local Planned Transit Connections

Within the Project Study Area, various regional and local transit projects are planned with the objective of creating a well-integrated transportation network that encompasses the future proposed YNSE.

Two (2) of these projects, identified in the 2041 RTP, provide direct connections to the existing Finch Station and proposed southern boundary of the YNSE in the City of Toronto (Metrolinx, 2018). These include the Finch West LRT extension, which will connect Finch West Station with Finch Station, and the Finch East Priority Bus, which will provide service between Finch Station and McCowan Road. Additionally, the RTP proposes Two-Way, All-Day Go Service between Union Station and Richmond Hill GO, and sets a ‘beyond 2041’ objective of 15-minute GO Service along the rail corridor at which the YNSE comes to grade. These planned transit improvements will provide more frequent service to the existing Langstaff GO station, which will connect directly to the proposed Bridge Station as part of the YNSE Project.

In addition to regional transit connections, the ongoing VivaNext BRT expansion program aims to transform Yonge Street and Highway 7 into urban corridors that support high-density mixed-use development through the construction of rapidways (York Region Rapid Transit Corporation, 2021). These rapidways involve the use of central bus-only lanes in order to expedite transit services. In the YNSE Study Area, the Steeles Avenue Rapidway, which is planned to connect Jane Street in Vaughan to Kennedy Road in Markham, is currently under analysis – with future BRT service along this corridor to be determined. The 6.5 km Yonge Street Rapidway, completed in December 2020, now provides service along Yonge Street from Highway 7 to 19th Avenue/ Gamble Road, and was planned with the objective of providing a rapid transit connection between the YNSE future terminus and other destinations within York Region (York Region Rapid Transit Corporation, 2020).

As per the YNSE IBC published in March 2020, the Project is estimated to provide subway service to 94,100 riders daily. This will allow 26,000 more people to live within a ten-minute commute of a subway station, make 1,650 jobs accessible within a 45-minute transit commute between York Region and Toronto, and allow 22,900 employees to work within walking distance of the subway. Integration with planned transit connections will further complement these key benefits and provide for a well connected inter-regional transit system.

4.4.3 Municipal Land Use and Transportation Policies

4.4.3.1 City of Toronto Planning Studies

4.4.3.1.1 City of Toronto Official Plan (2019)

The City of Toronto Official Plan was approved by the Ontario Municipal Board in 2006, and subsequently amended through Official Plan Amendments, and compiled in the 2019 Office Consolidation. The Official Plan identifies a vision for an attractive and safe City, based on principles of diversity and opportunity, beauty, connectivity, leadership, and stewardship. The Official Plan notes that the Greater Toronto Area is projected to grow by 2.7 million residents and 1.8 million jobs by the year 2031. The Official Plan identifies the need for the City to be a competitive employment area, integrate regional transportation and transit systems, plan for a range of housing types, deliver services to residents, and protect natural environment and cultural resources.

The Urban Structure of the City identifies a system of Centres, Avenues, Employment Areas, and Green Space System. The following provides a summary of the Urban Structure within the Study Area:

- **North York Centre:** located along Yonge Street between Highway 401 and Drewry Avenue / Cummer Avenue. Centres are areas that have high transit accessibility, and will be places where jobs, housing and services will be concentrated. The Official Plan notes the presence of important commercial office space, and a vibrant residential and cultural centre.

- **Avenues:** the area along Yonge Street between Drewry Avenue / Cummer Avenue, continuing north to Steeles Avenue at the Toronto/Vaughan/Markham Municipal Boundaries is identified as an Avenue. Avenues are important corridors along major roads where re-urbanization is anticipated for new housing and job opportunities. Not all areas identified as Avenues are identified for growth, and development must meet the neighbourhood protection policies to address compatibility.
- **Employment Areas:** No Employment Areas are located within the Study Area in the City's Urban Structure.
- **Greenspace System:** No lands within the Green Space System are located within the Study Area.

The Official Plan includes transportation policies that encourage transit supportive densities and support place making. Yonge Street north of Finch Avenue is identified as a Transit Corridor to facilitate development of Yonge Street as an Avenue and to improve transit service to residents of York Region (Section 2.2.2).

An Official Plan Review is underway to bring the City of Toronto Official Plan into conformity with the Growth Plan by the province's deadline of July 1, 2022. As part of this work, the City of Toronto is identifying the locations of Major Transit Station Areas, including within the YNSE Study Area.

It is also noted that the City of Toronto is evaluating opportunities to improve the streetscape and public realm for all users (pedestrians, cyclists, transit and vehicles) along Yonge Street from Sheppard Avenue to the Finch Hydro Corridor as part of the REimagining Yonge Street Environmental Assessment. The recommended final design for the reconstruction of Yonge Street from Florence Avenue/Avondale Avenue to Hendon Avenue/Bishop Avenue includes:

- a cross-section reduction from six to four lanes;
- wider sidewalks and boulevards;
- new and enhanced pedestrian crossings – traffic signals and turn restrictions at some intersections;
- a centre landscaped median;
- protected bicycle lanes (cycle tracks);
- on-street lay-bys for parking, loading and deliveries, where right-of way width permits;
- the removal of both northbound and southbound left-turn lanes at the intersection of Yonge Street and Sheppard Avenue
- modifications in the section of Finch Avenue and Hendon Avenue/Bishop Avenue to improve TTC bus travel

In the event that the recommendations from the REimagining Yonge Street Environmental Assessment are adopted by the City's Infrastructure and Environment Committee, then Detailed Design could begin as early as 2023, with construction commencing potentially as early as 2026.

4.4.3.1.2 North York Centre Secondary Plan

The North York Centre Secondary Plan contains area specific development policies for North York Centre, an important focus of transit-based employment and residential growth. The Secondary Plan area is divided into two parts:

- **North York Centre North:** The Study Area is located within the "North" sub-area, which is intended to be predominantly residential with commercial uses focused at Finch Station.
- **North York Centre South:** This sub-area is located south of the Study Area and will be a commercial hub, with office and commercial uses, as well as a preferred location for civic and governmental uses.

The Secondary Plan outlines a set of development policies for this area, addressing density, streetscaping, transportation, environment, among others.

4.4.3.1.3 Yonge Street North Planning Study and Transportation Master Plan (Ongoing)

A new Secondary Plan is in development for the Yonge Street North area, between Finch Avenue and Steeles Avenue. The study will be undertaken in the context of existing provincial policies and plans, including the Growth Plan for the GGH and Metrolinx's Big Move. It will determine the level of development that can be supported by the existing and improved transportation network and planned higher order transit system.

Community consultation on this study has been conducted since 2011 and informed the development of policies regarding built form, massing, streetscaping, parks and transportation. A presentation was made to the City's Urban Design Review Panel, and draft Secondary Plan policies are under development. The boundary of the Secondary Plan extends from Drewry Avenue / Cummer Avenue to the south, Lariviere Road / west boundary of Centrepont Mall to the west; Steeles Avenue to the north; and Willowdale Avenue / south of Centre Avenue / east of Yonge Street to the east.

A related Transportation Master Plan is also in progress and will identify transportation solutions to support the vision for complete communities within the Yonge Street North area. Potential transportation network changes may include establishing development block sizes that are transit-oriented and walkable, increase connectivity for walking and cycling, provide access and manage traffic from existing and future developments, and access to and from neighbourhood amenities. The Plan will also address parking requirements, transportation demand management (TDM) measures, road safety and traffic calming, and potential expansion of pedestrian and cycling networks.

4.4.3.2 York Region Planning Studies

4.4.3.2.1 York Region Official Plan (2019)

York Region's Official Plan was approved in 2010 and amendments to the Plan since that time have been compiled in the 2019 Office Consolidation. The Region is currently updating its Official Plan and a draft Official Plan is to be prepared in 2021. The current Official Plan describes how York Region plans to accommodate future growth and development while meeting the needs of existing residents and businesses. It provides directions and policies that guide economic, environmental and community planning decisions.

In terms of transportation goals, York Region's vision is an expanded, comprehensive, and well-integrated public transit system that is convenient and accessible to all residents and workers and links all major communities within York Region. The Region's objectives include, but are not limited to:

- Recognizing transit as a Regional strategic investment priority;
- Working with partners to complete the transit network (including subway line extensions);
- Achieving higher transit usage by supporting improvements in service, access and design;
- Achieving an overall transit modal split of 30 percent during peak periods in the Urban Area and 50 per cent in the Regional Centres and Corridors by 2031;
- Securing lands for facilities such as transit stations and related infrastructure (including vent shafts, transit; operation and maintenance facilities, passenger pick-up and drop-off areas, electrical and electronic infrastructure and passenger safety facilities);
- Providing accessible and integrated public transit to people with disabilities; and,
- Coordinating the planning, integration and operation of existing and new transit services with local municipalities, the Toronto Transit Commission, the Province, Metrolinx and adjacent municipalities.

As noted above, York Region is undergoing a Municipal Comprehensive Review (also known as Official Plan Review) and is addressing conformity of its Regional Official Plan to the 2019 Growth Plan. As part of this scope of work, Major Transit Station Areas (MTSAs) are being delineated. Currently, up to five of the Region's proposed MTSAs are located along the Yonge North Subway Extension alignment (Steeles, Clark Royal Orchard, Langstaff/Longbridge, and Richmond Hill Centre). The Growth Plan required MTSAs to be mapped in Official Plans, and that density targets of 200 residents and jobs combined per hectare are met for areas served by subways.

4.4.3.2.2 York Region Transportation Master Plan (2016)

The York Region Transportation Master Plan (2016) updates the 2009 Transportation Master Plan and 2008 Pedestrian and Cycling Master Plan. The Plan addresses the transportation objectives of the Region's Official Plan, Vision 2051 and Strategic Plan. To accommodate population and employment growth, the transportation networks need to be optimized and expanded, and expanding opportunities for active transportation. The proposed 2041 Transit Network identifies:

- Subway Extension along Yonge Street from Toronto to Yonge Street and Highway 407 ETR; and
- Potential for this subway to be extended further north in the future.

The 2041 Transit Network also includes:

- A Rapid Transit Corridor along Yonge Street north of Highway 407 ETR;
- Frequent Transit Network (bus transit) along collector roads;
- GO Train Rush Hour Service along the railway east of the Study Area;
- Proposed East-West Transitway along the 407 ETR Corridor; and,
- Proposed Separated Cycling Facilities along Yonge Street.

Transit coordination on a regional scale, is a key component of the plan, and the Yonge North Subway Extension is identified as a key project that would increase connectivity between York Region and the rest of the Greater Toronto and Hamilton Area (GTHA).

4.4.3.2.3 York Region South Yonge Streetscape Master Plan Study Update (2021)

The York Region South Yonge Streetscape Master Plan was completed in 2012 and was updated in 2021. Since the 2012 plan, the Region has implemented several on-street cycling facilities, however public feedback indicated that on-boulevard facilities were preferred as they are perceived to be safer. Additional studies undertaken by the Region (Pedestrian and Cycling Planning and Design Guidelines and Designing Great Streets Guidelines) also did not recommend on-street cycling facilities. This resulted in the growth in support of on-boulevard cycling facilities by York Region's active transportation standards.

In response to the changing direction on implementing future cycling facilities, York Region issued an RFP to update the 2012 South Yonge Streetscape Master Plan to integrate cycling facilities with other pedestrian and streetscape facilities within the boulevard. The key objectives of the Master Plan update set out to transform the corridor into a "main street" for York Region that is bold, sustainable and achievable.

4.4.3.3 City of Vaughan Planning Studies

4.4.3.3.1 City of Vaughan Official Plan (2019)

The City of Vaughan Official Plan was approved in 2010, and the amendments to date are compiled in the 2019 Office Consolidation. The City of Vaughan is currently undertaking an Official Plan Review (OPR). The Official Plan is part of an overall Growth Management Strategy initiated by Vaughan City Council that will shape the future of the City and guide its continued transformation into a vibrant, beautiful and sustainable

City. Also known as “A Plan for Transformation”, the Plan addresses all elements of effective, sustainable, and successful city-building while managing projected growth to the year 2031.

The west side of Yonge Street north of Steeles and south of Langstaff Road is located within the City of Vaughan. The Urban Structure is organized into different Intensification Areas and Stable Areas, as follows:

- **Primary Centre:** centred at the northwest quadrant of Yonge Street and Steeles Avenue, this area is identified as a Primary Centre, which is intended for intensification around planned subway stations and existing regional shopping destinations. These areas are envisioned to become mixed use areas with residential development and a range of other uses that will serve the residents.
- **Local Centre:** located north and south of Centre Street, this Local Centre will function as mixed use cores of their communities. These areas will be primarily residential supported by a mix of uses to serve the daily needs of the surrounding community.
- **Regional Intensification Corridor:** The lands along Yonge Street are identified as a Regional Intensification Corridor, which connect the Primary Centre and Local Centre. These areas are located along roads identified for higher-order transit and can accommodate mixed use or employment intensification.
- **Natural Areas and Countryside:** The East Don River is identified as part of the Natural Areas, and the Natural Heritage Network policies of the Official Plan apply and restrict development within these areas.
- **Parkway Belt West Lands:** The lands directly south of the 407 ETR are part of the Parkway Belt West Plan.

The above Urban Structure sets the planning framework for land use decisions along the Yonge Street corridor. These intensification areas also support transit supportive densities with the planned subway extension into York Region. The Official Plan contains policies that coordinate land use and transit planning in the City of Vaughan and implement the provincial Growth Plan.

4.4.3.3.2 Yonge Steeles Corridor Secondary Plan

The Yonge Steeles Corridor Secondary Plan was adopted by Vaughan City Council on September 7, 2010, and contains land use policies and urban design guidelines for future development in the plan area, which is depicted in **Figure 4-29**. The Secondary Plan includes policies to integrate transit and land uses, assuming that either the extension of the Yonge Subway or the introduction of a Bus Rapid Transit service would be implemented along Yonge Street.

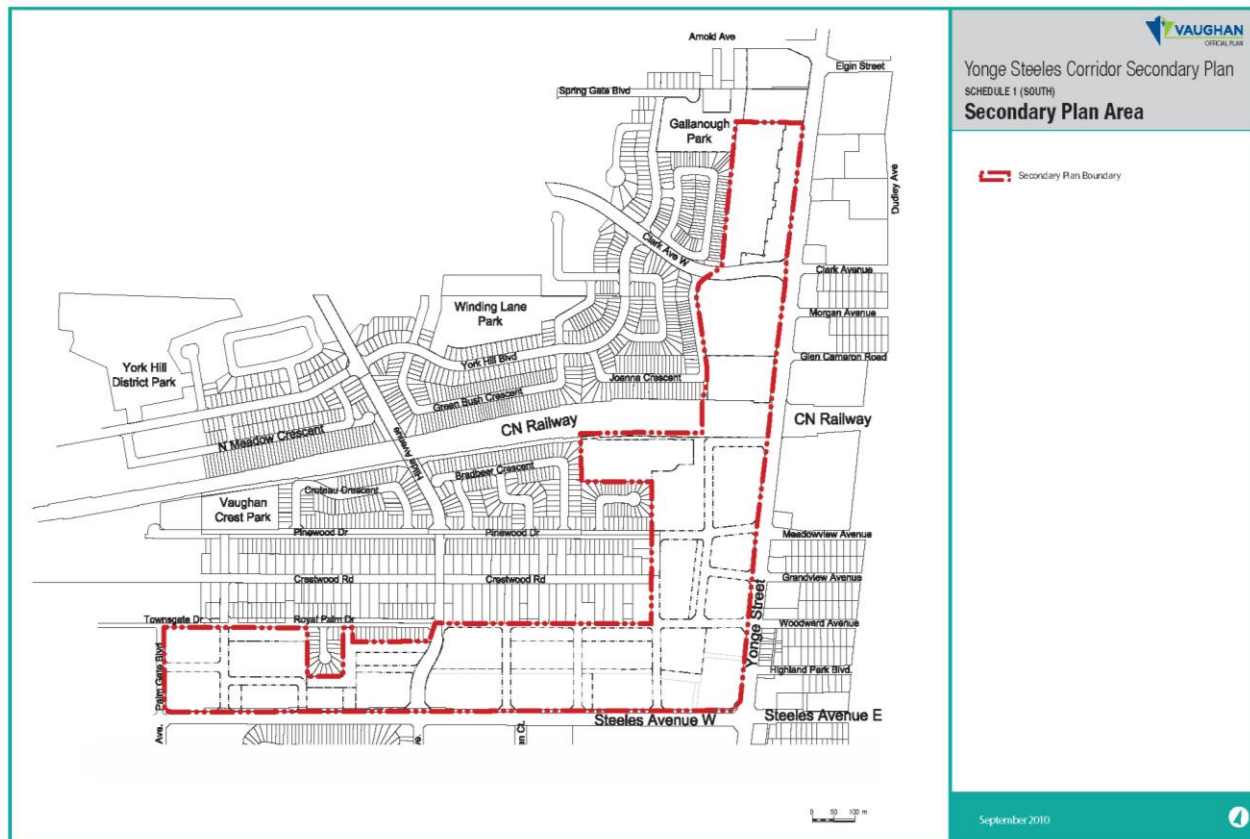


Figure 4-29 City of Vaughan Yonge Steeles Corridor Secondary Plan South Area – South Portion of Study Area

The Secondary Plan provides opportunities for intensification through the redevelopment of lands fronting Yonge Street and Steeles Avenue while simultaneously protecting stable residential neighbourhoods, providing a range of housing choices and a mix of uses, conserving land, and minimizing the ecological footprint of the residential and working population.

4.4.3.3.3 City of Vaughan Transportation Master Plan (2012)

The Vaughan Transportation Master Plan (TMP) (2012) is currently undergoing an update and was prepared to address the auto-oriented urban structure of the City of Vaughan, and to evaluate transportation needs and identify policies, infrastructure and services needed to accommodate growth to 2031. The TMP highlights that the City of Vaughan has integrated transit and land use planning in the Official Plan, and that the urban structure of intensification areas will support transit supportive densities and encourage alternative modes of transportation. The Plan builds upon the 2007 Pedestrian and Bicycle Master Plan pedestrian and bicycle network of trails and pathways. The TMP identifies targets for transit modes, identifies a 'Transit First' approach, and programs to change travel behaviours. The Yonge North Subway Extension is noted as one of the planned transit network improvements.

The City of Vaughan initiated a new Transportation Plan in 2019 that will update and re-evaluate transit and transportation policies and infrastructure needs for the next 20 years.

4.4.3.3.4 Vaughan Thornhill Heritage Conservation District

The community of Thornhill contains two Heritage Conservation Districts (HCDs), one within the City of Vaughan, and the other within the City of Markham. A heritage permit is required from the City of Vaughan and Markham for certain development activities within the HCDs.

The Vaughan Thornhill Heritage Conservation District is located on the west side of Yonge Street, generally from south of Arnold Avenue to Helen Avenue. The HCD was approved by the City of Vaughan in 1988, and the Thornhill Vaughan Heritage Conservation District Plan (2007) sets out design guidelines for development within this area. The guidelines provide for direction on the design of buildings to fit into the surrounding heritage character. The intent for the Yonge Street corridor to become a vibrant mixed-use area is acknowledged in the plan, and policies are outlined to protect, and enhance heritage resources, and ensure that developments are complementary to the surrounding heritage character (City of Vaughan 2007).

4.4.3.3.5 Vaughan Pedestrian and Bicycle Master Plan (2017)

In 2017, the City of Vaughan undertook an update to the 2007 Pedestrian and Bicycle Master Plan to set the City on a path to becoming a more walkable and bikeable community. The updates built on the 2010 Vaughan Official Plan and the 2012 Transportation Master Plan and focused on building a community and internal understanding and support, as well as understanding community priorities while updating technical content to reflect current standards.

The key themes outlined in the updated Pedestrian and Bicycle Master Plan are outlined below:

- **Safety:** will be prioritized through physically separated pedestrian and cycling infrastructure (sidewalks and cycle tracks) for all ages and abilities, as well as ongoing seasonal maintenance.
- **Infrastructure:** will be advanced in a cost-effective yet timely manner by leveraging larger capital projects and developments and annual active transportation planning and implementation program budgets to fill the gaps.
- **Connectivity:** will occur by prioritizing bold initiatives such as the Vaughan Super Trail, Vaughan Metropolitan Centre Separated Cycling Network, localized neighbourhood mini-networks and intensification areas, as well as access across physical barriers.
- **Awareness and Culture:** within the organization and broader community will be fostered through ongoing education and outreach as well as expanding active transportation policies and guidelines in applicable City plans.

4.4.3.3.6 City of Vaughan Yonge-Steeles Urban Design and Streetscape Study (Ongoing)

The Yonge-Steele Urban Design Study and Streetscape Plan is currently underway for completion in 2022 and sets out to develop an urban design framework through design guidelines and a streetscape plan to guide private development and publicly accessible space design for the secondary plan area. The study will build on the existing City policy frameworks and guidelines to support the evolution of the Yonge-Steeles Corridor as an attractive, transit-oriented, vibrant and sustainable urban environment and an inviting destination for people and businesses.

4.4.3.4 City of Markham Planning Studies

4.4.3.4.1 City of Markham Official Plan (2018)

The City of Markham Official Plan was approved in 2014 in part, and the Office Consolidation is based on the Partial Approval Orders from the Ontario Municipal Board (OMB) and Local Planning Appeal Tribunal (LPAT). The Official Plan provides a vision for growth in Markham to 2031, based on the principles of protecting the natural environment and agricultural lands, building healthy communities, increasing travel options and

maintaining a strong economy. The land use framework set out in this plan is informed by the principles of sustainable community development.

The Urban Structure of the City of Markham consists of a system of Centres and Corridors. Along Yonge Street, the Urban Structure identifies the following areas:

- **Gateway Hub:** The intersection of Steeles Avenue and Yonge Street is identified as a Gateway Hub, a key entrance location to and from the City of Markham which supports a sense of place and community.
- **Regional Corridor / Key Development Area:** as part of the City's intensification strategy, priority areas for intensification include Regional Corridor / Key Development Areas, as well as Local Centres and Corridors. Growth will be directed to these areas. Two areas along Yonge Street are identified with this designation, the Yonge Steeles Corridor, located north of Steeles Avenue, and the Yonge North Corridor, located at Royal Orchard Boulevard.
- **Heritage Centre:** The area at Yonge Street and John Street is identified as a Heritage Centre and is one of Markham's heritage conservation districts which recognize the distinct character of heritage buildings, historic sites and landscapes. Any redevelopment within this area must be compatible and enhance the heritage character of Thornhill.

Langstaff Gateway is located east of Yonge Street, south of the 407 ETR and is part of the Provincial Urban Growth Centre. The Official Plan recognizes its status as a Regional Centre, as defined in the York Region Official Plan. It is also identified as an Anchor Hub, which are intended to be a central place with significant levels of transit services that support development (Markham 2014). Multiple transit systems interface at the Langstaff Gateway including the GO Rail system, a Regional Rapid Transit Corridor along Highway 7 and the planned Highway 407 Transitway. The Langstaff Gateway is adjacent to the Richmond Hill Regional Centre north of Highway 407 ETR.

The City's Urban Structure also identifies a Greenway System which includes natural heritage and hydrological features and their associated buffers. The Official Plan contains a set of development policies around the permitted uses within and adjacent to this area.

4.4.3.4.2 Langstaff Gateway Secondary Plan (2011)

In May 2008, the City of Markham initiated a Master Plan for the Langstaff area, bounded to the north by Langstaff Road, to the south by the Holy Cross Cemetery, to the east by Bayview Avenue and to the west by Yonge Street. A large proportion of the Langstaff area is located within the YNSE Study Area and the approved plan is based on the Gateway Community being serviced by a subway entrance located at Yonge Street, as shown in Schedule BB – Community Structure found in official Plan Amendment No. 183.

Through consultation with area landowners and the public, a Land Use and Built Form Master Plan and mixed-use design concept was created. The Langstaff Gateway Secondary Plan and an Official Plan amendment were approved by York Regional Council in 2011 and are now in effect. The Langstaff Gateway Secondary Plan implements the vision of the Master Plan, and provides for a compact, complete, integrated, sustainable, high-density urban centre that will serve as a portion of the Regional Centre and the Richmond Hill Centre / Langstaff Gateway Urban Growth Centre.

4.4.3.4.3 Yonge Steeles Corridor Study- Secondary Plan Amendment

The Yonge Steeles Corridor Study was undertaken based on the direction that growth in the region will occur through Regional Centres and locally identified Key Development Areas within Regional Corridors. The Thornhill Secondary Plan covers the entire community of Thornhill in Markham. This Secondary Plan Amendment establishes new policies for the Yonge Steeles Redevelopment Area, which includes the lands at the north-east quadrant of Yonge Street and Steeles Avenue. The area extends north to south of Elgin Street,

and extends easterly to Dudley Avenue, except for the block directly abutting Steeles Avenue, which extends further east to Willowdale Boulevard. The Secondary Plan Amendment identifies a policy framework that will guide development to achieve the built form objectives, while providing appropriate transitions to surrounding land uses. The plan encourages mixed use, compact forms, and vibrant frontages and requires appropriate urban design and servicing studies.

4.4.3.4.4 City of Markham Cycling Master Plan (2010)

The City of Markham Cycling Master Plan (2010) recommends a strategy for addressing cycling in Markham until the year 2025. It lays out a clear path that the City can follow to provide a more integrated cycling network, which is a key component of the local transportation and recreational system. A guiding principle of the plan is that the cycling network should be integrated with other nodes of transportation, particularly public transit, and routes should be selected to provide access to transit nodes.

4.4.3.4.5 City of Markham Pedestrian and Trail Master Plan (2009)

The City of Markham Pedestrian and Trails Master Plan (2009) sets out the means for improving and expanding Markham's trail system. The vision of the plan is an interconnected system of pathways and trails which provide improved connections to existing and planned sidewalks and connect neighbourhoods to key destinations in Markham.

4.4.3.4.6 Markham Thornhill Heritage Conservation District

The community of Thornhill contains two Heritage Conservation Districts (HCDs), one within the City of Vaughan, and the other within the City of Markham. A heritage permit is required from the City of Vaughan and Markham for certain development activities within the HCDs.

The City of Markham approved the Thornhill Heritage Conservation District in 1986. The boundary of the HCD is located on the east side of Yonge Street, generally from south of Arnold Avenue to Bay Thorn Drive. A large area along John Street is located within this HCD. The Thornhill-Markham Heritage Conservation District Plan establishes a set of policies and design guidelines for this area. The YNSE alignment is located in proximity to the Yonge Street Special Policy Area, which is located between John Street and south of the East Don River. The HCD Plan includes Yonge Street streetscape policies that recognize the intent for this corridor to become a vibrant mixed-use area, that promotes a high-quality pedestrian environment and transit supportive streetscape. The policies identify a framework for how the Yonge Street corridor should be developed, in a way that is complementary the historic character of the area (City of Markham 2005).

4.4.3.5 City of Richmond Hill Planning Studies

4.4.3.5.1 City of Richmond Hill Official Plan (2020)

The City of Richmond Hill Official Plan was partially approved by the OMB in 2018 and amendments since that time have been included in the 2020 Office Consolidation. The City is currently reviewing its Official Plan and will be completing a Municipal Comprehensive Review. The existing Official Plan vision identifies guiding principles including creating complete communities, environmental protection and sustainability, economic vitality, place making, and planning for connectivity and mobility.

With the City's settlement areas nearly built out, future development in the Town will be through intensification. The Urban Structure for the City of Richmond Hill identifies the following components within the Study Area:

- **Richmond Hill Centre:** the lands surrounding Yonge Street and Highway 7 are designated as a Centre. This Centre will be the primary intensification area for the greatest height and density and is planned to achieve a 1:1 ratio of residents-to-jobs.

- **Regional Corridor:** Regional Corridors are key connections between Centres in York Region and across the GTA, which accommodate transit. There are two Regional Corridors within the Study Area along Yonge Street and Highway 7. Not all areas along these corridors will be suitable for intensification.
- **Parkway Belt West Plan:** includes the lands along the Highway 407 ETR corridor along the municipal border with the City of Markham that are within the Parkway Belt West Plan area.
- **Greenway System:** the Greenway System contains natural features and functions as well as urban open spaces. The Study Area includes portions of the Greenway System along Pomona Creek and German Mills Creek.
- **Key Development Area:** These areas are generally located along Regional Corridors and are well served by transit and major nodes of retail and commercial development, and where there are opportunities for redevelopment. A Key Development Area is located at Yonge Street and Carrville Road / 16th Avenue.

Official Plan policies address the policies that support the urban structure and implement the guiding principles of the plan. The Transportation System policies identify the importance of having a well connected transportation system, a range of mobility options, coordination with regional and provincial transportation initiatives, and local transportation and transit needs.

4.4.3.5.2 Richmond Hill Centre Secondary Plan (Ongoing)

The Richmond Hill Centre Secondary Plan is under development and has been presented at two Public Open Houses. The Secondary Plan will outline a vision for the urban centre and provide development policies. The Centre is envisioned as a hub of residential and employment uses, well serviced by transit, and will be the place where new public spaces and walkable streets are established.

4.4.3.5.3 Yonge and Carrville / 16th Key Development Area Secondary Plan (Ongoing)

The Yonge and Carrville / 16th Key Development Area Secondary Plan is under development. It was first presented to Council in 2017, and both the Secondary Plan and Official Plan Amendment were revised based on public input. Currently, the Secondary Plan is undergoing further review and is being revisited as part of the Official Plan Review process. The Key Development Area Policy Directions and Recommendation Report presents a preferred land use scenario that identifies a range of low (4 storey), mid-rise (8 storeys), tall building zone (16 storeys) and tall buildings: Yonge and 16th Intersection (20 storeys). The built form and development policies for this area will be finalized and are subject to change.

The Secondary Plan will provide direction for intensification of the area as a retail, commercial, and medium to high-density development node. It proposes policy direction on matters such as character, parks and open space, transportation and servicing and provides for the development of a multi-use trail, which is planned to be located generally in an area extending from Langstaff Road to 16th Avenue, west of the CN rail corridor.

A workshop and stakeholder engagement has taken place with respect to the Secondary Plan, and per Richmond Hill's Key Directions report it is anticipated that elements of this Secondary Plan will be carried forward including the possibility of a future TTC/GO station serving this area. The City's Yonge – 16th Key Development Area (KDA) Secondary Plan shown in **Figure 4-30** below, identifies the conceptual location for the future subway station at the Yonge Street and 16th Avenue area.

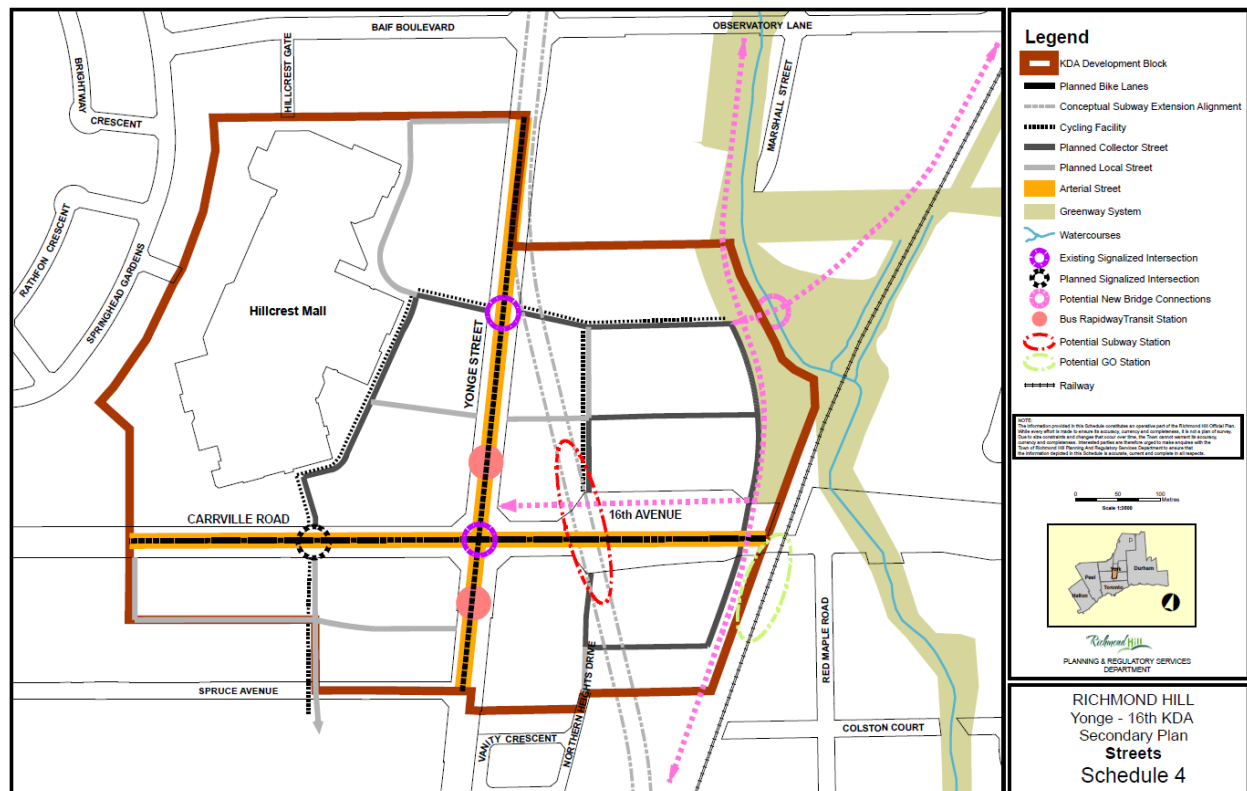


Figure 4-30 Yonge – 16th KDA Secondary Plan

4.4.3.5.4 City of Richmond Hill Transportation Master Plan (2006)

The City of Richmond Hill's Transportation Master Plan aims to address key transportation challenges including the need to manage growth and minimize environmental impacts while ensuring that Richmond Hill has a strong competitive position to attract business and maintain economic vitality. The 2006 TMP was further updated in 2014 to reflect new population and employment forecasts, support the implementation of the Official Plan, and accommodate provincial and regional planning goals and objectives.

The 2014 TMP addressed Richmond Hill Centre and noted that Yonge Street is intended to be a pedestrian-oriented urban street with accessible transit, with a grid of secondary streets to support the transportation needs of the area. The TMP identified street network upgrades including a mid block crossing at Highway 7 to connect Richmond Hill Centre to Markham's Langstaff Gateway, a pedestrian and cyclist bridge over the CN Rail tracks at Richmond Hill Centre, and an extension of Garden Avenue between Yonge Street and Bayview Avenue including a grade separation at the railway tracks.

The City of Richmond Hill initiated a study in 2019 to update the Transportation Master Plan to establish a future vision for all travel modes within the City to the year 2041.

4.4.4 Segment 1 – Finch Station to Clark Station (Below Grade)

The following neighborhoods are found within this segment:

- Newtonbrook West, which comprises land west of Yonge Street up through Drewry Avenue (which becomes Cummer Avenue east of Yonge Street) in the City of Toronto;
- Newtonbrook East, which comprises lands east of Yonge Street to Cummer Avenue in the City of Toronto;

- Thornhill Community, which is located north of Steeles Station and divided between the City of Markham and the City of Vaughan.

Steeles Avenue represents the municipal boundary between the City of Toronto and York Region. Within York Region, Yonge Street is the boundary between the lower-tier municipalities of Vaughan to the west and Markham to the east. Within both Vaughan and Markham, this segment of the Study Area represents a primary municipal gateway. The segment is suburban and automobile-centric in nature, both from a land use and built form perspectives. While the area is suburban in nature, it is an evolving Regional intensification corridor with multiple high-density mixed-use developments constructed in the area.

4.4.4.1 Socio-Economic Conditions

In 2016, the population of Newtonbrook West was 23,831 – a 3% increase since 2011, while the population of Newtonbrook East was 16,097, a 2% decrease since 2011. The median age of residents was approximately 42 years in both neighbourhoods. Twenty eight percent (28%) of residents in Newtonbrook West and 45% in Newtonbrook East lived in private single-detached housing, while 49% of residents in Newtonbrook West and 43% in Newtonbrook East resided in units in high-density buildings greater than five storeys. 45% of residents in Newtonbrook West and 49% in Newtonbrook East commuted to work by driving their own vehicles while 43% in Newtonbrook West and 41% in Newtonbrook East took public transit (City of Toronto, 2016).

Thornhill is a community located within the Cities of Markham and Vaughan. In 2016, Thornhill had a population of 112,719, a 2% increase since 2011. The median age of residents was just under 43 years. Private single-detached housing comprised 53% of Thornhill's dwelling units, while 26% of residents occupied units in high-density buildings greater than five storeys. 70% of Thornhill residents commuted to work in personal vehicles, while nearly 20% took public transit (Statistics Canada, 2016).

4.4.4.2 Existing Land Use

The land uses described in **Table 4-9** are located within this segment and are mapped in **Appendix C**. The following sections characterize the existing uses by land use type within the Study Area.

Table 4-9 Existing Land Uses – Segment 1: Finch Station to Clark Station

Land Use Type	Facility Name
Institutional – School	Anderson College
Institutional – School	Unionville Academy
Institutional – School	Drewry Secondary School
Commercial	Centrepont Mall
Recreation Area	North York Seniors Centre
Park	Olive Square
Park	Finch Parkette
Park	Centre Park
Park	Benjamin Thorne Park
Park	Sir Robert Watson-Watt Park

4.4.4.2.1 Residential Uses

This segment of the Study Area comprises high density mixed residential uses along the Yonge Street corridor (within approximately 100 m of Yonge Street). A number of large apartment buildings and condominium towers are located along Yonge Street, including the World on Yonge just north of Meadowview Avenue on the east side of Yonge Street (see **Table 4-23** below) and the Skyrise on Yonge just south of Clark Avenue on the west side of Yonge Street (see **Table 4-24** below). A large site at the south-east quadrant of Yonge Street and Cummer Avenue is under development for a large residential development. A number of large apartment and condominium towers are located at the intersection of Yonge Street and Clark Avenue.



Figure 4-31 View Facing North on Yonge Street North of Steeles Avenue –
World on Yonge Mixed Use Development



**Figure 4-32 View Facing South-West on Yonge Street at Clark Avenue –
*Skyrise on Yonge Mixed-Use Development***

Beyond the mixed-uses along the Yonge Street corridor are established low density residential neighbourhoods. These areas are designated as ‘Neighbourhoods’ in the City of Toronto Official Plan, ‘Residential Low Rise’ in the City of Markham Official Plan, and ‘Low-Rise Residential’ in the City of Vaughan Official Plan.

4.4.4.2.2 Commercial and Industrial Uses

Two (2) large high-rise office buildings are located at the south-west quadrant of Yonge Street and Finch Avenue, the North American Centre buildings. These buildings include employment offices and associated retail uses in close proximity to the existing Finch Subway Station.



**Figure 4-33 View Facing South-West on Yonge Street at Bishop Avenue –
North American Centre Office Buildings**

Centerpoint Mall, located at the southwest intersection of Yonge Street and Steeles Avenue West, is a large indoor shopping centre with over 95 commercial tenants. Across the street from the mall, north of Steeles Avenue West, is a large commercial plaza containing various retail uses and services. Further north along Yonge Street, a series of auto dealerships are clustered on the west side of Yonge Street, south of the railway corridor. Doncaster Avenue, east of Yonge Street contains a number of established commercial businesses, on the south side of the rail corridor.

Further north, mixed use developments are located on the west side of Yonge Street, north and south of Clark Avenue. The south-west quadrant contains a high-density mixed-use development with at grade retail and office uses. Strip plaza commercial uses are located on the east side of Yonge Street, south of Clark Avenue. Several commercial plazas and multi-unit buildings line both sides of Yonge Street within this segment. These commercial uses include restaurants, retail stores, offices, grocery stores, and other convenience services.

There are no industrial uses within this segment.

4.4.4.2.3 Institutional Uses

A total of three (3) schools are located within this segment, as outlined in **Table 4-9**. The schools are generally located beyond the Yonge Street corridor, with the exception of Anderson College, which is located on Yonge Street just north of the Finch Station Pick up and Drop off area.

There are a number of specialized schools that are located within the commercial plazas along Yonge Street. In general, these uses are contained within a commercial unit and do not have outdoor amenities (i.e., playgrounds, sports fields).

4.4.4.2.4 Recreational Uses

This segment comprises a number of parks, parkettes, recreation areas and open spaces, as shown in **Table 4-9**. North York Seniors Centre, shown in **Figure 4-34**, is a recreational facility that provides classes, events, and social supports for seniors.



Figure 4-34 Recreational Land Use – North York Seniors Centre

Two parks, Olive Square and Benjamin Thorne Park are located within approximately 100 m of Yonge Street.

4.4.4.2.5 Sensitive Facilities

A total of three (3) sensitive facilities are located within the segment, all of which are schools. There are no places of worship, childcare facilities, hospitals or long-term care facilities located in this segment.

4.4.4.3 Planned Land Use

4.4.4.3.1 Official Plan

According to the City of Toronto Official Plan, the section of Segment 1 between Finch Avenue and Steeles Avenue is designated 'Mixed-Use Areas' along the Yonge Street corridor and 'Neighbourhoods' with some 'Parks' beyond Yonge Street. There is also a 'Utility Corridor', a Hydro One transmission line, running east-west just north of Finch Avenue. These designations are classified under the generic 'Mixed Use', 'Residential', 'Parks/Open Space', and 'Utilities/ Transportation' categories, see **Table 4-8** for an overview of generic land use designations.

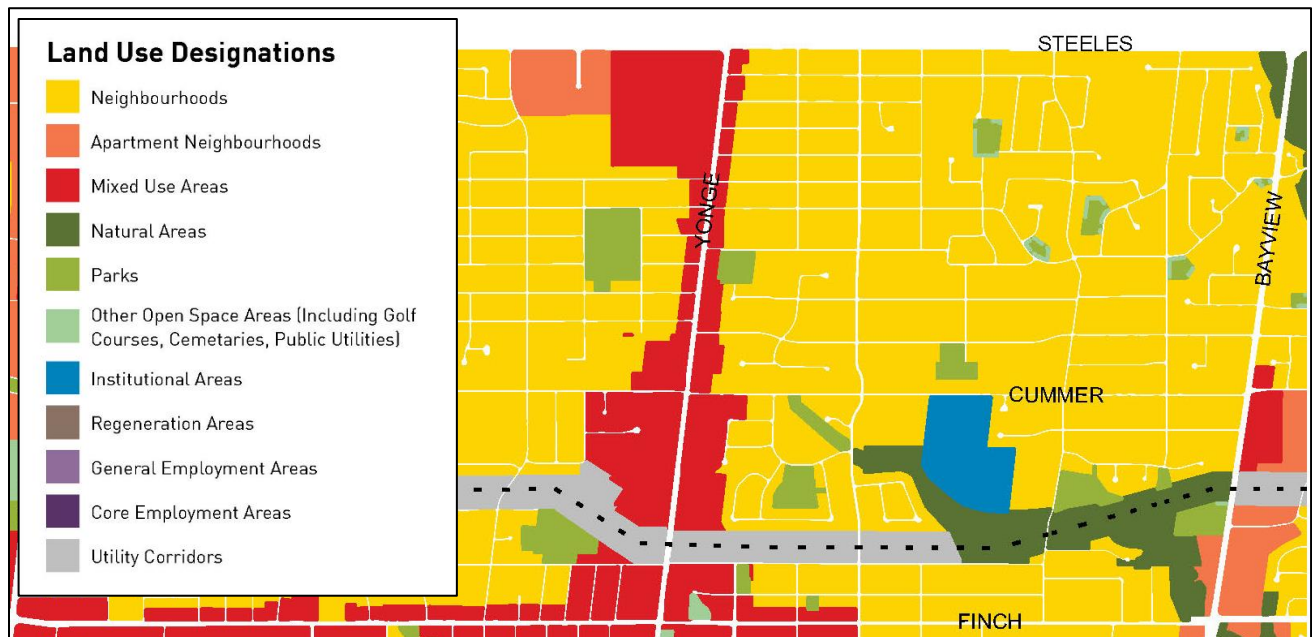


Figure 4-35 Excerpt from City of Toronto Official Plan – Map 16 Land Use Plan

Under the York Region Official Plan, the section of this segment between Steeles Avenue and Clark Avenue is designated as an 'Urban Area' and Yonge Street is defined as a 'Regional Corridor'.

The City of Markham Official Plan designates the portion of Segment 1 east of Yonge Street between Steeles Avenue and Clark Avenue 'mixed use high rise'. The CN Railway Corridor, classified as 'transportation and utilities', crosses the segment south of Clark Avenue. These designations are classified under the generic 'Mixed Use' and 'Utilities/Transportation' categories.

In the City of Vaughan Official Plan, the portion of Segment 1 west of Yonge Street between Steeles Avenue and Clark Avenue is designated 'lands subject to secondary plans', in reference to the Yonge Steeles Corridor Secondary Plan. These designations are classified under the generic 'Mixed Use' categories.

4.4.4.3.2 Zoning

Under the City of Toronto Zoning By-law 569-2013, the portion of Segment 1 between Finch Avenue West and Steeles Avenue West is zoned primarily 'Commercial Residential'. One notable exception is the Hydro One Transmission Line, zoned as a 'Utility and Transportation' corridor and extending to just north of Finch GO Station. Another exception is 'Residential Apartment' areas north of Drewry Avenue/ south of Connaught Avenue and north of Moore Park Avenue/south of Centerpoint Mall on the west side of Yonge Street.

North of Steeles Avenue the Study Area is within York Region, with the City of Vaughan on the west side of Yonge Street, and the City of Markham on the east side of Yonge Street.

It should be noted that, at the time of writing this Addendum, the City of Vaughan and the City of Markham were undertaking Comprehensive Zoning By-law reviews to produce new zoning by-laws that conform to Official Plan policies and guide land use and development. This section should be interpreted in the context of the in-effect zoning by-law at the time of study.

According to the City of Vaughan Zoning By-law 1-88, the portion of Segment 1 between Steeles Avenue and Clark Avenue west of Yonge Street is zoned 'Commercial', with the exception of the CN rail corridor zoned 'Transportation Industrial' and the land north of the CN tracks/ south of Clark Avenue West zoned 'Commercial Residential'.

According to the City of Markham Zoning By-law 2551, most of the land between Steeles Avenue and Clark Avenue are zoned 'Highway Commercial'. There are two (2) areas zoned 'Community Amenity': north of Woodward Avenue/ south of Grandview Avenue and another north of Meadowview Avenue/ south of the CN rail corridor. Additionally, the portion of Segment 1 north of Glen Cameron Road/ south of Morgan Avenue is zoned 'Neighbourhood Commercial' and north of Morgan Avenue/ south of Clark Avenue is zoned 'Community Commercial'.

4.4.4.3.3 Secondary Plans and Future Developments

Nearby development applications in this segment of the Study Area as of April 2021 are as follows:

City of Toronto

- 127 Finch Avenue- proposal for three townhouse blocks containing a total of 17 common element condominium street townhouse units with internal private road and an underground garage.
- 100 Finch Avenue- proposal for a four-storey residential building with ground floor commercial uses and a one-level underground garage. Concurrent Official Plan Amendment, Rezoning and Site Plan Control applications.
- 50 Finch Avenue- proposal to construct a nine-storey mixed-use building with ground floor commercial uses and two levels of below-grade parking.
- 57 Finch Avenue- Draft Plan of Condominium Application to establish stacked townhouses. A Rezoning Application, and Site Plan Approval Application have been approved for the proposed development.
- 40 Hendon Avenue- Official Plan Amendment proposing a four-storey multi-unit residential building consisting of two-storey townhouse units and apartment units. The Official Plan Amendment proposes to amend mapping of the North York Centre Secondary Plan that shows Hendon Avenue terminating into a cul-de-sac.
- 5799-5915 Yonge Street- Site plan approval application for the first phase of the Newtonbrook Plaza re-development, which includes two mixed-use towers of 34 and 32 storeys.
- 5800 Yonge Street- Plan of Subdivision Approval application for four new residential and mixed-use buildings with heights ranging from 34- to 44-storeys and a new public park organized around a network of public streets and a system of pedestrian connections.
- 5995 to 5997 Yonge Street- Zoning By-law Amendment application for a 40-storey mixed use building with non-residential.
- 51 Drewry Avenue- proposal for two towers of nine and 29-storeys and a five-storey podium containing townhouses and apartment units.
- 5959 Yonge Street- Site Plan application to permit a 40-storey high-rise mixed-use building.
- 6080 Yonge Street- Zoning by-law and Official Plan amendment for a 20-storey mixed-use building.
- 6150 Yonge Street- Site Plan Application for a mid-rise mixed-use building that comprises an entire block along Yonge Street between Pleasant Avenue and Goulding Avenue.

City of Vaughan

- 7028 Yonge Street and 2 Steeles Avenue West- proposed mixed-use development consisting of three towers of residential, hotel, and at-grade retail.
- 100 Steeles Avenue West- proposed mixed-use development consisting of four mixed-use blocks and a north-south public street.

- 180 Steeles Avenue West- proposed mixed-use development consisting of six buildings with residential and ground floor retail uses, including two 16-storey buildings and four towers ranging from 25 to 45 storeys.
- 72 Steeles Avenue West- proposed mixed-use development consisting of three buildings with residential and ground floor retail uses. 7040 and 7054 Yonge Street are also included within this proposed development.
- 7080 Yonge Street- proposed mixed-use development consisting of two high-rise buildings, linked by a shared two-storey podium.
- 88 Steeles Avenue West- proposed redevelopment containing two mixed-use towers with heights of 40 and 52 storeys atop a shared seven-storey podium.

City of Markham

- 36 Steeles Avenue- Official Plan Amendment and Zoning by-law amendment applications for the development of two 13-storey mixed-use buildings and two eight-storey residential buildings.
- 7015 Yonge Street- proposed redevelopment of a current gas station into two mixed-use residential towers with heights of 65 and 52 storeys connected by a one-storey podium.

The southern portion of Segment 1, between Finch Avenue and Drewry Avenue (west of Yonge Street)/ Cummer Avenue (east of Yonge Street) is located within the City of Toronto's North York Centre Secondary Plan Area, see **Section 4.4.3** for more information about this plan.

From Steeles Avenue to Clark Avenue, this portion of Segment 1 is located within the Yonge Steeles Corridor Secondary Plan area (within the City of Vaughan) and the Yonge Steeles Corridor Study Area (within the City of Markham).

4.4.5 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

This segment is entirely located within the community of Thornhill, which is separated between the City of Markham to the east of Yonge Street and the City of Vaughan to the west.

4.4.5.1 Socio-Economic Conditions

Refer to **Section 4.4.4** for a description of Socio-Economic Conditions of the Thornhill community.

4.4.5.2 Existing Land Use

The land uses described in **Table 4-10** are located within this segment and are mapped in **Appendix C**. The following sections characterize the existing uses by land use type within the Study Area.

Table 4-10 Existing Land Uses – Segment 2: Clark Station to Portal/Launch Shaft

Land Use Type	Facility Name
Institutional - School	Thornhill Public School
Institutional - School	Baythorn Public School
Institutional - School	St. Anthony Catholic School
Institutional - Place of Worship	Thornhill Baptist Church
Institutional - Cemetery	Thornhill Baptist Church Cemetery
Institutional - Cemetery	Holy Cross Catholic Cemetery & Funeral
Institutional - Child Care Facility	Inventive Minds Kidz Academy

Land Use Type	Facility Name
Institutional - Library	Thornhill Village Library
Recreation Area	The Thornhill Club
Recreation Area	Ladies' Golf Club of Toronto
Recreation Area	Thornhill Park Tennis Club
Park	Thornhill Park & Sports Fields
Park	Cricklewood Park
Park	Riverside Park
Park	Royal Orchard Park
Park	Romfield Park

4.4.5.2.1 Residential Uses

Between Clark Avenue and Royal Orchard Boulevard, along the Yonge Street corridor, this segment of the Study Area consists of low and mid-rise apartments and condominiums as well as single-detached homes, classified mainly as 'Residential Mid-Rise' in the City of Markham Official Plan and 'Low-Rise Mixed Use' in the City of Vaughan Official Plan. A concentration of mid-to-high density 'tower in the park' style apartments and condominiums are located near Royal Orchard Boulevard, surrounding the proposed Royal Orchard Station, including the Gazebo of Thornhill condominiums located north of Royal Orchard Boulevard and south of Bay Thorn Drive (see **Figure 4-34**).



**Figure 4-36 View Facing East on Yonge Street, North of Royal Orchard Boulevard –
*The Gazebo of Thornhill Condominiums***

Beyond the Yonge Street corridor and north of Royal Orchard Boulevard, this segment of the Study Area consists of low-density residential neighbourhoods. This includes the Langstaff Community located east of the proposed Royal Orchard Station, which is comprised of predominantly single-family homes.

4.4.5.2.2 Commercial and Industrial Uses

Commercial uses within this segment consist mainly of low-density commercial plazas offering retail and grocery stores, restaurants, banks, and medical offices. Between John Street and Crickelwood Park / the Thornhill Club, the Yonge Street corridor is lined with retail shops, restaurants and offices that make up the commercial core of the Markham/Vaughan Thornhill Heritage Conservation District (see **Figure 4-37** below).



Figure 4-37 View Facing West on Yonge Street, North of Old Jane Street – Commercial Uses Within the Markham/Vaughan Thornhill Heritage Conservation District



Figure 4-38 View Facing North-East on Yonge Street, North of Thornhill Summit Drive – Commercial Uses Within the Markham/Vaughan Thornhill Heritage Conservation District

The Royal Orchard Shopping Centre, located on the east side of Yonge Street at Royal Orchard Boulevard, provides retail and office space for over 15 commercial tenants. There are no industrial uses within this segment.

4.4.5.2.3 Institutional Uses

This segment contains a significant number of institutional uses, including three (3) schools, one (1) place of worship, two (2) cemeteries, one (1) childcare facility, and one (1) library, as shown in **Table 4-10**. Thornhill Public School is located on the west side of Yonge Street and Arnold Avenue adjacent to the

proposed alignment, while St. Anthony Catholic School is located north of Banquo Road and south of Kirk Drive directly above the proposed alignment.

Holy Cross Catholic Cemetery, which provides burial services, a funeral home, and related facilities, is located just southwest of the proposed portal footprint where the subway alignment comes to grade, extending east to the existing CN corridor. Both the Thornhill Baptist Church and its accompanying cemetery are also located along the corridor, at Yonge Street and Royal Orchard Boulevard, slightly south of the proposed Royal Orchard Station. Inventive Minds Kidz Academy, an early childhood development and daycare centre, and the Thornhill Village Branch of the Markham Public Library System are located on the east side of Yonge Street, north of Colborne Street and south of Thornhill Summit Drive near where the proposed alignment traverses off Yonge Street and completely into the City of Markham.



Figure 4-39 View Facing West on Yonge Street, Just North of Royal Orchard Boulevard –
Thornhill Baptist Church

4.4.5.2.4 Recreational Uses

There is a high concentration of parks, recreation areas, and open space along both sides of the proposed alignment within this segment. As outlined in **Table 4-10**, this amounts to a total of three (3) parks and two (2) recreation areas within the Study Area. A park, Romfield Park, is located adjacent to the proposed alignment, slightly east of where the alignment begins running parallel to the existing CN corridor. A section of Royal Orchard Park is also contained within the Study Area, between Bay Thorn Drive and Thorny Brae Drive. Pedestrian trails meander along Pomona Creek and the East Don River valley.

The Thornhill Park Tennis Club, a privately owned tennis facility offering court bookings, programs and lessons, is located on the east end of Thornhill Park in close proximity to Yonge Street. The Thornhill Club, a private golf course, is located on the west side Yonge Street, north of Mill Street and the East Don River. Finally, the Ladies' Golf Club of Toronto is located south of Cricklewood Park on the east side of Yonge Street.

4.4.5.2.5 Sensitive Facilities

In summary, 8 (eight) sensitive facilities are located within the segment, including three (3) schools, one (1) place of worship, two (2) cemeteries, one (1) childcare facility, and one (1) library. There are no hospitals or long-term care facilities located in this segment.

4.4.5.3 Planned Land Use

4.4.5.3.1 Official Plan

The York Region Official Plan designates all land north of proposed Clark Station to the proposed portal/launch shaft location as 'Urban Area' and defines Yonge Street as a 'Regional Corridor'.

According to the City of Markham Official Plan, various land use designations apply along this segment of Yonge Street. This includes 'Residential Mid Rise' areas immediately north of proposed Clark Station, transitioning into a 'Mixed Use Heritage Main Street' and a small 'Residential High Rise' strip north of John Street. These land uses are generically classified as 'Mixed Use' and 'Residential'. The segment then traverses east into the City of Markham north of Royal Orchard Boulevard, passing through a 'Greenway', 'Private Open Space', and 'Residential Low Rise' areas. Towards the north end of the segment, the CN Railway corridor is found and is designated as 'Transportation and Utilities'. These land uses are generalized as 'Parks/Open Space', 'Residential', and 'Utilities/Transportation' as per **Table 4-8**.

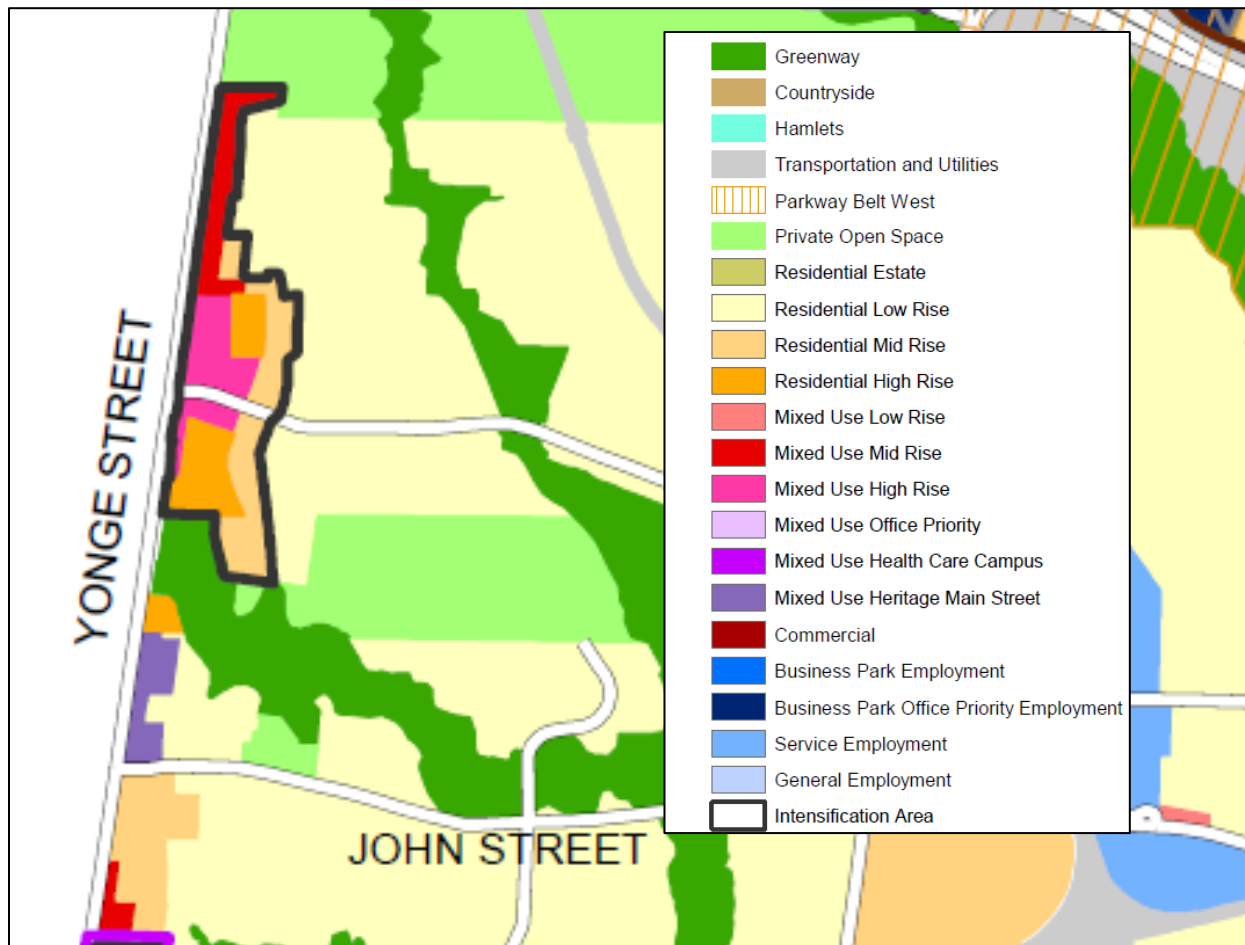


Figure 4-40 Excerpt from City of Markham Official Plan Map 3 – Land Use

The City of Vaughan Official Plan also applies multiple designations to this segment along Yonge Street. North of proposed Clark Station and south of Centre Street, the land is primarily designated 'Low-Rise Mixed-Use', interspersed with a 'Mid-Rise Mixed-Use' section and two small 'Parks' areas. North of Centre Street, this segment of the Study Area includes 'Parks,' 'Natural Areas', and 'Private Open Spaces' designations before it traverses east and away from the City of Vaughan. These uses are classified as 'Mixed Use' and 'Parks/Open Space' as per **Table 4-8**. Segment 2 is also located within two Heritage Conservation Districts (HCDs), the Vaughan-Thornhill HCD and the Markham-Thornhill HCD.

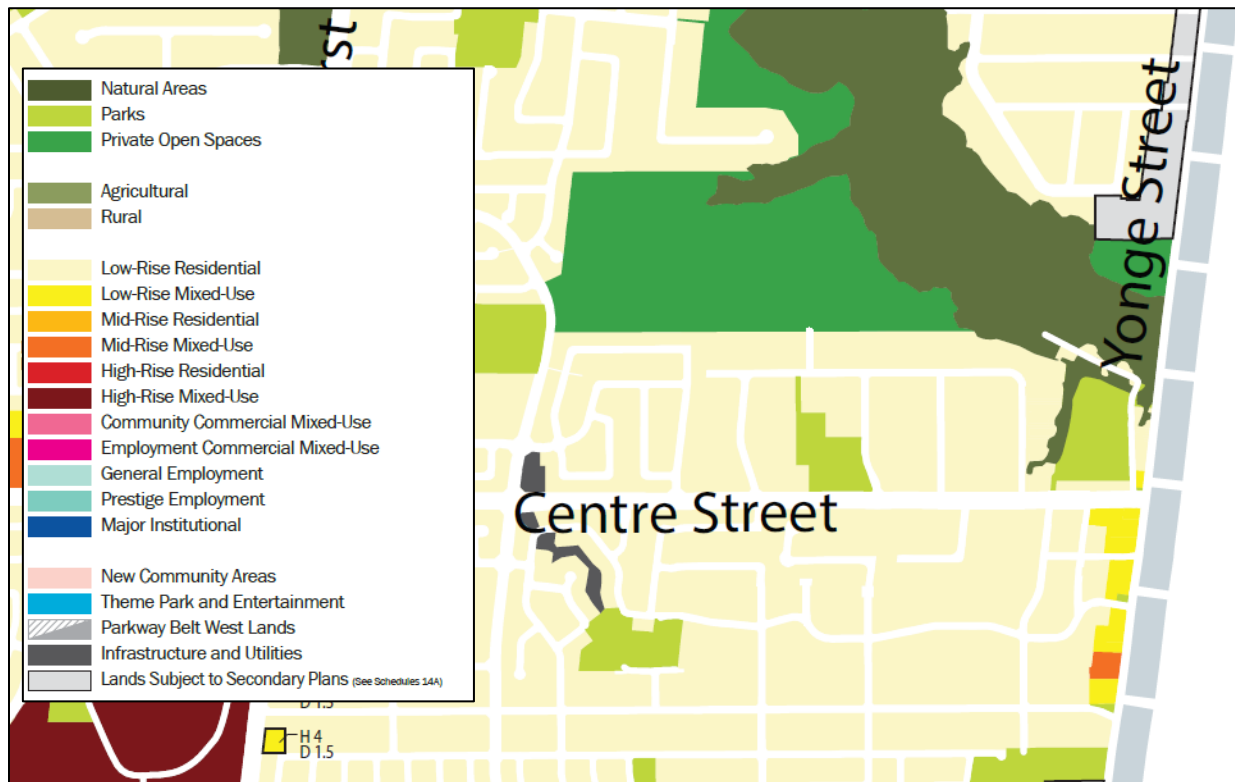


Figure 4-41 Excerpt from City of Vaughan Official Plan Schedule 13 – Land Use

4.4.5.3.2 Zoning

The section of this segment that runs along Yonge Street is split between the City of Markham to the east and the City of Vaughan to the west. North of Royal Orchard Boulevard and south of Bay Thorn Drive, this segment moves completely into the City of Markham, extending further east until it reaches the CN Railway corridor, where it moves north and slightly west.

It should be noted that, at the time of writing this Existing Conditions Report, the City of Vaughan and the City of Markham were undertaking Comprehensive Zoning By-law reviews to produce new zoning by-laws that conform to Official Plan policies and guide land use and development. This section should be interpreted in the context of the in-effect zoning by-law at the time of study.

The City of Markham Zoning By-law 2551 applies various zoning designations to the lands east of Yonge Street between the northern end of proposed Clark Station and the portal/launch shaft area. These include 'Multiple Family Residential', 'Highway Commercial', 'Neighbourhood Commercial', and 'Community Commercial'. Extending northeast of Royal Orchard Boulevard, where this segment is situated fully within the City of Markham, lands are designated 'Community Commercial', 'Multiple Family Residential', 'Single Family Residential', 'Open Space' (within the vicinity of Pomona Creek and Royal Orchard Park), and 'Special Uses' (at Holy Cross Catholic Cemetery).

West of Yonge Street, lands are zoned for various uses under the City of Vaughan Zoning By-law 1-88. Residential uses include 'Residential', 'Apartment Residential', and 'Old Village Residential'. Commercial uses include 'Highway Commercial' and 'Restricted Commercial'. North of Centre Street, lands are zoned 'Open Space Park' at Thornhill Park and 'Parkway Belt Open Space Zone' which encompasses the East Don River Valley and extends west to include the Thornhill Club.

4.4.5.3.3 Secondary Plans and Future Developments

Nearby development applications in this segment of the Study Area as of April 2021 are as follows:

City of Vaughan

- 7608 Yonge Street- condominium application for a residential apartment building.
- 46 Centre Street- proposal for a mixed-use development consisting of two low-rise buildings.
- 8136-8188 Yonge Street- zoning by-law amendment to permit a ten-storey mixed-use building.
- 8248 Yonge Street- proposed redevelopment for a three-storey retail/office commercial building.

City of Markham

- 14 John Street- proposal for a four-storey apartment building to the rear of the existing heritage dwelling.
- 7859 Yonge Street- Official Plan Amendment and Zoning by-law amendment to facilitate the development of a 12-storey residential building and a public park.
- 10 Royal Orchard Boulevard- Official Plan Amendment and Zoning by-law amendment for a redevelopment consisting of four residential buildings with heights ranging from 25-29 stories.
- 25, 11, 9, and 5 Langstaff Road East- Zoning by-law amendment and Draft Plan of Subdivision for two residential towers of 50 and 45 storeys connected by a ten-storey podium and four levels of underground parking.
- 14 Cedar Avenue- new recycling/ processing facility with an existing building in the southern half to be used for accessory space.

This segment of the Study Area is situated within the Langstaff Gateway Secondary Plan Area, which extends from the Holy Cross Catholic Cemetery north to Langstaff Road East (just beyond the northern limit of this segment) and from Yonge Street east to Bayview Avenue. This Secondary Plan aims to provide for integrated, compact development within the Langstaff Gateway Urban Growth Centre (also identified as a Regional Centre). See **Section 4.4.3.4** for more information about this Secondary Plan.

4.4.6 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

This segment of the Study Area traverses three (3) different neighbourhoods within Ward 6 of the City of Richmond Hill:

- South Richvale;
- Langstaff; and
- Observatory (at the most northern point of the proposed alignment).

The majority of this segment is located in the Langstaff neighbourhood. Ward 6 is bounded by Weldrick Road East and 16th Avenue to the north, Highway 404 to the east, Highway 7 to the south, and Yonge Street to the west.

4.4.6.1 Socio-Economic Conditions

In 2016, Ward 6 of the City of Richmond Hill had a population of 35,140, comprising 18% of the city's total population. The median age of residents was 43. 32% of residents lived in private single-detached homes, while 44% resided in units in high-density buildings greater than five storeys. 21% of Ward 6 residents commuted to work within Richmond Hill, 29% commuted outside of Richmond Hill and within York Region, and 50% of residents commuted outside of York Region (Richmond Hill Demographics, 2016).

4.4.6.2 Existing Land Use

The land uses described in **Table 4-11** are located within this segment and are mapped in **Appendix C**. The following sections characterize the existing uses within the Study Area by land use type.

Table 4-11 Existing Land Uses – Segment 3: Portal/Launch Shaft to Moonlight Lane

Land Use Type	Facility Name
Park	Railway Parkette
Park	Grace Lawrence Parkette
Park	Junction Parkette
Park	Red Maple Parkette

4.4.6.2.1 Residential Uses

This segment contains primarily low-density residential neighbourhoods. West of the Study Area, along the Yonge Street corridor, are higher-density, mixed use residential developments such as the Beverly Hills Condos within the Yonge and Carrville/16th Avenue Key Development Area, as shown in **Table 4-34**. A number of new residential developments are under construction in this area, demonstrating evolving land uses in conjunction with the Key Development Area policy direction.



Figure 4-42 View Facing North on Yonge Street at Carrville Road –
The Beverly Hills Condos Mixed-Use Development

4.4.6.2.2 Commercial and Industrial Uses

A series of commercial plazas are clustered between the Langstaff GO Station and Bantry Avenue on the east side of Yonge Street, near the proposed High Tech Station. These plazas contain retail stores, restaurants, medical and veterinary offices, and employment uses including a York Region government office building.

Hillcrest Mall, an enclosed shopping centre offering 135 retail stores, services, and restaurants, is located on the west side of Yonge Street at Carrville Road. South Hill Shopping Centre, another commercial plaza, is located on the east side of Yonge Street, adjacent to Hillcrest Mall and in closer proximity to the Study Area, as shown in **Figure 4-43**. This plaza consists of over 20 commercial tenants including retail stores, pharmacies, restaurants, a fitness centre, and other services.



**Figure 4-43 View Facing East on Yonge Street North of Carrville Road –
*South Hill Shopping Centre Commercial Plaza***

North of the proposed Bridge Station and Highway 7, within the vicinity of the existing Langstaff GO Station and parking lot, this segment traverses a Hydro One transmission line (see **Figure 4-44**).



Figure 4-44 View Facing East from Langstaff GO Parking Lot – Hydro One Transmission Line

4.4.6.2.3 Institutional Uses

There are no institutional uses located within this segment of the Study Area.

4.4.6.2.4 Recreational Uses

A total of four (4) parks are located in this segment, as shown on **Table 4-11**, all of which are small parkettes: Railway Parkette, Grace Lawrence Parkette, Junction Parkette, and Red Maple Parkette. The parkettes are located relatively close to one another and serve residential areas on either side of the CN railway corridor north of Bantry Avenue and south of 16th Avenue. A small woodlot, Heritage Woodlot, is also located at the southeast corner of Yonge Street and High Tech Road. German Mills Creek crosses the proposed TSF alignment just north of 16th Avenue and south of Observatory Lane, surrounded by a municipally designated Natural Heritage System and pedestrian trails, as shown in **Table 4-39**.



Figure 4-45 View Facing South on Observatory Lane, East of Yonge Street and West of Nighstar Drive/
Marshall Street – German Mills Creek Natural Heritage System

4.4.6.2.5 Sensitive Facilities

No sensitive facilities are located within the segment.

4.4.6.3 Planned Land Use

4.4.6.3.1 Official Plan

Within the York Region Official Plan, Segment 3 is designated as an 'Urban Area' and Yonge Street is defined as a Regional Corridor. The Parkway Belt West Plan area surrounds Highway 7/Highway 407 ETR and a Regional Centre is located at the east corner of Yonge Street and Langstaff Road. **Section 4.4.2.4** provides an overview of the provincial Parkway Belt West Plan, which provides protection for large-scale infrastructure corridors, among other uses.

The City of Richmond Hill Official Plan designates the land north of the proposed portal/launch shaft and surrounding Highway 7 as 'Parkway Belt West' and 'Utility Corridor', which are classified as 'Parkway Belt' and 'Utilities/Transportation' in **Appendix C**.

North of this segment, the 'Neighbourhood' designation primarily applies, with a few key exceptions. The Richmond Hill Centre Secondary Plan Area is designated 'Downtown Local Centre', extending into a 'Regional Mixed-Use Corridor' along Yonge Street. Additionally, a 'Key Development Area' is designated at Yonge Street and Carrville Road / 16th Avenue, located just west of the Study Area northern limit. These classifications are generalized as 'Residential', 'Mixed Use', and 'Intensification Area' as per **Table 4-8**.

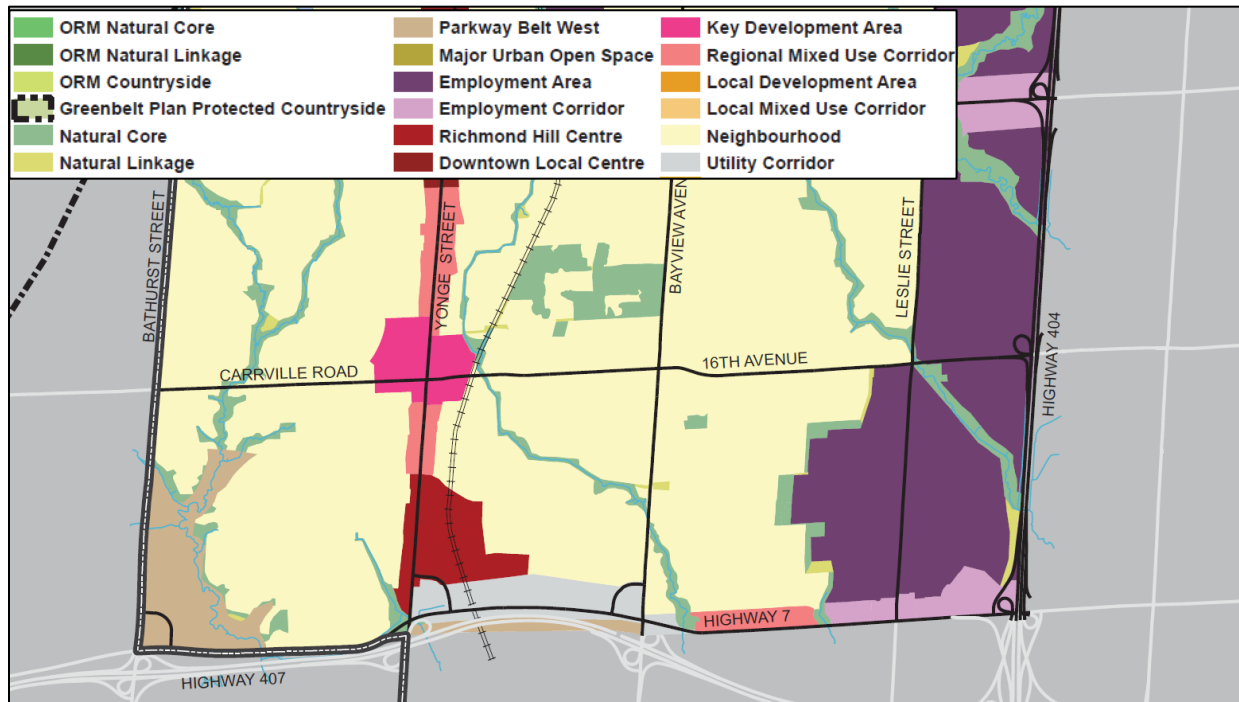


Figure 4-46 Excerpt from City of Richmond Hill Official Plan Schedule A2 – Land Use

4.4.6.3.2 Zoning

It should be noted that, at the time of writing this EPR, the City of Richmond Hill was undertaking a Comprehensive Zoning By-law review to produce a new zoning by-law that conforms to Official Plan policies and guides land use and development. This section should be interpreted in the context of the in-effect zoning by-law at the time of study.

According to the City of Richmond Hill Zoning By-law 111-17, the land extending from the northern end of the portal/launch shaft to Langstaff Road East is zoned as 'Rural Industrial'. North of this is a 'Utility Corridor', comprising Highway 7 and the Hydro One Transmission Line. Lands beyond this are zoned 'Special Commercial', extending north along the Study Area to Beresford Drive to the west/ Bantry Avenue to the east. Moving north towards 16th Avenue, lands are zoned 'Residential Multiple' and 'Rear Land Townhouse Dwelling', interspersed with lands zoned for 'Park' uses.

4.4.6.3.3 Secondary Plans and Future Developments

Nearby development applications in this segment of the Study Area as of April 2021 are as follows:

City of Richmond Hill

- 8888 Yonge Street- Site Plan submission for a 15-storey mixed-use building.
- 10 Oneida Crescent- Official Plan Amendment and Zoning by-law amendment to facilitate the development of a high-density residential development comprised of four residential towers ranging from 18 to 30 storeys with an interconnected three-storey podium.
- 8700 and 8710 Yonge Street- re-application of Official Plan and Zoning By-law amendment applications to facilitate the construction of a 54-storey high rise, mixed-use development.
- 65 Oneida Crescent- Site Plan Approval and Draft Plan of Condominium to permit a 19-storey residential apartment building.
- 0 Oneida Crescent- Site Plan Approval, Official Plan Amendment and Zoning by-law amendment applications for nine street townhouse blocks and four residential towers ranging from 25-37 storeys, with a three-storey podium on each tower. The proposal also includes a free-standing, two-storey shared amenity building.
- 8868 Yonge Street- Site Plan Application, Official Plan Amendment, and Zoning by-law amendment applications and related Site Plan applications to permit two 15-storey buildings with five- and seven-storey podiums, an 18-storey tower on a six-storey podium, a 13-storey tower on a four-storey podium, and a ten-storey retirement residence.
- 9201, 9205 & 9185 Yonge Street and 55 16th Avenue- Site Plan application to permit mixed-use, high density development consisting of four condominium towers between one and 24 storeys.
- 9251 Yonge Street- revised Official Plan Amendment and Zoning by-law amendment applications for high density, mixed-use developments of 38 and 43 storey towers.
- 9350 Yonge Street- Official Plan Amendment and Zoning by-law amendment applications for two apartment buildings 26 and 29 storeys in height on a shared seven-storey podium
- 243 16th Avenue- Zoning by-law amendment, Draft Plan of Subdivision, Draft Plan of Condominium and Site Plan applications for 13 common element condominium townhouse units.
- 265, 305 16th Avenue and 86, 92, 94, 98, 102 & 106 Duncan Road- Zoning by-law amendment and Draft Plan of Subdivision applications to facilitate the creation of 14 single detached dwellings and 20 semi-detached dwelling units.
- 9301, 9325, 9335 Yonge Street- Official Plan Amendment and Zoning by-law amendment applications to facilitate Phase 1 of a multi-phased site redevelopment, consisting of two high density mixed-use buildings of 42 and 45 storeys that are to be connected by a five-storey podium.
- 159, 169, 177, 181, and 189 Carrville Road- Zoning by-law amendment and Draft Plan of Subdivision Re-Applications for a medium density residential development comprised of 36 townhouse dwelling units.

There are two (2) Secondary Plans located within the vicinity of this segment, both currently under development. The Richmond Hill Centre Secondary Plan will outline a vision for the urban centre including policies to guide development of a residential and employment hub that is well-served by transit. The built form and draft policies for the Yonge and Carrville/16th Key Development Area Secondary Plan have been developed, but the Secondary Plan is still in progress. The Key Development Area contains Hillcrest Mall, a large commercial plaza, and residential uses.

4.5 Archaeological Resources

4.5.1 Methodology

4.5.1.1 Data Gap Analysis

A review of available background information including previously completed studies and/or reports was undertaken to identify any data gaps, if relevant. This data gap analysis identified area where data was non-existent from previous studies, and/or new data needed to be collected, and/or existing available data required review and updating or augmenting. The results of this data gap analysis are presented in **Table 4-12**.

Table 4-12 Archeology Gap Analysis

Data Reviewed	Gaps Identified
Stage 1 Archaeological Assessment (ASI 2008)	<p>A Stage 1 archaeological assessment was completed by Archaeological Services Inc. (ASI) in 2008 on the 2009 TPAP study area and included a visual inspection of the original subway alignment from Finch Station to the Richmond Hill Centre Station north of Highway 7. ASI noted ten archaeological sites located within 2 kilometres of the study alignment, two of which ASI identified as located adjacent to the Yonge Street Corridor. Following a field review ASI recommended the following:</p> <ul style="list-style-type: none"> the Yonge Street right-of-way, with the exception of the East Don River crossing, does not retain archaeological potential and does not require an additional assessment. a Stage 2 archaeological assessment is required on all lands that retain archaeological potential <p>This archaeological assessment was completed more than 10 years ago and before the current provincial archaeological standards were introduced in 2011 (MHSTCI 2011). As such, and in agreement with Section 16 of <i>O. Reg. 231/08</i> (Lapse of time), a new Stage 1 archaeological assessment of the EPR Addendum Study Area was undertaken, including a visual inspection of the Study Area.</p>
Stage 2 Archaeological Assessment (ASI 2011)	<p>A Stage 2 archaeological assessment was completed by ASI in 2010 on portions of the 2009 TPAP study area. No archaeological resources were encountered during the Stage 2 property survey and all surveyed areas were deemed to be free of further archaeological concern. Most of the area subject to Stage 2 survey by ASI in 2010 is beyond the current Study Area, however the lands associated with the Cummer Station bus loop footprint, on the north side of Drewry Avenue, are within the current Study Area. These lands were subject to Stage 2 archaeological assessment and cleared of further archaeological concern (Appendix D).</p>
Stage 1-2 Archaeological Assessment (New Directions Archaeology Ltd. 2013)	<p>New Directions Archaeology Ltd. conducted a Stage 1-2 archaeological assessment for a proposed subway extension study area between Highway 7 and north of 16th Avenue. The New Directions study area was different than the proposed EPR Addendum Study Area north of Highway 7.</p> <p>The New Directions Stage 1-2 archaeological assessment recommended that: "Should the study area extend outside of the current plan; further archaeological assessment will be required" (New Directions Archaeology Ltd. 2013:5).</p>

4.5.1.2 Background Research and Desktop Data Collection

Data was collected from the following sources and considered as appropriate as part of documenting existing conditions within the Study Area. Please note that this exercise was separate from, and used to inform, the Stage 1 Archaeological Assessment summarized within **Section 4.5** and presented fully in **Appendix D**:

- Aerial photography
- 1860 Historical County Map of York County Published by Tremaine
- 1878 Illustrated historical atlas of the county of York Published by Miles & Co.
- Department of Militia and Defense Topographic Sheets (Various)
- Recent Google Earth Aerial Imagery
- Master Plan of Archaeological Resources for the City of Toronto

4.5.2 Segment 1 – Finch Station to Clark Station (Below Grade)

The Study Area at Segment 1 starts at the existing Finch Station and traverses northward to the proposed Clark Station along Yonge Street and is defined by roadways and residential/commercial development. Based on a review of background archival research it is assumed that Segment 1 has general archaeological potential. Despite the presence of general archaeological potential in Segment 1 of the Study Area, much of the archaeological potential is assumed to have been removed through previous disturbance. A detailed summary of the determination of general archaeological potential is provided in **Table 4-13**.

Appendix D provides detailed alignment plans/mapping including an overview of the infrastructure proposed within Segment 1. Representative photos of the segment are included as **Figure 4-47** and **Figure 4-48**.

Table 4-13 Segment 1 – General Archeological Potential

Section of Segment 1	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
Yonge Street ROW from Southern Extent of Segment 1 to Drewry Avenue/Cummer Avenue	<ul style="list-style-type: none"> • Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) • Located within 300 m of Water Source(s) Including: • Wilket Creek (Tremaine 1860, Miles & Co. 1878) • Village of Newtonbrook Intersecting Study Area (Tremaine 1860, Miles & Co. 1878) • Numerous historical features within 300 m of the Study Area including: • One (1) Hotel (Tremaine 1860) • One (1) Pottery (Tremaine 1860) 	<ul style="list-style-type: none"> • According to the City of Toronto Archaeological Master Plan portions of the Study Area have Archaeological Potential 	<ul style="list-style-type: none"> • This Section of Segment 1 has general archaeological potential • This Section of Segment 1 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.

Section of Segment 1	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
	<ul style="list-style-type: none"> One (1) Church (Miles & Co. 1878) More than 10 Residences (Miles & Co. 1878) 		
Yonge Street ROW from Drewry Avenue/Cummer Avenue to Steeles Avenue	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Located within 300 m of Water Source(s) Including: <ul style="list-style-type: none"> Wilket Creek (Tremaine 1860, Miles & Co. 1878) Village of Newtonbrook Intersecting Study Area (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area including: <ul style="list-style-type: none"> Green Bush Inn (Tremaine 1860, Miles & Co. 1878), One (1) Pottery (Tremain 1860) One (1) Church (Miles & Co. 1878) One (1) School (Miles & Co. 1878) More than 10 Residences (Miles & Co. 1878) 	<ul style="list-style-type: none"> According to the City of Toronto Archaeological Master Plan portions of the Study Area have Archaeological Potential 	<ul style="list-style-type: none"> This Section of Segment 1 has general archaeological potential This Section of Segment 1 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Yonge Street ROW from Steeles Avenue to end of Segment 1	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area including: <ol style="list-style-type: none"> Green Bush Inn (Tremaine 1860, Miles & Co. 1878), Two (2) Residences labelled S.S. (Tremaine 1860) One (1) Pottery (Tremaine 1860) 	<ul style="list-style-type: none"> No Mapping available 	<ul style="list-style-type: none"> This Section of Segment 1 has general archaeological potential. This Section of Segment 1 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential, except for a lawn parking lot located at the southeast corner of Yonge Street and Newton Drive. This disturbance must be confirmed through visual inspection.

Section of Segment 1	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
	<ul style="list-style-type: none"> d. One (1) Church (Miles & Co. 1878) e. One (1) School (Miles & Co. 1878) f. More than 10 Residences (Miles & Co. 1878) 		
Finch Station Duct Bank Modification	<ul style="list-style-type: none"> • Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) • Numerous historical features within 300 m of the Study Area including (Miles & Co. 1878): • Seven (7) Residences) 	<ul style="list-style-type: none"> • According to the City of Toronto Archaeological Master Plan portions of the Study Area do not have Archaeological Potential 	<ul style="list-style-type: none"> • This Section of Segment 1 has general archaeological potential. • This Section of Segment 1 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential, except for a section of Hendon Park north of the corner of Hendon Avenue and Greenview Avenue. • This disturbance must be confirmed through visual inspection.
Cummer Station	<ul style="list-style-type: none"> • Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) • Located within 300 m of Water Source(s) Including: <ul style="list-style-type: none"> a. Wilket Creek (Tremaine 1860, Miles & Co. 1878) • Village of Newtonbrook Intersecting Study Area (Tremaine 1860, Miles & Co. 1878) • Numerous historical features within 300 m of the Study Area including: <ul style="list-style-type: none"> a. More than 10 Residences (Miles & Co. 1878) 	<ul style="list-style-type: none"> • According to the City of Toronto Archaeological Master Plan portions of the Study Area have Archaeological Potential 	<ul style="list-style-type: none"> • This Section of Segment 1 has general archaeological potential. • This Section of Segment 1 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Steeles Station and Proposed Bus Terminal	<ul style="list-style-type: none"> • Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) 	<ul style="list-style-type: none"> • According to the City of Toronto Archaeological Master Plan portions of 	<ul style="list-style-type: none"> • This Section of Segment 1 has general archaeological potential.

Section of Segment 1	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
	<ul style="list-style-type: none"> Numerous historical features within 300 m of the Study Area including: <ol style="list-style-type: none"> One (1) Homestead labelled S.S. (Tremaine 1860) Green Bush Inn (Tremaine 1860) One (1) Pottery (Tremaine 1860) Two (2) Residences (Tremaine 1860) One Post Office (Miles & Co. 1878) One School House (Miles & Co. 1878) One (1) Church labelled C.M (Miles & Co. 1878) More than 10 Residences (Miles & Co. 1878) 	the Study Area have Archaeological Potential	<ul style="list-style-type: none"> This Section of Segment 1 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Clark Station	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) The Village of Thornhill within 300 m of the Study Area (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area Including: <ol style="list-style-type: none"> Four (4) Residences (Tremaine 1860) Nine (9) Residences (Miles & Co. 1878) 	<ul style="list-style-type: none"> No Mapping available 	<ul style="list-style-type: none"> This Section of Segment 1 has general archaeological potential. This Section of Segment 1 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.



Figure 4-47 Facing North on 6000 Yonge Street, Proposed Cummer Station



Figure 4-48 Facing Northeast from the West Side of Yonge Street Across from Turnberry Court, Proposed Finch Station Transition Box Structure location within the Yonge Street right-of-way

The above analysis of general archaeological potential is subject to change following the completion of fieldwork and the results of queries made to both the Ontario Archaeological Sites Database and the Ontario Public Register of Archaeological Reports.

It is assumed that portions of the Study Area have been disturbed by modern activities, both extensive and intensive and these areas, as a result, have low potential for the recovery of archaeological resources. However, it is required, under MHSTCI regulations, to confirm these areas have had their archaeological potential removed by a visual inspection / property inspection completed by a licensed archaeologist.

Portions of the Study Area that retain archaeological potential may require additional archaeological assessment (Stage 2) if they will be subject to ground disturbance in association with the Project.

4.5.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

The Study Area at Segment 2 just beyond the limits of the proposed Clark Station extends northward to the proposed portal structure and launch shaft location, just south of Langstaff Road East within the City of Markham and is defined by roadways, residential/commercial development and two Heritage Conservation Districts. Based on a review of background archival research it is assumed that Segment 2 has general archaeological potential. Despite the presence of general archaeological potential in Segment 2 of the Study Area, much of the archaeological potential is assumed to have been removed through previous

disturbance. A detailed summary of the determination of general archaeological potential is provided in **Table 4-14**.

The analysis of existing conditions and the presence or absence of archaeological potential within Segment 2 of the Study Area will be updated in detail once a PIF has been granted and associated field investigations have been completed.

Appendix D provides detailed alignment plans/mapping including an overview of the infrastructure proposed within Segment 2. Representative photos of the segment are included as **Figure 4-49** and **Figure 4-50**.

Table 4-14 Segment 2 – General Archeological Potential

Section of Segment 2	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
Yonge Street ROW from Clark Station to John Street	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Located within 300 m of Water Source(s) Including: Don River (Tremaine 1860, Miles & Co. 1878) Village of Thornhill Intersecting Study Area (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area Including: <ul style="list-style-type: none"> a. Five (5) Residences (Tremaine 1860) b. Nine (9) Residences (Miles & Co. 1878) Historical features within 300 m of the Study Area as depicted in 1878 Village of Thornhill Map: <ul style="list-style-type: none"> a. One (1) School b. Three (3) Churches c. One (1) Post Office d. One (1) Drug Store e. One (1) Cemetery f. Victoria Hill g. Two (2) Parsonages' h. One (1) Cemetery 	<ul style="list-style-type: none"> No mapping available 	<ul style="list-style-type: none"> This Section of Segment 2 has general archaeological potential. This Section of Segment 2 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Alignment from John Street to Royal Orchard Station	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Located within 300 m of Water Source(s) Including: 	<ul style="list-style-type: none"> No mapping available 	<ul style="list-style-type: none"> This Section of Segment 2 has general archaeological potential. This Section of Segment 2 is assumed

Section of Segment 2	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
	<ul style="list-style-type: none"> ○ Don River (Tremaine 1860, Miles & Co. 1878) ○ The Village of Thornhill Intersecting Study Area (Tremaine 1860, Miles & Co. 1878) ● Numerous historical features within 300 m of the Study Area including: <ul style="list-style-type: none"> a. One (1) Grist Mill (Tremaine 1860) b. One (1) Post Office (Tremaine 1860) c. One (1) School (Miles & Co. 1878) d. Six (6) Residences (Miles & Co. 1878) e. One (1) Parsonage (Miles & Co. 1878) f. One (1) Church (Miles & Co. 1878) ● Historical features within 300 m of the Study Area as depicted in 1878 Village of Thornhill Map: <ul style="list-style-type: none"> a. One (1) School b. Four (4) Churches c. One (1) Post Office d. One (1) Drug Store e. One (1) Cemetery f. Victoria Hill g. Three (3) Parsonages' h. One (1) Hotel i. One (1) Cemetery 		to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Alignment from Royal Orchard Station to Langstaff Road	<ul style="list-style-type: none"> ● Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) ● Numerous historical features within 300 m of the Study Area including: <ul style="list-style-type: none"> a. Six (6) Residences (Miles & Co. 1878) b. One (1) Parsonage (Miles & Co. 1878) 	<ul style="list-style-type: none"> ● No mapping available 	<ul style="list-style-type: none"> ● This Section of Segment 2 has general archaeological potential. ● This Section of Segment 2 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be

Section of Segment 2	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
	<ul style="list-style-type: none"> c. One (1) Church (Miles & Co. 1878) • Historical features within 300 m of the Study Area as depicted in 1878 Village of Thornhill Map: <ul style="list-style-type: none"> a. One (1) Churches b. One (1) Parsonages' c. One (1) Hotel 		confirmed through visual inspection.
Royal Orchard Station	<ul style="list-style-type: none"> • Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) • Numerous historical features within 300 m of the Study Area including: <ul style="list-style-type: none"> a. Five (5) Residences (Miles & Co. 1878) b. One (1) Parsonage (Miles & Co. 1878) c. One (1) Church (Miles & Co. 1878) • Historical features within 300 m of the Study Area as depicted in 1878 Village of Thornhill Map: <ul style="list-style-type: none"> a. One (1) Church b. One (1) Parsonages' c. One (1) Hotel 	<ul style="list-style-type: none"> • No mapping available 	<ul style="list-style-type: none"> • This Section of Segment 2 has general archaeological potential. • This Section of Segment 2 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Proposed Portal Footprint	<ul style="list-style-type: none"> • Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) • Numerous historical features within 300 m of the Study Area including: <ul style="list-style-type: none"> a. One (1) Residence (Miles & Co. 1878) 	<ul style="list-style-type: none"> • No mapping available 	<ul style="list-style-type: none"> • This Section of Segment 2 has general archaeological potential • This Section of Segment 2 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.



**Figure 4-49 Facing Southeast Within CN Right of Way,
South of Langstaff Road East, east of 75 Langstaff Road East**



Figure 4-50 Facing Northwest Within CN Right of Way, East of South End of Holy Cross Cemetery

The above analysis of general archaeological potential is subject to change following the completion of fieldwork and the results of queries made to both the Ontario Archaeological Sites Database and the Ontario Public Register of Archaeological Reports.

It is assumed that portions of the Study Area have been disturbed by modern activities, both extensive and intensive and these areas, as a result, have low potential for the recovery of archaeological resources. However, it is required, under MHSTCI regulations, to confirm these areas have had their archaeological potential removed by a visual inspection / property inspection completed by a licensed archaeologist.

Portions of the Study Area that retain archaeological potential may require additional archaeological assessment (Stage 2) if they will be subject to ground disturbance in association with the Project.

4.5.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

The Study Area at Segment 3 starts just beyond the limits of the proposed portal and launch shaft location, near the proposed Bridge Station, and traverses northward to Moonlight Lane which marks the northernmost Study Area limit and is defined by residential subdivisions, apartment buildings, and commercial properties. Based on a review of background archival research it is assumed that Segment 3 has general archaeological potential. Despite the presence of general archaeological potential in Segment 3 of the Study Area, much of the archaeological potential is assumed to have been removed through previous disturbance. A detailed summary of the determination of general archaeological potential is provided in **Table 4-15**.

The analysis of existing conditions and the presence or absence of archaeological potential within Segment 2 of the Study Area will be updated in detail once a PIF has been granted and associated field investigations have been completed.

Appendix D provides detailed alignment plans/mapping including an overview of the infrastructure proposed within Segment 3. Representative photos of the segment are included as **Figure 4-51** and **Figure 4-52**.

Table 4-15 Segment 3 – General Archeological Potential

Section of Segment 3	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
Alignment from Langstaff Road to Bantry Avenue	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area including: <ol style="list-style-type: none"> One (1) Residences (Tremaine 1860) Four (4) Residences (Miles & Co. 1878) 	<ul style="list-style-type: none"> No mapping available 	<ul style="list-style-type: none"> This Section of Segment 3 has general archaeological potential. This Section of Segment 3 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Alignment from Bantry Avenue to 16th Avenue	<ol style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Located within 300 m of Water Source(s) Including: <ol style="list-style-type: none"> Don River (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area including: <ol style="list-style-type: none"> Five (5) Residences (Miles & Co. 1878) 	<ul style="list-style-type: none"> No mapping available 	<ul style="list-style-type: none"> This Section of Segment 3 has general archaeological potential. This Section of Segment 3 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.
Alignment from 16th Avenue to End of Segment 3	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Located within 300 m of Water Source(s) including: <ol style="list-style-type: none"> Don River (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area including: 	<ul style="list-style-type: none"> No mapping available 	<ul style="list-style-type: none"> This Section of Segment 3 has general archaeological potential. This Section of Segment 3 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This

Section of Segment 3	Feature(s) of Archaeological Potential	Review of Archaeological Master Plan(s)	General Archaeological Potential
	a. Three (3) Residences (Miles & Co. 1878)		disturbance must be confirmed through visual inspection.
Bridge Station and Proposed Bus Terminal	<ul style="list-style-type: none"> Located within 100 m of Transportation Routes (Tremaine 1860, Miles & Co. 1878) Located within 300 m of Water Source(s) including: <ol style="list-style-type: none"> Don River (Tremaine 1860, Miles & Co. 1878) Numerous historical features within 300 m of the Study Area including: <ol style="list-style-type: none"> Three (3) Residences (Tremaine 1860) One (1) Inn (Tremaine 1860) Two (2) Residences (Miles & Co. 1878) One (1) Post Office (Miles & Co. 1878) One (1) Sawmill (Miles & Co. 1878) One (1) Store (Miles & Co. 1878) 	<ul style="list-style-type: none"> No mapping available 	<ul style="list-style-type: none"> This Section of Segment 3 has general archaeological potential. This Section of Segment 3 is assumed to have been subject to previous disturbance resulting in the removal of archaeological potential. This disturbance must be confirmed through visual inspection.



**Figure 4-51 Facing Southwest From CN Right of Way Between Highway 7 and Highway 407
at Proposed Bridge Station Bus Terminal Lands**



Figure 4-52 Facing North Within CN Right of Way Towards High Tech Road Overpass and the High Tech Station Lands on the west side of the CN tracks

The above analysis of general archaeological potential is subject to change following the completion of fieldwork and the results of queries made to both the Ontario Archaeological Sites Database and the Ontario Public Register of Archaeological Reports.

It is assumed that portions of the Study Area have been disturbed by modern activities, both extensive and intensive and these areas, as a result, have low potential for the recovery of archaeological resources. However, it is required, under MHSTCI regulations, to confirm these areas have had their archaeological potential removed by a visual inspection / property inspection completed by a licensed archaeologist.

Portions of the Study Area that retain archaeological potential may require additional archaeological assessment (Stage 2) if they will be subject to ground disturbance in association with the Project.

4.6 Built Heritage Resources and Cultural Heritage Landscapes

4.6.1 Methodology

The following sections provide a summary of the methodology developed to collect and document cultural heritage existing conditions information within the Cultural Heritage Study Area. Please note that a separate methodology was applied to assess potential impacts within the Study Area as a result of the project, which is described within **Section 5.5.1** of this EPR Addendum.

4.6.1.1 Data Gap Analysis

A review of previously completed studies and/or reports to confirm the findings of the previous technical studies and identify areas where data was either non-existent from previous studies, and/or determine is new data needed to be collected, and/or existing available data required review and updating or augmenting. The results of this data gap analysis are presented in **Table 4-16**.

The information contained in the 2009 EPR and 2014 EPR Addendum and associated heritage reports is out of date and does not meet current Metrolinx and MHSTCI cultural heritage requirements. In addition, the proposed alignment and associated infrastructure for current EPR Addendum has changed since these reports were completed. Therefore, additional analysis was required to confirm and assess the findings of the 2009 and 2014 Cultural Heritage studies. Refer to **Appendix E** for more details on the results of the gap analysis.

Table 4-16 Cultural Heritage Data Gap Analysis

Data Reviewed	Summary	Gaps Identified
2009 EPR. Yonge North Subway Extension	A cultural heritage resource survey of built heritage resources and cultural heritage landscapes was completed for Appendix H of the EPR. The EPR contains a summary of the key findings. Numerous protected heritage properties are identified in the Study Area, including two Heritage Conservation Districts (HCD).	Further work was recommended for several properties in the form of a Heritage Impact Assessment (See below row for details regarding the recommended HIAs contained in the 2009 Existing Conditions for Cultural Heritage).
<i>2009 Existing Conditions: Built Heritage & Cultural Heritage Landscapes, Yonge Subway Extension Environmental Project, Finch Avenue to Highway 207, City of Markham, City of Vaughan, City of Toronto (Unterman McPhail 2009)</i>	Existing Conditions Report for built heritage and cultural heritage landscapes for YNSE from Finch Avenue to Highway 407. A total of 20 protected and/or potential heritage properties were identified. No impacts identified at Richmond Hill Station, Langstaff/Longbridge Station, Clark Station, and Steeles Avenue Station. Heritage Impact Assessments (HIAs) recommended for: <ul style="list-style-type: none"> • Thornhill HCD • 8000 Yonge Street 	The 2009 Existing Conditions report does not meet current MHSTCI and Metrolinx requirements. While the existing reports will not be updated for the sole purpose of adhering to current guidelines the existing conditions of the identified heritage properties should be confirmed since the information in the report is over 10 years old and the status of these properties may have changed. In addition, a new impact assessment should be completed to confirm anticipated

Data Reviewed	Summary	Gaps Identified
	<ul style="list-style-type: none"> 8010 Yonge Street Old Thornhill Cemetery 7951 Yonge Street 5925 Yonge Street 5926 Yonge Street 	impacts based on the current proposed work.
2014 EPR Addendum. Yonge North Subway Extension	EPR for YNSE from Finch Station to Richmond Hill Centre. A cultural heritage memo was produced for the EPR by Unterman McPhail to address areas not included in the 2009 EPR. No impacts to cultural heritage resources were identified in the memo.	The proposed work for YNSE has changed since this report was completed. Accordingly, a new impact assessment should be completed to confirm anticipated impacts based on the current proposed work.
<i>2014 Memorandum from Richard Unterman: Yonge Subway Extension – TSFD EPR Addendum Cultural Heritage Assessment Report</i> (Unterman McPhail 2014)	A technical memo was produced by Unterman McPhail to assess areas not included in the 2009 EPR. No additional heritage properties were identified and no further cultural heritage work was recommended.	The technical memo does not meet current MHSTCI and Metrolinx requirements.
<i>2018 Cultural Heritage Resource Assessment: Built Heritage Resources and Cultural Heritage Landscapes, Existing Conditions and Assessment of Impacts, 16th Avenue Municipal Class Environmental Assessment from Yonge Street to Woodbine Avenue, Town of Richmond Hill and City of Markham, York Region</i> (ASI 2018)	Cultural Heritage Resource Assessment completed by ASI on 16 th Avenue from Yonge Street to Woodbine Avenue. No built heritage resources of cultural heritage landscapes identified within the current YNSE Study Area.	None

4.6.1.2 Background Research and Desktop Data Collection

Background research was carried out during the preparation of the existing conditions analysis to gain a thorough understanding of the historical context of the Cultural Heritage Study Area. Research regarding the physiography, survey and settlement, 19th-century land use, and 20th-century land use of the cultural heritage Study Area was completed. A review of historical mapping and aerial photographs was also conducted to identify settlements, structures, and landscape features within, and adjacent to, the Study Area. Historical maps from 1860, 1878, 1914, 1933 and 1943 were reviewed as well as aerial photography from 1959, 1970, and 1977. The detailed results of background research are presented in **Appendix E**.

Data was reviewed and collected from the following sources and considered as appropriate as part of documenting existing conditions within the Study Area:

- Ontario Heritage Act Register and plaques database
- Previously completed TPAPs and cultural heritage studies, including:
 - 2009 Environmental Project Report (EPR). Yonge North Subway Extension.

- b. 2009 Existing Conditions: Built Heritage & Cultural Heritage Landscapes, Yonge Subway Extension Environmental Project, Finch Avenue to Highway 207, City of Markham, City of Vaughan, City of Toronto (Unterman McPhail 2009)
 - c. 2014 EPR Addendum. Yonge North Subway Extension
 - d. 2014 Memorandum from Richard Unterman: Yonge Subway Extension – TSFD Environmental Project Report Addendum Cultural Heritage Assessment Report
 - e. 2018 Cultural Heritage Resource Assessment: Built Heritage Resources and Cultural Heritage Landscapes, Existing Conditions and Assessment of Impacts, 16th Avenue Municipal Class Environmental Assessment from Yonge Street to Woodbine Avenue, Town of Richmond Hill and City of Markham, York Region (ASI 2018)
- City of Toronto Heritage Register
 - City of Vaughan’s Heritage Preservation website
 - City of Markham Heritage Property Register
 - City of Richmond Hill’s Inventory of Cultural Heritage Resources
 - City of Vaughan Thornhill HCD
 - City of Markham Thornhill HCD

4.6.1.3 Field Investigations

Field investigations and site reconnaissance activities were undertaken to collect primary source data within the Study Area as part of the existing conditions phase. The cultural heritage field investigations are broadly summarized in **Table 4-17**.

Table 4-17 Cultural Heritage Field Investigation Summary

Segment	Field Survey Date(s)	Status	Comments
Segment 1 – Finch Station to Clark Station	November 05, 2020; December 11, 2020; January 12, 2021; November 15, 2021.	Complete	Status based on OneT+ Cultural Heritage Study Area defined in Appendix E Figure A 2-3.
Segment 2 – Clark Station to Portal/Launch Shaft	November 05, 2020; December 11, 2020; January 12, 2021; June 4, 2021; November 15, 2021.	Complete	Status based on OneT+ Cultural Heritage Study Area defined in Appendix E Figure A 2-4.
Segment 3 – Portal/Launch Shaft to Moonlight Lane	November 05, 2020; December 11, 2020; January 12, 2021.	Complete	Status based on OneT+ Cultural Heritage Study Area defined in Appendix E Figure A 2-5.

4.6.2 Segment 1 – Finch Station to Clark Station (Below Grade)

4.6.2.1 Summary of Built Heritage Resources and Cultural Heritage Landscapes in Segment 1

To date, a total of thirteen potential or known built heritage resources and seven (7) potential or known cultural heritage landscapes were identified in Segment 1 of the Study Area. A detailed description of these properties is provided in **Table 4-18**. Detailed mapping of these properties in relation to the Study Area is provided in **Appendix E**.

4.6.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

4.6.3.1 Summary of Built Heritage Resources and Cultural Heritage Landscapes in Segment 2

To date, a total of 48 potential or known built heritage resources and 17 potential or known cultural heritage landscapes were identified in Segment 2 of the Study Area. A detailed description of these properties is provided in **Table 4-18**. Detailed mapping of these properties in relation to the Study Area is provided in **Appendix E**.

4.6.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)



4.6.4.1 Summary of Built Heritage Resources and Cultural Heritage Landscapes in Segment 3



To date, there are no potential or known built heritage resources located within Segment 3 of the Study Area however, there is one (1) known cultural heritage landscape. A detailed description of this property is provided in **Table 4-18**. Detailed mapping of these properties in relation to the Study Area is provided in **Appendix E**.



4.6.5 Inventory of Built Heritage Resources and Cultural Heritage Landscapes



Following the completion of the background research and field review, an Inventory of Built Heritage Resources and Cultural Heritage Landscapes within, and adjacent to, the Study Area was compiled. The Inventory is provided in the table below.



Table 4-18 Inventory of Potential and Known Built Heritage Resources and Cultural Heritage Landscapes


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S1-CHR1	-BHR -Willowdale Baptist Church	15 Olive Avenue, North York	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a single-storey church that was originally constructed in 1924 (Willowdale Baptist Church 2020). An addition was built on the existence structure between 1987 and 1989, an image of the original structure taken by Ted Chirnside, in 1958, is located in the column to the right.</p> <p>The church is a one and a half storey structure with an irregular-shaped plan and a gable flat roof with plain soffit eaves covered in decorative brickwork. The front façade (north elevation) features three multi-light pointed windows with plain lug sills and a decorative brick voussoir. The front façade features a segmental door from the original structure with a pointed multi-light shaped transom with decorative concrete trim. An offset multi-glass panelled entryway is located within the addition with ground floor steps with open and closed railing leading to the entryway. Above the pointed arched doorway is a sign for ‘Willowdale Baptist Church’.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Decorative brickwork• Three multi-light pointed windows with plain lug sills with decorative brick voussoir• Segmental door from the original structure with a pointed multi-light shaped transom with decorative stucco trim <p><u>Summary</u></p> <p>This property contains a one and a half-storey structure with Ontario Vernacular architectural influences that was constructed in 1924. This property may have design/physical, historical/associative, and/or contextual value.</p>	  <p>Reference: Historic Public Library 2020</p>




CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S1-CHR2	-CHL -Commercial Block/ streetscape	5643-5647 Yonge Street, North York	- Identified during field review	<p>This commercial block was identified during field review. The description below is based on field observations.</p> <p><u>Property Description</u></p> <p>Constructed between 1943 and 1953 with additions added between 1977 and 1981 this streetscape includes five (5) two storey commercial properties featuring rectangular plans and flat roofs with a mix of decorative brick and stucco exteriors. The streetscape features various sash style windows and glass panel entryways. The property at 5643 Yonge Street features unique single pane semi-elliptical windows with decorative voussoirs trim (Upper) and a glass panel canted entrance.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Commercial streetscape including 5643-5647 Yonge Street• Brick building exteriors• 2 storey massing and pedestrian scale• Buildings extend to property line/sidewalk• Sash Windows• Semi-Elliptical Windows with voussoirs trim (5643 Yonge Street)• Canted Entrance (5643 Yonge Street) <p><u>Summary</u></p> <p>This commercial streetscape contains five (5) two-storey commercial buildings within a streetscape constructed between 1943 and 1953 with additions added between 1977 and 1981. As one of the few mid to late 20th commercial streetscapes within in this section of Yonge Street, this commercial streetscape may have design/physical, historical/associative, and/or contextual value.</p>	
S1-CHR3	-BHR -Former Civic Building	5800 Yonge Street, North York	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a two-storey civic building, formally owned by the Hydro Electric company for use as their head office building within the township of North York. The building includes modernist architectural influences that was originally constructed in 1963 and designed by architect Harry B Kohl. The front façade (west elevation) features an L-Shaped plan with a flat roof and a rounded dome with glass panelling. Landscape elements include mature trees and ground floor steps with open railings.</p> <p>This property has been nominated as a heritage property, but no formal protection is currently in place (Branch 2020).</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Modernist architectural style• L shaped plan with a flat roof• Round dome <p><u>Summary</u></p> <p>This property contains two storey former civic building constructed in 1962. As one of the few late 20th modernist buildings within in this section of Yonge Street, this property may have design/physical, historical/associative, and/or contextual value.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S1-CHR4	-BHR -Residence	51 Drewry Avenue, North York	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property includes a Bungalow style residence that was constructed between 1922 and 1930. The residence is a simple two storey structure with a rectangular-shaped plan with a gable roof and projecting eaves. The building is clad in red brick while the front and rear additions are clad in clapboard-style siding. The front façade (north elevation) features an offset wood door with six horizontal panels and a shaped transom, with multiple lights. The front façade features two segmentally arched windows on the second storey. The right (east) window is sash one-over-one and the right (west) window is sash two-over-one. Both appear to retain the original wood window frames and have plain trims and a plain lug sill. The east and west facades feature a shed-style dormer with clapboard siding with three one over one single hung windows. Landscape elements on the property include grass, the concrete sidewalk and ground floor steps with no railing.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Bungalow style residence• Rectangular plan• Gable roof• Shed style additions• Shed style dormers with three one-over-one windows• Offset left (east) interior chimney• Clapboard sty e and red rick cladding• Offset wood door with six horizontal panels with a shaped multiple light transom• One (1) one over one single hung window with plain trim and plain lug sills (Upper)• One (1) two over one single hung window with plain trim and plain lug sills (Upper) <p><u>Summary</u></p> <p>This property contains a one-and-a-half storey Bungalow style residence that was constructed between 1922 and 1930. This property may have historical/associative and/or contextual value.</p>	
S1-CHR5	-CHL -School (Drewry Secondary School)	70 Drewry Avenue, North York	-Identified during field review	<p>This property was identified during field review the property description is provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>Drewry Secondary School, located 70 Drewry Avenue, is a multi-level two-storey school that was constructed between 1959 and 1961. Both the lower two storey section on the left (west) and taller two storey section on the right(east) are clad in decorative brickwork with a flat roof. The school is currently in operation. The front façade (north elevation) of the taller section features numerous nine over nine-double hung windows with plain lug sills on the upper and lower levels of the original structure. There is no visible doorway on this section of the structure. The front façade (north elevation) of the two storey lower section includes a covered offset doorway with three glass panelled doors and a multi light transom and numerous triple light double hung widows set in a continuous trim and sill of unknown material.</p> <p>The building includes an addition located on the left (west) of the original structure and is clad in brick with an offset glass paneled gable style entry way, a flat roof and three one-over-one single hung window. Landscape elements on the property include grass, concrete sidewalks and pathways, and a parking lot, rear circulation pathways, a large playing fields, a basketball court and two auxiliary buildings associated with the school. These auxiliary buildings were constructed between 1989 and 1991.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<u>Exterior Elements</u> <ul style="list-style-type: none">• Flat roof• Brick cladding• Numerous single and double hung windows with plain lug sills and trim• An addition with as offset glass paneled gable style entry way• Landscape elements on the property include grass, concrete sidewalks and pathways, and a parking lot, rear circulation pathways, a large playing fields, a basketball court and two auxiliary buildings <u>Summary</u> <p>This property contains a two-storey school that was constructed between 1959 and 1961. This property may have design/physical, historical/associative, and/or contextual value.</p>	
S1-CHR6	-BHR -Commercial Building	5926 Yonge Street, North York	- Listed on the City of Toronto Municipal Heritage Register	<p>This property is listed on the City of Toronto Municipal Heritage Register. The property description provided below is based on field observations.</p> <u>Property Description</u> <p>This property contains a one and a half-storey commercial property with a rectangular shaped plan, hipped roof, and stucco siding. While the date of the original building is not known, a historic plaque notes the presence of the structure, formally a general store known as the CC. Charleton’s store, with the previous frame structure replaced in 1907. The front façade (west elevation) features two one over two sash windows (upper) with plain lug sills and numerous single pane glass windows and glass door front entrances with ground floor steps with no railings. This building is highly altered but has known historical associations.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">• Rectangular plan and hipped roof• Two one over two sash windows (upper) with plain lug sills• Numerous single pane glass windows (lower)• Glass entranceway <u>Summary</u> <p>This property contains a two-storey structure that was re-constructed in 1907. The construction date of the previous frame building, formally a general store known as the CC. Charleton’s store, is unknown. This property may have historical/associative and/or contextual value.</p>	
S1-CHR7	-BHR -Commercial Building	5925 Yonge Street North York	-Previously identified as potential built heritage resource by Unterman McPhail Associates (2009)	<p>This property was previously identified as a potential built heritage resource by Unterman McPhail Associates (2009). The following property description provided below is based on field observations.</p> <u>Property Description</u> <p>This property contains a two-storey commercial property with a rectangular shaped plan and flat roof. The building was constructed between 1957 and 1960. The front façade (east elevation) features multiple single pane glass doors and windows (lower) and five double pane horizontal sliding windows. The building is covered in painted brick.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">• Brick cladding• Five double pane horizontal sliding windows <u>Summary</u> <p>This property contains a two-storey commercial building that was constructed between 1957 and 1960. This property may have design/physical, historical/associative, and/or contextual value.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S1-CHR8	-BHR -Residence	15 Patricia Avenue, North York	Listed on the City of Toronto Heritage Register	<p>This property is listed on the City of Toronto Heritage Register. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a two-and-a-half storey residence built circa 1900. The residence features a mix of Dutch Colonial and Queen Anne style influences. The building has an L-shaped plan with a gambrel roof with projecting eaves clad in asphalt shingles. The front façade (north elevation) has an offset (right) four light wooden doorway in a semi enclosed two storey porch that is supported by four piers and two balusters and has a second storey bay window. The second storey bay window (located above the entrance) has five (5) four-over-four sash-windows and a skirt roof. A two-storey bay window with a pyramidal roof is located on the northeast corner of the building. The two-storey bay window has multiple sash one-over-one windows, a skirt roof between the first and second storeys, and is topped with a pyramidal roof.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Dutch Colonial and Queen Anne style influences• L-shaped plan• Gambrel roof• Projecting eaves• Asphalt shingles• Clapboard style siding• Wood door with four lights• Two storey front porch with semi-enclosed first storey, bay window on the second storey, and pyramidal roof. The porch is porch supported by four piers and two balusters• Two-storey bay window on the northeast corner of the building with multiple one-over-one sash windows, a skirt roof between the first and second storeys, and a pyramidal roof <p><u>Summary</u></p> <p>This property contains a two and a half storey residence that was built circa 1900 residence and features Dutch Colonial and Queen Anne style influences. This property may have architectural/design value and contextual value.</p>	
S1-CHR9	-BHR -Commercial Building	6075 Yonge Street, North York	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a five-storey industrial building with Brutalist architectural influences that dates between 1968 and 1970. The building has a rectangular plan and a flat roof. The front façade (east elevation) features a recessed entrance, offset glass panelled door, and four levels of fixed single pane windows. The building is clad in concrete.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Brutalist architecture influences• Recessed entrance• Offset glass panelled door• Fixed single pane windows• Concrete exterior	


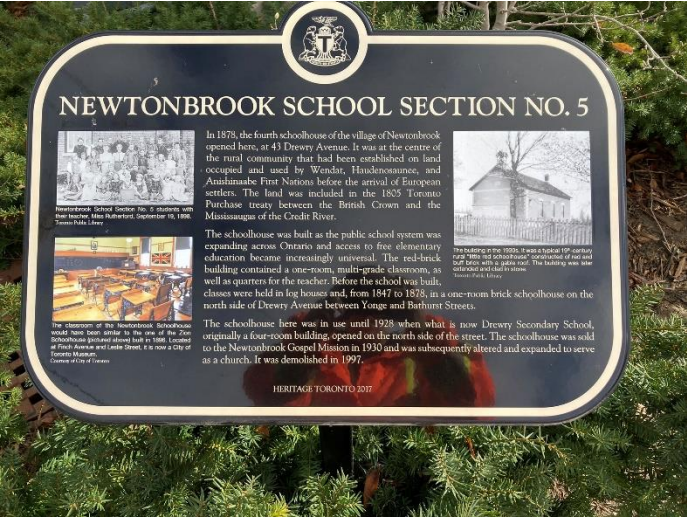
CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<u>Summary</u> This property contains a five-storey commercial building with Brutalist architectural influences that was constructed between 1968 and 1970. Few buildings along this section of Yonge Street are constructed in this architectural style. Accordingly, this property may have design/physical, and/or contextual value.	
S1-CHR10	-BHR -Residence	12 Centre Avenue, North York	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property includes a Bungalow style residence that was constructed between 1943 and 1950. The residence is a simple one storey structure with a rectangular-shaped plan with a steeply pitched gable roof and projecting eaves. The front façade (north elevation) is clad in a mix of painted brick and stucco with one sash one over two window and one (1) sash one over one window with plain lug sill trims. Landscape elements on the property include grass, a concrete sidewalk/walkway with steps and ground floor steps with open railings. In addition, the front lawn features an original fence with wooden balustrades and iron rod balusters. A second structure resides on the property with a rectangular footprint and gable roof with pronounced projecting eaves clad in clapboard siding.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Bungalow style residence• Rectangular plan• Steeply pitched gable roof• Brick and stucco siding• One (1) sash one over two window• One (1) sash one over one window• Original wood/concrete/iron fence along front property line <p><u>Summary</u></p> <p>This property contains a one-storey Bungalow style house constructed between 1943 and 1950. This residence is representative of this particular time period and may have significant design/physical, historical/associative, and/or contextual value.</p>	

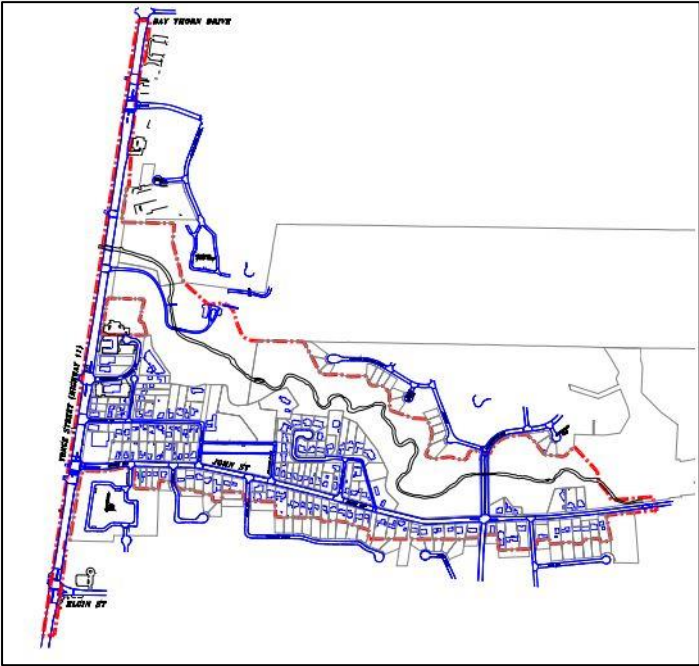
CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S1-CHR11	-CHL -School (Newtonbrook Secondary School)	155 Hilda Avenue, North York	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>The Newtonbrook Secondary Public School is a two-storey Mid-Century Modern school that was constructed between 1963 and 1965. The front façade (east elevation) features numerous multi-light floor to ceiling clad in brick laid out in a stretcher bond pattern. The façade features a recessed covered entryway with multi-light doorways and a decorative mosaic mural above the entryway. The property includes large playing fields, a track, baseball diamond, and auxiliary buildings associated with the school. The school is known for its athletics program, which is supported by the large field and pool on the property.</p> <p>Historically, Newtonbrook Secondary School was opened by then Prime Minister Lester B. Pearson in 1965. Rob Ford, former Mayor of Toronto, coached Newtonbrook Secondary School’s football program until 2001.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Flat roof• Low and flat two-storey massing• Brick cladding including brick pilasters and a keystone archway• Multi light floor to ceiling window• Decorative mosaic mural• Landscape elements including track, baseball diamond, and playing fields• Sports related property elements including, but not limited to, the pool and track field <p><u>Summary</u></p> <p>This property contains a two-storey Mid-Century Modern school that was constructed between 1963 and 1965. This property may have design/physical, historical/associative, and/or contextual value.</p>	 
S1-CHR12	-BHR -Residence	15 Athabaska, North York	-Identified during field review	<p>This property was identified during the field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property includes a Bungalow style residence that was constructed between 1950 and 1953. The residence is a simple one storey structure with a rectangular-shaped plan with a steeply pitched gable roof with projecting eaves and a gable style dormer with clapboard siding. The front facade (south elevation) is clad in red brick and clapboard siding with two single pane windows with plain lug sill trims and a single Victorian style hanging lantern. The front entryway includes a door with a multi-light shaped transom and decorative trim and a glass panelled screen door.</p> <p>Landscape elements on the property include grass, a concrete sidewalk/walkway and ground floor steps with an open railing.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Bungalow style residence• Rectangular plan• Steeply pitched cross-gable roof	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<ul style="list-style-type: none">• Red brick cladding• Gable style dormer with clapboard siding• Two (2) single pane windows with plain lug sill trims• Victorian style hanging lantern <u>Summary</u> This property contains a one-storey Bungalow style house constructed between 1950 and 1953. This residence is representative of this particular time period and may have significant design/physical, historical/associative, and/or contextual value.	
S1-CHR13	-BHR -Residence	17 Athabaska North York	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <u>Property Description</u> This property includes a Victory style residence that was constructed between 1950 and 1953. The residence is a simple one storey structure with a rectangular-shaped plan with a steeply pitched gable roof with projecting eaves. The front facade (south elevation) is clad in buff brick with one square bay window with clapboard siding and a single over one sash window both with plain lug sill trims. The front entryway includes a door with plain lug sill trim and a glass panelled screen door. Landscape elements on the property include grass, a concrete sidewalk/walkway and ground floor steps with no railing. <u>Exterior Elements</u> <ul style="list-style-type: none">• Victory style residence• Rectangular plan• Steeply pitched cross-gable roof• Buff brick cladding <u>Summary</u> This property contains a one-storey Victory style house constructed between 1950 and 1953. This residence is representative of this particular time period and may have significant design/physical, historical/associative, and/or contextual value.	
S1-CHR14	-CHL -Commercial Block	6301-6313 Yonge Street, North York	-Identified during field review	<p>This streetscape was identified during field review. The property description provided below is based on field observations.</p> <u>Description</u> Constructed between 1950 and 1953, with additions added between 1964 and 1966, this streetscape includes two (2) two storey commercial properties featuring rectangular plans and flat roofs with a mix of decorative brick and stucco exteriors. The streetscape features various sash style windows and glass panel entryways with a mix of plain/molded trims/lugsills. The property at 6301 Yonge Street features a mix of single pane and one over two sash semi-elliptical windows with plain lug sills (Upper) and a canted entrance with board and batten siding. <u>Exterior Elements</u> <ul style="list-style-type: none">• Cohesive row of commercial buildings with similar scale/massing, architectural style, and construction date• Buildings extend to the sidewalk/public realm• Canted Entrance with board and batten siding (6301 Yonge Street) <u>Summary</u> This property contains five (5) two-storey commercial buildings within a streetscape constructed between 1950 and 1953 with additions added between 1964 and 1966. As one of the few late 20th commercial	




CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				streetscapes within in this section of Yonge Street, these properties may have contextual value when considered as a group.	
S1-CHR15	-CHL -Commercial Streetscape	7039-7071 Yonge Street, Thornhill, Markham	-Identified during field review	<p>This streetscape was identified during field review. The property description provided below is based on field observations.</p> <p><u>Description</u></p> <p>Constructed between 1947 and 1953, this streetscape includes a mix of seven (7) one and two storey commercial properties featuring rectangular plans and flat roofs with a mix of brick and stucco exteriors. The streetscape features various sash style windows and various glass panel style entryways. The property at 7057 Yonge Street features a brick arched entryway and front window with brick voussoirs trim.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Cohesive row of commercial buildings with similar scale/massing, architectural style, and construction date• Buildings extend to the sidewalk/public realm• Brick arched entryway and front window with brick voussoirs trim (7057 Yonge Street) <p><u>Summary</u></p> <p>This commercial streetscape was constructed between 1947 and 1953. As one of the few mid 20th commercial streetscapes within in this section of Yonge Street, these properties may have contextual value when considered as a group.</p>	
S1-CHR16	-CHL -Residential Streetscape	40-48 Hendon Avenue, North York	-Identified During Field Review	<p>This residential streetscape was identified during field review. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>Constructed between 1947 and 1953 this residential streetscape contains five (5) identical one and a half storey Victory style structures. The residences all feature a rectangular plan with steeply pitched gable roofs and flush eaves and exterior chimneys. The front facades (south elevation) are clad in stucco with quoins and include one two casement and one three casement window with moulded trims and slip sills. The front entryways feature a centered doorway with decorative entablatures trim bordered by engaged pilasters and a ground floor, open railing.</p> <p>A fence line, which separates the streetscape from Hendon Park, borders the properties on the east, west and north sides of the properties.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Five identical Victory style residence• Rectangular plan• Steeply pitched cross-gable roof• Stucco siding and quoins• Exterior chimney• Decorative window and entryway trim <p><u>Summary</u></p> <p>This streetscape contains five (5) identical one and a half storey Victory style structures constructed between 1947-1953. This property may have design/physical, historical/associative, and/or contextual value.</p>	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S1-CHR17	-CHL -Public/Municipal Park	50 Hendon Ave (Hendon Park), North York	-Identified During Field Review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property features a 3.5-hectare park and includes a one storey main building with an irregular shaped plan that was built in 1965. A secondary structure with a gable roof is located within the property. Landscape elements on the property include two ball diamonds, bike trails/circulation routes, stylized lamp posts, a drinking fountain, four outdoor tennis courts, a parking lot, splash pad, and playground (City of Toronto 2021). Hendon Park is encased by black iron fencing and features two entry points with identical stone pilasters with iron panels inscribed with ‘Hendon Park’.</p> <p><u>Landscape Elements</u></p> <ul style="list-style-type: none">• 3.5 hectare park• Mature trees• Bike trails/circulation routes• Stylized lamp posts• Black iron fencing• Two entry points with identical stone pilasters with iron panels inscribed with ‘Hendon Park’ <p><u>Summary</u></p> <p>This property contains a 3.5 hectare park that was established in 1965. This park may have contextual value for the surrounding community.</p>	
S1-CHR18	-BHR -Residence	20 Abitibi Avenue, North York	-Identified During Field Review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property features a one and a half storey Bungalow style residence built between 1953-1956. The residence features a rectangular shaped plan with a hipped gambrel roof and projecting returned eaves clad in a mix of painted rusticated concrete blocks (lower level) and vertical planks (upper level) and an exterior chimney. The front façade (southern elevation) features one (1) two casement window, one (1) three casement window with side lights and one (1) sliding window all with plain lug sills and trims. The upper window features wooden fence style shutters. The offset entryway (right) features a shaped multi-light transom with a glass panelled screen door located within an open wood porch with a ground floor, open railing.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• One storey Bungalow style residence• Rectangular Plan• Hipped Gambrel Roof• Painted rusticated concrete blocks (lower level) and vertical planks (upper level) <p><u>Summary</u></p> <p>This property contains a one and a half-storey structure with Bungalow style architectural influences that was constructed between 1953-1956. This property may have design/physical, historical/associative, and/or contextual value.</p>	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S1-CHR19	-BHR -Residence	39 Highland Park Boulevard, Thornhill, Markham	-Identified During Field Review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property features a one and a half storey Bungalow style residence built between 1950-1953. The structure features an L-shaped shaped plan with a cross gable roof and projecting eaves clad in clapboard siding. The front façade (southern elevation) features one (1) one over two sash window and one (1) three casement window with side lights all with plain lug sills and trims. The front façade features two entryways the first feature three lights and the second featuring a multi light transom both with glass panelled screen doors. The entryways are accessible by a wooden porch with ground floor steps and an open railing.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• One storey Bungalow style residence• L-shaped Plan• Cross gable roof• Clapboard siding <p><u>Summary</u></p> <p>This property contains a one and a half-storey structure with Bungalow architectural influences that was constructed between 1950-1953. This property may have design/physical, historical/associative, and/or contextual value.</p>	
S1-CHR20	-BHR -Historical Plaque	Plaque located at 43 Drewry Avenue, North York	-Identified During Field Review	<p>This plaque was erected by Heritage Toronto in 2017. The contents illustrate the history of the fourth schoolhouse within the Village of Newtonbrook, located at 43 Drewry Avenue and the students within Newtonbrook School Section No. 5. The contents are transcribed below.</p> <p><u>Plaque Content</u></p> <p>“Newtonbrook School Section No. 5</p> <p><i>In 1878, the fourth schoolhouse of the Village of Newtonbrook opened here, at 43 Drewry Avenue. It was at the centre o the rural community that had been established on land occupied and used by Wendat, Haudenosaunee, and Anishinaabe First Nations before the arrival of European settlers. The land was included in the 1805 Toronto Purchase treaty between the British Crown and the Mississauga’s of the Credit River.</i></p> <p><i>The schoolhouse was built as the public school system was expanding across Ontario and access to free elementary education became increasingly universal. The red-brick building contained a one-room, multi-grade classroom, as well as quarters for the teacher. Before the school was built, classes were held in log houses and from 1847 to 1878, in a one room brick schoolhouse on the north side of Drewry Avenue between Yonge and Bathurst Streets.</i></p> <p><i>The schoolhouse here was in use until 1928 when what is now Drewry Secondary School, originally a four-room building, opened on the north side of the street. The schoolhouse was sold to the Newtonbrook Gospel Mission in 1930 and was subsequently altered and expanded to serve as a church. It was demolished in 1997.”</i></p> <p>Also found on the plaque are three photographs, the first depicts the students of Newtonbrook School Section No. 5 dated September 19, 1898 with their teacher Miss Rutherford. The second, depicting the interior of the Zion Schoolhouse located at Finch Avenue and Leslie Street offered as a comparative example and lastly a photograph of the structure from the 1930s.</p>	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p><u>Summary</u></p> <p>This property contains a historic plaque detailing the history of the property and as such may have historical/associative value.</p>	
S2-CHR1	-CHL -Heritage Conservation District	Thornhill, Markham Ontario	Designated under Part V of the <i>Ontario Heritage Act</i> as the Thornhill-Markham HCD	<p>The Thornhill-Markham HCD is designated under Part V of the <i>Ontario Heritage Act</i> under By-law 269-86. A full copy of the designation By-law can be found online. The ‘Statement of Heritage Value’ and ‘Description of Heritage Attributes’ are contained in Section 2.0 of the HCD Plan and are provided below.</p> <p><u>Statement of Heritage Value</u></p> <p>The Thornhill-Markham Heritage Conservation District is a distinct community in the City of Markham, characterized by a wealth of heritage buildings, historic sites, and landscapes. Although none of Thornhill’s mills or the earliest houses have survived, a wealth of buildings, both residential and commercial, dating from the 1840s, ‘50s, and ‘60s remain – largely intact.</p> <p>The concentration of mid-19th century Georgian and Neo-Classical buildings in the historic village core is remarkable and constitutes the original basis of the village’s heritage character. Other houses dating from the late 19th century through the early 20th century represent many of the styles developed during this prolific decades. Regency, Victorian vernacular, Victorian Gothic, Queen Anne, Edwardian, Foursquare, Arts and Crafts, and Craftsman Bungalow styles are all represented in the District. Many of the mid-20th century houses, including the Department of Veteran Affairs (DVA) housing, were built in the Cape Cod Cottage style, which shares the New England Georgian model with the old village houses of a century before, and many more recent houses have made an effort to reflect the heritage styles in the village.</p> <p>The ongoing development of Thornhill has maintained the scale and character of the older parts of the village, with a variety of lot sizes and siting, mostly modest-sized buildings, mature and rich planting and landscaping, a rural or modified-rural road profile, and a proliferation of white wooden picket fencing. This character is strongly maintained in most of the village. Although the mills and their ponds are long gone, the valleys are preserved in a mostly natural state as parkland with significant amounts of woodland. The preservation of the valleys respects and honours the mill-town origins of Thornhill.</p> <p>The quality of heritage resources in the District is indicated by the number of properties designated under Part IV of the <i>Ontario Heritage Act</i>, and the large number of buildings carrying “A” and “B” grades in the District Inventory.</p> <p>There are numerous properties with architectural and historical significance located in this HCD that together communicate the CHVI of this area.</p>	 <p>Boundaries of the Thornhill-Markham HCD (add ref: 6)</p>


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR2	-CHL -Heritage Conservation District	Thornhill, Vaughan Ontario	Designated under Part V of the <i>Ontario Heritage Act</i> as the Thornhill Vaughan HCD	<p>The Thornhill Vaughan HCD is designated under Part V of the <i>Ontario Heritage Act</i> under By-law 306-88. A full copy of the designation By-law can be found online. The ‘Statement of Heritage Value’ and ‘Description of Heritage Attributes’ as presented in Section 2.5 of the HCD Plan are provided below:</p> <p><u>Statement of Heritage Value</u></p> <p>The Vaughan Thornhill Heritage Conservation District is a distinct community in the City of Vaughan, characterized by a wealth of heritage buildings, historic sites, and landscapes. Although none of Thornhill’s mills or the earliest houses have survived, a wealth of buildings, both residential and commercial, dating from the 1830s, 40s, ‘50s remain – largely intact. These constitute the original bases of the village’s heritage character.</p> <p>The continuing development of Thornhill saw new buildings erected decade by decade. Houses dating from the mid-19th century through the early 20th century represent many of the styles developed during those prolific decades. Victorian vernacular, Victorian Gothic, Queen Anne, Foursquare/Edwardian, Arts and Crafts, and Craftsman Bungalow styles are all represented in the District. Many of the mid-20th century houses, including the Department of Veteran Affairs (DVA) housing, were built in the Cape Cod Cottage style, which shares the New England Georgian model with the old village houses of a century before, and many of the most recent houses have made an effort to reflect the heritage styles in the village.</p> <p>The ongoing development of Thornhill has maintained the scale and character of the older parts of the village, with a variety of lot sizes and sitings, mostly modest-sized buildings, mature and rich planting and landscaping, and a rural or modified-rural road profile in many places. This character is strongly maintained in most of the village. Although the mills and their ponds are long gone, the river valley remains unbuilt, as woodland and grass (the golf course), and serves as a reminder of the mill-town origins of Thornhill.</p> <p>The quality of the heritage resources in the District is indicated by the number of properties carried on municipal, provincial and national inventories, as listed above on page 8 [of the HCD Plan].</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR3	-CHL -Market	7509 Yonge Street, Thornhill, Markham	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>Constructed in 1953, the York Farmers Marker features a one storey commercial building. The building features a rectangular plan, a flat roof, clad in stucco and a mural to the left with numerous two-over-two sash windows with plain lug sills. The front façade (east elevation) features an enclosed porch and a cross gable roof with glass doors and multi-light windows. Historically, the building operated as a farmer’s market and also offered a space for the community events. Landscape elements on the property include a parking lot and a ‘York Farmers Market’ in Mid-Century Modern style.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• One storey market building• Flat roof• Stucco exterior• Mural• Two-over-two sash windows• Plain Lug Sills• Enclosed porch• Cross gable roof• Glass doors and multi light windows• ‘York Farmers Market’ Mid-Century Modern sign• Seasonal use of outdoor space to sell market wares <p><u>Summary</u></p> <p>This property contains a one-storey commercial building with Ontario Vernacular architectural influences that was constructed in 1953. As one of the few late 20th commercial buildings within in this section of Yonge Street, this property may have design/physical, historical/associative, and/or contextual value.</p>	 
S2-CHR4	-BHR -School (Thornhill Public School)	7554 Yonge Street, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. At the time of the writing an individual inventory sheet for this property was not available. The property description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>Thornhill Public School, located at the corner of Arnold Avenue and Yonge Street, is a two-storey administrative building with Edwardian influences with a flat roof that is currently in operation. The front façade (west elevation) features numerous two-double hung windows and plain lug sills with decorative brick pilasters on the upper level. The front façade (west elevation) includes a centred multi light recessed doorway with a multi light transom with a brick keystone archway trimmed in brick voussoirs and dichromatic springer stones.</p> <p>Historically, the Thornhill schoolhouse building was located on Lot 30, Concession 1, Vaughan Township in 1847. In 1917 the Thornhill School Board purchased 1 and a 1/2 acres of land on the west side of Yonge St. opposite Elgin Avenue (present location) and planned to build a four-room brick school. The current school was opened in 1923. Planned additions for the school occurred in 1953 and in the early 1990s (The Society for the Preservation of Historic Thornhill 2021a).</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<u>Exterior Elements</u> <ul style="list-style-type: none">• Edwardian architectural style• Two storey scale• Flat roof• Decorative brickwork including brick pilasters and a keystone archway• Three bands of drip stones between the first and second storeys• Symmetrical, well-proportioned design• Multi light two-double hung windows and west facing entrance door• Plain lug sills <u>Summary</u> <p>This property contains a two-storey school with Edwardian style influences that was opened in 1923. As one of the few examples of an early 20th century school along Yonge Street, this property may have design/physical, historical/associative, and/or contextual value.</p>	
S2-CHR5	-BHR -Commercial Building	7529 Yonge Street, Thornhill, Markham	-Identified during field review	<p>This property was identified during field review. The property description provided below is based on field observations.</p> <u>Property Description</u> <p>Originally built between 1965 and 1966, and reconstructed in 1992 following a fire, ‘The Octagon’ restaurant is a one and a half storey building in Octagon style with an irregular plan clad in polychrome red brick with matching quoins. The building features a truncated roof with decorative bargeboard trim and wooden baluster railings and five-gable style dormers clad in stucco with a decorative brick trims with decorative bargeboard trim and stained-glass windows. The lower-level building features numerous single light octagonal windows with voussoirs trim and Victorian style armed lanterns. An exterior stone chimney with a centred clock and decorative brickwork is located on the western elevation. The east elevation has a square tower and a Porte cochere with bargeboard trim and a truncated roof supported by a mix of columns and engaged columns with Doric capitals; both the tower and Porte cochere have wooden baluster railings on the roof. Landscape elements on the property include a parking lot, young trees located the at the front of the building, grass and pathways to the front entrance.</p> <p>Historically, The Octagon was called the Copper Kettle. In 1974 the current owners purchased the building and re-named it ‘The Octagon’ in reference to the unique shape of the building. Following the 1992 fire, which destroyed the original structure, the owners looked to design with what they described as a building featuring exotic woods and unique artifacts in an effort to create an elegant jewel box setting (The Octagon 2021). While this property is less than 40 years of age, the unique design and high level of craftsmanship may confer design/physical value.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">• Octagonal architectural style and plan• Truncated roof with baluster railings• Bargeboard trim• Decorative polychrome brickwork• Porte cochere with bargeboard trim and a truncated roof• Doric style columns and engaged Doric columns• Exterior tower• Gable style dormers• Exterior stone chimney	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p><u>Summary</u></p> <p>This property contains a one and a half storey commercial building with unique architectural influences originally built between 1965 and 1966 and re-constructed in 1992 using the same footprint and design. While the current structure is less than 40 years old it was later rebuilt on the original building footprint which supports the character of the area and displays a high degree of craftsmanship and artistic merit and as such this property may have design/physical, historical/associative, and/or contextual value.</p>	
S2-CHR6	-BHR -Residence	7616 Yonge Street, Thornhill, Vaughan	<p>-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD</p> <p>-Listed on the City of Vaughan’s Buildings of Architectural and Historic Value</p>	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. At the time of the writing individual inventory sheets were not available. Property description is provided below based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a Victorian style residence that was constructed between 1878 and 1914. The residence is a simple two storey structure with an L-Shaped plan and offset cross gable roof with projecting eaves clad in buff brick (upper and lower) laid out in a stretcher bond pattern with dichromatic brick quoins and wood shingles on the upper level. The front façade (east elevation) includes a centred doorway with a flat transom, with multiple segmental lights and a covered veranda with a skirt-roof. The veranda half wall features half-circle cut outs with a flat arch and voussoirs trim, square columns in buff brick laid out in a stretcher bond pattern capped in stone and a bay window with a mansard roof. The façade features a mix of two over two segmental windows featuring dichromatic segmental voussoirs brickwork, dual wooden shutters, and plain lug sills (upper and lower) and paired three over one sash windows (upper) set in a continuous sill. The front gable features a projecting eaves with bargeboard trim with quatrefoil pattern outs and a fleur de lis at the apex. Landscape elements on the property include a mature tree on the east side of the house, grass, pathways to the front entrance, a flower garden and a sign for Mill Street & Co.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Residence with Gothic Revival style influences• L-shaped plan• Cross gable roof• Projecting eaves• Buff brick laid out in a stretcher bond pattern (upper and lower levels)• Dichromatic brick quoins• Wood shingles (upper level)• First storey bay window• Windows with dichromatic segmental voussoirs brickwork and plain lug sills (upper and lower levels)• Windows with paired three over one sash windows set in a continuous sill• Centered doorway with a flat transom and multiple segmental lights• Covered veranda with a skirt-roof• Half wall featuring half-circle cut outs with a flat arch and voussoirs trim capped in stone• Bargeboard <p><u>Summary</u></p> <p>This property contains a two storey Victorian style residence that was constructed between 1878 and 1914 and as such this property may have design/physical, historical/associative, and/or contextual value.</p>	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR7	-BHR -Former Residence	7626 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. At the time of writing an HCD inventory sheet for this property was not available. Property description is provided below based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a two-and-a-half storey Victorian style residence that was built between 1878 and 1914. The building features an original structure and a rear addition with an irregular plan and a multi cross-gable roof with projecting eaves clad in red polychrome bricks laid out in a stretcher bond pattern with dichromatic brick quoins. The front façade (east elevation) includes a double-gable and a centred gable style dormer with a segmental attic window with dichromatic segmental voussoirs brickwork, plain lug sills and wooden shutters. The house features one over one two segmental windows featuring dichromatic segmental voussoirs brickwork and plain lug sills. The first storey has two bay windows and an open porch supported by wood baluster columns with flat roofs. Above the porch is a centred single French door (second level) with a flat transom and plain trim. The lower level features a centred semi-elliptical front entrance with a double glass panels and a single light shaped transom and side lights with moulded panels on the on the door and sides beneath the middle rail. Landscape elements on the property include mature trees at the front of the house, a front lawn, a bench, and a brick walkway with steps leading to the house and a sign for CBT psychology.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Victorian style• Irregular plan• Brick laid out in a stretcher bond pattern (Upper and Lower Levels)• Dichromatic brick quoins• Double gable roof• Gable style dormer with a segmental attic window with dichromatic segmental voussoirs brickwork, plain lug sills and wooden shutters• Projecting eaves• Two bay windows• Numerous windows with dichromatic segmental voussoirs brickwork and plain lug sills (upper and lower levels)• Covered veranda• Above the porch is a centered single French door (second level) with a flat transom and plain trim• Lower level features a centered semi-elliptical front entrance with a double glass panels and a single light shaped transom and side lights with moulded panels on the on the door and sides beneath the middle rail <p><u>Summary</u></p> <p>This property contains a two-and-a-half storey Victorian style former residence that was constructed between 1878 and 1914 and as such this property may have design/physical, historical/associative, and/or contextual value.</p>	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR8	-BHR -Former Residence	7636 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. At the time of the writing an HCD inventory sheet for this property was not available. Property description is provided below based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a Victorian style residence that was constructed between 1878 and 1914. The residence is a simple two storey structure with an L-Shaped plan and offset cross gable roof with projecting eaves with clapboard-style siding. The front façade (east elevation) includes a centred doorway with moulded panels with a flat transom (multiple lights), sides (multiple lights), and moulded panels beneath the middle rail. The front façade includes a covered veranda with a low hipped roof and Doric capital columns. The front façade features two over two sash windows featuring wooden shutters, and plain lug sills (upper and lower) and an additional two-over-two sash window (lower) with plain lug sills and wooden shutters located on the lower level (east elevation). The front gable features a projecting eaves with decorative bargeboard trim. Landscape elements on the property include a mature tree on the south side of the house, grass, brick pathways/steps to the front entrance, a flower garden, and a sign for the Thornhill Corporate Centre.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Victorian style• L-shaped plan• Cross gable roof• Projecting eaves• Clapboard style siding• Centered multi light doorway with moulded panels with a flat transom• Covered veranda with a low hipped roof and Doric capital columns.• Four (4) two over two sash windows featuring wooden shutters, and plain lug sills (upper and lower storeys)• One (1) two-over-two sash window (lower storey) with plain lug sills and wooden shutters located on the lower level• Bargeboard trim <p><u>Summary</u></p> <p>This property contains a two storey Victorian style former residence that was constructed between 1878 and 1914. This property may have design/physical, historical/associative, and/or contextual value.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR9	-BHR -Former Residence	7666 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. At the time of the writing an HCD inventory sheet for this property was not available. Property description is provided below based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a two-and-a-half storey residence with Victorian style influences that was built between 1878 and 1914. The building has a rectangular plan and a cross-gable roof with projecting eaves. The front façade (east elevation) includes a centred two light attic window with lintel. The second storey includes two centred one-over-one sash windows with wooden shutters with plain lug sills. The first storey has an offset left (east) one-over-one sash window with wooden shutters with plain lug sills and lintels and an offset left (south) front entrance. The front façade also has covered veranda with a shed-style roof and an additional recessed entrance to left (south). The building is clad in red bricks laid out in a stretcher bond pattern and has an offset right (north) interior chimney. Landscape elements on the property include a mature tree at the front of the house, a front lawn, a driveway, a nearby parking lot and a rear new traditional commercial plaza.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Victorian style influences• Rectangular plan• Cross gable roof• Projecting eaves• Centered two light attic window with lintel• Two centered one-over-one sash windows with wooden shutters with plain lug sills and lintels (second storey)• Covered veranda with a shed-style roof and an additional recessed entrance to left supported by piers• Clad in red bricks laid out in a stretcher bond pattern• Offset right (north) interior chimney <p><u>Summary</u></p> <p>This property contains a two-and-a-half storey residence with Victorian style influences that was constructed between 1878 and 1914 and as such this property may have design/physical, historical/associative, and/or contextual value.</p>	
S2-CHR10	-BHR -Residence	14 John Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD. At the time of the writing an HCD inventory sheet was not available. Property description is provided below based on field observations.</p> <p><u>Property Description</u></p> <p>This property contains a two-storey residence with Ontario Vernacular style influences constructed between 1878 and 1914. The building has an L-Shaped plan with a cross-gable roof clad in clapboard. The front façade (north elevation) has a centred molded wood panel door with a gable-dormer style porch supported by two Doric capital columns, and three (3) sash two-over-two windows with moulded lintels and plain lug sills and wooden shutters. A small offset (left) plaque reads ‘Morris Casey 1834 Laborer’, additional writing is visible but was not legible during field observations. The building is clad in board and batten siding.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Ontario Vernacular style• L-shaped plan• Cross gable roof	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<ul style="list-style-type: none">• Projecting eaves• Clapboard siding• Centered molded wood panel door• Gable-dormer style porch supported by two Doric capital columns• Three (3) sash two-over-two windows with moulded lintels and plain lug sills and wooden shutters• Plaque that reads ‘Morris Casey 1834 Laborer’ <u>Summary</u> This property contains a two-storey residence that was constructed between 1878 and 1914 and as such this property may have design/physical, historical/associative, and/or contextual value.	
S2-CHR11	-BHR -Commercial Building	7562 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing property within the HCD. The description provided below is based on field observations.</p> <u>Property Description</u> This is a single-storey commercial structure was constructed between 1995 and 1998. The structure has a flat roof and primarily glass front façade. <u>Exterior Elements</u> <ul style="list-style-type: none">• Late twentieth-century commercial building• Large parking lot• Primarily glass front facade• Flat roof <u>Summary</u> This property contains a non-contributing single-storey late twentieth-century commercial building within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.	
S2-CHR12	-BHR -Commercial Building	7582 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <u>Property Description</u> This is a multi-storey mixed use residential and commercial structure constructed between 1978 and 1988. The structure has a flat roof and red brick façade. The residential portion of the building features balconies with railings and glass patricians. The first storey commercial portion of the building has branded fabric eaves. <u>Exterior Elements</u> <ul style="list-style-type: none">• Mixed commercial and residential building• Balconies with railings and glass patricians• First floor commercial space with branded fabric eaves• Large parking lot• Flat roof <u>Summary</u> This property contains a non-contributing multi-storey late twentieth-century mixed residential and commercial structure within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR13	-BHR -Commercial Building	7584 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a multi-storey mixed use residential and commercial structure constructed in 2013-2014. The structure has a flat roof and red brick façade. The residential portion of the building features inset balconies with railings and glass patricians. The first storey commercial portion is supported by concrete pillars and has a primarily glass facade.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Mixed commercial and residential building• Balconies with railings and glass patricians• Commercial space with supported by concrete pillars• Primarily red brick façade• First floor primarily glass facade• Flat roof <p><u>Summary</u></p> <p>This property contains a non-contributing multi-storey late twentieth-century mixed residential and commercial structure within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> under the HCD policies and guidelines.</p>	
S2-CHR14	-BHR -Commercial Building	7620 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a two-storey townhouse residential structure constructed between 1988 and 1995. The red brick structure has a hipped roof and features a tourelle, gabled dormers and corbel fenestration. It is surrounded by a brick courtyard lit by lanterns and trimmed with landscaping. The structure is sympathetic to but does not contribute to the HCD.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Late twentieth-century residential townhouses• Two storey construction• Hipped roof with a tourelle and gabled dormers• Corbel fenestration• Brick courtyard• Lanterns and landscaping <p><u>Summary</u></p> <p>This property contains a non-contributing two-storey late twentieth-century residential townhouses within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR15	-BHR -Commercial Building	7646 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a three-storey structure constructed between 1978 and 1988 of with Neoclassical influences fronting Yonge Street. The red brick structure has a hipped roof featuring two gabled dormers and a centre pediment. The front elevation is seven bays across, and features sash windows accented by sills, shutters and keystone lintels. The edges of the building are fenestrated with quoins and stairs lead to a stoop at the main entrance framed with a transom and pilasters.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Late twentieth-century architecture with Neoclassical influences• Three storey construction• Hipped roof with gabled dormers and a centre pediment• Sash windows accented with sills, keystone lintels, and shutters• Quoins fenestration on the corners of the building• Front stoop• Front entrance framed with transom and pilasters <p><u>Summary</u></p> <p>This property contains a non-contributing three-storey late twentieth-century structure with Neoclassical influences within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR16	-BHR -Historical Plaque	Plaque located at the corner of John and Yonge, Thornhill, Markham	Identified during field review	<p>This plaque was erected by <i>The Society for the Preservation of Historic Thornhill on the Occasion of Thornhill's Bicentennial, 1994</i>. The contents illustrate the colourful early local history of Thornhill relating to the surrounding landscape and to a broader international history. The contents are transcribed below.</p> <p><u>Plaque Content</u></p> <p>“How Thornhill Decided the American Election of 1832</p> <p><i>In 1826, in Batavia, N.Y. William Morgan Published Illustrations of Masonry, an expose of the first three degrees of masonry, for his efforts he was imprisoned, allegedly for a two-dollar debt. Someone paid off his debt, and upon his release from prison, he was seized, gagged, and thrust into a yellow carriage. There was a wild ride with relays of horses, to the Niagara Frontier. It was commonly believed he was then murdered and dropped into Lake Ontario.</i></p> <p><i>His disappearance and the obstruction of justice by politically influential masons raised popular indignation to a point that a third party, the antimasonic party with William Wirt as its leader and presidential candidate, was born.</i></p> <p><i>Just Prior to the presidential election of 1852, a body was found near the mouth of the Niagara River, said to be Morgan's was claimed by his family. It turned out to be someone else's but was said by the antimasonic party to be a good enough Morgan ‘till after the election”, a statement of political deceit. Andrew Jackson won, in part because the antimasonic candidate drew votes from Republican Henry Clay.</i></p> <p><i>All this time William Morgan was in Thornhill, operating a distillery in Brewers Hollow, southeast of this location.”</i></p> <p>Milburn Tavern</p> <p><i>Milburn Tavern, built in 1829 west of Yonge Street at John (formerly Milburn Rd) was a meeting place for the local rebels of 1837. As a result of the owner, Joseph Milburn, a Quaker, was arrested and banished to Van Diemen's Land in Australia in 1837 until his pardon by Queen Victoria in 1843.</i></p> <p><i>A Tavern and Inn under various names such as the White Horse Tavern, Lemon's Inn and Queen's existed at this location until 1905. It was at Lemon's Inn on Friday, June 2, 1848, at 10:00 am that the trustees of the bankrupt estate of Thornhill's most prominent citizen, Benjamin Thorne, held an auction of his smaller possessions – horses and colts, sleighs, wagons, hogs, and ox cart. He was a wealthy owner of a number of mills who was financially ruined by the repeal of the corn laws in England in 1846. One month later, Thorne, aged 54, went to a rocky knoll behind his home (near Thornhill Country Club), and shot himself. He left behind a wife and eight children.</i></p> <p>Brewers Hollow</p> <p><i>A tributary of the Don that ran southeast of this location, currently under John Street, was known as Brewers Hollow because of the existence of at least two breweries and a distillery in this area from 1820 to 1880.</i></p> <p><i>Breweries were located close to water, near grist mills, from which the “Tailings” and damaged grain were used in the brewer's mash.</i></p> <p><i>Erected by the Society for the Preservation of historic Thornhill on the Occasion of Thornhill's Bicentennial, 1994.</i></p> <p><u>Summary</u></p> <p>This property contains a historic plaque detailing the history of the surrounding landscape, as such, this property may have design/physical, historical/associative, and/or contextual value.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR17	-BHR -Residence	5 Elizabeth Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a two-storey structure built prior to 1954 in Georgian Revival style with classical influences. It has a hipped roof and the elevation fronting Elizabeth Street is five bays across. The second storey has five sash windows accented with shutters and the first storey has four sash windows with shutters centred around a front door featuring a decorative portico supported by columns. An addition was added to the structure between 1970 and 1978. The property also includes a double garage with a steeply pitched front gable. The front lawn is lined with mature trees.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Georgian style with classical influences• Symmetrical design• Front elevation is five bays across• Sashed windows accented by shutters• Portico leading to the central front entrance• Double garage with steeply pitched front gable roof• Mature trees lining the front lawn <p><u>Summary</u></p> <p>This property contains a non-contributing two storey Georgian style structure with classical influences built prior to 1954, as such, this property may have design/physical, historical/associative, and/or contextual value.</p>	
S2-CHR18	-BHR -Residence	7 Elizabeth Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a two-storey residential structure built between 1988 and 1995. The structure has a hipped roof with an offset front gable and a light-colored brick façade. It features arched fenestration, decorative brick corbels, and quoins. A double garage is set substantially below grade.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Late twentieth-century eclectic residential style• Hipped roof with off centered cross gable• Light brick façade• Arched fenestration• Decorative brick corbels• Decorative quoins• Double garage set substantially below grade <p><u>Summary</u></p> <p>This property contains a non-contributing two-storey late twentieth-century residential structure within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR19	-BHR -Residence	17 Old Jane Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a two to three-storey residence built prior to 1954 in an Arts and Crafts style. The elevation fronting Old Jane Street is partially set into a bank. It has a flat roof with an eve separating the second storey from the first. The second storey has three enclosed bays with four plain square windows and an open bay surrounded by a railing. The first storey includes four enclosed bays with three double windows with shutters and a door with a decorative arched element with geometric embellishment atop. Stairs leading to the front entrance situated atop the bank include a railing. A driveway leads to the garage, which is set into the bank. The property includes a well manicured garden along the stairs and in front of the main entrance.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Arts and Crafts style• Front elevation partially set into a bank• Second floor open area enclosed with railing• Four bay length along front elevation• Staircase to leading to raised entrance• Decorative element above front entrance• Double windows with shutters• Well-manicured landscape along staircase to front entrance• Railing along stairs to front entrance <p><u>Summary</u></p> <p>This property contains a non-contributing two storey Arts and Crafts style structure partially set into a bank. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	
S2-CHR20	-BHR -Commercial Building	7681 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a single-storey commercial plaza originally constructed between 1954 and 1970 that is currently home to Scotia Bank and Tim Hortons. It has a façade of red brick with metal light grey metal coping and features a tower at the southwest corner of structure. The structure is sympathetic to but does not contribute to the surrounding HCD.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Commercial Plaza• Large parking lot• Red brick facade• Light grey metal coping• Tower on the southwest corner <p><u>Summary</u></p> <p>This property contains a non-contributing single-storey late twentieth-century commercial plaza located within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR21	-BHR -Residence	23 Elizabeth Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This two-storey structure was constructed between 1978 and 1988. It is a residential structure with a light brick facade, hipped roof, and recessed arched entrance. It has sash windows with shutters and decorative quoins. The front yard is raised from Elizabeth Street, which it fronts, by a brick retaining wall.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Late twentieth-century residential structure• Hipped roof• Recessed arched entrance• Decorative quoins• Brick retaining wall <p><u>Summary</u></p> <p>This property contains a non-contributing two-storey late twentieth-century residential structure located within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	
S2-CHR22	-BHR -Residence	12 Old Jane Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This three-storey structure was constructed between 1988 and 1995. It is a residential structure with a stucco façade, hipped roof, and large front portico. The yard is extensively landscaped.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Late twentieth-century residential structure• Hipped roof• Large portico• Extensive landscaping <p><u>Summary</u></p> <p>This property contains a non-contributing three-storey late twentieth-century residential structure located within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR23	-BHR -Commercial Building	7700 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This two-storey structure was constructed in the 1970s in a Brutalist architectural style with a façade of red brick and concrete. The east elevation fronting Yonge Street has no windows and a single entrance appearing small in scale compared to the structure. The concrete portion of the front façade features curved edges and vines are covering a section of the building. This is a Bell utility building.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Brutalist style• Curved concrete outcrop• Red brick facade• Small entrance• No windows on front facade• Vines growing on the structure <p><u>Summary</u></p> <p>This property contains a non-contributing two-storey red brick and concrete Brutalist style utility building constructed in the 1970s located within the HCD As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> under the HCD policies and guidelines.</p>	
S2-CHR24	-BHR -Residence	7699 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as contributing attribute of the Thornhill-Markham HCD. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>The building located at 7699 Yonge Street is a two-storey side gabled structure with a west elevation fronting Yonge Street. The original structure was built in 1846 in the Georgian Traditional style. There was a second floor added subsequently in the late nineteenth-century and a substantial modern brick renovation added to rear of the building in the twentieth century. The front façade of the original structure is stucco, accented by shutters. The first storey of the west elevation features five bays with two entrances, two slightly arched sash windows, one paired window, a central double door, and a double door located near the southern elevation. The entire first floor of the west elevation features a covered porch that is level with the surrounding lawn and supported by wooden columns. A central portico is framed by two wooden columns, above which is finial detail attached to a decorative second-floor cupola. The second storey features three bays with slightly arched sash windows including shutters. The central bay of the second storey has a rectangular cupola with a low profile and finial decoration. The original plan of the building fronting Yonge Street retains its heritage integrity and supports the heritage character of the area.</p> <p>A modern brick addition forms the east elevation and two thirds of the north and south elevation. It is five bays deep on the north and south elevations and three bays across on the east elevation. The addition features a mansard style roof.</p> <p>There is a cultural interpretive sign located on the front lawn of the western elevation of the structure entitled “<i>Yonge and Colborne Streets: Landmarks of this historic corner</i>” erected in cooperation with the City of Markham in 2015. There is also a plaque noting a former owner of the structure and proprietor of a hardware store at the location that reads “<i>John Carter, Gentleman, 1846, Thornhill Village Trustees-1967</i>”. The first owner is believed to by the Francis family who sold the house by the late 1840s. After the ownership period of John Carter, the house was under ownership Dr. Jon N. Reid, who added the second storey.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Georgian Traditional style• Stucco façade• Front porch supported by decorative wooden columns• Sash windows with eight segments and slight arch• Shutter surrounding sash windows on the west elevation• Original 1846 plan of building and 19th century second storey addition• Central portico and cupola with finial decoration• Cultural Interpretive plaque in the front yard• Plaque commemorating John Carter <p><u>Summary</u></p> <p>This property contains a two-storey Georgian Traditional house constructed in the mid-19th century. This property has known CHVI as a “Class A” property in the Thornhill Markham HCD.</p>	
S2-CHR25	-BHR -Residence	11 Colborne Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i>. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>The north elevation of the building fronting 11 Colborne Street is set back from the street and partially obscured by mature deciduous trees that line much of the street. The structure has an irregular plan shape composed of a central large side gable section that is one and 1-1/2 or two storeys tall. Two shorter side gable wings protrude on each side and are fronted by two flat sections protruding from the north elevation fronting the Colborne. The structures façade is stucco.</p> <p>The entrance of the house has a stone stoop leading to a wooden framed glass double door on the northern elevation of the house. This portion of the eastern wing of the house has a roof crested with wrought iron decorative fencing. However, the heritage photograph found on the Markham Heritage Register indicated that this entrance is not original, and that the flat portions of the east and west wings once had an exposed rafter design.</p> <p>This structure was originally built for Fred S. Haines, Principle of the Ontario College of Arts from 1933 to 1952.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Arts and Crafts style• Irregular three wing design featuring a 1-1/2 storey central gable and two shorter side gables fronted with flat roof segments• Mature wooded lot <p><u>Summary</u></p> <p>This property contains an Arts and Crafts style structure built in 1919 associated with Fred S. Haines. This property has known CHVI as a “Class A” property in the Thornhill Markham HCD.</p>	  <p>Reference: Markham Heritage Register 2021</p>

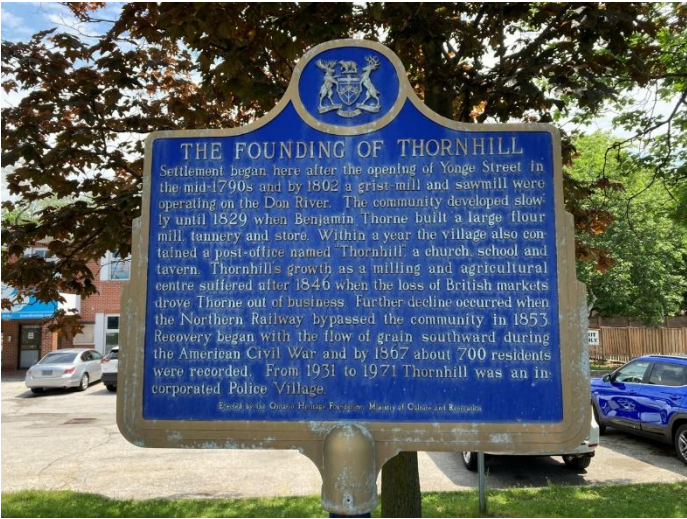

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR26	-BHR -Residence	7714 Yonge Street; W.D. Stark House, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>This property is designated under Part V of the <i>Ontario Heritage Act and</i> Listed on the City of Vaughan’s Buildings of Architectural and Historic Value The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>The north elevation of the building fronting Yonge Street shows a small 1-1/2 storey Ontario Vernacular style cottage with Late Victorian influences. It was constructed in 1853 (City of Vaughan Heritage Register 2020). The east elevation faces Yonge Street and consists of three bays with a side gable roof. The roof of the building has a gabled dormer with a sash window and shutters accented by a cupola with a finial design. The first floor has a central entrance flanked by two sash windows; all are covered by a large porch supported by wooden columns. The porch has a low railing with finial decoration.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Ontario Vernacular style cottage with Late Victorian influences• Side gable roof• 1-1/2 storeys• Three bay configurations• Gabled dormer• Finial accents• Sash windows with shutters <p><u>Summary</u></p> <p>This property contains Ontario vernacular style cottage with Late Victorian influences built in 1853. It is within the Thornhill-Vaughan HCD and is listed on the City of Vaughan’s Buildings of Architectural and Historic Value. This property has known CHVI as a contributing property in the Thornhill Markham HCD and as a listed heritage property.</p>	
S2-CHR27	-BHR -Commercial Building	7707 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill-Markham HCD. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>The building located 7707 Yonge Street is a two-storey structure built in the Georgian Traditional style. The site was purchased in 1843 by Archibald Gallanough, shopkeeper and veterinarian, from the Sutton R. Frizzel portion of Lot 30, Concession 1, Markham. Mr. Gallanough built the house to include a general store and his veterinary clinic (Markham Heritage Register 2021). The light brown clapboard structure, originally constructed 1850, is currently used for commercial purposes. The west elevation fronts Yonge Street. The west elevation of the first storey features two bays, both have an entrance located on the north end of the bay. The entrances both exhibit a wooden door with a geometric decorative wooden inlay and a window, and a decorative wood transom. Four bay windows accented by a brick underlay are located immediately south of both doors. The second storey has five bays, four have sash windows (1 over 9) while the centre bay does not have a window. All four windows are accented by shutters.</p> <p>The building was moved to accommodate the widening of Yonge Street, but is in excellent condition. Recent alterations are sympathetic to the 19th century Georgian Traditional style (Markham Heritage Register 2021). A historic photograph retrieved form the Markham Heritage Register shows that alterations have been made to the first storey window and door configuration and a door was formerly present in the centre bay of the second storey. The first storey also historically had a covered porch. Despite the relocation of the building and changes to the configuration the building maintains its commercial use of the</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p>first storey and residential aesthetic to the second storey. The buildings relocation has allowed it to maintain its access to Yonge Street.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Georgian Traditional style• Rectangular plan• Side gable roof• Rectangular sash windows• Wooden shutters• Decorative front doors with windows• Access to Yonge Street <p><u>Summary</u></p> <p>This property contains a two storey Georgian Traditional style structure built in 1850. This property has known CHVI as a “Class A” property in the Thornhill Markham HCD.</p>	 <p>Reference: Markham Heritage Register 2021</p>
S2-CHR28	-BHR -Residence	10 Colborne Street; The Ellen Ramsden House (Thornhill Village Library), Thornhill, Markham	Designated under Part IV and V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated individually under Part IV of the <i>Ontario Heritage Act</i> and under <i>Part V</i> of the <i>Ontario Heritage Act</i> as part of the Thornhill-Markham HCD. The property description provided below is based on the individual designation By-Law Number 298-78 and the description of the property found in the Markham Heritage Register.</p> <p><u>Architectural Reasons for Designation</u></p> <p>The building at 10 Coulbourne Street in Thornhill Ontario, now the Thornhill Village Library, is recommended for designation for architectural reasons as it is a unique example of a modest domestic building of a Classical Revival style. The clapboard structure sits with its southern gable end to the street. Adapting to the medium gable roof, the second storey of the street façade is two bays across while the main level is three bays. The four street-side windows have large shutters of the original type with adjustable slats on the lower half. The boxed and returned cornice also includes a plain moulding frieze. Centrally placed, the main entrance is a single leaf, double panel door with a recessed mullioned transom of eighteen divisions and a pair of unfluted pilasters to either end. This in turn is headed by a simple but elegantly moulded entablature. Somewhat eclectic like most Ontario domestic buildings from the mid-nineteenth century, it remains in excellent condition. Historically this building was erected in 1851 as a home for Mrs. Ramsden.</p> <p><u>Historic Description</u></p> <p>The house was built for Mrs. Ellen Ramsden nee Frizzell. She died two years afterwards, and the house was deeded to her infant John A. Ramsden. There is a gap in the record, but it is known that John Grice Jr. operated a grocery store in the building in the 1890s until around 1902. Veterinarian John Campbell rented it for while, and in 1911 it was again a residence, home to the Murcock McDonald family who occupied it for 20 years. It subsequently housed the Jim Tutt family, Bill and Mae Tucker, and finally Frank Tucker, who was a village trustee. Mr. Tucker sold the house to the Library Board in 1959, for \$16,000. The branch was scheduled to be closed in 1971, but public outcry reversed the decision, and portables were added at the rear as expansion space. In 1977 the property was turned over to the City of Markham. Napier Simpson designed a restoration, including excavation for replacement foundation. In 1992 the portables were replaced with a new addition, which provided wheelchair access, and more space and amenities (Markham Heritage Register).</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p><u>Summary</u></p> <p>This property contains nineteenth-century Classical Revival style building is designated individually under Part IV of the <i>Ontario Heritage Act</i> and under <i>Part V</i> of the <i>Ontario Heritage Act</i> as part of the Thornhill-Markham HCD. This property has known CHVI as a “Class A” property in the Thornhill Markham HCD and as an individually designated property.</p>	 <p>Reference: Markham Heritage Register 2021</p>
S2-CHR29	-BHR -Commercial Building	7724 Yonge Street (Francis Block), Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>This property is designated under Part V of the <i>Ontario Heritage Act and</i> Listed on the City of Vaughan’s Buildings of Architectural and Historic Value. The description provided below is based on information available in Vaughan Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>The east elevation of the building fronts Yonge Street. The building has a rectangular plan and consists of three Georgian style store fronts originally constructed in 1898 that have undergone some modern modifications (Vaughan Heritage Register 2020). The first floor has a substantial number of windows allowing pedestrians to view into the shops, these windows and associated entrances are covered by eaves. The second floor of the northern most of the three sections has modern windows. The middle store front has three sash windows with lintels and sills, while shutters are only present on the north side of the north window and south side of the south window. The second storey of the southern store front has two sash windows with lintels and sills that both have a pair of shutters.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Georgian style store front• Flat roof• Sash windows with lintels, sills, and shutters• Crown moulding• Eaves at the top of the first storey• East elevation facing Yonge Street <p><u>Summary</u></p> <p>This property contains a Georgian style commercial structure constructed in 1898 that is designated under Part V of the <i>Ontario Heritage Act and</i> Listed on the City of Vaughan’s Buildings of Architectural and Historic Value. This property has known CHVI.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR30	-BHR -Commercial Building	7711-7715 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> in the Thornhill-Markham HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is the southern portion of a two-storey red brick structure constructed in 1950 in the former location of the Thornhill Hotel, which burned down in January 1950. It has a rectangular plan and houses multiple commercial store fronts. It comprises part of the modern infill included in the HCD and is typical of mid-century commercial architecture fronting many main streets in Ontario.</p> <p>The structure’s west elevation fronts Yonge Street and has an eve running the entire length defining the first and second storeys of the structure and sheltering the commercial entrances. The second storey of the building has ten bays indicated by ten bay windows. An understated crown moulding runs the length of the west elevation defining the flat roof. The south half of the structure has an engraved stone under the crown moulding that reads “<i>Anstey Building 1950</i>”</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Typical mid-twentieth century main street commercial structure• Red brick façade• Two storey construction• Inscribed stone, denoting name and date• Crown moulding• 5 bay length (southern half of structure)• Eve length of the western elevation <p><u>Summary</u></p> <p>This property contains a two-storey red brick commercial structure built in 1950 in the former location of the Thornhill Hotel within an HCD, as such, this property is protected under Part V of the Ontario Heritage Act and, as such, is protected under the HCD guidelines.</p>	
S2-CHR31	-BHR -Commercial Building	7719, 7725 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> in the Thornhill-Markham HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is the northern portion of a two-storey red brick structure constructed in 1950 in the former location of the Thornhill Hotel, which burned down in January 1950. It has a rectangular plan and houses multiple commercial store fronts. It comprises part of the modern infill included in the HCD and is typical of mid-century commercial architecture fronting many main streets in Ontario.</p> <p>The structure’s west elevation fronts Yonge Street and has an eve running the entire length defining the first and second storeys of the structure and sheltering the commercial entrances. The second storey of the building has ten bays indicated by ten bay windows. An understated crown moulding runs the length of the west elevation defining the flat roof. The north side of the structure has a stone that reads “<i>MacNeil Building 1950</i>”.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Typical mid-twentieth century main street commercial structure• Red brick façade• Two storey construction• Inscribed stone, denoting a name and date• Crown moulding• 5 bay length (southern half of structure)	




CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<ul style="list-style-type: none">Eve length of the western elevation <u>Summary</u> <p>This property contains a two-storey red brick commercial structure built in 1950 in the former location of the Thornhill Hotel within an HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	
S2-CHR32	-BHR -Residence	19 Centre Street; Robert Shuter House, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> and Listed on the City of Vaughan’s Buildings of Architectural and Historic Value. The description provided below is based on field observations.</p> <u>Property Description</u> <p>This is a two-storey Neoclassical style structure built in 1840 that appears to have a recent addition placed onto the rear of the originally rectangular plan (City of Vaughan Heritage Register 2020). The north elevation of the structure fronts Centre Street and sits behind a wooden clapboard fence that appears to be a recent addition to the property. The structure has a side gable roof and is three bays across on the north elevation. The top floor includes three sash windows with shutters. The first storey features a portico with classically decorated wood inlay supported by two Roman Doric columns flanked by two sash windows with shutters.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">Neoclassical symmetrical formSash windows with shuttersThree bay northern elevationPortico with classical inlayRoman Doric columnsSide gable roofStucco facade <u>Summary</u> <p>This property contains a two-storey Neoclassical structure built in 1840 designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD and Listed on the City of Vaughan’s Buildings of Architectural and Historic Value, as such, this property has known CHVI.</p>	
S2-CHR33	-BHR -Commercial Building	7738 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing property within the Thornhill-Markham HCD. The description provided below is based on field observations.</p> <u>Property Description</u> <p>This is a one-storey gas station built between 1954-1970. It has an essentially rectangular plan with, glass façade, flat roof and is typical of a mid to late twentieth-century gas station. The structure comprises part of the modern infill included in the HCD.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">Gas pumping stationsRectangular plan buildingGlass facadeFlat roof <u>Summary</u> <p>This contains a gas station and is located within the Markham-Thornhill HCD.As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR34	-BHR -Historic Plaque	Plaque near corner of Yonge and Centre Street, Thornhill, Vaughan	Erected by the Ontario Heritage Foundation, Ministry of Culture and Recreation	<p>This property is designated contains a plaque outlining the history of Thornhill. This plaque was observed during filed assessment and is within the Markham-Thornhill HCD.</p> <p><u>The Plaque Reads the Following:</u></p> <p><i>The Founding of Thornhill</i></p> <p><i>Settlement began here after the opening of Yonge Street in the mid-1790s and by 1802 a grist mill and sawmill were operating on the Don River. The community developed slowly until 1829 when Benjamin Thorne built a large flour mill, tannery, and store. Within a year the village also contained a post-office named "Thornhill", a church, school and tavern. Thornhill's growth as a milling and agricultural centre suffered after 1846 when the loss of British markets drove Thorne out of business. Further decline occurred when the Northern Railway bypassed the community in 1853. Recovery began with the flow of grain southward during the American Civil War and by 1867 about 700 residents were recorded. From 1931 to 1971 Thornhill was an incorporated Police Village.</i></p> <p><i>Erected by the Ontario Heritage Foundation, Ministry of Culture and Recreation</i></p> <p><u>Summary</u></p> <p>This property contains a plaque detailing the history of Thornhill within the Markham-Thornhill HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines.</p>	
S2-CHR35	-BHR -Commercial Building	7751 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> in the Thornhill-Markham HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing property within the Thornhill-Markham HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a two-storey red brick structure constructed in 1978 (Markham Heritage Register 2021). It has an essentially rectangular plan. The structure comprises part of the modern infill included in the HCD and is typical of mid to late twentieth-century small scale commercial/institutional architecture in Ontario.</p> <p>The structure's west elevation fronting Yonge Street is set back from the street by a parking lot associated with the structure, which houses a small educational facility. The building has white vinyl windows with white shutters. A white cornice and crown moulding mark the parapet wall surrounding the flat roof.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Parking lot fronting Yonge• Red brick façade• Two storey construction• Crown moulding and cornice <p><u>Summary</u></p> <p>This property contains a two storey red brick structure located within the Markham Thornhill HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR36	-BHR -Residence	18 Centre Street; Mason Cogswell House, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> and Listed on the City of Vaughan’s Buildings of Architectural and Historic Value. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a structure was constructed in 1840 and its south elevation fronts Centre Street (City of Markham Heritage Register 2021). This 1-1/2-storey cottage Ontario Vernacular Cottage is influenced by Gothic Revival style. This structure has a side gable roof with a gabled dormer that has wood vergeboard. The dormer also has a sash window with a sill and shutters. It has a symmetrical layout featuring twin chimneys and a three-bay first storey including a door with a decorative glass transom light surrounding it flanked by sash windows with shutters on either side. The structure appears to have a single storey addition on the west elevation visible when viewing the south elevation.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Ontario Vernacular Cottage with Gothic Revival influences• Symmetrical design with asymmetrical addition• Side gable roof• Twin chimneys• Gabled dormer with decorative vergeboard• Centered front door with a surrounding transom light• Sash windows with wood shutters <p><u>Summary</u></p> <p>This property contains Ontario Vernacular Cottage with Gothic Revival influences. It is designated under Part V of the <i>Ontario Heritage Act</i> and listed on the City of Vaughan’s Buildings of Architectural and Historic Value. As such, this property has known CHVI.</p>	
S2-CHR37	-BHR -Residence	12 Centre Street, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing part of the HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This Bungalow style structure was built prior to 1954. It has a gambrel roof and a red brick façade. There is a central dormer with a shed style roof on the top floor and large enclosed porch supported by two brick pillars located along the front elevation. The structure has a concrete foundation and concrete stairs lead to concrete stoop in front of the enclosed porch.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Bungalow design• Red brick façade• Gambrel roof• Dormer with shed style roof• Large, enclosed porch supported by brick pillars• Concrete foundation• Concrete stairs and stoop <p><u>Summary</u></p> <p>This property contains a two-storey Bungalow style house built prior to 1954 within an HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR38	-CHL -Public/Municipal Parkette	Northwest intersection of Centre Street and Yonge Street, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. It is a small parkette adjacently south of the Thornhill Pub where there are multiple historic plaques.</p> <p>A bronze plaque erected by the <i>Society for the Preservation of Historic Thornhill in 1994</i> highlights several topics.</p> <ul style="list-style-type: none">• A section of the plaque entitled “Old Victoria Hall” notes that Victoria Hall opened just north of this location in 1871. The hall was known its acoustics and was home to concerts and political meetings. It notes that at least two Prime Ministers spoke there including Sir John A McDonald and Mackenzie King. It notes that multiple similar venues were subsequently located in the same location. Notably, the Thornhill Pub is currently in this approximate location.• A section entitled “Mineral Water Bottling Plant” notes that in the late 1880s Thornhill was known for having health spas and bottling mineral water, due to many natural springs in the area.• The plaque also notes that a wagon yard and weigh scale was situated at this approximate location. <p>An additional interpretive plaque at this location supplies a history of several local properties within Thornhill Vaughan HCD locate along the Yonge Street hill.</p> <p><u>Summary</u></p> <p>This property contains heritage plaque and interpretive sign denoting attributes of the local landscape and is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD, as such, this property may has known CHVI.</p>	
S2-CHR39	-BHR -Commercial Building	7765 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> in the Thornhill-Markham HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing part of the Thornhill-Markham HCD. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>This is a mid-twentieth century single storey bank branch of brick construction. This architectural style is typical of bank branches of the era. The west elevation fronts Yonge Street and it has an irregular rectangular plan shape. The west elevation is comprised mainly of windows and an entrance. It features a field stone quoin along the west elevation.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Single storey construction• Typical mid-century bank branch architecture• Field stone quoin <p><u>Summary</u></p> <p>This property contains a single storey bank branch typical of the mid-twentieth century within an HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR40	-BHR -Commercial Building	7756 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This vernacular style structure was built in approximately 1900 near the location of the Old Victorian Hall referenced in the S2-CHR38 entry in this table. This structure has a combined flat and front gable roof with a stucco facade. The roof is lined with crown moulding and a decorative cornice sits atop the branded eve reading “Thornhill Pub”. There is mixture of window styles, some with arched lintels and shutters. The first-floor façade is decorated with wooden inlay and etched windows. The structure is surrounded by a patio.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Vernacular design• Flat and front gable roof• Moulded fascia• Mixture of window styles, some with arched lintels and shutters• Large, enclosed porch supported by brick pillars• First-floor façade is decorated with wooden inlay and etched windows• Concrete stairs and stoop• Surrounded by patio <p><u>Summary</u></p> <p>This property contains a two-storey vernacular style structure built in approximately 1900 located within the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	
S2-CHR41	-BHR -Commercial Building	7775/7771 Yonge Street; Robert A. West General Store, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class B” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i>. The Markham Heritage Register notes that the structure was constructed in 1845 in the Classic Revival style. The description provided below is based on information available in the Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>This structure is currently a primarily one storey modern commercial building with a stucco façade fronting Yonge Street. The Markham Heritage Register notes that it was originally constructed in 1845 in the Classical Revival style (Markham Heritage Register 2021). However, while it is apparent that a portion of the building may once have been a residential structure the building has since undergone extensive twentieth-century modification and the current footprint of the building appears to be entirely modern.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Single storey construction• Extensive modern modification• Portion of possible two-storey nineteenth-century structure located along the southern elevation <p><u>Summary</u></p> <p>This property contains a primarily single storey commercial structure that may encompass a building constructed in 1845 in the Classical Revival style. It is located within an HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	

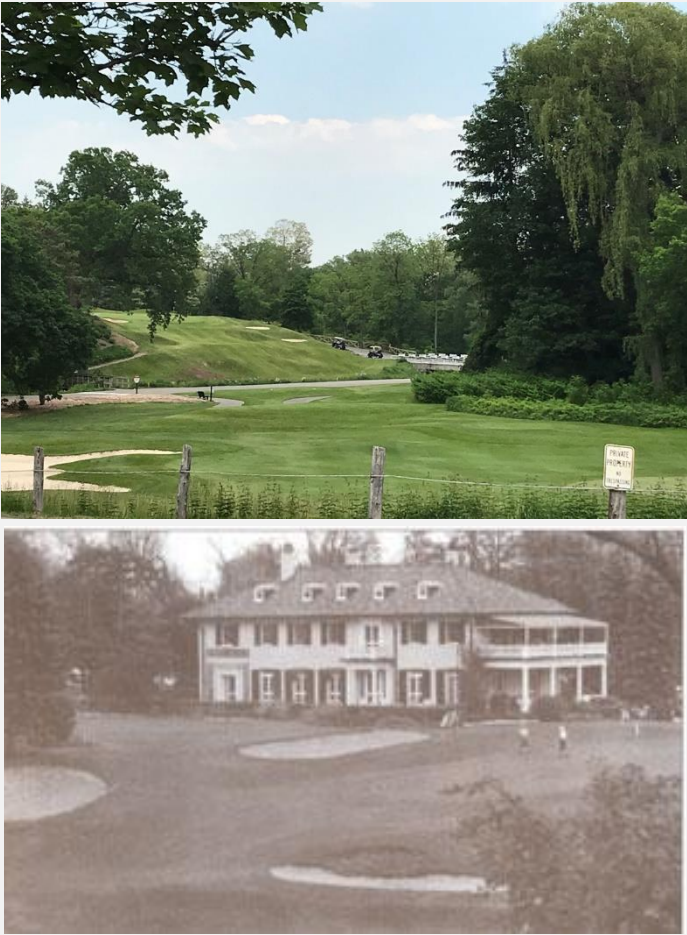

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR42	-CHL -Public/ Municipal Park	26 Old Yonge Street; Thornhill Park, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>The frontage of this property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This property features a one storey main building with an irregular plan and roof built between 2002 and 2005. The landscape also includes a tennis court which has been utilized by the Thornhill Park Tennis Club since 1951, a baseball field, a small parkette identified as the Percy Bone Parkette which was not visible from the ROW and circulation routes/trails. This property was identified within the HCD as having significant natural features associated with the property.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Mature Trees-Circulation Routes <p><u>Summary</u></p> <p>This property contains a one storey main building with an irregular plan and roof, a tennis court, baseball field, a small parkette identified as the Percy Bone Parkette, and circulation routes/trails. This property is located within the HCD and as such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	 
S2-CHR43	-BHR -Residence	7780 Yonge Street; Robert West House, Thornhill, Vaughan	<p>-Designated under Part IV and Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD</p> <p>-Listed on the City of Vaughan’s Buildings of Architectural and Historic Value</p> <p>-Protected by an Ontario Heritage Trust (Trust) Heritage Conservation Easement Agreement (HCEA)</p>	<p>This property is designated under Part IV (by-law number unknown) and Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. At the time of this writing the associated by-law was not available for viewing. As such, the below property description of field observations and the construction date provided in the City of Vaughan’s Heritage Register.</p> <p><u>Property Description</u></p> <p>Visibility was not clear at the time of this writing however an informational plaque associated with S2-CHR38 identifies this property as a neo-classical frame house built in 1837 by Robert West. Robert West had a store which was located directly across the street. In 2008, Louisa (Davie) Keith, a descendant of Robert West donated this property to the Thornhill Heritage Foundation established on April 19, 2008.</p> <p><u>Summary</u></p> <p>This property contains a neo-classical frame house built in 1837, located within the Vaughan HCD. This property has known CHVI.</p>	




CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR44	-BHR -Former Residence	7787 Yonge Street, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i>. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>This is a two storey Georgian Traditional style house with a clapboard façade and hipped roof, originally constructed in 1846 (Markham Heritage Register 2021). The west elevation of the house fronts Yonge Street and has three bays. The first floor has two sash windows (two over two) with shutters flanking a central door. The door is decorated with a transom light and additional decorative windows separated by mullions along either side of the door framed by pilasters. The second storey is said to be an edition completed in 1914, it has three sash windows (3 over 1) with shutters. There is a gable dormer housing a sashed window centrally present along the west elevation of the hipped roof.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Georgian Traditional style• Clapboard façade• Three bay west elevation• Symmetrical design• Door with transom light and pilasters• Hipped roof• Gabled dormer• Sash windows with shutters• Location fronting Yonge (was moved) <p><u>Historic Notes</u></p> <p>Built as a 1-storey building in 1846 for George Medd, saddler. In 1914, Nelson Smellie enlarged the house, making it 2 storeys high. The Smellie family remained in the house until the 1960s. The house was bought by the Ring family in the mid 1960s and converted into the Byron E. Ring Funeral Home. In 1986 the house was moved to its present location, from its original site at 7783 Yonge Street (Markham Heritage Inventory 2021).</p> <p><u>Summary</u></p> <p>This property contains a two storey Georgian Traditional style house with a clapboard façade and hipped roof originally constructed in 1846, within the Markham-Thornhill HCD. This property has known CHVI.</p>	
S2-CHR45	-BHR -Thornhill Methodist Church	7788 Yonge Street; Thornhill Methodist Church, Thornhill, Vaughan	Designated under Part IV and V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> and Listed on the City of Vaughan’s Buildings of Architectural and Historic Value. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This 1-1/2-storey church structure was constructed in 1846 in vernacular style with classical influences. Its east elevation fronting Yonge Street is three bays across and has a front gable roof. The façade is clapboard and there are two sash windows flanking the centre portico on the first storey. It has decorative wood moulding forming a large pediment under the gable roof and this is echoed in the portico design with a pediment above the main entrance. The central portico features a double door framed by pilasters on either side. Stairs lead to the church that sits on a raised elevation behind a white picket fence.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• 1-1/2 storey vernacular style with classical influences• Front gable roof• Large pediment under the roof	




CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<ul style="list-style-type: none">• Front portico with pediment and pilasters• Front double door• Symmetrical sash windows framed with moulding and topped with lintels• Position atop a hill with stairs leading to the location• White picket fence <p><u>Summary</u></p> <p>This property contains a church of vernacular style with classical influences. It is designated under Part V of the <i>Ontario Heritage Act</i> and listed on the City of Vaughan’s Buildings of Architectural and Historic Value. As such, this property has known CHVI.</p>	
S2-CHR46	-BHR -Residence	7802 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This two-storey structure was constructed on or before 1920. The east elevation visible from Yonge Street appears to not be the original frontage of the structure. From what can be seen from this vantage point the structure appears to have a side gable design with a central gable dormer pointed north. The building appears to have a mixture of board and batten and brick façade. The east elevation has a central brick chimney flanked by two sash windows with lintels. The first storey has an enclosed black porch with sash windows covered by a pent roof. Additions to the house have been built as recently as 2020 and the roof is clad in metal.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Two-storey construction• Mix of board and batten and brick façade• Brick chimney• Sash windows with lintels• Gable dormer• Enclosed porch with sash windows covered by pent roof• Decorative wood detail at the top of the side gable• Original orientation of the frontage is north, not facing Yonge <p><u>Summary</u></p> <p>This property contains a two-storey side gable structure. It is designated under Part V of the <i>Ontario Heritage Act</i> as part of the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR47	-BHR -Residence	7808 Yonge Street; George Munroe House, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This single-storey vernacular structure was constructed in 1856 (Vaughan Heritage Register 2020). The east elevation fronting Yonge Street is three bays across with a simple door flanked by plain sash windows. The structure has a stucco façade and a side gable roof. The property is overgrown and the house is in disrepair.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Single- storey construction• Side gable roof• Three bay plan• Stucco façade• Plain door and sash windows <p><u>Summary</u></p> <p>This property contains a single-storey side gable structure. It is designated under Part V of the <i>Ontario Heritage Act</i> as part of the HCD. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	
S2-CHR48	-BHR -Residence	7820 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as non-contributing part of the Thornhill Vaughan HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a three-storey residence built in 2007. It is constructed in an eclectic style with multiple gables with varying pitches. The house has a stucco façade. The view of the house, which fronts Yonge Street is partially obscured by the front gate and landscaping.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Modern home of eclectic style• Multiple gables of varying pitch• Masonry and wrought iron front gate• Fronts Yonge• Stucco façade• Asymmetrical design <p><u>Summary</u></p> <p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing part of the Thornhill Vaughan HCD and is a recent residential home. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR49	-BHR -Residence	7822 Yonge Street, Seager Cottage, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> and listed on the City of Vaughan’s Buildings of Architectural and Historic Value. The description provided below is based on field observations and the construction date provided in the City of Vaughan’s Register.</p> <p><u>Property Description</u></p> <p>This structure was constructed in 1850 and its west elevation fronts Yonge Street. This 1-1/2-storey cottage is constructed in the Ontario Vernacular style. The façade is composed of clapboard and it has a side gable roof. The structure has a raised porch and gabled dormer featuring a small plain window. The three-bay first floor has a centred front entrance flanked by sash windows (six over six) on either side. The front entrance also features two symmetrical lantern style lights.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Ontario Vernacular style• Symmetrical 1-1/2-storey cottage layout• Side gable roof• Gabled dormer with simple window• First floor sash windows (six over six)• Raised porch entry• Central wood entrance with a simple geometrical inlay <p><u>Summary</u></p> <p>This property contains a two-storey Ontario Vernacular style structure built in 1850. It is within the Thornhill Vaughan HCD and is listed on the City of Vaughan’s Buildings of Architectural and Historic Value. This property has known CHVI.</p>	
S2-CHR50	-CHL -Residence and associated Outbuilding	42 Old Yonge Street; William Walton Armstrong House, Thornhill, Vaughan	Designated under Part IV and Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part IV (under by law 66-2001) and Part V of the <i>Ontario Heritage Act</i>. At the time of this writing the associated by-law was not available for viewing. As such, the below property description is based on field observations and the construction date provided in the City of Vaughan’s Heritage Register.</p> <p><u>Property Description</u></p> <p>This structure was constructed in 1890 and its west elevation fronts Yonge Street (City of Vaughan Heritage Register 2020). This Ontario Vernacular style structure is two-storeys high and three bays across. It has a clapboard façade and a cross gable roof with a front gable located at the south elevation. The structure features plain sash windows and the first storey has a protruding bay window with a mansard style cupola located under the front gable. The remainder of the west elevation features a covered porch.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Ontario Vernacular style• Cross gable roof• Protruding bay window installation under the front gable with a mansard style roof• Front porch housing the main entrance along the north end of the west elevation• Plain sash windows• Raised porch entry <p><u>Summary</u></p> <p>This property contains a two-storey Ontario Vernacular style structure built in 1890. It is within the Thornhill Vaughan HCD and is individually designated. This property has known CHVI.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR51	-CHL -Golf Course/Club House	7859 Yonge Street Toronto Ladies Golf Club, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill-Markham HCD. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>The Ladies Golf Club of Toronto (LGCT) was constructed in 1922 and is the last surviving golf club in North America established for women by women. Ada Mackenzie (1891-1973), a repeat Canadian Amateur champion, was the driving force behind the founding of the Ladies Golf Club of Toronto. The property, originally a farm estate called "Brooklands", was purchased by LGCT in 1924 from Stafford Watson. The course was designed by golf course architect Stanley Thompson, and was inaugurated on August 23, 1926, when Ada Mackenzie won a match with Helen Paget of the Royal Ottawa Club.</p> <p>The clubhouse is the original Watson home, built for his son as a wedding present, with some later additions and renovations. The clubhouse is two-stories high and is constructed in a Colonial Revival style. The structure has a hipped roof with a fenestration pattern of arched dormers with windows across it. The front elevation of the first floor consists of seven bays with three sashed windows, two smaller windows, and two entrances. The main entrance is framed by a portico and the other entrance consists of a wooden door framed by transom light in an inset arch. The second floor has several sash windows with shutters and one arched window. There are additions on both sides of the building.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">Colonial Revival style clubhouse:<ul style="list-style-type: none">Front PorticoSecond door framed by transom lightHipped roofFenestration pattern of arched dormersMix of arched and sash windowsGolf course landscape designed by golf course architect Stanley Thompson <p><u>Summary</u></p> <p>This property contains a golf course and two storey Colonial Revival style clubhouse. This property is the last surviving golf club in North America established for women by women. The property is designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD, and as such has known CHVI.</p>	 <p>Reference: Markham Heritage Register 2021</p>
S2-CHR52	-BHR -Residence	10 Mill Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing part of the Thornhill Vaughan HCD. The description provided below is based on information available in the Vaughan Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>This structure is noted as an example of 1950s modernism on the City of Vaughan Heritage Register (2020). An adequate view of the structure located on the property was not attainable during field assessment due to dense foliage on the property.</p> <p><u>Summary</u></p> <p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD as a non-contributing property. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR53	-CHL -Public/ Municipal park	7877 Yonge Street; Toronto Radial Railway stop #17, Thornhill, Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill-Markham HCD. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>The Stop 17 waiting room was originally located at the west side of Yonge at Royal Orchard, it was moved to the Country Club Golf Course sometime after 1930 where it served as a refreshment stop and rain shelter, until it was relocated, restored, and moved to this location in November 2000. It is a small wooden vernacular structure with a rectangular plan and hipped shingle roof. This building served as a waiting room at Stop 17 for the Radial Railway Line from Toronto at the turn of the twentieth-century, the line opened in 1897 and ran into the 1920s when the popularity of cars decreased the need for public transportation and the line was closed.</p> <p>This property is also home to Cricklewood Park. East of the location stands an imposing Georgian house locally known as the Cricklewood, although until 1956 the house and surrounding lands were known as Brooklands. A portion of this park is located within the Thornhill-Markham HCD.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Stop 17 waiting room, an example of vernacular architecture• Cricklewood Park Landscape <p><u>Summary</u></p> <p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD and contains Stop 17 of the Toronto Radial Railway and Cricklewood Park. This property has known CHVI.</p>	   <p>Reference: Markham Heritage Register 2021</p>



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR54	-CHL -Golf Course	7994 Yonge Street (Mortimer House); 8000 Yonge Street, Thornhill, Vaughan	-Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD -Listed on the City of Vaughan’s Buildings of Architectural and Historic Value	<p>The frontage of this property is designated under Part V of the <i>Ontario Heritage Act</i>. The description provided below is based on field observations and the construction date provided in the City of Vaughan’s Register.</p> <p><u>Property Description</u></p> <p>The City of Vaughan Heritage Register notes that this property contains a Georgian style structure constructed in 1843, however the presence of this structure could not be confirmed during field assessment. The remainder of the property includes a golf course, clubhouse, associated buildings and a Neo-Classical building (8000 Yonge Street).</p> <p>The Neo-Classical building consists of a two-storey structure constructed in a Neo-Classical style house with a hipped roof built prior to 1954. The east elevation fronts Yonge Street and has a fenestration pattern of evenly placed sash windows accented by sills, lintels, and shutters. The structure is five bays wide and has a centred front door flanked by two windows on the first storey, while the second storey has five sashed windows with shutters. The front door is accessible through a raised stoop leading to a portico with a gabled dormer supported by classically styled pillars. This structure was listed on the City of Vaughan’s Buildings of Architectural and Historic Value</p> <p><u>Exterior Elements (8000 Yonge Street)</u></p> <ul style="list-style-type: none">• Neo-Classical style• Hipped roof• Fenestration pattern of evenly placed sash windows accented by sills, lintels, and shutters• Two-storey construction• Raised stoop• Gabled portico supported by pillars• Centered walkway through front yard <p><u>Summary</u></p> <p>The frontage of this property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD, and the Neo-Classical building is listed on the City of Vaughan’s Buildings of Architectural and Historic Value. It contains a two-storey structure constructed prior to 1954 in the Neo-Classical style as such this property may have design/physical, historical/associative, and/or contextual value and must be protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	  



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR55	-BHR -Residence	7951 Yonge Street "Edwardian House", Thornhill, Markham	Listed on the City of Markham's Heritage Registrar	<p>This property is listed in the Markham Heritage Register. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <p><u>Property Description</u></p> <p>This property contains a two-storey structure built in 1910 in the Edwardian style (Markham Heritage Register 2021). It features a large, covered veranda supported by plain pillars, plain sash windows, and a gabled dormer on the roof. The house is set back considerably from Yonge Street and the west elevation, fronting Yonge, is obscured considerably by a mature treeline.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Edwardian style• Two storey construction• Extensive covered veranda• Mature treeline• Gabled dormer <p><u>Summary</u></p> <p>This property contains two storey structure dating to 1910 built in the Edwardian style and is listed on the City of Markham's Heritage Registrar, as such, it may have design/physical, historical/associative, and/or contextual value.</p>	
S2-CHR56	-CHL -Holy Trinity Anglican Cemetery	8004 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The description provided below is based field observations and preliminary desktop research.</p> <p><u>Property Description</u></p> <p>This property is home to the Holy Trinity Cemetery founded in 1830. An onsite plaque erected by the Society for the Preservation of Historic Thornhill and Holy Trinity Anglican Church, with the Assistance of the Ontario Ministry of Culture and Recreation details the history of the surrounding landscape and site history described below (The Society for the Preservation of Historic Thornhill 2021b).</p> <p><i>Thornhills first official cemetery was the churchyard of Holy Trinity Church built on this site in 1830 and moved to Brooke Street in 1950. The Parish Hall was added in 1928 and serves a Baptist congregation. The historic burying ground remains to serve parishioners who have settled here since the early 1800's. The oldest headstone dated 1804, commemorates Rebecca Wilson who fled New Jersey with her family Loyalist refugees in 1793. Other headstones record the drama of immigration and rugged settlement, War in 1812, Rebellion in 1837, fire, flood, epidemic and of greater wars. The reality of daily life is dominant. These men, women and children lived by the seasons, working with their hands and minds to create our community.</i></p> <p>Today the Thornhill Baptist Church occupies a lot fronting Yonge while the cemetery is located behind the church with access to Yonge just south of the church. The historic plaque referenced above is located on or just adjacent to the property. In addition to the cemetery and church, the plaque references the early history of Thornhill.</p> <p>The plaque references surviving properties from the original village including:</p> <ul style="list-style-type: none">• 8000 Yonge Street-The Mortimer House• 8038 Yonge Street, Soules Inn and later temperance stagecoach depot• 8046, 8054, 8064-Old houses from the village• 8201-Langstaff School circa. 1811 <p>Other 'survivors' named from the historic time are Cricklewood, Sunnyside Manor, Holy Trinity Church and the Methodist Church on Centre Street.</p>	



CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<u>Exterior Elements</u> <ul style="list-style-type: none">Cemetery with Burial GroundsAccess to Yonge StreetHistoric Plaque <u>Summary</u> <p>This property is a historic cemetery founded in 1830 within the Thornhill Vaughan HCD. This property has known CHVI.</p>	
S2-CHR57	-BHR -Thornhill Baptist Church	8018 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The description provided below is based field observations and preliminary desktop research.</p> <u>Property Description</u> <p>This site is home to the two-storey Thornhill Baptist Church constructed in 1928. This site was previously home to the Holy Trinity Church constructed in 1830 and moved to Brooke Street in 1950. The church is constructed in a vernacular style with Neo-Gothic influences. It features an off-centre front gable with a one storey hipped roof element protruding from the south elevation. There is a large portico with a front gable that is adorned with a cross and double doors framed by pilasters and a large lintel. The windows along the east elevation are arched and there are concrete steps with a railing leading to concrete stoop. While the cemetery itself was constructed in the early twentieth-century, it is situated in front of a historic cemetery dating to the early nineteenth-century.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">Vernacular style with Gothic influencesFront gable roofRed brick façadeHipped roof protruding from the southern elevationFront portico with gableCross adorning the front porticoConcrete steps with railing leading to concrete stoopFront door with decorative lintel and pilastersArched window fenestration <u>Summary</u> <p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. It contains a two-storey church constructed in 1928, as such, it may have design/physical, historical/associative, and/or contextual value.</p>	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR58	-CHL -Residential Complex	8038 Yonge Street; Soules Inn, Thornhill, Vaughan	Designated under Part IV and V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This property is designated under Part IV (under by-law 51-83) and Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The associated by-law was not available for viewing at the time this report was written. As such the below property description is based off of field observations.</p> <p><u>Property Description</u></p> <p>This is a two-storey structure is constructed in a Georgian style with classical influences. The east elevation fronts Yonge Street and has a fenestration pattern of evenly placed sash windows accented by sills and shutters. The structure is five bays wide and has a centred front door flanked by two windows on the first storey, while the second storey has five sashed windows with shutters. The front door is accessible through a slightly raised stoop leading to a shallow portico supported by classically styled pilasters with a decorative moulding over the door.</p> <p>The property contains numerous residential units in addition to the historical Georgian-style residence.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Georgian style with classical influences• Two-storey construction• Second storey fenestration pattern of evenly placed sash windows accented by sills and shutters• Centered door accessible through a low stoop• Portico supported by classically styled pilasters with a decorative moulding over the door centered front door <p><u>Summary</u></p> <p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD and contains a two-storey structure constructed in 1860 in the Georgian style with classical influences. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	
S2-CHR59	-BHR -Former Residence	8054 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing part of the Thornhill Vaughan HCD. The description provided below is based on field observations.</p> <p><u>Property Description</u></p> <p>This is a 1-1/2-storey structure built prior to 1954 in an Ontario Vernacular Cottage with Gothic style influences. The east elevation fronts Yonge Street and it features a side gable roof with a centre gable with vergeboard. The front door is covered by a portico. The structure has three bays and has a centred front door flanked by sash windows with shutters on the first floor. The front door is accessible through steps that are a modern intervention and modern signage obstructs some of the front façade.</p> <p><u>Exterior Elements</u></p> <ul style="list-style-type: none">• Ontario Vernacular style with Gothic Revival influences• 1-1/2 storey construction• Side gable roof• Centre gable with vergeboard• Sashed windows with shutters	


CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<ul style="list-style-type: none">Centered front doorFront portico supported by columns <u>Summary</u> <p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing part of the Thornhill Vaughan HCD and contains a 1-1/2 storey structure constructed prior to 1954 in an Ontario Vernacular style. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	
S2-CHR60	-CHL -Thornhill; Anglican Church Rectory	8088 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD	<p>This designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD. The description provided below is based on information available in Markham Heritage Register and field observations.</p> <u>Property Description</u> <p>This is a 1-1/2-storey structure built in 1860 in an Ontario Vernacular style with Gothic Revival influences (Markham Heritage Register 2021). Its east elevation fronts Yonge Street and it features a side gable roof with a centre gable with vergeboard that houses a sashed window with shutters. The three bays of the first storey include a door decorated with a transom light flanked by two sash windows with shutters. There is a brick fence structure located in front of the west elevation of the house.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">Ontario Vernacular style with Gothic Revival influences1-1/2 storey constructionSide gable roofCentre gable with vergeboardSashed windows with shuttersCentered front door with transom lightBrick fence at west elevation <u>Summary</u> <p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD and contains a 1-1/2 storey structure constructed in 1860 in an Ontario Vernacular. As such, this property is protected under <i>Part V of the Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	
S2-CHR61	-CHL -Commercial Building	8100 Yonge Street, Thornhill, Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (non-contributing)	<p>This property is designated under Part V of the <i>Ontario Heritage Act</i> as a non-contributing portion of the HCD. The description provided below is based on field observations.</p> <u>Property Description</u> <p>This is a single-storey commercial plaza originally constructed between 1978-1988. The structure is clad in brick and features a canted portico supported by two piers.</p> <u>Exterior Elements</u> <ul style="list-style-type: none">Commercial PlazaLarge parking lotRed brick facade <u>Summary</u> <p>This property contains a non-contributing single-storey late twentieth-century commercial plaza located within the HCD. As such, this property is protected under Part V of the <i>Ontario Heritage Act</i> and must comply with the associated policies and guidelines of the HCD Plan.</p>	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR62	-CHL -School	201 Bay Thorn Drive; Baythorn Public School, 201 Bay Thorn Drive	Identified during field review	<p>This property was identified during field review. The description provided below is based field observations.</p> <p><u>Property Description</u></p> <p>Baythorn Public School is a single storey structure constructed in 1966-1967. The school is built in a Modernist style typical of similar institutions of the era. It is set within a large subdivision built at a similar time and as such represents the cultural cohesion of the surrounding neighbourhood.</p> <p><u>Property Elements</u></p> <ul style="list-style-type: none">• Modernist architecture of mid-twentieth century school design• Single storey construction• Brick construction• Large glass windows• Field and baseball diamonds <p><u>Summary</u></p> <p>This property contains a school constructed in 1966-1967, as such, it has possible design/physical, historical/associative, and/or contextual value.</p>	
S2-CHR63	-CHL -Public/Municipal Park	110 Royal Orchard Boulevard, Thornhill, Markham	Identified during field review	<p>This property was identified during field review. The description provided below is based field observations.</p> <p><u>Property Description</u></p> <p>Royal Orchard Park is located within a mid-twentieth century subdivision and includes circulation paths and a peaceful woodland setting. The park crosses Royal Orchard Boulevard and contains a bridge, which crosses a small water course. The Heintzman House, or Sunnyside Manor, is located adjacently west and is one of the oldest homes in Markham.</p> <p><u>Property Elements</u></p> <ul style="list-style-type: none">• Bridge crossing a small water course• Circulation paths connecting parts of the surrounding subdivision• Woodland setting• Setting within mid-twentieth century subdivision <p><u>Summary</u></p> <p>This property is a park set within a mid-twentieth century subdivision that includes circulation paths through the community and over a watercourse, as such, it has possible design/physical, historical/associative, and/or contextual value.</p>	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
					
S2-CHR64	-CHL -School	141 Kirk Drive; St. Anthony Catholic School, Thornhill, Markham	Identified during field review	<p>This property was identified during field review. The description provided below is based field observations.</p> <p><u>Property Description</u></p> <p>St. Anthony Catholic School is located within a mid-twentieth century subdivision and was built in 1969-1970. It is a one storey brick structure with multiple hipped roof pavilions situated throughout. A large multi-storey portion of the building is visible at the rear when viewing the west elevation from Kirk Drive.</p> <p><u>Property Elements</u></p> <ul style="list-style-type: none">• Typical mid-twentieth century school design• Single storey construction• Brick construction• Hipped roof pavilion design• Multi-storey component in the rear• Playing fields <p><u>Summary</u></p> <p>This property contains a school constructed in 1966-1967, as such, it has possible design/physical, historical/associative, and/or contextual value.</p>	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
S2-CHR65	-CHL -Cemetery	Holy Cross Cemetery, Thornhill, Markham	Identified during field review	<p>This property was identified during field review. The description provided below is based field observations and preliminary desktop research.</p> <p><u>Property Description</u></p> <p>Holy Cross Cemetery was consecrated in 1954 includes a mausoleum and ground burials as well as an onsite funeral home (Catholic Cemeteries & Funeral Services, Archdiocese of Toronto 2021).</p> <p><u>Property Elements</u></p> <ul style="list-style-type: none">• Cemetery• Circulation routes• Mature trees/plant8ngs• Watercourse• Burials and associated markers• Funeral Home• Mausoleum• Pedestrian underpass to connect east and west sides of property <p><u>Summary</u></p> <p>This property is a Catholic cemetery consecrated in 1954, as such, it has possible design/physical, historical/associative, and/or contextual value.</p>	
S3-CHR1	-CHL -Observatory	23 Hillsvie Drive (David Dunlap Observatory Lands), Richmond Hill	Designated under Part IV of the <i>Ontario Heritage Act</i> under By-law 100-09	<p>The David Dunlap Observatory Lands is designated under Part IV of the <i>Ontario Heritage Act</i> under By-law 100-09. A full copy of the designation By-law can be found online. The following ‘Description of Property’, ‘Statement of Heritage Value’ and ‘Description of Heritage Attributes’ are contained within the By-Law.</p> <p><u>Description of Property</u></p> <p>The sprawling property located at 123 Hillsvie Drive encompasses Parts of Lots 42 and 43, Concession 1, former Township of Markham,. The Property is known as the David Dunlap Memorial Observatory.</p> <p>This property is designate as a CHL. In particular, the section of the property extending from Hillsvie Drive in the north to the fence line at the boundary of Lot 41 to the south and from the CNR tracks in the west to a surveyed line located 150 metres east of the easternmost row of the University of Toronto's former experimental tree plantation. This area encompasses a wide range of important cultural resources. Principally these include: the Observatory Building (originally known as the Great Telescope Dome) and telescope; the Administration Building; Elms Lea (Observatory House); the Radio Shack; the natural topographic rise and earthwork enhancements in the area of the Observatory Building; the designed landscaping associated with the Administration Building; the vestigial landscape elements and plantings associated with Elms Lea and the University of Toronto's Department of Forestry's experimental tree plantation.</p> <p><u>Property Elements:</u></p> <ul style="list-style-type: none">• the siting of the Observatory Building and the Administration Building at the highest local elevation, enhanced and modified to a 'podium, form by significant earthworks for the placement of the buildings, the laying out of the site to follow the cardinal points with the Observatory Building as due north and the Administration Building due east. This directional emphasis remained an essential design determinant for site layout right through the 1960s¹ and extended throughout most major elements of the site -including the interior plan of the Administration Building (see below), the siting of the Radio Shack, the location of the elliptical traffic island with north-south pedestrian walk-way through its centre	

¹ The north-south axial emphasis continued into the 1980s reflected in the Town designed Observatory Park and Elvis Stojko Arena on what has become known as the 'Panhandle' (described as Parts 2 and 3 on Plan 65R-29959). The "Panhandle" does not form part f the Property and is not included here for designation.

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p>and sun dial at its southern end, the placement of the flag pole, the orientation of the rows of the University's Department of Forestry experimental tree plantation.</p> <p>a. Elms Lea c.1864, the picturesque dichromatic brick farmhouse originally designed for Alexander Marsh. While subject to several renovations and minor additions associated with its use within the DDO complex, the original exterior appearance is largely intact, and the interior plan remains legible. It is an eclectic expression combining elements of Classical, Gothic Revival and Italianate derivation in a well-integrated composition.</p> <p>Key heritage attributes of the exterior include:</p> <ul style="list-style-type: none">• the three bay symmetrical facade;• the 'T' plan with original kitchen 'tail';• the side gabled roof with relatively steeply pitched centre gable;• the bracketed eave at the facade, eave returns and verges with distinctive pendant bracket;• the dichromatic brickwork with buff brick accent detailing which include: quoins; stringcourses; arches; decorative 'reflecting' of brackets in brickwork and cross pattern with margins at gables. The Flemish bond coursing pattern at the facade and the complex cambered ('flat') arches in red brick;• the treatment of openings including: the quarter round windows with quarter fanlights at the gables; the 6/6 small pane wood sash; the French doors flanking the centre bay of the facade; the prominence given to the openings of the centre bay including the main entrance with transom (with distinctive lancet light divisions) and sidelights and the semi-circularly arched opening containing French doors at the balcony which 'breaks' the eaves at the centre gable; and• the rear 2 storey gable roofed 'tail' with dichromatic brickwork and voussoir cambered ('flat') arches at the window openings. <p>Key heritage attributes of the interior include:</p> <ul style="list-style-type: none">• the centre hall plan;• the grand winder stair and balustrade at main hall. The curved rail and soffit of the main stair create a spiraling, floating effect within the space.• the plaster paterae featuring acanthus leaves in main hall and north reception room;• the high wood bases throughout;• the moulded door and window architraves;• the remaining 4 panel doors;• the original wood fireplace surrounds at the north reception room and 'tail' with c. 1933 fireboxes and hearths;• the tile floor, tiled dado and moulded tile dado cap at 'master bathroom';• the king post truss roof structure of the main roof. <p>a. the Observatory Building (originally known as the Great Telescope Dome), 61' in diameter, designed and built to house the 74" telescope, 2nd largest in the world at that time and prototype for the use of pyrex mirrors of that scale, with rotating copper dome incorporating retractable shutters for astronomical viewing. The building expresses the Machine Age aesthetic of the period, the building being an 'envelope' for the instrument and its function. The DDO 74" reflecting telescope, still the largest optical telescope in the country, is one of Canada's most significant scientific artifacts (as well as continuing to be a viable instrument for astronomical observation). A 'leading edge' technical achievement at the global level upon its fabrication, much innovative design went into its housing and support allowing for its rotation and the cleaning and re-aluminizing of its 5000 lb. primary mirror. Most of the apparatus and associated electrical system for these operations remains original (with some replacement parts) and these partake of the high level of significance of the telescope itself.</p>	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p>Key heritage attributes of the exterior include:</p> <ul style="list-style-type: none">the circular form broken only by the entrance vestibule facing due south;the hemispherical dome clad in flat seam copper panels;the galvanized metal cladding of the walls and the 'rhythm' created by the regular spacing of pilasters and louvered shutters;the symmetry of the facade;the beveled base into which the pilasters terminate;the network of steel stairs and 'catwalks';the double leaved metal clad paneled entrance doors with moulded surround and transom with tripartite geometric pattern.the retractable shutters. <p>Within this structure form, material and function are virtually indivisible. Thus, all aspects of the interior are included, highlighted by, but not restricted to:</p> <ul style="list-style-type: none">the semi-circular corridor formed around the service core at the first floor with galvanized metal wall cladding;the multi-pane steel sash (louvered shutters on exterior);the telescope;the concrete support pier (formed independently from the building itself;the telescope tube;the interior stair and 'catwalk' system;the apparatus associated with the rotation of the telescope;the apparatus associated with the rotation of the dome and opening of the shutters including the cable pulley system;the carriage/elevator and all associated components such as the vacuum chamber, floor hatch and pulley system associated with the mirror cleaning/re-aluminizing processthe electrical system with much original wiring. <p>a. the Administration Building, a prototypical example of Beaux-Arts classicism rendered masterfully in stone and incorporating three copper 'observatory domes'. The Administration Building is a major architectural achievement. Mathers and Haldenby successfully combined an eloquent memorial to the patron's husband, David Dunlap, with a functional administrative and research facility supporting the astronomical Observatory. Literally at its core the building integrates the sacred and scientific bringing the cardinal point orientation of the site into the interior where, directly in line with the main entrance, at the termination of the building's eastern axis, accessed across the compass rose inlaid into the floor, through a monumental, temple-like double height space and then through a pilastered arch, resides the memorial to David Dunlap. The memorial, incised and gold-leafed into a panel at the marble wall, is at the centre of the cross hall. At the cross halls the ceremonial space is further defined by fluted pilasters. Throughout this area both wall and floor finishes are marble and the ceilings arched. Around this sacred core and the highly articulated Library a functional lay-out of offices, laboratories and support services was arranged.</p> <p>Key heritage attributes of the exterior include:</p> <ul style="list-style-type: none">the classical Beaux-Arts symmetrical form and footprint;the 5 bay main block with projecting central pavilion and angled side pavilions;the focal treatment of the centre bay incorporating semi-circular main entrance portico with Corinthian columns and Tuscan pilasters and approached via stone steps, Palladian window (with moulded	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p>architrave and keystone), balcony with wrought iron railing, stepped (up) and splayed section of stone parapet incorporating stone balustrade and urns surmounted by the largest dome placed in symmetrical relationship with the smaller domes of the side pavilions.</p> <ul style="list-style-type: none">the wall treatment combining sandstone and limestone and contrasting the texture of the rock faced general coursing with cut stone accents (including quoins, stringcourses, parapet copings, window and door surrounds) and carved elements (including panels with swag and floral patera at the stone parapets, freestanding urns surmounting the central dome parapet, balusters at the central dome parapet,Corinthian columns at the front portico including circular dentillated entablature with fluted frieze and a floral patera above each of the column capitals;the main entrance treatment consisting of a wide door of 6 fielded panels (with original hardware), with both wood and stone surrounds. The wood surround includes fluted pilasters and architrave featuring 'the lamp of knowledge' in relief as its central motif and floral emblem at its raised comers. The stone surround is in the form of a moulded architrave.The window treatment typically incorporating a stone apron panel with bas relief floral patera at 2nd storey. The multi-pane window sash typically 12/8 at end2 storey, and 12/12 at ground storey. Oculus windows with broached stone voussoirs at side pavilions and centre bay of rear elevation.The domes clad in flat seam copper panels;The symmetrical 9 bay rear elevation;The side entrances each featuring a door with six fielded panels (with original hardware), stone sill and moulded architrave, with semi-circular fanlight above, approached via stone steps and landing with curved wrought iron rail with newel set into 'return' of first step. <p>Key heritage attributes of the interior include:</p> <ul style="list-style-type: none">the symmetrical Beaux-Arts footprint and floor plan;the true cardinal point orientation of the halls and straight-line relationship between the main entrance and the memorial wall;the open two storey volume of the main hall and mezzanine with groin vaulted ceiling featuring the marble stair with swan necked bronze rail, tapered newels and alternating baluster types accented with floral motifs at every second baluster;the relationship of the main stair landing to the Palladian window with fluted marble colonnade surround;the chamfered marble cladding and flooring of the hall;the compass rose of coloured marble inlaid in the marble floor;the 'lantern' type light fixture suspended from the apex of the cross vault; the patterned cast bronze vent covers;the Greek key pattern in marble carried around the Hall at 2nd storey floor level;the unifying use of decoration in marble, wood and bronze including the patera (spiral disc) and the stylized floral patera carried from the exterior;the pilastered entry to the memorial space at the centre of the cross hall from the north, south and west;the fine jointed marble wall cladding and marble flooring of the dedication area;the marble memorial bench;the incised and gold-leafed dedication panel with red marble border;the terrazzo flooring and brick wall finish at the remaining sections of the cross hall;	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<ul style="list-style-type: none">the barrel vaulted ceiling of the cross hall;the original entrances to the rooms off the cross hall with transoms above the door openings;the bronze framed panels along the walls of the cross hall designed to display images of astronomical phenomena illuminated with back-lighting;the acorn light fixtures in the cross halls and Lecture Room;all the finishes and features of the Library including: the plastered cornice, frieze with dentillation and fluting accented by a raised floral motif, pilastered fireplace surround with dentillated mantel and black marble at the firebox face and hearth, the paneled walls, built-in book shelves and display cabinet, the doors composed of three major panels with the top and bottom panels decorated with a patera (spiral disc motif) and architraves with gold leafed um motif accenting the comers, the two original suspended bronze chandeliers;the original raised dais, slate chalkboard in the Lecture Room;the typical door type of six 'frosted' lights above two panels, simple wood entablature (from office side), patera centred on the lower panel and original bronze hardware;the parquet flooring of the offices and Library;the colonnade treatment which defines the mezzanine area with plaster wall finish between;the doors with two large panels, each with patera at the bathroom entrymarble stalls and terrazzo floors at the bathrooms;the 'Donor's Room', originally the office/reception space of Jessie Dunlap, finished with a marble fireplace with moulded and dentillated wood surround, moulded chair rail, base, plaster cornice and parquet floors;the original built-in wood cabinets at the technical and shop areas;the observatory domes including: their pulley rotation and shutter retraction systems; the 24" c.1960 telescope in the centre dome and most particularly the 19" telescope built by C.A. Chant's astronomical colleague at University of Toronto, R.K. Young in 1929.<ul style="list-style-type: none">the elliptical island within the driveway with paving designed to represent Kepler's 2nd Law of Planetary Motion and walkway/axis through the centre from sun dial to Observatory Building. The island, along with the curved hedge, flagpole and plantings around the Administration Building represent a 1950s attempt to realize something of the grand scheme originally envisaged for the site and continued the compass and cosmological orientation established from the outset. <p>The following are the cultural attributes which express the associative/historical values of the Property:</p> <ul style="list-style-type: none">landscape features such as the former lane to Yonge Street, the line of mature spruce which screen Elms Lea, the vestigial orchard to the south of the house, the row of hickories between the house yard and the field, the line of maples to the north of the lane and the old field pattern, which, along with Elms Lea itself, represent the 19th century Marsh farmstead era of the property;Elms Lea c.1864, the Alexander Marsh family residence throughout the latter half of the19th century, which, with the transformation of the site into the DDO in 1935, became Observatory House, the home of C.A. Chant, 'the father of Canadian Astronomy' and the visionary behind the creation of the DDO;the Observatory Building (originally known as the Great Telescope Dome) from which major discoveries of international importance were made including Helen Hogg's work on variable stars in globular clusters and C.T. Bolton's investigation of Cygnus X-1 as a black hole. The Observatory Building and especially the telescope also represents an important period in the development of astronomy in Canada and particularly at the University of Toronto -a period in which astronomy grew from its infancy as a faculty to where major world class discoveries were being made, the best known of which being the confirmation of 'black holes' by C.T. Bolton;	

CHR No.	Type	Location	Heritage Recognition	Description of Known or Potential Cultural Heritage Value or Interest (CHVI)	Photographs/Digital Image
				<p>d. the Radio Shack from which the determination of the absolute flux density of Cas A at 320 MHz was made;</p> <p>e. the original components which comprised the DDO at its initiation/dedication in 1935, the Observatory Building (originally known as the Great Telescope Dome), Administration Building and Observatory House (Elms Lea). This event was considered of national importance (attended by the Prime Minister), and indeed throughout the British Empire;</p> <p>f. the complex overall land pattern within the identified area. Comprised of the original survey grid field pattern overlain with the formal geometry of the Beaux Arts observatory core and the curvilinear road network containing all fields, lawns and plantings;</p> <p>g. Donald Drive, the curvilinear 'new' approach road named to commemorate the Observatory's patron Jessie Donald Dunlap; and</p> <p>h. the experimental tree plantation planted by University of Toronto's Dept. of Forestry as representing one of the founding objectives of the facility, i.e., its use by other academic disciplines.</p> <p>The following are the cultural attributes/relationships which express the contextual values of the Property:</p> <p>a. as a result of its early insertion into the then rural landscape, its unique function and associated architecture, as well as its international reputation, the site is a landmark;</p> <p>b. the traditional views to the west (toward Yonge Street) from Elms Lea and the Administration Building and the views to the Observatory Building and the Administration Building from the west (though now partially obscured by mature trees) reflecting the visual prominence of the structures sited at (the Observatory Building, the Administration Building) or near (Elms Lea) the top of the knoll;</p> <p>c. the views from the south to the Observatory Building, particularly along the direct north/south axis which was carried into the Town's design of Observatory Park on the leased 'Panhandle' lands, reflecting its visual prominence having been sited at the top of the knoll;</p> <p>d. the form of the Town designed Observatory Park, sub-division and adjacent buildings to the south reflecting the influence of the Observatory and its site design principles (the lands originally having been surveyed to provide an approach to the Observatory from the south);</p> <p>e. the traditional relationship of the Observatory to the CNR line; and</p> <p>f. the traditional relationship of the Observatory to Hillsvie Drive, formerly the 'narrow lane' which divided Lot 43 into north and south halves.</p>	

4.7 Air Quality

4.7.1 Methodology

The following sections provide a summary of the methodology developed to collect and document air quality existing conditions information within the Air Quality Study Area. A more detailed overview of this methodology is provided in **Appendix G**, Air Quality Existing Conditions & Impact Assessment Report.

4.7.1.1 Data Gap Analysis

A review of available background information/studies/reports was undertaken to identify data gaps. The data gap analysis involved identifying information that was either outdated, non-existent, or needed to be augmented. The results of this data gap analysis were as follows:

- Air quality conditions documented in the 2009 EPR were based on the most recent measurements available at the time (2007). Depending on the location and contaminant, more recent data is available from 2018 at the writing of this addendum.
- Air quality conditions documented in the 2009 EPR did not include all “Contaminants of Interest” that were selected by Metrolinx for assessment in their air quality impact assessments.
- The 2014 EPR Addendum air quality assessment focussed on the prediction of total suspended particulate which is not a Metrolinx “Contaminant of Interest” and is not monitored by regional air quality stations.
- Greenhouse Gases (GHGs) (specifically carbon dioxide, methane, and nitrous oxide) were not assessed in the 2009 EPR nor the 2014 EPR Addendum, but were estimated in the Initial Business Case (Metrolinx 2021).
- Meteorological information to support the air quality assessment was not found in any supporting documentation.

4.7.1.2 Desktop Data Collection

Data was collected from the following sources and considered where appropriate as part of documenting existing conditions within the Study Area:

- Government of Canada – Canadian Climate Normals, 1981-2010
- Government of Canada – Past Weather and Climate: Historical Data
- Government of Canada – National Air Pollution Surveillance (NAPS)

4.7.1.3 Field Investigations

No field surveys were undertaken as part of the existing conditions phase. MECP or ECCC monitoring stations collect data on various relevant air quality parameters, and the datasets are publicly available. The air quality parameters that require assessment can be adequately represented using monitoring station(s) exposed to representative air quality conditions.

4.7.2 Summary of Existing Conditions

The monitoring stations used to establish regional existing conditions for the Project are identified in **Table 4-19**.

Table 4-19 Monitoring Stations Used to Establish Existing Conditions

ID	Station Name	Latitude	Longitude	Distance from Yonge/Clark (km)	Parameter	Years of Data
Air Quality						
NAPS 60440	Toronto North - Downsview	43.78	79.47	5 SW	PM2.5	2017-2019 (3 years)
					NO2	
					CO	
					O3	
					Benzene	
					1,3-Butadiene	
NAPS 60438	Toronto West, 125 Resources Rd.	43.71	-79.54	14 SW	Acetaldehyde	
					Formaldehyde	
					Acrolein	
					Benzo(a)pyrene	
Meteorological						
CLIMATE 6158409	Toronto Buttonville Airport	43.86	79.37	7 NE	Climate Normal ¹	1981-2010
					Temp., Prec., Wind (speed/direction)	2015-2019

¹Climate Normals describe the average climatic conditions of a particular location over 30 years.

SO₂ is not a key contaminant of Interest because use of ultra-low-sulphur diesel was mandated in Canada (Metrolinx uses ultra-low-sulphur diesel fuel in all its bus and rail vehicles) which has reduced SO₂ emissions from diesel fuel to “very low levels”.

4.7.2.1 Air Quality

The corresponding existing concentrations for the air quality parameters are shown in **Table 4-20**.

Table 4-20 Ambient Background Concentrations for the Air Contaminants of Interest

Contaminant	Station (NAPS ID)	Averaging Period	Year			Concentration Statistic ($\mu\text{g}/\text{m}^3$)		Background Concentration ($\mu\text{g}/\text{m}^3$) ^{1,2}	Ambient Air Quality Criterion ³ ($\mu\text{g}/\text{m}^3$)	% of Criterion
				Mean	Median	Maximum	90th Percentile			
PM _{2.5}	Downsview (60440)	1-hr		7.4	6.0	58.0	15.0	15.0	NA	NA
			2018	7.6	6.0	62.0	15.0			
			2019	6.8	5.0	52.0	14.0			
		24-hr	2017	7.4	6.6	27.2	15.0	12.8	27 (CAAQS) ⁷	47%
			2018	7.6	6.5	34.0	15.0			
			2019	6.8	5.6	32.1	14.0			
		Annual	–	–	–	–	–	7.2	8.8 (CAAQS) ⁸	82%
PM ₁₀	Note 4	24-hr	–	–	–	–	–	23.7	50	47%
NO ₂	Downsview (60440)	1-hr	2017	21.0	16.0	98.0	44.0	44.0	400	11%
			2018	20.7	16.0	108.0	44.0		117 ⁶ (2020 CAAQS) ⁹	38%
			2019	21.3	16.0	140.0	44.0		82 (2025 CAAQS) ⁹	54%
		24-hr	2017	21.0	18.8	71.4	36.6	37.4	200	19%
			2018	20.7	17.7	60.3	38.1			
			2019	21.3	17.8	66.8	39.1			

Contaminant	Station (NAPS ID)	Averaging Period	Year			Concentration Statistic (µg/m³)		Background Concentration (µg/m³) ^{1,2}	Ambient Air Quality Criterion ³ (µg/m³)	% of Criterion
				Mean	Median	Maximum	90th Percentile			
		Annual	–	–	–	–	–	21.0	33 (2020 CAAQS) ¹⁰	64%
									23 (2025 CAAQS) ¹⁰	91%
CO	Downsview (60440)	1-hr	2017	267	241	1158	398	362	36200	1%
			2018	255	229	929	362			
			2019	263	229	8447	362			
	Note 5	8-hr	–	–	–	–	–	362	15700	2%
Benzene	Downsview (60440)	24-hr	2017	0.6	0.6	0.6	1.1	0.76	2.30	33%
			2018	0.5	0.5	1.1	0.7			
			2019	0.4	0.3	0.9	0.7			
		Annual	–	–	–	–	–	0.51	0.45	113%
1,3- Butadiene		24-hr	2017	0.03	0.03	0.03	0.05	0.44	10.0	4%
			2018	0.02	0.02	0.07	0.04			
			2019	0.02	0.02	0.05	0.04			
		Annual	–	–	–	–	–	0.024	2.0	1%
Acetaldehyde		24-hr	2017	2.9	2.8	20.08	3.75	2.91	500	1%
			2018	1.9	1.9	3.61	2.60			

Contaminant	Station (NAPS ID)	Averaging Period	Year			Concentration Statistic (µg/m³)		Background Concentration (µg/m³) ^{1,2}	Ambient Air Quality Criterion ³ (µg/m³)	% of Criterion
				Mean	Median	Maximum	90th Percentile			
	Toronto West (60438)		2019	2.9	2.9	2.91	2.91			
		½ -hr	–	–	–	–	–	8.6	500	2%
Formalde- hyde		24-hr	2017	3.7	2.6	37.5	3.7	2.76	65	4%
			2018	1.7	1.7	3.1	2.4			
			2019	2.6	2.6	2.6	2.6			
Acrolein		24-hr	2017	0.05	0.05	0.19	0.09	0.08	0.40	20%
			2018	0.03	0.02	0.12	0.06			
			2019	ND	ND	ND	ND			
		1 -hr	–	–	–	–	–	0.19	4.50	4%
Benzo(a)- pyrene		24-hr	2017	0.0634	0.0648	0.1480	0.1100	0.00011	0.00005	220%
			2018	0.0554	0.0501	0.1438	0.1100			
			2019	0.0488	0.0468	0.1646	0.1008			
		Annual	–	–	–	–	–	0.00006	0.00001	561%

Notes:

1 For the 1-hr and 24-hr averaging times, the background concentration is the 90th percentile of the whole dataset.

2 For the annual averaging times, the background concentration is the mean of the whole dataset.

3 AAQC unless otherwise noted.

4 $\text{PM}_{2.5}/\text{PM}_{10} = 0.54$ (Lall et. al, 2004)

6 Assumed to be equal to the 1-hr Background Concentration.

7 ppm/ppb concentrations were converted to $\mu\text{g}/\text{m}^3$ using 101.325 kPa and 15°C

8 The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations

9 The 3-year average of the annual average of the daily 24-hour average concentrations

10 The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations

11 The average over a single calendar year of all 1-hour average concentrations

The table above shows that for existing conditions many of the contaminants are approaching, or have exceeded, a relevant air quality benchmark. Of particular note are the benzene and benzo(a)pyrene concentrations, which exceed their respective criteria, and nitrogen dioxide, PM10, and PM2.5 where the existing conditions are approaching or exceeding 50% of their respective limits (e.g., NO2 is 91% of its 2025 annual CAAQS (Project completion projected for 2031)).

Average hourly concentrations of PM2.5, NO2, and CO were also established for both average weekday and weekend hours; these data, in combination with hourly traffic and meteorology, was used in development of the “comprehensive predictable worst-case analysis”.

4.7.2.2 Weather and Climate

Air quality is affected by both the emission sources that release pollutants into the air, and by atmospheric conditions, such as wind speed, wind direction, and temperature.

4.7.2.2.1 Wind Speed and Direction

Northerly and westerly winds are the predominant wind directions within the Study Area, according to the wind rose for the Toronto Buttonville Airport - the nearest weather station with greater than 95% valid data over a recent 5-year period.

A wind rose depicts the predominant wind patterns for a site by graphically illustrating the distribution of wind speed and wind direction. The wind rose is comprised of two parts: the frequency that winds blow from each specified direction around the rose, and the distribution of wind speed indicated by the colours on each bar that represent wind speed ranges. Northerly and westerly winds are the predominant wind directions.

4.7.2.2.2 Temperature and Precipitation

The Toronto Buttonville Airport station data were also used to determine typical temperature and precipitation in the Project area.

According to the Canadian Climate Normals (calendar years 1981 to 2010) for this station, the mean annual temperature is estimated at 7.7°C. The warmest month of the year is July with an average temperature of 21.2°C and the coldest month is January with an average temperature of -5.8°C. The meteorological station recorded a total average annual precipitation of 852.9 mm, of which 717.4 mm was rainfall. Precipitation is distributed throughout the year, with most of the rain occurring between April and November. The maximum mean monthly rainfall is 81.8 mm and occurs in September. Climate Normals (1981-2010) for the Toronto Buttonville Airport meteorological station are summarized in **Table 4-21**.

Table 4-21 Buttonville Airport 30-Year Climate Normals

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Average Temperature (°C)	-5.8	-5.6	-0.4	6.7	13.0	18.6	21.2	20.2	15.7	8.9	3.1	-2.9	7.7
Daily Maximum Temperature (°C)	-1.5	-0.9	4.5	12.1	19.1	24.6	27.1	26.0	21.5	14.1	7.2	0.9	12.9

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Minimum Temperature (°C)	-10.1	-10.2	-5.3	1.2	6.8	12.6	15.2	14.3	9.9	3.6	-1.1	-6.8	2.5
Rainfall (mm)	26.0	22.9	33.6	66.7	79.5	82.8	78.8	76.2	81.8	66.7	68.3	34.2	717.4
Snowfall (cm)	38.9	29.9	19.3	7.5	0.1	0.0	0.0	0.0	0.0	0.6	12.1	34.2	142.6
Total Precipitation (mm)	62.1	50.5	53.2	74.1	79.6	82.8	79.0	76.2	81.8	68.0	80.0	65.7	852.9

4.8 Noise

4.8.1 Methodology

The following sections provide a summary of the methodology developed to collect and document noise existing conditions information within the Noise and Vibration Study Area. A more detailed overview of this methodology is provided in **Appendix G**, Noise & Vibration Existing Conditions & Impact Assessment Report.

Representative sensitive receptors were identified using publicly available data from official plans from municipalities and satellite aerial images. Field work surveys and official data from regulatory agencies (e.g., development applications) were used to complement this review. In general terms, the nature of the primary land uses, as further described in the YNSE Socio-Economic and Land Use Baseline Conditions/ Impact Assessment Report, determined the representative sensitive receptors used in the noise and vibration impact assessment.

Ambient sources of noise and/or vibration were identified during field surveys and through desktop data collection of major railways and roadways within the Project Study Area. These are the major sources of noise and vibration that have the potential to dominate the ambient sound levels. Examples include Highway 407, Highway 7 and Yonge Street. Traffic data, obtained directly from the various agencies and municipalities, complemented the data collection process and provided additional information to fill any data gaps.

Noise and vibration monitoring of existing conditions was completed between Finch Avenue and John Street and between High Tech Road and 16th Avenue. The last of these measurements were completed in winter, 2021. Noise and vibration monitoring of existing conditions was completed between John Street and High Tech Road and north of 16th Avenue in spring and summer, 2021.

Railway, roadway, and highway traffic volumes will be used to calculate the existing condition sound levels. The existing conditions will inform the Construction and Operations noise and vibration modelling and will be used as a baseline to compare against projections of future conditions and complete the noise and vibration impact assessment.

4.8.1.1 Data Gap Analysis

A review of available background information (e.g., previously completed studies and/or reports) was undertaken to identify any data gaps, if relevant. This data gap analysis identified areas where data was non-existent from previous studies, and/or new data needed to be collected, and/or existing available data required review and updating or augmenting. The results of this data gap analysis were as follows:

- Previous Noise and Vibration Impact Assessments (NVIAs) were completed more than 10 years ago. As a result, baseline conditions data is out of date. There have been numerous new residential developments within the Study Area since that time.
- Baseline conditions were not completed for the proposed alignment.
- Previous Noise and Vibration Impact Assessments lacked extensive baseline noise and vibration measurements, which are typically expected from more current NVIAs.

4.8.1.2 Desktop Data Collection

Data was collected from the following sources and considered as appropriate as part of documenting existing conditions within the Study Area:

- Existing roadway and highway traffic data
- Existing and future railway (CN, VIA Rail, and GO Transit) traffic data
- Approved Development Applications
- Proposed Subway Vehicle Noise Data

Guideline and Standards reviewed include:

- Ministry of the Environment and Energy and Toronto Transit Commission, MOEE/TTC “Protocol for Noise and Vibration Assessment for the Proposed Yonge-Spadina Subway Loop” (June 1993)
- Ministry of the Environment, Environmental Noise Guideline – Stationary and Transportation Sources (2013)
- Federal Transit Administration (FTA), U.S. Department of Transportation, “Transit Noise and Vibration Impact Assessment Manual” (September 2018)

Desktop field reviews were also completed to identify locations at which to deploy noise and vibration monitoring equipment.

4.8.1.3 Field Investigations

The following field investigations and site reconnaissance activities were undertaken to collect primary source data within the Study Area as part of the existing conditions phase:

- Field surveys to identify baseline noise and vibration monitoring locations and determine PTE requirements.
- Field surveys to identify representative sensitive receptors.
- Baseline noise and vibration monitoring.

4.8.1.4 Noise Measurement Locations and Results

Appendix G provides mapping of the proposed locations for noise and vibration monitoring along the entire alignment. A minimum of 72 hours of unattended noise measurements were completed at each noise monitoring location, including at least one (1) full weekend day and one (1) full weekday.

Table 4-22 provides a brief description of the railway or roadway nearest the monitoring locations as well as the nearest intersection.

Table 4-22 Noise Monitoring Location Description

Noise and Vibration Monitoring Location	Study Area Segment	Nearest Roadway or Railway	Nearest Intersection or Roadway
N1	1	Yonge Street	Hendon Avenue/Yonge Street
N2	1	Yonge Street	Cummer Avenue/Drewry Avenue
N3	1	Drewry Avenue	Drewry Avenue/Yonge Street
N4	1	Yonge Street	Wedgewood Drive/Yonge Street
N5	1	Yonge Street	Newton Drive/Yonge Street
N6	1	Yonge Street	Abitibi Avenue/Yonge Street
N7	1	Steeles Avenue West	Yonge Street/Steeles Avenue
N8	1	Yonge Street	Highland Park Boulevard/Yonge Street
N9	1	Clark Avenue	Yonge Street/Clark Avenue
N10	1	Yonge Street	Clark Avenue/Yonge Street
N11	2	Yonge Street	Arnold Avenue/Yonge Street
N12	2	Yonge Street	John Street/Yonge Street
N13	2	Yonge Street	Centre Street/Yonge Street
N14	2	Yonge Street	Bay Thorn Drive/Yonge Street
N16	3	CN Bala Rail Subdivision	Ruggles Avenue
N17	3	CN Bala Rail Subdivision	Cedar Avenue
N18	3	CN Bala Rail Subdivision / Highway 407	Langstaff Road East
N19	3	CN Bala Rail Subdivision	High Tech Road
N20	3	CN Bala Rail Subdivision	King William Crescent
N21	3	CN Bala Rail Subdivision	Coburg Crescent
N22	3	CN Bala Rail Subdivision	16th Avenue/Red Maple Road
V1	1	TTC Line 1 Yonge-University	Yonge Street/Finch Avenue
V2	1	York Rail Subdivision	Yonge Street
V4	3	CN Bala Rail Subdivision	Ruggles Avenue
V5	3	CN Bala Rail Subdivision	High Tech Road
V6	3	CN Bala Rail Subdivision	King William Crescent
V7	3	CN Bala Rail Subdivision	Coburg Crescent

The sound levels provide the measured hourly sound level during the measurement period (refer to **Appendix G**). These sound levels assist in accurately modelling future with-Project and no-Project sound levels. The hourly sound levels also assist in establishing a baseline or guideline against which stationary noise sources are assessed.

Table 4-23 summarizes the typical daytime and nighttime equivalent ($L_{eq,16hr}$ and $L_{eq,8hr}$, respectively) sound levels as well as the lowest hourly sound level during the daytime and nighttime periods. The sound levels measured are consistent with sound levels typically occurring in developed areas.

Table 4-23 Summary of Measured Sound Levels

Receptor	Study Area Segment	Daytime Equivalent Sound Level (7 a.m. – 11 p.m.) $L_{eq,16hr}$	Nighttime Equivalent Sound Level (11 p.m. – 7 a.m.) $L_{eq,8hr}$	Quietest Hourly Sound Level	
				Daytime (dBA $L_{eq,1hr}$)	Nighttime (dBA $L_{eq,1hr}$)
N1	1	72	67	70	63
N2	1	72	64	70	63
N3	1	63	56	59	48
N4	1	72	67	70	63
N5	1	61	55	58	50
N6	1	73	68	69	64
N7	1	71	66	68	60
N8	1	58	52	51	46
N9	1	64	56	57	49
N10	1	67	60	60	55
N11	2	60	53	53	47
N12	2	63	56	54	47
N13	2	72	65	65	58
N14	2	60	52	52	44
N16	3	61	60	51	43
N17	3	59	53	43	43
N18	3	65	63	56	50
N19	3	67	60	60	53
N20	3	59	60	44	37
N21	3	62	62	41	37
N22	3	65	62	54	46

4.8.2 Segment 1 – Finch Station to Clark Station (Below Grade)

This section outlines the existing land uses to assist in determining receptors sensitive to noise, as well as potential sources of ambient noise, along this segment of the YNSE alignment.

Primary Land Uses:

- High-rise and low-rise residential
- Commercial plazas
- Shopping centres
- Automotive dealerships
- Commercial offices

Ambient sources of noise:

- Yonge Street
- Finch Avenue
- Cummer Avenue
- Steeles Avenue
- CN Rail York Subdivision
- Clark Avenue

Please refer to **Table 4-23** for a summary of the typical daytime and nighttime equivalent ($L_{eq,16hr}$ and $L_{eq,8hr}$, respectively) sound levels as well as the lowest hourly sound level during the daytime and nighttime periods.

4.8.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

This section outlines the existing land uses to assist in determining receptors sensitive to noise, as well as potential sources of ambient noise and vibration along this segment of the YNSE alignment.

Primary Land Uses:

- High-rise and low-rise residential
- Commercial plazas
- Golf course and country club
- Cemetery
- Industrial buildings

Ambient sources of noise:

- Yonge Street
- Royal Orchard Boulevard
- Clark Avenue
- CN Bala Rail Subdivision (including freight, VIA Rail trains, and GO Rail trains)

Please refer to **Table 4-23** for a summary of the typical daytime and nighttime equivalent ($L_{eq,16hr}$ and $L_{eq,8hr}$, respectively) sound levels as well as the lowest hourly sound level during the daytime and nighttime periods.

4.8.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

This section outlines the existing land uses to assist in determining receptors sensitive to noise, as well as potential sources of ambient noise and vibration along this segment of the YNSE alignment.

Primary Land Uses:

- High-rise and low-rise residential
- Industrial buildings
- Cemetery
- Commercial plazas
- Commercial office buildings
- Langstaff GO Station

Ambient sources of noise:

- Highway 407
- Highway 7
- High Tech Road
- Bantry Avenue
- 16th Avenue
- CN Bala Rail Subdivision (including freight, VIA Rail, and GO Rail trains)

Please refer to **Table 4-23** for a summary of the typical daytime and nighttime equivalent ($L_{eq,16hr}$ and $L_{eq,8hr}$, respectively) sound levels as well as the lowest hourly sound level during the daytime and nighttime periods.

4.9 Vibration

4.9.1 Methodology

Please refer to **Section 4.8.1** above. A more detailed overview of the noise and vibration methodology is provided in **Appendix G**, Noise & Vibration Existing Conditions & Impact Assessment Report.

4.9.1.1 Vibration Measurement Locations and Results

In general, the vibration data indicates that the existing vibration levels due to existing freight, passenger or commuter trains are well below the threshold of perception (0.10 mm/s RMS) at all surface rail locations. The vibration levels from existing TTC trains near Finch Station are well above the threshold of perception. This is expected given the shallow depth of the station box near the TTC subway station and the older track fixation and isolation methods used. **Table 4-24** provides an overall summary of the measured vibration levels.

Table 4-24 Summary of Measured Vibration Levels

Location	Study Area Segment	Location Description	Average Measured Vibration Level (mm/s RMS)	Vibration Level Range (mm/s RMS)
V1	1	Ground near TTC Finch Station	0.14	0.05 – 0.28
V2	1	Ground near CN York Rail Subdivision	0.03	0.02 – 0.04

Location	Study Area Segment	Location Description	Average Measured Vibration Level (mm/s RMS)	Vibration Level Range (mm/s RMS)
V4	3	Ground near CN Bala Rail Subdivision and Ruggles Avenue	0.03	0.02 – 0.05
V5	3	Ground near CN Bala Rail Subdivision and High Tech Road	0.03	0.02 – 0.07
V6	3	Ground near CN Bala Rail Subdivision and King William Crescent	0.04	0.03 – 0.06
V7	3	Ground near CN Bala Rail Subdivision and Coburg Crescent	0.03	0.02 – 0.03

Table 4-25 provides a detailed breakdown of the highest measured vibration levels at each location. Passby vibration level figures are also provided. The passby vibration level figures demonstrate the duration of a given vehicle passby. For freight, passbys can last several minutes. For passenger or commuter trains, the passby lasts for less than a minute.

Table 4-25 Summary of Highest Vibration Levels Measured

Measurement Location	Study Area Segment	Train Type	Maximum Vibration Level (mm/s, RMS)
V1	1	TTC Train 1	0.26
		TTC Train 2	0.20
		TTC Train 3	0.28
		TTC Train 4	0.23
		TTC Train 5	0.25
V2	1	Freight Train 1	0.02
		Freight Train 2	0.02
		Freight Train 3	0.04
		Freight Train 4	0.03
		Freight Train 5	0.04
V4	3	Freight Train 1	0.04
		Freight Train 2	0.05
		GO Train 1	0.02
		GO Train 2	0.02
		GO Train 3	0.02
V5	3	Freight Train 1	0.07

Measurement Location	Study Area Segment	Train Type	Maximum Vibration Level (mm/s, RMS)
		GO Train 1	0.02
		GO Train 2	0.03
		GO Train 3	0.02
		GO Train 4	0.02
V6	3	Freight Train 1	0.06
		GO Train 1	0.03
		GO Train 2	0.03
		GO Train 3	0.03
		GO Train 4	0.03
V7	3	GO Train 1	0.03
		GO Train 2	0.03
		GO Train 3	0.03
		GO Train 4	0.02

4.9.2 Segment 1 – Finch Station to Clark Station (Below Grade)

This section outlines the existing land uses to assist in determining receptors sensitive to vibration, as well as potential sources of vibration along this segment of the YNSE alignment.

Primary Land Uses:

- High-rise and low-rise residential
- Commercial plazas
- Shopping centres
- Automotive dealerships
- Commercial offices

Ambient sources of vibration:

- Yonge Street
- Finch Avenue
- Cummer Avenue
- Steeles Avenue
- CN Rail York Subdivision
- Clark Avenue

Please refer to **Table 4-24** for a summary of the measured vibration levels; and **Table 4-25** for a detailed breakdown of the highest measured vibration levels at this segment.

4.9.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

This section outlines the existing land uses to assist in determining receptors sensitive to vibration, as well as potential sources of vibration along this segment of the YNSE alignment.

Primary Land Uses:

- High-rise and low-rise residential
- Commercial plazas
- Golf course and country club
- Cemetery
- Industrial buildings

Ambient sources of vibration:

- Yonge Street
- Royal Orchard Boulevard
- Clark Avenue
- CN Bala Rail Subdivision (including freight, VIA Rail trains, and GO Rail trains)

Please refer to **Table 4-24** for a summary of the measured vibration levels; and **Table 4-25** for a detailed breakdown of the highest measured vibration levels at this segment.

4.9.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

This section outlines the existing land uses to assist in determining receptors sensitive to vibration, as well as potential sources of vibration along this segment of the YNSE alignment.

Primary Land Uses:

- High-rise and low-rise residential
- Industrial buildings
- Cemetery
- Commercial plazas
- Commercial office buildings
- Langstaff GO Station

Ambient sources of vibration:

- Highway 407
- Highway 7
- High Tech Road
- Bantry Avenue
- 16th Avenue
- CN Bala Rail Subdivision (including freight, VIA Rail, and GO Rail trains)

Please refer to **Table 4-24** for a summary of the measured vibration levels; and **Table 4-25** for a detailed breakdown of the highest measured vibration levels at this segment.

4.10 Transportation

4.10.1 Methodology

Considering the proposed extension alignment runs along Yonge Street, the defined Study Area buffer around each proposed station was comprised of 3 signalized intersections, including the immediate station traffic signal on Yonge Street and its two N-S neighboring traffic signals. The following section provides an overview of the methodology followed to collect and document traffic existing conditions within the Study Area.

In order to gain insight into the existing traffic conditions within the Study Area, intersection capacity analysis was conducted at signalized intersections associated with each proposed station respectively (**Table 4-26**). These analyses were completed by development of Synchro models at study intersections. The City of Toronto Guidelines for using Synchro 11 were followed for Synchro intersection capacity analysis using Highway Capacity Manual (HCM) 2000. York Region's Transportation Impact Study Guidelines were also reviewed and followed for this analysis.

Table 4-26 Study Intersections per Station

Stations	Intersections (South to North)	Study Area Segment
Finch	Yonge Street and Kempford Boulevard Yonge Street and Finch Avenue Yonge Street and Hendon Avenue/Bishop Avenue	1
Cummer	Yonge Street and Turnberry Court Yonge Street and Cummer Avenue/Drewry Avenue Yonge Street and Patricia Avenue	
Steeles	Yonge Street and Athabaska Avenue Yonge Street and Steeles Avenue Yonge Street and Meadowview Avenue	
Clark	Yonge Street and Glen Cameron Road Yonge Street and Clark Avenue Yonge Street and Elgin Street/Arnold Avenue	
Royal Orchard	Yonge Street and Centre Street/Thornhill Summit Drive Yonge Street and Royal Orchard Boulevard Yonge Street and Uplands Avenue	2
Bridge	Yonge Street and Highway 407 E Ramp/Langstaff Road East Yonge Street and highway 407 W Ramp Yonge Street and Highway 7 Ramp/Garden Avenue	3
High Tech	Yonge Street and High Tech Road Yonge Street and Westwood Lane/Beresford Drive Yonge Street and Scott Drive/Bantry Avenue	

Volume to capacity (v/c) ratio and level of service (LOS) were the two (2) Measures of Effectiveness that were used to assess intersection capacity.

The following thresholds were set to identify critical movements at signals:

Movements with V/C ratio of 0.85 or above; and
Movements with Level of Service ("LOS") as "E" or worse.

Data was collected from the following sources and considered as appropriate as part of documenting existing conditions within the Study Area:

- Google Map Street View: Google map street view was used to collect roadway speed limits, intersection lane configuration as well as right-turn-red signs for York Region.
- Google Map Aerial View: Google map aerial view was used to collect lane configuration details (e.g., storage lane length, lane width confirmation)
- City of Toronto Interactive Map: This map covers the latest road conditions within the boundaries of the City. This map was used to view road geometry and lane configuration (including signal detector locations) details for the Study Areas within the City.
- City of Toronto Traffic Bylaws: The bylaws were used to collect and confirm roadway speed limits, as well as right-turn-on-red signs at signals within the City boundaries.
- York Region Interactive Map: used to collect data on the overall road network layout and configuration as well as some details associated with the existing bus operations (e.g., Bus Stop locations)
- TTC System Map: illustrates TTC bus routes within the Study Area
- YRT System Map: illustrates YRT (including VIVA) bus routes within the Study Area

4.10.2 Segment 1 – Finch Station to Clark Station (Below Grade)

4.10.2.1 Road Network

Yonge Street is the primary north-south arterial roadway running through this segment from Finch station in the City of Toronto to Clark station in City of Markham of York Regional Municipality. Within this segment, the City of Toronto's jurisdiction is from Finch Avenue to Steeles Avenue. This segment of the corridor consists of three (3) regular general-purpose lanes between Finch Avenue and Hendon Avenue and two (2) general purpose lanes plus one (1) HOV lane per direction and one (1) centre two-way left turn lane between Hendon Avenue and Steeles avenue. Yonge Street from Steeles Avenue to Clark Avenue is an arterial under the jurisdiction of York Region. North of Steeles Avenue, Yonge Street consists of two (2) regular general-purpose lanes, one (1) HOV lane and one (1) centre two-way left turn lane in the north and south directions that extend to Clark Avenue.

Major east-west arterial and collector roadways within this segment are Finch Avenue, Hendon Avenue/Bishop Avenue, Cummer Avenue/Drewry Avenue, Steeles Avenue, Doncaster Avenue and Clark Avenue.

4.10.2.2 Traffic

Intersection capacity analysis using HCM 2000 were completed for the proposed stations within this segment as explained in the Methodology Section. Summary of Synchro results per station are presented in **Table 4-27** through **Table 4-34**. These results include all critical turning movements with LOS E or F and V/C of greater than 0.85. Movements with LOS "F" or V/C as one (1) or higher are highlighted in grey. Tabulated Synchro outputs including all intersection movements are presented in **Appendix H**. Detailed Synchro reports are provided in **Appendix H**.

Table 4-27 Finch Station – Intersection Capacity Analyses – Existing AM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Hendon Ave / Yonge St	C	30	0.83	EBL	F	81.1	0.87	26.6	61.6	-
				WBT	E	69.9	0.93	81.1	137.2	-
Finch Ave / Yonge St	D	43.8	0.91	EBL	F	105.6	1.00	24.0	67.5	55
				WBL	E	60.1	0.86	25.3	52.2	37
				WBT	E	57.4	0.93	126.9	168.2	-
				NBL	E	65.4	0.89	26.1	66.6	56
Kempford Blvd / Yonge St	A	6.3	0.42	NBL	A	9.8	0.33	2.1	16.8	14

During AM peak period, Finch Avenue and Yonge Street intersection operates with v/c of 0.91. The EBL movement is at capacity and experiences LOS F and long delays due to high turning movement demand, and also high westbound through demand which leads to a lack of gaps between westbound vehicles. The westbound left movements 95th queue extends beyond the storage lane and spills onto the through lanes. The northbound left and westbound through movements also operate near capacity with LOS E. At the Hendon Avenue and Yonge Street intersection the eastbound left operates at a LOS F, due to long delays associated with this movement. The westbound through performs poorly, operating at a LOS E.

Table 4-28 Finch Station – Intersection Capacity Analyses – Existing PM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Finch Ave / Yonge St	D	38.1	0.85	EBL	E	75.8	0.94	25.3	65.8	55

During PM peak period, Finch Avenue and Yonge Street intersection operates with v/c of 0.85. Similar to AM peak, the eastbound left is a critical movement with LOS E and v/c of 0.94. The 95th queue length for this movement extends beyond its storage lane and impacts the adjacent lanes in the approach at times.

Table 4-29 Cummer Station – Intersection Capacity Analyses – Existing AM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Cummer Ave / Yonge St	C	31.7	0.83	EBL	D	35.3	0.29	13.7	27.0	25
				SBT	C	32.5	0.91	81.6	101.0	-

During AM peak, Cummer Avenue / Yonge Street intersection operate with an overall acceptable LOS and v/c. The southbound through movement operates at v/c of 0.91 which is due to a high demand, however the signal is able to serve the demand with LOS of C and acceptable delay.

Table 4-30 Cummer Station – Intersection Capacity Analyses – Existing PM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Cummer Ave / Yonge St	C	31.1	0.78	EBL	D	36.2	0.34	15.1	29.3	25
				NBL	D	40.7	0.82	17.2	52.5	47

During PM peak period, Cummer Avenue / Yonge Street intersection operates with LOS C similar to AM Peak period. Northbound being the dominant traffic direction at this intersection (based on counts), northbound left movement has high a demand, creating queue spill back onto the through lanes.

Table 4-31 Steeles Station – Intersection Capacity Analyses – Existing AM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Meadowview Ave / Yonge St	C	22	0.73	WBL	E	61.9	0.81	57.1	81.0	100
Steeles Ave / Yonge St	E	55.4	0.99	EBL	E	74.6	0.93	33.3	77.6	117

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
				EBT	E	70.7	0.98	124.8	168.9	-
				WBL	E	74.3	0.91	27.7	68.0	165
				WBT	D	51.9	0.87	101.7	120.1	-
				NBL	E	67.1	0.87	26.4	62.4	75
				SBL	D	36.6	0.78	27.7	55.3	40
				SBT	E	62.7	1.00	214.8	257.3	-

During AM peak period, the westbound left movement at Meadowview Avenue / Yonge Street experiences a high turning demand and operates at LOS E. The left turn queues are long but are contained within the left turn lane storage space. Steeles Avenue / Yonge Street intersection operates almost at capacity with LOS E. Multiple movements are among critical movements in this intersection among which are all left turns. The southbound through movement experiences high demand and operates at capacity. The southbound left queue also extends beyond its storage lane and further aggravates the through lane operation.

Table 4-32 Steeles Station – Intersection Capacity Analyses – Existing PM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Meadowview Ave / Yonge St	C	29.3	0.78	WBL	E	69.6	0.88	74.7	114.2	100
Steeles Ave / Yonge St	E	59.5	0.98	EBL	E	72.4	0.93	43.0	89.9	117
				EBT	E	64.0	0.96	138.8	184.6	-
				WBL	E	66.7	0.89	34.9	75.0	165
				WBT	E	59.9	0.95	112.6	143.8	-

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
				NBL	E	55.2	0.82	23.3	54.7	75
				NBT	E	65.2	0.99	172.1	220.0	-
				SBL	E	67.9	0.89	34.2	75.1	40
				SBT	D	53.8	0.93	145.6	191.0	-
Athabaska Ave / Yonge St	B	17.9	0.69	EBL	D	43.7	0.55	30.0	51.8	43

During PM peak period, Steeles Avenue / Yonge Street intersection operates near capacity with LOS E. Similar movements to AM peak period operate at critical conditions, however no movements are over-capacity. At the Athabaska Avenue / Yonge Street intersection, the eastbound left movement is at critical conditions, which is due to high demand leaving the parking on the west. Similar to AM peak period, Meadowview Avenue / Yonge Street intersection experiences long queues and LOS E for the westbound left movement, as a result of high demand at this intersection.

Table 4-33 Clark station – Intersection Capacity Analyses - Existing AM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Arnold Ave/ Yonge St	B	14.1	0.68	EBL	E	55.8	0.54	15.9	29.7	35
				WBT	E	58.8	0.67	43.0	63.6	-
				SBL	B	13.7	0.54	14.4	43.1	34
Clark Ave/ Yonge St	D	43.8	0.94	EBL	F	106.8	0.93	58.6	106.1	78
				WBL	E	56.6	0.45	21.6	38.2	-
				WBT	E	65.6	0.72	64.7	92.8	-
				NBL	F	115.8	0.99	31.1	78.1	47

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
				SBT	D	45.6	0.93	246.1	306.8	-

During AM Peak period, Clark Avenue / Yonge Street intersection as the main signal of future Clark station, operates near capacity (v/c of 0.94) and LOS D. The eastbound left and northbound left movements at this intersection operate near capacity with LOS F, and their queues extend beyond the storage lane and impacts the through movements at those approaches.

Table 4-34 Clark Station – Intersection Capacity Analyses – Existing PM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Arnold Ave/ Yonge St	B	10.2	0.65	WBT	E	57.7	0.56	29.1	46.8	-
				SBL	C	28.0	0.67	9.1	50.3	34
Clark Ave/ Yonge St	D	37.8	0.93	EBL	F	106.5	0.96	66.2	118.3	78
				WBT	E	58.0	0.68	60.2	88.2	-
				NBL	E	78.8	0.94	49.0	101.2	47
Glen Cameron Rd/ Yonge St	B	17.2	0.86	WBT	E	55.7	0.65	40.2	56.8	-
				SBL	E	74.9	0.89	23.9	69.0	46

During PM peak period, Clark Avenue and Yonge Street intersection operates with similar LOS and v/c to AM peak period. Similar to AM peak, the eastbound left movement operates near capacity with LOS F and long queues, which extends beyond the storage lane capacity. At Arnold Avenue/Yonge Street the westbound through operates at a LOS E. At the Glen Cameron Road/Yonge Street signals movements that experience delay and poor performance are the westbound through and southbound left, both operating at a LOS

4.10.2.3 Transit Services

Toronto Transit Commission (TTC), York Region Transit (YRT) and Government of Ontario Transit (GO Transit) are the three transit agencies which operate in this segment. Within this segment TTC operates bus routes between Finch Avenue and Steeles Avenue. YRT is the primary transit agency that serves this segment with VIVA, Express and YRT local service. GO transit also operates bus service on Yonge Street within this segment. It should be noted that there are HOV lanes along Yonge Street within this segment which give priority to buses during peak periods. There exist no dedicated transit lanes on the roadway for on-surface transit services within this segment, and buses operate in mixed lanes with other vehicles. Consequently, it is expected for transit units' operations to be similar to other vehicles on the roadway.

4.10.2.4 Pedestrian and Cycling Network

Cyclists traffic on Yonge Street is very limited and they use general purpose lanes mixed with other modes of traffic. Sidewalks along Yonge Street provide sufficient width and capacity for pedestrian flow. Pedestrian activity along Yonge Street varies considerably depending on the adjacent land use. Higher pedestrian activity is currently observed between Finch Avenue and Steeles Avenue as a result of higher residential and business densities.

The City of Vaughan has also completed a revamp of Clark Avenue beginning at the Bartley Smith Greenway and Vaughan Super Trail entrance at Jason Street to Yonge Street. This project was project was a key priority identified by the community and staff through the City's Pedestrian and Bicycle Master Plan study, as well as during the development of the Thornhill Sustainable Neighbourhood Action Plan. The improvements to Clark Avenue include upgrades for those who walk, cycle, drive and take public transit to and through the area, connecting the surrounding neighbourhood to the Yonge North Subway Extension Project and future active transportation facilities along Yonge Street.

Pedestrian activity is facilitated by pedestrian crossings at signalized intersections, which maintains network continuity. Pedestrian and cyclist operations are accommodated by signals at signalized intersections with dedicated signal heads for pedestrians. An additional pedestrian feature at signals in operation south of Steeles is a leading pedestrian interval that starts the pedestrian walk display in advance of the corresponding through green display. This feature gives pedestrians a "head start" over motorists.

4.10.2.5 Rail Network

The rail network within this segment in the proximity of Yonge Street is limited to the east-west route that crosses Yonge Street at a separated grade south of Clark Avenue.

4.10.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

4.10.3.1 Road Network

Within this segment, Yonge Street runs for approximately three (3) kilometres from Clark Avenue to Langstaff Road with two (2) regular general-purpose traffic lanes and a centre two-way left turn lane. Major east-west arterial and collector roadways within this segment are John Street, Centre Street and Royal Orchard Boulevard.

4.10.3.2 Traffic

Intersection capacity analysis using HCM 2000 was completed for the only proposed station within this segment (i.e. Royal Orchard station) as explained in the Methodology Section.

Summary of Synchro results per station are presented in **Table 4-35** through **Table 4-36**. These results include all critical turning movements with LOS E or F and V/C of greater than 0.85. Movements with LOS “F” or V/C as one (1) or higher are highlighted in grey. Tabulated Synchro outputs including all intersection movements and detailed Synchro reports are provided in **Appendix H**.

Table 4-35 Royal Orchard Station – Intersection Capacity Analyses – Existing AM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Royal Orchard Blvd / Yonge St	C	23.8	0.83	WBL	E	69.2	0.90	66.5	95.5	26
Centre St / Yonge St	C	34.3	0.96	EBL	F	80.8	0.94	79.8	134.9	-
				EBT	E	56.4	0.82	81.4	135.1	-
				NBL	F	108.4	1.00	36.5	86.4	46
				SBT	C	31.7	0.98	289.2	339.1	-

Centre Street is an important east-west access to Yonge Street as there exists no major east-west arterials north of Centre Street up to Highway 7/407 ETR. During the AM Peak period, this intersection operates near capacity with LOS C and shows two critical left-turn movements of eastbound left and northbound left with LOS F and long queues that could potentially impact other movements of the same approach.

Table 4-36 Royal Orchard Station – Intersection Capacity Analyses – Existing PM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Uplands Ave / Yonge St	A	8.3	0.81	SBL	F	97.7	0.88	6.4	27.8	42
Royal Orchard Blvd / Yonge St	B	17.7	0.88	EBT	E	55.5	0.12	4.8	10.8	-
				WBL	D	50.5	0.63	36.2	46.7	26
				NBT	B	15.3	0.94	71.1	403.9	-
Centre St / Yonge St	D	50.5	0.99	EBL	F	84.8	0.96	84.0	142.0	-
				WBL	F	80.6	0.81	18.8	48.1	28

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
				NBL	F	164.4	1.20	65.2	120.4	46
				NBT	C	27.6	0.91	233.9	276.8	-
				SBL	F	120.1	0.89	13.7	26.2	46
				SBT	E	57.3	0.99	223.5	267.6	-
				SBR	C	25.1	0.27	34.1	61.4	30

During PM peak period, the southbound left movement at Uplands Avenue and Yonge Street suffers from long delays due to lack of gaps between northbound through vehicles. Similar to AM Peak, Centre Street / Yonge Street intersection operates near capacity with LOS D. All left-turn movements at this intersection operate at critical conditions with LOS F, while the northbound left operates over capacity. The southbound left movement at Uplands Avenue / Yonge Street experience long delays and operate with LOS F due to high conflicting demand with the northbound through movement, and not protected left turn phase for this movement. Queue length for this movement is contained within storage lane.

4.10.3.3 Transit Services

York Region Transit (YRT) is the transit agency that operates VIVA, Express and YRT local service in this segment. There exist no dedicated transit lanes on the roadway for on-surface transit services within this segment, and buses operate in mixed lanes with other vehicles. Consequently, it is expected for transit units' operations to be similar to other vehicles on the roadway.

4.10.3.4 Pedestrian and Cycling Network

There are no dedicated bike lanes in the proximity of Yonge Street within this segment. Pedestrian activity is also very limited within this segment due to the low-density commercial and residential land use along Yonge Street throughout this segment. Both pedestrians and cyclists are expected to operate at an acceptable level of service. Sidewalks along Yonge Street provide sufficient width and capacity and pedestrian activity is facilitated by pedestrian crossings at signalized intersections, which provide network continuity. Pedestrian and cyclist operations are accommodated by signals at signalized intersections with dedicated signal heads for pedestrians.

4.10.3.5 Rail Network

Currently, there is no existing rail network within this segment.

4.10.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

4.10.4.1 Road Network

Through the Yonge Street and Highway 407 interchange, Yonge Street operates as a 3-lane facility with a centre two-way left-turn lane to High Tech Road where it narrows to two (2) lanes. Major east-west arterial and collector roadways within this segment are High Tech Road and Bantry Avenue. Highway 407 and Highway 7 runs east-west within this segment and connect to Yonge street via their ramps.

4.10.4.2 Traffic

Intersection capacity analysis using HCM 2000 was completed for the proposed stations within this segment as explained in **Section 4.10.1**.

Summary of Synchro results per station are presented in **Table 4-37** through **Table 4-40**. These results include all critical turning movements with LOS E or F and V/C of greater than 0.85. Movements with LOS "F" or V/C as 1 or higher are highlighted in grey. Tabulated Synchro outputs including all intersection movements and detailed Synchro reports are provided in **Appendix H**.

A separate scope of work to study the transportation operations and needs around Bridge and High Tech stations has been defined and is underway. Under this scope of work, the area will be modelled in a multi-resolution platform and will undergo more comprehensive and meticulous evaluations of all modes of transportation in the area. The following presents a subset of the analytics that can be completed at this time.

Table 4-37 Bridge Station – Intersection Capacity Analyses – Existing AM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Garden Ave / Yonge St	F	92.2	0.98	EBL	D	53.0	0.46	40.0	61.6	20
				EBT	E	63.3	0.49	43.8	68.3	-
				EBR	E	58.8	0.15	0.0	21.1	31
				WBL	F	124.6	0.99	49.1	81.7	85
				WBT	E	60.2	0.29	22.8	40.4	-
				WBR	E	61.3	0.35	21.5	38.9	-
				NBL	F	113.2	0.9	49.6	94.1	85
				SBL	F	169.1	1.11	82.9	139.8	150
				SBT	F	124.7	1.15	241.6	423.3	-
407ETR WB off-Ramp / Yonge St	B	12.2	0.6	WBR	E	58.6	0.63	34.7	56.8	-
Langstaff Rd E – 407ETR EB off-ramp / Yonge St	B	16.7	0.6	EBR	E	58.6	0.67	37.5	62.2	-
				WBL	E	60.3	0.32	8.1	18.5	-
				WBR	E	58.5	0.05	0.0	8.2	-

During AM Peak period, Garden Avenue / Yonge Street intersection Operates near capacity with LOS F. The three highlighted left turn movements (westbound left, northbound left and southbound left) at Garden Avenue and Yonge Street are protected left-turns phases. These left-turns are over or near capacity and experience poor Level of Service during AM peak due to long delays. Southbound is the predominant traffic direction on Yonge Street at this signal and makes southbound movement over capacity and operates at critical conditions due to high demand. The two 407 ETR ramp terminals on Yonge Street operate with an acceptable LOS and v/c ratio. No capacity issues were observed at these two signals however there were movements on 407 ramps and Langstaff Road which experience long delays and operate with LOS E.

Table 4-38 Bridge Station – Intersection Capacity Analyses – Existing PM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Garden Ave / Yonge St	F	95.4	1.05	EBL	E	56.9	0.21	13.1	24.1	20
				EBT	E	63.8	0.18	9.6	20.1	-
				EBR	E	62.3	0.04	-	-	31
				WBL	F	135.6	1.07	91.5	128	85
				WBT	E	58.9	0.25	18.8	34.2	-
				WBR	E	73.2	0.71	50.5	76.9	-
				NBL	F	129.6	0.99	68.7	124.5	85
				NBT	F	120	1.15	256.4	467.5	-
				SBL	F	158.6	1.06	67.1	120.5	150
407ETR WB off-Ramp / Yonge St	B	15.7	0.69	WBR	E	57.6	0.79	78.6	104.4	-
Langstaff Rd E – 407ETR EB off-ramp / Yonge St	C	32.6	0.75	EBR	E	59.2	0.79	68.9	99.0	-
				WBL	E	58.8	0.52	22.9	40.3	-

During the PM peak period, Garden Avenue and Yonge Street intersection operates over-capacity with LOS F. Similar to AM peak the three protected left-turn phases (westbound left, northbound left and southbound left) at Garden Avenue and Yonge Street signal operate at or near capacity with LOS F due to long delays. Contrary to the AM Peak, northbound is the predominant traffic direction during PM peak which causes the northbound through movement to operate over-capacity with LOS F.

The two 407 ETR ramp terminals on Yonge Street operate with an acceptable LOS and v/c ratio. No capacity issues were observed at these two signals, however there are movements on the 407 ramps and Langstaff Road which experience long delays and operate with LOS E.

Table 4-39 High Tech Station – Intersection Capacity Analyses – Existing AM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Scott Dr / Yonge St	C	31.9	0.84	WBL	E	70.6	0.75	38.0	58.2	140
				NBL	E	68.4	0.50	12.4	26.2	75
				SBL	E	65.7	0.68	40.0	61.0	75
				SBT	C	25.9	0.85	224.5	358.8	-
Westwood Ln / Yonge St	C	26.5	0.8	EBL	E	55.7	0.34	16.2	26.2	15
				WBL	E	58.2	0.51	25.3	37.2	30
				NBL	F	93.5	0.61	29.3	42.9	70
				SBT	C	29.6	0.89	182.4	417.6	-
High Tech Rd / Yonge St	D	36.1	0.84	EBT	E	68.0	0.03	0.3	2.3	-
				WBL	E	59.3	0.76	57.4	72.3	53

During the AM peak period, there are multiple critical movements among the intersections within the Study Area of this station. Queues at all of these critical movements are contained within the storage lane except for the westbound left movement at High Tech Road and Yonge Street intersection, which extends beyond the storage capacity. The northbound left movement at Westwood Lane and Yonge Street intersection operates as a protected left-turn phase and consequently experiences long delays and poor LOS.

Table 4-40 High Tech Station – Intersection Capacity Analyses – Existing PM

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Scott Dr / Yonge St	C	34.9	0.82	WBT	E	60.1	0.69	54.8	80.4	-
				NBL	E	67.5	0.67	35.5	37.1	75

Intersection	Intersection LOS	Intersection Delay	Intersection V/C Ratio	Critical Movement						
				Movement	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (m)	95th Percentile Queue (m)	Storage Capacity (m)
Westwood Ln / Yonge St	C	32.2	0.82	NBT	C	33.9	0.89	284.0	370.5	-
				SBL	E	65.4	0.66	36.9	57.3	75
				EBL	E	72.7	0.63	13.7	24.8	15
				WBL	E	56.3	0.41	21.3	32.3	30
				WBT	E	58.6	0.55	33.2	52.6	-
				NBL	E	75.4	0.69	39.2	32.9	70
High Tech Rd / Yonge St	D	52	0.97	NBT	C	24.5	0.86	318.1	400.7	-
				EBT	E	67.6	0.00	-	-	-
				WBL	E	60.1	0.73	50.1	63.6	53
				NBT	E	68.3	1.05	283	452.2	-
				SBL	F	91.3	0.96	81.3	133.6	80

During the PM peak period, similar to AM peak period, there are multiple critical movements among the intersections within the Study Area of this station. Queues at all of these critical movements are contained within the storage lane except for the southbound left and westbound left movement at High Tech Road and Yonge Street intersection, which extends beyond the storage capacity. The northbound through movement at High tech Road / Yonge Street intersection is over-capacity due to high demand and operates at LOS E. The southbound left movement at High Tech Road and Yonge Street has a high demand and operates as a protected only left-turn, which consequently results in long delays and poor LOS.

4.10.4.3 Transit Services

York Region Transit (YRT) and Government of Ontario Transit (GO Transit) are the two transit agencies which operate in this segment. YRT is the primary transit agency that serves this segment with VIVA, Express and YRT local service. GO transit also operates GO Train Richmond Hill line throughout this segment and has a stop at Langstaff GO station. It should be noted that Yonge Street Rapidway, which opened for service in December 2020 extends from Richmond Hill Centre to the northern limit of this segment. The Rapidway provides a dedicated bus rapid transit corridor, allowing to provide significantly improved transit performance along Yonge Street north of Richmond Hill Centre and providing a rapid transit connection with the proposed northern terminus of the YNSE.

4.10.4.4 Pedestrian and Cycling Network

There are no dedicated bike lanes in the proximity of Yonge Street within this segment. Pedestrian activity is also very limited within this segment due to the low-density commercial and residential land use along Yonge Street throughout this segment. Both pedestrians and cyclists are expected to operate at an acceptable level of service. Sidewalks along Yonge Street provide sufficient width and capacity, and pedestrian activity is facilitated by pedestrian crossings at signalized intersections, which provides network continuity. Pedestrian and cyclist operations are accommodated by signals at signalized intersections with dedicated signal heads for pedestrians.

4.10.4.5 Rail Network

The north-south GO Transit Richmond Hill line moves closer to Yonge Street within this segment and runs through it.

4.11 Utilities

This section of the EPR Addendum documents the utility coordination work completed to date for the RCD of the YNSE.

Existing conditions Utility data within the Study Area was previously collected as part of was reviewed the 2009 TPAP and the 2014 EPR Addendum. There are several sections of the current EPR Addendum Study Area that are not adequately covered by the previous studies. As a result, additional data gathering, topographic survey, and Subsurface Utility Engineering (SUE) investigation work was initiated for these sections. To assess the potential utility impacts, SUE Quality Levels D to B studies were carried out as part of the Reference Concept Design. Additional SUE investigations continue to be undertaken as the design progresses and the information presented herein is based on the information available at the time of preparing this report.

In locations where existing utilities are in conflict with the proposed elements of the YNSE project, utility relocations may be required. In addition, certain utilities may need to be protected during construction activities.

4.11.1 Methodology

With respect to overhead utilities, topographic survey investigations are being carried out as part of the project to identify the location and approximate height of existing overhead utilities within the project area. Once established, proposed treatment options for impacted overhead utilities will be coordinated with the relevant utility owners.

With respect to underground utilities, partial Sub-surface Utility Engineering (SUE) field investigations were being carried out at various locations along the alignment as part of the 2009 TPAP and the 2014 EPR Addendum. Upon reviewing existing SUE investigation reports, areas that require additional SUE investigation were identified and additional SUE investigations were conducted.

Results from the SUE field investigations at each location were used to incorporate Quality Level information into the composite utility plan. The quality levels are defined under CI/ASCE 38 -Mapping of Underground Utility Infrastructure as follows:

- Quality Level D (QLD): Information derived from existing records or verbal recollections.
- Quality Level C (QLC): Information obtained by surveying and plotting visible above-ground features and by using professional judgement in correlating this information to the QL-D information.
- Quality Level B (QL-B): Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of the subsurface utilities.
- Quality Level A (QL-A): Precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of subsurface utilities, usually at a specific point.
- Information collected through the utility circulation process has been used to validate and supplement the information contained in the existing composite utility plans. Any missing or additional information (e.g., size, material) has been added to composite utility plans during their development. When discrepancies were identified, the differing sources were further reviewed to ensure accuracy of composite utility plans.

4.11.2 Segment 1 – Finch Station to Clark Station (Below Grade)

4.11.2.1 Vicinity of Existing Finch Station

Based on data collected at the time of this EPR Addendum, the following existing utilities have been identified in the vicinity of Finch Station.

Table 4-41 Utilities Identified – Finch Station

Site	Nearest Street	Location Description	Owner	Utility Type
Finch Transition Box	Turnberry Court	W side of Yonge St	City of Toronto	Sanitary Sewer
Extraction Shaft	Turnberry Court	W side of Yonge St	City of Toronto	Sanitary Sewer
Finch Transition Box	Turnberry Court	Centre of Yonge St	City of Toronto	Sanitary Sewer
Extraction Shaft	Turnberry Court	Centre of Yonge St	City of Toronto	Sanitary Sewer
Finch Transition Box	Turnberry Court	Centre of Yonge St	City of Toronto	Storm Sewer
Extraction Shaft	Turnberry Court	Centre of Yonge St	City of Toronto	Storm Sewer
Finch Transition Box	Turnberry Court	E side of Yonge St	City of Toronto	Storm Sewer
Extraction Shaft	Turnberry Court	E side of Yonge St	City of Toronto	Storm Sewer
Finch Transition Box	Turnberry Court	Cross Yonge St	City of Toronto	Storm Sewer
Finch Transition Box	Turnberry Court	Cross Yonge St	City of Toronto	Storm Sewer
Finch Transition Box	Turnberry Court	Cross Yonge St	City of Toronto	Storm Sewer
Finch Transition Box	Turnberry Court	W side of Yonge St	City of Toronto	Watermain
Extraction Shaft	Turnberry Court	W side of Yonge St	City of Toronto	Watermain
Finch Transition Box	Turnberry Court	Cross Yonge St	City of Toronto	Watermain
Extraction Shaft	Turnberry Court	Cross Yonge St	Enbridge	Gas

Site	Nearest Street	Location Description	Owner	Utility Type
Finch Transition Box	Turnberry Court	W side of Yonge St	Enbridge	Gas
Extraction Shaft	Turnberry Court	W side of Yonge St	Enbridge	Gas
Finch Transition Box	Turnberry Court	W side of Yonge St	Bell	Telecom
Extraction Shaft	Turnberry Court	W side of Yonge St	Bell	Telecom
Finch Transition Box	Turnberry Court	E side of Yonge St	Bell	Telecom
Extraction Shaft	Turnberry Court	E side of Yonge St	Bell	Telecom
Finch Transition Box	Turnberry Court	Cross Yonge St	Bell	Telecom
Finch Transition Box	Turnberry Court	W side of Yonge St	Bell	Telecom
Finch Transition Box	Turnberry Court	W side of Yonge St	Bell	Telecom
Finch Transition Box	Turnberry Court	E Side of Yonge St	Telus	Telecom
Extraction Shaft	Turnberry Court	E Side of Yonge St	Telus	Telecom
Finch Transition Box	Turnberry Court	E Side of Yonge St	Telus	Telecom
Finch Transition Box	Turnberry Court	E Side of Yonge St	Telus	Telecom
Finch Transition Box	Turnberry Court	E Side of Yonge St	Telus	Telecom
Finch Transition Box	Turnberry Court	E Side of Yonge St	Zayo	Telecom
Finch Transition Box	Turnberry Court	W side of Yonge St	Rogers	Telecom
Finch Transition Box	Turnberry Court	Cross Yonge St		Traffic light
Finch Transition Box	Turnberry Court	Cross Yonge St		Traffic light

4.11.2.2 Vicinity of (Potential) Cummer Station

The Utilities investigations in the vicinity of the potential Cummer Station were still underway at the time of writing this EPR Addendum. Additional SUE investigations continue to be undertaken as the design progresses. This information will be incorporated into the composite utility plans as required for use during future design phases.

4.11.2.3 Vicinity of (Confirmed) Steeles Station

Based on data collected at the time of this EPR Addendum, the following existing utilities have been identified in the vicinity of *Confirmed* Steeles Station.

Table 4-42 Utilities Identified – Steeles Station

Site	Nearest Street	Location Description	Owner	Utility Type
Steeles Station	Athabaska Ave, Abitibi Ave, Nipigon Ave, Steeles Ave	W side of Yonge St	City of Toronto	Watermain
Steeles Station	Athabaska Ave, Abitibi Ave, Nipigon Ave, Steeles Ave	E side of Yonge St	City of Toronto	Watermain
Steeles Station	Steeles Ave	E side of Yonge St	City of Toronto	Watermain

Site	Nearest Street	Location Description	Owner	Utility Type
Steeles Station	Athabaska Ave	Cross Yonge St	City of Toronto	Watermain
Steeles Station	Abitibi Ave	Cross Yonge St	City of Toronto	Watermain
Steeles Station	Nipigon Ave	Cross Yonge St	City of Toronto	Watermain
Steeles Station	Steeles Ave	Cross Yonge St	City of Toronto	Watermain
Steeles Station	Steeles Ave	Middle of Steeles Ave, E side of Yonge St	City of Toronto	Watermain
Steeles Station	Steeles Ave	N side of Steels Ave, E side of Yonge St	City of Toronto	Watermain
Steeles Station	Steeles Ave	N side of Steels Ave, E side of Yonge St	City of Toronto	Watermain
Steeles Station	Steeles Ave	N side of Steels Ave, E side of Yonge St	City of Toronto	Watermain
Steeles Station	Athabaska Ave	W side of Yonge St	City of Toronto	Watermain
Steeles Station	Athabaska Ave	W side of Yonge St	City of Toronto	Watermain
Steeles Station	Athabaska Ave, Abitibi Ave	W side of Yonge St	Bell	Telecom
Steeles Station	Abitibi Ave	W side of Yonge St	Bell	Telecom
Steeles Station	Athabaska Ave	Cross Yonge St, S of Athabaska Ave	Bell	Telecom
Steeles Station	Athabaska Ave	Cross Yonge St, N of Athabaska Ave	Bell	Telecom
Steeles Station	Abitibi Ave	W side of Yonge St	Bell	Telecom
Steeles Station	Nipigon Ave	W side of Yonge St	Bell	Telecom
Steeles Station	Steeles Ave	W side of Yonge St	Bell	Telecom
Steeles Station	Nipigon Ave	Cross Yonge St, N of Athabaska Ave	Bell	Telecom
Steeles Station	Nipigon Ave	Cross Yonge St, S of Athabaska Ave	Bell	Telecom
Steeles Station	Steeles Ave	E side of Yonge St	Bell	Telecom
Steeles Station	Steeles Ave	Cross Yonge St	Bell	Telecom
Steeles Station	Steeles Ave	Cross Yonge St	Bell	Telecom
Steeles Station	Athabaska Ave, Abitibi Ave, Nipigon Ave, Steeles Ave	W side of Yonge St	Telus	Telecom
Steeles Station	Abitibi Ave	middle of Abitibi Ave, E side of Yonge St	Telus	Telecom

Site	Nearest Street	Location Description	Owner	Utility Type
Steeles Station	Steeles Ave	E side of Yonge St	Rogers	Telecom
Steeles Station	Athabaska Ave, Abitibi Ave, Nipigon Ave, Steeles Ave	W side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave, Abitibi Ave, Nipigon Ave, Steeles Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Abitibi Ave	Cross Yonge St	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave	W side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave	E side of Yonge St, middle of Athabaska Ave	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave	W side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave	W side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Abitibi Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Abitibi Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Abitibi Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Nipigon Ave	W side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Nipigon Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Nipigon Ave	E side of Yonge St, middle of Nipigon Ave	City of Toronto	Storm Sewer
Steeles Station	Nipigon Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Nipigon Ave	W side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Steeles Ave	W side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Steeles Ave	E side of Yonge St	City of Toronto	Storm Sewer
Steeles Station	Athabaska Ave	Cross Yonge St		Traffic
Steeles Station	Athabaska Ave	Cross Yonge St		Traffic
Steeles Station	Steeles Ave	E side of Yonge St		Traffic
Steeles Station	Steeles Ave	E side of Yonge St		Traffic
Steeles Station	Abitibi Ave	Cross Yonge St	THES	Hydro
Steeles Station	Abitibi Ave, Nipigon Ave	W side of Yonge St	THES	Hydro
Steeles Station	Nipigon Ave	W side of Yonge St	THES	Hydro

Site	Nearest Street	Location Description	Owner	Utility Type
Steeles Station	Nipigon Ave	Cross Yonge St, E side of Yonge St	THES	Hydro
Steeles Station	Steeles Ave	Cross Yonge St	THES	Hydro
Steeles Station	Steeles Ave	E side of Yonge St	THES	Hydro
Steeles Station	Nipigon Ave	W side of Yonge St	THES	Hydro
Steeles Station	Steeles Ave	E side of Yonge St	THES	Hydro
Steeles Station	Nipigon Ave	W side of Yonge St	Enbridge	Gas
Steeles Station	Nipigon Ave, Steeles Ave	W side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	E side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	E side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	E side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	E side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	Cross Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	N side of Steeles, E side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	E side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	E side of Yonge St	Enbridge	Gas
Steeles Station	Steeles Ave	N side of Steeles, E side of Yonge St	City of Toronto	Sanitary Sewer

4.11.2.4 Vicinity of (Confirmed) Clark Station

Based on data collected at the time of this EPR Addendum, the following existing utilities have been identified in the vicinity of *Confirmed* Clark Station.

Table 4-43 Utilities Identified – Clark Station

Site	Nearest Street	Location Description	Owner	Utility Type
Clark Station	Clark Ave	E Side of Yonge St		Sanitary Sewer
Clark Station	Clark Ave	W Side of Yonge St in private property		Sanitary Sewer
Clark Station	Clark Ave	W Side of Yonge St in private property		Sanitary Sewer
Clark Station	Clark Ave	W Side of Yonge St in private property		Sanitary Sewer
Clark Station	Clark Ave	Centre of Clark Avenue E side of Yonge St		Sanitary Sewer

Site	Nearest Street	Location Description	Owner	Utility Type
Clark Station	Clark Ave	E Side of Yonge St feeding private property		Sanitary Sewer
Clark Station	Clark Ave	E Side of Yonge St		Storm Sewer
Clark Station	Clark Ave	Cross Yonge St		Storm Sewer
Clark Station	Clark Ave	Cross Yonge St		Storm Sewer
Clark Station	Clark Ave	Cross Yonge St		Storm Sewer
Clark Station	Clark Ave	Cross Yonge St		Storm Sewer
Clark Station	Clark Ave	W Side of Yonge St in private property		Storm Sewer
Clark Station	Clark Ave	W Side of Yonge St in private property		Storm Sewer
Clark Station	Clark Ave	W Side of Yonge St		Storm Sewer
Clark Station	Clark Ave	E Side of Yonge St in private property		Storm Sewer
Clark Station	Clark Ave	E Side of Yonge St in private property		Storm Sewer
Clark Station	Clark Ave	E Side of Yonge St		Watermain
Clark Station	Clark Ave	E Side of Yonge St		Watermain
Clark Station	Clark Ave	W Side of Yonge St in private property		Watermain
Clark Station	Clark Ave	E Side of Yonge St, n side of Clark Ave		Watermain
Clark Station	Clark Ave	E Side of Yonge St, n side of Clark Ave		Watermain
Clark Station	Clark Ave	E Side of Yonge St	Enbridge	Gas
Clark Station	Clark Ave	E Side of Yonge St, S side of Clark Ave	Enbridge	Gas
Clark Station	Clark Ave	W Side of Yonge St in private property	Enbridge	Gas
Clark Station	Clark Ave	W Side of Yonge St in private property	Enbridge	Gas
Clark Station	Clark Ave	Crossing Yonge St N Side of Clark Ave	Bell	Telecom
Clark Station	Clark Ave	W Side of Yonge St	Bell	Telecom
Clark Station	Clark Ave	Crossing Yonge St	Bell	Telecom
Clark Station	Clark Ave	E Side of Yonge St	Bell	Telecom

Site	Nearest Street	Location Description	Owner	Utility Type
Clark Station	Clark Ave	E Side of Yonge St	Telus	Telecom
Clark Station	Clark Ave	Crossing Yonge St	Rogers	Telecom
Clark Station	Clark Ave	E Side of Yonge St	Rogers	Telecom
Clark Station	Clark Ave	E Side of Yonge St	Rogers	Telecom
Clark Station	Clark Ave	E Side of Yonge St	Rogers	Telecom
Clark Station	Clark Ave	E Side of Yonge St	Alectra	Hydro
Clark Station	Clark Ave	E Side of Yonge St	Alectra	Hydro
Clark Station	Clark Ave	SE Corner of Clark Ave and Yonge St	Alectra	Hydro
Clark Station	Clark Ave	SE Corner of Clark Ave and Yonge St	Alectra	Hydro
Clark Station	Clark Ave	W Side of Yonge St	Alectra	Hydro
Clark Station	Clark Ave	Crossing E Side of Yonge St	UKN	Hydro
Clark Station	Clark Ave	Crossing Yonge St	UKN	Hydro

4.11.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

4.11.3.1 Vicinity of (Potential) Royal Orchard Station

The Utilities investigations in the vicinity of the potential Royal Orchard Station were still underway at the time of writing this EPR Addendum. Additional SUE investigations continue to be undertaken as the preliminary design progresses and updates are made to the RCD drawings. This information will be incorporated into the composite utility plans as required for use during future design phases.

4.11.3.2 Vicinity of Portal

Based on data collected at the time of this EPR Addendum, the following existing utilities have been identified in the vicinity of the proposed portal structure.

Table 4-44 Utilities Identified –Portal Structure

Site	Nearest Street	Location Description	Owner	Utility Type
Portal	Langstaff Rd E	West of CN Rail Corridor, South of Langstaff	CN	Gas
Portal	Langstaff Rd E	W Side of CN Rail Corridor, South of Langstaff	CN	Telecom
Portal	Langstaff Rd E	E side of CN Rail Corridor, South of Langstaff	CN	Telecom
Portal	Langstaff Rd E	E Side of CN Rail Corridor, South of Langstaff	CN	Telecom
Portal	Langstaff Rd E	E side of CN Rail Corridor, South of Langstaff	CN	Telecom

Site	Nearest Street	Location Description	Owner	Utility Type
Portal	Langstaff Rd E	E side of CN Rail Corridor, South of Langstaff	Rogers	Telecom
Portal	Langstaff Rd E	E side of CN Rail Corridor, South of Langstaff, Crosses Corridor E-W	UKN	UKN (Likely Telecom)
Portal	UKN	UKN	Zayo	Telecom

4.11.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

4.11.4.1 Vicinity of (Confirmed) Bridge Station

Based on data collected at the time of this EPR Addendum, the following existing utilities have been identified in the vicinity of *Confirmed* Bridge Station.

Table 4-45 Utilities Identified – Bridge Station

Site	Nearest Street	Location Description	Owner	Utility Type
Bridge Station	Langstaff Rd E	Alongside Langstaff Rd, Crosses proposed alignment	Enbridge	Gas main
Bridge	Langstaff Rd E	Alongside Langstaff Rd, Crosses proposed alignment	Enbridge	Gas main
Bridge	Langstaff Rd E	Alongside proposed east track, south of Langstaff	Enbridge	Gas service
Bridge	Langstaff Rd E	Alongside Langstaff Rd, Crosses proposed alignment	Bell	Telecom
Bridge Station	Langstaff Rd E	Alongside Langstaff Rd, Crosses proposed alignment	Bell	Telecom
Bridge Station	Langstaff Rd E	West of proposed track, across Langstaff Rd	Bell	Telecom
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	Bell	Telecom
Bridge Station	Langstaff Rd E	Alongside North side of Langstaff Rd, Crosses proposed alignment	Municipality	Watermain
Bridge Station	Langstaff Rd E	Alongside Langstaff Rd, Crosses proposed alignment	Municipality	Watermain
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	Municipality	Water service
Bridge Station	Langstaff Rd E	Crosses Langstaff Rd, Crosses proposed alignment	UKN	Telecom
Bridge Station	Langstaff Rd E	North of Langstaff Rd, Crosses proposed alignment	Rogers	Telecom

Site	Nearest Street	Location Description	Owner	Utility Type
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	Rogers	Telecom
Bridge Station Bridge Station	Langstaff Rd E	North of Langstaff Rd, At East edge proposed alignment	CN	Telecom
Bridge Station	Langstaff Rd E	North of Langstaff Rd, At East edge proposed alignment	CN	Telecom
Bridge Station	Langstaff Rd E	North side of Langstaff Rd, east of track alignment	CN	Telecom
Bridge Station	Langstaff Rd E	North side of Langstaff Rd, east of track alignment	CN	Telecom
Bridge Station	Langstaff Rd, Hwy 407, Hwy 7	Cross the three roads, W of CN	CN	Telecom
Bridge Station	Langstaff Rd E	Near proposed east track, north of Langstaff Rd	UKN	Hydro
Bridge Station	Langstaff Rd E	Near proposed east track, north of Langstaff Rd	UKN	Hydro
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	UKN	Hydro
Bridge Station	Langstaff Rd, Hwy 407, Hwy 7	Cross the three roads, E of CN	UKN	Hydro
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	UKN	Hydro
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	UKN	Hydro
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	UKN	Hydro
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	UKN	Hydro
Bridge Station	Langstaff Rd E	North of Langstaff Rd E, E of proposed track	UKN	Hydro
Bridge Station	Highway 407	North of Highway 407, E of proposed track	UKN	Hydro
Bridge Station	Hwy 407	North of Highway 407, E of proposed track	UKN	Hydro
Bridge Station	Highway 407	South of Highway 407, ends at east side of proposed tracks	Municipality	Storm (Culvert)
Bridge Station	Highway 407	South of Highway 407, ends at east side of proposed tracks. Crosses Highway 407	Municipality	Storm (Culvert)

Site	Nearest Street	Location Description	Owner	Utility Type
To be confirmed ²	Langstaff Rd	north of Langstaff Rd	To be confirmed	Storm (Culvert)
To be confirmed	Langstaff Rd	north of Langstaff Rd	To be confirmed	Storm (Culvert)
To be confirmed	Hwy 407	Cross Hwy 407	To be confirmed	Storm (Culvert)
To be confirmed	Hwy 7	Cross Hwy 7	To be confirmed	Storm (Culvert)
To be confirmed	Hwy 7	N of Hwy 7	To be confirmed	Storm (Culvert)
To be confirmed	Hwy 407	Cross Hwy 407, W of CN	Alectra	Hydro
To be confirmed	Hwy 407	Cross Hwy 407, E of CN	Alectra	Hydro
To be confirmed	Hwy 7	N of Hwy 7, cross CN	Alectra	Hydro
To be confirmed	Hwy 407	S of Hwy 407, cross CN	Alectra	Hydro

4.11.4.2 Vicinity of (Confirmed) High Tech Station

Based on data collected at the time of this EPR Addendum, the following existing utilities have been identified in the vicinity of *Confirmed* High Tech Station.

Table 4-46 Utilities Identified – High Tech Station

Site	Nearest Street	Location Description	Owner	Utility Type
High Tech Station	High Tech Rd	Along Proposed Retaining Wall	CN	Telecom
High Tech Station	High Tech Rd	Crosses Track Alignment	Municipality	Storm Sewer
High Tech Station	High Tech Rd	West of and alongside proposed track alignment	Municipality	Storm Sewer
High Tech Station	High Tech Rd	N of proposed platform, between two proposed tracks	Municipality	Storm Sewer
High Tech Station	High Tech Rd	Cross proposed w track and CN	Municipality	Storm Sewer
High Tech Station	High Tech Rd	Crosses Track Alignment	Municipality	Sanitary Sewer
High Tech Station	High Tech Rd	Crosses Track Alignment	Rogers	Telecom
High Tech Station	High Tech Rd	Crosses Track Alignment	Rogers	Telecom
High Tech Station	High Tech Rd	Crosses Track Alignment	Bell	Telecom
High Tech Station	High Tech Rd	Crosses Track Alignment	Alectra	Hydro
High Tech Station	High Tech Rd	Crosses Track Alignment	Alectra	Hydro (Aband)
High Tech Station	High Tech Rd	Crosses Track Alignment	Alectra	Hydro
High Tech Station	High Tech Rd	Crosses Track Alignment	Alectra	Hydro
High Tech Station	High Tech Rd	Crosses Track Alignment	Alectra	Hydro

² The Utilities investigations were still underway at the time of writing this EPR Addendum. Further work will continue following completion of the EPR Addendum process to confirm and document potential Utility conflicts and to identify mitigation solutions where required.

Site	Nearest Street	Location Description	Owner	Utility Type
High Tech Station	High Tech Rd	Crosses Track Alignment	Alectra	Hydro
High Tech Station	High Tech Rd	Crosses Track Alignment	York	Hydro

4.11.4.3 Vicinity of Train Storage Facility

Based on data collected at the time of this EPR Addendum, the following existing utilities have been identified in the vicinity of the proposed TSF.

Table 4-47 Utilities Identified – Train Storage Facility

Site	Nearest Street	Location Description	Owner	Utility Type
TSF	Bantry Ave	South Side of Bantry, running along Bantry, crossing proposed track alignment	Alectra	Hydro
TSF	Bantry Ave	North Side of Bantry, running along Bantry, crossing proposed track alignment	Alectra	Hydro
TSF	Bantry Ave	South Side of Bantry, running along Bantry, crossing proposed track alignment	Alectra	Hydro
TSF	Bantry Ave	South Side of Bantry, running along Bantry, crossing proposed track alignment	Alectra	Hydro
TSF	Bantry Ave	North Side of Bantry, running along Bantry, crossing proposed track alignment	Alectra	Hydro
TSF	Bantry Ave	North Side of Bantry, running along Bantry, crossing proposed track alignment	Alectra	Telecom
TSF	Bantry Ave	Centre of Bantry, running along Bantry, crossing proposed track alignment	UKN	Hydro
TSF	Coburg Crescent	Leaving Structure that is on proposed east track alignment (NB)	UKN	Hydro
TSF	Bantry Ave	North Side of Bantry, running along Bantry, crossing proposed track alignment	Rogers	Telecom
TSF	Coburg Crescent	From southeast corner of Coburg Crescent to northwest corner of King William Crescent, crossing proposed track alignment	Municipality	Watermain
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Municipality	Storm Sewer
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Municipality	Storm Sewer
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Municipality	Watermain
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Municipality	Watermain (aband.)
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Enbridge	Gas main

Site	Nearest Street	Location Description	Owner	Utility Type
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Rogers	Telecom
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Rogers	Telecom
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Bell	Telecom
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Bell	Telecom
TSF	16th Avenue	North of 16th avenue, crossing the proposed track alignment	Bell	Telecom
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	UKN	UKN
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Alectra	Hydro
TSF	16th Avenue	East of 16th avenue, crossing the proposed track alignment	Alectra	Hydro
TSF	16th Avenue	North of 16th avenue, crossing the proposed track alignment	Municipality	Sanitary Sewer
TSF	16th Avenue	North of 16th avenue, crossing the proposed track alignment	Municipality	Sanitary Sewer

4.12 Hydrology, Stormwater Management and Drainage

The stormwater management (SWM) and drainage design for the YNSE project was under development at the time of preparing the Updated EPR Addendum. Design development will involve reviewing applicable background information including available City of Toronto, City of Markham, City of Vaughan and York Region basement flooding study reports, available SWM reports and storm sewer plans and profiles.

The objective of the stormwater management and drainage design is to develop a conceptual design within the RCD that addresses stormwater quantity, quality, water balance, and erosion control criteria through adherence to the relevant municipal guidelines.

5.0 Impact Assessment, Mitigation and Monitoring

For each of the environmental disciplines discussed in the following sub-sections, a four-step process was followed to assess potential impacts associated with the Project and to identify mitigation measures and monitoring activities (as required):

- **Step 1** – Identify potential impacts resulting from the construction and operation of the Project;
- **Step 2** – Establish mitigation measures to eliminate or minimize potential adverse effects, as well as monitoring activities to verify and validate that mitigation measures are functioning effectively;
- **Step 3** – Carry out consultation with stakeholders/regulatory authorities; update impact assessment results and/or proposed mitigation and monitoring measures as appropriate; and
- **Step 4** – Document impact assessment results.

For the purposes of differentiating the various types of potential environmental impacts associated with the Project, impacts were characterized and grouped as follows:

Table 5-1 Characterization of Potential Impacts

Construction Impacts	Potential temporary effects (e.g., disruption/disturbance) on existing Study Area features or receptors due to construction activities associated with the Project (e.g., construction of new tracks, tunnelling, storage facility, bridge modifications, etc.).
Operations and Maintenance Impacts	Potential permanent effects on existing Study Area features (i.e., displacement or removal) or receptors due to operations and/or maintenance activities associated with the Project (e.g., operation of the new subway system/trains, operation of train storage facility, etc.).

Following impact assessment, mitigation measures and monitoring activities were identified to avoid or reduce project impacts based on a combination of general best management practices and Project-specific mitigation measures, as appropriate.

5.1 Natural Environment

5.1.1 Segment 1 – Finch Station to Clark Station (Below Grade)

5.1.1.1 Natural Heritage Features

5.1.1.1.1 Potential Impacts

Natural heritage features within Segment 1 have been identified in **Section 4.2.2.1**. The only identified natural heritage feature is a narrow belt of woodland along the rail corridor at the north end of the segment (see **Figure 5-1**). Direct impacts to this small woodlot are not anticipated.

5.1.1.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around natural heritage features can be found in **Table 5-47**.

5.1.1.2 Surface Water

5.1.1.2.1 Potential Impacts

There is no surface water within or adjacent to Segment 1, and as such no impacts to surface water are expected in this segment.

5.1.1.2.2 Mitigation Measures and Monitoring

As no impacts are expected, no mitigation measures are required.

5.1.1.3 Fish and Fish Habitat

5.1.1.3.1 Potential Impacts

There is no fish habitat within or adjacent to Segment 1, and as such no impacts are expected.

5.1.1.3.2 Mitigation Measures and Monitoring

As no impacts are expected, no mitigation measures are required.

5.1.1.4 Vegetation and Vegetation Communities

5.1.1.4.1 Potential Impacts

Information relating to existing vegetation and vegetation communities in Segment 1 has been identified in **Section 4.2.2.4**. Limited natural vegetation cover is present in this segment. Impacts to vegetation is primarily associated with the proposed bus loop on Drewry Avenue. Project construction activities in other areas of Segment 1 are not expected to disturb vegetation communities, though removal of individual trees (e.g., street trees) may occur. Other potential impacts may include damage of vegetation adjacent to construction areas as a result of accidental intrusion, introduction of invasive species, increased erosion and sedimentation, and soil contamination as a result of spills (e.g., fuel) from equipment use. Several species of locally uncommon or rare plants have been previously identified in this segment, but all are either species typical of heavily disturbed areas or likely present only due to plantings, and as such significant negative impacts are not anticipated.

Work on the proposed bus loop on Drewry Avenue will likely require the removal of some areas of existing natural vegetation. Other at grade and below grade works are expected to have minimal impact on vegetation. Mitigation measures and monitoring have been recommended to avoid, and/or minimize impacts to the vegetation and vegetation communities, refer to **Table 5-47**.

With respect to Project activities within identified vegetation communities, the proposed areas of vegetation removal (based on the engineering design) will be quantified during detailed design.



Figure 5-1 Vegetation Communities within proximity of proposed Clark Station

5.1.1.1.1 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around trees, vegetation, and vegetation communities can be found in **Table 5-47**. If wildlife and/or wildlife habitat including but not limited to SAR and bird nests are present, mitigation measures and monitoring recommended for Wildlife and Wildlife Habitat and/or Species at Risk should also be followed, as applicable.

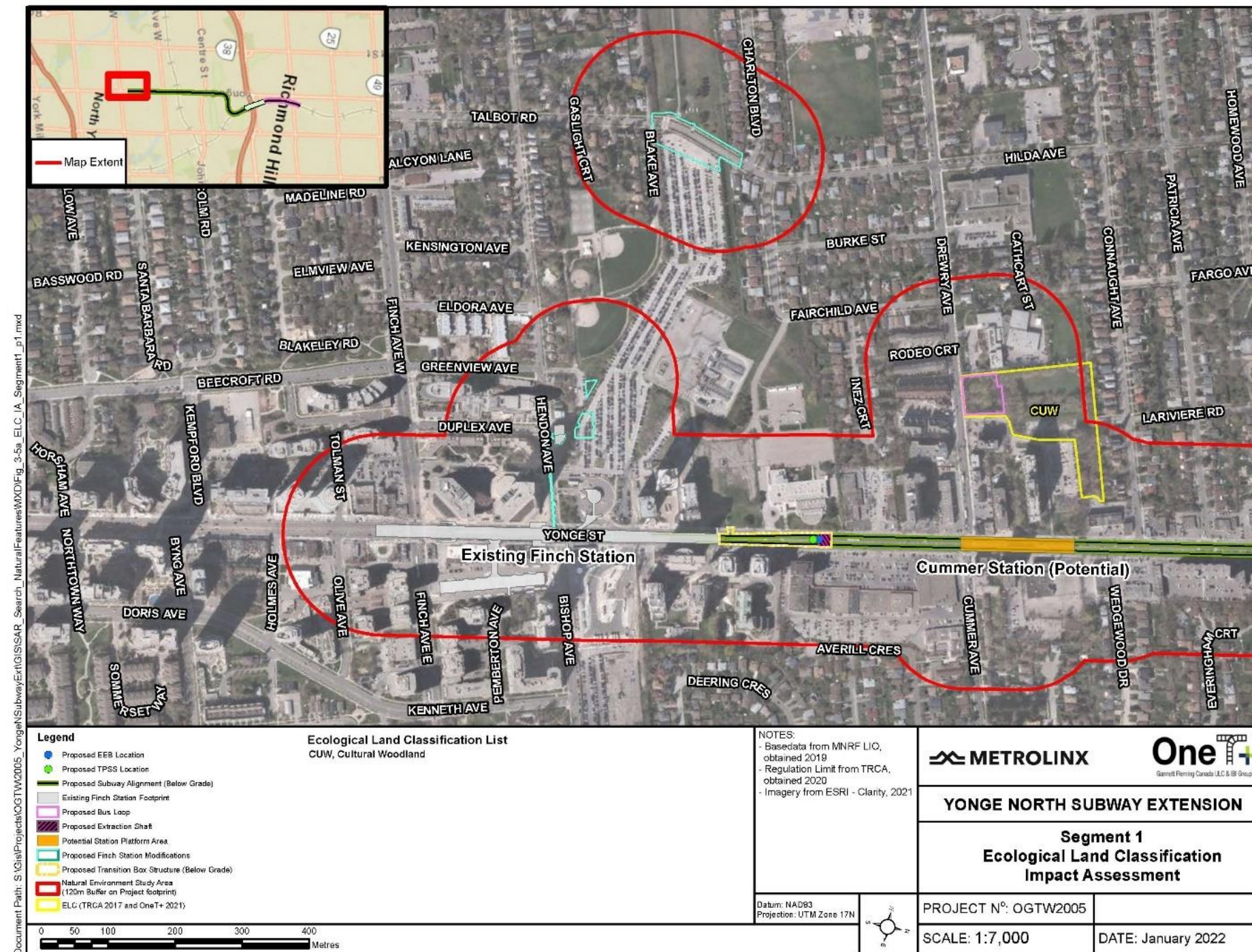


Figure 5-2 Segment 1 – Natural Environment ELC (A)

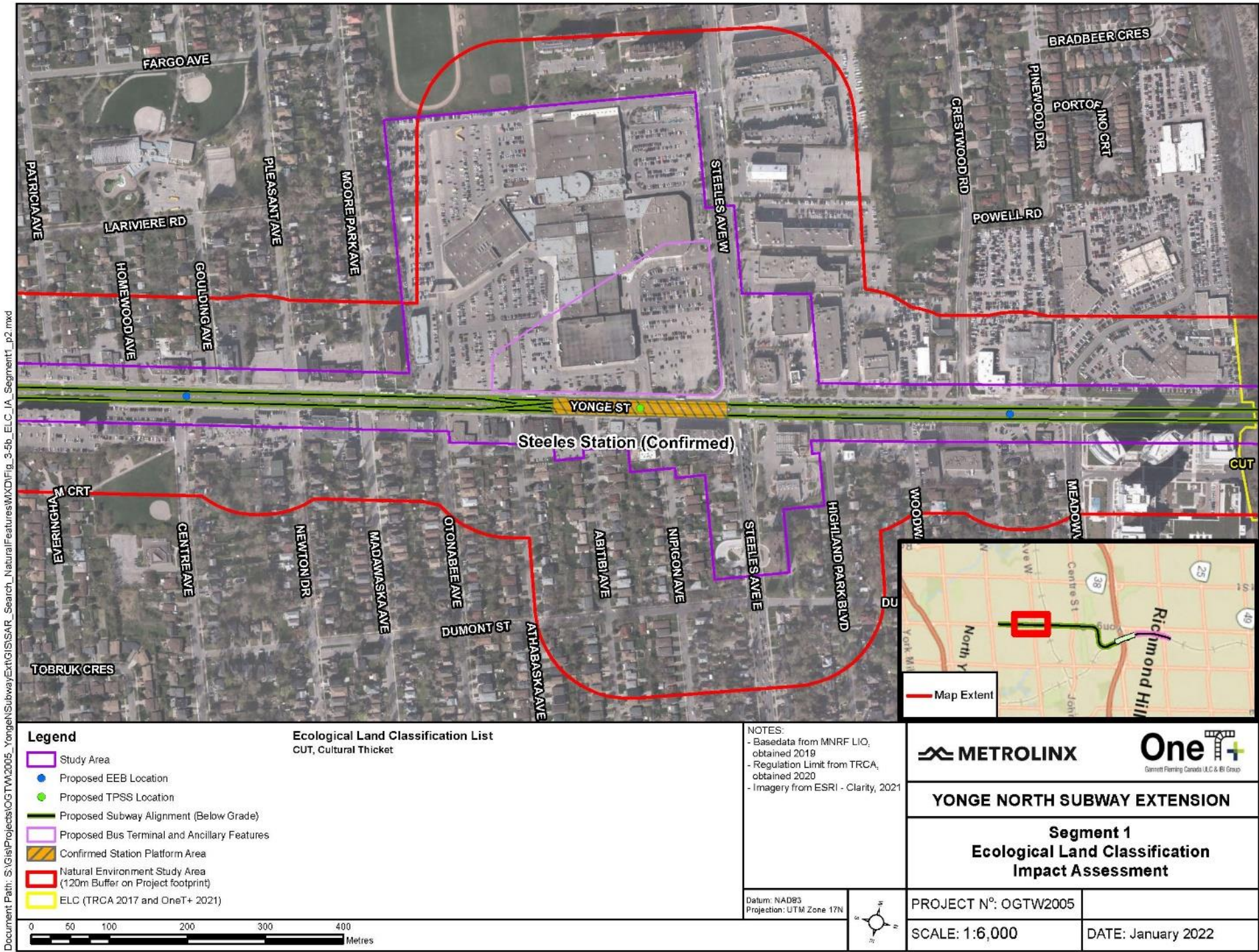


Figure 5-3 Segment 1 – Natural Environment ELC (B)

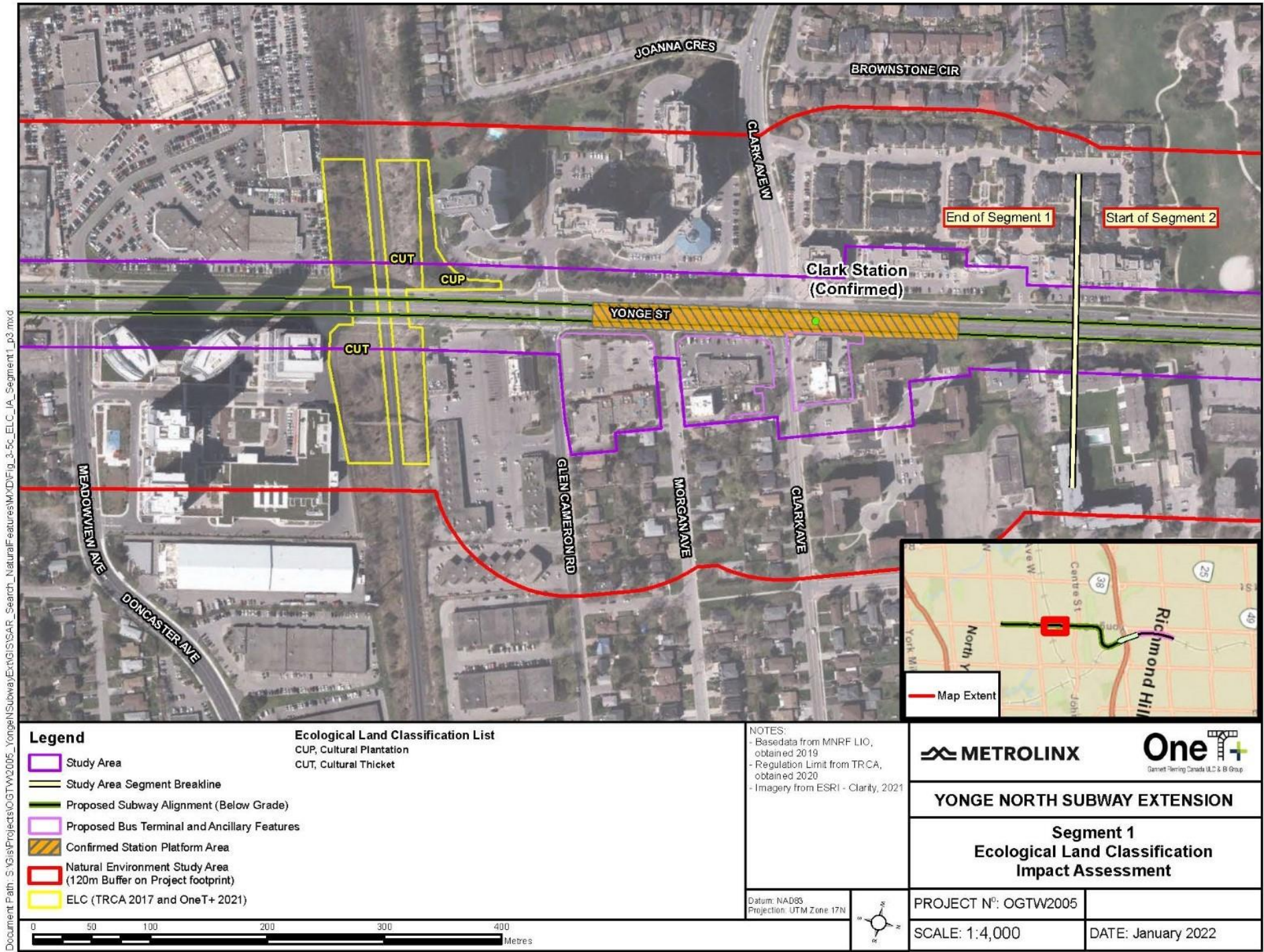


Figure 5-4 Segment 1 – Natural Environment ELC (C)

5.1.1.5 Wildlife and Wildlife Habitat

5.1.1.5.1 Potential Impacts

Information about existing wildlife and wildlife habitat in Segment 1 has been identified in **Section 4.2.2.5**. No significant wildlife habitats (SWH) have been identified in this area or determined to be potentially present. The construction of the YNSE may have direct and indirect impacts on existing wildlife and wildlife habitat. Due to the highly urbanized nature of Segment 1, wildlife that may be present includes species commonly found in urban environments, such as raccoon, skunks, grey squirrel and red squirrels and wildlife habitat is very limited. Nevertheless, wildlife may be injured or displaced as a result of construction activities.

5.1.1.5.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around existing wildlife and wildlife habitat can be found in **Table 5-47**. If SAR wildlife and/or SAR habitat are confirmed present during the future phases of the Project (i.e., detailed design or construction), the mitigation measures and monitoring recommended should be followed, as applicable.

5.1.1.6 Species at Risk

5.1.1.6.1 Potential Impacts

One (1) SAR and its habitat is confirmed present and four (4) other SAR have a moderate or high potential to occur within the SAR Desktop Study Area in Segment 1, details can be found in **Section 4.2.2.6**. Potential impacts to these species are outlined below.

- Barn Swallow is not known to nest in this segment of the Project footprint but has the potential to make use of any existing or newly created structures in and around the existing natural areas associated with the proposed bus loop on Drewry Avenue. If such nests are present but not identified ahead of disturbance-causing activities, there may be negative impacts on this species;
- Chimney Swift was confirmed present and nesting in a chimney within Segment 1. This species is tolerant of urban environments, and as such, it is not anticipated that construction activities will result in modification or removal of the nesting site;
- SAR bats have the potential to occur in existing trees/vegetation communities. Within Segment 1, potential bat SAR habitat is most likely to occur in the natural habitats in the vicinity of the proposed bus loop on Drewry Avenue. Further surveys to confirm presence of SAR bat habitat will be conducted in bat-suitable vegetation communities, subject to the requirements of the ESA.

5.1.1.6.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around SAR and SAR habitat can be found in **Table 5-47**.

5.1.2 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

5.1.2.1 Natural Heritage Features

5.1.2.1.1 Potential Impacts

Natural heritage features within Segment 2 have been identified in **Section 4.2.3.1**. With the exception of a small at grade portion of Royal Orchard Station, Project works in the vicinity of the identified natural heritage features are below grade, and the potential for impacts is low. Potential impacts may include damage or disturbance of vegetation communities, introduction/spread of invasive species, contamination via accidental spills (e.g., fuel), increased erosion and sedimentation. In general, impacts to the natural heritage features are anticipated to be minimal, and potentially negligible, as limited work will occur at grade. Below-grade

work occurring under/in vicinity of the Don River East and Pomona Creek is not anticipated to impact these features. Scattered areas of York Region Woodland are located throughout Segment 2 and Project activities may be subject to limited vegetation removal. The TRCA regulated areas located south of Centre Street are generally thought to be low quality and have been largely altered by human development, coupled with limited anticipated vegetation removal impacts in these areas are anticipated to be low.

5.1.2.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around Natural Heritage Features can be found in the Natural Heritage Features section of **Table 5-47**. Many of the mitigation measures and monitoring recommended for Surface Water and Vegetation and Vegetation Communities are also applicable.

5.1.2.2 Surface Water

5.1.2.2.1 Potential Impacts

Surface water features located within Segment 2 include the East Don River and Pomona Mills Creek, as well as underground crossings of Yonge Street where flows are piped through culverts that extend beyond the Yonge Street ROW (see **Section 4.2.3.2**). As Project works in the vicinity of these watercourses is below grade, the potential for impacts to these features is low. The East Don River is located within a naturalized watershed and therefore could be increasingly sensitive to potential impacts to the surface water and riparian vegetation community. Pomona Mills Creek is located within a more urbanized landscape, which could reduce its sensitivity to temporary Project works. However, at grade works are not proposed in the vicinity of Pomona Creek.

5.1.2.2.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around surface water features (all Project segments) can be found in **Table 5-47**.

5.1.2.3 Fish and Fish Habitat

5.1.2.3.1 Potential Impacts

Fish Habitat in Segment 2 is limited to the Don River East Branch and Pomona Creek. The fish community data for these watercourses is presented in **Section 4.2.3.3**. Although not anticipated, in-water construction activities could result in negative impacts to fish and fish habitat (e.g., harmful alteration of fish habitat), and appropriate mitigation measures are to be followed to eliminate or reduce the potential impacts.

Alterations to riparian vegetation can also have a negative impact to fish and fish habitat. The Don River East Branch provides habitat for diverse species of both coldwater and warmwater fish, and Pomona Creek is classified as coldwater, making them potentially sensitive to impacts from runoff, effluents, sedimentation and alterations to riparian habitats. Notwithstanding, as Project works in the vicinity of these watercourses are primarily below grade, the potential for impacts to these features is low.

5.1.2.3.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around fish and fish habitat (all Project segments) can be found in **Table 5-47**.

5.1.2.4 Vegetation and Vegetation Communities

5.1.2.4.1 Potential Impacts

Information about vegetation and vegetation communities in Segment 2 have been identified in **Section 4.2.3.4**. No rare vegetation communities have been identified in this segment or determined to be potentially present. However, Red Pine and White Spruce were recorded in Segment 2 and are species of regional conservation concern but are likely only present due to plantings. As such, large-scale negative impacts are not anticipated. The trees located in the Section 2 Project footprint (at EEB-4, EEB-5, EEB-6, EEB-7, TPSS-4, TPSS-5 and the potential Royal Orchard Station) could still be impacted through cutting, tree/root injury, or intrusion on a tree protection zone. Other potential impacts may include damage of vegetation adjacent to construction areas as a result of accidental intrusion, introduction of invasive species, increased erosion and sedimentation, and soil contamination as a result of spills (e.g., fuel) from equipment use. Due to the disturbed nature, and generally low-quality vegetation communities that have been heavily influenced by human development located within Segment 2, impacts to vegetation is anticipated to be low.

With respect to Project activities within identified vegetation communities, the areas of vegetation removal (based on the engineering design) and removal of vegetation communities will be quantified during detailed design.

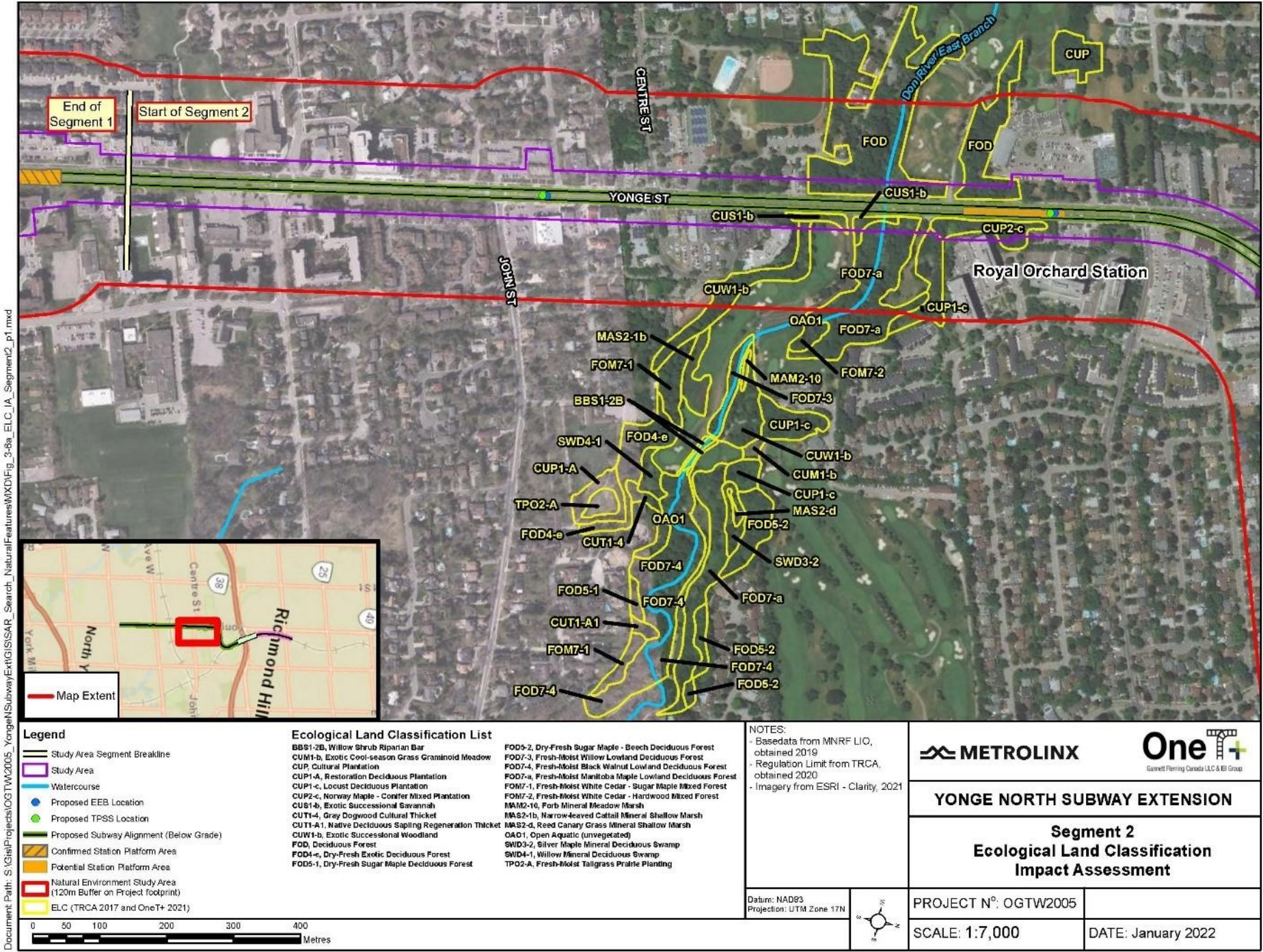


Figure 5-5 Segment 2 – Natural Environment ELC (A)

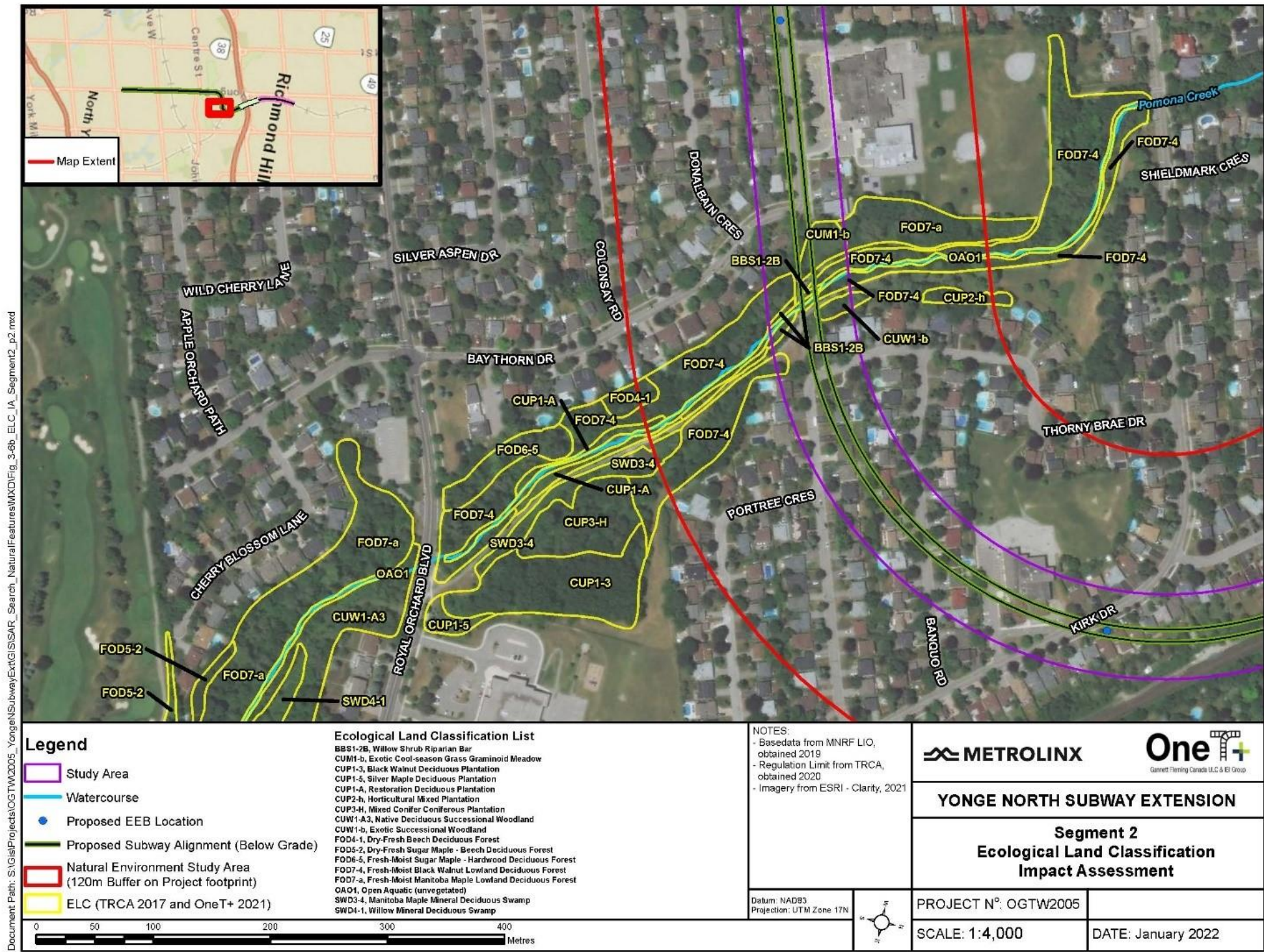


Figure 5-6 Segment 2 – Natural Environment ELC (B)

5.1.2.4.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around trees, vegetation and vegetation communities can be found in **Table 5-47**.

5.1.2.5 Wildlife and Wildlife Habitat

5.1.2.5.1 Potential Impacts

Known information about existing wildlife and wildlife habitat in Segment 2 have been identified in **Section 4.2.3.5**. No significant wildlife habitats have been identified in this area or determined to be potentially present.

Four (4) L4 species (i.e., of urban concern) Gray Catbird, Red-breasted Nuthatch, Red-eyed Vireo, Green Frog were documented in Segment 2. These species, and their nests/habitats could be present throughout Segment 2 and mitigation measures for wildlife should be followed. Mitigation measures and monitoring have been recommended below to avoid, and/or minimize impacts to the existing wildlife and wildlife habitat.

Construction activities may result in disturbance/displacement and/or mortality of wildlife, as well as wildlife habitat disturbance or removal. As above grade construction in Segment 2 is not anticipated to be extensive, no substantial impacts to wildlife and wildlife habitat are anticipated.

5.1.2.5.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around existing wildlife and wildlife habitat can be found in **Table 5-47**. If SAR wildlife and/or habitat are confirmed present during the SAR reconnaissance surveys or during future phases of the Project (i.e., detailed design or construction), the mitigation measures and monitoring recommended for Species at Risk should also be followed, as applicable.

5.1.2.6 Species at Risk

5.1.2.6.1 Potential Impacts

One (1) SAR is confirmed present and four (4) other SAR have a moderate or high potential to occur within the SAR Desktop Study Area in Segment 2, details can be found in **Section 5.1.3.6**. Potential impacts to these species are outlined below. In addition to the specific issues outlined below, the general impacts to vegetation and wildlife as discussed in the previous sections generally apply to plant and animal SAR, respectively.

- Barn Swallow records have been confirmed within this segment. This species has the potential to make use of any existing or newly created structures in and around the existing natural areas. Structures associated with the East Don River and Pomona Mills Creek watercourse crossings (bridges, culverts, etc.) could provide suitable nesting habitat. To avoid negative impacts on this species, surveys of structures constituting potentially suitable nesting habitat should be conducted and installation of exclusion measures if required, ahead of disturbance-causing activities
- Chimney Swift may nest in or on buildings in the SAR Desktop Study Area. It is not anticipated that construction activities in Segment 2 will result in modification or removal of any such buildings. This species range widely for foraging and are unlikely to be affected by construction activities beyond any impacts to nesting sites.

- SAR bats have the potential to occur in existing trees/vegetation communities. Potentially suitable bat SAR habitat is most likely to occur in the natural habitats associated with the Don River East Branch and Pomona Mills Creek watersheds and the designated York Region Woodlands. Further surveys to confirm presence of SAR bat habitat will be conducted in bat-suitable vegetation communities, subject to the requirements of the ESA.

5.1.2.6.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around SAR and SAR habitat can be found in the Species at Risk rows of **Table 5-47**.

5.1.3 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

5.1.3.1 Natural Heritage Features

5.1.3.1.1 Potential Impacts

Within Segment 3 natural heritage features, as described in **Section 4.3.5.1**, primarily occur in the areas surrounding German Mills Creek and at the extreme northern end of the Study Area (the significant woodland), but also near the Bridge Station north of the 407 ETR and within hedgerow features on the east side of the corridor. The TRCA regulated area encompasses German Mills Creek and in outlying sections further from the watercourse is thought to be low quality and largely altered by human development. Features which may be directly impacted by early works include:

- The significant woodland;
- The York Region Woodland;
- TRCA Regulated Area at German Mills Creek;
- The York Region Greenland System; and
- The City of Richmond Hill Natural Core.

Construction-related potential impacts to natural features may include damage or disturbance of vegetation communities, introduction/spread of invasive species, contamination via accidental spills (e.g., fuel), increased erosion and sedimentation.

Potential for impacts to the significant functions of the significant woodland is low. This woodlot is primarily significant due to its size, which will be minimally reduced if at all by project activities. The woodlot is already heavily disturbed and modified and indirect effects are not expected to change its ecological functions.

5.1.3.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around Natural Heritage Features can be found in **Table 5-47**.

5.1.3.2 Surface Water

5.1.3.2.1 Potential Impacts

Surface water within Segment 3 include an assumed tributary to Pomona Creek (an ephemeral drainage feature), which crosses the CN Rail ROW approximately 230 m north of High Tech Road and German Mills Creek (see **Section 4.2.4.2** for more details). At grade Project works in Segment 3 such as the German Mills Creek crossing culvert replacement have the potential to impact the watercourse. Without mitigation, in- or near-water construction activities such as use of industrial equipment may cause impacts such as increased potential for erosion and sedimentation and introduction of deleterious substances as result of accidental spills. Potential impacts should be avoided and/or minimized by implementing appropriate mitigation measures and monitoring activities.

5.1.3.2.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around surface water features can be found in **Table 5-47**.

5.1.3.3 Fish and Fish Habitat

5.1.3.3.1 Potential Impacts

Fish Habitat within Segment 3 is limited to German Mills Creek. The existing fish habitat and background information regarding the fish community within German Mills Creek is presented in **Section 4.2.4.3**. Construction near German Mills Creek involves replacement of an existing culvert (see **Figure 5-7** for an example of a typical DECAST open-bottom culvert similar to what is planned be constructed at German Mills Creek). Without mitigation, construction activities occurring near or within the watercourses and/or at the watercourse crossing could have negative impacts to fish and fish habitat, such as harmful alteration of fish habitat. Potential impacts can be avoided or reduced via implementation of appropriate mitigation measures and monitoring activities.



Figure 5-7 Typical Modular DECAST Culvert

5.1.3.3.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around fish and fish habitat can be found in **Table 5-47**. All the mitigation measures and monitoring recommended for Surface Water are also applicable.

5.1.3.4 Vegetation and Vegetation Communities

5.1.3.4.1 Potential Impacts

Information about vegetation and vegetation communities in Segment 3 have been identified in **Section 4.2.4.4**. Several locally rare plants have been recorded in Segment 3 including the SAR Butternut. Butternut is an Endangered species in Ontario and potential impacts, mitigation measures and monitoring are discussed further in **Section 5.1.3.6** of the 2009 YNSE EPR. No rare vegetation communities have been previously identified in this Segment.



Figure 5-8 Vegetation Communities within Proximity of Proposed TSF location

Project construction activities have the potential to disturb and/or destroy plants, trees and vegetation communities located throughout Segment 3 in areas where work is planned. Due to the disturbed nature, and generally low-quality vegetation communities that have been heavily influenced by human development located within Segment 3, impacts to vegetation are anticipated to be low. However, construction activities occurring within the naturalized areas associated with the proposed Bus terminal north of 407 ETR, German Mills Creek crossing, and other York Region Woodlands north of the German Mills Creek crossing have potential to disturb and/or destroy native trees and vegetation communities. Vegetation removal occurring within the German Mills Creek TRCA regulated area also has the potential to increase erosion and sediment movement during precipitation and flooding events. Mitigation measures and monitoring have been recommended to avoid, and/or minimize impacts to the vegetation and vegetation communities, refer to **Table 5-47**.

5.1.1.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around trees, vegetation and vegetation communities can be found in **Table 5-47**. Compensation and/or replanting of vegetation to compensate for tree removals will follow Metrolinx's Vegetation Guideline (2020), as amended from time to time.

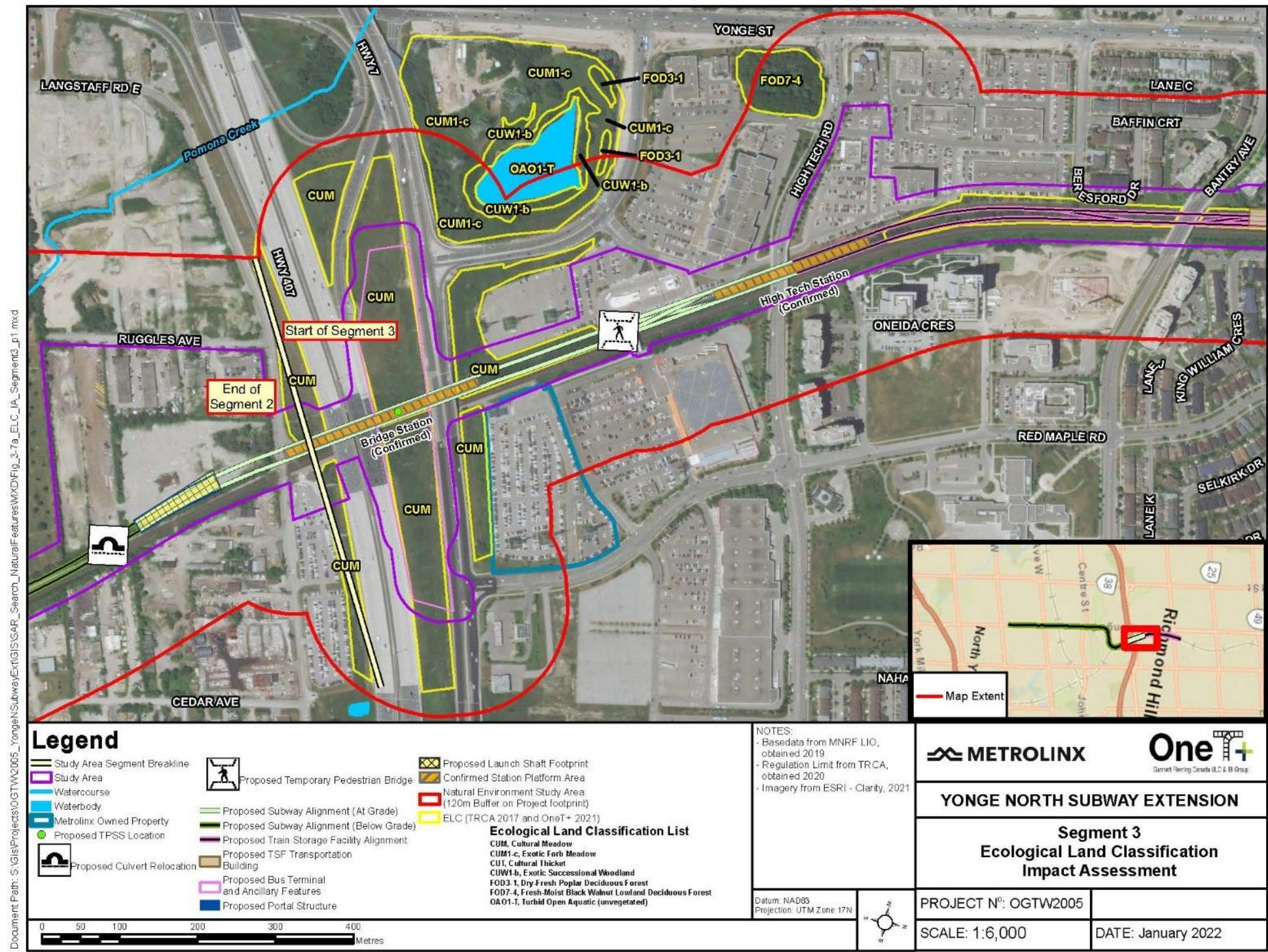


Figure 5-9 Segment 3 – Natural Environment ELC (A)

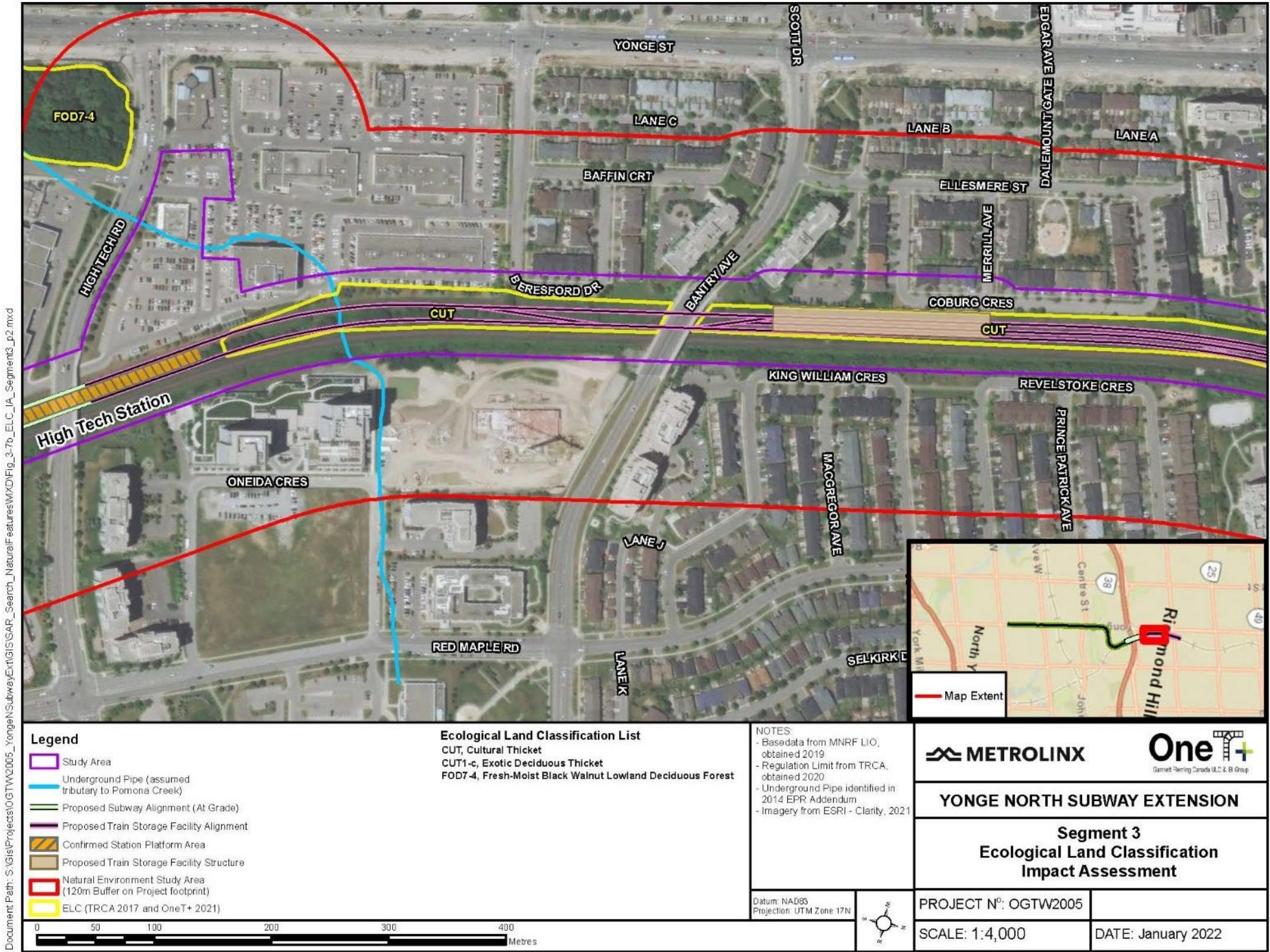


Figure 5-10 Segment 3 – Natural Environment ELC (B)

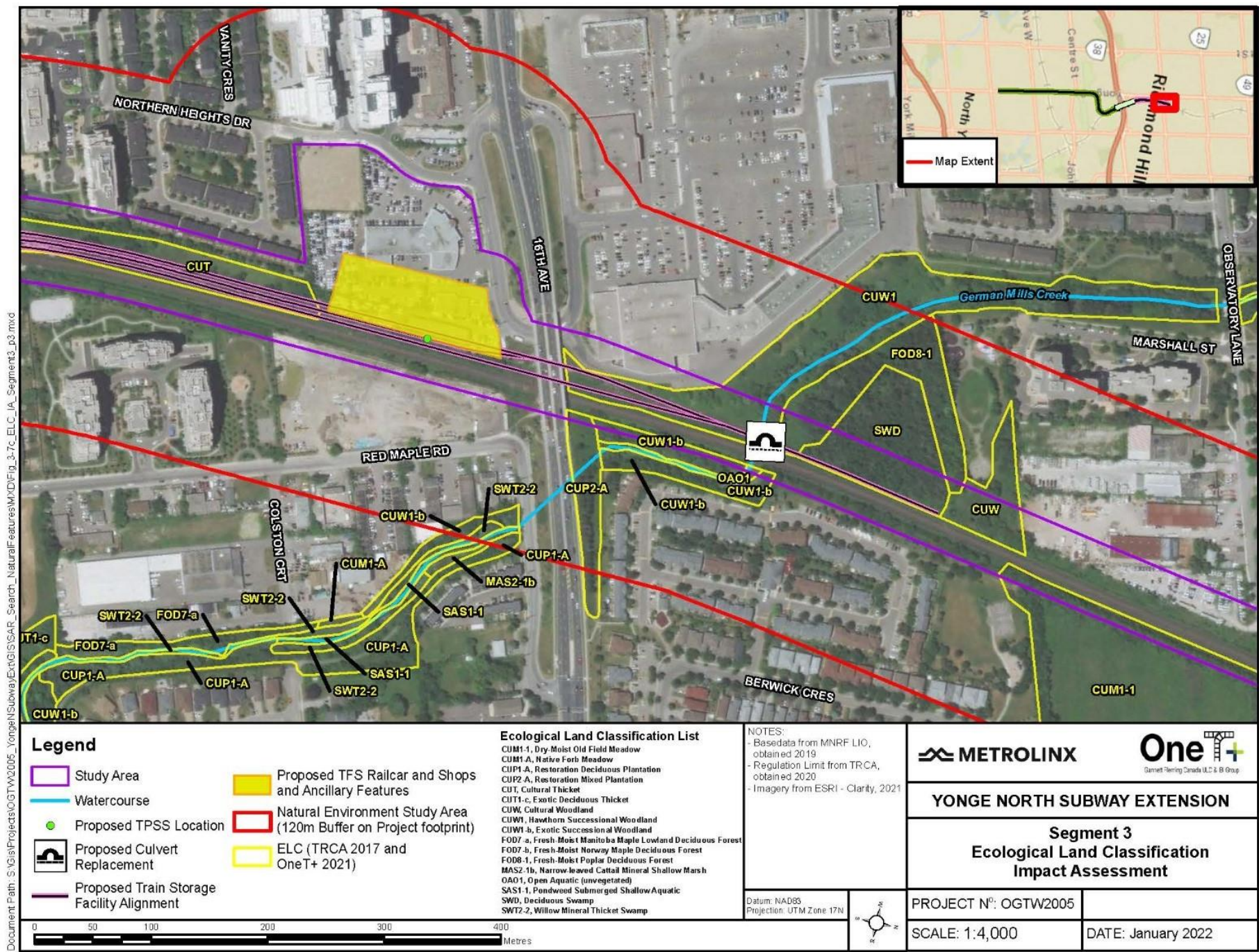


Figure 5-11 Segment 3 – Natural Environment ELC ©

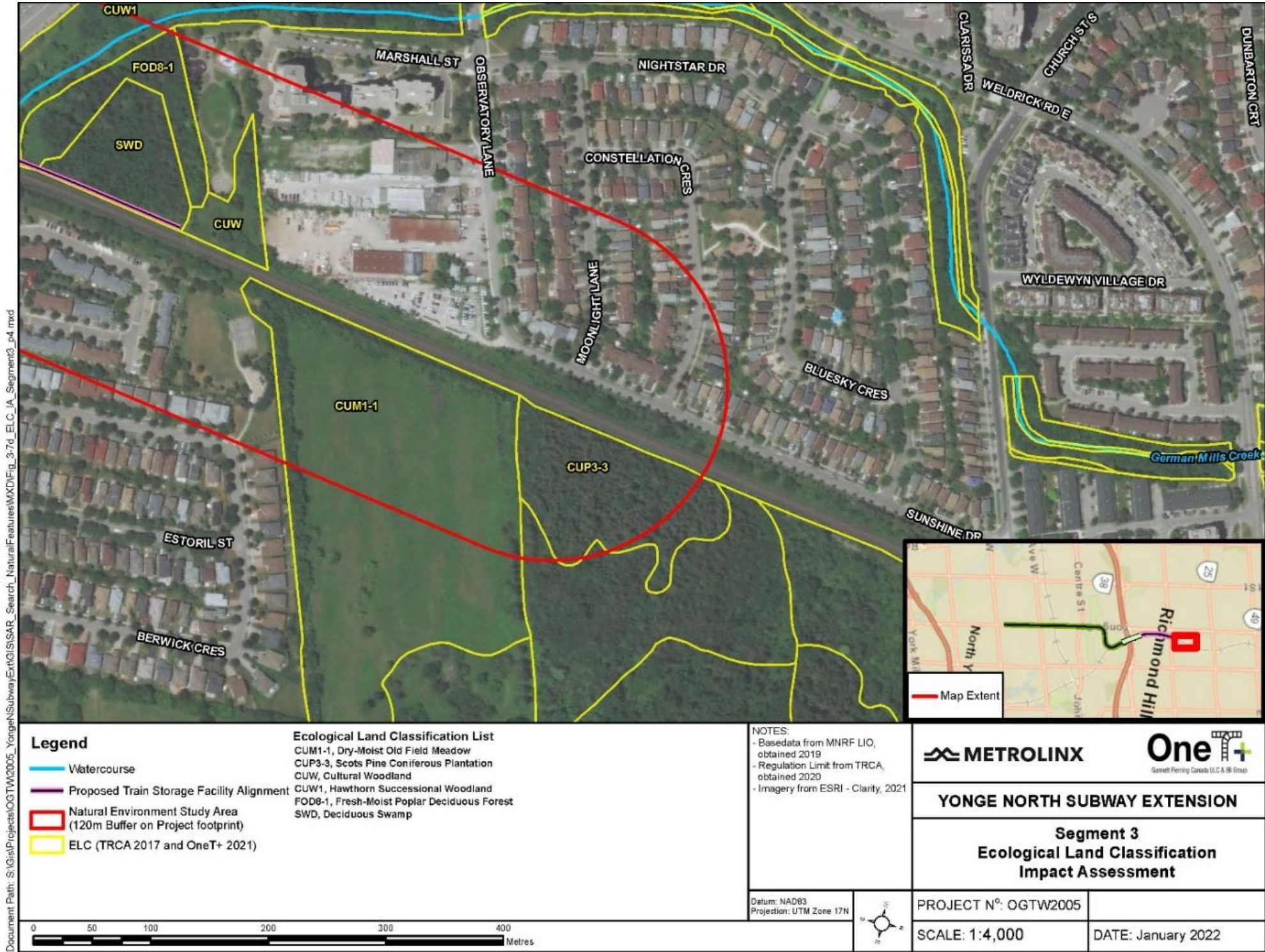


Figure 5-12 Segment 3 – Natural Environment ELC (D)

5.1.3.5 Wildlife and Wildlife Habitat

5.1.3.5.1 Potential Impacts

Known information about existing wildlife and wildlife habitat in Segment 3 have been identified in **Section 4.2.4.5**. No significant wildlife habitats have been identified in this area or determined to be potentially present. The construction of the YNSE may have impacts on general wildlife such as wildlife habitat removal or disturbance, and wildlife displacement or mortality. It is important to note that the existing wildlife and wildlife habitat associated with the Study Area are already susceptible to disturbance activities that arise from adjacent urbanized landscape. Mitigation measures will be implemented to reduce and/or avoid potential negative impacts.

5.1.3.5.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around existing wildlife and wildlife habitat can be found in **Table 5-47**. If SAR wildlife and/or habitat are confirmed present, during the SAR species-specific surveys or during future phases of the Project where such surveys are required, the mitigation measures and monitoring recommended for Species at Risk should also be followed, as applicable.

5.1.3.6 Species at Risk

5.1.3.6.1 Potential Impacts

A total of two (2) SAR are confirmed present and five (5) other SAR have a moderate or high potential to occur within the SAR Desktop Study Area in Segment 3.

- Barn Swallow was observed to be foraging in Segment 3. Barn Swallow is not known to nest in the Project footprint currently but has the potential to make use of any existing or newly created structures in and around the existing natural areas associated with the proposed bus terminal north of the 407 ETR, Bridge Station, High Tech Station, TSF and the German Mills Creek crossing. If such nests are not identified and adequately protected prior to construction activities that may impact confirmed nesting habitat, there may be negative impacts on this species. This species was observed foraging during 2021 field investigations.
- Chimney Swift may nest in or on buildings in the SAR Desktop Study Area; however, it is not anticipated that construction activities in Segment 3 will result in modification or removal of any such buildings. This species range widely for foraging and are unlikely to be affected by construction activities beyond any impacts to nesting sites;
- SAR Bats have the potential to occur in existing trees/vegetation communities. Potentially suitable SAR bat habitat is most likely to occur in the natural habitats in the vicinity of German Mills Creek, and the proposed bus terminal north of 407 ETR. Further surveys to confirm presence of SAR bat habitat will be conducted in bat-suitable vegetation communities, subject to the requirements of the ESA.
- Butternut is present within the SAR Desktop Study Area and has the potential to be present in the natural areas associated with the proposed TSF, the German Mills Creek crossing, and the proposed bus terminal north of 407 ETR. Any construction activities occurring in the vicinity of existing trees may result in the removal or damage of Butternuts. Identification of all tree species will be completed as part of arborist studies and reporting to confirm presence / absence of this species.

5.1.3.6.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for Project work around SAR and SAR habitat can be found in **Table 5-47**.

5.2 Hydrogeology/Groundwater

5.2.1 Segment 1 – Finch Station to Clark Station (Below Grade)

5.2.1.1 Hydrogeological Features

5.2.1.1.1 Potential Impacts

It is currently anticipated that construction will consist of minimal dewatering and permanent groundwater dewatering systems will not be required as this tunnel segment is not anticipated to interrupt long-term existing groundwater migration pathways. The tunnel segment is anticipated to extend below the groundwater table but will utilize tunneling methods such that minimal if any construction dewatering will be required.

The potential for groundwater impacts will be further reviewed and documented in the Groundwater Management and Dewatering/Unwatering Plan developed prior to construction.

5.2.1.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential hydrogeological, groundwater and soil impacts can be found in **Table 5-48**.

Where any groundwater is extracted, care must be taken to remove fine soil particles prior to disposal/release as well as ensuring confirmation that the disposal water meets any water quality regulatory requirements for the approved disposal location (such as local sewer systems).

5.2.1.2 Groundwater Resources

5.2.1.2.1 Potential Impacts

At this time, on-going post-construction dewatering is not anticipated, though temporary construction-related dewatering may be required.

5.2.1.2.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential hydrogeological and groundwater impacts can be found in **Table 5-48**.

At this time, ongoing dewatering is not expected.

5.2.1.3 Soil Quantity and Quality

Construction activities such as tunneling, excavation, and grading have the potential to generate excess soil. These activities can cause soil settlement and subsidence. In addition, excess soil generated may be contaminated and thus needs to be handled in accordance with applicable regulations such as Ontario Regulation 406/19.

Mitigation measures and monitoring activities associated with soil quantity and quality can be found in **Table 5-48**.

5.2.2 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

5.2.2.1 Hydrogeological Features

5.2.2.1.1 Potential Impacts

It is currently anticipated that the tunnel construction will consist of minimal dewatering and permanent groundwater dewatering systems will not be required as this tunnel segment is not anticipated to interrupt

long-term existing groundwater migration pathways. Depending on the type and depth of installation of the excavation shoring system selected for Emergency Exit Building (EEB) 4, a Permit to Take Water (PTTW) may be required for the temporary dewatering.

The tunnel segment, stations, EEBs and other deep excavations are anticipated to extend below the groundwater table. Tunneling methods and support of excavation systems will be selected to minimize construction dewatering requirements. Where groundwater is extracted, the groundwater will be treated, as required, to meet the relevant municipal sewer discharge by-laws (Toronto, Vaughan and Markham).

5.2.2.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential hydrogeological impacts can be found in **Table 5-48**.

5.2.2.2 Groundwater Resources

5.2.2.2.1 Potential Impacts

At this time, on-going dewatering is not anticipated, though temporary construction-related dewatering may be required.

5.2.2.2.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential groundwater impacts can be found in **Table 5-48**.

5.2.2.3 Soil Quantity and Quality

Construction activities such as tunneling, excavation, and grading have the potential to generate excess soil. These activities can cause soil settlement and subsidence. In addition, excess soil generated may be contaminated and thus need to be handled in accordance with applicable regulations such as Ontario Regulation 406/19.

Mitigation measures and monitoring activities associated with soil quantity and quality can be found in **Table 5-48**.

5.2.3 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

5.2.3.1 Hydrogeological Features

5.2.3.1.1 Potential Impacts

The currently available subsurface information for Segment 3 indicates that the groundwater levels are greater than 4 m below existing ground surface. As the stations and rail are at grade within Segment 3, construction dewatering is not anticipated to be required for foundation excavations. Consequently, no permanent impacts to the local groundwater table are expected.

5.2.3.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential hydrogeological impacts can be found in **Table 5-48**.

5.2.3.2 Groundwater Resources

5.2.3.2.1 Potential Impacts

Long term dewatering is not anticipated, and no significant impacts to the local groundwater resources are anticipated, as no deep excavations are required for the at-grade segment in Segment 3.

5.2.3.2.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential groundwater impacts can be found in **Table 5-48**.

5.2.3.3 Soil Quantity and Quality

Construction activities such as tunneling, excavation, and grading have the potential to generate excess soil. These activities can cause soil settlement and subsidence. In addition, excess soil generated may be contaminated and thus need to be handled in accordance with applicable regulations such as Ontario Regulation 406/19.

Mitigation measures and monitoring activities associated with soil quantity and quality can be found in **Table 5-48**.

5.3 Socio-Economic and Land Use

5.3.1 Segment 1 – Finch Station to Clark Station (Below Grade)

5.3.1.1 Finch Station, Transition Box, Extraction Shaft and EEB-1

5.3.1.1.1 Operations and Maintenance Impacts

Socio-Economic

There are two (2) parks located in the vicinity of the existing Finch Station. Olive Square is immediately adjacent to the southeast end of the station, while Finch Parkette is located further north and east. West of the station are two (2) sensitive facilities: North York Seniors Centre and Anderson College.

Maintenance of the proposed transition box structure may occur when necessary; however, these activities are short-term in nature and pose no long-term visual, noise/vibration, or traffic disturbances to sensitive facilities or recreational amenities. It should also be noted that any related operations and maintenance will occur below-grade within the tail track.

The proposed extraction shaft is a temporary Project component and will be removed once tunnelling is complete; therefore, there will be no impacts related to operations & maintenance of the extraction shaft.

EEB-1 is located between the existing Finch Station and the potential Cummer Station, in the vicinity of the proposed transition box structure and extraction shaft.

Land Use

The site of the existing Finch Station and proposed infrastructure is located in the City of Toronto's Higher Order Transit Corridor in an area designated as mixed-use, with the exception of the Finch Hydro Corridor. The area is surrounded by office employment, multi-unit residential buildings, and two bus terminals on the east side of Yonge Street, including the TTC Finch Terminal on the south side of Bishop Avenue and the YRT/VIVA and GO Bus Terminal on the north side of Bishop Avenue. Furthermore, a large residential project is currently under development on the east side of Yonge Street, adjacent to the northeast end of the proposed transition box and extraction shaft.

The existing and proposed infrastructure are located within the provincially designated North York Centre Urban Growth Centre, as per the Growth Plan (2019). This area is also within the City of Toronto's North York Centre Secondary Plan Area. The proposed infrastructure is compatible with current land uses, as its intent is to serve provincial and municipal policy objectives by enhancing the existing inter-regional transit network.

Since the site of Finch Station is currently an operating subway station within the Higher Order Transit Corridor, and is located within an Urban Growth Centre, the operations of the proposed infrastructure and the extension of the TTC Line 1 are compatible with existing uses.

It is recognized that land use over time changes as communities evolve; however, all land use is regulated through the Municipal Official Plans. As such, the operation and maintenance of Finch Station and Transition Box is anticipated to be compatible with future development of surrounding land uses.

5.3.1.1.2 Construction Impacts

Socio-Economic

Potential socio-economic effects associated with construction are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects along Yonge Street and Hendon Avenue (including traffic diversions and control), construction staging areas and visual disturbances. Metrolinx will ensure that local business and property owners are aware of construction scheduling and that staging options will be developed to minimize potential effects on local access and travel patterns to the extent possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.1.2 Cummer Station, Bus Loop, TPSS-1, and EEB-2

5.3.1.2.1 Operations and Maintenance Impacts

Socio-Economic

There is one (1) park, Centre Park, located north of the proposed station and southeast of EEB-2. Additionally, there are two (2) sensitive facilities: Unionville Academy, a private secondary school located between the proposed station footprint and the proposed off-street bus loop, and Drewry Secondary School, a specialized vocational public secondary school located west of the bus loop.

Area residents may experience visual impacts associated with the Cummer Station, bus loop, TPSS-1 and EEB-2. A Design Excellence process will be followed during detailed design to integrate new infrastructure into the existing environment and reduce the extent of visual impacts, where possible. This may be accomplished through visual screening measures such as fencing, selection of appropriate design, vegetative buffers/landscaping or the use of locally sourced building materials which are compatible with the characteristics of the surrounding environment.

In residential areas in the vicinity of the proposed infrastructure, there is the potential for nuisance effects. Maintenance of the road network surrounding Cummer Station and bus loop, as well as the stairwells, elevators, and structures associated with the station, bus loop, TPSS-1, and EEB-2 may occur when necessary. These activities are short-term in nature and pose no long-term disturbances to sensitive facilities or recreational amenities. It should also be noted that the majority of station operations and maintenance will occur below-grade and have minimal impacts at grade. Lane closures and temporary detours may be required to ensure the safety of workers. These effects are anticipated to cease once maintenance activities have finished.

Land Use

Cummer Station TPSS-1, and EEB-2 are currently located in an area designated as mixed-use, while the proposed bus loop is located on a site designated as neighbourhoods in the City of Toronto's Official Plan. Additionally, this section of Yonge Street is designated as a Higher Order Transit Corridor (as per Map 4 of the

City of Toronto's Official Plan). Therefore, land use designations in this area permit the development of transit facilities, and there are no impacts due to operations and maintenance of the proposed infrastructure.

The southern end of the proposed Cummer Station is situated within the provincially designated North York Centre Urban Growth Centre, as per the Growth Plan (2019). The proposed Cummer Station-TPSS-1, and EEB-2 are expected to support the achievement of the minimum density target by enhancing the inter-regional transit network. It also falls within the City of Toronto's North York Centre Secondary Plan Area, which extends north to Cummer/Drewry Avenue and contains area specific development policies to promote transit-based employment and residential growth.

At the southeast quadrant of Yonge Street and Cummer Avenue, a large residential project is currently under development, located directly adjacent to the southern end of the station footprint and south of TPSS-1 (see **Figure 5-13**).



Figure 5-13 View Facing East on Yonge Street, South of Cummer Avenue – Mixed-Use Development Under Construction

5.3.1.2.2 Construction Impacts

Socio-Economic

Access to businesses and existing uses along Yonge Street and Cummer Avenue/ Drewry Avenue (including Drewry Secondary School and Unionville Academy, located on either side of the proposed bus loop) may be

impacted during construction. Well-connected walkways, clearly marked detours, and alternative access and signage will be provided where required.

Potential socio-economic effects associated with construction are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects (including traffic diversions and control), construction staging areas and visual disturbances. Metrolinx will ensure that the local community is aware of construction scheduling and staging options will be developed to minimize potential effects on local access and travel patterns as much as possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.1.3 Steeles Station, Bus Terminal, TPSS-2, and EEB-3

5.3.1.3.1 Operations & Maintenance Impacts

Socio-Economic

There are no sensitive facilities located in the vicinity of the proposed infrastructure, however there is a park located northeast of the proposed station and north of EEB-3 (Sir Robert Watson-Watt Park) and Benjamin Thorne Park Parkette.

The bus terminal will be designed to provide a functional layout that supports existing uses while minimizing overall dimensions. All modified intersections and platform designs will meet current municipal and provincial accessibility standards including, but not limited to, implementation of standard details for drop curbs with tactile walking surfaces.

Maintenance of the road network surrounding Steeles Station and bus terminal, the stairwells, elevators, and structures associated with the station, TPSS-2, and EEB-3 may occur when necessary; however, these activities are short-term in nature and pose no long-term visual disturbances to sensitive facilities or recreational amenities. It should also be noted that the majority of station operations and maintenance will occur below-grade and have minimal impacts at-grade. Lane closures and temporary detours may be required to ensure the safety of workers. These effects are anticipated to cease once maintenance activities have finished.

Land Use

The proposed infrastructure (including Steeles Station and bus terminal, TPSS-2, and EEB-3) is located in an area designated as mixed use with transit facilities permitted under mixed-use land designations according to all three municipal Official Plans (City of Toronto, City of Markham, and City of Vaughan).

This area is guided by two separate secondary plans. The City of Vaughan's Yonge Steeles Corridor Secondary Plan contains policies and design guidelines to integrate transit and land uses in anticipation of the extension of the Yonge subway or another rapid transit service in this municipally designated Primary Centre. The City of Markham's Yonge Steeles Corridor Study and resulting Secondary Plan Amendment establishes policies for the Yonge Steeles Redevelopment Area, which includes the lands at the north-east quadrant of Yonge Street and Steeles Avenue. It encourages mixed use, compact development to support growth in this municipally designated Regional Corridor and Gateway Hub.

Significant mixed-use development activity is anticipated at the northwest quadrant of this intersection, which, in conjunction with enhanced transit service through the proposed infrastructure, will further support the objectives of the Yonge Steeles Corridor secondary plans. The proposed infrastructure will promote

intensification within a Regional Corridor, Key Development Area, and Primary Centre, as recognized in the City of Vaughan and City of Markham's Official Plans and is consistent with municipal land use policies.

Therefore, activities associated with operations of the proposed infrastructure are compatible with existing land uses.

5.3.1.3.2 Construction Impacts

Socio-Economic

Access to a section of the Centerpoint Mall parking lot and pedestrian access to the northeast quadrant of the Yonge Street and Steeles Avenue intersection is likely to be impacted during construction, however signage and clearly marked detours will be provided where required.



Figure 5-14 View Facing Southwest from the Intersection of
Yonge Street and Steeles Avenue – *Centerpoint Mall*

Potential socio-economic effects associated with construction are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects (including traffic diversions and control), construction staging areas and visual disturbances. Metrolinx will ensure that the local community and businesses are aware of construction scheduling and staging options that will be developed to minimize potential effects on local access and travel patterns as much as possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.1.4 Clark Station, Bus Terminal and TPSS-3**5.3.1.4.1 Operations & Maintenance Impacts****Socio-Economic**

There are no parks or sensitive facilities located within 250 m of the proposed Clark Station footprint and TPSS.

Maintenance of the road network surrounding Clark Station, stairwells, elevators, and structures associated with the station and TPSS-3 may occur when necessary; however, these activities are short-term in nature and pose no long-term visual disturbances to sensitive facilities or recreational amenities. It should also be noted that the majority of station operations and maintenance will occur below-grade and have minimal impacts at-grade. Lane closures and temporary detours may be required to ensure the safety of workers.

Land Use

Both the City of Vaughan and the City of Markham designate this area as mixed-use, a designation which encourages a variety of land uses and the permitted land uses include transit facilities in the Official Plans of both municipalities. The subject site is also situated within the northern portion of the Yonge Steeles Corridor secondary plan jurisdiction.

The proposed infrastructure is anticipated to have no adverse impacts on current land uses, and will contribute to municipal policy objectives by integrating transit and surrounding land uses and promoting intensification within a Regional Corridor, Key Development Area, and Primary Centre, as recognized in the City of Vaughan and City of Markham's Official Plans.

5.3.1.4.2 Construction Impacts**Socio-Economic**

Pedestrian access in close proximity to the Clark Avenue/ Yonge Street intersection and future project construction activities in this area may be impacted during construction due to the proposed construction activities here, however signage and clearly marked detours will be provided where required.

A cycling route traverses Clark Avenue and passes through the proposed station area, which may result in impacts to cycling route connectivity, particularly in relation to the above-grade station components construction. To address this, Metrolinx will provide well connected, clearly delineated, and appropriately signed walkways and cycling route options, with clearly marked detours where required. Additionally, at locations where construction vehicles are present, flagging will be implemented to ensure construction vehicle operators are aware of crossing cyclists and pedestrians.

Potential socio-economic effects associated with construction are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects (including traffic diversions and control), construction staging areas and visual disturbances. Metrolinx will ensure that local business and property owners are aware of construction scheduling and staging options will be developed to minimize potential effects on local access and travel patterns as much as possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.2 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

5.3.2.1 TPSS-4, and EEB-4

5.3.2.1.1 Operations & Maintenance Impacts

Socio-Economic

There are no parks/open spaces/ recreation areas or sensitive facilities located within 250m of the proposed EEB-4 and TPSS-4. Thornhill Park and Tennis Club, the Thornhill Club (private golf club), and Riverside Park on the west side of Yonge Street and the Ladies' Golf Club of Toronto and Cricklewood Park to the east are all located further north, towards Royal Orchard Station. Three (3) sensitive facilities are located in the general area between Clark Station and Royal Orchard Station, including Thornhill Public School (south of EEB-4 and TPSS-4), Thornhill Village Library, and Inventive Minds Kidz Academy childcare centre (northeast of EEB-4 and TPSS-4). Finally, cycling routes connect with Yonge Street from Arnold Avenue on the west and John Street on the east, located south of the proposed ancillary facilities.

Maintenance of the stairwells, elevators, and structures associated with PSS-4, and EEB-4 may occur when necessary; however, these activities are short-term in nature and pose no long-term disturbances to sensitive facilities or recreational amenities. It should also be noted that the majority of EEBs operations and maintenance will occur below-grade and have minimal impacts at-grade. Lane closures and temporary detours may be required to ensure the safety of workers.

Land Use

The proposed EEB-4 and TPSS-4 are located in the City of Vaughan in an area designated as mixed use ('low-rise mixed use' in the City of Vaughan's Official Plan). They are also located within the Vaughan Thornhill Heritage Conservation District, which contains a mix of commercial, residential, and recreational uses.

As part of detailed design, efforts will be made to minimize visual impacts where possible. Finally, these Project components are located within the TRCA Regulated Limit. Refer to the Natural Environment Impact Assessment Report contained in the current EPR Addendum for further details and proposed mitigation measures.

It is recognized that land use changes over time as communities evolve; however, all land use is regulated through the Municipal Official Plans. The operation and maintenance of TPSS-4 and EEB-4 is anticipated to be compatible with future development of surrounding land uses.

5.3.2.1.2 Construction Impacts

Socio-Economic

Potential socio-economic effects associated with construction are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects (including traffic diversions and control), construction staging areas and visual disturbances. Metrolinx will ensure that local business and property owners are aware of construction scheduling and staging options will be developed to minimize potential effects on local access and travel patterns as much as possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.2.2 Royal Orchard Station, TPSS-5, EEB-5, EEB-6 and EEB-7

5.3.2.2.1 Operations & Maintenance Impacts

Socio-Economic

There is one (1) park located northwest of the proposed EEB-7, Riverside Park. Additionally, there are four (4) sensitive uses located within the vicinity of the proposed infrastructure - Baythorn Public School, located northeast of the proposed Royal Orchard station, St. Anthony Catholic School, located just southwest of EEB-7, and Thornhill Baptist Church and Cemetery, located northwest of Royal Orchard Station.

Maintenance of the road network surrounding Royal Orchard Station, stairwells, elevators, and structures associated with the station, TPSS-5, EEB-5, EEB-6 and EEB-7 may occur when necessary; however, these activities are short-term in nature and pose no long-term disturbances to sensitive facilities or recreational amenities. It should also be noted that the majority of station operations and maintenance will occur below-grade and have minimal impacts at-grade. Lane closures and temporary detours may be required to ensure the safety of workers. These effects are anticipated to cease once maintenance activities have finished.

Land Use

The proposed Royal Orchard Station, TPSS-5 and EEB-5 are located in the City of Markham's Yonge North Regional Corridor and Intensification Area, intended to provide for mixed use higher density development served by rapid transit. This area is designated both as mixed-use heritage main street and residential high rise, with both designations supporting transit uses.

The City of Markham designates the land on which the proposed EEB-6 and EEB-7 are situated as residential low-rise. Markham's Official Plan provides for municipal transportation facilities as a land use in all designations (except greenways unless specifically stipulated) and promotes transit-oriented development in low-rise residential areas. Additionally, these Project components will primarily operate below-grade and provide passenger safety facilities to support the functions of the YNSE. Therefore, no adverse impacts are anticipated as a result of the proposed infrastructure.

The proposed Royal Orchard Station is located partially within the TRCA Regulated Limit, outside of the floodline, in an urban river valley that surrounds the East Don River, as shown in **Figure 5-15** below. Refer to the Natural Environment Impact Assessment Report contained in the current EPR Addendum for further details.

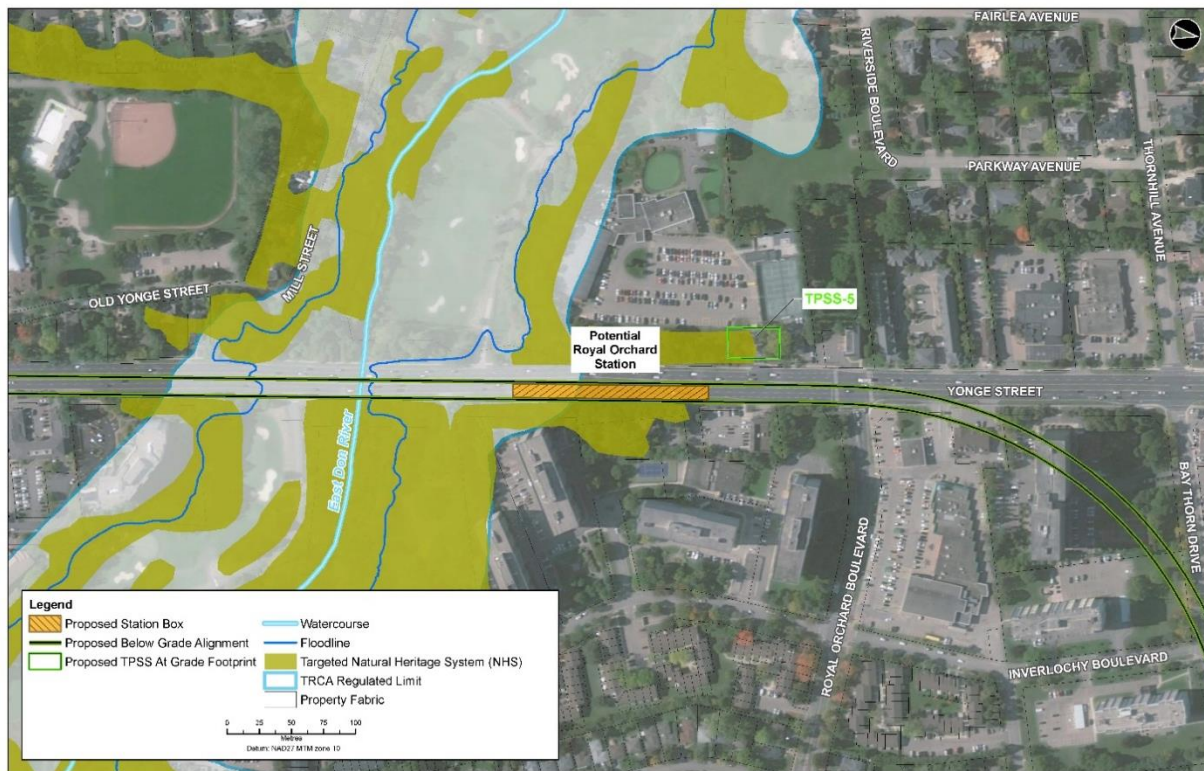


Figure 5-15 Proposed Royal Orchard Station and Ancillary Features and TRCA Regulated Area

It is recognized that land use changes over time as communities evolve; however, all land use is regulated through the Municipal Official Plans. The operation and maintenance of Royal Orchard Station, TPSS-5, EEB-5, EEB-6 and EEB-7 is anticipated to be compatible with future development of surrounding land uses.

5.3.2.2.2 Construction Impacts

Socio-Economic

To mitigate potential construction impacts, access to nearby land uses will be maintained to the extent possible, and potentially affected residents and business owners will be notified of construction activities, and a communications plan will be in place to facilitate inquiries and ensure timely resolution of complaints. Signage and clearly marked detours will be provided where required. Regarding visual impacts, a screened enclosure for the development site will be provided, with particular attention to the waste disposal and material storage areas and consideration will be given to providing temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows, and where necessary.

Potential socio-economic effects associated with construction are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects (including traffic diversions and control), construction staging areas and visual disturbances. Metrolinx will ensure that local business and property owners are aware of construction scheduling and that staging options will be developed to minimize potential effects on local access and travel patterns to the extent possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.2.3 Portal and Launch Shaft

5.3.2.3.1 Operations & Maintenance Impacts

Socio-Economic

There are no parks/recreation areas located within 150 m of the proposed infrastructure, however one (1) sensitive use, the Holy Cross Catholic Cemetery, is located just southwest of the portal/launch shaft footprint, extending east to the CN Corridor. The location of the portal/ launch shaft has purposely been situated north of the cemetery lands to avoid encroachment.

Maintenance of the tunnel portal may occur when necessary; however, these activities are short-term in nature and pose no long-term impacts on sensitive facilities or recreational amenities. These effects are anticipated to cease once maintenance activities have finished.

The proposed launch shaft is a temporary Project component and will be removed once tunnelling is complete; therefore, no impacts during the operations and maintenance phase are anticipated for the launch shaft.

Land Use

The proposed portal and launch shaft are located in the City of Markham on a site with three (3) separate land use designations, as shown in **Figure 5-16**: mixed-use to the north, utilities/ transportation to the east, and medium to high density residential to the south. Transit uses are permitted under all three of these designations.

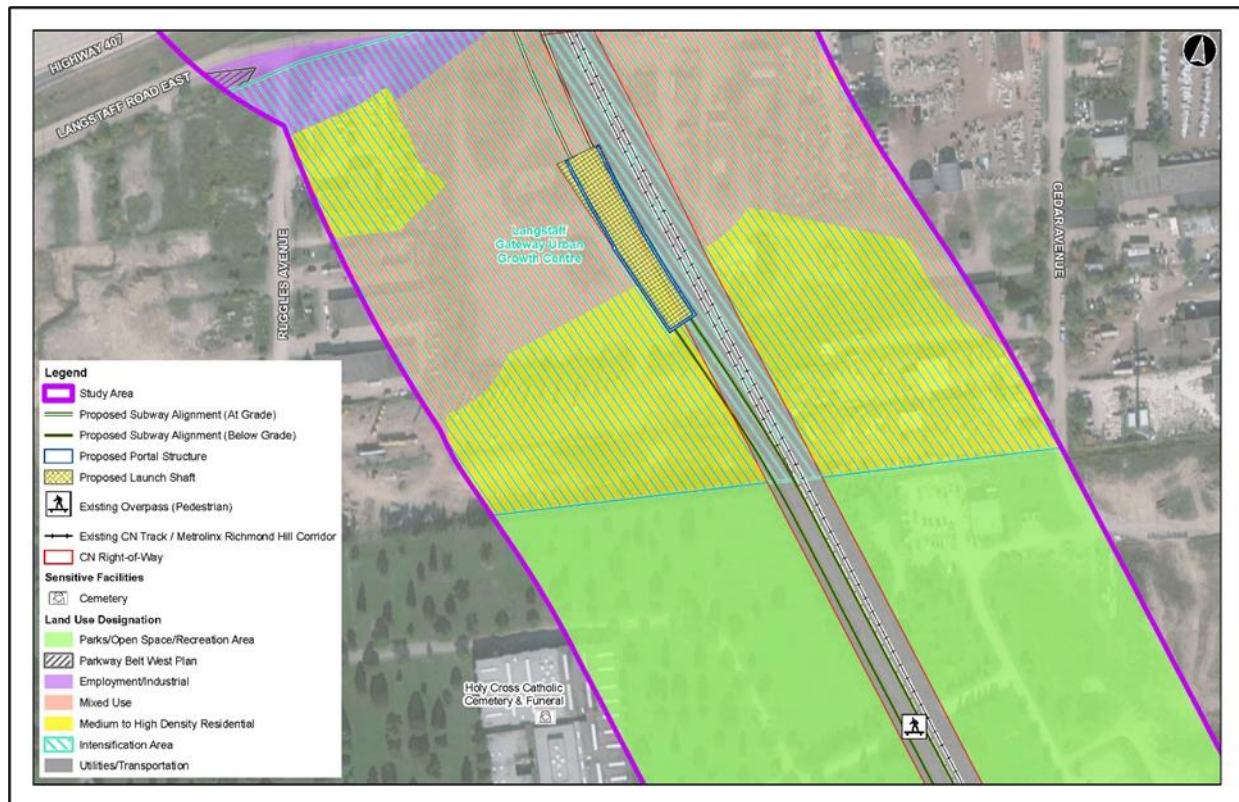


Figure 5-16 Proposed Portal/ Launch Shaft Footprint with Land Use Designations Overlaid

The subject site is located within the provincially designated Richmond Hill Centre/ Langstaff Gateway Urban Growth Centre as per the Growth Plan (2019). Urban Growth Centres are planned focal areas for regional service facilities, intended to serve as high density employment areas that are supported by an inter-regional transit network. The Richmond Hill Centre/ Langstaff Gateway Urban Growth Centre is planned to achieve a minimum density target of 400 residents and jobs combined per hectare by 2031. This area is also within the City of Markham's Langstaff Gateway Secondary Plan Area, which provides for a compact, complete, and high-density regional centre that will serve as a portion of the Urban Growth Centre.

5.3.2.3.2 Construction Impacts

Socio-Economic

Through the design process, it was determined that in order to avoid encroachment onto the lands of the Holy Cross Cemetery, the existing CN tracks would require temporary diversion to the east to prepare the land within the existing CN corridor to accommodate for the proposed tunnels. Once these preparatory works are complete, the CN tracks will be reinstated to their permanent location and tunnelling will proceed. This work is not anticipated to impact sensitive facilities, parks, or recreational amenities. There may be temporary disruptions to CN/GO rail service along the existing CN Bala corridor, and consultation is underway to establish a suitable mitigation strategy and ensure that the public is notified in advance of any potential service disruptions. Additionally, a temporary barrier structure is proposed during construction to separate the boundaries of the Project work site from the temporarily diverted CN track.

To mitigate construction impacts, a screened enclosure for the development site will be provided, with particular attention to the waste disposal and material storage areas. Additionally, consideration will be given to providing temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows, and where necessary. Mitigation measures related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration Impact Assessment reports contained in the current EPR Addendum.

These impacts are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects (including traffic diversions and control), temporary disruptions to CN/GO rail service (as noted above), construction staging areas and visual disturbances. Metrolinx will ensure that local business and property owners are aware of construction scheduling and staging options will be developed to minimize potential effects on local access and travel patterns as much as possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.3 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

5.3.3.1 Bridge Station, Bus Terminal, and TPSS-6

5.3.3.1.1 Operations and Maintenance Impacts

Socio-Economic

There are no parks or sensitive features located within 250 m of the proposed infrastructure or 150 m of this section of segment 3. A shared roadway bike lane along Langstaff Road terminates at the CN right-of-way, near the south end of the proposed station footprint, while a paved shoulder cycling route crosses the north end of the proposed station along Highway 7 via an existing overhead road overpass and adjoins with shared roadway cycling routes along Red Maple Road and High Tech Road.

A multi use trail (MUT) is planned by the City of Richmond Hill to extend from just south of Langstaff Road to 16th Avenue along the west side of the existing CN right-of-way and proposed at-grade alignment. The MUT overlaps with the footprint of the proposed Bridge Station and bus terminal and the location and Metrolinx will work with the City of Richmond Hill to accommodate for the proposed infrastructure (**Figure 5-17**).

Metrolinx will engage in ongoing consultation with the City of Richmond Hill to confirm the location of the MUT, find integrated solutions to accommodate the proposed development and planned uses of the site, and identify appropriate site-specific mitigation measures as required.

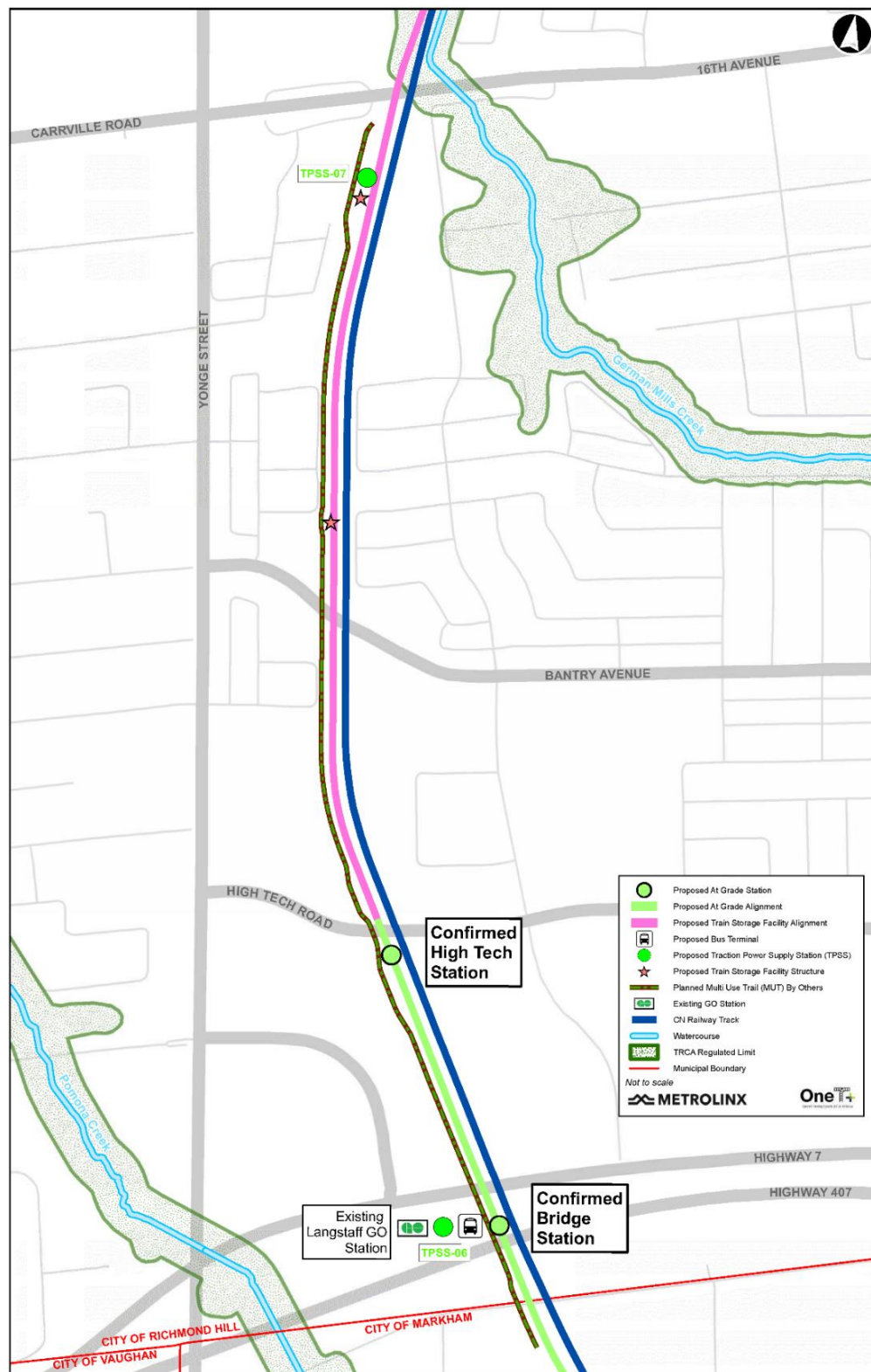


Figure 5-17 City of Richmond Hill Planned Multi-Use Trail

Maintenance of the proposed at-grade and below-grade components of Bridge Station, bus terminal, and TPSS-6, stairwells, elevators, and structures associated with these Project components may occur when necessary; however, these activities are short-term in nature and pose no long-term disturbances. Additionally, there are no sensitive facilities or recreational amenities within 250 m of the proposed infrastructure. Lane closures and temporary detours may be required to ensure the safety of workers.

Land Use

The site of the proposed Bridge Station, bus terminal, and TPSS-6, located in the City of Richmond Hill, is designated as Parkway Belt West Plan (on the southern half of the site) and utility corridor (on the northern half) in the Official Plan. According to the City of Richmond's Official Plan, the Parkway Belt West Plan and designation protects land along Highway 7 and 407 ETR for a variety of uses including large infrastructure corridors. The Official Plan utility corridor designation permits electrical transformer and distribution systems, transportation utilities, parking and related facilities.

The subject site is located within the provincially designated Richmond Hill Centre/ Langstaff Gateway Urban Growth Centre as per the Growth Plan (2019). The proposed Bridge Station, bus terminal, and TPSS-6 are anticipated to have no adverse impacts on current land uses and are aligned with provincial policy objectives.

5.3.3.1.2 Construction Impacts

Socio-Economic

The existing GO Langstaff Station is located on the east side of the CN corridor on the north end of the proposed Bridge Station footprint, spanning underneath both Highway 7 and Highway 407 ETR and connecting with the Richmond Hill Centre Terminal (RHCT) VIVA/YRT/GO Bus Station by way of a pedestrian bridge. There is an existing passenger pick-up and drop-off (PPUDO) area at the southeast corner of the platform connecting to Langstaff Road East and GO parking lots to service the station, one on each side of the highways. There are also two existing overhead road overpasses located within the proposed station footprint. Impacts including transit access disruptions and road modifications are anticipated during construction of the proposed Bridge bus terminal, which will be centred above Bridge Station between Highway 7 and Highway 407 ETR.

Potential socio-economic effects associated with construction are anticipated to be temporary and related to noise/vibration, air quality, temporary traffic effects (including traffic diversions and control), construction staging areas and visual disturbances. Metrolinx will ensure that local business and property owners are aware of construction scheduling and staging options will be developed to minimize potential effects on local access and travel patterns as much as possible. These effects are anticipated to cease once construction has finished.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.3.2 High Tech Station

Socio-Economic

5.3.3.2.1 Operations and Maintenance Impacts

Socio-Economic

The City of Richmond Hill is currently planning for a MUT, which will extend along the west side of the proposed alignment and station. This area currently consists of greenspace separating the CN corridor from Richmond Hill Centre Terminal (RHCT), commercial plazas, government offices, and low-density residential areas further north. Additionally, the proposed MUT overlaps with the south end of the proposed at grade

station footprint. Metrolinx will engage in ongoing consultation with the City of Richmond Hill to confirm the location of the proposed MUT, find integrated solutions to accommodate the proposed development and planned uses of the site, and identify appropriate site-specific mitigation measures as required.

Maintenance of the proposed at-grade High Tech Station, stairwells, elevators, and structures associated with the station may occur when necessary; however, these activities are short-term in nature and pose no long-term disturbances. Additionally, there are no sensitive facilities within 250 m of the proposed infrastructure, and no impacts on the nearby parkettes are anticipated. Lane closures and temporary detours may be required to ensure the safety of workers. These effects are anticipated to cease once maintenance activities have finished.

Land Use

The subject site is located in the City of Richmond Hill in an area designated as Richmond Hill Centre and is surrounded by RHCT (a VIVA, YRT, and GO bus terminal), commercial plazas, and government offices. The Richmond Hill Centre designation is intended to support the development of a mixed-use, compact urban centre supported by a high-quality public realm, walkable streets and transit-oriented development, as per Chapter 4, Section 4.2 of the City of Richmond Hill's Official Plan.

The subject site is also located within the provincially designated Richmond Hill Centre/ Langstaff Gateway Urban Growth Centre, which extends to just north of Bantry Avenue, as per the Growth Plan (2019).

5.3.3.2.2 Construction Impacts

Socio-Economic

A potential demolition is planned for an existing pedestrian bridge, located just south of the High Tech Station footprint and connects the Langstaff GO Station with RHCT. This demolition will occur as late as possible during the construction phase to minimize impacts to pedestrians and transit-users, and a new pedestrian bridge will be integrated with the southern end of the proposed station to replace the existing bridge.

During construction of the proposed High Tech Station, local road closures may be required on either side of High Tech Road. A shared roadway bike lane traverses High Tech Road and passes through the proposed station footprint via an existing overhead road overpass, connecting with another shared roadway cycling route approximately 125 m east of the station at Red Maple Road. Additionally, a bike lane crosses the proposed alignment along an existing overhead road overpass at Bantry Avenue. To address potential impacts to cyclists, Metrolinx will provide well connected, clearly delineated, and appropriately signed walkways and cycling route options, with clearly marked detours where required. Additionally, at locations where construction vehicles are present, flagging can be implemented to ensure construction vehicle operators are aware of crossing cyclists.

Finally, there may be nuisance and/or visual impacts experienced by residents north of Bantry Avenue during construction of the at-grade alignment.

Potential socio-economic effects associated with construction are anticipated to be temporary.



Figure 5-18 Richmond Hill Centre Station and Pedestrian Bridge Connecting with Langstaff GO Station

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.3.3.3 Train Storage Facility and TPSS-7

5.3.3.3.1 Operations and Maintenance Impacts

Socio-Economic

Railway Parkette, Junction Parkette, and Red Maple Parkette are located east of the proposed TSF tracks, while Grace Lawrence Parkette is to the west. No sensitive facilities are located within 150 m of the proposed infrastructure. The City of Richmond Hill is currently planning for a MUT which would extend directly through the proposed TSF and TPSS-7. This area currently consists of greenspace separating the CN corridor from an auto dealership and parts store, as well as an auto collision centre. Metrolinx will consult with the City of Richmond Hill to find integrated solutions to accommodate the proposed infrastructure and planned uses of the site.

There is potential for the proposed at grade TSF tracks to interface with the TRCA regulated limit near 16th Avenue, which surrounds German Mills Creek and pedestrian trails that meander along sections of the watercourse. Refer to the Natural Environment Impact Assessment Report contained in the current EPR Addendum for further details.

Light maintenance of train cars including cleaning is proposed at this site. Additionally, maintenance of the stairwells, elevators, and structures associated with the TSF structures and TPSS-7 may occur when necessary. To address this, Metrolinx will mitigate noise and vibration impacts, as outlined in the Noise and Vibration Impact Assessment Reports contained in the current EPR Addendum. Additionally, Metrolinx will

address potential light pollution by adhering to Ministry of Transportation practices for lighting in areas near or adjacent to highways and roadways.

Land Use

The proposed TSF parking and access area and TPSS-7 are located in a designated Key Development Area (KDA). According to the City of Richmond Hill's Official Plan, KDAs are intensification areas where public rapid transit services intersect with major nodes of retail and commercial development activity. Transit uses are permitted within this land use designation.

The proposed hostler platform is located in a low-density residential area (designated neighbourhood by the City of Richmond Hill). Transit facilities are not typically permitted within this land use designation; however, the proposed hostler platform is located within or directly adjacent to the existing CN corridor. Therefore, the proposed holster platform will have no adverse impacts on existing land use.

North of the proposed TSF parking & access area, a commercial plaza is located on the north side of 16th Avenue, while a car dealership and automotive uses are located on the south side of 16th Avenue. Low-density residential neighbourhoods and the greenway system surround the proposed TSF tracks, which are situated completely within the existing CN corridor, therefore avoiding encroachment and any related impacts.

The Yonge and Carrville/16th Avenue KDA is envisioned as a sub-centre for mixed-use high density development due to its proximity to public rapid transit on Yonge Street and the opportunity to intensify underutilized lands in the area. A Secondary Plan is also currently under development for this area. Metrolinx will consult with the City of Richmond Hill to remain informed of the Secondary Plan as it is developed.

5.3.3.3.2 Construction Impacts

Socio-Economic

Construction-related nuisance and/or visual impacts may be experienced on either side of the existing CN corridor during construction of the at-grade TSF track. A screened enclosure for the construction site will be provided, with particular attention to the waste disposal and material storage areas, and Metrolinx will develop Communications and Complaints protocols to keep property owners and tenants informed of upcoming construction works.

Potential socio-economic effects associated with construction are anticipated to be temporary.

Land Use

Please refer to the land use discussion above for a discussion of potential land use impacts.

5.4 Archaeological Resources

5.4.1 Stage 1 Property Inspection

A Stage 1 property inspection was undertaken on 05 May 2021, 31 May 2021, 04 June 2021, and 21 June 2021 and Chelsea Dickinson (R1194) on 15 November 2021. The property inspection confirmed archaeological site potential and determined the degree to which development and landscape alteration have affected that potential. It included a walk-through of the entire Study Area. The property inspection was thoroughly photo-documented. Field observations were recorded on aerial maps and field forms. The lands for the Stage 1 property inspection were determined on the basis of the data gap analysis described in **Section 4.5.1** and reflected the results of queries made to both the Ontario Archaeological Sites Database and the Ontario Public Register of Archaeological Reports.

5.4.2 Results

Based on the Stage 1 property inspection and background research it was determined that archaeological potential has been removed within 77.70 ha (85%) of the Study Area. These areas, identified as disturbed, have had the integrity of the topsoil compromised by earth moving activities to the point where archaeological potential has been removed. These areas include road and railway ROWs, buildings/buildings with basements, parking lots and/or utility corridors. The remainder of the Study Area retains general archaeological potential. These results of archaeological potential within the YNSE Study Area are shown visually in **Figure 5-17**, and **Appendix D, Figure 8**. Note these findings have informed the subsequent Stage 1 analysis described below. Please refer to **Section 5.4.3** below for ultimate conclusions of the Stage 1 archaeological assessment conducted in support of the Project.



Figure 5-19 Archaeological Potential Within the YNSE Study Area

5.4.2.1 Documentary Record

The inventory of documentary records accumulated as part of this assessment is provided in **Table 5-2**.

Table 5-2 Archaeological Inventory of Documentary Record

Study Area	Map and Photo(s)	Field Notes
Part of Lots 26-30; 31-32 Concession I West of Yonge Street Township of Vaughan, Lots 26-30; 32-42 Concession I East of Yonge Street Township of Markham, Lots 20-25 Concession I West and West of Yonge Street Township of York, York County	Copies of 6 historical maps, 107 Stage 1 photographs and 6 aerial photographs	Stage 1 photo logs and field notes

5.4.3 Stage 1 Analysis and Conclusions

The Stage 1 background study indicated that portions of the Study Area has general archaeological potential and warrants Stage 2 property assessment for the following reasons:

- Natural water sources which transect portions of the Study Area, including Wilket Creek and two additional tributaries of the Don River,
- The Study Area is located within 100 m of historical roadways, including Yonge Street, and within 300 m of numerous noted historic features including historical settlements/structures, and cemeteries,
- Portions of the Study Area, located within the City of Toronto's Archaeological Management Plan, are identified as having archaeological potential,
- Portions of the Study Area, located within the Region of York's Archaeological Master Plan, are identified as having archaeological potential and,
- The presence of 22 sites located within a 1 km radius of the Study Area, seven of which are located within 250 m of the Study Area.

The Stage 1 archaeological assessment determined that of the 91.17 ha Study Area

- 77.70 ha (85%) of the Study Area is disturbed and does not require Stage 2 archaeological assessment,
- 12.1 ha (13%) of the Study Area has been previously assessed and requires no further archaeological assessment and,
- 1.39 ha (2%) of the Study Area retains archaeological potential and warrants Stage 2 archaeological assessment. This includes 0.4 ha (29%) from Segment 1 and 0.99 ha (71%) from Segment 2. No further AA is recommended for Segment 3.

Areas that retain archaeological potential include a section of Hendon Park north of the corner of Hendon Avenue and Greenview Avenue within Segment 1, a lawn parking lot located at the southeast corner of Yonge Street and Newton Drive within Segment 1, sections of manicured lawns associated with residential properties south of Steeles Avenue East and east of Yonge Street within Segment 1, sections of manicured lawn at 7994 and 8000 Yonge Street associated with the proposed Royal Orchard Station and TPSS-5 within Segment 2, and the section of Royal Orchard Park between Bay Thorn Drive and Thorny Brae Drive within Segment 2.

There are two cemeteries located in close proximity to the Study Area worth considering in relation to the YNSE Project: 1) Holy Cross Catholic Cemetery located at 8361 Yonge Street and 2) Holy Trinity Anglican Cemetery/Holy Trinity Burying Grounds, located at 8004 Yonge Street.

The Holy Cross Cemetery was opened in 1954 in Thornhill to meet the demands of the Catholic population in the area. The cemetery has an eastern extension located at 211 Langstaff Road East, separated from the original cemetery by the CN corridor. The CN rail corridor is separated from both sides of the cemetery by deep ditching. The western half of the Holy Cross Cemetery is also immediately adjacent to 5 Ruggles Avenue. 5 Ruggles Avenue has been previously subject to significant grading below topsoil, and has been previously assessed and found to not retain archaeological potential (This Land Archaeology Inc. 2018). The late date of the creation of the Holy Cross Cemetery, the deep ditching adjacent to the cemetery on both sides of the CN corridor, the subgrade soil removal from 5 Ruggles Avenue on the cemetery's northern boundary as well as the previous archaeological assessment that cleared the 5 Ruggles Avenue property of archaeological potential, all indicate that there is no reasonable potential for human burials to be located beyond the cemetery boundaries. There is no requirement for a Stage 3 Cemetery Investigation to confirm the cemetery boundaries within either the CN corridor or the 5 Ruggles Avenue property adjacent to the Holy Cross Cemetery.

The Holy Trinity Anglican Cemetery (also known as the Holy Trinity Burying Ground) was begun in the early 1800s with the earliest recorded headstone dating to 1804. The cemetery has considerable archaeological potential and any ground disturbing activity occurring within 10 m of the current cemetery boundary must be preceded by a Stage 3 Cemetery Investigation to confirm that there are no human remains located within that section of land. A portion of the 10 m buffer to the south of the Holy Trinity Cemetery within the Thornhill Golf and Country Club property at 7994 Yonge Street has previously been subject to full archaeological mitigation and does not require additional AA (This Land Archaeology Inc. 2015, 2016). The Study Area is not within 10 m of the Holy Trinity Cemetery boundary so currently no archaeological work is required due to the proximity of the Study Area to the Holy Trinity Cemetery. However, should the Study Area change such that it is located within a portion of a 10 m buffer around the Holy Trinity Cemetery that has not previously been subject to AA, a Stage 3 Cemetery Investigation will be required within that portion of the Study Area.

In light of the findings of the Stage 1 archaeological assessment of the YNSE Archaeology Study Area, the following future work commitments apply, subject to the conditions outlined below:

1. Approximately 77.70 ha (85%) of the Study Area has low archaeological potential due to disturbance and requires no further archaeological assessment, as indicated in **Appendix D, Figure 9A-M**.
2. Approximately 12.1 ha (13%) of the Study Area has been previously assessed and requires no further archaeological assessment as indicated in **Appendix D, Figure 9A-M**.
3. Approximately 1.39 ha (2%) of the Study Area retains archaeological potential, as indicated on **Appendix D, Figure 9A-M**. This includes 0.4 ha (29%) from Segment 1 and 0.99 ha (71%) from Segment 2 and must be subject to Stage 2 archaeological assessment prior to ground disturbance activities if any disturbance is anticipated to those areas. No further AA is recommended for Segment 3. No portion of the Study Area retaining archaeological potential can viably be ploughed for pedestrian survey, so Stage 2 AA will either take place by test pit survey, on swards and manicured lawns, or mechanical trenching on paved areas. Test pit survey will follow the Standards presented in Sections 2.1.2 and 2.1.3 of the *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011) and will include the hand excavation of test pits at 5 m grid intervals across the portion of the Study Area retaining archaeological potential. All test pits should be a minimum of 30 centimetres (cm) in diameter and dug to a minimum

of 5 cm into the subsoil. Soil fills should be screened through 6 millimetre (mm) mesh screens in order to facilitate artifact recovery. Test pit profiles should be examined for cultural deposits prior to being backfilled. Test pitting should be conducted to within 1 m of all built structures or until modern disturbance is identified. All test pits should be backfilled to level grade, and any sod caps replaced and tamped down by foot. Stage 2 AA survey by mechanical trenching will follow the Standards presented

in Section 2.1.7 of the *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011).

The planned trenches will be located within all areas of archaeological potential and will be placed at a maximum interval of 10 m within those areas. The recommendations of any Stage 2 Archaeological Assessment reports will be followed, including the completion of further stages of archaeological assessment, as applicable.

4. The Stage 1 Archaeological Assessment Report completed under PIF number P362-0311-2021 for the YNSE will be submitted to MHSTCI for technical review and will not be considered final until it has been entered into the Ontario Public Register of Archaeological Reports. A further addendum or erratum to the EPR will be issued, if necessary, to ensure that commitments remain aligned with the final version of the Stage 1 Archaeological Assessment Report.

The above findings and future work commitments are subject to Ministry of Heritage, Sport, Tourism and Culture Industries' approval, and it is an offence to alter any of portion of the Study Area without Ministry of Heritage, Sport, Tourism and Culture Industries' concurrence.

No development or site alteration (including, but not limited to, grading, excavation or the placement of fill that would change the landform characteristics) is permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved (Government of Ontario 2020:31).

5.4.4 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential impacts to archaeological resources can be found in **Table 5-50**.

5.5 Built Heritage Resources and Cultural Heritage Landscapes

5.5.1 Impact Assessment Criteria

The MHSTCI (2017) *Standards & Guidelines for Conservation of Provincial Heritage Properties—Information Bulletin 3: Heritage Impact Assessment for Provincial Heritage Properties (Information Bulletin 3)* and the MHSTCI (2019) guidance document titled *MTCS Sample Tables and Language for "Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment" and Environmental Project Reports (EPR) under Transit Project Assessment Process (TPAP) for Proponents and their Consultants* gives guidance on the how to complete cultural heritage impact assessments for public bodies prescribed under the Ontario Heritage Act, such as Metrolinx (Government of Ontario 2014). The purpose of the impact assessment is to identify and assess the proposed activity to determine impacts (positive or negative, direct or indirect) that the proposed activity may have on the cultural heritage value or interest (CHVI) of identified built heritage resources and cultural heritage landscapes. For the purpose of this document, an impact is a change in an identified cultural heritage resource resulting from a particular activity (MHSTCI 2019). In order to make predictions about potential impacts, additional factors were considered, including the scale or severity of impacts, and whether they are to be temporary or permanent, reversible or irreversible (MHSTCI 2019).

For this preliminary impact assessment, the following definitions of direct, indirect, and positive impacts are used:

- **Direct Adverse Impact:** A permanent or irreversible that negative affects the CHVI of a property or results in the loss of one or more heritage attributes on all or part of the property.
- **Indirect Adverse Impact:** An impact that is the result of an activity on or near the property that may adversely affect its CHVI and/or heritage attributes.
- **Positive Impact:** An impact that may positively affect a property by conserving or enhancing its CHVI and/or heritage attributes (Government of Ontario 2017).

As outlined in the 2019 MHSTCI TPAP guidance document, a direct adverse impact would have a permanent and irreversible negative affect on the CHVI of a property or result in the loss of one or more heritage attributes on all or part of the property. Examples of direct adverse impacts include, but are not limited to:

- Removal or demolition of all or part of any heritage attribute.
- Removal or demolition of any building or structure on the property whether or not it contributes to the CHVI of the property (i.e., non-contributing buildings).
- Any land disturbance, such as a change in grade and/or drainage patterns that may adversely affect the property, including archaeological resources.
- Alterations to the property in a manner that is not sympathetic, or is incompatible, with the CHVI of the property. This may include necessary alterations, such as new systems or materials to address health and safety requirements, energy-saving upgrades, building performance upgrades, security upgrades or servicing needs.
- Alterations for access requirements or limitations to address such factors as accessibility, emergency egress, public access, security.
- Introduction of new elements that diminish the integrity of the property, such as a new building, structure or addition, parking expansion or addition, access or circulation roads, landscape features changing the character of the property through the removal or planting of trees or other natural features, such as a garden, or that may result in the obstruction of significant views or vistas within, from, or of built and natural features.
- Change in use for the property that could result in permanent, irreversible damage to, or negate, the property's CHVI.
- Continuation or intensification of the use of a property without prior conservation of its heritage attributes.

An indirect adverse impact would be the result of an activity on or near the property that may adversely affect its CHVI and/or heritage attributes. Examples of indirect adverse impacts include, but are not limited to:

- Shadows that alter the appearance of a heritage attribute or change the visibility of an associated natural feature, or plantings, such as a tree row, hedge or garden.
- Isolation of a heritage attribute from its surrounding environment/context, or from other significant cultural heritage features.
- Vibration damage to a structure due to construction or activities on, or adjacent to, the property.
- Alteration or obstruction of a significant view of, or from, the property from a key vantage point.

Positive impacts are those that may positively affect a property by conserving or enhancing its CHVI and/or heritage attributes. Examples of positive impacts may include, but are not limited to:

- Changes or alterations that are consistent with accepted conservation principles, such as those articulated in MHSTCI's Eight Guiding Principles in the Conservation of Historic Properties, Heritage

Conservation Principles for Land Use Planning, Parks Canada's Standards and Guidelines for the Conservation of Historic Places in Canada.

- Adaptive re-use of a property—alteration of a heritage property to fit new uses or circumstances of the property in a manner that retains its CHVI.
- Public interpretation or commemoration of the heritage property.

5.5.2 Segment 1 – Finch Station to Clark Station (Below Grade)

5.5.2.1 Impacts to Built Heritage Resources and Cultural Heritage Landscapes

The preliminary impact assessment to evaluate the potential impacts of the proposed work on potential and known built heritage resources and cultural heritage landscapes in Segment 1 is contained in **Table 5-3**. This table also contains proposed mitigation measures including vibration monitoring and recommendations for further cultural heritage reporting. The impact assessment is based on conceptual designs and therefore presents a range of anticipated impacts, mitigation options, and mitigation measures for Segment 1 of the Study Area. Segment 1 of the Study Area starts at the existing Finch Station and traverses northward to Clark Station. This segment is inclusive of Clark Station and also includes the proposed Cummer Station, Cummer Station bus loop, Steeles Station, and Steeles Station bus terminal.


Full details regarding potential impacts and mitigation measures are provided in **Appendix E**, Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.

Table 5-3 Preliminary Impact Assessment and Mitigation Measures for Build Heritage and Cultural Heritage Landscapes in Segment 1

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S1-CHR1	15 Olive Avenue, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR1 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment located approximately 150+ m north-northwest of S1-CHR1.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR1 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
S1-CHR2	5643-5647 Yonge Street, City of Toronto	Identified during field review.	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR1, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S1-CHR2 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment located approximately 10 m west of S1-CHR2.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR2 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
S1-CHR3	5800 Yonge Street, City of Toronto	Identified during field review	2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR2, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S1-CHR3 and may include: <ul style="list-style-type: none">Construction of EEB-01 within, or adjacent to, S1-CHR3.Construction of TPSS-1 within, or adjacent to, S1-CHR3.Proposed below-grade subway alignment 10 m east of S1-CHR3.	
			1. No anticipated impacts from the Project.	
S1-CHR3	5800 Yonge Street, City of Toronto	Identified during field review	No impact: S1-CHR3 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.

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			2. Potential direct adverse impact from the Project (ordered from most to least preferred)	
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: <ul style="list-style-type: none">If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes of the property, then the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA; andDesign Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			C. Modification of the building to fit a new use.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: <ul style="list-style-type: none">If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes of the property. For option C, the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA; andComplete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	i. Preferred Option D: Avoidance - Design the Project to avoid the property. ii. Alternative Option D: <ul style="list-style-type: none">If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA; andComplete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored; andDesign Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration of the property (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			E. Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserve;▪ Stabilize the interior and exterior of the building before relocation;▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation; and▪ During Design, incorporate commemoration signage in consultation with City of Toronto Heritage Preservation Services, to communicate the cultural heritage value of the relocated structure on the property to the public.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition; and▪ During design, incorporate commemoration signage in consultation with City of Toronto's Heritage Preservation Services, to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR3, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1-CHR4	51 Drewry Avenue, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR4 and may include:	
			<ul style="list-style-type: none">• Construction of proposed bus loop approximately 15 m north-northwest of S1-CHR4.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR4 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.



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			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA; andConsult with the City of Toronto as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option A.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: <ul style="list-style-type: none">If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA; andDesign Project to integrate new physical elements with the building and to be sympathetic and compatible with the building, (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			C. Modification of the building to fit a new use.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: <ul style="list-style-type: none">If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;Consult with the City of Toronto as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option C; andComplete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute	i. Preferred Option D: Avoidance - Design the Project to avoid the property. ii. Alternative Option D: <ul style="list-style-type: none">If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;

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				<ul style="list-style-type: none">▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored; and▪ Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			E. Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved;▪ Stabilize the interior and exterior of the building before relocation;▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation;▪ During Design, incorporate commemoration signage in consultation with City of Toronto Heritage Preservation Services, to communicate the cultural heritage value of the relocated structure on the property to the public; and▪ Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI, a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister's approval.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition; and▪ Complete an interpretation/commemoration Strategy framework in consultation with the City of Toronto Heritage Preservation Services. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR6, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: if vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions of the building to determine if the structure is vulnerable to vibration impacts;○ Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;

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				<ul style="list-style-type: none">○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1-CHR7	5925 Yonge Street, City of Toronto	Previously identified as potential built heritage resource by Underman McPhail Associates (2009).	Based on the current conceptual design, project components in the vicinity of S1-CHR7 and may include: <ul style="list-style-type: none">● Construction of Cummer Station within, or adjacent to, S1-CHR7.● Proposed below-grade subway alignment 10 m west of S1-CHR7.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR7 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred)	
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option A: If avoidance of the whole property is not feasible, then:</p> <ul style="list-style-type: none">○ Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	<p>i. Preferred Option B: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option B:</p> <ul style="list-style-type: none">○ If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes of the property, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA; and▪ Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			C. Modification of the building to fit a new use.	<p>i. Preferred Option C: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option C:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes of the property. For Option C, the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA; and▪ Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	<p>i. Preferred Option D: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option D:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:

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				<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored;▪ Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			E. Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved;▪ Stabilize the interior and exterior of the building before relocation;▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation; and▪ During Design, incorporate commemoration signage in consultation with City of Toronto Heritage Preservation Services, to communicate the cultural heritage value of the relocated structure on the property to the public.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER, HIA, or SCP;▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition; and▪ During design, incorporate commemoration signage in consultation with City of Toronto's Heritage Preservation Services, to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR7, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1-CHR8	15 Patricia Avenue, City of Toronto	Listed on the City of Toronto Heritage Register	Based on the current conceptual design, project components in the vicinity of S1-CHR8 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment located approximately 50 m east of S1-CHR8.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR8 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR8, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions of the building to determine if the structure is vulnerable to vibration impacts;Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1-CHR9	6075 Yonge Street, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR9 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment located approximately 20 m west of S1-CHR9.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR9 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR9, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;

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				<ul style="list-style-type: none">○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1- CHR10	12 Centre Avenue, North York	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR10 and may include: <ul style="list-style-type: none">● Proposed below-grade subway alignment located approximately 80 m west of S1-CHR10.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR10 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR10, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1- CHR11	155 Hilda Avenue, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR11 and may include: <ul style="list-style-type: none">● Proposed bus terminal and ancillary features proposed approximately 250+ m from S1-CHR11.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR11 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
S1- CHR12	15 Athabaska Ave, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR12 and may include: <ul style="list-style-type: none">● Proposed below-grade subway alignment located approximately 60 m west of S1-CHR12.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR12 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR12, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1- CHR13	17 Athabaska Ave, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR13 and may include: <ul style="list-style-type: none">● Proposed below-grade subway alignment located approximately 75 m west of S1-CHR13.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR13 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR13, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1- CHR14	6301-6313 Yonge Street, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR14 and may include: <ul style="list-style-type: none">● Proposed below-grade subway alignment located approximately 10 m west of S1-CHR14.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR14 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR14, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1- CHR15		Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR15 and may include: <ul style="list-style-type: none">● Proposed below-grade subway alignment located approximately 10 m west of S1-CHR15.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
	7039-7071 Yonge Street, City of Markham		1. No anticipated impacts from the Project.	
			No impact: S1-CHR15 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR15, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1-CHR16	40-48 Hendon Avenue, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR16 and may include: <ul style="list-style-type: none">Proposed Finch Station modifications within approximately 50 m of S1-CHR16.Proposed below-grade subway alignment 250+ m east of S1-CHR16.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR16 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR16, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1-CHR17	Hendon Park, 50 Hendon Ave, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR17 and may include: <ul style="list-style-type: none">Proposed Finch Station modifications within S1-CHR17.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR17 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: <ul style="list-style-type: none">If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes of the property, then the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			C. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: <ul style="list-style-type: none">If avoidance of the property and Options A and B are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with City of Toronto's Heritage Preservation Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA;Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored;Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			3. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building located in Hendon Park related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR17, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S1- CHR18	20 Abitibi Ave, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR18 and may include: <ul style="list-style-type: none">Proposed construction of Steeles Station and TPSS-2 approximately 115 m west of S1-CHR18.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR18 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project. A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S1-CHR18, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S1- CHR19	39 Highland Park Boulevard, City of Markham	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR19 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment located approximately 250+ m west of S1-CHR19.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR19 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
S1- CHR20	Plaque located at 43 Drewry Avenue, City of Toronto	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S1-CHR20 and may include: <ul style="list-style-type: none">Construction of proposed bus loop approximately 15 m north of S1-CHR20.	
			1. No anticipated impacts from the Project.	
			No impact: S1-CHR20 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the plaque.

5.5.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

5.5.3.1 Impacts to Built Heritage Resources and Cultural Heritage Landscapes

The preliminary impact assessment to evaluate the potential impacts of the proposed work on built heritage resources and cultural heritage landscapes in Segment 2 is contained in **Table 5-4**. This table also contains proposed mitigation measures and recommendations for further work. The impact assessment is based on conceptual designs and therefore presents a range of anticipated impacts, mitigation options, and mitigation measures for Segment 2 of the Study Area.

Segment 2 Study Area starts just beyond the limits of Clark Station and extends northward to the proposed portal structure and launch shaft location, just south of Langstaff Road East within the Town of Markham and City of Vaughan. It should be noted that this segment is inclusive of the entirety of the proposed portal and launch shaft footprint area, extending north to the proposed Bridge Station and west from the CN rail corridor towards Ruggles Avenue. It also includes the proposed Royal Orchard Station. Full details regarding potential impacts and mitigation measures are provided in **Appendix E**, Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.

Table 5-4 Preliminary Impact Assessment and Mitigation Measures for Built Heritage Resources and Cultural Heritage Landscapes in Segment 2

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S2- CHR1	Thornhill Markham HCD, City of Markham	Designated under Part V of the Ontario Heritage Act.	Based on the current conceptual design, project components in the vicinity of S2-CHR1 include: <ul style="list-style-type: none">• Construction of EEB-4 and TPSS-4 within the HCD.• Proposed below-grade subway alignment located within the HCD.• Construction of EEB-5 and TPSS-5 within the HCD.• Construction of Royal Orchard Station within the HCD.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR1 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the HCD.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
			A. Encroachment into the HCD causing a physical impact, including introduction of new elements to the HCD, alterations to contributing property or diminishment in integrity of the HCD due to the introduction of new elements. Note: The impacts to individual properties within the HCD, including Contributing Properties (listed/Part IV Designated) and Non-Contributing Properties are provided in separate CHR entries.	i. Preferred Option A: Avoidance - Design the project to avoid the Thornhill-Markham HCD. ii. Alternative Option A: While avoidance of the HCD altogether seems unlikely, the following mitigation measures are required: <ul style="list-style-type: none">○ Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham Heritage Services regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as CHERs and HIAs.▪ Evaluate and document the existing conditions of a contributing property including the heritage attributes prior to designing alterations.▪ Record, repair and restore where possible, if elements of the HCD are impacted by the Project▪ New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD.▪ If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines.○ In addition, consult the HCD Design Guidelines and follow requirements for alterations to: heritage buildings, non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.<ul style="list-style-type: none">▪ The heritage attributes of properties that are "listed" or designated under Part IV of the Ontario Heritage Act, as defined in their respective listing reports or designation by-laws, should be maintained and enhanced in any proposed alteration to the property.
			3. Potential indirect adverse impact from the Project.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			A. Vibration impacts to the building related to the Project on or adjacent To the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR1, including a sufficient buffer (within 250m) between Project components/activities and the buildings within the HCD. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			B. Obstruction/alteration of views identified in the Thornhill-Markham HCD.	i. Preferred Option B: Design the Project to conserve and not obstruct views as identified in the HCD Plan. ii. Alternative Option B: If impact on identified views cannot be avoided, then the following is required: <ul style="list-style-type: none">Consult with City of Markham Heritage Services regarding any physical impact to the HCD in order to determine and obtain any approval or permits required;Limit Impact on identified view corridors by designing new features to blend with the architectural style and landscape aesthetic style of the HCD. Make new additions complimentary to, subordinate to, and distinguishable from the existing landscape (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
S2-CHR2	Thornhill Vaughan HCD, City of Vaughan	Designated under Part V of the Ontario Heritage Act.	Based on the current conceptual design, project components in the vicinity of S2-CHR2 include: <ul style="list-style-type: none">Construction of EEB-4 and TPSS-4 within the HCD.Proposed below-grade subway alignment located within the HCD.Construction of EEB-5 and TPSS-5 within the HCD.Construction of Royal Orchard Station within the HCD.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR2 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the HCD.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			<p>A. Encroachment into the HCD causing a physical impact, including introduction of new elements to the HCD, alterations to contributing property or diminishment in integrity of the HCD due to the introduction of new elements.</p> <p>Note: The impacts to individual properties within the HCD, including Contributing Properties (listed/Part IV Designated) and Non-Contributing Properties are provided in separate CHR entries.</p>	<p>i. Preferred Option A: Avoidance - Design the project to avoid the Thornhill-Markham HCD</p> <p>ii. Alternative Option A: While avoidance of the HCD altogether seems unlikely, the following mitigation measures are required:</p> <ul style="list-style-type: none">Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:<ul style="list-style-type: none">Consult with City of Vaughan Cultural Heritage Division regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as CHERs and HIAs;Evaluate and document the existing conditions of a contributing property including the heritage attributes prior to designing alterations;Record, repair and restore where possible, if elements of the HCD are impacted by the Project;New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD;If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines.In addition, consult the HCD Design Guidelines and follow requirements for alterations to: heritage buildings, non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.<ul style="list-style-type: none">The heritage attributes of properties that are "listed" or designated under Part IV of the Ontario Heritage Act, as defined in their respective listing reports or designation by-laws, should be maintained and enhanced in any proposed alteration to the property.
			<p>3. Potential indirect adverse impact from the Project.</p>	
			<p>A. Vibration impacts to the building related to the Project on or adjacent To the property.</p>	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR2, including a sufficient buffer (within 250m) between Project components/activities and buildings within the HCD. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Documentation (Review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			<p>B. Obstruction/alteration of views identified in the Thornhill-Markham HCD.</p>	<p>i. Preferred Option B: Design the Project to conserve and not obstruct views as identified in the HCD Plan.</p> <p>ii. Alternative Option B: If impact on identified views cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Consult with City of Vaughan Cultural Heritage Division regarding any physical impact to the HCD in order to determine and obtain any approval or permits required;Limit Impact on identified view corridors by designing new features to blend with the architectural style and landscape aesthetic style of the HCD. Make new additions complimentary to, subordinate to, and distinguishable from the existing landscape (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S2- CHR3	7509 Yonge Street, City of Markham	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S2-CHR3 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment 65 m west of S2-CHR3.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR3 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
S2- CHR4	Thornhill Public School, 7554 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property). Listed on the City of Vaughan's Buildings of Architectural and Historic Value.	Based on the current conceptual design, project components in the vicinity of S2-CHR4 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 40 m east of S2-CHR4.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR4 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the Thornhill-Vaughan HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR4	Thornhill Public School, 7554 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property). Listed on the City of Vaughan's Buildings of Architectural and Historic Value.	A. Vibration impacts to the building related to the Project on or adjacent To the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR4, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S2- CHR5	7529 Yonge Street, City of Markham	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S2-CHR5 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment 50 m west of S2-CHR5.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR5 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project.	
S2- CHR6	7616 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property). Listed on the City of Vaughan's Buildings of Architectural and Historic Value.	Based on the current conceptual design, project components in the vicinity of S2-CHR6 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR6.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR6 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the Thornhill-Vaughan HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR6	7616 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property). Listed on the City of Vaughan's Buildings of Architectural and Historic Value.	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR6, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S2- CHR7	7626 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR7 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR7.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR7 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the Thornhill-Vaughan HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR8	7636 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR7, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR8 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR8.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR8 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the Thornhill-Vaughan HCD in order to determine and obtain any approval or permits required.
S2- CHR9	7666 Yonge Street, City of Vaughan	Designated under Part V of the Ontario	2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent To the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR8, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR9 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR9.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
		Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	<ul style="list-style-type: none">Construction of EEB-4 and TPSS-4 within, or adjacent to S2-CHR9. 1. No anticipated impacts from the Project. No impact: S2-CHR9 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. However, note: Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the Thornhill-Vaughan HCD in order to determine and obtain any approval or permits required.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes identified in HCD Plan. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required: <ul style="list-style-type: none">Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.
			C. Modification of a building to fit a new use.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: If avoidance of the whole property or Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required: <ul style="list-style-type: none">Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute	i. Preferred Option D: Avoidance - Design the Project to avoid the property. ii. Alternative Option D: <ul style="list-style-type: none">If avoidance of the property or Options A, B, or C are not feasible, and if a physical impact to a heritage attribute cannot be avoided, the following is required:<ul style="list-style-type: none">Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			E. Relocation of all or part the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building components should be retained and conserved and/or restored.▪ Stabilize the interior and exterior of the building before relocation.▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation.▪ During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the City of Vaughan Cultural Heritage Division. Incorporate commemoration signage to communicate the cultural heritage value of the relocated building on the property to the public.▪ Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister approval.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.▪ During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the City of Vaughan Cultural Heritage Division. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR9, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">○ Documentation (review and establish) of the structural condition of the building to determine if the structure is vulnerable to vibration impacts;○ Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measure in place prior to construction. If damage is identified, then implement additional corrective steps.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S2- CHR10	14 John Street, City of Markham	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR10 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 80 m west of S2-CHR10.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR10 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR11	7562 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non- Contributing Property).	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR10, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR11 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 50 m east of S2-CHR11.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR11 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR12	7582 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non- Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR12 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 25 m east of S2-CHR12.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR12 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR13	7584 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non- Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR13 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR13.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR13 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR14	7620 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR14 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m east of S2-CHR14.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR14 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR15	7646 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR15 include: -Proposed below-grade subway alignment 15 m east of S2-CHR15.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR15 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR16	Plaque located at the corner of John and Yonge, City of Markham	Located within the Thornhill Markham HCD.	Based on the current conceptual design, project components in the vicinity of S2-CHR16 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m west of S2-CHR16.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR16 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR17	5 Elizabeth Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR17 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 100 m east of S2-CHR17.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR17 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR18	7 Elizabeth Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR18 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 100 m east of S2-CHR18.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR18 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR19	17 Old Jane Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR19 include: -Proposed below-grade subway alignment 100 m east of S2-CHR19.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR19 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR20	7681 Yonge Street, City of Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Markham HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR20 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m west of S2-CHR20.Construction of EEB-4 and TPSS-4 within, or adjacent to S2-CHR20.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR20 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the HCD. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
			A. Encroachment or construction within a non-contributing property in the HCD that may cause a physical impact, including introduction of new elements to the HCD or diminishment in integrity of the HCD due to the introduction of new elements.	i. Preferred Option A: Avoidance - Design the project to avoid the Thornhill-Markham HCD. ii. Alternative Option A: While avoidance of the HCD altogether seems unlikely, the following mitigation measures are required: <ul style="list-style-type: none">Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:<ul style="list-style-type: none">Consult with City of Markham Heritage Services regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as an HIA.New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD.If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines.In addition, consult the HCD Design Guidelines and follow requirements for alterations to: non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.
S2-CHR21	23 Elizabeth Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill	Based on the current conceptual design, project components in the vicinity of S2-CHR21 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 120 m east of S2-CHR21.	
			1. No anticipated impacts from the Project.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
		Vaughan HCD (Non-Contributing Property).	No impact: S2-CHR21 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR22	12 Old Jane Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR22 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 95 m east of S2-CHR22	
			1. No anticipated impacts from the Project. No impact: S2-CHR22 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR23	7700 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Markham HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR23 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m east of S2-CHR23.Construction of EEB-4 and TPSS-4 within, or adjacent to S2-CHR23.	
			1. No anticipated impacts from the Project. No impact: S2-CHR23 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the HCD. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred). A. Encroachment or construction within a non-contributing property in the HCD that may cause a physical impact, including introduction of new elements to the HCD or diminishment in integrity of the HCD due to the introduction of new elements.	i. Preferred Option A: Avoidance - Design the project to avoid the Thornhill-Markham HCD. ii. Alternative Option A: While avoidance of the HCD altogether seems unlikely, the following mitigation measures are required: <ul style="list-style-type: none">Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:<ul style="list-style-type: none">Consult with City of Markham Heritage Services regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as an HIA.New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD.If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines.In addition, consult the HCD Design Guidelines and follow requirements for alterations to: non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.
S2-CHR24	7699 Yonge Street, City of Markham	Designated under Part V of the <i>Ontario Heritage Act</i> as a	Based on the current conceptual design, project components in the vicinity of S2-CHR24 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m west of S2-CHR24.Construction of EEB-4 and TPSS-4 within, or adjacent to S2-CHR24.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
		“Class A” property in the Thornhill-Markham HCD (Contributing Property).	1. No anticipated impacts from the Project.	
			No impact: S2-CHR24 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes identified in HCD Plan. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes.	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: <ul style="list-style-type: none">If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:<ul style="list-style-type: none">Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan
			C. Modification of a building to fit a new use.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: <ul style="list-style-type: none">If avoidance of the whole property or Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:<ul style="list-style-type: none">Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute	i. Preferred Option D: Avoidance - Design the Project to avoid the property. ii. Alternative Option D: <ul style="list-style-type: none">If avoidance of the property or Options A, B, or C are not feasible, and if a physical impact to a heritage attribute cannot be avoided, the following is required:<ul style="list-style-type: none">Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">▪ Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.
			E. Relocation of all or part the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ b. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building components should be retained and conserved and/or restored.▪ Stabilize the interior and exterior of the building before relocation.▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation.▪ During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the City of Markham Heritage Services. Incorporate commemoration signage to communicate the cultural heritage value of the relocated building on the property to the public.▪ Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister approval.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.▪ During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the City of Markham Heritage Services. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR24, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">○ Documentation (review and establish) of the structural condition of the building to determine if the structure is vulnerable to vibration impacts;○ Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and

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				<ul style="list-style-type: none">○ Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measure in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR25	11 Colborne Street, City of Markham	Designated under Part V of the Ontario Heritage Act as a “Class A” property in the Thornhill-Markham HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR25 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment 85 m west of S2-CHR25.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR25 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR26	W.D. Stark House, 7724 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR25, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR26 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment 15 m east of S2-CHR26.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR26 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
		Listed on the City of Vaughan’s Buildings of Architectural and Historic Value.	2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR26, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR27	7707 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act as a “Class A” property in the Thornhill-Markham HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR27 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment 15 m west of S2-CHR27.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR27 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR28	10 Colborne Street; The Ellen Ramsden House (Thornhill Village Library), City of Markham	Designated under Part IV and V of the <i>Ontario Heritage Act</i> as a “Class A” property in the Thornhill-Markham HCD (Contributing Property).	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR27, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR28 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment 55 m west of S2-CHR28.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR28 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. 3Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR28, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and

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				<ul style="list-style-type: none">○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR29	7724 Yonge Street (Francis Block), City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR29 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment 15 m east of S2-CHR29.	
		Listed on the City of Vaughan’s Buildings of Architectural and Historic Value.	1. No anticipated impacts from the Project. No impact: S2-CHR29 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project. A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR29, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR30	7711-7715 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act in the Thornhill-Markham HCD (Non- Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR30 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment 10 m west of S2-CHR30.	
			1. No anticipated impacts from the Project. No impact: S2-CHR30 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR31	7719-7725 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act in the Thornhill-Markham HCD (Non- Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR31 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment 10 m west of S2-CHR31	
			1. No anticipated impacts from the Project. No impact: S2-CHR31 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.

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S2- CHR32	19 Centre Street, Robert Shuter House, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR32 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 60 m east of S2-CHR32.	
		Listed on the City of Vaughan’s Buildings of Architectural and Historic Value.	1. No anticipated impacts from the Project.	
			No impact: S2-CHR32 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR33	7738 Yonge Street, City of Vaughan	Designated under Part V of the <i>Ontario Heritage Act</i> as part of the Thornhill Vaughan HCD (Non- Contributing).	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR32, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR33 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 20 m east of S2-CHR33.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR33 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR34	Plaque near corner of Yonge Street and Centre Street, City of Vaughan	n/a	Based on the current conceptual design, project components in the vicinity of S2-CHR34 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m west of S2-CHR34	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR34 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			Based on the current conceptual design, project components in the vicinity of S2-CHR35 include:	

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S2- CHR35	7751 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act in the Thornhill-Markham HCD (Non-Contributing Property).	• Proposed below-grade subway alignment 30 m west of S2-CHR35.	
			1. No anticipated impacts from the Project	
			No impact: S2-CHR35 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR36	Mason Cogswell House, 18 Centre Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property). Listed on the City of Vaughan's Buildings of Architectural and Historic Value.	Based on the current conceptual design, project components in the vicinity of S2-CHR36 include: • Proposed below-grade subway alignment 55 m east of S2-CHR36.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR36 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR36, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR37	12 Centre Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR37 include: • Proposed below-grade subway alignment 40 m east of S2-CHR37.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR37 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR38	Public/Municipal Parkette, northwest intersection of Centre Street and	Designated under Part V of the Ontario Heritage Act as part of the Thornhill	Based on the current conceptual design, project components in the vicinity of S2-CHR38 include: • Proposed below-grade subway alignment 5 m east of S2-CHR38.	
			1. No anticipated impacts from the Project.	

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	Yonge Street, City of Vaughan	Vaughan HCD (Contributing Property).	No impact: S2-CHR38 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the structures in the Parkette related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR38, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR39	7765 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act in the Thornhill-Markham HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR39 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 5 m west of S2-CHR39.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR39 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR40	7756 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR40 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR40.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR40 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the structures in the Parkette related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR40, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and

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				<ul style="list-style-type: none">o Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR41	Robert A. West General Store, 7775/7771 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act as a “Class B” property in the Thornhill- Markham HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR41 include: <ul style="list-style-type: none">• Proposed below-grade subway alignment 15 m west of S2-CHR41.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR41 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project. A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR41, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">o Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;o Implement vibration mitigating measures on the construction site and/or at the building;o Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; ando Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR42	Thornhill Park, 26 Old Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Non- Contributing).	Based on the current conceptual design, project components in the vicinity of S2-CHR42 include: <ul style="list-style-type: none">• Proposed below-grade subway alignment 60 m east of S2-CHR42.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR42 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR43	Robert West House, 7780 Yonge Street, City of Vaughan	Designated under Part IV and Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR43 include: <ul style="list-style-type: none">• Proposed below-grade subway alignment 10 m east of S2-CHR43.	
		Listed on the City of Vaughan’s Buildings of Architectural and Historic Value.	1. No anticipated impacts from the Project.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
		Protected by an Ontario Heritage Trust Heritage Conservation Easement Agreement (HCEA).	No impact: S2-CHR43 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division and the Ontario Heritage Trust as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR43, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR44	7787 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act as a “Class A” property in the Thornhill-Markham HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR44 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m west of S2-CHR44.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR44 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR44 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR45	Thornhill Methodist Church, 7788 Yonge Street, City of Vaughan	Designated under Part IV and V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR45 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m east of S2-CHR45.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
		Listed on the City of Vaughan’s Buildings of Architectural and Historic Value.	1. No anticipated impacts from the Project.	
			No impact: S2-CHR45 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR45 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR46	7802 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR46 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m east of S2-CHR46.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR46 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR46 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR47	George Munroe House, 7808 Yonge	Designated under Part V of the Ontario Heritage Act as part of the Thornhill	Based on the current conceptual design, project components in the vicinity of S2-CHR47 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m east of S2-CHR47.	
			1. No anticipated impacts from the Project.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
	Street, City of Vaughan	Vaughan HCD (Contributing Property).	No impact: S2-CHR47 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR47 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR48	7820 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR48 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 60 m east of S2-CHR48.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR48 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR49	7822 Yonge Street, Seager Cottage, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR49 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m east of S2-CHR49.	
			1. No anticipated impacts from the Project.	
		Listed on the City of Vaughan's Buildings of Architectural and Historic Value.	No impact: S2-CHR49 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR49 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR50	William Walton Armstrong House, 42 Old Yonge Street, City of Vaughan	Designated under Part IV and Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR50 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 65 m east of S2-CHR50.	
		Listed on the City of Vaughan’s Buildings of Architectural and Historic Value.	1. No anticipated impacts from the Project.	
			No impact: S2-CHR50 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR50 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR51	7859 Yonge Street Toronto Ladies Golf Club, City of Markham	Designated under Part V of the Ontario Heritage Act as a “Class A” property in the Thornhill-Markham HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR51 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m west of S2-CHR51 and 250+ m west of the clubhouse building.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR51 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR52	10 Mill Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill	Based on the current conceptual design, project components in the vicinity of S2-CHR52 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 90 m east of S2-CHR52.	
			1. No anticipated impacts from the Project.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
		Vaughan HCD (Non-Contributing Property).	No impact: S2-CHR52 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2-CHR53	Toronto Radial Railway Stop #17, 7877 Yonge Street, City of Markham	Designated under Part V of the Ontario Heritage Act as a "Class A" property in the Thornhill-Markham HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR53 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m west of S2-CHR53.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR53 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2-CHR54	Mortimer House, 7994-8000 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR53 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR54 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR54.Construction of EEB-5 and TPSS-5 within, or adjacent to S2-CHR54.Proposed construction of Royal Orchard Station within, or adjacent to, S2-CHR54.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR54 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the Thornhill-Vaughan HCD in order to determine and obtain any approval or permits required.
		Listed on the City of Vaughan's Buildings of Architectural and Historic Value.	2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes identified in HCD Plan. However, for any physical impact to the property, the following is required:

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	<p>i. Preferred Option B: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option B:</p> <ul style="list-style-type: none">○ If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan
			C. Modification of a building to fit a new use.	<p>i. Preferred Option C: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option C:</p> <ul style="list-style-type: none">○ If avoidance of the whole property or Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	<p>i. Preferred Option D: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option D:</p> <ul style="list-style-type: none">○ If avoidance of the property or Options A, B, or C are not feasible, and if a physical impact to a heritage attribute cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.▪ Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			E. Relocation of all or part the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building components should be retained and conserved and/or restored.▪ Stabilize the interior and exterior of the building before relocation.▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation.▪ During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the City of Vaughan Cultural Heritage Division. Incorporate commemoration signage to communicate the cultural heritage value of the relocated building on the property to the public.▪ Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister approval.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.▪ During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the City of Vaughan Cultural Heritage Division. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR54, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">○ Documentation (review and establish) of the structural condition of the building to determine if the structure is vulnerable to vibration impacts;○ Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measure in place prior to construction. If damage is identified, then implement additional corrective steps.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S2- CHR55	"Edwardian House", 7951 Yonge Street, City of Markham	Listed on the City of Markham's Heritage Register.	Based on the current conceptual design, project components in the vicinity of S2-CHR55 and may include: <ul style="list-style-type: none">Proposed below-grade subway alignment 15 m west of S2-CHR55.Construction of EEB-5 and TPSS-5 within, or adjacent to S2-CHR55.Proposed construction of Royal Orchard Station within, or adjacent to, S2-CHR55.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR55 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with City of Markham Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Consult with the City of Markham as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option A.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: <ul style="list-style-type: none">If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:<ul style="list-style-type: none">Consult with City of Markham Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the building, (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			C. Modification of the building to fit a new use	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: <ul style="list-style-type: none">If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For option C, the following is required:<ul style="list-style-type: none">Consult with City of Markham Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Consult with the City of Markham as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option C.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	<p>i. Preferred Option D: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option D:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.▪ Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			E. Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.▪ Consult with the City of Markham as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval/consent for Option E. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved.▪ Stabilize the interior and exterior of the building before relocation.▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation.▪ During Design, incorporate commemoration signage in consultation with City of Markham Heritage Services, to communicate the cultural heritage value of the relocated structure on the property to the public.▪ Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI, a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister's approval.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and options., B., C., D., and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.▪ Consult with the City of Markham as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option F.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				Complete an interpretation/Commemoration Strategy framework in consultation with the City of Markham Heritage Services. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<div>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR55, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</div> <div>ii. Alternative Option A: if vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">Documentation (Review and establish) of the structural conditions of the building to determine if the structure is vulnerable to vibration impactsEstablish vibration limits based on building conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.</div>
S2-CHR56	Holy Trinity Anglican Cemetery, 8004 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR56 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 35 m east of S2-CHR56.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR56 is not anticipated to be impacted by the undertaking.	<div>i. Preferred Option: Continued Avoidance of the property</div> <div><u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.</div>
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<div>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR56 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</div> <div>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.</div>
S2-CHR57	Thornhill Baptist Church, 8018 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD	Based on the current conceptual design, project components in the vicinity of S2-CHR57 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 10 m east of S2-CHR57.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR57 is not anticipated to be impacted by the undertaking.	<div>i. Preferred Option: Continued Avoidance of the property.</div>

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
		(Contributing Property).		<u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR57 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">o Documentation (Review and establish) of the structural conditions, founding soil conditions and type of construction vibration;o Implement vibration mitigating measures on the construction site and/or at the building;o Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; ando Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR58	Soules Inn, 8038 Yonge Street, City of Vaughan	Designated under Part IV and V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR58 include: <ul style="list-style-type: none">• Proposed below-grade subway alignment 10 m east of S2-CHR58.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR58 is not anticipated to be impacted by the undertaking.	<p>i. Preferred Option: Continued Avoidance of the property.</p> <p><u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.</p>
			2. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR58 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">o Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;o Implement vibration mitigating measures on the construction site and/or at the building;o Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; ando Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR59	8054 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Non-Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR59 include: <ul style="list-style-type: none">• Proposed below-grade subway alignment 10 m east of S2-CHR59.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR59 is not anticipated to be impacted by the undertaking.	<p>i. Preferred Option: Continued Avoidance of the property.</p> <p><u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.</p>

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S2- CHR60	Thornhill Anglican Church Rectory, 8088 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Contributing Property).	Based on the current conceptual design, project components in the vicinity of S2-CHR60 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 25 m east of S2-CHR60.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR60 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
			2. Potential indirect adverse impact from the Project.	
S2- CHR61	8100 Yonge Street, City of Vaughan	Designated under Part V of the Ontario Heritage Act as part of the Thornhill Vaughan HCD (Non-Contributing Property).	A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR60 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;Implement vibration mitigating measures on the construction site and/or at the building;Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; andConduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
			Based on the current conceptual design, project components in the vicinity of S2-CHR61 include: <ul style="list-style-type: none">Proposed below-grade subway alignment 125+ m east of S2-CHR61.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR61 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property. <u>However, note:</u> Consult with City of Vaughan's Cultural Heritage Division as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.
S2- CHR62	Baythorn Public School, 201 Bay Thorn Drive, City of Markham	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S2-CHR62 and may include: <ul style="list-style-type: none">Construction of EEB-06 within, or adjacent to S2-CHR62.Proposed below-grade subway alignment 30 m south of S2-CHR62.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR62 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
S2- CHR62	Baythorn Public School, 201 Bay Thorn Drive, City of Markham	Identified during field review.	A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	<p>i. Preferred Option B: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option B:</p> <ul style="list-style-type: none">○ If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes of the property, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			C. Modification of the building to fit a new use	<p>i. Preferred Option C: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option C:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes of the property. For Option C, the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	<p>i. Preferred Option D: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option D:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.▪ Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
			E. Relocation of all or part of the building.	i. Preferred Option E: Avoidance - Design the Project to avoid the property. ii. Alternative Option E: <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved.▪ Stabilize the interior and exterior of the building before relocation.▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation.▪ During Design, incorporate commemoration signage in consultation with City of Markham's Heritage Services, to communicate the cultural heritage value of the relocated structure on the property to the public.
			F. Demolition of all or part of the building.	i. Preferred Option F: Avoidance - Design the Project to avoid the property. ii. Alternative Option F: <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.▪ During design, incorporate commemoration signage in consultation with City of Markham's Heritage Services, to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR62, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2-CHR63	Royal Orchard Park, 110 Royal Orchard	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S2-CHR63 include: <ul style="list-style-type: none">• Proposed below-grade subway alignment beneath S2-CHR63.	
			1. No anticipated impacts from the Project.	

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
	Boulevard, City of Markham		No impact: S2-CHR63 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
S2-CHR64	St. Anthony Catholic School, 141 Kirk Drive, City of Markham	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S2-CHR64 and may include: <ul style="list-style-type: none">Construction of EEB-07 within, or adjacent to S2-CHR64.Proposed below-grade subway alignment beneath S2-CHR64.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR64 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential direct adverse impact from the Project (ordered from most to least preferred).	
			A. Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then: <ul style="list-style-type: none">Design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.
			B. Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: <ul style="list-style-type: none">If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes of the property, then the following is required:<ul style="list-style-type: none">Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			C. Modification of the building to fit a new use.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: <ul style="list-style-type: none">If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes of the property. For option C, the following is required:<ul style="list-style-type: none">Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.
			D. Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	i. Preferred Option D: Avoidance - Design the Project to avoid the property. ii. Alternative Option D: <ul style="list-style-type: none">If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.▪ Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).
			E. Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E:</p> <ul style="list-style-type: none">○ If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.○ If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved.▪ Stabilize the interior and exterior of the building before relocation.▪ Prepare the new site, i.e. construction of a new foundation, prior to relocation.▪ During Design, incorporate commemoration signage in consultation with City of Markham's Heritage Services, to communicate the cultural heritage value of the relocated structure on the property to the public.
			F. Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F:</p> <ul style="list-style-type: none">○ If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">▪ Consult with City of Markham's Heritage Services as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, such as a CHER, HIA, or SCP.▪ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.▪ During design, incorporate commemoration signage in consultation with City of Markham's Heritage Services, to communicate the cultural heritage value of the demolished structure on the property to the public.
			3. Potential indirect adverse impact from the Project.	
			A. Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR64, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
				<ul style="list-style-type: none">○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.
S2- CHR65	Holy Cross Cemetery, 8361 Yonge Street, City of Markham	Identified during field review.	Based on the current conceptual design, project components in the vicinity of S2-CHR65 include: <ul style="list-style-type: none">● Proposed below-grade subway alignment within 10 m of S2-CHR65.	
			1. No anticipated impacts from the Project.	
			No impact: S2-CHR65 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.
			2. Potential indirect adverse impact from the Project. A. Vibration impacts to the property related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to S2-CHR65 including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration;○ Implement vibration mitigating measures on the construction site and/or at the building;○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.

5.5.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

5.5.4.1 Impacts to Built Heritage Resources and Cultural Heritage Landscapes

The preliminary impact assessment to evaluate the potential impacts of the proposed work on built heritage resources and cultural heritage landscapes in Segment 3 is contained in **Table 5-5**. This table also contains proposed mitigation measures. The impact assessment is based on conceptual designs and therefore presents a range of anticipated impacts, mitigation options, and mitigation measures for Segment 3 of the Study Area.

Segment 3 Study Area starts at Highway 407 and continues north to just south of Constellation Crescent. Full details regarding potential impacts and mitigation measures are provided in **Appendix E**, Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.

Table 5-5 Preliminary Impact Assessment and Mitigation Measures for Built Heritage Resources and Cultural Heritage Landscapes in Segment 3

CHR#	Name/Address/ Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures: i. Mitigation Options ii. Mitigation Recommendations
S3-CHR1	David Dunlap Observatory, 23 Hillsview Drive, City of Richmond Hill	Designated under Part IV of the Ontario Heritage Act under By-law 100-09.	Based on the current conceptual design, project components in the vicinity of S3-CHR1 include:	
			<ul style="list-style-type: none">Proposed below-grade subway alignment 350+ m west of buildings contained within S3-CHR1.	
			1. No anticipated impacts from the Project.	
			No impact: S3-CHR1 is not anticipated to be impacted by the undertaking.	i. Preferred Option: Continued Avoidance of the property.

5.5.5 Summary of Potential Impacts, Mitigation Measures and Monitoring Activities

A summary of mitigation measures and associated monitoring recommended for potential impacts to built heritage resources and cultural heritage landscapes can be found in **Table 5-51**.

Please note that Ministerial Consent is required where properties that meet, or have the potential to meet, O. Reg. 10/06 are subject to direct impacts such as removal, demolition, alteration of heritage structures/landscapes, or transfer from provincial control. Ministerial Consent will be obtained during the detailed design phase for properties that meet, or have the potential to meet, O. Reg. 10/06 of the *Ontario Heritage Act* and have the potential to be impacted by the YNSE Project.

5.6 Air Quality

5.6.1 Impact Assessment Criteria

A Zone of Influence (ZOI) was identified in proximity to each major construction footprint of the Project where the potential exists for air quality effects on the sensitive receptors. The ZOI represents the area where there may be exceedances of the AAQC, CAAQS, as a result of construction activities of the Project, and the maximum extent of the ZOI is the further point from the Project footprint where the assessment identifies potential, albeit infrequent, exceedances

The modelling results indicated that due to the actual separation distances between receptors and construction areas, the following construction sites are not predicted to have ZOIs that extend to sensitive receptors:

- Steeles Station,
- Tunnel Portal,
- Bridge Station, and
- High Tech Station.

The following construction sites were predicted to have ZOIs extending to sensitive receptors, based on a conservative worst-case assessment and frequency of predicted exceedances of AAQC or CAAQS, with further details outlined in sections below:

- Cummer Station
 - 24-hour average acrolein
 - 24-hour average benzo(a)pyrene
- Clark Station
 - 24-hour average acrolein
 - 24-hour average benzo(a)pyrene
 - 15-minute average PM_{2.5}
- Royal Orchard Station
 - 24-hour average acrolein
 - 24-hour average benzo(a)pyrene
- Train Storage Facility
 - 24-hour average acrolein
 - 24-hour average benzo(a)pyrene

- 15-minute average PM_{2.5}
- Emergency Exit Building No. 4
 - 24-hour average acrolein
 - 24-hour average benzo(a)pyrene
 - 15-minute average PM_{2.5}
 - 15-minute average PM₁₀
- Extraction Shaft:
 - 1-hour average acrolein
 - 24-hour average acrolein
 - 24-hour average benzo(a)pyrene
 - 24-hour average PM_{2.5}

5.6.2 Construction Phase

The construction phase impact assessment was divided into geographical areas, each encompassing a station and any other nearby infrastructure (e.g., TPSSs, bus stations). Additionally, one (1) EEB was assessed as an example and the Zone of Influence determined was applied to each of the EEBs as the construction phase for each of these is expected to be similar.

For each station, professional experience was used to approximate the footprint in which to place the emissions sources representative of the estimated construction fleets. For the representative EEB, and TBM extraction shaft, a footprint was approximated based upon the open space available.

A selection of representative ZOIs for each construction site is included in **Appendix F**. The contour shown in each figure bounds the area where the construction-related concentration is above the stated criteria/standard. The “Maximum extent of ZOI” value, provided for each construction site and contaminant, represents how far from the construction site air quality is predicted to exceed the AAQC under worst-case conditions; a value of “0” indicates effects above the AAQC, if any, do not extend outside of the construction site.

5.6.2.1 Cummer Station

The station will be below grade, at the intersection of Cummer/Drewry Avenue and Yonge Street, with two (2) at-grade entrances. Aside from entrances, this station has a stand-alone TPSS building east of the main entrance.

The “Shoring and Excavation” stage of construction was selected to represent worst-case emissions due to intensity of earthworks and expected duration, relative to the other stages. This stage includes establishment of temporary access shafts for station box excavation adjacent to Yonge Street; temporary decking will be installed over the station box to allow traffic flow while excavation continues adjacent to and beneath Yonge Street.

The construction phase ZOIs for the location are available in **Appendix F**. Benzo(a)pyrene had the largest ZOI, extending 28 metres from the construction footprint. The table below provides the distance from the construction footprint to where the criterion/standard is first achieved.

Table 5-6 Zone of Influence (Project Impact) – Cummer Station Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.021 Controlled - 0.021	24-hour	50	0	0
PM _{2.5}	Uncontrolled - 0.020 Controlled - 0.020	Annual	8.8 ^b	0	0
		24-hour	27 ^b	7	6
Nitrogen Dioxide (NO ₂)	0.34	Annual	33 ^b	15	Note ^d
		24-hour	200	0	
		1-hour	400	0	
Acrolein	0.00053	24-hour	0.4	25	
		1-hour	4.5	0	
Benzo(a)pyrene	0.000000086	Annual	0.00001	28	
		24-hour	0.00005	28	
Benzene	0.00081	Annual	0.45	0	
		24-hour	2.3	0	
1,3-Butadiene	0.000043	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.13	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0021	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.0057	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.1.1 Cummer Station Bus Loop

An off-street bus loop will be provided west of Cummer station, serving only buses and bus operators. It will not be a passenger facility. Due to the expected low intensity and short duration of this construction, quantitative assessment was not undertaken. Some activities under specific meteorological conditions may result in fugitive dust or odour occurrences, and the same mitigation measures detailed for the larger sites will apply to this site also.

5.6.2.2 Steeles Station and Bus Terminal

Steeles Station will be below grade with three (3) at-grade entrances. An at grade terminal will be located in the south-west quadrant of Yonge Street and Steeles Avenue.

The “Shoring and Excavation” stage of construction was selected to represent worst-case emissions due to intensity of earthworks and expected duration, relative to the other stages. This stage includes establishment of temporary access shafts for station box excavation adjacent to Yonge Street; temporary decking will be installed over the station box to allow traffic flow while excavation continues adjacent to and beneath Yonge Street.

The construction phase ZOIs for the location are available in **Appendix F**. Acrolein had largest ZOI, extending 42 m from the construction footprint. **Table 5-7** provides the distance from the construction footprint to where the criterion/standard is first achieved.

Table 5-7 Zone of Influence (Project Impact) – Steeles Station Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.18 Controlled - 0.084	24-hour	50	25	0
PM _{2.5}	Uncontrolled - 0.11 Controlled - 0.064	Annual	8.8 ^b	10	0
		24-hour	27 ^b	25	15
Nitrogen Dioxide (NO ₂)	0.82	Annual	33 ^b	15	Note ^d
		24-hour	200	0	
		1-hour	400	0	
Acrolein	0.0013	24-hour	0.4	42	
		1-hour	4.5	5	
Benzo(a)pyrene	0.00000023	Annual	0.00001	30	
		24-hour	0.00005	40	
Benzene	0.00219	Annual	0.45	0	
		24-hour	2.3	0	
1,3-Butadiene	0.00011	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.33	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0053	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.015	24-hour	65	0	

Notes:

^a Ambient Air Quality Criterion based on Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion set by Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.3 Clark Station and Bus Terminal

The station will be below grade, at the intersection of Clark Avenue and Yonge Street, with two (2) at-grade entrances and a bus terminal.

The "Shoring and Excavation" stage of construction was selected to represent worst-case emissions due to intensity of earthworks and expected duration, relative to the other stages. This stage includes establishment of temporary access shafts for station box excavation adjacent to Yonge Street; temporary decking will be installed over the station box to allow traffic flow while excavation continues adjacent to and beneath Yonge Street.

The construction phase ZOIs for the location are available in **Appendix F**. Benzo(a)pyrene had the largest ZOI, extending 35 metres from the construction footprint.

Table 5-8 provides the distance from the construction footprint to where the criterion/standard is first achieved.

Table 5-8 Zone of Influence (Project Impact) – Clark Station Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.021 Controlled - 0.021	24-hour	50	0	0
PM _{2.5}	Uncontrolled - 0.020 Controlled - 0.020	Annual	8.8 ^b	0	0
		24-hour	27 ^b	5	5
Nitrogen Dioxide (NO ₂)	0.34	Annual	33 ^b	0	Note ^d
		24-hour	200	0	
		1-hour	400	0	
Acrolein	0.00053	24-hour	0.4	20	
		1-hour	4.5	0	
Benzo(a)pyrene	0.000000086	Annual	0.00001	15	
		24-hour	0.00005	35	
Benzene	0.00081	Annual	0.45	0	
		24-hour	2.3	0	
1,3-Butadiene	0.000043	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.13	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0021	24-hour	500	0	

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
		½-hour	500	0	
Formaldehyde	0.0057	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.4 Royal Orchard Station

The station will be below grade and located near the intersection of Royal Orchard Boulevard and Yonge Street.

The "Shoring and Excavation" stage of construction was selected to represent worst-case emissions due to intensity of earthworks and expected duration, relative to the other stages. This stage includes establishment of temporary access shafts for station box excavation; temporary decking will be installed over the station box to allow traffic flow while excavation continues adjacent to and beneath Yonge Street near Royal Orchard Boulevard. The construction phase ZOIs for the location are available in **Appendix F**. PM_{2.5} had the largest ZOI, extending 55 metres from the construction footprint.

Table 5-9 provides the distance from the construction footprint to where the criterion/standard is first achieved.

Table 5-9 Zone of Influence (Project Impact) – Royal Orchard Station Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.064 Controlled - 0.044	24-hour	50	20	10
PM _{2.5}	Uncontrolled - 0.040 Controlled - 0.037	Annual	8.8 ^b	8	6
		24-hour	27 ^b	22	21
Nitrogen Dioxide (NO ₂)	0.57	Annual	33 ^b	12	Note ^d
		24-hour	200	0	
		1-hour	400	6	
Acrolein	0.00098	24-hour	0.4	50	
		1-hour	4.5	14	
Benzo(a)pyrene	0.00000016	Annual	0.00001	40	
		24-hour	0.00005	66	
Benzene	0.0016	Annual	0.45	5	
		24-hour	2.3	10	

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
1,3-Butadiene	0.000080	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.24	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0039	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.011	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.5 Portal Structure/Launch Shaft

The portal structure, including launch shaft, begins immediately south of Langstaff Road, west of the CN corridor ROW and facilitates the transition from at-grade rail to below grade alignment.

The "Shoring and Excavation" stage of construction was selected to represent worst-case emissions due to intensity of earthworks and expected duration, relative to the other stages. This stage includes establishment of the entry point for TBM and the change from below grade to above grade.

The construction phase ZOIs for the location are available in **Appendix F**. NO₂ had the largest ZOI, extending 27 metres from the construction footprint.

Table 5-10 provides the distance from the construction footprint where the criteria/standard is first achieved.

Table 5-10 Zone of Influence (Project Impact) – Portal Structure Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM10	Uncontrolled - 0.12 Controlled - 0.064	24-hour	50	0	0
PM2.5	Uncontrolled - 0.075 Controlled - 0.053	Annual	8.8 b	0	0
		24-hour	27 b	0	0
Nitrogen Dioxide (NO ₂)	0.77	Annual	33 b	0	
		24-hour	200	0	
		1-hour	400	27	
Acrolein	0.0012	24-hour	0.4	5	

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
		1-hour	4.5	0	Note ^d
Benzo(a)pyrene	0.00000021	Annual	0.00001	3	
		24-hour	0.00005	12	
Benzene	0.0021	Annual	0.45	0	
		24-hour	2.3	0	
1,3-Butadiene	0.00010	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.30	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0050	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.014	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

There may be a diesel locomotive that ferries precast subway tunnel liners to the tunnel boring machine (TBM). Emissions are anticipated to be vented from the portal. Due to the proximity of Highway 407 high urban density, the emissions from this locomotive were not considered to be significant and were not quantitatively assessed.

5.6.2.6 Bridge Station and Bus Terminal

The station will be at-grade west of the CN Rail Corridor and north of Highway 407 and Highway 7, and will include three (3) pedestrian entrances and a bus terminal.

A combination of the "Shoring and Excavation" and "Station/Bus Terminal Construction" stages was selected to represent worst-case emissions due to the volume of at-grade equipment and expected duration, relative to the other stages. This includes ground preparation and concrete works.

The construction phase ZOIs for the location are available in **Appendix F**. Benzo(a)pyrene had the largest ZOI, extending 40 metres from the construction footprint.

Table 5-11 provides the distance from the construction footprint to where the criterion/standard is first achieved.

Table 5-11 Zone of Influence (Project Impact) – Bridge Station Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.12 Controlled - 0.065	24-hour	50	8	0
PM _{2.5}	Uncontrolled - 0.075 Controlled - 0.052	Annual	8.8 ^b	0	0
		24-hour	27 ^b	10	5
Nitrogen Dioxide (NO ₂)	0.71	Annual	33 ^b	7	Note ^d
		24-hour	200	0	
		1-hour	400	0	
Acrolein	0.0011	24-hour	0.4	25	
		1-hour	4.5	0	
Benzo(a)pyrene	0.00000022	Annual	0.00001	30	
		24-hour	0.00005	40	
Benzene	0.0020	Annual	0.45	0	
		24-hour	2.3	0	
1,3-Butadiene	0.000093	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.30	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0047	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.013	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.7 High Tech Station

The station will be at grade east of Yonge St. traversing High Tech Road, west of the CN rail corridor, and adjacent to Richmond Hill Centre Terminal. Two (2) at-grade pedestrian entrances will be constructed on each side of the road.

A combination of the "Shoring and Excavation" and "Station/Bus Terminal Construction" stages was selected to represent worst-case emissions due to the volume of at-grade equipment and expected duration, relative to the other stages. This includes ground preparation and concrete works.

The construction phase ZOIs for the location are available in **Appendix F**. Acrolein had the largest ZOI, extending 40 m from the construction footprint.

Table 5-12 provides the distance from the construction footprint to where the criterion/standard is first achieved.

Table 5-12 Zone of Influence (Project Impact) – High Tech Station Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.11 Controlled - 0.052	24-hour	50	20	0
PM _{2.5}	Uncontrolled - 0.062 Controlled - 0.039	Annual	8.8 ^b	10	0
		24-hour	27 ^b	25	5
Nitrogen Dioxide (NO ₂)	0.50	Annual	33 ^b	0	Note ^d
		24-hour	200	0	
		1-hour	400	0	
Acrolein	0.00081	24-hour	0.4	30	
		1-hour	4.5	0	
Benzo(a)pyrene	0.000000148	Annual	0.00001	25	
		24-hour	0.00005	40	
Benzene	0.00143	Annual	0.45	0	
		24-hour	2.3	0	
1,3-Butadiene	0.000068	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.21	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0034	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.0094	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.8 Train Storage Facility

The TSF will be located at north end of the alignment. The facility will be designed to accommodate storage for vehicles required by the operator and will include limited maintenance spaces.

The “Site Preparation/Earth Works” stage of construction was selected to represent worst-case emissions due to intensity of earthworks and expected duration, relative to the other stages.

The construction phase ZOIs for the location are available in **Appendix F**. Benzo(a)pyrene had the largest ZOI, extending 70 m from the construction footprint. **Table 5-13** provides the distance from the construction footprint to where the criterion/standard is first achieved.

Table 5-13 Zone of Influence (Project Impact) – Train Storage Facility Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.19 Controlled - 0.081	24-hour	50	60	15
PM _{2.5}	Uncontrolled - 0.10 Controlled - 0.057	Annual	8.8 ^b	20	10
		24-hour	27 ^b	60	20
Nitrogen Dioxide (NO ₂)	0.60	Annual	33 ^b	20	Note ^d
		24-hour	200	0	
		1-hour	400	0	
Acrolein	0.0011	24-hour	0.4	12	
		1-hour	4.5	0	
Benzo(a)pyrene	0.00000021	Annual	0.00001	50	
		24-hour	0.00005	70	
Benzene	0.0019	Annual	0.45	4	
		24-hour	2.3	0	
1,3-Butadiene	0.000089	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.30	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0044	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.012	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standards (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.9 Emergency Exit Buildings

Emergency Exit Buildings (EEBs) accommodate stairs and fire department connections. The construction of Emergency Exit Buildings (EEB) shafts will follow the cut-and-cover method. EEB4 was used as a surrogate for all EEBs.

The “Underground Construction” stage of construction was selected to represent worst-case emissions due to intensity of earthworks relative to the other stages.

The construction phase ZOI for all EEBs are available in **Appendix F**. Benzo(a)pyrene had the largest ZOI, extending 80 m from the construction footprint. **Table 5-14** provides the distance from the construction footprint to where the criterion or standard is met.

Table 5-14 Zone of Influence (Project Impact) – Emergency Exit Building Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.19 Controlled - 0.081	24-hour	50	25	15
PM _{2.5}	Uncontrolled - 0.10 Controlled - 0.057	Annual	8.8 ^b	15	14
		24-hour	27 ^b	33	32
Nitrogen Dioxide (NO ₂)	0.60	Annual	33 ^b	18	Not Applicable (Note ^d)
		24-hour	200	0	
		1-hour	400	20	
Acrolein	0.0011	24-hour	0.4	70	
		1-hour	4.5	35	
Benzo(a)pyrene	0.00000021	Annual	0.00001	50	
		24-hour	0.00005	80	
Benzene	0.0019	Annual	0.45	9	
		24-hour	2.3	11	
1,3-Butadiene	0.000089	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.30	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0044	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.012	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standard (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.2.10 Extraction Shaft

The Extraction Shaft is a temporary element of the project needed to remove the TBM when the tunnel excavation is completed. At this final phase of tunnel excavation, TBMs are disassembled, extricated from the extraction/retrieval shaft to the ground level, and removed from the Project site. After the TBMs retrieval, the extraction shaft is covered, so no emissions to the atmosphere are associated with it during the operational phase of the Project.

The "Excavation" stage of construction was selected to represent worst-case emissions due to intensity of earthworks relative to the other stages.

The construction phase ZOI for the location are available in **Appendix F**. Benzo(a)pyrene had the largest ZOI, extending 70 from the construction footprint.

Table 5-15 Zone of Influence (Project Impact) – Extraction Shaft Construction

Contaminant	Project Hourly Emission Rate (g/s)	Averaging Period	AAQC ^a (µg/m ³)	Maximum Extent of ZOI (m) ^d	
				Uncontrolled Emissions	Controlled Emissions ^e
PM ₁₀	Uncontrolled - 0.19 Controlled - 0.081	24-hour	50	22	17
PM _{2.5}	Uncontrolled - 0.10 Controlled - 0.057	Annual	8.8 ^b	18	17
		24-hour	27 ^b	33	31
Nitrogen Dioxide (NO ₂)	0.60	Annual	33 ^b	25	Not Applicable (Note ^d)
		24-hour	200	3	
		1-hour	400	18	
Acrolein	0.0011	24-hour	0.4	56	
		1-hour	4.5	30	
Benzo(a)pyrene	0.00000021	Annual	0.00001	50	
		24-hour	0.00005	70	
Benzene	0.0019	Annual	0.45	15	
		24-hour	2.3	14	
1,3-Butadiene	0.000089	Annual	2	0	
		24-hour	10	0	
Carbon Monoxide (CO)	0.30	8-hour	15,700	0	
		1-hour	36,200	0	
Acetaldehyde	0.0044	24-hour	500	0	
		½-hour	500	0	
Formaldehyde	0.012	24-hour	65	0	

Notes:

^a Ambient Air Quality Criteria set by Ontario's Ministry of the Environment, Conservation and Parks, unless otherwise noted

^b Air Quality Criterion based on Canadian Ambient Air Quality Standard (CAAQS)

^c A value of "0" implies that the Zone of Influence did not extend beyond the construction footprint

^d Controls only apply to fugitive dust emissions

5.6.3 Operational Phase – Local Effects

The Project is expected to improve air quality in the AQSA due to the reduction of ground traffic along the Yonge Street corridor and adoption of low- and zero-emission vehicles. Localized potential increases in air quality contaminants in the operational phase are related to incidental emissions from bus facility activity and increased usage of existing parking lots and are expected to diminish as adoption of low- and zero-emission cars and buses increases. Background concentrations of air contaminants were assumed to remain the same in 2041 as they are in 2021; this is a conservative assumption, as nationally, air contaminant emissions have been trending down since 1990 (CCME 2022).

Note that while road traffic, bus operations, and parking lots are not under the control of Metrolinx, they have been included as required in the assessment to understand the aggregate effects on air quality.

5.6.3.1 2021 “Baseline”

Predicted air quality concentrations for the 2021 “Baseline” contaminants are available as **Table 5-16**.

Table 5-16 2021 “Baseline” Maximum Concentration (Primary Screening)

Contami- nant	Averaging Time	Ambient Air Quality Criteria ¹	Study Area Maximum Concentration in 2021 Considering Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic (µg/m ³)	Concentration attributed to 2021 Baseline, Parking Lot, Road, Bus Terminal, and CN Rail Traffic (Percentage of Criteria)	Background Concentra- tion in 2021 (µg/m ³)	Concentration attributed to 2021 Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic + Background (Percentage of Criteria)
PM _{2.5}	24-hr	27 ²	2.02	7%	12.8	55%
	Annual	8.8 ³	0.30	3%	7.2	85%
PM ₁₀	24-hr	50	6.57	13%	23.7	61%
NO ₂	1-hr	400	263	66%	44.0	77%
		82 (2025 CAAQS ⁴)	155	Exceeding CAAQS ⁶	44.0	Exceeding CAAQS ⁷
	24-hr	200	135	67%	37.4	86%
	Annual	23 (2025 CAAQS ⁵)	5.1	22%	21.0	Exceeding CAAQS ⁷
CO	1-hr	36200	2197	6%	362	7%
	8-hr	15700	1828	12%	362	14%
Benzene	24-hr	2.30	1.32	58%	0.76	91%

Contami- nant	Averaging Time	Ambient Air Quality Criteria ¹	Study Area Maximum Concentration in 2021 Considering Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic (µg/m ³)	Concentration attributed to 2021 Baseline, Parking Lot, Road, Bus Terminal, and CN Rail Traffic (Percentage of Criteria)	Background Concentra- tion in 2021 (µg/m ³)	Concentration attributed to 2021 Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic + Background (Percentage of Criteria)
	Annual	0.45	0.64	Exceeding AAQC ⁶	0.51	Exceeding AAQC ⁷
1-3 Butadiene	24-hr	10	0.22	2%	0.44	7%
	Annual	2	0.11	5%	0.024	7%
Formalde- hyde	24-hr	65	0.95	1%	2.76	6%
Acetalde- hyde	24-hr	500	0.50	0%	2.91	1%
	1/2-hr	500	5.62	1%	8.6	3%
Acrolein	24-hr	0.40	0.13	33%	0.08	53%
	1-hr	4.50	1.29	29%	0.19	33%
Benzo(a)- pyrene	24-hr	0.00005	8.30E-06	17%	0.00011	Exceeding AAQC ⁷
	Annual	0.00001	4.01E-06	40%	0.00006	Exceeding AAQC ⁷

Notes:
¹ Unless otherwise noted, with the CAAQS applicable in 2041 being used for baseline and future scenario assessments.

² The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations, as per CAAQS definition.

³ The 3-year average of the annual average of the daily 24-hour average concentrations, as per CAAQS definition.

⁴ The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations, as per CAAQS definition.

⁵ The average over a single calendar year of all 1-hour average concentrations, as per CAAQS definition.

⁶ CAAQS or AAQC exceedances are predicted less than 10% of the time on an annual basis.

⁷ CAAQS or AAQC exceedances are attributed to the notable background concentration of the contaminant in the AQSA.

There were exceedances of the AAQCs for benzene (annual averaging time) and benzo(a)pyrene (annual and 24 hour averaging time) predicted, however these exceedances were driven by the elevated background concentrations. It was only at a limited number of receptors that construction emissions alone resulted in any air concentrations that exceeded the respective AAQCs (i.e., benzene AAQC exceedances were predicted at 13 of the 6,729 receptors (0.2%) within the study due to emissions from construction activities and equipment alone).

The hourly concentrations at some receptors may be above the 1-hour CAAQS when directly compared, however this is not considered to be an exceedance as:

- They are used by provinces and territories to guide air zone management and were not developed as regulatory standards;
- They are meant to be compared to with a 3-year average of the annual 98th percentile of the daily maximum 1 hour average concentrations; and
- The background concentrations already include contributions from transportation emissions, and this double-counting is likely to bias the results high.

Considering a 24-hour dataset of the highest predicted concentrations for each hour for each receptor, only 6% of hours are predicted to exceed the 1-hour 2025 CAAQS when directly compared, therefore the exceedances are infrequent. For the annual NO₂ CAAQS, the background exceeds 90% of the of the CAAQS before the addition of air quality Study Area transportation sources and the primary screening is conservative for reasons similar to those detailed for the 1-hour concentrations.

There were no exceedances of the 1-hour NO₂ AAQC in this Comprehensive Predictable Worst-case Analysis. **Appendix F** provides contours of the cumulative (all considered transportation sources + 90th percentile background) NO₂ concentrations as a percent of the 1-hour NO₂ AAQC (400 µg/m³); the highest cumulative concentration was 75% of the AAQC.

5.6.3.2 2041 “Future No Build”

Predicted air quality concentrations for the 2041 “Future No Build” contaminants are available as **Table 5-17**.

Table 5-17 "Future No Build" Maximum Concentration (Primary Screening)

Contami- nant	Averaging Time	Ambient Air Quality Criteria ¹	Study Area Maximum Concentration in 2021 Considering Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic (µg/m ³)	Concentration attributed to 2021 Baseline, Parking Lot, Road, Bus Terminal, and CN Rail Traffic (Percentage of Criteria)	Background Concentra- tion in 2021 (µg/m ³)	Concentration attributed to 2021 Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic + Background (Percentage of Criteria)
PM _{2.5}	24-hr	27 ²	0.85	3%	12.8	51%
	Annual	8.8 ³	0.13	1%	7.2	83%
PM ₁₀	24-hr	50	4.99	10%	23.7	57%
NO ₂	1-hr	400	197	49%	44.0	60%
		82 (2025 CAAQS ⁴)	97	Exceeding CAAQS ⁶	44.0	Exceeding CAAQS ⁶
	24-hr	200	88	44%	37.4	63%
	Annual	23 (2025 CAAQS ⁵)	2.8	12%	21.0	Exceeding CAAQS ⁷
CO	1-hr	36200	1311	4%	362	5%
	8-hr	15700	1112	7%	362	9%
Benzene	24-hr	2.30	0.84	36%	0.76	70%
	Annual	0.45	0.42	93%	0.51	Exceeding AAAQS ⁷
1-3 Butadiene	24-hr	10	0.14	1%	0.44	6%
	Annual	2	0.07	4%	0.024	5%

Contaminant	Averaging Time	Ambient Air Quality Criteria ¹	Study Area Maximum Concentration in 2021 Considering Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic (µg/m ³)	Concentration attributed to 2021 Baseline, Parking Lot, Road, Bus Terminal, and CN Rail Traffic (Percentage of Criteria)	Background Concentration in 2021 (µg/m ³)	Concentration attributed to 2021 Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic + Background (Percentage of Criteria)
Formaldehyde	24-hr	65	0.71	1%	2.76	5%
Acetaldehyde	24-hr	500	0.39	0%	2.91	1%
	1/2-hr	500	3.89	1%	8.6	2%
Acrolein	24-hr	0.40	0.04	11%	0.08	31%
	1-hr	4.50	0.45	10%	0.19	14%
Benzo(a)pyrene	24-hr	0.00005	5.12E-06	10%	0.00011	Exceeding AAQs ⁷
	Annual	0.00001	2.56E-06	26%	0.00006	Exceeding AAQs ⁷

Notes:

¹ Unless otherwise noted, with the CAAQS applicable in 2041 being used for baseline and future scenario assessments.

² The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.

³ The 3-year average of the annual average of the daily 24-hour average concentrations.

⁴ The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations.

⁵ The average over a single calendar year of all 1-hour average concentrations.

⁶ CAAQS or AAQC exceedances are predicted less than 13% of the time on an annual basis.

⁷ CAAQS or AAQC exceedances are attributed to the notable background concentration of the contaminant in the AQSA.

There were exceedances of the AAQCs for benzene (annual averaging time) and benzo(a)pyrene (annual and 24-hour averaging time) predicted, however these exceedances were driven by the elevated background concentrations.

This shows that some hourly concentrations at some receptors may be above the 1-hour CAAQS when directly compared, however this is not considered to be an exceedance as:

- They are used by provinces and territories to guide air zone management and were not developed as regulatory standards;
- They are meant to be compared to with a 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations; and
- The background concentrations already include contributions from transportation emissions; and this double-counting is likely to bias the results high.

Considering a 24-hour dataset of the highest predicted concentrations for each hour for each receptor, less than 2% of the hours considered are predicted to have an exceedance of the 2025 CAAQS when compared directly. For the annual NO₂ CAAQS, the background exceeds 90% of the of the standard before the addition of AQSA transportation sources and the primary screening is conservative for reason similar to those detailed for the 1-hour concentrations.

There were no exceedances of the 1-hour NO₂ AAQC in this comprehensive predictable worst-case analysis. **Appendix F** provides contours of the cumulative (all considered transportation sources + 90th percentile background) NO₂ concentrations as a percent of the 1-hour NO₂ AAQC (400 µg/m³); the highest cumulative concentration was 60% of the AAQC.

5.6.3.3 2041 "Future Build"

Predicted air quality concentrations for the 2041 "Future Build" contaminants are available as **Table 5-18**.

Table 5-18 2041 "Future Build" Maximum Concentration (Primary Screening)

Contaminant	Averaging Time	Ambient Air Quality Criteria ¹	Study Area Maximum Concentration in 2021 Considering Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic (µg/m ³)	Concentration attributed to 2021 Baseline, Parking Lot, Road, Bus Terminal, and CN Rail Traffic (Percentage of Criteria)	Background Concentration in 2021 (µg/m ³)	Concentration attributed to 2021 Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic + Background (Percentage of Criteria)
PM _{2.5}	24-hr	27 ²	0.92	3%	12.8	51%
	Annual	8.8 ³	0.14	2%	7.2	83%
PM ₁₀	24-hr	50	5.16	10%	23.7	58%
NO ₂	1-hr	400	206	52%	44.0	63%
		82 (2025 CAAQS ⁴)	103	Exceeding CAAQS ⁶	44.0	Exceeding CAAQS ⁶
	24-hr	200	90	45%	37.4	64%
	Annual	23 (2025 CAAQS ⁵)	3.0	13%	21.0	Exceeding CAAQS ⁷
CO	1-hr	36200	1686	5%	362	6%
	8-hr	15700	1429	9%	362	11%
Benzene	24-hr	2.30	0.98	43%	0.76	76%
	Annual	0.45	0.49	Exceeding AAQC ⁶	0.51	Exceeding AAQC ⁷
1-3 Butadiene	24-hr	10	0.17	2%	0.44	6%
	Annual	2	0.09	4%	0.024	5%
Formaldehyde	24-hr	65	0.71	1%	2.76	5%
Acetaldehyde	24-hr	500	0.42	0%	2.91	1%
	1/2-hr	500	5.03	1%	8.6	3%

Contaminant	Averaging Time	Ambient Air Quality Criteria ¹	Study Area Maximum Concentration in 2021 Considering Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic ($\mu\text{g}/\text{m}^3$)	Concentration attributed to 2021 Baseline, Parking Lot, Road, Bus Terminal, and CN Rail Traffic (Percentage of Criteria)	Background Concentration in 2021 ($\mu\text{g}/\text{m}^3$)	Concentration attributed to 2021 Baseline Parking Lot, Road, Bus Terminal, and CN Rail Traffic + Background (Percentage of Criteria)
Acrolein	24-hr	0.40	0.04	11%	0.08	31%
	1-hr	4.50	0.46	10%	0.19	14%
Benzo(a)-pyrene	24-hr	0.00005	6.03E-06	12%	0.00011	Exceeding AAQC ⁷
	Annual	0.00001	3.02E-06	30%	0.00006	Exceeding AAQC ⁷

Notes:

¹ Unless otherwise noted, with the CAAQS applicable in 2041 being used for baseline and future scenario assessments.

² The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.

³ The 3-year average of the annual average of the daily 24-hour average concentrations.

⁴ The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations.

⁵ The average over a single calendar year of all 1-hour average concentrations.

⁶ CAAQS or AAQC exceedances are predicted less than 15% of the time on an annual basis.

⁷ CAAQS or AAQC exceedances are attributed to the notable background concentration of the contaminant in the AQSA.

There were exceedances of the AAQCs for benzene (annual averaging time) and benzo(a)pyrene (annual and 24 hour averaging time) predicted, however these exceedances were driven by the elevated background concentrations. When only considering transportation sources, of the 6806 receptors considered, only 4 (0.1%) exceeded the benzene AAQC.

The hourly concentrations at some receptors may be above the 1-hour CAAQS when directly compared, however this is not considered to be an exceedance as:

- They are used by provinces and territories to guide air zone management and were not developed as regulatory standards;
- They are meant to be compared to with a 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations; and
- The background concentrations already include contributions from transportation emissions, and this double-counting is likely to bias the results high.

Considering a 24-hour dataset of the highest predicted concentrations for each hour for each receptor, less than 2% of the hours considered are predicted to have an exceedance of the 2025 CAAQS when compared directly. For the annual NO₂ CAAQS, the background exceeds 90% of the of the standard before the addition of AQSA transportation sources and the primary screening is conservative for reason similar to those detailed for the 1-hour concentrations.

There were no exceedances of the 1-hour NO₂ AAQC in this comprehensive predictable worst-case analysis.

Appendix F provides contours of the cumulative (all considered transportation sources + 90th percentile background) NO₂ concentrations as a percent of the 1-hour NO₂ AAQC (400 $\mu\text{g}/\text{m}^3$); the highest cumulative concentration was 63% of the AAQC.

5.6.4 Interpretation

Table 5-16 to **Table 5-18** represent the locations with the worst-case air contaminant concentrations predicted across the entire AQSA. Further, for each contaminant and averaging time, the concentration presented is not necessarily at the same location (e.g., the maximum PM_{2.5} concentration may occur at a different location than the maximum NO₂ concentration due to different type of sources creating these impacts). The rest of the AQSA is predicted to have lower air contaminant concentrations than what is shown in the tables.

When looking at local effects, there is a general decrease in predicted air contaminant concentrations in the 2041 “Future No Build” scenario when compared to the 2021 “Baseline” scenario; this is due to the adoption of low- and zero- emission vehicles. Due to incidental emissions from bus facility activity and increased usage of existing parking lots, the 2041 “Future Build” scenario has minor localized increases of predicted worst-case concentrations for some air contaminants; however, the majority of the AQSA is expected to benefit from lower traffic volumes and resultant lower air contaminant concentrations along the Yonge Street corridor.

5.6.5 Operational Phase – Regional Effects

The operation of the Project would support the overall provincial objective in shifting towards a more sustainable mode of transportation, with an estimated reduction of 7,700 kilometre travelled by private vehicles during the morning peak hour and corresponding reduction in auto-related greenhouse (GHG) emissions of 4,800 tonnes annually (Metrolinx 2021) as people shift to taking the Yonge North Subway Extension. The shift in travel mode will lead to: 1) reductions in combustion exhaust and road dust emissions because fewer vehicles will be travelling on roads, and 2) improved fuel efficiency from less congestion and vehicle idling for those vehicles that remain on the road (Metrolinx 2008).

5.6.6 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential air quality impacts can be found in **Table 5-52**.

5.7 Noise

5.7.1 Impact Assessment Criteria

The following table describes the applicable guideline/reference documents that were followed as part of assessing the potential noise impacts resulting from operation of the various elements of the YNSE project.

5.7.1.1 Operational Noise Criteria

Table 5-19 Operational Noise Criteria

Source	Guideline Document	Point of Assessment	Descriptor	Limit
Revenue vehicle operations noise	MOEE/GO Transit Protocol	Exterior façade of receptor or outdoor living areas of residential receptors, whichever is closer	$L_{eq,16h}$ and $L_{eq,8h}$	Daytime (07:00-23:00): Not to exceed 55 dBA or ambient $L_{eq,16h}$, whichever is greater by 5 dBA or more. Nighttime (23:00-07:00): Not to exceed 50 dBA or pre-project $L_{eq,8h}$, whichever is greater by 5 dBA or more.

Source	Guideline Document	Point of Assessment	Descriptor	Limit
Revenue vehicle passby noise	MOEE/TTC Protocol	All locations beyond 15 m from the nearest track's centreline, with exception of within 100 m of special track work areas.	L_{eq} , passby	Not to exceed 80 dBA L_{eq} , passby
Stationary equipment noise (including ventilation shafts, bus terminals, and substations)	NPC-300	Exterior façade of sensitive receptor or outdoor living areas of residential receptors, whichever is closer	$L_{eq,1h}$	Maximum of quietest ambient $L_{eq,1hr}$ or 50 dBA during daytime (7:00-19:00) and evening (19:00- 23:00) or 45 dBA during nighttime (23:00-7:00) *Testing of emergency equipment is permitted to make 5 dB more noise under the same conditions and may be assessed separately from the other noise sources.
Layovers (such as the train storage facility)	MOEE/GO Transit Protocol and NPC-300	Exterior façade of sensitive receptor or outdoor living areas of residential receptors, whichever is closer	$L_{eq,1h}$	Maximum of ambient $L_{eq,1hr}$ or 55 dBA $L_{eq,1hr}$
Revenue Vehicle passby vibration	FTA Manual	Ground buildings where vibration could interfere with interior operations (e.g., concert halls, television studios, recording studios, vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, etc.)	Vertical vibration velocity	Not to exceed 0.045 mm/sec rms
	MOEE/TTC Protocol and FTA Manual	Ground residences and buildings where people normally sleep (residential buildings, hotels, hospitals, etc.)	Vertical vibration velocity	Not to exceed 0.10 mm/sec rms
		Ground outside institutional land uses with primarily daytime use	Vertical vibration velocity	Not to exceed 0.14 mm/sec rms

Source	Guideline Document	Point of Assessment	Descriptor	Limit
Revenue Vehicle passby ground borne noise measured as maximum passby sound pressure level using slow response	FTA Manual	Inside concert halls, television studios, recording studios	$L_{max,S}$	25 dBA
	FTA Manual	Inside auditoriums	$L_{max,S}$	30 dBA
	FTA Manual	Inside residences and buildings where people normally sleep (e.g., residential buildings, hotels, hospitals); and theatres	$L_{max,S}$	35 dBA
	FTA Manual	Inside institutional buildings without vibration-sensitive equipment (e.g., schools, places of worship, office buildings, other institutions)	$L_{max,S}$	40 dBA

5.7.1.2 Construction Noise Criteria

In addition, the following table describes the receptor-based limits for construction noise that were adopted to assess the potential noise impacts resulting from construction activities for the purposes of this assessment.

Receiver based noise level limits provide a basis for the assessment of construction noise impacts to communities from construction over extended periods of time. The United States Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual (United States Federal Transit Administration, 2018 – referred to as the Federal Transit Administration Guide) is widely used as a reference for construction noise and vibration impact assessment and the eight-hour criteria have been used in past Metrolinx noise impact assessments.

The average daytime criterion is defined as a rolling eight-hour (any consecutive eight hours during a time period longer than eight hours) energy average ($L_{eq,8hr}$) over the course of the daytime, which is defined as 07:00 to 23:00 (Ministry of the Environment, 2013) for noise assessments in Ontario; this daytime noise level limit is 80 dBA. The average nighttime criterion is defined as the eight-hour energy average ($L_{eq,8hr}$) during the nighttime, which is defined as 23:00 to 07:00 (Ministry of the Environment, 2013); this nighttime noise level limit is 70 dBA. These assessment criteria have been adopted for use as part of the YNSE project construction noise impact assessment and are summarized in the table below.

Table 5-20 Adopted Construction Noise Criteria

Land Use	L _{eq} (16-hour, 8-hour) (dBA)	
	Day (7:00 to 23:00)	Night (23:00 to 7:00 the following day)
Residential	Louder of: 75 or Baseline+5	Louder of: 65 or Baseline+3
Institutional	Louder of: 70 or Baseline+5	Louder of: 60 or Baseline+3
Commercial	Louder of: 80 or Baseline+5	Not Applicable
Industrial	Louder of: 85 or Baseline+5	Not Applicable
Station	Louder of: 85 or Baseline +5	Louder of: 70 or Baseline +5

5.7.2 Identification of Receptors

Table 5-21 summarizes the representative receptors selected for the Project. As noted, not all receptors are sensitive to both construction and operational noise and vibration. Similarly, not all receptors are sensitive to both noise and vibration. Receptors designated as “V” are sensitive only to ground-borne noise and vibration given their location along the below grade alignment. Receptors designated as “R” are sensitive to both air-borne noise and ground-borne noise and vibration.

Table 5-21 Representative Receptors

Segment	Receptor Number	Description	Receptor Sensitivity			
			Operational Noise	Operational Vibration	Construction Noise	Construction Vibration
1	R1	High-rise Residential	N	Y	Y	Y
	V1	High-rise Residential	N	Y	N	Y
	V2	High-rise Residential	N	Y	N	Y
	R2	High-rise Residential	Y	Y	Y	Y
	R3	High-rise Residential	Y	Y	Y	Y
	R4	Low-rise Residential	Y	Y	Y	Y
	R5	High-rise Residential	Y	Y	Y	Y
	R6	Low-rise Residential	Y	Y	Y	Y
	R7	High-rise Residential	Y	Y	Y	Y
	R8	High-rise Residential	N	Y	Y	Y
	R9	High-rise Residential	N	Y	Y	Y

Segment	Receptor Number	Description	Receptor Sensitivity			
			Operational Noise	Operational Vibration	Construction Noise	Construction Vibration
	V3	High-rise Residential	N	Y	N	Y
	R10	Low-rise Residential	Y	Y	Y	Y
	R11	Low-rise Residential	Y	Y	Y	Y
	R12	High-rise Residential	Y	Y	Y	Y
	R13	Funeral Home	Y	Y	Y	Y
	R14	Low-rise Residential	Y	Y	Y	Y
	R15	Low-rise Residential	Y	Y	Y	Y
	R16	Low-rise Residential	Y	Y	Y	Y
	R17	Low-rise Residential	Y	Y	Y	Y
	R18	Low-rise Residential	Y	Y	Y	Y
	R19	Low-rise Residential	Y	Y	Y	Y
	R20	High-rise Residential	N	Y	Y	Y
	R21	Low-rise Residential	N	Y	Y	Y
	V4	High-rise Residential	N	Y	N	Y
	V5	High-rise Residential	N	Y	N	Y
	V6	High-rise Residential	N	Y	N	Y
2	R22	Low-rise Residential	Y	Y	Y	Y
	R23	High-rise Residential	Y	Y	Y	Y
	R24	High-rise Residential	Y	Y	Y	Y
	R25	High-rise Residential	Y	Y	Y	Y
	R26	High-rise Residential	Y	Y	Y	Y
	V7	High-rise Residential	N	Y	N	Y
	V8	High-rise Residential	N	Y	N	Y
	V9	Low-rise Residential	N	Y	N	Y
	V10	Low-rise Residential	N	Y	N	Y
	R27	Low-rise Residential	Y	Y	Y	Y
	R28	Low-rise Residential	Y	Y	Y	Y
	V11	Church	N	Y	N	Y
	V12	High-rise Residential	N	Y	N	Y
	R29	Golf Club	Y	Y	Y	Y
	R30	High-rise Residential	Y	Y	Y	Y

Segment	Receptor Number	Description	Receptor Sensitivity			
			Operational Noise	Operational Vibration	Construction Noise	Construction Vibration
	R31	High-rise Residential	Y	Y	Y	Y
	R32	Church	Y	Y	Y	Y
	V13	High-rise Residential	N	Y	N	Y
	R33	High-rise Residential	N	Y	N	Y
	R34	High-rise Residential	N	Y	N	Y
	V14	Low-rise Residential	N	Y	N	Y
	R35	Low-rise Residential	N	Y	Y	Y
	R36	Low-rise Residential	N	Y	Y	Y
	V15	Low-rise Residential	N	Y	N	Y
	V16	Low-rise Residential	N	Y	N	Y
	V17	Low-rise Residential	N	Y	N	Y
	R37	School	N	Y	Y	Y
	R38	Low-rise Residential	N	Y	Y	Y
	R39	Low-rise Residential	N	Y	Y	Y
	R40	Low-rise Residential	Y	Y	Y	Y
3	R41	Church	Y	Y	Y	Y
	V18	Theatre	N	Y	N	Y
	R42	High-rise Residential	Y	Y	Y	Y
	R43	High-rise Residential	Y	Y	Y	Y
	R44	Low-rise Residential	Y	Y	Y	Y
	R45	High-rise Residential	Y	Y	Y	Y
	R46	Low-rise Residential	Y	Y	Y	Y
	R47	High-rise Residential	Y	Y	Y	Y
	R48	Low-rise Residential	Y	Y	Y	Y
	R49	High-rise Residential	Y	Y	Y	Y
	R50	Low-rise Residential	Y	Y	Y	Y
	R51	Low-rise Residential	Y	Y	Y	Y
	R52	Low-rise Residential	Y	Y	Y	Y
	R53	Low-rise Residential	Y	Y	Y	Y
	R54	Low-rise Residential	Y	Y	Y	Y
	R55	High-rise Residential	Y	Y	Y	Y

Segment	Receptor Number	Description	Receptor Sensitivity			
			Operational Noise	Operational Vibration	Construction Noise	Construction Vibration
	R56	High-rise Residential	Y	Y	Y	Y
	R57	Low-rise Residential	Y	Y	Y	Y
	R58	Low-rise Residential	Y	Y	Y	Y
	R59	Low-rise Residential	Y	Y	Y	Y
	R60	Low-rise Residential	Y	Y	Y	Y

5.7.3 Operational Noise

The operational noise assessment reviews the following Project components:

- Stationary noise from stations, including ventilation shafts, mechanical equipment such as exhaust fans, bus terminals and a bus loop.
- Operational subway noise from the subway when it operates at grade.
- Operational noise from the train storage facility.

5.7.3.1 Segment 1 – Finch Station to Clark Station (Below Grade)

5.7.3.1.1 Potential Impacts

Table 5-22 provides the predicted sound levels from all stationary sources within Segment 1 (including stations, ventilation equipment, traction power substations, bus terminals, etc.). In all cases, the sound levels from the stationary sources are not anticipated to require mitigation.

Table 5-22 Segment 1 Stationary Source Sound Levels

Receptor	Predicted Sound Levels (dBA $L_{eq,1hr}$)		Guideline Sound Levels (dBA $L_{eq,1hr}$)		Project Component
	Daytime	Nighttime	Daytime	Nighttime	
R4	51	42	53	46	Cummer Station
R5	43	43	64	57	Cummer Station
R6	39	39	60	53	Cummer Station
R7	49	49	63	56	Cummer Station
R8	45	45	65	58	Cummer Station
R9	54	54	63	56	Cummer Station
R12	49	42	62	55	Steeles Station
R13	52	44	67	60	Steeles Station
R14	49	42	55	47	Steeles Station
R15	48	40	57	50	Steeles Station
R16	49	42	55	48	Steeles Station
R17	39	39	68	61	Steeles Station

Receptor	Predicted Sound Levels (dBA $L_{eq,1hr}$)		Guideline Sound Levels (dBA $L_{eq,1hr}$)		Project Component
	Daytime	Nighttime	Daytime	Nighttime	
R18	38	34	57	50	Steeles Station
R19	41	37	58	51	Steeles Station

Table 5-26 provides a prediction of the cumulative noise from the bus terminal at Steeles Station and the bus loop at Cummer Avenue. The cumulative noise includes the noise from the buses as well as any stationary sources of sound associated with the station or facility itself. Similarly, due to either the modest operations or the lack of nearby sensitive receptors, the bus facilities are not expected to generate a noise impact. Mitigation measures are not required.

Table 5-23 Steeles Station Bus Terminal and Cummer Bus Loop Sound Levels

Bus Terminal	Representative Receptor	Morning Peak Period (6:00 - 7:00)		Late Night Period (22:00 - 23:00)		Overnight Period (2:00 - 3:00)	
		Sound Levels (dBA L _{eq,1hr})					
		Predicted	Guideline	Predicted	Guideline	Predicted	Guideline
Cummer Bus Loop	R4	51	54	49	53	N/A1	N/A
Steeles Station	R16	49	56	49	55	42	48

¹ Note that the overnight period was not assessed at Cummer Station as buses are not expected to use the loop during the nighttime.

5.7.3.1.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential noise impacts can be found in **Table 5-53**.

Based on the assessment, the sound levels from the noise sources in Segment 1 are expected to meet the applicable limits without further noise control measures. Inherent to the design are mitigation measures such as silencers for the tunnel ventilation system and selection of quiet mechanical and electrical equipment. Noisier equipment, for example, may require additional noise mitigation in order to meet the limits. An updated analysis will be completed as the mechanical/electrical design of the facilities progresses.

5.7.3.2 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

5.7.3.2.1 Potential Impacts

Table 5-24 provides the predicted sound levels for all stationary sources associated with Segment 2, between the Portal and Clark Station. Note the impact of the portal itself will be assessed in **Section 5.7.3.3**.

Table 5-24 Segment 2 Stationary Source Sound Levels

Receptor	Predicted Sound Levels (dBA $L_{eq,1hr}$)		Guideline Sound Levels (dBA $L_{eq,1hr}$)		Project Component
	Daytime	Nighttime	Daytime	Nighttime	
R22	51	45	62	55	Clark Station
R23	49	46	58	51	Clark Station

Receptor	Predicted Sound Levels (dBA $L_{eq,1hr}$)		Guideline Sound Levels (dBA $L_{eq,1hr}$)		Project Component
	Daytime	Nighttime	Daytime	Nighttime	
R24	60	53	59	51	Clark Station
R25	43	43	65	58	Clark Station
R26	52	52	64	57	Clark Station
R27	36	36	62	55	TPSS
R28	43	43	55	48	TPSS
R29	39	39	60	53	Royal Orchard Station
R30	54	54	64	57	Royal Orchard Station
R31	40	40	60	53	Royal Orchard Station
R32	42	42	62	55	Royal Orchard Station

As peak bus terminal volumes vary, the operational scenarios for the bus terminal at Clark Station have been assessed separately. The predicted sound levels are summarized in **Table 5-25**. As can be seen, there is a modest 2 dB impact predicted at the worst case. This impact is entirely due to the operational noise from the bus terminal. The stationary sources associated with the station itself (such as the TPSS, tunnel ventilation systems, etc.) do not significantly contribute to this excess. Mitigation measures are discussed in the following section.

Table 5-25 Clark Station Bus Terminal Sound Levels

Bus Terminal	Representative Receptor	Morning Peak Buses (6:00 - 7:00)		Late Night Buses (22:00 - 23:00)		Overnight Buses (2:00 - 3:00)	
		Sound Levels (dBA $L_{eq,1hr}$)					
		Predicted	Guideline	Predicted	Guideline	Predicted	Guideline
Clark Station	R24	60	59	57	59	53	51

5.7.3.2.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential noise impacts can be found in **Table 5-53**.

Based on the assessment, the sound levels from the mechanical and electrical noise sources in Segment 2 are expected to meet the applicable limits without further noise control measures. Inherent to the design are mitigation measures such as silencers for the tunnel ventilation system and selection of quiet mechanical and electrical equipment. Noisier equipment, for example, may require additional noise mitigation in order to meet the limits. An updated analysis should be completed as the mechanical/electrical design of the facilities progresses.

Due to the height of the receptor (R24 is a 6-storey building), a 5.5m tall noise barrier is recommended along the north extent of the Clark Station bus terminal. With the barrier in place, the sound levels are predicted to be below or equal to the limits as shown in **Table 5-26**.

Table 5-26 Clark Station Bus Terminal Sound Levels with Noise Barrier

Bus Terminal	Representative Receptor	Morning Peak Buses (6:00 - 7:00)		Late Night Buses (22:00 - 23:00)		Overnight Buses (2:00 - 3:00)	
		Sound Levels (dBA $L_{eq,1hr}$)					
		Predicted	Predicted	Predicted	Predicted	Predicted	Guideline
Clark Station	R24	57	59	55	59	51	51

The predicted excess is ~ approximately 2 dB, which is relatively minor. NPC-300 requires mitigation for any excess even if it is relatively insignificant. In this case, the minor excess is predicted to be mitigated by a 5.5m tall noise barrier. Given that most agencies are moving towards electric buses, which are quieter than their diesel counterparts, the need for a noise barrier should be reviewed as the design develops during the Detailed Design phase. The noise mitigation needed could be reduced or eliminated through the increased use of electric buses.

5.7.3.3 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

5.7.3.3.1 Potential Impacts

Table 5-27 provides the predicted sound levels during the peak operational period of the train storage facility. As noted, the guideline limit of 55 dBA $L_{eq,1hr}$ is slightly exceeded at several receptors to the west of the storage tracks. Mitigation measures are discussed in the following section.

Table 5-27 Predicted Sound Levels for Train Storage Facility

Receptor	Sound Levels (dBA $L_{eq,1hr}$)	MECP Guideline Limit (dBA $L_{eq,1hr}$)	Project Component
R43	41	55	TSF
R44	52	55	TSF
R45	52	55	TSF
R46	59	55	TSF
R47	63	55	TSF
R48	56	55	TSF
R49	66	55	TSF
R50	51	55	TSF
R51	49	55	TSF
R52	56	55	TSF
R53	52	55	TSF
R54	56	55	TSF
R55	55	55	TSF
R56	52	55	TSF
R57	56	55	TSF
R58	41	55	TSF

Receptor	Sound Levels (dBA $L_{eq,1hr}$)	MECP Guideline Limit (dBA $L_{eq,1hr}$)	Project Component
R59	53	55	TSF
R60	52	55	TSF

Table 5-28 provides the predicted sound levels for the remainder of the stationary sources along the at-grade alignment. Given the substantial setback between the facilities and nearby receptors, excesses are not predicted, and mitigation is not required.

Table 5-28 Segment 3 Stationary Source Sound Levels

Receptor	Predicted Sound Levels (dBA $L_{eq,1hr}$)		Guideline (dBA $L_{eq,1hr}$)		Project Component
	Daytime	Nighttime	Daytime	Nighttime	
R40	45	35	56	49	Portal
R41	50	41	58	51	Portal
R42	48	40	61	54	High Tech Station

The nearest receptor is more than 500m from the bus terminal. The sound levels from the Bridge Station bus terminal at that receptor are provided in **Table 5-29**.

Table 5-29 Bridge Station Bus Terminal Review

Bus Terminal	Critical Receptor	Morning Peak Period (6:00 - 7:00)		Late Night Period (22:00 - 23:00)		Overnight Period (2:00 - 3:00)	
		Sound Levels (dBA L _{eq,1hr})					
		Predicted	Guideline	Predicted	Guideline	Predicted	Guideline
Bridge Station	R41	50	59	46	58	41	50

The TSF boundary is approximately at Bantry Avenue. South of Bantry Avenue is the start of the operations of the subway. The sound levels between Bantry Avenue and High Tech Station are modest due to the lack of significant subway train traffic as compared to the full volume of trains that operates between High Tech Station and the Portal. Full service starts just north of High Tech Station. The assessment has reviewed the maximum permissible train volumes as a first step. The operational sound levels from the subway are summarized in **Table 5-27**.

Table 5-30 Operational Subway Sound Levels (Maximum Service Levels)

Receptor	Existing		Subway Only		Future With Subway	
	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)
R40	70	67	49	44	71	68
R41	66	60	55	50	68	62
R42	69	65	66	61	71	67
R43	67	65	56	52	68	66

Receptor	Existing		Subway Only		Future With Subway	
	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)
R44	68	65	60	56	69	66
R45	69	66	54	51	70	67
R46	68	65	58	54	69	66
R47	68	65	48	45	68	65

Notes:

Existing includes current noise from road and rail sound sources

Subway Only includes noise only from the Subway Train

Future With Subway includes noise from subway trains, road and other rail sound sources

Table 5-31 provides a comparison between the subway sound levels and the existing ambient as well as a comparison of the total future sound levels (Future With Subway) with the existing ambient. As seen in **Table 5-30** and **Table 5-31**, the subway does not result in an increase in the ambient sound levels present at critical receptors. The increase in the future sound levels is predominantly a result of minor service increases in GO Transit railway traffic and roadway traffic. The subway itself only results in a minor increase in sound levels at one receptor 42 (R42). The modest increase in sound is primarily a result of the relatively quiet sound levels from electrified subway service as well as the lack of noise sensitive receptors between High Tech Station and the portal. Given the insignificant contribution of the subway sound levels (as the subway sound levels are lower than or equal to the existing sound levels), noise mitigation measures are not warranted. Similarly, the subway service is expected to comply with the L_{eq} , passby limit of 80 dBA at 15m or more from normal trackwork at all receptors. The assessment has been completed based on the maximum number of trains proposed (Scenario 3). The interim scenarios would have even lower sound levels and correspondingly lower impacts. The minor increases in sound levels noted below may not be realized for several years until GO Transit ridership reaches sufficient levels.

Table 5-31 Operational Subway Noise Impacts

Receptor	Subway vs. Existing		Future With Project vs. Existing		Future With Project vs. Without Project	
	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)	Day (dBA $L_{eq,16hr}$)	Night (dBA $L_{eq,8hr}$)
R40	0	0	1	1	0	0
R41	0	0	2	2	0	0
R42	0	0	2	2	1	1
R43	0	0	1	1	0	0
R44	0	0	1	1	0	0
R45	0	0	1	1	0	0
R46	0	0	1	1	0	0
R47	0	0	0	0	0	0

Notes:

Subway vs. Existing provides the comparison of the subway only sound levels to the existing ambient sound levels as per the MECF

protocols. This indicates that the project does not generate any noise impacts based on the guidelines, even at the project's highest (most frequent) service level.

Future With Project vs. Existing compares the total future sound levels, inclusive of rail, road, and subway against the existing ambient road and railway sound levels. This demonstrates that the growth in sound levels would not be as a result of the project.

Future With Project vs. Future Without Project compares the future sound levels inclusive of rail, road, and subway against the future sound levels (inclusive of road and rail) without the subway. This similarly demonstrates that some of the increase in sound levels would occur regardless of the subway extension project.

5.7.3.3.2 Mitigation Measures and Monitoring

TSF Mitigations Measures

Mitigation measures and associated monitoring recommended for potential noise impacts can be found in **Table 5-53**.

Sound levels from the TSF building and TPSS are expected to meet the applicable limits and do not require further mitigation measures. Sound levels from the TSF trackwork are predicted to exceed the guideline limit of 55 dBA $L_{eq,1hr}$ at the nearest residences. The exceedance is caused by a combination of rolling noise along tangent track, impact noise at special trackwork, and to a lesser degree the idling noise before trains depart for service.

A 5.5m high noise barrier is recommended along the western extent of the TSF area from approximately Bantry Avenue to south of 16th Avenue and is shown in figures below. The final height and extent of the noise barrier will be subject to further refinement during the Detailed Design phase. In order to limit noise reflections, the side of the barrier facing the TSF should be acoustically absorptive.

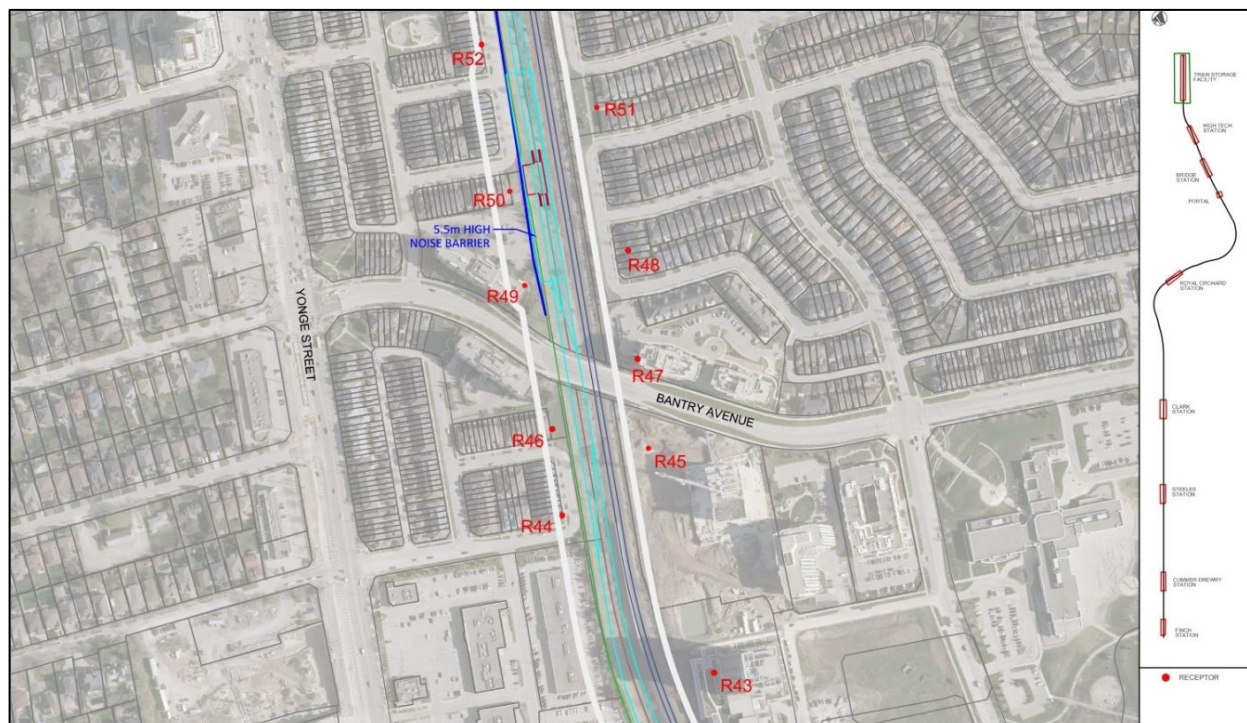


Figure 5-20 TSF Noise Barrier Part 1

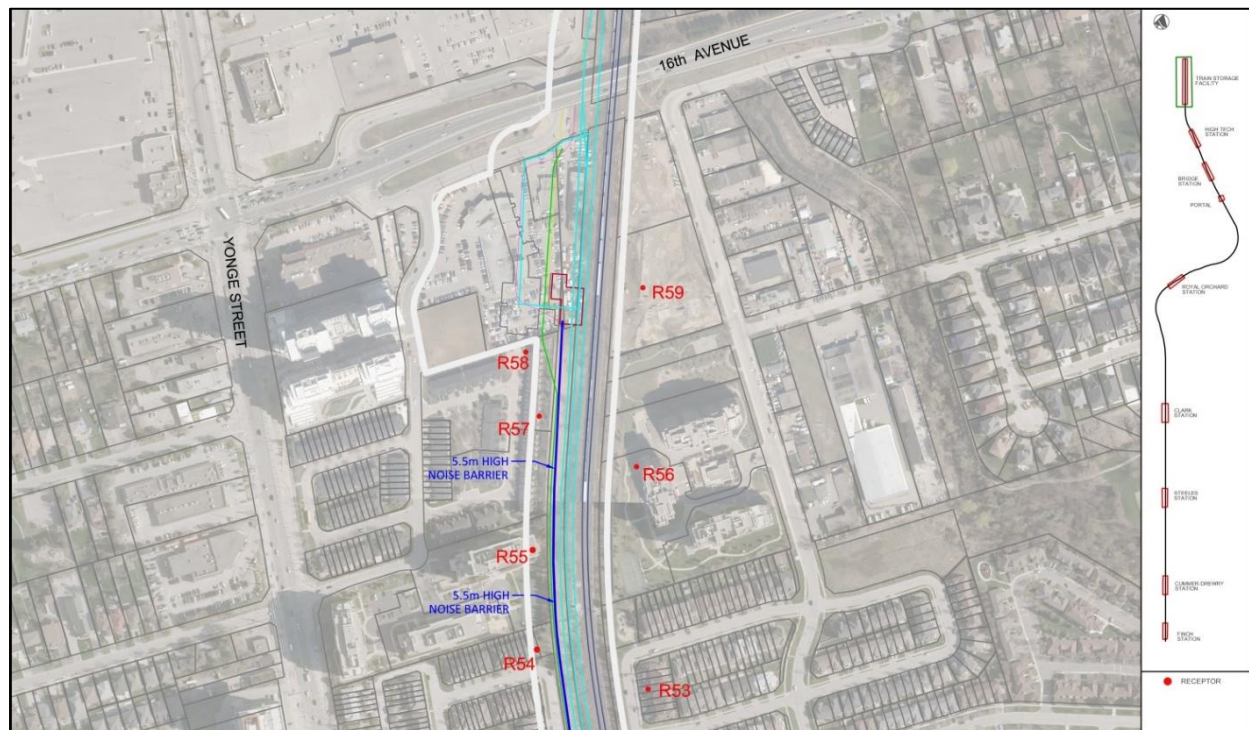


Figure 5-21 TSF Noise Barrier Part 2

In addition, all special trackwork associated with the TSF should be provided with moveable point frogs. Moveable point frogs will greatly reduce the impact noise generated by trains that travel across and through the special trackwork. Due to the heights of nearby apartment buildings, noise barriers alone would not be sufficient to mitigate the noise from the special trackwork.

Table 5-32 Train Storage Facility Sound Levels with Mitigation

Receptor	Sound Levels (dBA $L_{eq,1hr}$)	MECP Guideline Limit (dBA $L_{eq,1hr}$)	Project Component
R43	38	55	TSF
R44	44	55	TSF
R45	42	55	TSF
R46	45	55	TSF
R47	48	55	TSF
R48	49	55	TSF
R49	51	55	TSF
R50	45	55	TSF
R51	49	55	TSF
R52	48	55	TSF
R53	52	55	TSF

Receptor	Sound Levels (dBA $L_{eq,1hr}$)	MECP Guideline Limit (dBA $L_{eq,1hr}$)	Project Component
R54	46	55	TSF
R55	54	55	TSF
R56	52	55	TSF
R57	49	55	TSF
R58	40	55	TSF
R59	53	55	TSF
R60	52	55	TSF

Facilities Mitigation Measures

Mitigation measures and associated monitoring recommended for potential noise impacts can be found in **Table 5-53**.

Based on the assessment, the sound levels from the mechanical and electrical noise sources associated with the remaining facilities in Segment 3 (inclusive of High Tech and Bridge Stations and the Portal) are expected to meet the applicable guideline limits without further noise control measures. Inherent to the design are mitigation measures such as silencers for the tunnel ventilation system and selection of quiet mechanical and electrical equipment. Noisier equipment, for example, may require additional noise mitigation in order to meet the limits. An updated analysis should be completed as the mechanical/electrical design of the facilities progresses.

The above-grade facilities analysis has been completed to demonstrate that it is feasible to meet the noise criteria with practical mitigation measures. The locations of specific above-grade project elements are still being determined within the Study Area. Updated assessments will be completed in subsequent design phases to confirm mitigation measures needed for compliance with the criteria.

At-Grade Alignment Mitigation Measures

Mitigation measures and associated monitoring recommended for potential noise impacts can be found in **Table 5-53**.

The increases in sound levels at nearby receptors as a result of the project are minor and do not trigger the need for noise mitigation measures. This is part due to the relatively low sound levels from electric subway trains. There are also few noise sensitive receptors between High Tech Station and the Portal as the lands are predominantly commercial or industrial. As well, there are relatively few trains between the train storage facility and High Tech Station where there are more residential receptors.

5.7.4 Construction Noise Assessment

At this level of design, detailed construction staging plans and laydown areas have not been developed. The precise locations, layouts and extents of construction staging and laydown areas have not been identified at this stage in project planning. Construction sound levels have been predicted based on preliminary areas, typical construction activities and previous projects proposed. Further assessments can be completed as the design progresses during subsequent phases of the project to include final site plans and construction methods.

Construction noise is highly variable as construction activity tends to ebb and flow during various stages and times of day. Adjustments such as equipment duty cycle (i.e., how much time a particular piece of equipment

operates) have been made to the equipment sound levels to generate the average daytime exposure. Equipment such as drill rigs do not operate continuously at the same sound level. Some equipment, such as generators or compressors, can operate for longer periods at a time.

Construction equipment sound levels are based on measured data, reference data from the FHWA and/or FTA, or NPC-115, where applicable.

5.7.4.1 Segment 1 – Finch Station to Clark Station

Table 5-33 provides the predicted sound levels for construction activities between the Cummer Station and Finch Station. Without mitigation, sound levels are expected to be elevated in areas where construction is occurring close to residential receptors. Without mitigation, the phase with the highest predicted sound levels is predicted to be the shoring phase of work. As noted previously, construction noise is variable. Hence, the predicted sound levels are a representation of worst-case periods when construction equipment is operating nearby. Sound levels will typically be lower during a majority of construction activity with each phase of construction.

Table 5-33 Segment 1 – Construction Sound Levels

Receptor	Site Preparation	Shoring	Excavation	Concrete Forming	Restoration
R1	75	N/A	75	74	76
R2	72	70	64	66	68
R3	75	81	75	73	76
R4	74	57	70	67	73
R5	74	79	75	71	74
R6	75	83	75	75	75
R7	74	83	75	76	75
R8	76	84	75	76	76
R9	77	84	76	76	76
R10	70	70	64	66	69
R11	70	70	65	68	70
R12	65	62	61	60	61
R13	67	65	66	62	62
R14	64	64	61	63	68
R15	69	72	71	71	67
R16	69	72	71	71	69
R17	74	73	72	73	75
R18	58	61	56	57	54
R19	65	66	64	66	62
R20	70	70	66	68	71
R21	75	81	75	73	76

5.7.4.2 Segment 2 – Clark Station to Portal/Launch Shaft

Table 5-34 provides the predicted sound levels for construction activities between the Portal/Launch Shaft and Clark Station. Without mitigation, sound levels are expected to be elevated in areas where construction is occurring close to residential receptors. Without mitigation, the phase with highest predicted sound levels is predicted to be the shoring phase of work. As noted previously, construction noise is variable. Hence, the predicted sound levels are a representation of worst-case periods when construction equipment is operating nearby. Sound levels will typically be lower during a majority of construction activity with each phase of construction.

Table 5-34 Segment 2 – Construction Sound Levels

Receptor	Site Preparation	Shoring	Excavation	Concrete Forming	Restoration
R22	73	77	71	72	76
R23	70	69	66	66	65
R24	73	78	76	71	74
R25	72	81	76	74	75
R26	76	82	77	75	74
R27	68	69	64	66	64
R28	73	75	70	69	70
R29	72	71	66	68	66
R30	76	85	77	75	73
R31	72	70	66	66	65
R32	71	71	65	71	68
R35	73	76	73	75	75
R36	74	84	76	76	74
R37	76	78	73	76	73
R38	76	82	76	75	75
R39	73	76	71	74	74

5.7.4.3 Segment 3 – Portal/Launch Shaft to Moonlight Lane

Table 5-35 provides the predicted sound levels at receptors closest to the Launch Shaft/Portal during both preparation of the Launch Shaft as well as during tunneling operations. Given the distance between the launch shaft area and existing receptors, excesses over the construction sound level limits are not expected.

Table 5-35 Launch Shaft/Portal Construction Sound Levels

Receptor	Site Preparation	Shoring	Excavation	Concrete Forming	Tunneling	Track Installation	Restoration
R40	55	58	52	54	54	50	55
R41	58	61	55	57	58	54	61

Table 5-36 provides the predicted sound levels during construction activities between the TSF and the Portal/Launch Shaft. Without mitigation, sound levels are expected to be elevated above the ambient sound levels during most phases of construction activity. The ambient sound levels are relatively high along the railway corridor which will reduce the noise impact from construction activities. Note that at Receptors R43 to R54, the only applicable construction phases are site preparation and track installation as there are no ancillary facilities or other project elements proposed near these receptors.

Table 5-36 TSF and At-Grade Construction Sound Levels

Receptor	Site Preparation	Shoring	Excavation	Concrete Forming	Restoration	Track Installation
R42	70	72	69	71	69	71
R43	71	N/A ¹	N/A ¹	N/A ¹	N/A ¹	69
R44	74					74
R45	68					68
R46	76					73
R47	75					74
R48	73					72
R49	76					76
R50	72					75
R51	75					74
R52	76					75
R53	72					71
R54	75					77
R55	75	60	58	62	51	76
R56	73	63	61	64	53	74
R57	73	62	64	66	55	72
R58	75	74	72	73	76	61
R59	69	68	64	64	62	66
R60	68	52	49	51	59	69

¹ Phases of construction not applicable to these receptors as construction associated with these phases are not expected to occur near those receptors.

5.7.4.4 Construction Noise Mitigation and Monitoring

Mitigation measures and associated monitoring recommended for potential noise impacts can be found in **Table 5-53**.

Construction activities are a temporary condition and construction noise ceases once construction is complete. While the predicted sound levels are conservative, they indicate that, without mitigation, certain phases of construction are expected to exceed the noise limits used in this assessment.

5.8 Vibration

5.8.1 Operational Vibration

The operational vibration assessment focuses on the ground-borne noise and vibration generated by subway vehicles along the proposed alignment and Project facilities such as the TSF. Ground-borne vibration refers to vibration that travels through the soil that may be felt (i.e., tactile vibration). Ground-borne noise refers to ground-borne vibration that enters a building and is reradiated from that building's surfaces as noise (i.e., audible vibration, vibration-induced noise, or the “rumble” of passing trains).

For below-grade transit systems, ground-borne noise is often the most critical. In most cases, ground-borne noise will reach the guideline limits before the vibration levels reach the limits for ground-borne vibration.

For at-grade systems, ground-borne vibration is often the most critical. This is typically a result of the lower frequency vibration typical of tie-on-ballast tracks and the increased distance between the tracks and adjacent receptors.

The operational vibration will review the vibration generated by the below-grade segment, the at-grade segment, and at the TSF. Otherwise, there are no significant sources of operational vibration associated with this project.

5.8.1.1 Segment 1 – Finch Station to Clark Station (Below Grade)

5.8.1.1.1 Potential Impacts

Table 5-37 provides the predicted vibration and ground-borne noise levels for representative receptors along Segment 1.

Table 5-37 Segment 1 – Predicted Vibration Levels

Receptor	Switches Nearby	Ground-borne Vibration (mm/s RMS)			Ground-borne Noise (dBA)		
		Predicted	MOEE Limit/Guideline	Impact	Predicted	Limit	Impact
V2	No	0.29	0.10	0.19	48	35	13
R2	No	0.28	0.10	0.18	48	35	13
R3	No	0.26	0.10	0.16	47	35	12
R4	No	0.02	0.10	0	32	35	0
R5	No	0.28	0.10	0.18	48	35	13
R6	No	0.08	0.10	0	46	35	11
R7	No	0.26	0.10	0.16	47	35	12
R8	No	0.30	0.10	0.2	49	35	14
R9	No	0.20	0.10	0.1	45	35	10
V3	No	0.27	0.10	0.17	48	35	13
R10	No	0.05	0.10	0	43	35	8
R11	No	0.12	0.10	0.02	50	35	15

Receptor	Switches Nearby	Ground-borne Vibration (mm/s RMS)			Ground-borne Noise (dBA)		
		Predicted	MOEE Limit/Guideline	Impact	Predicted	Limit	Impact
R12	No	0.25	0.10	0.15	49	35	14
R13	No	0.33	0.14	0.19	54	40	14
R14	Yes	0.22	0.10	0.12	55	35	20
R15	Yes	0.19	0.10	0.09	54	35	19
R16	No	0.13	0.10	0.03	50	35	15
R17	No	0.09	0.10	0	47	35	12
R18	No	0.04	0.10	0	40	35	5
R19	No	0.1	0.10	0	48	35	13
R20	No	0.24	0.10	0.14	47	35	12
R21	No	0.11	0.10	0.01	49	35	14
V4	No	0.19	0.10	0.09	45	35	10
V5	No	0.09	0.10	0	38	35	3
V6	No	0.13	0.10	0.03	41	35	6

Note:

Bolded numbers and **grey cells** indicate exceedance of applicable criteria.

As indicated in **Table 5-37**, vibration levels may exceed the criteria by up to 0.20 mm/s for ground-borne vibration and up to 20 dBA for ground-borne noise at a number of receptors. As such, mitigation measures should be implemented to adequately control the operational vibration levels.

5.8.1.1.2 Mitigation Measures

Mitigation measures and associated monitoring recommended for potential vibration impacts can be found in **Table 5-53**.

Table 5-38 summarizes the performance needed from the vibration mitigation measures in order to meet the respective limits. The analysis is conservative and may over predict the potential impacts. The indicative measures are readily available and proven technologies that are predicted to achieve required reductions and are provided to demonstrate the feasibility of meeting the criteria. During detailed design, further studies will be completed to identify location-specific mitigation measures to be used.

Table 5-38 Segment 1 – Vibration Mitigation Recommendations

Receptor	Reduction Needed to control Ground-borne Vibration (dB)	Reduction Needed to control Ground-borne Noise (dB)	Indicative Mitigation Measures
V2	9	13	Resilient tie block
R2	9	13	Resilient tie block
R3	8	12	Resilient tie block

Receptor	Reduction Needed to control Ground-borne Vibration (dB)	Reduction Needed to control Ground-borne Noise (dB)	Indicative Mitigation Measures
R4	0	0	Resilient tie block*
R5	9	13	Resilient tie block
R6	0	11	Resilient tie block
R7	8	12	Resilient tie block
R8	10	14	Resilient tie block/floating slab track
R9	6	10	Resilient tie block
V3	9	13	Resilient tie block
R10	0	8	Resilient tie block
R11	2	15	Resilient tie block
R12	8	14	Resilient tie block
R13	10	19	Resilient tie block/moveable point frogs
R14	7	20	Resilient tie block/moveable point frogs
R15	6	19	Resilient tie block/moveable point frogs
R16	2	15	Resilient tie block/moveable point frogs
R17	0	12	Resilient tie block
R18	0	5	Resilient tie block
R19	0	13	Resilient tie block
R20	8	12	Resilient tie block
R21	1	14	Resilient tie block
V4	6	10	Resilient tie block
V5	0	3	Resilient tie block*
V6	2	6	Resilient tie block

*Different mitigation measures are not able to be transitioned in such a small area. Hence, even if mitigation is not required for a particular receptor, it is assumed to be provided due to the impacts predicted at other receptors.

According to the FTA General Assessment Procedure, floating slab track can provide a reduction in vibration levels of approximately 15 dB. As such, it would be suitable to employ floating slab track (as shown in **Figure 5-22**) in areas where reductions of 10 dB or more are needed in the vibration levels. In general, controlling ground-borne noise is more challenging than controlling ground-borne vibration. That is, achieving the ground-borne noise limits will usually result in achieving ground-borne vibration levels that are well below the limits.

For areas where such high performance is not required, alternative track vibration isolation can be considered. Resilient tie block systems consist of a series of precast concrete tie blocks (lower mass) that sit on vibration isolation pads. According to the FTA general assessment procedure, high attenuation resilient tie block (or low vibration track) can provide reductions of up to 10 dB in the overall levels. Depending on the

soil propagation characteristics, reductions of 15-20 dBA can be expected in the A-weighted sound levels. There are several kinds of resilient tie block that can be used.

The existing TTC subway systems in Toronto employ a type of floating slab track known as the double tie floating slab (also referred to as a discontinuous floating slab). The floating slab consists of a series of precast concrete slabs that rest on rubber isolation pucks. The TTC double tie floating slab track has been measured to provide more than 15 dB reduction in the vibration levels as compared to the older subway systems at similar depths. The system is highly effective at controlling ground-borne noise. A reduction of more than 25 dB in the A-weighted sound levels can be achieved with this system in place. At the closest receptors, sound levels of less than 30 dBA can be expected with floating slab track in place. Again, there are a variety of floating slab configurations and types that can be used to provide the necessary vibration isolation.

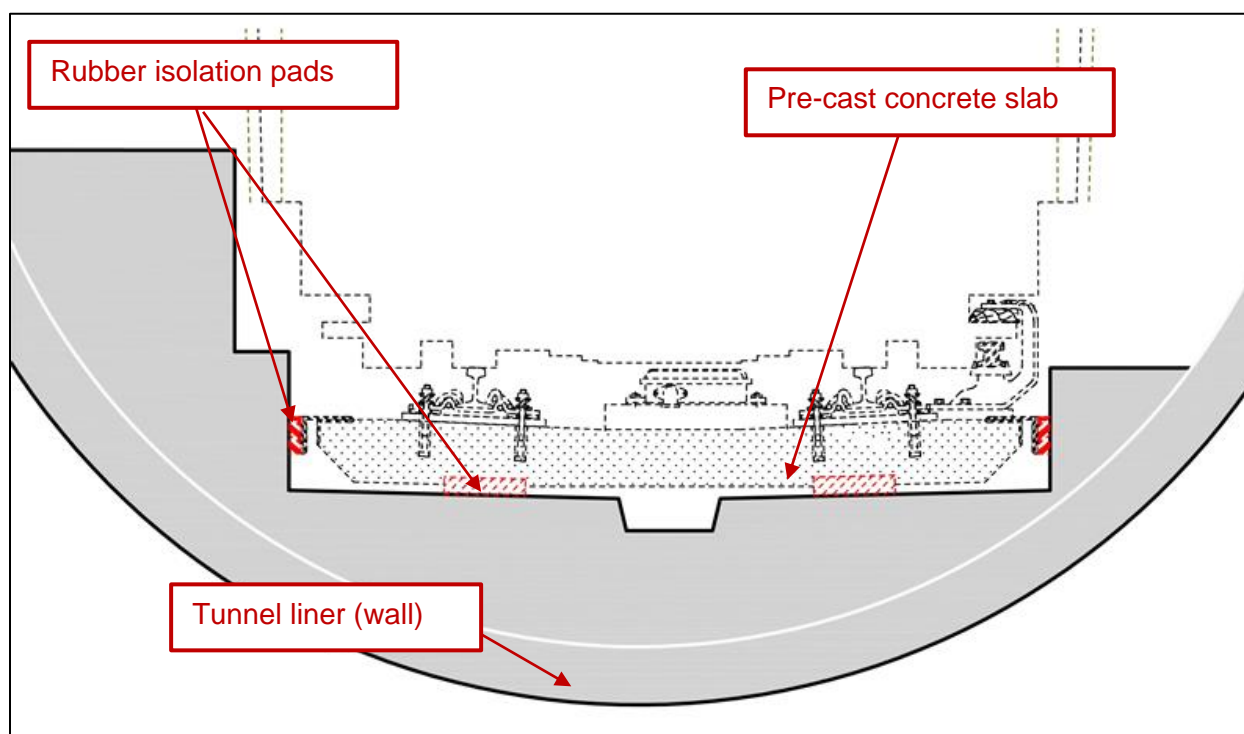


Figure 5-22 Cross-Section of TTC Floating Slab Track

5.8.1.2 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)

5.8.1.2.1 Potential Impacts

Table 5-39 provides the predicted vibration and ground-borne noise levels for representative receptors along Segment 2.

Table 5-39 Segment 2 – Predicted Vibration Levels

Receptor	Speed (km/h)	Ground-borne Vibration (mm/s RMS)			Ground-borne Noise (dBA)		
		Predicted	Limit	Impact	Predicted	Limit	Impact
R22	80	0.11	0.10	0.01	49	35	14
R23	80	0.03	0.10	0	32	35	0
R24	80	0.21	0.10	0.11	47	35	12

Receptor	Speed (km/h)	Ground-borne Vibration (mm/s RMS)			Ground-borne Noise (dBA)		
		Predicted	Limit	Impact	Predicted	Limit	Impact
R25	80	0.24	0.10	0.14	49	35	14
R26	80	0.15	0.10	0.05	43	35	8
V7	80	0.21	0.10	0.11	50	35	15
V8	80	0.18	0.10	0.08	47	35	12
V9	80	0.23	0.10	0.13	49	35	14
V10	80	0.18	0.10	0.08	53	35	18
R27	80	0.17	0.10	0.07	52	35	17
R28	80	0.06	0.10	0	44	35	9
V11	80	0.14	0.14	0	47	40	7
V12	80	0.14	0.10	0.04	44	35	9
R29	80	0.08	0.10	0	44	35	9
R30	80	0.12	0.10	0.02	43	35	8
R31	80	0.06	0.10	0	36	35	1
R32	80	0.11	0.14	0	45	40	5
V13	80	0.13	0.10	0.03	41	35	6
R33	80	0.14	0.10	0.04	44	35	9
R34	80	0.13	0.10	0.03	43	35	8
V14	80	0.16	0.10	0.06	52	35	17
R35	80	0.19	0.10	0.09	53	35	18
R36	80	0.18	0.10	0.08	53	35	18
V15	80	0.29	0.10	0.19	57	35	22
V16	80	0.32	0.10	0.22	58	35	23
V17	80	0.31	0.10	0.21	58	35	23
R37	80	0.32	0.14	0.18	54	40	14
R38	80	0.26	0.10	0.16	56	35	21
R39	80	0.32	0.10	0.22	58	35	23
R40	80	0.22	0.10	0.12	55	35	20
R41	80	0.04	0.14	0	35	40	0

Note:

Bolded numbers and **grey cells** indicate exceedance of applicable criteria

While no exceedances are predicted at some receptors, **Table 5-39** indicates that vibration levels may exceed the criteria for ground-borne vibration and ground-borne noise at other receptors. As such, mitigation measures should be implemented to adequately control the operational vibration levels. As discussed below, predicted exceedances are expected to be readily mitigatable using conventional technologies.

5.8.1.2.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential vibration impacts can be found in **Table 5-53**.

Table 5-40 below summarizes the reduction needed from the vibration mitigation measures in order to meet the respective limits. The analysis is conservative and may over predict the potential impacts. The indicative measures are readily available and proven technologies that are predicted to achieve required reductions and are provided to demonstrate the feasibility of meeting the criteria. During detailed design, further studies will be completed to identify location-specific mitigation measures to be used.

Table 5-40 Segment 2 – Vibration Mitigation Recommendations

Receptor	Reduction Needed to control Ground-borne Vibration (dB)	Reduction Needed to control Ground-borne Noise (dB)	Indicative Mitigation Measures
R22	1	14	Resilient tie block
R23	0	0	Resilient tie block*
R24	7	12	Resilient tie block
R25	8	14	Resilient tie block
R26	4	8	Resilient tie block
V7	6	15	Resilient tie block
V8	5	12	Resilient tie block
V9	7	14	Resilient tie block
V10	5	18	Resilient tie block
R27	5	17	Resilient tie block
R28	0	9	Resilient tie block
V11	3	12	Resilient tie block
V12	3	9	Resilient tie block
R29	0	9	Resilient tie block
R30	2	8	Resilient tie block
R31	0	1	Resilient tie block*
R32	1	10	Resilient tie block
V13	2	6	Resilient tie block
R33	3	9	Resilient tie block
R34	2	8	Resilient tie block
V14	4	17	Resilient tie block

Receptor	Reduction Needed to control Ground-borne Vibration (dB)	Reduction Needed to control Ground-borne Noise (dB)	Indicative Mitigation Measures
R35	5	18	Resilient tie block
R36	5	18	Resilient tie block
V15	9	22	Floating slab track
V16	10	23	Floating slab track
V17	10	23	Floating slab track
R37	10	19	Floating slab track
R38	8	21	Floating slab track
R39	10	23	Floating slab track
R40	7	20	Floating slab track
R41	0	0	-

*Different mitigation measures are not able to be transitioned in such a small area. Hence, even if mitigation is not required for a particular receptor, it is assumed to be provided due to the impacts predicted at other nearby receptors.

According to the FTA General Assessment Procedure, floating slab track can provide a reduction in vibration levels of approximately 15 dB. As such, it would be suitable to employ floating slab track (as shown in **Figure 5-22**) in areas where reductions of 10 dB or more are needed in the vibration levels. In general, controlling ground-borne noise is more challenging than controlling ground-borne vibration. That is, achieving the ground-borne noise limits will usually result in achieving ground-borne vibration levels that are well below the limits.

For areas where such high performance is not required, alternative track vibration isolation can be considered. Resilient tie block systems consist of a series of precast concrete tie blocks (lower mass) that sit on vibration isolation pads. According to the FTA general assessment procedure, high attenuation resilient tie block (or low vibration track) can provide reductions of up to 10 dB in the overall levels. Depending on the soil propagation characteristics, reductions of 15-20 dBA can be expected in the A-weighted sound levels. There are several kinds of resilient tie block that can be used.

The existing TTC subway systems in Toronto employ a type of floating slab track known as the double tie floating slab (also referred to as a discontinuous floating slab). The floating slab consists of a series of precast concrete slabs that rest on rubber isolation pucks. The TTC double tie floating slab track has been measured to provide more than 15 dB reduction in the vibration levels as compared to the older subway systems at similar depths. The system is highly effective at controlling ground-borne noise. A reduction of more than 25 dB in the A-weighted sound levels can be achieved with this system in place. At the closest receptors, sound levels of less than 30 dBA can be expected with floating slab track in place. Again, there are a variety of floating slab configurations and types that can be used to provide the necessary vibration isolation.

The industry standard criteria for ground-borne noise and vibration at residential receptors are 35 dBA and 0.10 mm/s, respectively. In order to reduce the potential impact of tunneling under existing low-rise homes in a mature residential neighbourhood, Metrolinx is committed to achieving ground-borne noise levels of less than 30 dBA and ground-borne vibration levels of less than 0.05 mm/s. Though subject to further refinement as the design progresses, this would entail installing floating slab track approximately between the north end of Royal Orchard Station and the south end of the portal. As noted previously, based on the depths through

the residential community, floating slab track can achieve sound levels of less than 30 dBA. The corresponding ground-borne vibration level would be less than 0.05 mm/s, and would be imperceptible.

5.8.1.3 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

5.8.1.3.1 Potential Impacts

Table 5-41 provides the predicted ground-borne noise and vibration levels for the at-grade segment between the tunnel portal and the TSF.

Table 5-41 Segment 3 – Predicted Vibration Levels

Receptor	Switches Nearby	Track Type	Speed (km/h)	Ground-borne Vibration Level (mm/s RMS)			Ground-borne Sound Level (dBA)		
				Predicted	Limit	Excess	Predicted	Limit	Excess
V18	Yes	Ballast	80	0.54	0.10	0.44	50	35	15
R42	No	Ballast	80	0.09	0.10	0	30	35	0
R43	No	Ballast	80	0.09	0.10	0	28	35	0
R44	Yes	Ballast	30	0.28	0.10	0.18	47	35	12
R45	Yes	Ballast	30	0.03	0.10	0	19	35	0
R46	Yes	Ballast	30	0.31	0.10	0.21	48	35	13
R47	No	Ballast	20	0.03	0.10	0	20	35	0
R48	No	Ballast	20	0.02	0.10	0	25	35	0
R49	Yes	Ballast	20	0.19	0.10	0.09	37	35	2
R50	Yes	Ballast	20	0.22	0.10	0.12	45	35	10
R51	Yes	Ballast	20	0.04	0.10	0	31	35	0
R52	Yes	Ballast	20	0.18	0.10	0.08	43	35	8
R53	No	Ballast	20	0.03	0.10	0	26	35	0
R54	No	Ballast	20	0.07	0.10	0	34	35	0
R55	No	Ballast	20	0.06	0.10	0	27	35	0
R56	No	Ballast	20	0.02	0.10	0	17	35	0
R57	No	Ballast	20	0.06	0.10	0	34	35	0
R58	No	Ballast	20	0.05	0.10	0	33	35	0
R59	No	Ballast	20	0.03	0.10	0	27	35	0
R60	Yes	Ballast	20	0.04	0.10	0	29	35	0

Note:

Bolded numbers and **grey cells** indicate exceedance of applicable criteria.

As seen in the table above the vibration levels exceed the criteria, at several receptors along the alignment, both for ground-borne vibration and for ground-borne noise, mitigation measures have been investigated. These are reviewed in the next section.

5.8.1.3.2 Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential vibration impacts can be found in **Table 5-53**.

The vibration levels from the TSF and at-grade alignment are generally predicted to be below the limits except for areas where there are existing residential uses or other sensitive uses located close to special trackwork. In these areas, reductions of up to 10 dB are needed in order to meet the limits for ground-borne vibration and noise. This can typically be achieved by ballast mats. As the noise impact assessment indicated that moveable point frogs were needed to control air borne noise, the combination of ballast mats and moveable point frogs is expected to be sufficient to control the ground-borne noise and vibration levels from the TSF.

Higher vibration levels are also expected at V18 (a theatre) due to the proximity of the tracks and the nearby switches. A combination of ballast mats and monoblock frogs can be used to achieve an overall 15 dB reduction in the sound levels.

The table below summarizes the reduction needed from the vibration mitigation measures in order to meet the respective limits. The analysis is conservative and may over predict the potential impacts. The indicative measures are conventional technologies that are predicted to achieve required reductions and are provided to demonstrate feasibility using conventional technologies. During detailed design, further studies will be completed to identify location-specific mitigation measures to be used.

Table 5-42 Segment 3 – Vibration Mitigation Recommendations

Receptor	Reduction Needed to control Ground-borne Vibration (dB)	Reduction Needed to control Ground-borne Noise (dB)	Indicative Mitigation Measures
V18	15	15	Ballast mat/moveable point frog
R42	0	0	-
R43	0	0	-
R44	9	12	Ballast mat/moveable point frog
R45	0	0	-
R46	10	13	Ballast mat/moveable point frog
R47	0	0	-
R48	0	0	-
R49	6	2	Moveable point frog
R50	7	10	Ballast mat/moveable point frog
R51	0	0	-
R52	5	8	Moveable point frog
R53	0	0	-
R54	0	0	-
R55	0	0	-
R56	0	0	-
R57	0	0	-

Receptor	Reduction Needed to control Ground-borne Vibration (dB)	Reduction Needed to control Ground-borne Noise (dB)	Indicative Mitigation Measures
R58	0	0	-
R59	0	0	-
R60	0	0	-

In terms of controlling vibration levels, implementation of a combination of ballast mats and monoblock frogs is anticipated to meet the limits. As noted in the Operational Noise Assessment, moveable point frogs are needed to control the air-borne sound levels. As such, they are assumed to be provided to control the vibration levels as well. The noise and vibration aspects of special trackwork, including the specific locations of such features, will be reviewed further during detailed design.

5.8.2 Construction Vibration

There will be several different phases of work associated with all surface construction activities. Tunnelling and tunneling support activities, while not a source of airborne noise along the below-grade alignment, will generate ground-borne vibration and noise. The following section outlines the predicted vibration levels, and where appropriate, ground-borne noise levels, resulting from construction activities for the proposed alignment.

Similar to the noise assessment, the details of construction methods and approach have not been finalized. Much of the actual approach used will depend on detailed design and approaches. A preliminary vibration assessment has been completed in order to document the potential vibration levels and recommend mitigation and monitoring, where appropriate, and will be updated/refined prior to construction based on the most up-to-date information regarding construction methods and equipment, as required.

The FTA provides typical vibration levels for various pieces of equipment and a formula in which to calculate the vibration levels at various distances. This simple formula for attenuation with distance attempts to simplify the relationship that soil conditions and associated soil damping have on construction vibration. The reference vibration levels for hydraulic breakers were obtained from Caltrans as the levels correlate with field measurements of hydraulic breakers. Vibration sources levels were also derived and confirmed via measurements from experience on similar scale subway construction projects.

The vibration assessment is broken down into two categories: surface construction and tunnelling.

5.8.2.1 Surface Construction Assessment

For all surface construction, the vibration levels are typically dominated by two types of equipment: vibratory compactors and hydraulic breakers. Vibratory compactors encompass drum rollers, ballast tampers, plate tampers and other such equipment that are intended to compact soil via oscillating motion. Hydraulic breakers include vibratory hammers, chippers, hoe rams, etc. which are used to break concrete, asphalt, etc.

Since most, if not all, surface construction will include the use of vibratory compactors and/or hydraulic breakers, the potential vibration impact can be reviewed by calculating the vibration levels from these two activities. Of the equipment used on such projects, these two pieces of equipment typically produce the highest vibration levels. All other equipment produces lower vibration levels and would be expected to meet the applicable criteria assuming the vibratory compactors and hydraulic breakers also meet the limits.

The construction vibration zone-of-influence (ZOI) is defined as the area where vibration levels from construction are expected to equal or exceed 5 mm/s PPV. In terms of perceptible vibration, a ZOI of 0.14 mm/s RMS is used.

Table 5-43 provides the various setbacks at which specific pieces of equipment produce peak particle velocities of 5 mm/s. The ZOI will be approximately 9m for hydraulic breakers and vibratory rollers, 5m for auger drill rigs and dozers and 3m for most other equipment.

The recommended limit for vibration in areas where people normally sleep is 0.14 mm/s RMS. This limit will provide an indication when vibration is likely to be perceived at receptors, even when there is no potential for structural damage. The peak particle vibration levels have been converted to root-mean square vibration levels using a conversion factor of approximately 0.25. **Table 5-43** also provides the various setbacks at which specific pieces of equipment produce vibrations levels of 0.14 mm/s RMS. The calculated setbacks would indicate that nearly all equipment used could result in vibration levels potentially causing perceptible vibration when used in close proximity to structures. Vibratory equipment such as hydraulic breakers and compactors may generate vibration levels that could be perceived more than 60m away. Note that such equipment may not be used continuously or during all phases of construction.

Table 5-43 Zone of Influence Setbacks

Construction Equipment	Setback Needed to Achieve 5 mm/s PPV (m)	Setback Needed to Achieve 0.14 mm/s RMS (m)
Hydraulic Breaker	9.0	65
Compactor	8.0	60
Auger Drill Rig	4.5	27
Bulldozer	4.5	27
Loaded Trucks	3.2	23
Jackhammer	1.6	12

The construction vibration analysis indicates there are several structures/buildings within the construction vibration ZOI and more within the perceptible vibration ZOI. Note that just because buildings are within the ZOI does not mean they are likely to suffer damage. They will however need to be reviewed and potentially monitored to ensure vibration levels do not reach those required for damage.

5.8.2.2 Tunnel Construction Assessment

During tunnel construction, there are two primary sources of noise and vibration: the TBMs and the temporary service locomotives. Temporary service locomotives are used to ferry tunnel liner segments and other materials to and from the TBM throughout the tunnelling phase. In some cases, the contractors may be able to use rubber tired multi-service vehicles. These vehicles produce minimal vibration levels. More commonly, contractors use locomotives and rail cars that operate on temporary rails. The rail cars are similar to subways in terms of operation vibration as the vibration is generated by the wheel-rail interaction. The rail is installed directly to the concrete tunnel liner. The rail is installed along with the TBM advance, and therefore there is often no time to weld the rails. The jointed rail is a common source of vibration and often the most critical since the service locomotives operate continuously throughout the tunneling process. This assessment has been completed conservatively, assuming temporary service locomotives operate on a rail-based system. The TBMs, while also continuous, pass by a given area in a matter of days. As such, any elevated vibration levels are temporary and transient.

TBM vibration levels can vary widely depending on soil composition. Vibration levels will tend to be elevated when drilling through rock or headwalls. Peak particle velocities from the TBM have been estimated using the Transportation Research Library's (TRL) Report 429, "Groundborne vibration caused by mechanised construction works". The predicted vibration levels are shown in **Table 5-44**. The root mean square

vibration velocities are calculated based on a crest factor of 4. As noted previously, the peak particle velocities represent the response of structures while the root mean square velocities are representative of human response.

Table 5-44 Predicted TBM Vibration Levels

Receptor	Lower Range TBM Vibration (mm/s PPV)	Upper Range TBM Vibration (mm/s PPV)	Lower Range TBM Vibration (mm/s RMS)	Upper Range TBM Vibration (mm/s RMS)
R3	0.32	3.25	0.08	0.81
R4	0.02	0.19	0.00	0.05
R5	0.33	3.34	0.08	0.84
R6	0.08	0.75	0.02	0.19
R7	0.31	3.05	0.08	0.76
R8	0.37	3.68	0.09	0.92
R9	0.22	2.16	0.05	0.54
V3	0.33	3.31	0.08	0.83
R10	0.05	0.52	0.01	0.13
R11	0.12	1.22	0.03	0.31
R12	0.31	3.09	0.08	0.77
R13	0.44	4.37	0.11	1.09
R14	0.12	1.24	0.03	0.31
R15	0.11	1.07	0.03	0.27
R16	0.13	1.31	0.03	0.33
R17	0.09	0.91	0.02	0.23
R18	0.04	0.41	0.01	0.10
R19	0.09	0.93	0.02	0.23
R20	0.27	2.70	0.07	0.67
R21	0.11	1.08	0.03	0.27
V4	0.2	1.97	0.05	0.49
V5	0.09	0.86	0.02	0.22
V6	0.13	1.27	0.03	0.32
R22	0.11	1.11	0.03	0.28
R23	0.03	0.35	0.01	0.09
R24	0.24	2.40	0.06	0.60
R25	0.29	2.88	0.07	0.72
R26	0.16	1.61	0.04	0.40

Receptor	Lower Range TBM Vibration (mm/s PPV)	Upper Range TBM Vibration (mm/s PPV)	Lower Range TBM Vibration (mm/s RMS)	Upper Range TBM Vibration (mm/s RMS)
V7	0.23	2.33	0.06	0.58
V8	0.2	1.99	0.05	0.50
V9	0.25	2.53	0.06	0.63
V10	0.19	1.89	0.05	0.47
R27	0.17	1.72	0.04	0.43
R28	0.06	0.61	0.02	0.15
V11	0.13	1.30	0.03	0.33
V12	0.14	1.41	0.04	0.35
R29	0.07	0.72	0.02	0.18
R30	0.12	1.16	0.03	0.29
R31	0.06	0.56	0.01	0.14
R32	0.1	1.02	0.03	0.26
V13	0.12	1.17	0.03	0.29
R33	0.13	1.31	0.03	0.33
R34	0.12	1.21	0.03	0.30
V14	0.15	1.53	0.04	0.38
R35	0.18	1.83	0.05	0.46
R36	0.18	1.81	0.05	0.45
V15	0.32	3.23	0.08	0.81
V16	0.36	3.57	0.09	0.89
V17	0.34	3.36	0.08	0.84
R37	0.36	3.57	0.09	0.89
R38	0.3	3.00	0.08	0.75
R39	0.36	3.57	0.09	0.89
R40	0.25	2.48	0.06	0.62

In most cases, the TBM is expected to operate in softer soils. As such, the lower range of vibration levels are likely to be more typical. Even when drilling through rock, the vibration levels from the TBM are expected to be well below the threshold of 5 mm/s PPV for typical wood-framed/non-engineered buildings. Based on the typical vibration levels, the TBM vibration is expected to be well below the levels required for structural damage. This is to be expected due to the depth of the tunnel and due to the nature of the TBM vibration. The TBM vibration levels may be felt though perception is unlikely in areas with soft soils.

Ground-borne noise associated with TBMs is usually very low unless drilling through rock. In either case, the dominant frequency of vibration is often low (less than 30 Hz). Based on the range above, the ground-borne noise levels may range from 22 dBA at the lowest to 42 dBA at the highest (i.e., when drilling through rock).

As noted, the vibration levels from the service locomotive are similar to those from rapid transit systems. While sometimes lighter (on a per axle load), the vehicles have stiffer suspensions. The source vibration levels predicted below are similar to those measured by Hatch (Tunnelling Construction Noise and Vibration Impact Study, 2016) at similar setbacks and depths. It should be noted that rail locomotives also travel at much lower speeds given that they operate in a construction environment on temporary supports. **Table 5-45** provides the predicted service train vibration levels. The suggested limits are based on the daytime/nighttime use of the facility. Lower limits are suggested for areas where people may sleep.

Table 5-45 Predicted Service Train Vibration Levels

Receptor	Ground-borne Vibration (mm/s RMS)		Ground-borne Noise (dBA)	
	Predicted	Suggested Guideline	Predicted	Suggested Guideline
R3	0.17	0.14	42	38
R4	0.01	0.14	27	38
R5	0.18	0.14	43	38
R6	0.05	0.14	41	38
R7	0.17	0.14	42	38
R8	0.20	0.14	43	38
R9	0.13	0.14	40	38
V3	0.18	0.14	42	38
R10	0.04	0.14	37	38
R11	0.08	0.14	45	38
R12	0.17	0.14	44	38
R13	0.22	0.20	49	43
R14	0.08	0.14	45	38
R15	0.07	0.14	44	38
R16	0.09	0.14	45	38
R17	0.06	0.14	42	38
R18	0.03	0.14	35	38
R19	0.06	0.14	42	38
R20	0.16	0.14	42	38
R21	0.07	0.14	44	38
V4	0.13	0.14	40	38
V5	0.06	0.14	33	38
V6	0.08	0.14	36	38
R22	0.07	0.14	44	38
R23	0.02	0.14	27	38

Receptor	Ground-borne Vibration (mm/s RMS)		Ground-borne Noise (dBA)	
	Predicted	Suggested Guideline	Predicted	Suggested Guideline
R24	0.14	0.14	42	38
R25	0.16	0.14	44	38
R26	0.10	0.14	38	38
V7	0.14	0.14	45	38
V8	0.12	0.14	42	38
V9	0.15	0.14	44	38
V10	0.12	0.14	48	38
R27	0.11	0.14	47	38
R28	0.04	0.14	39	38
V11	0.09	0.20	42	43
V12	0.10	0.14	39	38
R29	0.05	0.14	38	38
R30	0.08	0.14	38	38
R31	0.04	0.14	31	38
R32	0.07	0.20	40	43
V13	0.09	0.14	36	38
R33	0.10	0.14	39	38
R34	0.09	0.14	38	38
V14	0.11	0.14	47	38
R35	0.13	0.14	48	38
R36	0.12	0.14	48	38
V15	0.19	0.14	52	38
V16	0.22	0.14	53	38
V17	0.21	0.14	53	38
R37	0.22	0.20	49	43
R38	0.17	0.14	51	38
R39	0.22	0.14	53	38
R40	0.15	0.14	50	38

Note: **Bolded numbers** and grey cells indicate exceedance of applicable criteria.

As can be seen from **Table 5-45**, without mitigation, the vibration levels are likely to exceed the suggested limits in areas where the receptors are closest to the alignment. As described in **Section 5.8.2.4**, mitigation measures have been considered given the 24-hour nature of tunneling.

5.8.2.3 Heritage Structures

Similar to most transit projects in an urban environment, there are several heritage structures located along the proposed alignment, as discussed within **Section 5.5** of this EPR Addendum and fully assessed within **Appendix E**, Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment. Heritage structures are sometimes more susceptible to vibration-induced damage as compared to newer structures. Not all heritage structures are prone to such concerns. To be conservative, and in line with FTA guidelines, a vibration limit of 3.0 mm/s PPV is suggested for all heritage buildings. During detailed design, and once an updated construction vibration assessment is completed, the buildings within the construction vibration ZOI should be reviewed and inspected by a qualified specialist. Lower vibrations limits should be considered wherever warranted. Vibration monitoring of these buildings should be considered where warranted by these detailed investigations, along with pre- and post-construction condition surveys.

5.8.2.4 Construction Vibration Mitigation Measures and Monitoring

Mitigation measures and associated monitoring recommended for potential vibration impacts can be found in **Table 5-53**.

Similar to construction noise, construction vibration is a temporary condition and ceases once construction is complete.

Noise and vibration levels associated with the TBM passage are expected to last 2-3 days at a given receptor location. Vibration from the passing TBMs is predicted to be well below the prohibited vibration limit, even for nearby heritage structures.

The vibration from the temporary service train can be effectively controlled using solutions such as resilient fasteners that can provide effective vibration isolation of the temporary track to, as indicated by results presented in **Table 5-46** below which provides the predicted vibration levels with vibration isolation of the tracks in place. The use of rubber tired service vehicles, however, would result in even lower noise and vibration levels and should be considered.

In terms of surface construction, without mitigation, the ZOIs for construction vibration (including the ZOI for perceptible vibration from construction activity) are predicted to intersect several buildings. This analysis has been based on preliminary information and assumptions on method. A more detailed assessment should be completed prior to the start of construction.

Table 5-46 Predicted Vibration Levels from Service Train with Mitigation

Receptor	Ground-borne Vibration (mm/s RMS)		Ground-borne Noise (dBA)	
	Predicted	Suggested Guideline	Predicted	Suggested Guideline
R3	0.06	0.14	24	38
R4	0.00	0.14	10	38
R5	0.07	0.14	26	38
R6	0.02	0.14	24	38
R7	0.06	0.14	25	38
R8	0.08	0.14	26	38
R9	0.05	0.14	23	38
V3	0.07	0.14	25	38

Receptor	Ground-borne Vibration (mm/s RMS)		Ground-borne Noise (dBA)	
	Predicted	Suggested Guideline	Predicted	Suggested Guideline
R10	0.01	0.14	20	38
R11	0.03	0.14	28	38
R12	0.06	0.14	27	38
R13	0.08	0.20	32	43
R14	0.03	0.14	28	38
R15	0.03	0.14	27	38
R16	0.03	0.14	28	38
R17	0.02	0.14	25	38
R18	0.01	0.14	18	38
R19	0.02	0.14	25	38
R20	0.06	0.14	25	38
R21	0.03	0.14	27	38
V4	0.05	0.14	23	38
V5	0.02	0.14	16	38
V6	0.03	0.14	19	38
R22	0.03	0.14	27	38
R23	0.01	0.14	10	38
R24	0.05	0.14	25	38
R25	0.06	0.14	27	38
R26	0.04	0.14	21	38
V7	0.05	0.14	28	38
V8	0.05	0.14	25	38
V9	0.06	0.14	27	38
V10	0.05	0.14	31	38
R27	0.04	0.14	30	38
R28	0.02	0.14	22	38
V11	0.03	0.20	25	43
V12	0.04	0.14	22	38
R29	0.02	0.14	21	38
R30	0.03	0.14	21	38
R31	0.01	0.14	14	38

Receptor	Ground-borne Vibration (mm/s RMS)		Ground-borne Noise (dBA)	
	Predicted	Suggested Guideline	Predicted	Suggested Guideline
R32	0.03	0.20	23	43
V13	0.03	0.14	19	38
R33	0.04	0.14	22	38
R34	0.03	0.14	21	38
V14	0.04	0.14	30	38
R35	0.05	0.14	31	38
R36	0.05	0.14	31	38
V15	0.07	0.14	35	38
V16	0.08	0.14	36	38
V17	0.08	0.14	36	38
R37	0.08	0.20	32	43
R38	0.06	0.14	34	38
R39	0.08	0.14	36	38
R40	0.05	0.14	33	38

5.9 Transportation

5.9.1 Impact Assessment Criteria

The criteria for evaluating the impacts associated with this Project included study of potential effects on all transportation modes within the defined boundaries of the impact assessment.

5.9.2 Segment 1 – Finch Station to Clark Station (Below Grade)

5.9.2.1 Road Network

5.9.2.1.1 Potential Impacts

Construction Phase

The proposed alignment in this segment is below-grade and it will not directly impact the road network alignment. There could potentially be road modifications to accommodate associated infrastructure and buildings (e.g., pedestrian entrance buildings) within this segment. Potential changes to road geometry and configuration throughout the construction period (e.g., potential re-alignment of road lanes in the area) may result in travel time delays and/or detours.

Operation Phase

Minimal short-term impacts associated with maintenance activities (e.g., temporary lane closure) may occur.

5.9.2.1.2 Mitigation Measures and Monitoring Activities

Construction Phase

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

Traffic and transportation management plan(s) will be developed prior to and implemented during construction. Construction-related major road modifications should be assessed through a supplementary traffic study as part of the traffic management plan(s) for these Project activities.

Operation Phase

No impacts associated with Project operations are anticipated in this segment.

5.9.2.2 Transit Network

5.9.2.2.1 Potential Impacts

Construction Phase

Transit network within this segment may potentially be impacted by the Project. The changes may potentially include adjustments to bus routes, schedules, and stops.

Operation Phase

There may be potential for modifications to the local transportation network, such as adjustments to transit service schedules.

Upon start of the operations of the new line, it is expected to see a mode shift towards transit (subway and bus) in the area as the new stations and extended subways line brings more utility to transit riders and offers a sustainable mode of transportation. Moreover, transit facilities and services are expected to be integrated to allow for riders to transfer between the YNSE and bus services.

5.9.2.2.2 Mitigation Measures and Monitoring Activities

Construction Phase

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

Re-routing of transit routes in such a way that minimizes the construction impacts and serves the transit users with an acceptable level of service is a feasible mitigation measure for transit services.

Local transit agencies will be consulted with to establish a suitable mitigation strategy to be implemented, if impacts to transit network are anticipated. The public will be notified in advance of any potential public transit service access restrictions and/or changes to service schedules and routes.

Operation Phase

Consult with local transit agencies is recommended regarding the potential changes to the local transportation network.

5.9.2.3 Pedestrian and Cycling Network

5.9.2.3.1 Potential Impacts

Construction Phase

Construction impacts associated with the pedestrian and cycling network include potential for temporary road lane, sidewalk, or bike lane closures and/or re-alignment.

Operation Phase

No impacts associated with Project operations are anticipated. With the extension of the subway line, addition of the new stations and mode shift, it is expected to see an increase in active transportation (pedestrian and cycling) demand and associated facilities (e.g., bike lanes and multi use paths) in the area (permanent impact).

It should be noted that off-street cycling lanes on Yonge Street are included in York Region Streetscape Master Plan Study (South Yonge Street Corridor) and will be part of the future permanent changes to the cycling network in the area.

5.9.2.3.2 Mitigation Measures and Monitoring Activities**Construction Phase**

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

All construction work will be carried out in a manner to ensure the interference with pedestrians and cyclists is minimal and will include fencing and lighting as required to provide a safe environment. In the event that the closure of sidewalk or bike lane is necessary, safe alternative path(s) will be provided.

5.9.2.4 Rail Network**5.9.2.4.1 Potential Impacts****Construction and Operation Phase**

The rail network throughout Segment 1 is not expected to be impacted as the proposed YNSE alignment will run below-grade and will not conflict with the existing surface track near Yonge Street and Clark Avenue intersection.

5.9.2.4.2 Mitigation Measures and Monitoring Activities**Construction and Operation Phase**

No rail network mitigation measures and monitoring are required.

5.9.3 Segment 2 – Clark Station to Portal/Launch Shaft (Below Grade)**5.9.3.1 Road Network****5.9.3.1.1 Potential Impacts****Construction Phase**

Traffic and transportation management plan(s) will be developed prior to and implemented during construction. Construction-related major road modifications should be assessed through a supplementary traffic study as part of the traffic management plan(s) for these Project activities.

Operation Phase

Minimal short-term impacts associated with maintenance activities (e.g., temporary lane closure) may occur.

5.9.3.1.2 Mitigation Measures and Monitoring Activities**Construction Phase**

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

Traffic and transportation management plan(s) will be developed prior to and implemented during construction. Construction-related major road modifications should be assessed through a supplementary traffic study as part of the traffic management plan(s) for these Project activities.

5.9.3.2 Transit Network

5.9.3.2.1 Potential Impacts

Construction Phase

Transit services within this segment may potentially be impacted by the Project. The changes may potentially include adjustments to bus routes, schedules, or stops.

Operation Phase

There may be potential for modifications to the local transportation network, such as adjustments to transit service schedules.

Notably, transit facilities and services are expected to be integrated to allow for riders to transfer between the YNSE and bus services.

Upon start of the operations of the new line, it is expected to see a mode shift towards transit (subway and bus) in the area as the new stations and extended subways line brings more utility to transit riders and offers a sustainable mode of transportation.

5.9.3.2.2 Mitigation Measures and Monitoring Activities

Construction Phase

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

Re-routing of transit routes in such a way that minimizes the construction impacts and serves the transit users with an acceptable level of service is a feasible mitigation measure for transit services. The public will be notified in advance of any potential public transit service access restrictions and/or changes to service schedules and routes.

Local transit agencies will be consulted with to establish a suitable mitigation strategy to be implemented, if impacts to transit services are anticipated.

Operation Phase

Consult with local transit agencies is recommended regarding the potential changes to the local transportation network.

5.9.3.3 Pedestrian and Cycling Network

5.9.3.3.1 Potential Impacts

Construction Phase

Construction impacts associated with the pedestrian and cycling network include potential for temporary road lane, sidewalk, or bike lane closures and/or re-alignment.

Operation Phase

No impacts associated with Project operations are anticipated. With the extension of the subway line, addition of the new stations and mode shift, it is expected to see an increase in active transportation (pedestrian and cycling) demand and associated facilities (e.g., bike lanes and multi use paths) in the area. (permanent impact)

It should be noted that off-street cycling lanes on Yonge Street are included in York Region Streetscape Master Plan Study (South Yonge Street Corridor) and will be part of the future permanent changes to the cycling network in the area.

5.9.3.3.2 Mitigation Measures and Monitoring Activities

Construction Phase

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

All construction work will be carried out in a manner to ensure the interference with pedestrians and cyclists is minimal and will include fencing and lighting as required. In the event a temporary construction-related closure of a sidewalk or bike lane is necessary, measures and steps will be taken to provide for alternative path(s).

5.9.3.4 Rail Network

5.9.3.4.1 Potential Impacts

Construction and Operation Phase

Currently there is no rail network throughout Segment 2 to be impacted.

5.9.3.4.2 Mitigation Measures and Monitoring Activities

Construction and Operation Phase

No mitigation measures and monitoring activities have been proposed for Segment 2 as part of this report.

5.9.4 Segment 3 – Portal/Launch Shaft to Moonlight Lane (At Grade)

5.9.4.1 Road Network

5.9.4.1.1 Potential Impacts

Construction Phase

The proposed alignment in this segment is below-grade and it will not directly impact the road network alignment. There could potentially be road modifications to accommodate associated infrastructure and buildings (e.g., pedestrian entrance buildings) within this segment. Potential changes to road geometry and configuration throughout the construction period (e.g., potential re-alignment of road lanes in the area) may result in travel time delays and/or detours.

Operation Phase

Minimal short-term impacts associated with maintenance activities (e.g., temporary lane closure) may occur.

5.9.4.1.2 Mitigation Measures and Monitoring Activities

Construction Phase

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

Traffic and transportation management plan(s) will be developed prior to and implemented during construction. Construction-related major road modifications should be assessed through a supplementary traffic study as part of the traffic management plan(s) for these Project activities.

Operation Phase

Signage and detours will be provided in advance of temporary lane closures during maintenance activities, as required.

5.9.4.2 Transit Network**5.9.4.2.1 Potential Impacts****Construction Phase**

Transit within this segment may potentially be impacted by the Project. The changes may potentially include adjustments to bus routes, schedules, or stops.

Operation Phase

There may be potential for modifications to the local transportation network, such as adjustments to transit service schedules.

Notably, transit facilities and services are expected to be integrated to allow for riders to transfer between the YNSE and bus services. Upon start of the operations of the new line, it is expected to see a mode shift towards transit (subway and bus) in the area as the new stations and extended subways line brings more utility to transit riders and offers a sustainable mode of transportation.

5.9.4.2.2 Mitigation Measures and Monitoring Activities**Construction Phase**

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

Re-routing of transit routes in such a way that minimizes the construction impacts and serves the transit users with an acceptable level of service is a feasible mitigation measure for transit services.

Local transit agencies will be consulted with to establish a suitable mitigation strategy to be implemented, if impacts to transit network are anticipated. The public will be notified in advance of any potential public transit service access restrictions and/or changes to service schedules and routes.

Operation Phase

Local transit agencies will be consulted with to establish a suitable mitigation strategy to be implemented, if modifications to transit services are anticipated.

5.9.4.3 Pedestrian and Cycling Network**5.9.4.3.1 Potential Impacts****Construction Phase**

Construction impacts associated with the pedestrian and cycling network include potential for temporary road lane, sidewalk, or bike lane closures and/or re-alignment.

Operation Phase

Minimal short-term impacts associated with maintenance activities (e.g., temporary lane/sidewalk closures) may occur.

With the extension of the subway line, addition of the new stations and mode shift, it is expected to see an increase in active transportation (pedestrian and cycling) demand and associated facilities (e.g., bike lanes and multi use paths) in the area. (permanent impact).

It should be noted that off-street cycling lanes on Yonge Street are included in York Region Streetscape Master Plan Study (South Yonge Street Corridor) and will be part of the future permanent changes to the cycling network in the area.

5.9.4.3.2 Mitigation Measures and Monitoring Activities

Construction Phase

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

All construction work will be carried out in a manner to ensure the interference with pedestrians and cyclists is minimal and will include fencing and lighting as required. In the event that a temporary construction-related closure of a sidewalk or bike lane is necessary, measures and steps will be taken to provide for alternative path(s).

Operation Phase

Signage and detours will be provided in advance of temporary lane/sidewalk closures during maintenance activities, as required.

5.9.4.4 Rail Network

5.9.4.4.1 Potential Impacts

Construction Phase

Potential disruptions to rail services (e.g., CN Freight services) through Segment 3 may occur.

Operation Phase

No impacts associated with Project operations are anticipated.

5.9.4.4.2 Mitigation Measures and Monitoring Activities

Construction Phase

Mitigation measures and associated monitoring recommended for potential transportation impacts can be found in **Table 5-54**.

Consultation with rail operators with current service along the rail corridor (i.e., Canadian National Railway) to assess how track closures, if necessary to implement, would impact their service and co-ordinate temporary schedules to accommodate all rail services on the open tracks.

5.10 Utilities

It is anticipated that utility conflicts will result from the construction of the YNSE Project. Some utilities will be supported during construction while others may have to be permanently relocated. It is anticipated that there will be temporary impacts to existing utilities during construction, with potential relocations and associated disruptions to be determined during detailed design.

As initial assessment of potential impacts to utilities was undertaken to support this EPR Addendum and will be refined and confirmed during detailed design, in consultation with the affected Utility owners.

Potential impacts, mitigation measures and monitoring activities associated with utilities are outlined in **Table 5-55**.

5.11 Hydrology, Stormwater Management and Drainage

YNSE development may impact existing storm sewers and potentially require storm sewer relocation or replacement. To address water balance control for the YNSE, green roofs and landscaped areas with absorbent soil will be considered. To mitigate water quality concerns, Oil/Grit Separator (OGS) units can be utilized as part of a treatment train approach to stormwater management. To provide water quantity control, roof control drains can be proposed on all above-ground buildings, and lot level conveyance controls including underground storage and parking lot storage will also be considered.

Proposed work within floodplain/areas regulated by the TRCA, such as the proposed German Mills Creek culvert replacement, will need to be planned and designed to ensure that development contributes to the prevention, elimination, and reduction in risk from flooding, erosion, and slope instability in accordance with TRCA's mandate.

Table 5-56 presents a summary of mitigation and monitoring commitments for hydrology, stormwater management and drainage.

5.12 Summary of Mitigation Measures and Monitoring Requirements

The following tables provide a summary of the potential impacts, mitigation measures, and monitoring activities for each discipline.

5.12.1 Natural Environment

The following table summarizes the potential Natural Environment impacts, and commitments to mitigation measures and monitoring activities identified through the YNSE EPR Addendum process.

Table 5-47 Summary of Potential Impacts, Mitigation Measures and Monitoring Activities: Natural Environment

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Natural Heritage Features	<ul style="list-style-type: none">Disturbance or destruction to natural heritage features.	<ul style="list-style-type: none">Prepare an Erosion and Sediment Control Plan (ESC Plan), in accordance with the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), as amended from time to time.Implement the ESC Plan during construction and maintain all ESC measures for the duration of construction to reduce the risk of erosion and sedimentation.Develop a Spill Prevention and Response Plan. Implement the Spill Prevention and Response Plan for the duration of construction. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and this Plan.Establish barriers (e.g., silt fencing around the perimeter of the site) to clearly delineate the construction areas and prevent accidental damage or intrusion to adjacent vegetation or vegetation communities. Maintain the barriers during construction.Ensure that machinery arrives on site in a clean condition (free of fluid leaks, invasive species, and noxious weeds) and will be handled in accordance with the Clean Equipment Protocol for Industry (Halloran et al, 2013).Reduce the size of construction areas, including staging and laydown areas and construction access, to the extent feasible.Stockpiled materials or equipment will be stored within the construction areas but shall be kept at least 30 m away from any wetland or watercourse to the extent feasible. If not feasible, install a heavy-duty silt fence and Silt Soxx (or equivalent) around the construction areas where within 30 m from a watercourse.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation and efficacy of mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.All erosion and sediment control measures should be inspected weekly, after every rainfall event and significant snow melt event, and daily during periods of extended rain or snow melt.All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection.
	Surface Water	<ul style="list-style-type: none">Removal or impacts to wetland, aquatic, and riparian vegetation.Erosion and sedimentation to surface water from construction.Risk of contamination to wetlands / waterbodies as a result of spills.	<ul style="list-style-type: none">Shorelines or banks disturbed by construction activities will be immediately stabilized to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.Stockpiled materials or equipment will be stored within the construction areas but shall be kept at least 30 m away from any wetland or watercourse to the extent feasible. If not feasible, install a heavy-duty silt fence and Silt Soxx (or equivalent) around the construction areas where within 30 m from a watercourse.Schedule construction activities immediately adjacent to waterbodies to avoid wet and rainy periods, to the extent feasible.Conduct in-water works in the dry during low flow condition, where feasible.Reduce the disturbance and removal of riparian vegetation, natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high-water mark.Where applicable to Project activities, in-water work should comply with the Ontario Provincial Standard Specifications (OPSS), including but not limited to OPSS 805 (Erosion and Sediment Control Measures), and OPSS 182 (Environmental Protection for Construction in Waterbodies and on Waterbody Banks).Refueling is to be undertaken at least 30 m from any watercourse or any other surface drainage feature (as indicated OPSS 182).Please refer to the Natural Heritage Features environmental component within this table for other applicable mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures.All erosion and sediment control measures should be inspected weekly, after every rainfall event and significant snow melt event, and daily during periods of extended rain or snow melt.All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Fish and Fish Habitat	<ul style="list-style-type: none">Potential for direct, in-water impacts to fish and fish habitat	<ul style="list-style-type: none">All requirements of the <i>Fisheries Act</i> will be met.If dewatering of isolated work areas is required, capture and relocate fish to suitable habitat outside of the work area under a License to Collect Fish for Scientific Purposes from the MNMNR prior to dewatering isolated work areas.Any fish isolated in the work area shall be transferred (using appropriate capture, handling and release techniques to prevent harm and minimize stress) downstream or away from the construction area.Reduce the disturbance and removal of riparian vegetation, natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high-water mark.Shorelines or banks disturbed by construction activities will be immediately stabilized to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.To the extent feasible, schedule work to avoid wet, windy and rainy periods that may result in high flow volumes and/or increase erosion and sedimentation.Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.Fish screens, if required, will be used to avoid entrainment of fish in pumps and hoses as per the End-of-pipe fish protection screens for small water intakes in freshwater and Fisheries and Oceans Canada’s Interim Standard and Code of Practice.If in-water and/or near water construction works are required, appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities such as Fisheries and Oceans Canada.Erosion and Sediment Control (ESC) measures shall be used to contain/isolate the construction zone and to manage site drainage to prevent erosion and sedimentation to the waterbody. ESC measures will be installed prior to the start of construction, maintained and repaired in place until all areas are stabilized. Site-specific ESC plans should be developed for in-water and near-water work.All equipment shall be operated, stored, and maintained in a manner that prevents the entry of any deleterious substances to the waterbody. All refueling should occur beyond 30m from the watercourse, and a spill tray should be used when completing maintenance and refueling.Please refer to the Natural Heritage Features and Surface Water environmental component within this table for other applicable mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Monitoring associated with any authorizations, permits, licenses and agreements to be completed as required.All erosion and sediment control measures should be inspected weekly, after every rainfall event and significant snow melt event, and daily during periods of extended rain or snow melt.All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection.
	Vegetation Communities	<ul style="list-style-type: none">Disturbance, and destruction of trees, plants and plant communities.	<ul style="list-style-type: none">Vegetation removal will be reduced and limited to within the construction areas.Construction activities will maintain the buffers established during the design phase to reduce potential impacts to the vegetation communities.Restore disturbed vegetated area with native species suitable for the site in adherence with the Metrolinx (2020) Vegetation Guideline, as amended from time to time. Plant species used for site restoration should be common to the region and appropriate for the site-specific soil moisture regime.Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the Emerald Ash Borer, <i>Agrilus planipennis</i> (Fairmaire) (2014), as amended from time to time. To comply with this Directive, all ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the Emerald Ash Borer Regulated Areas of Canada unless otherwise authorized by a Movement Certificate issued by the CFIA, moving these products out of the Regulated Area is prohibited. This is necessary to prevent the spread of the Emerald Ash Borer to un-infested areas in other part of Ontario and Canada. The Contractor must dispose of all wood at a registered waste facility.Provide compensation for the removal of vegetation in accordance with Metrolinx Vegetation guideline.An Arborist Report by an International Society of Arboriculture Certified Arborist will be prepared in accordance with the Ontario Forestry Act R.S.O. 1990, and other regulations and best management practices as applicable.Prior to the undertaking of tree removals, a tree removal strategy/Tree Preservation Plan will be developed during detailed design to document tree protection and mitigation measures that follow Metrolinx (2020) Vegetation Guideline, as amended from time to	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<p>time, and/or relevant municipal guidelines (i.e., the City of Toronto Tree Protection Policy and Specifications for Construction Near Tree Guidelines (2016)) and adherence with best practices, standards and regulations on safety, environmental and wildlife protections.</p> <ul style="list-style-type: none">• Tree Protection Zone fencing will be established to protect and prevent tree injuries and Tree Protection Zones will be clearly staked prior to construction using barriers in accordance with local by-law requirements and/or in accordance with Metrolinx (2020) Vegetation Guideline, as amended from time to time.• Adhere to the local bylaws for tree protection as per Metrolinx (2020) Vegetation Guideline, as amended from time to time.• Please refer to the Natural Heritage Features environmental component within this table for other applicable mitigation measures.	
	Wildlife and Wildlife Habitat – General	<ul style="list-style-type: none">• Disturbance, displacement, or mortality of wildlife.	<ul style="list-style-type: none">• Prior to construction, investigate the construction areas for wildlife and wildlife habitat that may have established following the completion of previous surveys/site inspections, as appropriate.• On-site personnel should be provided with information (e.g., factsheets) regarding wildlife (including Special Concern wildlife species) that have potential to occur on site. This should include information related to the identification of the wildlife species and the procedure(s) to follow if wildlife are encountered or injured.• If wildlife is encountered, measures to avoid destruction, injury, or interference with the species, and/or its habitat should be implemented. For example, construction activities should cease or be reduced, and wildlife will be encouraged to move off site and away from the construction area on its own. As necessary, a qualified biologist should be consulted to define the appropriate buffer required for wildlife and/or its habitat.	<ul style="list-style-type: none">• Regular on-site inspection by on-site environmental workers or construction staff will occur within the construction area to ensure that no wildlife is trapped within the construction area.
	Migratory Breeding Birds and Nests	<ul style="list-style-type: none">• Disturbance or destruction of migratory birds and/or nests.	<ul style="list-style-type: none">• Works must adhere to the Migratory Birds Convention Act (MBCA), including the timing windows for the general nesting period (April 1 to August 31 in Ontario).• If activities, including tree/vegetation removal, are proposed to occur during the general nesting period, then a breeding bird and nest survey should be undertaken prior to commencement of the activities. Nest searches should be performed no more than 48 hours prior to vegetation removal. Nest searches should be performed by a biologist with experience conducting nest searches.• Nests (including ground nests) of migratory bird found outside of the general nesting period should still receive protection.• If an active nest is found, then a protective buffer area should be established around the nest. The extent of the buffer should be determined in consultation with a qualified biologist and if applicable, additional consultation with the agencies having jurisdiction (e.g., ECCC, MECP) may be required to determine extent of protection and mitigations.• Please refer to the Vegetation and Vegetation Communities and Wildlife and Wildlife Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">• Regular monitoring should be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
	Species at Risk – General	<ul style="list-style-type: none">• Habitat loss, disturbance and/or mortality to SAR.	<ul style="list-style-type: none">• All requirements of the ESA and/or SARA Species-specific mitigation measures will be implemented, in consultation with MECP as required.• Please refer to the Vegetation and Vegetation Communities, Surface Water, Wildlife and Wildlife Habitat and Fish and Fish Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">• Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Species at Risk – Barn/Bank Swallow	<ul style="list-style-type: none">Habitat loss, disturbance and/or mortality to Barn and/or Bank Swallow.	<ul style="list-style-type: none">Field surveys should be undertaken prior to construction to confirm the number of Barn and/or Bank Swallow nests present in known nest locations and whether the nests remain active.Where loss or disturbance cannot be avoided (e.g., due to work on bridges or banks) in confirmed Bank/Barn Swallow habitat, all requirements under the ESA will be met, including any registration, compensation, replacement structures and/or permitting requirements.Loose soil faces (including aggregate piles) should be graded at an angle of no greater than 75° to discourage Bank Swallow nesting.If construction activities that would cause disturbance to structures confirmed to provide Barn Swallow habitat and/or banks confirmed to provide Bank Swallow habitat are scheduled during the nesting season for Barn and/or Bank Swallow (April 1 to August 31), a nest search should be undertaken by a qualified biologist. The nest search should confirm that no Barn and/or Bank Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If feasible, exclusion measures will be installed in the area prior to the nesting season to dissuade use of these areas for nesting.Please refer to Wildlife and Wildlife Habitat environmental components within this table for other applicable general mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
	Species at Risk – Chimney Swift	<ul style="list-style-type: none">Habitat loss, disturbance and/or mortality to Chimney Swift.	<ul style="list-style-type: none">If repair, maintenance or demolition of buildings/structures with suitable roosting/nesting habitat (e.g., chimneys) is to take place, targeted surveys for Chimney Swift should be completed by a qualified biologist as per the Bird Studies Canada Chimney Swift Monitoring Protocol (2009).If required, repair, maintenance, or demolition of an identified confirmed roosting/nesting will meet all requirements of the ESA.Please refer to Wildlife and Wildlife Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
	Species at Risk -- Bats	<ul style="list-style-type: none">Habitat loss, disturbance and/or mortality to SAR Bats.	<ul style="list-style-type: none">Should removal of potential SAR bat habitat be required, SAR bat surveys will be completed by a qualified specialist in advance of the removal activities to confirm SAR bat habitat presence.If removal of confirmed SAR bat habitat is required, all requirements under the ESA will be met, including any registration, compensation, replacement structures and/or permitting requirements.Please refer to Wildlife and Wildlife Habitat environmental components within this table for other applicable mitigation measures.	<ul style="list-style-type: none">On-site inspection should be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
	Species at Risk – Butternut	<ul style="list-style-type: none">Disturbance and/or destruction of Butternut.	<ul style="list-style-type: none">All requirements of the Endangered Species Act will be met. Species-specific mitigation measures will be implemented, in consultation with MECP as required.	<ul style="list-style-type: none">Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.
Operation	Natural Heritage Features – General	<ul style="list-style-type: none">No impacts are anticipated during the operation phase	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Surface Water	<ul style="list-style-type: none">Risk of contamination to wetlands / waterbodies as a result of spills.	<ul style="list-style-type: none">Refueling at least 30 m from any watercourse or any other surface drainage feature.	<ul style="list-style-type: none">NA
	Fish and Fish Habitat	<ul style="list-style-type: none">Risk of contamination to wetlands / waterbodies as a result of spills.	<ul style="list-style-type: none">Refueling at least 30 m from any watercourse or any other surface drainage feature.	<ul style="list-style-type: none">NA

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Vegetation Communities	<ul style="list-style-type: none">Removal of vegetation during operational vegetation maintenance activities, if applicableRemoval and/or damage to adjacent vegetation or ELC communities as a result of accidental intrusion during vegetation maintenance activities, if applicable	<ul style="list-style-type: none">Vegetation removal will be reduced to the extent possible and limited to the Project right-of-way.Herbicide applications will be administered subject to the Pesticides Act.	<ul style="list-style-type: none">On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions, if required. Corrective actions may include additional site maintenance and alteration of activities to reduce impacts.
	Wildlife and Wildlife Habitat – General	<ul style="list-style-type: none">Operations activities such as vegetation maintenance may cause disturbance or displacement of wildlife.	<ul style="list-style-type: none">Ensure routine maintenance of ROW fences as an exclusionary measure within the above ground portion of the project.Operation maintenance activities will include nest searches and wildlife surveys prior to maintenance work commencing, as required.	<ul style="list-style-type: none">On-site inspection should be regularly undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
	Migratory Breeding Birds and Nests	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Wildlife – Barn/Bank Swallow	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Wildlife – Chimney Swift	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Species at Risk – Bats	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA
	Species at Risk – Butternut	<ul style="list-style-type: none">No impacts are anticipated	<ul style="list-style-type: none">NA	<ul style="list-style-type: none">NA

5.12.2 Hydrogeology/Groundwater

The following table provides a summary of the potential hydrogeology/groundwater and soil quality and quantity impacts, and commitments to mitigation measures, monitoring and future work identified through the review of the YNSE RCD Design Changes.

Table 5-48 Summary of Potential Impacts, Mitigation Measures and Monitoring: Hydrogeology/Groundwater

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Groundwater Quantity and Quality	<ul style="list-style-type: none">• Potential impact to local groundwater levels:<ul style="list-style-type: none">○ Dewatering efforts associated with tunneling, if any is ultimately required, may cause local and temporary drawdown of the water table;○ If extensive dewatering is ultimately required, drawdown has the potential to impact the recharge of local wetlands or other natural surface water features, if within the zone of influence;○ Construction activities may cause soil displacement which may result in ground movement and settlement;○ Dewatering activities may cause soil subsidence/settlement and other impacts in the zone of influence.○ In addition, construction activities have the potential to expose contaminated materials and/or result in the spreading of contaminated materials.	<ul style="list-style-type: none">• Conduct further hydrogeologic assessments, as required, at locations requiring dewatering to estimate/confirm groundwater flow rates, refine impacts (such as lowering groundwater table and potential features that could be impacted) within the Zone of Influence (ZOI), and evaluate treatment/discharge options. These studies are also needed to support potentially required watering taking permits from MECP, including registration under MECPs Environmental Activity Sector Register (EASR) or Permit to Take Water (PTTW) applications.• Develop detailed site-specific mitigation plans, as required, prior to construction once the design has been finalized and to support EASRs or PTTW monitoring requirements as necessary.• A Groundwater Management and Dewatering/Unwatering Plan will be developed to guide the handling, management, and disposal of groundwater encountered during the works. The Groundwater Management and Dewatering/Unwatering Plan will be overseen by a Qualified Person (QP) and will comply with the Ontario Water Resources Act and <i>O.Reg. 153/04</i> made under the Environmental Protection Act; Groundwater Management and Dewatering/Unwatering Plan will include, but not be limited to the following components:<ul style="list-style-type: none">• Description of handling, transfer, testing, monitoring, disposal of excess water, groundwater, and dewatering effluent generated as part of the works and in accordance with applicable regulatory requirements;• groundwater monitoring considerations during the works and provide guidance for groundwater monitoring following the works where considered applicable;• consider the potential impacts of groundwater dewatering on natural heritage features and functions;• describe the anticipated groundwater quantity and dewatering ZOI that will be encountered during the works, and if approvals are needed for the water taking; and• describe the storage, transfer, and disposal and or treatment of the groundwater collected during the works, and approvals for the water disposal, and/or treatment if applicable, based on the quantity and quality.• Groundwater disposal (where required) is anticipated to be to an existing storm or sanitary sewer. The conditions and resulting monitoring and reporting requirements will be the subject of a water disposal permit and monitoring will include sampling and analysis.• Provide water treatment prior to disposal, as required.• Contaminated groundwater will be managed in accordance with provincial legislation and regulations including the Ministry of Environment, Conservation and Park’s (formerly the Ministry of Environment) (MECP) Guidelines for Use at Contaminated Sites in Ontario (1997).	<ul style="list-style-type: none">• Groundwater disposal (where required) is anticipated to be to an existing storm or sanitary sewer. The conditions and resulting monitoring and reporting requirements will be the subject of a water disposal permit and monitoring will include sampling and analysis, as required.
	Soil Quantity and Quality	<ul style="list-style-type: none">• Construction activities can cause displacement of the soils and bedrock, resulting in ground subsidence and movement.• Construction activities (e.g., excavation) could expose contaminated materials and/or result in the spreading of contaminated materials.	<ul style="list-style-type: none">• Develop an Excavated Material Management Plan (EMMP) for the handling, management, and disposal of all excavated material (i.e., soil, rock, and solid waste, including contaminated materials) that is generated or encountered during construction. This plan must be in accordance with <i>O. Reg. 406/19</i> and <i>O. Reg. 347/90</i>, as amended.• Soil and groundwater investigations in the form of Environmental Site Assessments to assess the presence of contaminated soil and groundwater will be undertaken along the project alignment, as required.• Ensure that the EMMP provides direction for the handling, management and disposal of contamination discovered during construction.• Use tunneling equipment designed to reduce the potential for frac-out, ground loss and the associated potential for settlement.• Ensure a contingency plan is in place for frac-out to reduce the potential for a frac-out associated with tunneling activities.	<ul style="list-style-type: none">• The EMMP will include requirements for on-going monitoring and compliance inspections.• If required, develop and conduct a settlement monitoring program to verify construction effects, identify adverse trends and identify the need for additional mitigation measures.• Soil movement will be governed in full accordance with <i>O. Reg. 406/19</i>, including assessment of past uses, sampling and analysis plans, and soil tracking.

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Consider ground treatment such as jet grouting to reduce the risk of ground loss.Third-party lands used during construction should be returned to existing or better conditions, and meet the requirements set out under <i>O. Reg. 153/04</i>.	
Operation	Groundwater Quantity and Quality	<ul style="list-style-type: none">Currently, on-going dewatering is not anticipated	<ul style="list-style-type: none">As no impacts are anticipated to groundwater quantity or quality during operations, no mitigation measures are recommended.	<ul style="list-style-type: none">As no impacts are anticipated to groundwater quantity or quality during operations, no monitoring activities are recommended.
	Soil Quality	<ul style="list-style-type: none">Contaminant impacts to soil quality are not anticipated during normal operation.	<ul style="list-style-type: none">None, as contaminant impacts to soil quality are not anticipated.	<ul style="list-style-type: none">None, as contaminant impacts to soil quality are not anticipated.

5.12.3 Land Use & Socio-Economic

The following table provides a summary of the potential socio-economic and land use impacts, and commitments to mitigation measures, monitoring and future work identified through the review of the YNSE EPR Addendum process.

Table 5-49 Summary of Potential Impacts, Mitigation Measures and Monitoring: Socio-Economic Environment

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Property Acquisition	Property acquisition – permanent and temporary	<ul style="list-style-type: none">Specific permanent property requirements associated with the Project infrastructure components, and temporary property requirements, such as those associated with construction staging and access, will be minimized to the extent feasible as planning progresses.	<ul style="list-style-type: none">None identified
	Land Use and Access Disruption	Nuisance effects from construction activities	<ul style="list-style-type: none">Mitigation measures related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration potential impacts, mitigation measures, and monitoring activities tables.An Erosion and Sediment Control Plan will be developed in accordance with the Greater Golden Horseshoe Area Conservation Authorities' <i>Erosion and Sediment Control Guideline for Urban Construction</i> (2019), as amended from time to time, that addresses sediment release to adjacent properties and roadways.	<ul style="list-style-type: none">Monitoring activities related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration potential impacts, mitigation measures, and monitoring activities tables.Erosion and sediment control monitoring to be conducted (e.g., on-site inspection of erosion and sediment control measures).
		Land use and access disruption	<ul style="list-style-type: none">Provide well connected, clearly delineated, and appropriately signed walkways and cycling route options, with clearly marked detours where required.Provide temporary walkways with a pedestrian clearway of 2.1 metres, where possible. Temporary walkways required during construction will also meet Accessibility for Ontarians with Disabilities Act requirements for universal accessibility.Provide temporary lighting, as required, and wayfinding signs and cues for navigation around the construction site.Regular (existing) access to businesses during working hours will be maintained, where feasible. Where regular access cannot be maintained, alternative access and signage will be provided.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of temporary access paths, walkways, cycling routes and fencing to ensure effectiveness.
	Visual Characteristics	Visual effects from construction areas/activities	<ul style="list-style-type: none">A screened enclosure for the construction site(s) will be provided, as required, with particular attention to the waste disposal and material storage areas.Consideration will be given to providing temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows, and where necessary.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of construction visual effects mitigation measures to ensure effectiveness.
	Light Pollution	Light trespass, glare and light pollution effects	<ul style="list-style-type: none">The Constructor will perform the Works in such a way that any adverse effects of construction lighting are controlled or mitigated in such a way as to avoid unnecessary and obtrusive light with respect to adjoining residents, communities and/or businesses.Comply with all local applicable municipal by-laws and Ministry of Transportation practices for lighting in areas near or adjacent to highways and roadways regarding outdoor lighting for both permanent and temporary construction activities, and incorporate industry best practices provided in ANSI/IES RP-8-18 – Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting. Obtrusive light with respect to adjoining residents, communities, and/or businesses will be limited.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of light pollution mitigation measures to ensure effectiveness.
	Transportation	Construction may result in the need for temporary road or lane closures and potential impacts to cycling and pedestrian, transit and rail networks.	<ul style="list-style-type: none">Mitigation measures related to transportation effects are outlined in the Transportation Existing Conditions & Impact Assessment report.	<ul style="list-style-type: none">Monitoring activities related to transportation effects are outlined in the Transportation Existing Conditions & Impact Assessment report.
Operation	Property Acquisition	Property acquisition during the operation phase of the Project is not required.	<ul style="list-style-type: none">N/A	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
	Land Use and Access Disruption	Nuisance effects from operational activities	<ul style="list-style-type: none">Mitigation measures related to potential nuisance effects from Operations are outlined in the Noise and Vibration potential impacts, mitigation measures, and monitoring activities tables.	<ul style="list-style-type: none">Monitoring related to potential nuisance effects are outlined in the Noise and Vibration Assessment Impact Assessment Reports contained in the current EPR Addendum.
		The operational activities of the subway will not generate land use and access disruption	<ul style="list-style-type: none">N/A	<ul style="list-style-type: none">N/A
	Visual Characteristics	Visual effects from construction areas/activities	<ul style="list-style-type: none">Reduce visual effects of project structures by considering their location, building materials, architectural design, and surrounding landscape treatments.	<ul style="list-style-type: none">None identified
	Light Pollution	Light trespass, glare and light pollution effects	<ul style="list-style-type: none">Comply with all local applicable municipal by-laws and Ministry of Transportation practices for lighting in areas near or adjacent to highways and roadways regarding outdoor lighting for both permanent and temporary construction activities, and incorporate industry best practices provided in ANSI/IES RP-8-18 – Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting. Obtrusive light with respect to adjoining residents, communities, and/or businesses will be limited.	<ul style="list-style-type: none">Regular monitoring (e.g., on-site inspection) of light pollution mitigation measures to ensure effectiveness
	Transportation	Minimal short-term impacts associated with maintenance activities (e.g., temporary lane/sidewalk closures) may occur.	<ul style="list-style-type: none">Provide signage and detours in advance of temporary lane/sidewalk closures during maintenance activities, as required.	<ul style="list-style-type: none">N/A

5.12.4 Archaeological Resources

The following table summarizes the potential impacts to archaeological resources, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process.

Table 5-50 Summary of Potential Impacts, Mitigation Measures and Monitoring: Archaeological Resources

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Archaeological Resources	Potential for the disturbance of unassessed or documented archaeological resources	<ul style="list-style-type: none">All work shall be performed in accordance with the recommendations from the Stage 1 Archaeological assessment report and any subsequent archaeological assessments as well as applicable guidelines and regulations, including but not limited to the Ontario Heritage Act, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) Standards and Guidelines for Consultant Archaeologists (2011), and the MHSTCI document, Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario (2011).If limits of the Project Area assessed in this report are altered and fall outside of the assessed Study Area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to ground disturbing activities.For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist as early as practical in the detail design stage and well before the commencement of ground- disturbing activities.All Archaeological Assessment findings will be shared with Indigenous Nations that were engaged in the Stage 1 archaeological assessment.	<ul style="list-style-type: none">None identified. However, should the results of further Archaeological Assessments, if any required as per mitigation measures outlined in this table, identify the need for monitoring during construction, those monitoring activities will be implemented.
		Potential for the recovery of archaeological resources during construction	<ul style="list-style-type: none">In the event that archaeological resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment of the resources may be required. If it is determined that there is a potential for Indigenous artifacts, Metrolinx should be contacted and Applicable Law will be followed.If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act. If the human remains are determined to be of Indigenous origin, Metrolinx should be contacted and all Applicable Law must be adhered to.For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist as early as practical in the detail design stage and well before the commencement of ground- disturbing activities.All Archaeological Assessment findings will be shared with Indigenous Nations that were engaged in the Stage 1 archaeological assessment.	<ul style="list-style-type: none">None identified.
Operation		No impacts to archaeological resources are anticipated during Project operations	<ul style="list-style-type: none">No impacts to archaeological resources are anticipated during Project operations, therefore no mitigation is required.	<ul style="list-style-type: none">No impacts to archaeological resources are anticipated during Project operations, therefore no monitoring is required.

*Notes:
Regulations, standards and guidance documents referenced herein are current as of the time of writing and may be amended from time to time.
If clarification is required regarding regulatory requirements, the Constructor is encouraged to consult with the appropriate regulatory agencies.

5.12.5 Built Heritage Resources and Cultural Heritage Resources

The following table summarizes the potential impacts to built heritage resources and cultural heritage landscapes, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process.

Table 5-51 Summary of Potential Impacts, Mitigation Measures and Monitoring: Built Heritage Resources and Cultural Heritage Landscapes

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Built Heritage Resources and Cultural Heritage Landscapes identified during the field review or previously identified in a cultural heritage study	<ul style="list-style-type: none">No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the property.	<ul style="list-style-type: none">N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred).		
		<ul style="list-style-type: none">Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. Consult with the local municipality to determine and obtain any approval or permit required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact B: Introduction of new physical elements and/or alterations without impacting the heritage attributes of the property	i. Preferred Option B: Avoidance - Design the Project to avoid the property. ii. Alternative Option B: If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes of the property, then the following is required: <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact C: Modification of the building to fit a new use.	i. Preferred Option C: Avoidance - Design the Project to avoid the property. ii. Alternative Option C: If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes of the property. For option C, the following is required: <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	i. Preferred Option D: Avoidance - Design the Project to avoid the property. ii. Alternative Option D: If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required: <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration of the property (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact E: Relocation of all or part of the building.	i. Preferred Option E: Avoidance - Design the Project to avoid the property. ii. Alternative Option E: If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			iii. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved.○ Stabilize the interior and exterior of the building before relocation.○ Prepare the new site, i.e. construction of a new foundation, prior to relocation.○ During Design, incorporate commemoration signage in consultation the local municipality, to communicate the cultural heritage value of the relocated structure on the property to the public.	
		• Direct Impact F: Demolition of all or part of the building.	i. Preferred Option F: Avoidance - Design the Project to avoid the property. ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required: <ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.○ During design, incorporate commemoration signage in consultation with City of Toronto's Heritage Preservation Services, to communicate the cultural heritage value of the demolished structure on the property to the public.	• N/A
		2. Potential indirect adverse impact from the Project.		
		• Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building/structure. The vibration buffer will be refined once property-specific impacts/vibration study are known/completed. ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required: <ul style="list-style-type: none">○ Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration.○ Implement vibration mitigating measures on the construction site and/or at the building.○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.○ Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	• N/A
Construction	Built Heritage Resource or Cultural Heritage Landscape listed on a municipal heritage register	• No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the property.	• N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred).		
		• Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes of the property.	i. Preferred Option A: Avoidance - Design the Project to avoid the property. ii. Alternative Option A: If avoidance of the whole property is not feasible, then design Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required: <ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.○ Consult with the local municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option A.	• N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
		<ul style="list-style-type: none">Direct Impact B: Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	<p>i. Preferred Option B: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option B: If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the building, (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact C: Modification of the building to fit a new use.	<p>i. Preferred Option C: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option C: If avoidance of the property and Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Consult with the local municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option C.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute	<p>i. Preferred Option D: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option D: If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact E: Relocation of all or part of the building.	<p>i. Preferred Option E: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option E: If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building component should be retained and conserved.Stabilize the interior and exterior of the building before relocation.Prepare the new site, i.e. construction of a new foundation, prior to relocation.During Design, incorporate commemoration signage in consultation with the municipality, to communicate the cultural heritage value of the relocated structure on the property to the public.Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI, a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister's approval.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
		<ul style="list-style-type: none">Direct Impact F: Demolition of all or part of the building.	<p>i. Preferred Option F: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.Complete an interpretation/commemoration Strategy framework in consultation with the municipality. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.	<ul style="list-style-type: none">N/A
		2. Potential indirect adverse impact from the Project.		
		<ul style="list-style-type: none">Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.</p> <p>ii. Alternative Option A: if vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions of the building to determine if the structure is vulnerable to vibration impacts.Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration.Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">N/A
Construction	Property Designated under Part IV of the Ontario Heritage Act	<ul style="list-style-type: none">No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the property.	<ul style="list-style-type: none">N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred)		
		<ul style="list-style-type: none">Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical; impact to the building and/or the heritage attributes of the property.	<p>i. Preferred Option A: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option A: If avoidance of the whole property is not feasible, then design the Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes of the property. However, for any physical impact to the property, the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option A.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact B: Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes of the property.	<p>i. Preferred Option B: Avoidance - Design the Project to avoid the property.</p> <p>ii. Alternative Option B: If avoidance of the property or Option A. is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option B.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Design Project to integrate new physical elements with the building and to be sympathetic and compatible with the architectural style and/or landscape design/configuration (consideration of Parks Canada's <i>Standards & Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	
		<ul style="list-style-type: none">Direct Impact C: Modification of the building to fit a new use.	<ul style="list-style-type: none">i. Preferred Option C: Avoidance - Design the Project to avoid the property.ii. Alternative Option C: If avoidance of the property and Option A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option C.Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute.	<ul style="list-style-type: none">i. Preferred Option D: Avoidance - Design the Project to avoid the property.ii. Alternative Option D: If avoidance of the property and Options A, B, and C are not feasible, and if the physical impact to a heritage attribute cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option D.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact E: Relocation of all or part of the building.	<ul style="list-style-type: none">i. Preferred Option E: Avoidance - Design the Project to avoid the property.ii. Alternative Option E: If avoidance of the property and Options A, B, C, or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval/consent for Option E.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order o inform what building component should be retained and conserved.Stabilize the interior and exterior of the building before relocation.Prepare the new site, i.e. construction of a new foundation, prior to relocation.During Design, incorporate commemoration signage in consultation with municipality, to communicate the cultural heritage value of the relocated structure on the property to the public.Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI, a Strategic Conservation Plan (SCP) for type ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Ministers approval.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact F: Demolition of all or part of the building.	<ul style="list-style-type: none">i. Preferred Option F: Avoidance - Design the Project to avoid the property.ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">○ Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required.○ Consult with the municipality as part of the detailed design phase and prior to issuance of the draft Environmental Assessment Report in regard to the terms of the heritage easement agreement on the property and if required, obtain approval/consent for Option F.○ Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.○ Complete an interpretation/Commemoration Strategy framework in consultation with the local municipality. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.	
		2. Potential indirect adverse impact from the Project		
		<ul style="list-style-type: none">● Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">○ Documentation (review and establish) of the structural condition of the building to determine if the structure is vulnerable to vibration impacts.○ Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration.○ Implement vibration mitigating measures on the construction site and/or at the building.○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.○ Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measure in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">● N/A
Construction	Heritage Conservation District designated under Part V of the Ontario Heritage Act	<ul style="list-style-type: none">● No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the HCD.	<ul style="list-style-type: none">● N/A
		1. Potential direct adverse impact from the Project (ordered from most to least preferred).		
		<ul style="list-style-type: none">● Direct Impact A: Encroachment into the HCD causing a physical impact, including introduction of new elements to the HCD, alterations to contributing property or diminishment in integrity of the HCD.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the project to avoid the HCD.ii. Alternative Option A: While avoidance of the HCD altogether seems unlikely, the following mitigation measures are required:<ul style="list-style-type: none">○ Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:<ul style="list-style-type: none">▪ Consult with the municipality regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as CHERs and HIAs.▪ Evaluate and document the existing conditions of a contributing property including the heritage attributes prior to designing alterations.▪ Record, repair and restore where possible, if elements of the HCD are impacted by the Project.▪ New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD.▪ If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines.○ In addition, consult the HCD Design Guidelines and follow requirements for alterations to: heritage buildings, non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.○ The heritage attributes of properties that are "listed" or designated under Part IV of the Ontario Heritage Act, as defined in their respective listing reports or designation by-laws, should be maintained and enhanced in any proposed alteration to the property.	<ul style="list-style-type: none">● N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
		2. Potential indirect adverse impact from the Project.		
		<ul style="list-style-type: none">Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage and include a sufficient buffer (within 250m) between Project components/activities and the buildings within the HCD. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration.Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Indirect Impact B: Obstruction/alteration of views identified in the HCD.	<ul style="list-style-type: none">i. Preferred Option B: Design the Project to conserve and not obstruct views as identified in the HCD Plan.ii. Alternative Option B: If impact on identified views cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with the local municipality regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.Limit Impact on identified view corridors by designing new features to blend with the architectural style and landscape aesthetic style of the HCD. Make new additions complimentary to, subordinate to, and distinguishable from the existing landscape (consideration of Parks Canada's <i>Standards and Guidelines for the Conservation of Historic Places in Canada</i>, 2010).	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">No anticipated impacts from the Project.	<ul style="list-style-type: none">i. Preferred Option: Continued Avoidance of the HCD. However, consult with the local municipality as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.	<ul style="list-style-type: none">N/A
Construction	Contributing Property within an HCD (Designated under Part V of the Ontario Heritage Act)	1. Potential direct adverse impact from the Project (ordered from most to least preferred).		
		<ul style="list-style-type: none">Direct Impact A: Encroachment onto the property causing a physical impact to the property, while avoiding physical impact to the building and/or the heritage attributes.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid the property.ii. Alternative Option A: If avoidance of the whole property is not feasible, then design the Project to encroach onto the property as close to the property line as possible, while avoiding all impacts to the building and/or heritage attributes identified in the HCD Plan. However, for any physical impact to the property, the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact B: Introduction of new physical elements and/or alterations to the building without impacting the heritage attributes.	<ul style="list-style-type: none">i. Preferred Option B: Avoidance - Design the Project to avoid the property.ii. Alternative Option B: If avoidance of the property or Option A is not feasible and if introduction of a new physical element and/or alteration to the building is proposed without impacting the heritage attributes, then the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact C: Modification of a building to fit a new use.	<ul style="list-style-type: none">i. Preferred Option C: Avoidance - Design the Project to avoid the property.ii. Alternative Option C: If avoidance of the whole property or Options A and B are not feasible, then consider retention of the building by modifying the building to fit a new use in order to retain its cultural heritage value and heritage attributes. For Option C, the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Complete Adaptive Reuse Study for the reuse of the building, if appropriate.	
		<ul style="list-style-type: none">Direct Impact D: Introduction of new elements and/or alterations that results in a physical impact to a heritage attribute	<ul style="list-style-type: none">i. Preferred Option D: Avoidance - Design the Project to avoid the property.ii. Alternative Option D: If avoidance of the property or Options A, B, or C are not feasible, and if a physical impact to a heritage attribute cannot be avoided, the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to alteration, in order to inform what building components should be retained and conserved and/or restored.Design the Project to be consistent with the Policies and Guidelines set out in the HCD Plan.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact E: Relocation of all or part the building.	<ul style="list-style-type: none">i. Preferred Option E: Avoidance - Design the Project to avoid the property.ii. Alternative Option E: If avoidance of the property and Options A, B, C or D are not feasible, complete a structural/engineering assessment to demonstrate the movability of the building or part of the building from this property to a new site. Identify a suitable site for relocation prior to undertaking Option E. If relocation or partial relocation of the building is possible and cannot be avoided, then the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to relocation, in order to inform what building components should be retained and conserved and/or restored.Stabilize the interior and exterior of the building before relocation.Prepare the new site, i.e. construction of a new foundation, prior to relocation.During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the local municipality. Incorporate commemoration signage to communicate the cultural heritage value of the relocated building on the property to the public.Prepare, once the building is relocated, by Metrolinx in consultation with MHSTCI a Strategic Conservation Plan (SCP) for the ongoing protection, use and maintenance of a building. SCP requires MHSTCI Deputy Minister approval.	<ul style="list-style-type: none">N/A
		<ul style="list-style-type: none">Direct Impact F: Demolition of all or part of the building.	<ul style="list-style-type: none">i. Preferred Option F: Avoidance - Design Project to avoid the property.ii. Alternative Option F: If avoidance of the whole property and Options A, B, C, D, and E are not feasible, and if demolition or partial demolition of the building on the property cannot be avoided, the following is required:<ul style="list-style-type: none">Consult with the local municipality as part of the detailed design phase regarding any physical impact to the property in order to determine and obtain any approval or permits required. If required, complete any cultural heritage technical studies, which may include a CHER or HIA.Complete detailed documentation of the property that includes the identification of salvageable materials and/or heritage attributes prior to demolition.During Design, complete an Interpretation/Commemoration Strategy Framework in consultation with the local municipality. Incorporate commemoration signage to communicate the cultural heritage value of the demolished structure on the property to the public.	<ul style="list-style-type: none">N/A
		2. Potential indirect adverse impact from the Project.		
		<ul style="list-style-type: none">Indirect Impact A: Vibration impacts to the building related to the Project on or adjacent to the property.	<ul style="list-style-type: none">i. Preferred Option A: Avoidance - Design the Project to avoid vibration damage to the property, including a sufficient buffer (within 250m) between Project components/activities and the building. Note, the vibration buffer will be refined once property-specific impacts/vibration study are known/completed.ii. Alternative Option A: If vibration impact cannot be avoided, then the following is required:<ul style="list-style-type: none">Documentation (review and establish) of the structural condition of the building to determine if the structure is vulnerable to vibration impacts.	<ul style="list-style-type: none">N/A

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
			<ul style="list-style-type: none">Establish vibration limits based on building conditions, founding soil conditions and type of construction vibration.Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measure in place prior to construction. If damage is identified, then implement additional corrective steps.	
Construction	Non-Contributing Property within an HCD (Designated under Part V of the Ontario Heritage Act)	<ul style="list-style-type: none">No anticipated impacts from the Project.	i. Preferred Option: Continued Avoidance of the HCD. However, consult with the local municipality as part of the detailed design phase regarding any physical impact to the HCD in order to determine and obtain any approval or permits required.	<ul style="list-style-type: none">N/A
		<p>1. Potential direct adverse impact from the Project (ordered from most to least preferred).</p> <ul style="list-style-type: none">Direct Impact A: Encroachment or construction within a non-contributing property in the HCD that may cause a physical impact, including introduction of new elements to the HCD or diminishment in integrity of the HCD due to the introduction of new elements.	<p>i. Preferred Option A: Avoidance - Design the project to avoid the HCD.</p> <p>ii. Alternative Option A: Any encroachment in the HCD resulting in a physical impact, including but not limited to, the demolition or removal of a building, or alterations to the exterior portions of a property visible from the street, then the following is required:</p> <ul style="list-style-type: none">Consult with the local municipality regarding any physical impact to the HCD in order to determine and obtain any approval or permits required. If required, completed any cultural heritage technical studies, such as an HIA.New elements and alteration must be complimentary and subordinate to the cultural heritage value and heritage attributes of the HCD.If demolition, removal or significant alteration to any building or structure in the HCD is necessary for the Project, this action should be limited to only those buildings that have been identified in the HCD Plan as "non-contributing". Work proposed within non-contributing properties must follow the HCD Plan guidelines. <p>iii. In addition, consult the HCD Design Guidelines and follow requirements for alterations to: non-contributing buildings, new buildings, commercial features and streetscape elements, and landscape features. Proposed work must support and enhance the HCD.</p>	<ul style="list-style-type: none">N/A
Construction	Known (listed or designated) and potential (identified during the field review or previously identified) Built Heritage Resources and Cultural Heritage Landscapes, including HCDs	<ul style="list-style-type: none">Vibration impacts to heritage buildings/structures related to the Project on or adjacent to the property.	<p>i. If vibration impact cannot be avoided, then the following is required:</p> <ul style="list-style-type: none">Documentation (review and establish) of the structural conditions, founding soil conditions and type of construction vibration. Implement vibration mitigating measures on the construction site and/or at the building.Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded.Conduct regular condition surveys and reviews during construction to evaluate efficacy or protective measures in place prior to construction. If damage is identified, then implement additional corrective steps.	<ul style="list-style-type: none">N/A
Operation	Known (listed or designated) and potential (identified during the field review or previously identified) Built Heritage Resources and Cultural Heritage Landscapes, including HCDs	<ul style="list-style-type: none">No impacts are anticipated during operations	<ul style="list-style-type: none">N/A	<ul style="list-style-type: none">N/A

*NOTES:
Regulations, standards and guidance documents referenced herein are current as of the time of writing and may be amended from time to time.
If clarification is required regarding regulatory requirements, consult with the appropriate regulatory agencies.

5.12.6 Air Quality

The following summarizes the potential air quality impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process.

Table 5-52 Summary of Potential Impacts, Mitigation Measures and Monitoring: Air Quality

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Air Quality	<ul style="list-style-type: none">• Potential air quality impacts could include effects from diesel combustion and particulate emissions. Odour and visible dust may also cause public annoyance.• Tailpipe emissions from construction equipment may contribute to increased level of nitrogen oxides, and volatiles such as benzene and benzo(a)pyrene, which given their existing background concentrations can contribute to existing levels of provincial criteria exceedance.• Certain construction activities are likely to emit particulate in higher quantities, which include earthworks, demolition, unpaved surface with heavy equipment travel, and uncovered material storage piles.	<ul style="list-style-type: none">• Development of an Air Quality Management Plan (AQMP) prior to construction commencement• Develop a Communications Protocol that includes timely resolution of complaints.• The following measures should be considered in the management of air quality:<ul style="list-style-type: none">○ Use of electricity from the grid over diesel generators wherever possible.○ Retrofitting of combustion engines with specific exhaust emission control measures such as particulate traps.○ If applicable, follow guidelines on hot mix asphalt outlined in the Ontario Hot Mix Producers Association’s Environmental Practices Guide: Ontario Hot Mix Asphalt Plants, Fifth Edition (Ontario Hot Mix Producers Association, 2015).• Implement applicable best practices identified in the Environment Canada document, <i>Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities</i> (2005) including but not limited to:<ul style="list-style-type: none">○ All equipment complies with Canadian engine emission standards.○ All equipment visually inspected prior to use and properly maintained.○ Implementation of no-idling policies (unless necessary for equipment operation).○ Temporary seeding or mulching of bare soil and storage piles.○ Compression or covering of soil surfaces and storage piles to reduce erosion.○ Confine storage pile activity to downwind side of piles.○ Reduction of activities during high wind conditions.○ Full or partial enclosure of demolition activities.○ Wind screens or barriers where possible or necessary.○ Scheduling certain construction activities (i.e., site preparation and earth works activities, demolition activities, unpaved surfaces with heavy equipment travel, and uncovered soil storage piles) to periods of time when exposure to dust is expected to be limited (e.g., avoid scheduling activities during dry, windy weather conditions).○ Landscaping materials ordered close to time of use to reduce on-site storage.○ Application of non-chloride soil stabilizers or dust control polymers where feasible.○ Daily removal of accumulated mud, dirt and debris deposits on-site, and regular truck washing.○ Paved and unpaved roadway cleaning, watering or application of a non-chloride dust suppressant.○ Minimize drop height of materials on-site.○ Methods and equipment for clean-up of accidental spill of dusty materials.○ Limit travel speeds on-site to a maximum of 24 kilometres per hour.	<p>The following monitoring activities should be considered in the development of the Air Quality Management Plan:</p> <ul style="list-style-type: none">• On-site monitoring that includes real-time particulate monitoring representative of receptor impacts.• Siting of the monitors should generally follow the guidelines provided in the Ministry of the Environment, Conservation and Parks (MECP) Operations Manual for Air Quality Monitoring in Ontario (2018).• Baseline conditions should be established prior to construction for longer than one week to capture representative concentrations under varying meteorological conditions, particularly where large local sources of pollution, such as highways, directly affect the zone of influence of the Project.• Place monitors upwind and downwind of activities where possible.• Reporting detailing results of ongoing monitoring and mitigation activities.
Operation	Air Quality	<ul style="list-style-type: none">• As the air quality in the AQSA is anticipated to improve, no mitigation measures are required. Activities related to the operations and maintenance of the subway that may potentially require the development and implementation of Air Quality Management Plans will be the responsibility of the operating authority.	<ul style="list-style-type: none">• Not Applicable	<ul style="list-style-type: none">• Not Applicable

5.12.7 Noise and Vibration

The following table summarizes the potential noise and vibration impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process.

Table 5-53 Summary of Potential Impacts, Mitigation Measures and Monitoring: Noise and Vibration

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Construction Noise along the Alignment	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and disturb sleep and other activities.	<ul style="list-style-type: none">Establish and apply project specific noise criteria/limits.Complete updated Construction Noise Impact Assessment studies during subsequent design phases using most up-to-date information regarding construction methods, equipment and staging.Prior to commencement of construction, develop and submit a Construction Noise Management Plan.Develop a Communications Protocol which includes timely resolution of complaints.Construction noise impact mitigation measures to be considered to meet project specific noise criteria/exposure limits include but are not limited to the following:<ul style="list-style-type: none">Ensure the equipment meets specifications and ensure that modifications have not been made to the equipment’s silencing.Operate equipment with silencers/mufflers where required.Use construction equipment that meets provincial criteria in NPC-115.Ensure smooth surfaces throughout the construction zones to help reduce the tailgate banging of dump trucks and other impulsive noises.Develop construction staging plans that reduce noise at nearby sensitive receptors, to the extent feasible. This can include ensuring a minimum separating distance from stationary equipment (such as generators and compressors), selecting truck staging areas that are as far away from critical areas as possible, designing optimal truck routes that minimize on site movement (especially reversing) and that avoid traversing the quieter residential streets.Schedule noisy activities during the daytime periods, wherever feasible. If nighttime construction is necessary, the activities with the highest noise levels should be conducted during daytime periods where feasible.If construction will occur outside of normal daytime hours, inform local residents before construction of type of construction and expected duration outside of daytime hours.Provide silencers for any ventilation fans and direct such fans away from sensitive receptors.Connect equipment to permanent power wherever feasible to reduce the use of portable generators.Erect temporary noise barriers or acoustic enclosures around noisy equipment such as concrete pumps, compressors, or generators, as required.Use of upgraded construction hoarding (considering requirements from Canadian Standards Association Z107.9 for noise barriers) between construction equipment and noise sensitive receivers.Erect temporary or semi-permanent noise barriers of sufficient height around long-term construction zones wherever feasible.Where feasible, provide a smooth and asphalt coated deck for any cut and cover excavation.Equipment should be provided with broadband backup alarms, where feasible.Where feasible, outfit shoring drill rigs with auger cleaner attachments. Where such attachments are not practical, manual cleaning of the attachments should be considered.Minimize simultaneous operation of equipment, where feasible.Implement a no idling policy on site (unless necessary for equipment operation).Limit the number of heavy trucks on site to the minimum required, where feasible.Undertake noise monitoring and regular reporting throughout the construction phase. Where noise level limits are exceeded, additional noise mitigation measures shall be implemented.Additional mitigation measures not listed above may be considered.	<ul style="list-style-type: none">Noise levels will be monitored where the impact assessment indicates that noise limits may be exceeded, to identify if any additional mitigation is required and verify mitigation measure(s) effectiveness.Continuous noise monitoring should be completed at each geographically distinct active construction site associated with the Project with monitor(s) located strategically to capture the worst-case construction related noise levels at receiver locations based on planned construction activities, their locations, and the number, geographic distribution and proximity of noise sensitive receivers.Monitoring at locations where there are persistent complaints, as required.

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Construction Vibration and Tunneling-generated Ground-Borne Noise along the Alignment	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.Without mitigation, vibration may cause damage to nearby structures, including heritage buildings.	<ul style="list-style-type: none">Establish and apply project-specific vibration limits.As project planning and design progress, conduct a review to identify any heritage structures and other vibration-sensitive structures/locations, buildings, or infrastructure vulnerable to vibration and/or vibration damage (e.g., sound recording studios), assess requirements and, if necessary, develop structure/location-specific mitigation measures.Prior to construction, complete updated Construction Vibration Impact Assessment studies during subsequent design phases that includes assessment of the vibration ZOI based upon refined site staging, construction areas/equipment, and building locations, as required.Develop and implement a Construction Vibration Management Plan.Complete pre-construction condition surveys for properties within the construction ZOI and at all potentially affected heritage structures and establish a baseline prior to any work beginning, as required.Increase setback distance between the construction vibration source and nearby buildings to the extent feasible.Schedule vibration intensive activities during the daytime periods wherever possible.Select construction methods and equipment with the least vibration impacts.Consideration should be given to using lower settings on hydraulic breakers and vibratory compactors to reduce the vibration levels.Where feasible, use equipment with lower vibration levels.Where feasible, saw cuts should be completed prior to demolition works to minimize vibration transfer.Ensure smooth surfaces throughout construction zones to reduce vibration.Implement vibration isolation solutions such as resilient fasteners for the temporary tracks used by the temporary service locomotives during tunneling or use of rubber-tired service vehicles, as required.Reduce the gaps between adjoining rail segments in the temporary tracks.Conduct regular inspection and maintenance of the temporary tracks, service trains and railway cars during tunneling operations.Develop communications protocol which includes timely resolution of complaints.Additional mitigation measures not listed above may be considered.	<ul style="list-style-type: none">Monitor vibration continuously at structures deemed to be within the construction ZOI to ensure compliance with applicable vibration limits, to verify mitigation measures effectiveness and to identify the need for additional mitigation if required.During TBM operations, vibration monitoring along the alignment is recommended.Monitoring at locations where there are persistent complaints, if required.
	Train Operations Noise along the At Grade Alignment	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and disturb sleep and other activities.If operations are projected to cause a 5-dB increase or greater in the average energy equivalent noise (referred to as “Leq”) relative to the existing noise level or the MECP objective of 55 dBA for daytime and 50 dBA for night-time, whichever is higher, then mitigation is required to be reviewed and implemented where feasible.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none">Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below. <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none">Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.
	Stationary Source Noise – Train Storage Facility	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design.Accommodate a 5.5m tall noise barrier along the western extent of the train storage facility, subject to further detailed design.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
		<p>disturb sleep and other activities.</p> <ul style="list-style-type: none">If project operations are predicted to exceed 55 dBA $L_{eq,1hr}$ at any time, implement mitigation measures to meet the criterion level.	<ul style="list-style-type: none">Implement quiet special trackwork such as moveable point frogs to reduce the impact noise from the tracks sufficient to meet the minimum criteria noted.As part of detailed design, complete a more detailed analysis to confirm any necessary noise control measures to meet NPC-300 criteria. Select mechanical and electrical equipment such that the sound levels meet NPC-300 criteria.	<ul style="list-style-type: none">Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.
	Stationary Sources Noise – Stations, Traction Power Supply Substations, Bus Terminals/ Loops, and Portal Structure	<ul style="list-style-type: none">Without mitigation, environmental noise may cause annoyance and disturb sleep and other activities.All ancillary facilities, including stations, bus terminals, and traction power substations are to comply with NPC-300.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design.All tunnel ventilation fan systems are to be provided with silencers as required to reduce noise and comply with NPC-300 limits.Provide a 5.5m tall noise barrier at Clark Station’s bus terminal, where specific location, height and extent are subject to further detailed design.As part of detailed design, complete a more detailed analysis to confirm any necessary noise control measures to meet NPC-300 criteria. Select mechanical and electrical equipment such that the sound levels meet NPC-300 criteria.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed to minimize noise and vibration.
Operation	Train Operations Vibration along Underground Alignment	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <p><u>Mitigation per this Noise and Vibration Impact Assessment Report:</u></p> <ul style="list-style-type: none">Complete more detailed studies to predict ground-borne noise and vibration levels in order to meet the vibration criteria outlined in this report. <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none">Implement mitigation measures such as floating slab track, ballast mats, resilient fasteners, moveable point frogs, etc. as needed to mitigate vibration levels.Implement regular vehicle and infrastructure maintenance to maintain compliance with the noise and vibration exposure criteria. <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none">Meet the ground-borne noise and vibration criteria in the 1995 MOEE/TTC Transit Noise and Vibration Protocol and the ground-borne noise criteria in the 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual.Achieve ground-borne noise and ground-borne vibration levels of less than 30 dBA and 0.05 mm/s, respectively, in areas (Segment 2) where the alignment passes beneath low-rise residential buildings in an established neighborhood.	<ul style="list-style-type: none">Complete post-construction measurement of vibration levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.
	Train Operations Vibration along the At Grade Alignment	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <p><u>Mitigation per this Noise and Vibration Impact Assessment Report:</u></p> <ul style="list-style-type: none">Complete more detailed studies to predict ground-borne noise and vibration levels in order to meet the vibration criteria outlined in this report. <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none">Implement mitigation measures such as floating slab track, ballast mats, resilient fasteners, moveable point frogs, etc. as needed to mitigate vibration levels.Implement regular vehicle and infrastructure maintenance to maintain compliance with the noise and vibration exposure criteria. <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none">Meet the ground-borne noise and vibration criteria in the 1995 MOEE/TTC Transit Noise and Vibration Protocol and the ground-borne noise criteria in the 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual.	<ul style="list-style-type: none">Complete post-construction measurement of vibration levels to confirm the predictions.Complete regular maintenance inspections and implement corrective measures wherever needed.During normal vehicle replacement, consider procuring vehicles that reduce noise and vibration.
	Stationary Source Vibration – Train Storage Facility	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and	<ul style="list-style-type: none">Complete updated Noise and Vibration Impact Assessment Studies during Detailed Design. <p><u>Mitigation per this Noise and Vibration Impact Assessment Report:</u></p> <ul style="list-style-type: none">Complete more detailed studies to predict ground-borne noise and vibration levels in order to meet the vibration criteria outlined in this report.	<ul style="list-style-type: none">Complete pre- and post-construction measurement of sound levels to confirm the predictions.

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
		<p>disturb sleep and other activities.</p> <ul style="list-style-type: none">If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none">Implement mitigation measures such as floating slab track, ballast mats, resilient fasteners, moveable point frogs, etc. as needed to mitigate vibration levels.Implement regular vehicle and infrastructure maintenance to maintain compliance with the noise and vibration exposure criteria. <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none">Meet the ground-borne vibration criteria in the 1995 MOEE/TTC Transit Noise and Vibration Protocol and the ground-borne noise criteria in the 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual.	<ul style="list-style-type: none">Complete regular maintenance inspections and implement corrective measures wherever needed to minimize noise and vibration.During normal vehicle replacement, consider procuring vehicles that minimize noise and vibration.
	Stationary Sources Vibration - Stations, Traction Power Supply Substations, Bus Terminals/Loops, and Portal Structure	<ul style="list-style-type: none">Without mitigation, environmental vibration may cause annoyance and disturb sleep and other activities.If operations are projected to exceed the ground-borne noise and vibration limits, implement mitigation measures.	<ul style="list-style-type: none">Ancillary facilities such as traction power supply substations, bus terminals/loops and portal structures are not significant sources of operational vibration. Mitigation measures are not required.	<ul style="list-style-type: none">None

5.12.8 Transportation & Traffic

The following table summarizes the potential transportation and traffic impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process.

Table 5-54 Summary of Potential Impacts, Mitigation Measures and Monitoring: Transportation

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Road Network and Pedestrian/Cycling Network	<ul style="list-style-type: none">• Potential for temporary road lane, sidewalk, or bike lane closures.• Potential re-alignment of road, sidewalk, or bike lanes in the area.• Potential changes to special traffic lanes (e.g., removal of HOV lanes).• Potential implementation of turn prohibitions at intersections.• Potential changes to on-street parking regulations in the area.	<ul style="list-style-type: none">• Traffic Control and Management Plan(s) will be developed prior to construction.• Access to nearby land uses will be maintained to the extent possible. Potentially affected residents, tenants and business owners will be notified of upcoming construction work and potential traffic impacts.• In the event closures of sidewalks or bike lanes are necessary, safe alternative paths and required signage will be provided.• Ensure public is notified of the changes to turn prohibitions at intersections via additional signage.• Ensure public is notified of changes to curbside lane regulations (e.g., parking, HOV lanes) via additional signage.• Ensure that access to existing parks, community recreation centers and trails (including multi-use paths) is maintained.	<ul style="list-style-type: none">• The effectiveness of the transit and traffic management plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
	Transit Network	<ul style="list-style-type: none">• Potential for access restrictions to local bus routes.• Potential changes to transit services schedules and routes.	<ul style="list-style-type: none">• Ensure that the public is notified in advance of any potential public transit service access restrictions and/or changes to service schedules and routes.	<ul style="list-style-type: none">• The effectiveness of the transit and traffic management plan(s) will be monitored throughout the construction period and adjustments will be made based on actual field observations, as needed.
	Rail Network	<ul style="list-style-type: none">• Potential disruptions to rail services (e.g., CN Freight services) in the impacted area.	<ul style="list-style-type: none">• Consult with rail operators with current service along the rail corridor (i.e., Canadian National Railway) to assess how track closures, if necessary, would impact their service and co-ordinate temporary schedules to accommodate all rail services on the open tracks.	<ul style="list-style-type: none">• The effectiveness of the transit and traffic management plan(s) will be monitored throughout the construction period. Adjustments to the construction staging plans and transit and traffic management plan(s) will be made based on actual field observations, as needed.
Operation	Road Network	<ul style="list-style-type: none">• Minimal short-term impacts associated with maintenance activities (e.g., temporary lane/sidewalk closures) may occur.	<ul style="list-style-type: none">• Provide signage and detours in advance of temporary lane/sidewalk closures during maintenance activities, as required.	<ul style="list-style-type: none">• No monitoring is required during operations, beyond transit/transportation agencies regular operational/maintenance monitoring.
	Transit Network	<ul style="list-style-type: none">• Potential for modifications to the local transportation network, such as adjustments to transit service schedules.	<ul style="list-style-type: none">• Consult with local transit agencies regarding the potential changes to the local transportation network.	

5.12.9 Utilities

The following table summarizes the potential utility impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process.

Table 5-55 Summary of Potential Impacts, Mitigation Measures and Monitoring: Utilities

Project Phase	Environmental Components	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Private and Public Utilities	Utility servicing to facilitate the YNSE project has the potential to affect/disrupt existing third-party utilities in the absence of mitigation.	<ul style="list-style-type: none">• Develop and implement a detailed Utility Infrastructure Relocation Plan that identifies all utilities anticipated to be impacted by the construction works, all relevant utility agencies and authorities, and outlines the approach to the utility relocation process. The Utility Infrastructure Relocation Plan will be developed in accordance with the Project Agreement.• Additional surveys shall be performed prior to construction to field locate and verify the existing utilities within the Project area and document their condition.• During detailed design, identify access requirements, construction methodology, mitigation measures, and any required restoration / compensation to support utilities relocation requirements.• Perform all work identified in the Utility Infrastructure Relocation Plan to protect, support, safeguard, remove, and relocate all Utility Infrastructure.• Obtain permits and consents from and with all Utility Companies with respect to the design, construction, installation, servicing, operation, repair, preservation, relocation, and or commissioning of Utility Infrastructure.• Where new utility crossings are proposed, application for a new utility crossing agreement will be required. Where modifications to an existing utility crossing takes place, updates to an existing utility crossing will be needed.• Post- construction inspections of the new utility infrastructure shall be undertaken for applicable works upon completion of the construction works to document condition.• Obtain as-built plans of the relocated infrastructure from utility agencies per as-built preparation standards <i>CSA S250-11 – Mapping of Underground Utility Infrastructure</i> (2011), as amended from time to time.• Design of all utility related works impacting municipal-owned infrastructure shall be in accordance with the applicable municipal Engineering Design Guideline or Standard.	<ul style="list-style-type: none">• During construction, utilities that will be protected in place may require monitoring and regular reporting, as determined by the requirements of each utility provider.
Operation	Private and Public Utilities	Potential impacts to utilities are not anticipated during operations.	<ul style="list-style-type: none">• No mitigation measures are identified as potential impacts to utilities are not anticipated during operations.	<ul style="list-style-type: none">• None identified

5.12.10 Hydrology, Stormwater Management and Drainage

The following table summarizes the potential hydrology (floodplain conditions), stormwater and drainage impacts, and commitments to mitigation measures, monitoring and future work identified through the YNSE EPR Addendum process.

Table 5-56 Summary of Potential Impacts, Mitigation Measures and Monitoring: Stormwater Management and Drainage

Project Phase	Environmental Component	Potential Impacts	Mitigation Measures	Monitoring Activities
Construction	Surface Water / Stormwater and Drainage	<p>Change in stormwater quality and quantity, including:</p> <ul style="list-style-type: none">Erosion of exposed soil and increased sediment loading which may impact receiving waterbodies and/or municipal stormwater drainage system; and,Increased surface water/stormwater runoff	<ul style="list-style-type: none">Prior to construction, a Stormwater Management Plan that will outline stormwater discharges management associated with construction activities, and an Erosion and Sediment Control plan will be developed. During construction, erosion and sediment control will be provided for all development sites.The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial, and federal requirements, as amended, and outlined in a Stormwater Management Report. Stormwater management design will consider guidance provided by the MECP, formerly the Ministry of the Environment and Climate Change Stormwater Management Planning and Design Manual (2003) and MTO Drainage Management Manual (2008), TRCA Stormwater Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation 2010), as required.The following stormwater management best management practices will be considered and implemented, as required:<ul style="list-style-type: none">Reduce clearing and amount of exposed soil;Install key sediment control before grading/land alterations begin;Sequence construction activities so that the soil is not exposed for long periods of times;Protect storm drain inlets to filter out debris; and,Stabilize all exposed soil areas as soon as land alterations have been completed.The applicable TRCAs Living City Policies will be followed during detailed design.The TRCAs Stormwater Management Criteria will be followed, including those policies related to impervious areas.	<ul style="list-style-type: none">Monitoring activities will be implemented as outlined in the Stormwater Management Plan and/or Erosion and Sediment Control Plan and may include regular inspections and reporting on the performance of implemented erosion and sediment control measures, best management practices, and other monitoring activities, as required.
	Floodplain	<ul style="list-style-type: none">Potential to impact flooding conditions in the Don River watershed and the German Mills Creek floodplain as a result of the proposed German Mills Creek culvert replacement; andPotential for flooding impacts on-site during construction associated with the proposed German Mills Creek culvert replacement	<ul style="list-style-type: none">Floodplain impact assessment will be conducted during detailed design following TRCA guidelines once detailed structural information is available. Design optimizations shall be considered to reduce hydraulic impacts.All temporary works will follow the Greater Golden Horseshoe’s Erosion and Sediment Control Guideline for Urban Construction (2006) and the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019), to reduce the chance of flooding during the construction.TRCA will be consulted during detailed design to avoid potential infrastructure conflicts and impacts to flood protection measures/initiatives in the Study Area and/or adjacent areas, if any present.In addition, all necessary studies such as fluvial geomorphic process studies, meander belt and erosion studies, and geotechnical and slope stability assessments will be completed.Prior to construction, develop a Flood Contingency Plan with specific mitigation measures for any proposed works or temporary laydown and staging areas, as required. The Flood Contingency Plan may include risk mapping, and a monitoring strategy.Include construction site on TRCA flood warning system to prepare site in advance of possible flood events.	<ul style="list-style-type: none">Include a monitoring strategy in the Flood Contingency Plan to monitor surface water levels during construction activities, as required per the Flood Contingency Plan.
Operation	Surface Water / Stormwater and Drainage	<ul style="list-style-type: none">Potential impacts are not anticipated during operations	<ul style="list-style-type: none">As no impacts are anticipated during operations, no mitigation measures are recommended.	<ul style="list-style-type: none">As no impacts are anticipated during operations, no mitigation measures are recommended.
	Floodplain	<ul style="list-style-type: none">Potential impacts are not anticipated during operations	<ul style="list-style-type: none">As no impacts are anticipated during operations, no mitigation measures are recommended.	<ul style="list-style-type: none">As no impacts are anticipated during operations, no monitoring activities are recommended.

6.0 Consultation Process

6.1 Consultation Program Overview

The consultation program for the YNSE EPR Addendum study was developed based on the requirements of *O. Reg. 231/08*.

On February 10, 2022, the Notice of EPR Addendum was issued to commence the review period, effective until March 14, 2022. The Notice was distributed to all individuals on the Project Contact List, property owners within 30 metres of the proposed Study Area (421), properties such as apartments, houses and businesses (approximately 52,700), government review agencies, Indigenous Nations, and advertised in five major newspapers (Toronto Star, York Region Newspaper, Metro Newspaper, Le Metropolitain, Toronto L'Express) and nine community newspapers (North York Mirror, The Richmond Hill Liberal, Markham Economist & Sun, Vaughan Citizen, Sharhre Ma, Salam Toronto, Iran Star, Korean Times Daily, Ming Pao, Sing Tao) in multiple languages.

Metrolinx implemented a consultation strategy for the Project that was developed to guide the engagement process described in the following subsections.

6.1.1 Consultation Approach

The following section provides a brief overview of the consultation and engagement program carried out by Metrolinx as part of the Project:

- Project Contact List:
- A Project Contact List was created and maintained containing contact information of the following groups/interested parties: members of the public, government review agencies, municipalities, conservation authorities, Indigenous Nations, third party utility companies, elected officials, emergency services, community groups and business improvement areas (BIAs).
- Project Website:
 - The Metrolinx Engage website was used over the course of the Project to deliver information, provide Project updates, provide a process for interested parties to submit comments and feedback, and served as the tool for delivering public consultation materials (**Figure 6-1**).

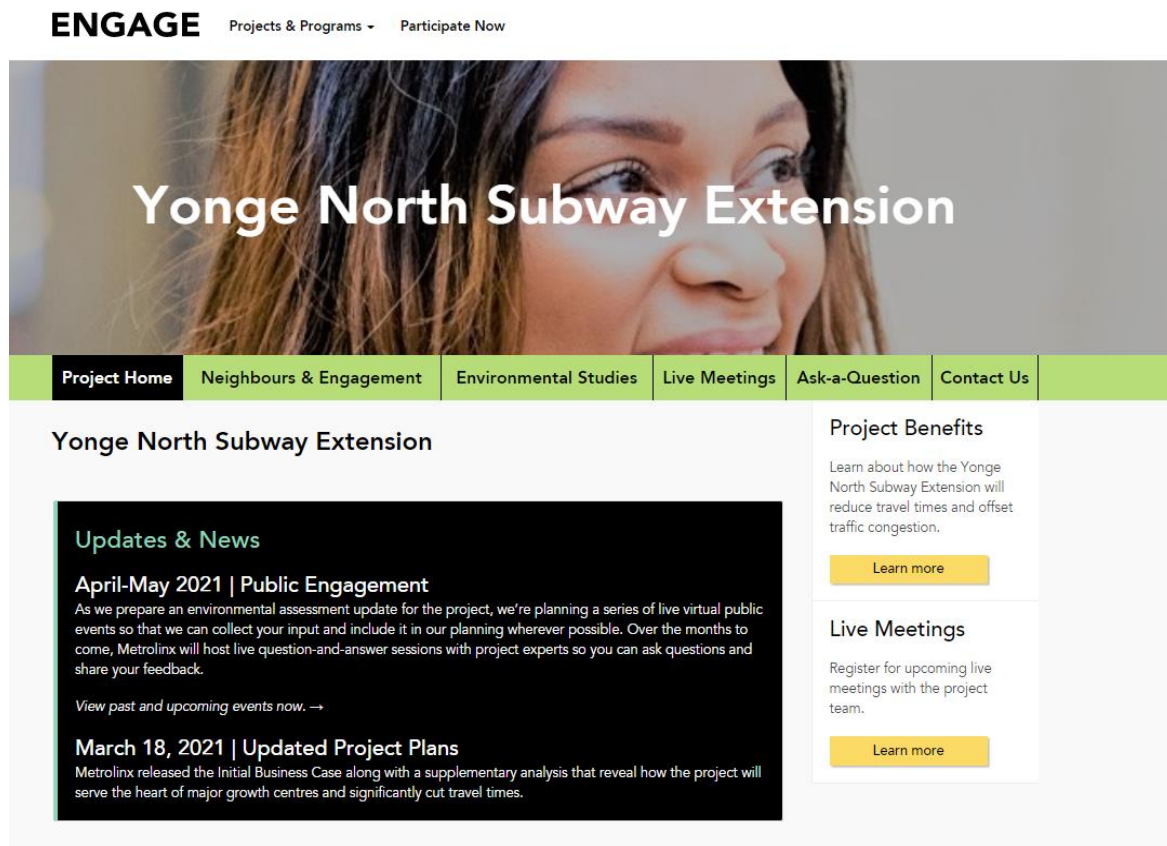





Figure 6-1 Metrolinx Engage YNSE Homepage

- Meetings with stakeholders, Indigenous Nations and other interested parties:
 - Several meetings were held with various interested parties (municipalities, regulatory agencies, Conservation Authorities, etc.) throughout the EPR Addendum process and as part of developing the engineering conceptual design to provide key Project updates and to seek feedback. A detailed summary of these meetings is contained in **Section 6.4** to **Section 6.7**.
- Public Consultation Activities:
 - At the time of preparing this EPR Addendum, directives from the Province of Ontario were in place regarding social distancing measures due to the COVID-19 pandemic. Therefore, public consultation was undertaken by using online methods and platforms, such as the Metrolinx Engage website [www.metrolinxengage.com/en/yonge-north-subway-extension].
 - During the live Virtual Open Houses, participants were able to vote on the questions they would most like answered via the Metrolinx Engage page (the audience interaction platform used to host the Virtual Open Houses) as well as submit them live through Zoom (communications platform utilized as part of the Virtual Open Houses). Questions submitted on the Metrolinx Engage page were answered in order based on popularity (total number of votes). Participants were encouraged to submit and vote on questions prior to the start of the live session as well as during the live session, and Metrolinx alternated between taking questions from Metrolinx Engage and live from Zoom.
 - The Metrolinx Engage platform was the hub for members of the public and other interested parties to learn more about the YNSE Project. Participants were able to visit the website to find out how to participate in consultation, provide feedback, and submit questions to Metrolinx.

- Information was made available on an ongoing basis over the course of the Project by issuing updates at key milestones.
- Public consultation was undertaken to seek feedback and comment on the proposed Project design, and ongoing EPR Addendum process.
- Social Media
 - Various social media platforms were utilized to make announcements about upcoming Virtual Open Houses, share Project updates, highlight key Project benefits, and provide information on how to submit feedback to the Project team. The following social media platforms were used throughout the course of the Project:
 - Instagram: <https://www.instagram.com/yongesubwayext/>
 - Facebook: <https://www.facebook.com/yongesubwayext>
 - Twitter: <https://twitter.com/YongeSubwayEXT>.



 [@YongeSubwayExt](https://twitter.com/YongeSubwayExt)
 [@YongeSubwayExt](https://www.instagram.com/yongesubwayext)
 [Yonge North Subway Extension](https://www.facebook.com/yongesubwayext)

- Record of Comments and Feedback:
 - A detailed record of all comments and feedback received and how Metrolinx responded to comments as part of the YNSE EPR Addendum process is contained in **Appendix I** and further summarized in the following sections of this document:
 - **Section 6.3** for Public Consultation;
 - **Section 6.4** for Engagement with Community Groups;
 - **Section 6.5** for Engagement with Indigenous Nations;
 - **Section 6.6** for Engagement with Technical Stakeholders; and,
 - **Section 6.7** for Engagement with Elected Officials.
- Notifications:
 - Notifications were issued at various stages of the EPR Addendum process as follows: postcard delivery via mail drop through Canada Post, posting notices electronically to the Metrolinx Engage website, social media platforms, and via e-mail notices issued to individuals on the Stakeholder Contact List.

6.2 Consultation & Engagement Approach

A communication and consultation program was developed and implemented for the Yonge North Subway Extension Project inform stakeholders and the community and seek feedback on various aspects of the Project, as well as to meet the requirements of Section 8 of *Ontario Regulation (O.Reg.) 231/08*. The following are the key steps in the EPR Addendum process for consultation and engagement:

- Complete an assessment of any impacts that the change in Project may have on the environment;
- Prepare and distribute the EPR Addendum; and,
- Prepare and distribute a Notice of EPR Addendum.

Metrolinx offered a wide range of communication, consultation activities, and platforms to reach all interested members of the public, residents, businesses, review agencies, Indigenous Nations, and other interested parties to solicit comments and feedback relating to the Project including:

- Project website ([MetrolinxEngage.com/YongeSubwayExt](https://www.metrolinxengage.com/YongeSubwayExt));
- Online via Metrolinx Engage (www.metrolinxengage.com/en/yonge-north-subway-extension);
- Online via Metrolinx News Blog posts (<https://blog.metrolinx.com/category/yonge-north-subway-extension>);
- Project email address (YongeSubwayExt@metrolinx.com);
- Metrolinx's York Region communication portal (YorkRegion@metrolinx.com);
- Project phone number: (416)-202-7000;
- Social media posts and announcements;
 - Instagram: <https://www.instagram.com/yongesubwayext/>
 - Facebook: <https://www.facebook.com/yongesubwayext>
 - Twitter: <https://twitter.com/YongeSubwayEXT>
- Virtual open houses (VOHs);
- Notifications and email updates;
- Postcard mailout;
- Elected Officials briefings;
- Meetings with technical stakeholders (provincial, municipal and conservation authorities);
- Meetings with Indigenous Nations; and,
- Meetings with other stakeholders (e.g., utilities), as required.

6.2.1 Project Contact List

A Project Contact List was established at the outset of the Project based on the previously completed 2009 EPR and 2014 EPR Addendum and the Ministry of Environment, Conservation and Parks (MECP) Government Review Team (GRT) List (January 2022). Based on these lists, the current Project Contact List consists of the following interested parties: Indigenous Nations, technical stakeholders/review agencies (federal, provincial, municipal and conservation authorities), elected officials, utility companies, transit authorities and service providers, community/interest groups, and businesses and business associations. The 2022 MECP Government Review Team List is maintained by the MECP and includes provincial and federal government agency contacts that may have a regulatory interest in reviewing environmental assessment projects. The Project Contact List contains the name, title, address, phone number and email address of each interested party to receive updates throughout the Project. The list was continually updated as the Project progressed.

The table below includes a list of each organization/stakeholder group included on the Project Contact List. A copy of the Project Contact List can be found in **Appendix I**.

Table 6-1 YNSE Project Contact List

Indigenous Nations	
• Alderville First Nation	• Beausoleil First Nation
• Chippewas of Georgina Island First Nation	• Chippewas of Rama First Nation
• Curve Lake First Nation	• Haudenosaunee Confederacy Chiefs Council
• Hiawatha First Nation	• Huron-Wendat Nation
• Kawartha Nishnawbe First Nation	• Métis Nation of Ontario
• Mississaugas of Scugog Island First Nation	• Mississaugas of the Credit First Nation
• Six Nations of the Grand River	• Williams Treaties First Nations
Provincial Agencies Government Review Team Members	
• Ministry of Economic Development, Job Creation and Trade	• Ministry of Transportation (MTO)
• Ministry of Agriculture, Food and Rural Affairs	• Ministry of Municipal Affairs and Housing
• Ministry of Environment, Conservation and Parks (MECP)	• Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI)
• Ontario Growth Secretariat (OGS)	• Ministry of Education
• Ministry of Natural Resources and Forestry;	• Ministry of the Solicitor General
• Ministry of Indigenous Affairs	• Ontario Provincial Police (OPP)
• Ontario Heritage Trust	
Federal Government Agencies Government Review Team Members	
• Department of Fisheries and Ocean Canada (DFO)	• Impact Assessment Agency of Canada
• Transport Canada – Ontario Region	
Regional and Local Municipalities	
• City of Toronto	• City of Markham
• City of Richmond Hill	• York Region
• City of Vaughan	
Conservation Authorities	
• Toronto and Region Conservation Authority	
Municipal Transit Service Providers	
• Toronto Transit Commission (TTC)	• York Region Transit (YRT)
• York Region Rapid Transit Corporation (YRRTC)	
Emergency Services	
• Toronto Fire Services	• Toronto Police Services
• Toronto Paramedic Services	• York Paramedic Services
• York Regional Police	• Ontario Provincial Police
• Central York Region Fire Services	• York Region Public Health

• Vaughan Fire and Rescue Services	• Markham Fire and Rescue Services
• Richmond Hill Fire Services	
School Boards and Schools	
• Toronto District School Board	• Toronto Catholic District School Board
• York Region District School Board	• York Catholic District School Board
• Conseil scolaire catholique MonAvenir	• Conseil scolaire Viamonde
Elected Officials (See Appendix I)	
Third Party Utilities (See Appendix I)	
General Public (See Appendix I)	
Property Owners and Local Businesses (See Appendix I)	

6.2.2 Record of Consultation

Metrolinx maintained a record of all consultation activities undertaken during the regulatory consultation phase. All Project correspondence and meeting summaries are documented in **Appendix I**. All comments received from the public have been redacted to protect personal information in accordance with the *Freedom of Information and Protection of Privacy Act*.

6.3 Public Consultation

The online public consultation process was intended to share information and seek feedback on the updates to the Project and environmental studies. The primary method used to engage the community was through a series of VOHs (see **Table 6-2**), this was chosen as the preferred community consultation method due to the ongoing restrictions due to the COVID-19 pandemic. The VOHs were carried out through the Project website from April 2021 to March 2022. The VOH materials presented included informational panels, live informational sessions/presentations accompanied with a live question and answer (Q&A) session, and a continually maintained Q&A forum. A series of blog posts were also published on the Metrolinx News website to share information on the Project and upcoming public consultation activities. Copies of each blog post is included in **Appendix I.2**.

Virtual Open House materials presented a wide range of topics including: key Project milestones, Project purpose, proposed infrastructure components, what is being planned for the future, Project benefits, assessment of the design changes from the 2009 EPR and 2014 EPR Addendum, proposed station locations, and environmental studies underway. Further detail of the materials presented at each VOH are described in the Sections below. Additional inquiries received outside of the VOH process throughout Project term are captured in **Appendix I.4**.

Table 6-2 Summary of Virtual Open Houses

Date	Topics Presented	Total Number of Metrolinx Social Media Posts to Notify of Upcoming VOH	Approximate Number of Participants in Attendance	Total Number of Comments/ Questions Received
April 7, 2021	• Introduction to the YNSE and key benefits;	Twitter: 2 Facebook: 2	500	688 (via Metrolinx Engage)

Date	Topics Presented	Total Number of Metrolinx Social Media Posts to Notify of Upcoming VOH	Approximate Number of Participants in Attendance	Total Number of Comments/ Questions Received
	<ul style="list-style-type: none"> • Overview of Initial Business Case (IBC) and reference alignment; • Overview of the purpose of Bridge & High Tech Stations; • Proven technology available to limit noise and vibration; and, • Tunnel Depths at the Royal Orchard Community. 			
April 21, 2021	<ul style="list-style-type: none"> • Train storage facility proposed location and design; • Proven technology available to limit noise and vibration; and, • Metrolinx's plans to connect with the public to understand their concerns and answer questions. 	Twitter: 2 Facebook: 2	225	95 (via Metrolinx Engage)
May 5, 2021	<ul style="list-style-type: none"> • Metrolinx's updated plans for the Project; • Innovative solutions - Metrolinx is using to ensure the extension can be built quickly and serve key growth areas; and, • Metrolinx's plans to connect with the public to understand their concerns and answer questions. 	Twitter: 4 Facebook: 3 Instagram: 2	200	21 (via Metrolinx Engage)
May 19, 2021	<ul style="list-style-type: none"> • Overview of assessment of design changes; • Environmental studies underway; • Upcoming fieldwork and EPR Addendum Schedule; and, 	Twitter: 3 Facebook: 2 Instagram: 1	626	44 (via Zoom) 303 (via Metrolinx Engage)

Date	Topics Presented	Total Number of Metrolinx Social Media Posts to Notify of Upcoming VOH	Approximate Number of Participants in Attendance	Total Number of Comments/ Questions Received
	<ul style="list-style-type: none"> Metrolinx's plans to connect with the public to understand their concerns and answer questions. 			
October 20, 2021	<ul style="list-style-type: none"> Project Updates – Stations and Reference alignment Improvements; Environmental Studies Underway; Noise and Vibration Studies – Early Results; EPR Addendum Look-Ahead Schedule; Property Requirements Process; and, Metrolinx's plans to connect with the public to understand their concerns and answer questions. 	Twitter: 5 Facebook: 3 Instagram: 1	582	81 (via Metrolinx Engage and Zoom)
December 16, 2021	<ul style="list-style-type: none"> Project Benefits; Route Improvements; Transit Action Ontario Proposal and Metrolinx Analysis; Finch Early Works; Geotechnical Investigations; Noise and Vibration Studies Early Results; Project Timeline; Public Engagement and Stakeholder Outreach; and, Community Office. 	Twitter: 3 Facebook: 3	371	85 (via Metrolinx Engage and Zoom)
January 5, 2022	<ul style="list-style-type: none"> Project Benefits; Route Improvements; Transit Action Ontario Proposal and Metrolinx Analysis; 	Twitter: 3 Facebook: 3	362	61 (via Metrolinx Engage and Zoom)

Date	Topics Presented	Total Number of Metrolinx Social Media Posts to Notify of Upcoming VOH	Approximate Number of Participants in Attendance	Total Number of Comments/ Questions Received
	<ul style="list-style-type: none"> • Finch Early Works; • Geotechnical Investigations; • Noise and Vibration Studies Early Results; • Project Timeline; • Public Engagement and Stakeholder Outreach; and, • Community Office. 			
February 17, 2022	<ul style="list-style-type: none"> • Project Benefits; • EPR Addendum Approach; • Proposed Changes Assessed in Updated EPR Addendum; • Natural Environment Findings; • Air Quality Findings; • Noise and Vibration Findings; • Transportation Findings; • Socio-Economic and Land Use Findings; • Soil and Groundwater Findings • Cultural Heritage Findings; • Archaeology Findings; and • Property Requirements Process 	Twitter: 3 Facebook: 3 Instagram: 1	190	37 (via Metrolinx Engage and Zoom)
February 23, 2022	<ul style="list-style-type: none"> • Project Benefits; • Project Timeline; • Tunneler Segment; • Finch Station Early Works; • Tunnel Portal & Tunnel Boring Machines at 	Twitter: 2 Facebook: 3 Instagram: 1	187	24 (via Metrolinx Engage and Zoom)

Date	Topics Presented	Total Number of Metrolinx Social Media Posts to Notify of Upcoming VOH	Approximate Number of Participants in Attendance	Total Number of Comments/ Questions Received
	Launch and Extraction Sites; <ul style="list-style-type: none"> • Cultural Heritage Approach and Findings for Tunneled Segment; • Noise and Vibration Approach, Criteria and Findings for Tunneled Segment • Natural Environment Approach and Findings for Tunneled Segment • Soil and Groundwater Approach and Findings for Tunneled Segment • EPR Addendum Review Schedule 			
March 2, 2022	<ul style="list-style-type: none"> • Project Benefits; • Project Timeline; • Surface Segment; • Bridge Station; • High Tech Station; • Train Storage Facility; • Noise and Vibration Approach, Criteria and Findings for Surface Segment; • Natural Environment Approach and Findings for Surface Segment • Air Quality Approach and Findings for Surface Segment • EPR Addendum Review Schedule 	Twitter: 4 Facebook: 4 Instagram: 1	188	18 (via Metrolinx Engage and Zoom)
March 10, 2022	<ul style="list-style-type: none"> • Project Benefits • EPR Addendum Approach and Study Area • EPR Addendum Review Schedule • What We've Heard about the EPR Addendum 	Twitter: 3 Facebook: 3 Instagram: 1	139	4 (via Metrolinx Engage and Zoom)

Date	Topics Presented	Total Number of Metrolinx Social Media Posts to Notify of Upcoming VOH	Approximate Number of Participants in Attendance	Total Number of Comments/ Questions Received
	<ul style="list-style-type: none"> Noise and Vibration <ul style="list-style-type: none"> Assessment Results Presentation Vibration from Tunnelling Natural Environment <ul style="list-style-type: none"> Vegetation Removal Species at Risk What We've Heard About the Project Tunnel Dimension's and Depths in Royal Orchard Emergency Exit Buildings Property Requirement Notifications Project Timeline Upcoming Engagement Opportunities 			

6.3.1 Online Public Engagement Notification

All project notifications, including notices for public meetings were published online on the Project website in advance of and throughout the EPR Addendum process to date. Multiple media, such as website postings, emails to the Project Contact List, newspaper advertisements, and postcard mailout were utilized as a means of ensuring information is accessible to interested parties.

Table 6-3 summarizes all notifications published as part of the Pre-Planning Phase and EPR Addendum Review Phase consultation process.

Table 6-3 Summary of Published Public Notifications

Phase	Notice Type	Date	Publication Location
Pre-Planning	Newsletter containing information on the April 7 th Virtual Open House	March 26, 2021	Circulated via e-mail to all who subscribed to receive Metrolinx project updates (network-wide), website posting, newspaper advertisements, postcard mailout.
Pre-Planning	Website update containing information on the April 7 th Virtual Open House	March 24, 2021	Metrolinx Engage
Pre-Planning	Newsletter containing information on the	April 13, 2021	Circulated via e-mail to all who subscribed to receive Metrolinx project updates (network-wide)

Phase	Notice Type	Date	Publication Location
	April 21 st Virtual Open House		
Pre-Planning	Website update containing information on the April 21 st Virtual Open House	April 7, 2021	Metrolinx Engage
Pre-Planning	Newsletter containing information on the May 5 th Virtual Open House	April 30, 2021	Circulated via e-mail to all who subscribed to receive Metrolinx project updates (network-wide)
Pre-Planning	Website update containing information on the May 5 th Virtual Open House	April 30, 2021	Metrolinx Engage
Pre-Planning	Postcard for May 19 th Virtual Open House	April 22, 2021	Delivered to residents and businesses within a 100m buffer on either side of the proposed alignment & Posted to the Project Website
Pre-Planning	Website update containing information on the May 19 th Virtual Open House	April 22, 2021	Metrolinx Engage
Pre-Planning	Newsletters containing information on October 20 th Virtual Open House	October 13, 2021 and October 19, 2021	Circulated via e-mail to all who subscribed to receive Metrolinx project updates (network-wide)
Pre-Planning	Website update containing information on the October 20 th Virtual Open House	October 13, 2021	Metrolinx Engage
Pre-Planning	Newsletter containing information on the December 16 th Virtual Open House	December 8, 2021	Circulated via e-mail to all who subscribed to receive Metrolinx project updates (network-wide)
Pre-Planning	Website update containing information on the December 16 th Virtual Open House	December 8, 2021	Metrolinx Engage

Phase	Notice Type	Date	Publication Location
Pre-Planning	Newsletters containing information on January 5 th Virtual Open House	December 8, 2021 and December 23, 2021	Circulated via e-mail to all who subscribed to receive Metrolinx project updates (network-wide)
Pre-Planning	Website update containing information on the January 5 th Virtual Open House	December 14, 2021	Metrolinx Engage
EPR Addendum Review Phase	Notice of EPR Addendum	February 10, 2022	Delivered to residents and businesses within a 30m buffer on either side of the proposed alignment & Posted to the Project Website
EPR Addendum Review Phase	E-mail to the Project Contact List	February 10, 2022	Circulated via e-mail to the Project contact list
EPR Addendum Review Phase	Newspaper Advertisement of the Notice of EPR Addendum	February 10, 11 & 12, 2022	Newspaper advertisement posted in the Toronto Star, Markham Economist, North York Mirror, Richmond Hill/Thornhill Liberal, Vaughan Citizen, Toronto L'Express, Le Metropolitain, Iran Star, Korea Times Daily, Ming Pao, Sing Tao, Salam, Shahre Ma
EPR Addendum Review Phase	Website update containing information on the February 17 th & 23 rd Virtual Open Houses	February 10, 2022	Metrolinx Engage - February 17 Metrolinx Engage - February 23
EPR Addendum Review Phase	Website update containing information on the March 2 nd & 10 th Virtual Open Houses	February 16, 2022	Metrolinx Engage - March 2 Metrolinx Engage - March 10

6.3.2 Information Presented via Online Engagement

Digital engagement tools were utilized as part of a comprehensive and accessible consultation program and formed a significant aspect of the consultation approach; largely necessitated by the COVID-19 pandemic. This allowed interested parties to receive information and Project updates, as well as submit comments and questions directly to the Project Team. The Metrolinx Engage project-specific webpage was used as part of engagement to notify stakeholders and the public of updates and public meetings, provide key Project information, and provide a mechanism for receiving stakeholder comments and feedback (see **Table 6-4**).

Informational panels and feedback forms were posted on Metrolinx Engage and were available online throughout the public consultation process as an alternative way for interested parties that were not able to attend the meetings to view the material and submit questions or feedback.

Table 6-4 Summary of Information Presented at Virtual Open Houses

Date of Virtual Open House	Information Presented
April 7, 2021	<ul style="list-style-type: none"> • Why We are Here • Ontario's New Subway Transit Plan for the Greater Toronto and Hamilton Area • What is the Yonge North Subway Extension (YNSE), a brief overview of the Project • Benefits of the YNSE • Initial Business Case (IBC) and Reference Alignment • Stations: Bridge and High Tech • Key Milestones and Project Timeline • Project Benefits • Community and Stakeholder Engagement process • Upcoming fieldwork updates • Next Steps and How to Share Feedback • Upcoming Virtual Open Houses and how the public can participate
April 21, 2021	<ul style="list-style-type: none"> • Why We are Here • Ontario's New Subway Transit Plan for the Greater Toronto and Hamilton Area • What is the Yonge North Subway Extension (YNSE), a brief overview of the Project • Benefits of the YNSE • Initial Business Case and Reference Alignment • Design and Proposed location for the Train Storage Facility • Construction Noise and Vibration Mitigations and new technologies to limit noise and vibrations • Project Milestones • Community and Stakeholder Engagement • Upcoming Field work • Next Steps
May 5, 2021	<ul style="list-style-type: none"> • What is the Yonge North Subway Extension (YNSE), a brief overview of the Project • Benefits of the YNSE • Benefits of Surface Level Routes • Benefits of connection to the Northern York Region

Date of Virtual Open House	Information Presented
	<ul style="list-style-type: none"> • Travel possibilities in York Region • Availability of Commuter Parking • Environmental Studies Ongoing • Project Milestones • Community and Stakeholder Engagement • Upcoming Field work • Next Steps
May 19, 2021	<ul style="list-style-type: none"> • What is the Yonge North Subway Extension (YNSE), a brief overview of the Project • Benefits of the YNSE • Public Consultation Overview • Overview of previous environmental studies (2009 EPR and 2014 EPR Addendum) • Assessment of Design Changes • Environmental Studies Underway <ul style="list-style-type: none"> ○ Natural Environment ○ Land Use and Socio Economic ○ Archaeology ○ Cultural Heritage ○ Air Quality ○ Noise and Vibration ○ Traffic • Upcoming Environmental Activities • Methods to share feedback • Environmental Assessment and Project Timeline • How feedback can be shared with the Project team
October 20, 2021	<ul style="list-style-type: none"> • Yonge North Subway Extension – By the Numbers • Project Updates – Stations and Reference alignment Improvements • Environmental Studies Underway • Noise and Vibration Studies – Early Results • EPR Addendum Look-Ahead Schedule • Investigative Drilling • Tunneling Construction • Property Requirements Process • Project Timeline • Community Office • Noise and Vibration Mitigation Experiential Program • Sound Demonstrations • How feedback can be shared with the Project team
December 16, 2021	<ul style="list-style-type: none"> • Yonge North Subway Extension – By the Numbers • A Launchpad to Explore the Region • Adjusted Route

Date of Virtual Open House	Information Presented
	<ul style="list-style-type: none"> • Transport Action Ontario Route Proposal • Property Requirements Process • Early Works at Finch Station • Geotechnical Program in Royal Orchard Community • Project Timeline • Early Results for Royal Orchard Noise and Vibration Studies • Noise and Vibration Mitigation Experiential Program • Public Engagement and Stakeholder Outreach • Community Office • How feedback can be shared with the Project team.
January 5, 2022	<ul style="list-style-type: none"> • Yonge North Subway Extension – By the Numbers • A Launchpad to Explore the Region • The Adjusted Route • Transport Action Ontario Route Proposal • Summary of Findings Option 1 • Summary of Findings Option 2 • Property Requirements Process • Early Works at Finch Station • Geotechnical Program in Royal Orchard Community • Project Timeline • Early Results for Royal Orchard Noise and Vibration Studies • Noise and Vibration Mitigation Experiential Program • Public Engagement and Stakeholder Outreach • Community Office • How feedback can be shared with the Project team.
February 17, 2022	<ul style="list-style-type: none"> • Yonge North Subway Extension – By the Numbers • Project Timeline • Environmental Assessment Definition & Timeline • EPR Addendum Approach and Study Area • Proposed Changes Assessed in Updated EPR Addendum • Environmental Topics Assessed <ul style="list-style-type: none"> ○ Natural Environment ○ Air Quality ○ Noise and Vibration ○ Transportation ○ Socio-Economic and Land Use ○ Soil and Groundwater ○ Cultural Heritage ○ Archaeology • EPR Addendum Review • EPR Addendum Study Area and Property

Date of Virtual Open House	Information Presented
February 23, 2022	<ul style="list-style-type: none"> • Yonge North Subway Extension – By the Numbers • Project Timeline • Environmental Assessment Definition • 2022 EPR Addendum – Tunneled Segment • Finch Station Early Works • Tunnel Portal and Tunnel Boring Machines Launch and Extraction Sites • Environmental Focus Topics: Tunneled Segment <ul style="list-style-type: none"> ○ Cultural Heritage Approach & Findings ○ Noise and Vibration Criteria, Approach and Findings ○ Natural Environment Approach and Findings ○ Soil and Groundwater Approach and Findings • EPR Addendum Review
March 2, 2022	<ul style="list-style-type: none"> • Yonge North Subway Extension – By the Numbers • Project Timeline • Environmental Assessment Definition • 2022 EPR Addendum – Surface Segment • Bridge Station • High Tech Station • Train Storage Facility • Environmental Focus Topics – Surface Segment <ul style="list-style-type: none"> ○ Noise and Vibration Criteria, Approach and Findings ○ Natural Environment Approach and Findings ○ Air Quality Approach and Findings • EPR Addendum Review
March 10, 2022	<ul style="list-style-type: none"> • Yonge North Subway Extension – By the Numbers; • EPR Addendum Approach and Study Area • EPR Addendum Review • What We’ve Heard About the EPR Addendum • Noise and Vibration <ul style="list-style-type: none"> ○ Assessment Results Presentation ○ Vibration from Tunnelling ○ Surface Segment • Natural Environment <ul style="list-style-type: none"> ○ Vegetation Removal ○ Species at Risk • What We’ve Heard About the Project • Tunnel Dimensions and Depths in Royal Orchard • Emergency Exit Buildings • Property Requirement Notifications • Project Timeline • Upcoming Engagement Opportunities

Interested parties were able to share feedback through the Metrolinx Engage platform, the Project email, York Region email portal, or through an online feedback form. Inquiries submitted through Metrolinx Engage were answered, with responses available for public viewing. Participants were able to vote on the questions posted to Metrolinx Engage, and Metrolinx answered those questions in order of popularity (i.e., the total votes cast by the public). Participants were encouraged to submit and vote on questions earlier as well as submit questions during the live meeting session.

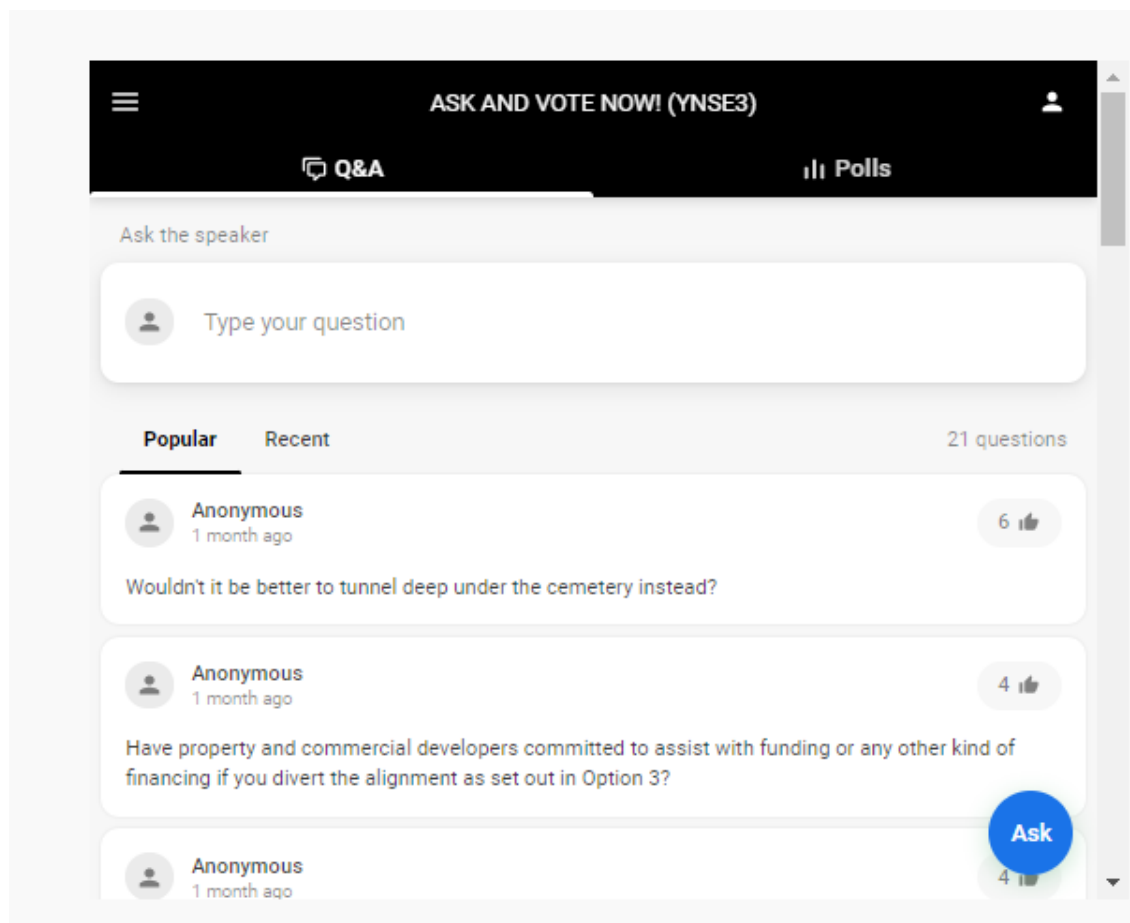


Figure 6-2 Example of Slide Questions and Voting Mechanism

6.3.3 Summary of Virtual Open Houses – Spring 2021

A series of live virtual public events were held between April 7 and May 19, 2021. A live question-and-answer session with the Project team, including technical experts was held during each of these events where the public was able ask questions and share feedback via comments while the session was ongoing. The VOH materials and comments received are documented in **Appendix I.2**.

6.3.3.1 April 7th – Royal Orchard Community Virtual Open House

A Virtual Open House was organized for the Royal Orchard community of Thornhill to provide members of the public with information about the Project and provide them with an opportunity to ask questions and share feedback as planning work continues. This session was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook, Twitter and Instagram
- Posted on the Metrolinx.com/itshappening website;
- Posting to the Project webpage (MetrolinxEngage.com/YongeSubwayExt) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.


This VOH provided an update and an overview of Project benefits, the IBC and Supplementary Analysis, community and stakeholder engagement opportunities, and next steps in the EPR Addendum process.

All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.2** and a video recording of the event is available at www.youtube.com/watch?v=HBzBqymU_Ig.

Yonge North Subway Extension LIVE - April 7, 2021

On April 7, 2021, Metrolinx hosted a presentation and live question-and-answer session with members of the Yonge North Subway Extension project team focused on the city of Markham and the Royal Orchard community of Thornhill. During the event, we answered the top-voted questions that had been submitted by participants through Slido, our interactive online platform. Our team answered questions about the latest plans for the project, including the updated route, tunneling and the Metrolinx business case process.

You can find written answers to these questions and others we didn't get to below. If you weren't able to join us, the video recording is available for you to watch any time.



Presentation Materials

[Yonge North Subway Extension - Presentation PDF →](#)

Figure 6-3 YNSE April 7, 2021 Virtual Open House Metrolinx Engage Webpage

6.3.3.1.1 Summary of Virtual Open House

Approximately 450 individuals participated in the Virtual Open House live session. A total of 688 comments were received via Metrolinx Engage prior to the beginning of the live session and while the session was ongoing. Staff from the Project team along with members of the OneT+ team (technical advisor) were in attendance to moderate the session and answer questions. The Project team along with the technical advisor provided information on the topics listed **Table 6-4** above, including an overview on the proposed location and design of the train storage facility (TSF).

Participants were eager to know more about the design and location of the TSF and the proposed stations.

6.3.3.1.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The key comments, questions or concerns were related to the Options Analysis for the IBC, station selection, tunneling impacts, and property impacts. Participants expressed various concerns about the impacts that tunneling may have on their residences; how Option 3 was selected; and how Metrolinx would compensate property owners for impacts to their properties.

Participants expressed concerns about noise and vibration levels associated with subway operations and were interested in learning more about Metrolinx noise and vibration standards as well as mitigation and monitoring technologies to reduce impacts.

6.3.3.1.3 Other Comments

Other comments were shared related to the funding of the Project, strategies to avoid crowding on the Line 1 subway, and the potential for a future extension beyond High Tech Station. The session ended with a discussion of the anticipated Project timeline, and opportunities for the public to contact Metrolinx for future questions.

6.3.3.2 April 21st – Richmond Hill & Bayview Glen Community Virtual Open House

Members of the public from the Bayview Glen community of Richmond Hill were invited to participate in a Virtual Open House to learn more about the YNSE Project, raise questions, and provide feedback on Project plans. The sessions was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook, Twitter and Instagram;
- Posted on the Metrolinx.com website;
- Posting to the Project webpage (MetrolinxEngage.com/YongeSubwayExt) approximately two weeks before the live sessions;
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

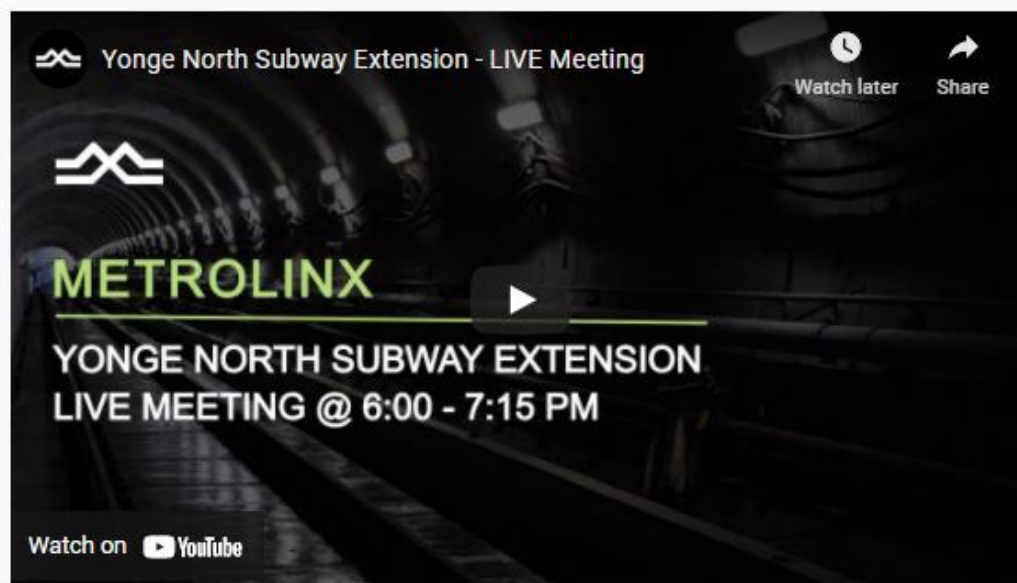
This Virtual Open House provided a Project update and an overview of the train storage facility proposed within the existing CN Railway corridor; an overview of the technology proposed to limit noise and vibration in the area; and information on how public feedback will be considered.

All Virtual Open House materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.2** and a video recording of the event is available at www.youtube.com/watch?v=oJT4tGB7IBc.

Yonge North Subway Extension LIVE (Richmond Hill) - April 21, 2021

On April 21, 2021, Metrolinx hosted a presentation and live question-and-answer session with members of the Yonge North Subway Extension project team focused on the city of Richmond Hill and the Bayview Glen community. During the event, we answered the top-voted questions that had been submitted by participants through Slido, our interactive online platform. Our team answered questions about the latest plans for the project, including the updated route, the proposal for a train storage facility at surface level, and the solutions available to reduce or eliminate noise and vibration during construction and when the extension is up and running.

You can find written answers to these questions and others we didn't get to below. If you weren't able to join us, the video recording is available for you to watch any time.



Presentation Materials

[Yonge North Subway Extension - Presentation PDF →](#)

Figure 6-4 YNSE April 21, 2021 Virtual Open House Metrolinx Engage Webpage

6.3.3.2.1 Summary of Virtual Open House

Approximately 225 individuals participated in the Virtual Open House live session. A total of 95 comments were received via Metrolinx Engage prior to the beginning of the live session and while the session was ongoing. Staff from the Project team were in attendance to moderate the session and answer questions. The Project team along with the technical advisor provided information on the topics listed in **Table 6-4** above, including an overview on the proposed location and design of the train storage facility (TSF).

Participants were eager to know more about the design and location of the TSF and the proposed stations.

6.3.3.2.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The key comments, questions or concerns were related to the proposed TSF being built on at grade rather than underground. Participants expressed various concerns about the impacts the TSF may have on the surrounding neighborhoods; how public consultation would be undertaken; and how and when will residents be informed of the fieldwork being conducted. Participants were also eager to learn about the number of proposed stations versus the number of confirmed stations.

Participants expressed concerns about what future development would look like for the Richmond Hill community if the four stations option was to be chosen. Participants were interested in learning more about improved technology meant for noise and vibration and what solutions are proposed to reduce noise and vibration impacts during construction and operations.

6.3.3.2.3 Other Comments

Other comments were shared related to the funding of the Project; how option 3 was the determined to be the preferred option in the Initial Business Case (IBC); and whether there was enough funding available for the other options if plans for option 3 do not advance. The session ended with queries related to the timeline of the Project, proposed parking and how the public would be able to contact Metrolinx for future questions.

6.3.3.3 May 5th – Northern York Region Virtual Open House

A Virtual Open House was held for residents of Northern York Region municipalities to introduce members of the public to the Project and allow them to ask questions and share feedback. The session was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook, Twitter and Instagram
- Posted on the Metrolinx.com website;
- Posting to the Project webpage (MetrolinxEngage.com/YongeSubwayExt) approximately two weeks before the live sessions;
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

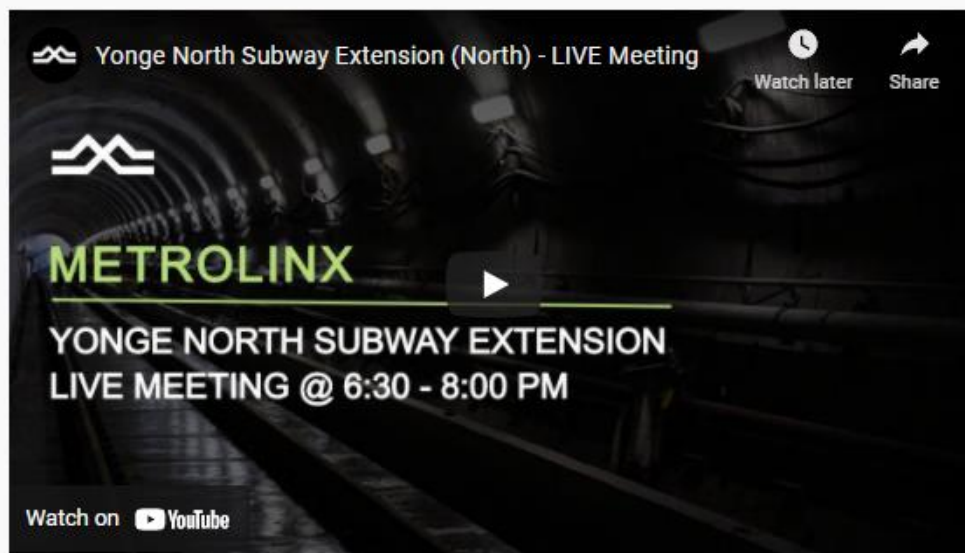
This VOH provided a Project update on what the new subway extension means for all of York Region; improved connections for Northern York Region; transformative transit network upgrades Metrolinx is completing in York Region; and how Metrolinx will connect with the public to understand concerns and answer questions.

All Virtual Open House materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I** and a video recording of the event is available at www.youtube.com/watch?v=PkMLsN8tRJw.

Yonge North Subway Extension LIVE (Northern York Region) - May 5, 2021

On May 5, 2021, Metrolinx hosted a presentation and live question-and-answer session with members of the Yonge North Subway Extension project team focused on municipalities in northern York Region. During the event, we answered the top-voted questions that had been submitted by participants through Slido, our interactive online platform. We also took live questions from community members who called in to the meeting. Our team answered questions about the latest plans for the project, including the updated route, new travel options the project will open up for riders on the Richmond Hill GO train line, and how the subway extension is part of a larger expansion of the regional transit network.

You can find written answers to these questions and others we didn't get to below. If you weren't able to join us, the video recording is available for you to watch any time.



Presentation Materials

[Yonge North Subway Extension - Presentation PDF →](#)

Figure 6-5 YNSE May 5, 2021 Virtual Open House Metrolinx Engage Webpage

6.3.3.3.1 Summary of Virtual Open House

Approximately 200 individuals participated at the Virtual Open House live session. A total of 21 comments were received via Metrolinx Engage prior to the beginning of and during the live session. Staff from the Project team along with members of the OneT+ team (technical advisor) were in attendance to moderate the session and answer questions. The Project team provided an overview what the proposed project would look like for residents of York Region, along with the anticipated rapid increase in transit network in the northern York region. A brief summary of the types of environmental studies and upcoming fieldwork was also provided. The meeting concluded with a plan on how and when future engagement will take place along with Project milestone highlights.

6.3.3.3.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

Key comments, questions and concerns included tunneling under the Holy Cross Cemetery; building a station below grade at High Tech Road; and the possibility of adding a below grade station at Langstaff Road as it would add new parking for customers. Many questions were received with regards to possibility of adding commuter parking at the proposed High Tech Station and how that would be beneficial for the community. Participants shared concerns about potential for increased noise and vibration impacts due to planned service increases and construction. They were also interested in learning more about the improved technology to minimize potential noise and vibration impacts and what mitigations are proposed to reduce those impacts during construction and operations.

6.3.3.3.3 Other Comments

Other comments received were related to the funding of the Project, how Option 3 was the chosen option in the Initial Business Case (IBC). The session ended with queries related to the anticipated timeline for procurement and construction and how the public would be able to contact Metrolinx for future questions.

6.3.3.4 May 19th – York Region-Wide Virtual Open House

A Virtual Open House was held for York Region as a whole, with the intention of introducing the Project so that members of the public learn about the Project, and providing an opportunity for community members to ask questions and share feedback as planning work progresses. The session was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook, Twitter and Instagram
- Posted on the Metrolinx.com/itshappening website;
- Posting to the Project webpage (MetrolinxEngage.com/YongeSubwayExt) approximately two weeks before the live sessions;
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House; and
- Postcard mailout via Canada Post to approximately 38,517 nearby residents and businesses within a 100 m radius of the Project Study Area approximately two weeks before the Virtual Open House, a copy of the postcard is available in **Appendix I**.

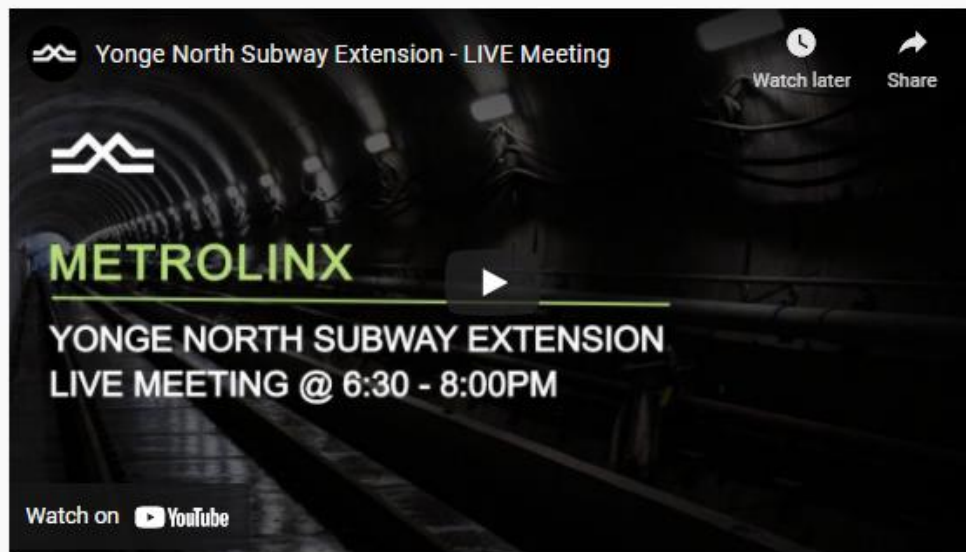
This VOH provided updated plans for the Project; overview of the environmental assessment process and timeline; key design changes; and environmental studies underway and how Metrolinx will connect with the public to understand concerns and answer questions.

All Virtual Open House materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.2** and a video recording of the event is available at www.youtube.com/watch?v=CuD4LVD6vTE.

Yonge North Subway Extension LIVE - May 19, 2021

On May 19, 2021, Metrolinx hosted a presentation and live question-and-answer session with members of the Yonge North Subway Extension project team focused on the updated environmental studies that inform our work to deliver the best project possible. During the event, we answered the top-voted questions that had been submitted by participants through Slido, our interactive online platform. We also took live questions from community members who called in to the meeting. Our team answered questions about the latest plans for the project, including the updated route, tunneling, and plans for future public input sessions.

You can find written answers to these questions and others we didn't get to below. If you weren't able to join us, the video recording is available for you to watch any time.



Presentation Materials

[Yonge North Subway Extension - Presentation PDF →](#)

Figure 6-6 YNSE May 19, 2021 Virtual Open House Metrolinx Engage Webpage

6.3.3.4.1 Summary of Virtual Open House

A total of 626 individuals participated at the Virtual Open House live session. A total of 347 comments were received via Metrolinx Engage and Zoom prior to the beginning of the live session and while the session was ongoing.

The purpose of the Virtual Open House was to provide the public with an updated overview of the Project and an introduction to the environmental assessment process and environmental studies currently underway. Mayors from the City of Markham, City of Vaughan, City of Richmond Hill, Councillors from Thornhill-Markham, Richmond Hill and Vaughan participated. Staff from the Project team were in attendance to moderate the session and answer questions.

6.3.3.4.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

Participants expressed interest in learning more about the proposed station locations; whether the proposed infrastructure will impact the existing cultural heritage resources within the Thornhill Heritage District; whether the proposed train storage facility will impact the Richmond Hill Centre Secondary Plan; potential impacts to existing utilities; and details of the proposed innovative technology planned to be used to mitigate potential noise and vibration impacts.

6.3.3.4.3 Other Comments

Various concerns about the preferred Option 3 of the IBC were shared specifically related to tunneling under residential buildings. Various members of the Royal Orchard community expressed interest in and support for Options 1 and 2 specifically for the increased benefits associated each option. Other concerns included health impacts for residents currently living in residential buildings under which tunnelling is being proposed. General questions were shared including whether there is a possibility for adding another station at 16th Avenue in York Region.

6.3.4 Metrolinx's Responses to Public Comments Received Spring 2021

Table 6-5 summarizes the key issues/comments/questions related to the Yonge North Subway Extension that were raised by the public as part of the four Spring 2021 Virtual Open Houses, and how they were considered by Metrolinx. Copies of all public comments received and responses that were issued can be found in **Appendix I.2**.

Table 6-5 Summary of Comment Key Themes and Questions Received During Spring 2021 Virtual Open House Events

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
April 7th / 21st & May 5th Virtual Open House(s)	Regional Emails / Metrolinx Engage	IBC Options Analysis	<ul style="list-style-type: none">Royal Orchard Community opposition to Option 3 for the YNSE due to noise, vibration, environmental impacts, and long-term costs.What is the rationale for Option 3 revised over the original Option 3? Since it appears that the new plan has the subway going directly underneath homes, what is the justification for the change in Option 3?Why is Option 3 being chosen if it has the fewest benefits according to the Initial Business Case?How did building the subway underneath the Royal Orchard neighbourhood turn from being an "option" to being "the latest plan"?Why wasn't more consideration given to tunneling entirely under the Holy Cross Cemetery lands – or at least a portion of it, rather than cutting a significant swath under a broad portion under the Royal Orchard neighbourhood?Was an option for constructing the turn just north of Kirk Drive (i.e., under the Good Life Fitness facility & along the edge of the cemetery) considered at all? Will Metrolinx adjust its course accordingly if our engineers can show that this route can achieve the necessary horizontal connectivity?If funding was available for Option 1 or Option 2, would Metrolinx still recommend Option 3 as the best long-term transportation plan?When the original six station alignment was decided, was funding not already committed?Why is the Project is proceeding at a cost benefit ratio below 1.0?Why is public input from impacted property owners not taken into consideration?	<p>The below summary addresses the various IBC Options Analysis concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">More detailed information about potential impacts to be determined as further design work is refined and environmental assessment work is advanced, but the goal is to minimize impacts to communities as much as possible while delivering major transit benefits. The subway is proposed to be built at a depth where there would be no direct impact on the homes above. The exact details of the depth will be determined through further study.Metrolinx is committed to addressing any noise and vibration due to construction and operation of the extension and will work with communities to ensure a comprehensive array of measures are in place to address noise or vibration impacts and to ensure designs are sensitive and respectful of communities. As part of the environmental assessment, a comprehensive study of potential impacts to air quality and the natural environment is being completed, and how to limit them.The aim is to ensure that there are no significant differences between the levels of noise and vibration experienced in the Royal Orchard neighbourhood today compared to when the Yonge North Subway Extension is up and running. Noise and vibration solutions will be used for the Project that are proven to work. A big benefit is that they'll be based on modern and up-to-date industry standards, which have significantly improved since the first subway lines in the GTA were built many decades ago.In regard to the possibility of curving the alignment north of the Royal Orchard community which was studied as part of the work, analysis showed that the curves this alignment would require would be too sharp to meet the minimum requirements for operational safety.It was determined that Option 1 could be delivered with up to three stations at Steeles, Richmond Hill Centre, and Langstaff within the \$5.6 billion announced funding envelope. Option 2 could also accommodate up to three stations in roughly the same areas.The refined Option 3 alignment has the benefit of allowing for a fourth station, since it minimizes the amount of costly tunneling required for the Project. Metrolinx is working with municipal partners to evaluate and determine the best location for the fourth station as planning work continues.This route also brings as many as six major rapid transit lines together through a new station in the northern section of the route – tentatively referred to as “Bridge Station.” Placed on the existing railway corridor at surface level between the Highway 7 and Highway 407 corridors, Bridge Station will offer fast, easy transfers to downtown Toronto on Line 1, and act as a launchpad to explore the entire region through convenient connections to the regional transit network.When Metrolinx assumed responsibility for the Yonge North Subway Extension in 2019, the only funding allotted to the previously envisioned Project was roughly \$91 million for preliminary design and engineering work.It is important to recognize that there are a wider range of factors that are considered as part of the final decision-making process. The Metrolinx business case is just one of several factors that is used in making a final decision. The approach in preparing business cases is to err on the side of caution, so the analysis represents a purposefully modest baseline that will aim to improve over time. Extending subway service through Vaughan, Markham and Richmond Hill will bring a world-class level of convenience and a better quality of life to the communities it serves. It will provide faster, easier access to downtown Toronto, York Region and all points in between. The Yonge North Subway Extension will expand travel options along York Region’s VIVA bus rapid transit lines and provide more Line 1 subway riders with a seamless journey. These benefits will also provide better access to jobs and offset traffic congestion as drivers get out from behind the wheel in favour of using the subway. Data from business cases is used, to ensure decisions are made that maximize benefits and control costs throughout the full course of a project. The business case is updated at key stages to ensure these benefits are realized.
April 7th / 21st & May 5th / 19th Virtual Open House(s)	Metrolinx Engage (Feedback Form)	Tunneling	<ul style="list-style-type: none">Can you provide a “to-scale” graphic of the tunnel depth below homes? I understand 20m is the goal but could go as little as 12-15m below homes. This means there remains a possibility the top of the tunnel could be 3m below a home’s basement (9 feet)?While MX committed to not expropriate homes for an above ground route, they did not yet commit to keeping the extension along Yonge St. Continuing the extension north along Yonge St. will truly add value to the Royal Orchard community and will have support.It does not make sense to go across a well-established housing area and ravine when continuing up Yonge Street beyond Royal Orchard	<p>The below summary addresses the various tunneling concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">The graphic of the tunnel depth shown is a general representation of the impacts from track level within the tunnel and it is not intended for “scaling” measurements. Details will emerge as the Project moves through further design stages, which are currently underway. The subway is proposed to be built at a depth where there would be no direct impact on the homes above – the exact details of the depth will be determined through further study, but early studies suggest the bottom of the tunnels will be at least 20 metres below the surface in the Royal Orchard community. Additionally, a wide array of proven noise and vibration solutions for the Project are being considered, including resilient fasteners and ballast mats to help cushion the tracks and reduce vibration. Rail dampers can also be used to help reduce the noise from passing trains.Tunneling below the Royal Orchard neighbourhood will have no direct impacts on the surface. The machines that dig the tunnels will be entirely below ground and all work on the tunnel will be accessed from the launch shaft in the Langstaff Gateway area. During construction,

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<p>and east under land with no housing would be more practical. Placing a station between Hwy 7 and Hwy 407, a very short distance from the terminus station, makes no sense and shows a lack of planning regarding the current transportation hub.</p> <ul style="list-style-type: none">• Why is tunnelling under a cemetery more difficult than tunnelling under homes?• How many access points will be required and how large of an area will they cover?• Where will the tunnel boring machines be staged and assembled?• How far down will the subway extension be relative to other lines? How will elevation differences, like the valley between Centre and Royal Orchard impact this?• Will there be tunneling underground below the valley where there are two golf courses?• Please clarify whether the section of tracks will run at-grade north of Royal Orchard?• Is the subway tunneling under the CN tracks or running above ground? If above ground, will it be on the east or west side of the CN tracks going into Bridge?• Why is Metrolinx pursuing tunnel boring when cut and cover is potentially a cheaper option?	<p>engineers and construction crews will be in the community to monitor progress and ensure there are no impacts at the surface. Depending on the location of emergency exit buildings that are required for the Project, some construction at surface level may be necessary. Locations of the emergency exit buildings will be shared with the community when those details are confirmed and discuss ways to minimize any possible disruptions.</p> <ul style="list-style-type: none">• A route that tunneled under Holy Cross Cemetery was considered but was not included in the detailed analysis because early investigations showed that the tunnel depth required to be built at below Pomona Mills Creek, would have not allowed the route to reach the location of Bridge Station before rising to the surface within the CN Railway corridor.• Emergency exit buildings will be required at various points between stations and are only used in the unlikely event of an emergency in the tunnel that would require people to safely get to the surface. The design team is working to determine the number of emergency exit buildings needed along the entire route of the subway, with a specific focus to reduce the number needed in residential areas. Emergency exit buildings are single storey structures that are much smaller than a house and can be designed is a variety of ways to fit the look and feel of the area around them.• The tunnel boring machines will be assembled and lowered into the ground from the Langstaff Gateway area, south of Highway 407 and west of the CN Railway corridor. This area was selected because it is far away from homes and businesses and will limit the need for construction vehicles to travel through residential areas. The tunnel boring machines will remain underground until they reach just south of Cummer Avenue, where they will be removed.• Line 2 was built at a shallower depth than is proposed along the Yonge North Subway Extension, which will use modern tunneling methods to carefully dig tunnels deep below the surface and use the latest technology to limit noise and vibration from trains passing over the rails. The bottoms of the tunnels will be at least 20 metres deep in the Royal Orchard community – roughly as deep as a six-storey building is tall. The tops of the tunnels will be at least 14 metres below the surface, which is equal to the height of a four-storey building. The tunnels will be surrounded by thick reinforced concrete and will be built to strict design and engineering standards. They will be based on modern and up-to-date industry standards, which have significantly improved since the first subway lines in the GTA were built many decades ago. High-quality, modern tunnels built to the latest industry standards will ensure future subway services won’t be a disruption for the community. Metrolinx is committed to addressing any noise and vibration due to construction and operation of the extension and the aim is to ensure no appreciable difference between existing noise and vibration levels in the community.• As part of the current plans, there will be tunneling along the Yonge Street corridor under the East Don River, between the two golf courses. Details of the Project like the precise alignment the route in the northern segment will follow as planning work continues. Subway tracks will emerge at the surface at the proposed subway tunnel portal within the CN railway corridor. The line then travels north within the existing rail corridor under the Highway 7 and Highway 407 overpasses on its approach to the Richmond Hill Centre area.• The current plans for the Project recommend placing the northern section of the Yonge North Subway Extension at the surface, instead of tunneling all the way to Richmond Hill. The tracks will head north beneath Yonge Street from Finch Station before they curve away from Yonge and align with the CN Railway corridor. The subway will rise to emerge at the surface south of Highway 407 as it continues through the Richmond Hill Centre area. We’ll be adding dedicated subway tracks to the west of the CN tracks within the existing railway corridor and looking at ways to keep the footprint of the Project as small as possible as we build new infrastructure.• Modern tunneling technology has been proven around the world to be an efficient way to build underground subways. The subway extension to Vaughan was recently completed using tunnel boring machines for most of the route. Tunneling allows the subway to be built deeper below the surface, which is not practical with cut-and-cover methods. Being able to build the subway deeper underground means there will be no direct impacts to the homes, buildings and roads at the surface. Subway stations are typically built using cut-and-cover methods because they are significantly larger and have entrances that need to be built at surface-level.
April 7th / 21st & May 5th / 19th Virtual Open House(s)	Regional Email / Metrolinx Engage	Stations	<ul style="list-style-type: none">• General interest in station locations and rationale for selection.• With the addition of at least 10 new high-rise developments being proposed in the Yonge Clark area that will bring increases of tens of thousands of new residents/businesses to the area, there must be a subway stop at Yonge and Clark to support this growth.• Will the Yonge and Clark community have a TTC station built to have easier access to public transportation?	<p>The below summary addresses the various station comments/concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">• The Project includes four new stations with three of the proposed locations at Steeles Ave, Highway 7 and Highway 407, and High Tech Rd. Metrolinx is working with municipal partners to determine the best location for the fourth station as planning work continues. The locations planners are looking at, are in line with the previously proposed Cummer, Clark, and Royal Orchard stations. As part of this analysis, Metrolinx is looking at the proposed Clark Station, as it provides easy connections to local and express York Region bus services that serve south-eastern Vaughan, including the Promenade Mall redevelopment area. There is lower potential for growth near Centre Street and John Street compared to the other potential stations because they located within the boundaries of heritage conservation districts in Markham and Vaughan.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<ul style="list-style-type: none">High Tech, Langstaff/Longbridge and Royal Orchard stations should have centre island platforms while Clark, Steeles and Cummer stations have side platforms because not all extensions should always have centre island platforms only. At least 1 or 2 stations can have an underpass just like Dundas and Queen stations.Consider finding a means to include a station at Yonge and Royal Orchard. Clark should also be built. In terms of alignment, it's best to stick with Yonge Street.Find a way to control the wildly escalating transit building costs in our province. Have you considered cut and cover and/or elevated to lower costs? Perhaps this line doesn't have to be buried so deeply.Will there be community engagement/participation opportunities with regards to the Clark and Steeles stations like there have been for the Royal Orchard community?How many passengers per peak hour are expected at both Bridge and High Tech Stations?The Bridge Station diagram shows bus terminal access from Highway 7. How will bus routes from the south and the 407 GO Bus access the terminal?Can stations be built along the extension after it is complete?Will High Tech and Bridge stations be set up at-grade like Davisville or Rosedale stations or will they be underground stations?If Bridge and High Tech stations are above ground, will there be development integrated in their design?Can you provide data that supports the need for Bridge Station and High Tech to be located so close as they are to one another?If the four-station option is chosen, what impact will this have on the Richmond Hill Centre proposal; specifically, Richmond Hill's plan for development of the area?Will your plan allow for a new southbound platform for two-way GO train service on the Richmond Hill GO line?Did Option 1 not look at the benefit of building at Bridge Station?Will there be more details regarding Bridge Station to better integrate with the Viva Purple and Orange BRT rapidways, to serve Markham and Vaughan?John Street is the best choice for a station as it runs east to Scarborough and beyond and runs west to join Highway 7. Clark only goes west to Dufferin and east to Henderson. Royal Orchard Only goes east to Bayview.	<ul style="list-style-type: none">The stations on the northern section of the extension, Bridge and High Tech, are placed the way they are to serve the most people in the future, making it faster and easier for riders to use the subway and connect to transit services across the region, and to better support growth while curbing local traffic congestion. An estimated 7,400 people will use Bridge Station in the morning peak hour, while High Tech Station is predicted to attract between 3,000 to 5,000 riders over the same period. By 2041, as many as 64,000 people are expected to live in the Richmond Hill Centre and Langstaff Gateway communities and more than 36,000 people could have jobs in the area. Since the neighbourhoods surrounding Bridge and High Tech stations are expected to grow significantly in the years to come, these stations will contribute a large portion of the riders that will use the extension, especially those who transfer to the subway from a bus. Located between Highway 7 and Highway 407, Bridge Station will create vital connections between the subway and the Richmond Hill GO line, as well as GO bus, VIVA Bus Rapid Transit and local bus services that run along the two major highways. It's also worth noting that the station at High Tech Road would put the subway within walking distance for more than half of the residents expected to live in the Richmond Hill Centre area by 2041.Bus routes from the south will access the Bridge Station bus terminal by using the regional and municipal road network. Metrolinx is working with our municipal partners to study the existing and future road network to determine the best route for buses to take.Several options are being studied to provide easy access to Bridge Station to GO buses that travel along Highway 407, including routes that would leave the highway at Yonge Street or Bayview Avenue and use regional and municipal roads to access the bus terminal. Metrolinx is also studying options that would directly connect Highway 407 to the bus terminal. More details will be shared about this aspect of the Project through the Preliminary Design Business Case.Cummer Station would support the growth planned in Toronto's North York Centre area and would connect riders with shopping, employment, and education opportunities that are nearby. Our analysis also shows that including the Cummer Station in the Project will lead to cost savings by reducing the length of bus routes that serve that section of the Yonge Street corridor. Metrolinx is working with our municipal partners to determine the best location for the fourth station as planning work continues. The locations planners are looking at are in line with the previously proposed Cummer, Clark, and Royal Orchard stations.Clark Station was found to bring faster transit to more people than a station at Centre Street. Clark Station will put 8,100 people and 1,900 jobs within a 10-minute walk of the subway by 2041 largely because of how well it will connect with key growth areas along Bathurst Street and Centre Street – thanks to the planned extension of the Viva Orange BRT line, which serves communities along Highway 7. Put together, 2,500 riders will use the subway at Clark Station during the peak of the morning rush, with more than half of those riders connecting to the subway from a bus. The connection to the Viva Orange line will bring convenient access to areas like the Bathurst-and-Centre corridor and Promenade Centre, which is expected to be home to more than 11,000 people and almost 6,000 jobs in the years to come. Metrolinx studies also show there is lower potential for growth along Centre Street compared to the areas served by the other stations in our analysis because Centre Street is located within the boundaries of local heritage conservation districts.It is possible to build new stations once the extension is complete but doing so would be complex in terms of maintaining existing service and limiting disruptions. This will be considered as the design is advanced. The provincial government will be exploring development opportunities through the Transit-Oriented Communities program as part of the planning process.There is demand from all communities to see as frequent service as possible on this GO train line, which is why Metrolinx is continuing to add service where possible on the Richmond Hill corridor. Metrolinx is introducing more weekday rush-hour service – every 15-30 minutes in the morning and every 15-30 minutes in the afternoon – to give people more options to get around. With the addition of a new GO station at Bloomington Road, customers will be able to travel further, too.The route identified in the Initial Business Case (IBC) as Option 1 represents the previously studied alignment that included Langstaff Station in the northern section of the route, on the western boundary of the Langstaff Gateway community. A modified version of this route – called Option 2 in the IBC – was studied that included Bridge Station in a location slightly west of the CN Railway corridor.
April 7 th / 21 st & May 5 th / 19 th Virtual Open House(s)	Regional Email / Metrolinx Engage	Noise & Vibration	<ul style="list-style-type: none">This subway route will cause us a lot of grief due to noise and underground vibrations and loss of property value.Will the trains be heard or felt? If the dampeners are effective, I believe they will only be as good the commitment to maintaining them, the tunnels, and the trains.	<p>The below summary addresses the various noise & vibration concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">Metrolinx is committed to addressing any noise and vibration due to construction and operation of the extension and will work with communities to ensure a comprehensive array of measures are in place to address noise or vibration impacts and to ensure designs are sensitive and respectful of communities. The environmental studies will look at the existing noise and vibration levels along the CN Railway corridor and how those levels may change when the subway goes into service. TTC subway trains are considerably quieter and lighter than freight trains. The subway will also run on dedicated tracks that will use modern technology to limit noise and vibration. Metrolinx will work

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<ul style="list-style-type: none">• It was mentioned that proven technology will limit noise and vibration. Where was this proven and can you quantify the limits in terms of actual noise and vibration levels?• There is commercial land, and a cemetery just north of the Royal Orchard neighbourhood where a subway route will not affect homeowners and makes more sense to construct.• What impact will this have on the foundations of homes and pools? What guarantee and recourse will we have should there be damage?• A 20m depth (measured from the bottom of the tunnel) is not sufficient enough to omit vibrations and possible damage to the homes. It was noted that vibrations are felt at York University and OISE at U of T. Run the subway under Yonge, to Langstaff and then to Richmond Hill Centre. Provide shuttle busses to Bridge station.• How will noise and vibration levels compare to the existing CN railway?• What makes this subway different for noise and vibration than the existing Bloor-Danforth line?• What are the standards you use for acceptable levels of noise and vibration?• What commitment will be made for effective maintenance on noise and vibration mitigation technology?• Have you completed studies of the soil to determine how effective mitigation can be?• What is the allowable limit for noise?• Low frequencies and infrasound can be heard though hundreds of metres of solid rock and earth.	<p>with communities to ensure a comprehensive array of solutions are in place to address and concerns about noise and vibration when the extension is up and running.</p> <ul style="list-style-type: none">• A wide array of proven noise and vibration solutions for the Project are being looked at, including resilient fasteners, floating slab and ballast mats to help cushion the tracks and reduce noise and vibration. Rail dampers can also be used to help reduce the noise from passing trains. These types of solutions have been used around the world, including on the recently completed Toronto-York Spadina Subway Extension. Metrolinx is committed to sharing the latest updates of the plans with the community, and that includes making sure that all necessary noise and vibration solutions are put in place to keep things quiet and peaceful and to ensure homes and the community remain sought-after places to live in. Solutions are being considered such as high-grade rail fasteners that keep all the parts tightly together, rubber dampers that attach to the rails to absorb vibration, and large rubber mats that go under the tracks to absorb noises and vibrations.• Metrolinx uses provincial guidelines to monitor and assess the noise and vibration associated with the operation of new transit lines, as well as facilities that support them like bus terminals, station entrance buildings, and train storage facilities. Metrolinx has also adopted the vibration standards from the Federal Transit Administration in the US. These standards are used extensively throughout the United States and Canada for transit projects. If noise and vibration levels are predicted to exceed these guidelines while the extension is in service, a wide array of solutions are available for Metrolinx to include in the design of the Project to limit those impacts.• The Project will be designed using modern technology that will limit the daily wear on the trains and track. Through regular inspections and maintenance, flat spots on train wheels and rails will be repaired to keep them smooth, preventing noise and vibration. The goal is to make sure there is no significant difference between the levels of noise and vibration in the community today compared to what those levels are in the future.• Adjusting the route of the line in the northern section will better position the project to serve the Richmond Hill Centre and Langstaff Gateway urban growth centres, while avoiding the sensitivities to tunneling under a cemetery and protecting the Royal Orchard community. Creating stronger connections here will mean better connections to transit and less traffic congestion as communities grow.• Metrolinx has a claims process in the event of potential damages as a result of our construction. Ahead of any construction, Metrolinx would offer a pre-condition survey to property owners within a project’s area to assess and document its current pre-construction condition. This survey is an industry standard used to set baseline conditions of properties located in close vicinity to a construction site. If you submit to Metrolinx a claim for damage to your property as a result of our construction, the pre-construction survey would demonstrate your property’s original state.• The provincial limits for airborne noise are based on the lower of either the existing levels of ambient sound in a given area, or a set of minimum sound level criteria. For areas along the surface-level segment of the route, the goal is not to exceed the existing ambient sound levels by 5 dB or more. When it comes to minimizing noise caused by trains traveling through the tunnels, the guideline limit Metrolinx aims to come in under is 35 dBA (a unit of measurement that best reflects how sound is perceived by the human ear) for ground-borne noise. In other words, roughly the same level of sound you could expect in a library. If noise and vibration levels are expected to exceed those guidelines, we put additional solutions in place to bring them back down below those limits.• Infra-sound, or sound below the typical level of human sensitivity, is often mistaken with low frequency sound. Low frequency sound, such as the “rumbling” noise generated by underground transit systems, is being assessed and noise and vibration mitigation measures will be incorporated into the design of the YNSE. Subway systems with vibration mitigation do not typically produce notable levels of infra-sound. Unlike air-borne sources of infra-sound, infra-sound from vibration will tend to be felt as vibration before it is heard as noise.
April 7 th / 21 st & May 5 th Virtual Open House(s)	Regional Email / Metrolinx Engage	Property Impacts	<ul style="list-style-type: none">• Is there a detailed map of impacted and potentially expropriated properties?• How and when do we find out if the subway will impact my property?• How will fair market value compensation work if the subway will be built under homes and the value will decrease?• What if people don’t want to move?• Does property compensation only apply when a property has been physically impacted above ground?• When will property owners be notified about their property’s change to designated transit corridor property?	<p>The below summary addresses the various property impact concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">• The initial business case for the YNSE included preliminary design for the Project. The precise alignment of the Yonge North Subway Extension will evolve throughout the design and procurement process as teams gather more information, including details on ground conditions, community and environmental impacts, and potential for partnering with third parties. Property requirements will be confirmed when detailed planning and design work for the alignment and stations is completed. Metrolinx will work to identify which properties would be required and would only acquire properties that are necessary to get transit built.• Metrolinx will try to determine property impacts as soon as possible and will contact owners directly once it is determined which properties are needed to support construction or operation of the Project. One-on-one meetings with owners will be arranged to answer questions, including how much property is needed and why, how the acquisition process works, and expected timelines. Multiple meetings will take place throughout this process to ensure property owners have all the information and support needed. In cases where Metrolinx requires temporary access to property to support the construction project, Metrolinx ensures it is restored to its pre-construction state or better

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<ul style="list-style-type: none">Will people living in buildings be offered compensation too?What are the impact to the Thornhill Outdoor Pool and Park, and Thornhill Golf & Tennis Club?When will business owners know whether their businesses will be affected?	<p>before it is returned to owner. Even when expropriation is initiated, Metrolinx continues to negotiate with owners in the hope of reaching an agreement.</p> <ul style="list-style-type: none">The preferred approach when it comes to compensation is to have direct negotiations with owners, with the goal of reaching amicable agreements.Fair market value represents the value of the property based on the market conditions at that time. A third-party appraisal will be completed to estimate the fair market value. Property owners may also complete their own appraisal to determine or confirm the fair market value. In some cases, other kinds of third-party experts may be asked to help determine fair market value for a property, such as environmental consultants.Metrolinx is committed to providing as much time as possible to find solutions. The acquisition process can take up to 18 months but can also be completed earlier, depending on the specific case.Compensation can apply to any property acquisition – whether it is above or below ground, or whether the need for the project is temporary or permanent. These details are unique to each situation and compensation will be discussed with each individual property owner.If a property is located on or within 30 metres of transit corridor land, a letter notification will be sent. A notice of this designation will also appear on the title of the property, which will be shown in the land registry. This notice will be removed once construction of the project is complete.Owning or occupying property on transit corridor land does not necessarily mean there will be impacts by transit construction or that Metrolinx will need to enter or acquire property. A separate written notification will be sent if a property is required in any way.If a home is being rented, Metrolinx has support in place. Each case is considered independently, and lease terms are always taken into consideration. Supports are tailored to specific needs and are determined through discussions during the acquisition process. Whenever Metrolinx needs to acquire property to support a new transit project, the commitment is to ensure that owners and tenants do not experience a financial loss.
April 7 th / 21 st & May 5 th Virtual Open House(s)	Regional Email / Metrolinx Engage	Subway Alignment Design / Construction	<ul style="list-style-type: none">Only one subway route option has been presented to the public for consideration. The public may wish to look at other cost saving options that fits into the budget but does not impact the Royal Orchard Community.Why must the line turn and twist through Royal Orchard Path residential community rather going straight up along the Yonge street?Why is it economical to run under Yonge Street from Finch Station but it's unfeasible at Royal Orchard?Why wasn't the southern side of the cemetery after turning east from Yonge St. just north of Kirk Dr. considered as an option?Why can't the tracks be turned to the east, north of the residential community?There are stations downtown (St George, Spadina, Dupont) that make tight turns. Why can't this be done here?Why are you connecting the subway with the Langstaff GO when it only operates at peak hours?Will the CN railway be widened?	<p>The below summary addresses the various alignment design and construction concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">The route will run deep underground through the Royal Orchard community in order to take advantage of the existing CN railway. This ensures the Project can be built quickly and serve key growth areas while delivering the most possible benefits within the initial funding envelope of \$5.6 billion. A range of factors were considered to make the Yonge North Subway Extension as easy as possible to access, for a wide number of people. The precise alignment of the Yonge North Subway Extension will evolve as planning work continues.Dedicated subway tracks will be added to the existing railway corridor and Metrolinx is looking at ways to keep the footprint of the Project as small as possible as new infrastructure is built. Further planning and design work is being done to confirm the precise route the subway will take through the CN Railway corridor, as well as the requirements for the two surface-level stations and train storage facility. More details will be shared when the Preliminary Design Business Case is finalized.Adjusting the route of the line in the northern section will better position the project to serve the Richmond Hill Centre and Langstaff Gateway urban growth centres, while avoiding the sensitivities to tunneling under a cemetery and protecting the Royal Orchard community. Creating stronger connections here will mean better connections to transit and less traffic congestion as communities grow. Running the extension at ground level along the existing CN railway corridor means faster project completion and reduction in the need for complex, time-consuming, and costly construction of tunnels and underground stations.The possibility of curving the alignment north of the Royal Orchard community as well as routes that would run underground near the southern end of Holy Cross Cemetery were considered but not included in the detailed analysis because they would have required curves too sharp to reach the location of Bridge Station and meet the minimum requirements for operational safety. Standards for designing underground rapid transit have come a long way since the downtown portion of Line 1 was built in the 1950s. The latest design standards for subway tunnels have been developed to make the ride smoother and more comfortable for customers by avoiding sharp turns, which reduces wear on the trains and track, and minimizes noise and vibration. The objective is to meet or exceed the most up-to-date regulations and design standards.Richmond Hill GO train riders can benefit from connecting to the subway in order to access shopping, employment, and educational opportunities located in areas that are not directly served by the Richmond Hill GO line, such as North York Centre, mid-town Toronto, and many areas between Oriole GO and Union Station. Riders will have convenient travel options at Bridge Station that will make it easier for them to get around the entire region.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
April 7 th Virtual Open House	Regional Email	Fieldwork	<ul style="list-style-type: none">Fieldwork scheduling	<ul style="list-style-type: none">Metrolinx will notify public prior to fieldwork taking place.
April 7 th / 21 st & May 5 th / 19 th Virtual Open House(s)	Metrolinx Engage	Consultation	<ul style="list-style-type: none">How can the community engagement team be contacted?Why is communication only being had in English?Why didn't Metrolinx consult on the preference for Option 3 prior to the release of the Initial Business Case?What is the status of the agreement with CN to tunnel under the railway?How can the team work with residents – can you provide specific activities and tasks?What agencies will provide approval and is Metrolinx aware of when these approvals are scheduled to be approved, is public participation available and what are the dates of approval in the project time lines?	<p>The below summary addresses the various consultation concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">Metrolinx is committed to keeping lines of communication open throughout the life of the project to encourage sharing of ideas and insights with the team. Thoughts, questions or comments on the project can be submitted by emailing YongeSubwayExt@Metrolinx.com or by calling 416-202-7000.Input received from communities is vital to the work and is top of mind as plans for the extension are refined. These insights will play an important part in shaping the project as it moves forward and there will be many more discussions as we move forward together on this important project. Feedback is collected through Virtual Open House events and will be documented in the draft report. Working groups with members of the community will be set up, called Community Liaison Committees. These groups will be a venue to review designs, hear concerns, answer questions, and keep the community updated on the project at every turn.Metrolinx is looking into ways to incorporate French language support through the online platform for virtual engagement sessions. In the meantime, the latest Project updates are available in French from the Metrolinx website at MetrolinxEngage.com/YongeSubwayExt.The Initial Business Case is the first step in the process to put projects on the right path from the beginning. Expert transit planners and engineers work together to prepare business cases while balancing multiple factors to choose options that will bring significant benefits to the communities they serve, all while minimizing and avoiding impacts. The initial plans that come from the IBC and supplementary analysis give a road map for the project, so the team can reach out to the community to get insights that will help move the project forward in the best way possible.Numerous positive discussions with CN took place about the plans for the YNSE s planning and design for the project continued. Metrolinx has a longstanding relationship with CN – we share rail corridor throughout our existing GO network and have done so for years. We're confident Metrolinx will be able to effectively work together to move this important project forward.The YNSE receives extensive review and approvals by the Province of Ontario, the Ministry of Transportation, the Ministry of Environment Conservation and Parks, the Regional Municipality of York, local municipalities, and a host of other reviewing authorities with jurisdiction over applicable permits, licences and approvals.Government approval occurs at many stages through a project's lifecycle. Public participation continues through the EPR Addendum process and the Notice of EPR Addendum is anticipated to be published in the fall. Upon the publication of the notice, a 30-day public review period will be provided, followed by up to 35 days for Metrolinx to respond to comments and post an updated EPR Addendum. Publication of the updated EPR Addendum opens a 35-day period during which the Minister of Environment, Conservation and Parks can issue a notice related to the EPR Addendum. This period is anticipated to be completed in winter 2022. Public participation and our ongoing dialogue with the community continues throughout every stage of the project, beyond the environmental assessment. Our commitment is to keep you informed as project plans develop.
April 7 th / 21 st & May 5 th Virtual Open House(s)	Metrolinx Engage	Funding	<ul style="list-style-type: none">Does Metrolinx have guaranteed funding from all levels of government?Why is the funding envelope the main consideration for Option 3?Why not have private developers pay for the stations?The federal budget did not include money for this project. Will this result in delays?Is rolling stock included in the procurement?	<p>The below summary addresses the various funding concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">The 2019 provincial budget estimates capital costs for the Yonge North Subway Extension to be \$5.6 billion. Metrolinx and Infrastructure Ontario are moving the project forward under the Subway Program, which includes three other rapid transit expansions that will get the region moving — the Ontario Line, the Eglinton Crosstown West Extension, and the Scarborough Subway Extension. Metrolinx will work with the TTC to procure new trains.The provincial government has committed \$11.2 billion toward the total estimated \$28.5 billion construction cost of Subway Program. York Region has agreed to contribute funding to the capital construction costs of the project through a preliminary agreement with the provincial government. The Government of Ontario and York Region are also seeking contributions from the federal government.Metrolinx is committed to building the most benefits possible into the Project within the announced funding envelope. The Option 3 proposal does this is through the location of Bridge Station, which will give riders convenient access to local and regional transit services that will open up new travel options across the region. Located at surface level with the existing CN Railway corridor, Bridge Station will make it faster and easier for riders to use the subway and better for supporting growth and curbing local traffic congestion. Option 3 also protects for further extension of the line in the future by positioning the northern end of the Project along the existing railway corridor.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
				<ul style="list-style-type: none">Metrolinx will explore innovative funding solutions and partnerships that could enhance the benefits of the project as the analysis is refined. Further discussions would be pursued with regional, municipal and development stakeholders to explore innovative funding solutions to enhance the final Project scope.On May 11th, the federal government announced a \$10.4 billion funding commitment to Ontario’s four priority subway projects, including the Yonge North Subway Extension. We remain committed to an in-service date of 2029-2030, after the Ontario Line is in service.
April 7 th / 21 st & May 5 th Virtual Open House(s)	Regional Email / Metrolinx Engage	Parking	<ul style="list-style-type: none">Will a parking lot be included or assessed in new stations? What happened to creating a parking lot under the hydro corridor at Longbridge?Is Metrolinx planning on building a parking lot in high-density developments to promote subway use?What is the plan for commuter parking at High Tech, Bridge, or Steeles Station?	<p>The below summary addresses the various parking concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the Project’s design, alignment, and benefits. Parking will be evaluated in more depth through the PDBC.The Yonge North Subway Extension has been designed to support vibrant urban development along the alignment that creates faster, easier connections to rapid transit so that people can get out from behind the wheel. Those connections include local transit routes, TTC bus service, York Region local and VIVA express bus service, Richmond Hill GO service, Highway 407 GO bus service, access with PRESTO (which automatically applies transfers and gives the user the lowest cost of a ride), as well as active transportation like walking and cycling.
April 7 th Virtual Open House	Regional Email / Metrolinx Engage	Scope	<ul style="list-style-type: none">If the subway line will be built alongside the railway tracks of the CN Bala subdivision - and become at-grade just south of Langstaff Road -- will Metrolinx include construction of a grade separation at Langstaff Road (over both the subway extension and the CN Bala subdivision, which also carries Metrolinx GO Richmond Hill trains), or will Metrolinx eliminate the Langstaff Road crossing altogether?Offices in Toronto are not as busy due to COVID-19. Why is a subway extension even required?	<p>The below summary addresses the various Project scope concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">As a part of the plan, the subway tracks will emerge at the surface at the proposed subway tunnel portal south of Langstaff Road at the CN railway corridor. The path then travels north within the CN railway corridor under the Highway 7 and Highway 407 overpasses on its approach to the area identified as Richmond Hill Centre. Options at Langstaff road will be evaluated through collaboration with municipal partners and more detailed information will be available as further design work is refined and environmental assessment work is advanced.The Yonge North Subway Extension will spur economic activity, create good jobs and connect more people to more opportunities to succeed.The extension is one of four priority subway projects are expected to support the equivalent of 12,000 full-time jobs each year. It will lead to new opportunities for businesses and workers that provide the services and equipment needed to build and operate the extension, including everything from terminals, stations and maintenance facilities; to train cars, tracks, and automated control systems.
April 7th Virtual Open House	Regional Email	Impact Assessment Reports	<ul style="list-style-type: none">Requests for copies of the draft environmental impact assessments as soon as available.	<ul style="list-style-type: none">An addendum to the existing environmental assessment (EA) is being prepared, which will cover off any changes to existing conditions since that EA was completed and evaluate the updated route. This involves studying things like noise and vibration, soil and groundwater quality, the natural environment, and land use, and will build off the work done on previous environmental studies. The results of the study will be shared publicly as part of the environmental assessment consultation process once they are available.
April 7th / May 19th Virtual Open House(s)	Metrolinx Engage	Natural Environment	<ul style="list-style-type: none">Are environmental impacts and specifically, local parks, taken into consideration in the analysis?Will the subway cross the Don River (south of Royal Orchard) above ground, or will the tunnel go under the river?There is an aquitard at Steeles. How is it being managed?What provisions is Metrolinx taking to safeguard the community from all too common "historical" weather events. A reading of the flood plain characteristics of the area in and around the Pomona Creek shows a complex system of pressurized transient aquifers. These characteristics have already created problems and expensive remediation in York region construction sites where deep excavation is required.	<p>The below summary addresses the various natural environment concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">A comprehensive study of potential changes to the natural environment is being completed as part of the environmental assessment process, and how these potential changes can be minimized, if necessary. The results of the study will be shared for review and comment as part of the environmental assessment once they are available.The subway will be tunneled below the East Don River. Running the subway below the East Don River in a continuous tunnel would eliminate the need for a costly and time-consuming effort to stop, move, and restart the tunnel boring machines on either side of a bridge. This approach also limits the need for traffic closures on Yonge Street and eliminates the need to build a four-lane detour into the river valley. Building a bridge over the river would mean potential noise and vibration impacts for the Royal Orchard community, as this would place the potential Royal Orchard Station at a shallow depth that would reduce the distance from the ground surface to the subway tunnel.Groundwater monitoring at the Steeles station location indicate that the groundwater level is above the design elevation of the base of the station. However, the groundwater measurements do not indicate that artesian conditions are present at this location. Temporary dewatering will be needed to lower the groundwater level below the base of the station excavation during construction. The impacts of the dewatering on near-by infrastructure will be assessed as part of the design process.The Yonge North Subway Extension is subject to the requirements of the federal Climate Lens, which includes a detailed assessment of how the Project will be designed to anticipate, prevent, withstand and adapt from climate change and its associated effects on the environment. Like all modern infrastructure, the Project must adhere to federal standards in that respect. The Metrolinx Sustainability Strategy (2015-2020) and Climate Adaptation Strategy provides more detail in how will help manage the uncertainties associated with climate change by applying robust solutions that are effective, economical and efficient.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
April 7th / 21st & May 5th / 19th Virtual Open House(s)	Regional Email / Metrolinx Engage	Land Use / Socio-Economic	<ul style="list-style-type: none">Planning for both the Langstaff Gateway and Richmond Hill Centre Secondary Plans designate land uses complimentary to the Option 1 alignment. Why change the approach?How will the massive development projects proposed for the Yonge Street corridor affect the subway build?Which will take precedence - the subway or the proposed developments?Will the subway build cause the developments to be delayed and for how long?	<p>The below summary addresses the various land use and socio-economic concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">The Yonge North Subway Extension is being planned and designed to support the communities along the Yonge Street corridor as they grow. The extension will spur vibrant urban development along the route that creates faster, easier connections to rapid transit so that people can get out from behind the wheel. To this end, Metrolinx is supporting the vision of the Province of Ontario and local municipalities’ Urban Growth Centres along the Yonge Street corridor. The vision for these burgeoning communities is an important part of the business case analysis and informs our decisions through each stage of the Project.The location of Langstaff Station at the western boundary of the Langstaff Gateway urban growth centre serves a very small portion of the people who will live in the area in the years to come and supports little to no growth potential west and south of the station. The Initial Business Case also shows that the location of Bridge Station provides people who will live in the Langstaff Gateway area convenient access to bus and subway services while also serving the future community of Richmond Hill Centre.Metrolinx will work closely with municipal partners and property owners to gain a complete understanding of the unique local considerations in each neighbourhood along the extension and coordinate our work to deliver this important and much-needed project.
April 7th / 21st & May 5th / 19th Virtual Open House(s)	Metrolinx Engage	Construction Impacts	<ul style="list-style-type: none">Will Metrolinx have liability insurance for damages from construction and operations?Will the tunnel be located directly under Yonge Street or off to the east or west?How will surface traffic on and around Yonge St. be maintained?What impacts will construction have on Yonge road traffic?	<p>The below summary addresses the various construction impact concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">Early analysis indicated that the subway tunnels will be deep enough that there will be no direct impacts on the homes above during construction and operation. Metrolinx has a claims process in the event of potential damages as a result of construction. Before construction begins, Metrolinx offers a pre-condition survey to property owners within a project’s area to assess and document its current condition. This survey is an industry standard used to set baseline conditions of properties located near a construction site. If a claim for damage to property as a result of construction is submitted to Metrolinx, the pre-construction survey would demonstrate your property’s original state.The tunnel will travel below Yonge Street from Finch Station to Centre Street. It will curve to the west of Yonge, crossing below the East Don River before curving east of Yonge Street, toward the CN Railway corridor.Metrolinx will work with municipalities and other stakeholders to determine the best way to maintain access for vehicles and pedestrians to Yonge Street and the surrounding streets and minimize disruption to residents and businesses.
April 7th Virtual Open House	Metrolinx Engage	EPR Addendum Process	<ul style="list-style-type: none">Please describe the environmental assessment process and the factors and decision criteria to be considered in comparing the 2009 EA approved route and the proposed alignment.Why is an EA addendum being completed rather than a full environmental assessment?What is the business case framework and is this part of the EA addendum? The Cummer station is funded in part by the City of Toronto and the two other stations are funded in part by York Region. Has York Region committed funding to both station and if not, what have they committed funding to and for what?	<p>The below summary addresses the EPR Addendum comments heard at the Virtual Open House events.</p> <ul style="list-style-type: none">The Environmental Project Report for the Yonge North Subway Extension was completed in 2009 under the environmental assessment process for transit projects in Ontario – the Transit Project Assessment Process. The addendum being prepared builds off of this work, as well as an addendum previously completed in 2014.The new addendum will cover off any changes to existing conditions since that EA was completed and evaluate the updated route. This involves studying things like noise and vibration, soil and groundwater quality, the natural environment, and land use, and will build off the work done on previous environmental studies. Crews are already undertaking field studies along the route to inform this work.A Metrolinx business case is a planning document separate from the environmental assessment. The business case is a comprehensive collection of evidence and analysis that sets out the rationale for why an investment should be made in order to solve a problem or address an opportunity. As with all Metrolinx business cases, the Initial Business Case for the Yonge North Subway Extension is structured around four cases: the Strategic Case, the Economic Case, the Financial Case, the Delivery and Operations Case. The Province of Ontario – City of Toronto Preliminary Agreement sets out the City’s funding responsibilities. The Province of Ontario – Regional Municipality of York Preliminary Agreement sets out York Region’s funding responsibilities.
April 7th / 21st & May 5th / 19th Virtual Open House(s)	Regional Email / Metrolinx Engage	Timeline	<ul style="list-style-type: none">What is the projected construction timeline?Is there a guarantee that this project will be completed on time and on budget?	<ul style="list-style-type: none">The target date for construction to begin on the main contract(s) is late 2023. Metrolinx is committed to efficiently and cost effectively guide the Project so that it can be completed on time and on budget. Lessons learned from past projects will be used to guide decision-making and steps taken along the way to reduce the risk of delays or cost overruns.
April 7th / 21st Virtual Open House(s)	Metrolinx Engage	Future Extension	<ul style="list-style-type: none">If the subway will be extended north in the future, does this mean it will continue to go under existing neighbourhoods further north?	<ul style="list-style-type: none">The benefits to running the alignment along the existing CN railway is for the protection for an easier extension of the subway north in the future.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
April 21st Virtual Open House	Metrolinx Engage	Project Benefits	<ul style="list-style-type: none">What will the benefit be for residents and businesses on the Yonge corridor?How many construction jobs will be created for this project?Will the contracts related to this project have a social benefit integrated into it such as employing members of the community?	<p>The below summary addresses the Project benefits comments heard at the Virtual Open House events.</p> <ul style="list-style-type: none">The Yonge North Subway Extension will cut commute times in York Region, Toronto and beyond by giving customers one seamless subway ride between Richmond Hill and downtown Toronto as well as bringing as many as six major rapid transit lines together through a new station in the northern section of the route – tentatively referred to as “Bridge Station.” Placed on the existing railway corridor at surface level between the Highway 7 and Highway 407 corridors, Bridge Station will offer fast, easy transfers to downtown Toronto on Line 1, and act as a launchpad to explore the entire region through convenient connections to the regional transit network.The Project is expected to serve 94,100 riders each day by 2041, cutting the time spent commuting in Toronto and York Region by a combined 835,000 minutes each day and saving riders as much as 22 minutes on a trip from Markham to downtown Toronto. The extension will also ease traffic congestion as more people get out from behind the wheel in favour of using transit, saving more than 4,800 tonnes of greenhouse gas emissions annually. New opportunities for employment will help the community thrive – a total of 22,900 employees will be within a 10-minute walk from a transit station along the extension.During construction, the Yonge North Subway Extension is expected to support the equivalent of 4,300 full-time jobs each year by recruiting the best local talent, providing training and apprenticeship opportunities for people living in those communities and looking for local suppliers and procurement opportunities where possible.
April 21 st & May 19 th Virtual Open House(s)	Metrolinx Engage	Train Storage Facility	<ul style="list-style-type: none">Where is the planned storage facility?Why is the train storage facility being built on the surface? It should be underground to minimize impact to the surrounding neighbourhood.	<ul style="list-style-type: none">The Train Storage Facility will be placed within the CN Railway north of High Tech Station.Placing a train storage facility at surface-level is a standard practice, and it’s a critical to keep it at ground level to stay within the \$5.6 billion funding envelope. This change brings the proposal in line with the TTC’s five subway train storage facilities, which are all above ground.
May 5 th Virtual Open House	Regional Email / Metrolinx Engage	Mitigation Measures	<ul style="list-style-type: none">Have there been studies completed of the soil to determine how effective mitigation can be?Is there a specific procedure to follow for claims related to compensation for loss?	<p>The below summary addresses the mitigation concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">An addendum to the existing environmental assessment (EA) is being prepared that will cover off any changes to existing conditions since that EA was completed and evaluate the updated route. This involves studying things like noise and vibration, soil and groundwater quality, the natural environment, and land use, and will build off the work done on previous environmental studies. Crews are already undertaking field studies along the route to inform this work.Metrolinx does not have a claims process that exists for compensation of loss. If anyone chooses to sell or purchase a home at this time, before it’s been determined which properties may be required or impacted, that is a personal decision for homeowners.The design is still in its early stages and property information extracted from the Initial Business Case release is not confirmed at this time. Once this is known, Metrolinx will reach out directly to homeowners to begin discussions, including the topic of compensation. In all conversations about compensation, Metrolinx fully complies with the requirements of the Expropriations Act.
May 19 th Virtual Open House	Metrolinx Engage	Transit Connectivity	<ul style="list-style-type: none">In the 2011 EA for the 407 Transitway, a proposed fully grade separated route was laid out for the transitway to connect to Richmond Hill Centre. Since then, that EA has lapsed, and now you are proposing an alternate alignment for the Subway Extension. With the diagram of the bus terminal for Bridge Center Station, there seems to be no mention of the 407 Transitway anywhere. If Option 2 or 3 are chosen, will Bridge Center/Bridge West station be designed with a fully grade separated 407 Transitway in mind, or will the Transitway have to access the bus terminal, and temporarily leave the grade separated corridor?Please consider working with City of Markham to plan for local transit connectivity to the subway stations. This not only includes local bus connectivity, but also the addition of bike lanes. There should also be committed funds to plow the bike lanes in the winter to ensure 365 day usage. Covered bike lockups or storage part of the stations design to encourage citizens to use bikes to get to the stations.	<p>The below summary addresses the transit connectivity concerns heard at the Virtual Open House events.</p> <ul style="list-style-type: none">Metrolinx is working with partners to plan for a potential connection at Bridge Station to the Highway 407 Transitway which would give transit vehicles easy access to the terminal.Connectivity via all transit nodes – including bicycling – is a major priority for our projects, including the Yonge North Subway Extension.Stations will ensure that bicycle storage is available and is proposed to be in the eventual design plan. While lanes outside the station are the jurisdiction of the city, the implementation of lanes that allow for customers to have more options to reach stations is encouraged. This will alleviate pressure on parking and congestion, and also increase overall accessibility to transit.Metrolinx is also working with partners at York Region Transit and the TTC to evaluate potential bus connections and facility design at each of the new stations along the Yonge North Subway Extension.Metrolinx has no plans for a moving sidewalk at Richmond Hill Centre or Langstaff Gateway, as this is outside of the scope of this Project. The location of Bridge Station brings important benefits to transit riders because it allows regional buses that travel along major roadways like Highway 7, Highway 407 and Yonge Street to quickly and easily access the station without having to divert far from their routes. This transit hub is ideally placed to bring as many as six existing and future regional and rapid transit services together in one convenient location.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<ul style="list-style-type: none">Richmond Hill Centre and Langstaff Gateway can be “bridged” by installing a high-speed moving sidewalk. Metrolinx, at their meeting, indicated that the moving sidewalk did not have the capacity to handle all the passenger demand in 20 years.	
May 19 th Virtual Open House	Regional Email	Miscellaneous	<ul style="list-style-type: none">Positive response to Virtual Open House and voiced appreciation for Project Team answering questions calmly and with respect. Although some answers not favourable, the delivery was appreciated.	<ul style="list-style-type: none">Metrolinx understands that there is a lot of frustration and concern within the community and appreciates positive comments such as this.

6.3.5 Summary of Virtual Open House – Fall 2021

A live virtual public event was held on October 20, 2021, between 6:30pm and 8:30pm, so that Metrolinx could solicit public input and incorporate it into the Project, wherever feasible. A live question-and-answer session with Project experts was held during each of these events where the public was able ask questions and share feedback via comments while the session was ongoing. The Virtual Open House materials are documented in **Appendix I.3**.

6.3.5.1 October 20th – Virtual Open House

A Virtual Open House was organized for members of the public to share project updates, information on tunnel construction, the upcoming environmental addendum and preliminary noise and vibration results, property compensation process, and updates on our upcoming community office and sound demonstrations. As expected, there were a number of the attendees from the Royal Orchard Community of Thornhill. The session was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

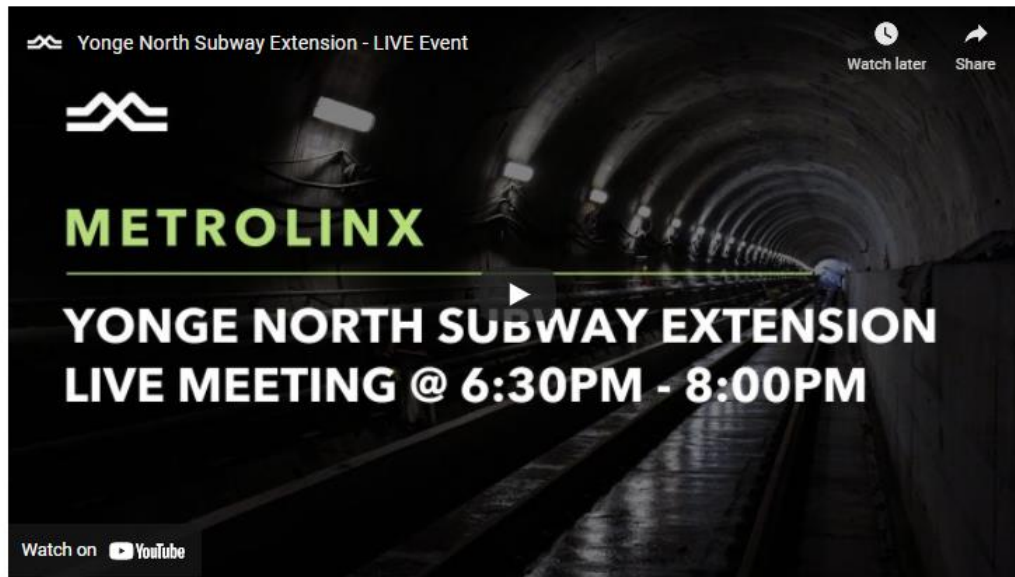
- Announcements made on Metrolinx social media accounts: Facebook, Twitter and Instagram;
- Posted on the Metrolinx.com/itshappening website;
- Posting to the Project webpage (MetrolinxEngage.com/YongeSubwayExt) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.
- This VOH provided an update and an overview of Project benefits, the IBC and Supplementary Analysis, community and stakeholder engagement opportunities, and next steps in the EPR Addendum process.

All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.3** and a video recording of the event is available at www.youtube.com/watch?v=mf86DKhwut8&t=7s.

Yonge North Subway Extension LIVE - October 20, 2021

On October 20, 2021, Metrolinx hosted a presentation and live question-and-answer session with members of the Yonge North Subway Extension project team to share updates on the progress of environmental studies that inform planning and design work for the project. The panel of Metrolinx experts answered the top-voted questions submitted by participants through our interactive online platform. The panel also took questions from community members who called in to the meeting. The topics included the latest plans for the project, tunneling, and plans for future public input sessions.

You can find written answers to these questions and others we didn't get to below. If you weren't able to join us, the video recording is available for you to watch any time.



Presentation Materials

[Yonge North Subway Extension - Presentation PDF →](#)

Figure 6-7 YNSE October 20, 2021 Virtual Open House Metrolinx Engage Webpage

6.3.5.1.1 Summary of Virtual Open House

Approximately 582 individuals participated in the Virtual Open House live session. Participants had the opportunity to join the virtual live stream event via Metrolinx's Engage Website and Zoom. A total of 81 comments were received via the Metrolinx Engage Website with 1,280 votes received (i.e., combined number of likes and dislikes). Questions were also received via Zoom, both within the chat box and verbally. Staff from the Project team were in attendance to moderate the session and answer questions live. The Virtual Open House was extended by 30 minutes to answer as many questions as possible, particularly for live question askers in the Zoom Room. Elected Officials were also present during this Virtual Open House, including Mayor Scarpitti from Markham, Deputy Mayor Hamilton from Markham, Regional Councillor Chan, and Markham Councillor Irish.

6.3.5.1.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The key comments, questions or concerns were related to alignment options, noise and vibration impacts, parking and traffic impacts, and property impacts. Participants expressed various concerns about the impacts that tunneling may have on their community, such as noise and vibration, potential property damage and increased congestion due to municipal plans for growth along the alignment.

6.3.5.1.3 Other Comments

Other comments received were related to the location of High Tech Station, stakeholder relations and consultation, timelines for construction, funding for the Project, and operations along the CN Rail track. The session ended with the Initial Business Case being shared in the Zoom chat box. Participants were also invited to sign-up for the e-mailing list to receive newsletters to stay informed about the Project and be notified of upcoming public events.

6.3.6 Metrolinx's Responses to Public Comments Received Fall 2021

Table 6-6 summarizes the key issues/comments/questions related to the Yonge North Subway Extension that were raised by the public as part of the October 2021 Virtual Open House, and how they were considered by Metrolinx. Copies of all public comments received and responses that were issued can be found in **Appendix I.3**.

Table 6-6 Summary of Comment Key Themes and Questions Received During Fall 2021 Virtual Open House Event

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
October 20th Virtual Open House	Metrolinx Engage/Zoom	Stations (i.e., Bridge and High Tech)	<ul style="list-style-type: none">What is the distance between the north platform of Bridge Station and the south platform of High Tech Station?Why are stations placed so close together?Why is there a High Tech station right after Langstaff GO station?Why is Bridge Station proposed where future condo development is anticipated?	<p>The below summary addresses the various Bridge Station and High Tech Station concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">The stations on the northern section of the extension are placed the way they are to serve the most people in the future, making it faster and easier for riders to use the subway and connect to transit services across the region, and to better support growth while curbing local traffic congestion.Bridge and High Tech stations will support York Region’s growth plans for the Langstaff Gateway and Richmond Hill Centre urban growth centres, which have been in place for many years in response to the demand for housing and employment opportunities in the region. Since those areas are expected to grow significantly in the years to come, these stations will help make sure any growth is sustainable by contributing a large portion of the riders that will use the subway extension. Our plan will bring the many people who will live near Bridge and High Tech stations within a 10-minute walk of rapid transit.Located between Highway 7 and Highway 407, Bridge Station will create vital connections between the subway and the Richmond Hill GO line, as well as GO bus, Viva Bus Rapid Transit and local bus services that run along the two major highways. Bridge Station will give customers new travel options that will allow them to tap into the entire regional transit network.It’s also worth noting that the station at High Tech Road would put the subway within walking distance for more than half of the residents expected to live in the Richmond Hill Centre area by 2041.Growing communities thrive with the right transit solutions in place. The latest plans for the Yonge North Subway Extension put two stations at the heart of Langstaff Gateway and Richmond Hill Centre, an area that is set to become a vibrant regional hub where people will live and work.Metrolinx is exploring opportunities with our project partners to include additional stations.
October 20th Virtual Open House	Metrolinx Engage/Zoom	Public Consultation	<ul style="list-style-type: none">What law states that Metrolinx cannot tunnel under a cemetery?Can you share the detailed operating plan with funding of Option 3 and the comparison of a detailed operating plan for other options?Have you conducted research with local residents, councilors, and businesses in the area to support this project?Alignment of tunnel under residential areas.The City of Vaughan and City of Markham oppose Option 3.Meeting schedule conflict with York Region Transportation.	<p>The below summary addresses the various consultation concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">There is no law that states that Metrolinx cannot tunnel under a cemetery, however our goal when we plan and design large projects like this is to minimize impacts as much as possible. Through our analysis, we found that running the subway tunnels below Holy Cross Cemetery would have made it necessary to relocate hundreds of burial sites since the tunnels would not be deep enough in this area. This could have affected thousands of people and added significantly to project timelines because we would need to identify, locate and get in touch with any next of kin to notify them of our plans before any burials are moved. With those issues in mind, planning and design teams advanced the analysis of the northern section of the route immediately after the Initial Business Case (IBC) was drafted and submitted for endorsement by the Metrolinx Board. The refined route proposal presented alongside the IBC is the recommended path forward, and will be analyzed further in the Preliminary Design Business Case, which will guide the next phase of the project.Metrolinx is confident that we can effectively manage any project impacts through robust planning, design work and community consultations. The precise route of the Yonge North Subway Extension will evolve as planning work continues. We expect to have more detailed information in the coming months as further design work is refined and we move forward with environmental assessments, but our goal will be to minimize impacts to communities as much as possible as we deliver major transit benefits to them. We’re committed to sharing the latest updates of our plans with the community.Information on the operating concept and funding for each of the options studied can be found in the IBC in Chapter 6 – Financial Case and Chapter 7 – Deliverability and Operations Case.Input from municipal and regional planners informed the development of the IBC and supplementary analysis. The insight we gathered from our partners helped us thoroughly understand the current land use characteristics, growth planned in each community served by the extension, and how that development will affect transit needs in the future. Metrolinx is working closely with our partners as the design and planning process moves forward.The plans released in the IBC are just the first step of a planning process that includes robust and frequent conversations with communities. It provides recommendations that are backed up by evidence to make sure the proposal we’re bringing forward for consultation is something we can confidently deliver.Metrolinx will continue to work with communities, municipalities and other partners such as the TTC and York Region Transit on further development of the operating plan for the extension as the project design and development progress.Our goal is to ensure we bring transit to the most people while limiting impacts on homes, businesses and communities as a whole. Once we identify the path a transit line will take, Metrolinx is able to then target our outreach to start discussing any impacts and how Metrolinx will solve for them.The proposal that is moving forward will help people all over York Region because it means we can include more stations along the subway extension, providing more congestion relief to existing transit lines and roadways. If we were to follow the Option 1 or Option 2, Metrolinx would only be able to build three stations.Running the subway along the CN rail corridor in the northern end of the extension will create better, faster connections with GO trains and bus rapid transit services in an area that is poised for growth. It will help us complete the project sooner than if the subway was tunneled the entire length of the route and also protects for a future northern extension of the subway along a railway corridor that already exists.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
				<ul style="list-style-type: none">• Metrolinx is determined to make the project the best possible fit for the communities it will serve. That is why Metrolinx is actively exploring refinements and improvements to our initial designs.• We know that October is a busy time for public meetings and that our Virtual Open House conflicted with a few public meetings on October 20th, 2021. To ensure people can still access the presentation, the Virtual Open House was recorded and posted on our website. You also still have the opportunity to ask us questions any time through Metrolinx Engage, via email YongeSubwayExt@Metrolinx.com or by phone (416-202-7000).
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Route	<ul style="list-style-type: none">• What are alternative alignments that Metrolinx is looking at?• Opposition to Option 3.• Provide Geotechnical Study(s) for Option 3.• Provide the detailed proposed route for Option 3.• What is the exact location from the point where the line exits Yonge Street to where it meets up with the existing line?• What are the benefits of Option 3? Who benefits from this option?• What is the reason you have decided to adopt Option 3?• Why not continue the route on Yonge Street?• Tunnelling under residential areas.• Tunnelling under the Holy Cross Cemetery.• Will you be tunneling under Saint Anthony and Baythorn Public School in a proposed alignment?• What difficulties are posed in using cemetery property for subway/road?	<p>The below summary addresses the various route concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">• Metrolinx is determined to make the project the best possible fit for the communities it will serve and Metrolinx is actively exploring refinements and improvements to our initial designs. Specifically, we’re looking at how we can go even deeper, and under fewer homes, in the northern end of the extension. We’ll continue to work closely with our regional and municipal partners as we advance our plans. The precise route of the Yonge North Subway Extension will evolve as planning work continues.• Our goal will be to minimize impacts to communities as much as possible as we deliver major transit benefits to them. Metrolinx is committed to sharing the latest updates of our plans with the community when our analysis is complete.• Subways around the world, including in the Greater Toronto Area, travel underneath homes and businesses all the time. Approximately 74 per cent of the current TTC system is underground today. The tunnels along the Yonge North Subway Extension will be built to strict design and engineering standards and will be much deeper underground than in many areas of Toronto’s existing subway network. The bottoms of the tunnels – where trains pass over the tracks – will be at least 20 metres deep in the Royal Orchard community – roughly as deep as a six-storey building is tall. We’re confident that high-quality, modern tunnels built to the latest industry standards will ensure future subway services won’t be a disruption for the community.• The approach we’re taking will help people all over York Region because it means we can include more stations along the subway extension, providing more congestion relief to existing transit lines and roadways. If we were to follow the other routes studied through the Initial Business Case, Metrolinx would only be able to build three stations. Running the subway along the CN rail corridor in the northern end of the extension will create better, faster connections with GO trains and bus rapid transit services in an area that is poised for growth.• Running subway trains along the existing CN rail corridor in the northern end of the route makes it possible to build that fourth station – and that’s why we need to run a tunnel from Yonge Street to connect to it.• The investigative drilling work is currently underway in Royal Orchard will help us better understand soil and groundwater conditions in the area. This will inform the planning and design stage for the Yonge North Subway Extension as we actively explore refinements and improvements to our initial designs to tunnel deeper and under fewer properties. Ultimately, we want to ensure we bring transit to the most people while limiting impacts on communities as a whole.• The updated route curves away from Yonge Street and runs underground to the proposed subway tunnel portal south of Langstaff Road. The precise location of the tunnel portal will be confirmed through further planning and design work. Metrolinx will have more details to share as we complete updated environmental studies for the project.• By running the route of the subway at ground level within the existing CN railway corridor, Metrolinx is able to build four stations along the subway extension. If we were to follow the original route, only three stations could be built within the project’s funding envelope. This approach reduces the need for complex and costly construction of tunnels and underground stations, and will help us complete the project sooner than if the subway was tunneled the entire length of the route. It will also help us create better, faster connections with GO trains and bus rapid transit services in an area that is set to become a vibrant regional hub where people live and work. This approach also protects for a simpler and less costly further extension of the subway in the future.• This project will be critical in supporting York Region’s growth plans, particularly for the Richmond Hill Centre and Langstaff Gateway urban growth centres. We know this because our municipal and regional partners have been planning for it for many years in response to the demand for more housing and employment opportunities in the region. Thanks to the Yonge North Subway Extension, it is expected that 26,000 more residents and 22,900 more jobs will be within a 10-minute walk of a new station within the next two decades, ensuring that any growth is sustainable. These growth plans need to be supported by a strong foundation of fast, reliable rapid transit with convenient connections to the regional transportation network that will keep people moving and give them more options to move around – whether those people are new to the community or have lived there for many years.• Metrolinx closely studied leaving Yonge Street at Centre as suggested. Our analysis shows there is lower potential for growth near Centre Street compared to the other potential stations because it is located within the boundaries of heritage conservation districts in Markham and Vaughan. Leaving Yonge Street at Centre would also affect a similar number of single-family residential properties as the preferred route and presented fewer benefits, as it would increase travel time for riders.• Our goal when we plan and design large projects like this is to minimize impacts as much as possible, and there are unique challenges we face no matter where we build. Through our analysis, we found that running the subway tunnels below Holy Cross Cemetery would have made it necessary to relocate hundreds of burial sites since the tunnels would not be deep enough in this area. This could have affected thousands of people and added significantly to project timelines because

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
				<p>we would need to identify, locate and get in touch with any next of kin to notify them of our plans before any burials are moved. With those issues in mind, planning and design teams advanced the analysis of the northern section of the route immediately after the Initial Business Case (IBC) was drafted and submitted for endorsement by the Metrolinx Board. The refined route proposal presented alongside the IBC is the recommended path forward, and will be analyzed further in the Preliminary Design Business Case, which will guide the next phase of the project.</p> <ul style="list-style-type: none">Metrolinx is confident that we can effectively manage any project impacts through robust planning, design work and community consultations. The precise route of the Yonge North Subway Extension will evolve as planning work continues. We expect to have more detailed information in the coming months as further design work is refined and we move forward with environmental assessments, but our goal will be to minimize impacts to communities as much as possible as we deliver major transit benefits to them.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Decision-Making	<ul style="list-style-type: none">How does the final decision get made? Who is the final decision maker regarding which option is finalized?Has CN Rail provided permission/access to the corridor for a subway?Cost to building subway under Yonge Street.The subway should go to where people live, work and shop.Exactly when is the final route to be chosen and publicized?Why is an underground bus terminal at Steeles Station not proposed? The initial conceptual plans showed that Steeles Station would have an extensive underground bus terminal that would both serve TTC and a number of York Region Transportation services.Why not create an exclusive bus lane system along Yonge Street? This could be built quicker than underground subways and would be far less costly to the taxpayers.Why not create exclusive bus lanes instead of an underground subway?Why is a subway extension needed?Anticipated future ridership.	<p>The below summary addresses the various decision-making questions heard at the Virtual Open House event.</p> <ul style="list-style-type: none">Final decisions on project scope, including the route of the subway extension and station locations, will be made by the Province of Ontario, in consultation with government partners. These decisions will be informed by updated environmental studies, feedback from communities, and detailed technical work done by Metrolinx.Metrolinx is in discussions with CN about our plans for the Yonge North Subway Extension as planning and design for the project continues. Metrolinx has a longstanding relationship with CN – we share rail corridor throughout our existing GO network, and have done so for years. Metrolinx is confident we will be able to effectively work together to move this important project forward.The route we’re moving forward with allows us to build a fourth station within the \$5.6 billion funding envelope because it minimizes the amount of tunneling needed. With the other underground options, only three stations could be built.Running subway trains along the existing CN rail corridor in the northern end of the route makes it possible to build that fourth station – and that’s why we need to run a tunnel from Yonge Street to connect to it. By aligning the subway at surface level in a railway corridor that already exists, we can also protect for an easier and less costly extension of the subway further north in the future. This approach will also create better, faster connections with GO trains and bus rapid transit services in an area that is poised for growth.This project will be critical in supporting York Region’s growth plans, particularly for the Richmond Hill Centre and Langstaff Gateway urban growth centres. We know this because our municipal and regional partners have been planning for it for many years in response to the demand for more housing and employment opportunities in the region. Thanks to the Yonge North Subway Extension, it is expected that 26,000 more residents and 22,900 more jobs will be within a 10-minute walk of a new station within the next two decades, ensuring that any growth is sustainable. These growth plans need to be supported by a strong foundation of fast, reliable rapid transit with convenient connections to the regional transportation network that will keep people moving and give them more options to move around – whether those people are new to the community or have lived there for many years.Communities are at the centre of our decision-making. Any decisions we make on the route of the subway and the location of stations are in the interest of improving the customer experience, increasing access to transit, maximizing ridership, achieving travel time savings, and creating better access to jobs. These criteria are balanced by cost and other important community considerations.Steeles, Bridge and High Tech stations were determined to be essential for maximizing the benefits of the project. These stations will significantly improve access to frequent rapid transit and support the growth of the neighbourhoods they serve. Clark Station will offer riders seamless connections to the planned extension of the Viva Orange bus rapid transit line, which serves communities along Highway 7.Metrolinx will continue to keep your community at the heart of our planning process as we advance this important project.The precise route of the Yonge North Subway Extension will evolve as planning work continues. We expect to have more detailed information in the in the near future as further design work is refined and we move forward with environmental assessments, but our goal will be to minimize impacts to communities as much as possible as we deliver major transit benefits to them. Metrolinx is committed to sharing the latest updates of our plans with the community, and that includes how Metrolinx will help manage any impacts during construction and beyond.The number of transit connections expected at the Steeles Station hub calls for a significant amount of space for buses to safely move around the terminal to pick up and drop off passengers.Our early analysis showed that an area roughly half a kilometre long and almost as wide as Steeles Avenue (the pavement spans four lanes at Yonge Street) would need to be hollowed out, two levels below the surface. The excavation needed would be a significant increase to the cost of the project, along with extra expenses to relocate utilities from beneath the intersection.The switch to plans for a street-level bus terminal also eliminates the need for a system that draws fresh air from the surface to circulate underground. Accommodating those ventilation requirements would have contributed to the cost of building and operating the station. The design concept and requirements

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
				<p>for the bus terminal are being refined based on the needs identified by the TTC, York Region Transit, and other local stakeholders. Metrolinx is seeking input from the TTC and City of Toronto and will share more details about the Steeles Station transit hub when the Preliminary Design Business Case is finalized.</p> <ul style="list-style-type: none">• Extending subway service through Vaughan, Markham and Richmond Hill will bring a world-class level of convenience and a better quality of life to the communities it serves. It will provide faster, easier access to downtown Toronto, York Region and all points in between. The Yonge North Subway Extension will reduce the time it takes to travel from the Yonge Street and Langstaff Road area to downtown Toronto by as much as 22 minutes – going from 70 minutes today to 48 minutes with the extension. We know that higher-order transit like this is transformative in so many ways. The Yonge North Subway Extension will expand travel options along York Region’s Viva bus rapid transit lines and provide more Line 1 subway riders with a seamless journey. These benefits will also provide better access to jobs and offset traffic congestion, saving more than 4,800 tonnes of greenhouse gas emissions annually, as drivers get out from behind the wheel in favour of using the subway.• Extending subway service through Vaughan, Markham and Richmond Hill will bring a world-class level of convenience and a better quality of life to the communities it serves. It will provide faster, easier access to downtown Toronto, York Region and all points in between.• We know that higher-order transit like this is transformative in so many ways. The Yonge North Subway Extension will expand travel options along York Region’s Viva bus rapid transit lines and provide more Line 1 subway riders with a seamless journey. These benefits will also provide better access to jobs and offset traffic congestion as drivers get out from behind the wheel in favour of using the subway.• Yonge North Subway Extension will put a combined 94,100 riders on the subway daily. By 2041, this would bring 26,000 more people within walking distance of the new stations and would give 26,000 people access to rapid transit compared to a scenario where the extension was not built.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Stations	<ul style="list-style-type: none">• Why is there no planned stop for Yonge Street and Centre Street?• Is there still a possibility that a fifth station will be added? How likely is this scenario?• How many stations are included and where?• Will there be any indoor bicycle storing facility at stations?• Will the stations be accessible for seniors with walkers, canes, or possibly wheelchairs?• Where is Clark Station located?• Will Metrolinx be using their own wayfinding design standards on the stations?	<p>The below summary addresses the various stations concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">• Our analysis shows there is lower potential for growth near Centre Street compared to the other confirmed and potential stations because Centre Street is located within the boundaries of heritage conservation districts in Markham and Vaughan.• All four stations that are included in the latest plans for the project were shown through our analysis to be essential to bring faster transit to more people. Steeles, Bridge and High Tech stations will significantly improve access to frequent rapid transit, providing easy connections to local and regional travel options that will help people move around the GTA and beyond. Clark Station will offer riders seamless connections to the planned extension of the Viva Orange bus rapid transit line, which serves communities along Highway 7.• Metrolinx is working with our partners to explore opportunities that could support additional stations at Royal Orchard Boulevard and Cummer Avenue.• At this time, Metrolinx is developing the project based on the four confirmed stations. In parallel, Metrolinx is advancing the planning of both Royal Orchard and Cummer stations to be prepared if funding for additional stations is approved.• A station at High Tech Road will serve future communities envisioned within the Richmond Hill Centre area.• A station at Steeles Avenue will connect with local bus routes that serve Toronto and York Region, as well as a future TTC rapid transit line proposed to connect communities along Steeles Avenue.• Clark Station will offer riders seamless connections to the planned extension of the Viva Orange bus rapid transit line, which serves communities along Highway 7.• The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the project's design, route, and benefits. There will be bike parking, either indoor or outdoor, at every station and Metrolinx is evaluating indoor parking at stations based on demand and available space.• The Yonge North Subway Extension has been designed to support vibrant urban development along the route that creates faster, easier connections to rapid transit so that people can get out from behind the wheel. Those connections include local transit routes, TTC bus service, York Region local and Viva express bus service, Richmond Hill GO service, Highway 407 GO bus service, access with PRESTO (which automatically applies transfers and gives the user the lowest cost of a ride), as well as active transportation like walking and cycling.• The extension will meet or exceed all up-to-date accessibility standards.• Metrolinx and our transit partners across the region are working together through the Regional Transit Wayfinding Harmonization project. The goal of the initiative is to improve the consistency of wayfinding across the region to make your commute better and easier.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Operations	<ul style="list-style-type: none">• How will accidents and movement conflicts between subway and rail lines be handled?	<p>The below summary addresses the operation concern heard at the Virtual Open House event.</p> <ul style="list-style-type: none">• The subway will run within the CN railway corridor on its own dedicated tracks that will be completely separate from other rail operations. Some adjustments to the CN rail track may be required, in addition to placing the subway track through the corridor. Any improvements needed to the CN rail corridor will be determined through our ongoing discussions with CN.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Timelines	<ul style="list-style-type: none">What is the approximate starting and completion dates for construction?What is the project time frame, including starting time and phases?	<p>The below summary addresses the various timeline questions heard at the Virtual Open House event.</p> <ul style="list-style-type: none">The planned date to begin the main construction on the project is late 2023. Metrolinx will have more information about construction timelines as we progress through the next phase of planning and design, but we remain committed to an in-service date of 2029-2030, after the Ontario Line is in service.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Funding	<ul style="list-style-type: none">Where are the cost estimates?	<p>The below summary addresses the funding concern heard at the Virtual Open House event.</p> <ul style="list-style-type: none">The Yonge North Subway Extension has been in the planning stage since the initiation of the Transit Project Assessment Process in 2007. Before Metrolinx assumed responsibility for the project in 2019, the estimated cost for the previous five station plan, which included stations at Cummer, Steeles, Clark, Langstaff, and Richmond Hill Centre, had grown to \$9.3 billion, based on updated design information and cost estimates.The current proposal for the Yonge North Subway Extension uses innovative solutions to ensure the project can be built quickly and serve key growth areas while delivering the most possible benefits within a funding envelope of \$5.6 billion.You can find a more detailed breakdown of costs on page 120 in the Initial Business Case.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Parking	<ul style="list-style-type: none">Why is there no planning for parking at Yonge Street and Highway 407?	<p>The below summary addresses the various parking concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the project's design, alignment, and benefits. Parking will be evaluated in more depth through the PDBC.The Yonge North Subway Extension has been designed to support vibrant urban development along the alignment that creates faster, easier connections to rapid transit so that people can get out from behind the wheel. Those connections include local transit routes, TTC bus service, York Region local and Viva express bus service, Richmond Hill GO service, Highway 407 GO bus service, access with PRESTO (which automatically applies transfers and gives the user the lowest cost of a ride), as well as active transportation like walking and cycling
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Business Case	<ul style="list-style-type: none">Why choose Option 3, when Option 1 has shown more ridership?Was an option to have the line extended elevated from Finch to Richmond Hill studied?	<p>The below summary addresses the various Business Case questions heard at the Virtual Open House event.</p> <ul style="list-style-type: none">Through our analysis, Metrolinx found that Option 1 could be delivered with up to three stations at Steeles, Richmond Hill Centre, and Langstaff within the \$5.6 billion announced funding envelope. Option 2 could also accommodate up to three stations in roughly the same areas. Option 3 has the benefit of allowing for a fourth station, since it minimizes the amount of costly tunneling required for the project.This route also brings as many as six major rapid transit lines together through a new station in the northern section of the route – tentatively referred to as ‘Bridge Station.’ Placed on the existing railway corridor at surface level between the Highway 7 and Highway 407 corridors, Bridge Station will offer fast, easy transfers to downtown Toronto on Line 1, and act as a launchpad to explore the entire region through convenient connections to the regional transit network.Elevated options were not part of our business case analysis for the Yonge North Subway Extension because there would not be enough clearance between the highway overpasses and the overhead hydro lines in the northern section of the route to accommodate an elevated subway. Running the route underground from Finch Station to the CN Railway corridor means we can limit our property needs and minimize impacts to the community.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Transit Connections and Local Area Planning	<ul style="list-style-type: none">Why is there no Station proposed in Thornhill?Municipal bus routes extending to connect into proposed subway stations.Municipal bus routes disruption/alterations.Will a pedestrian tunnel be proposed to connect people to Bridge Station?Bus layovers.Will bus bays be exclusive or shared? Where is the location of bus exits and entrances?How will hi-rises on Steeles Avenue West be linked to the Station?Traffic congestion and volumes.	<p>The below summary addresses the various transit connections and local area planning concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">A new station in Thornhill at the intersection of Clark Avenue and Yonge Street will be included as the fourth station on the Yonge North Subway Extension. Clark Station will join Steeles, Bridge and High Tech stations to serve growing neighbourhoods along the Yonge Street corridor and beyond, becoming part of an expansive map of integrated projects, routes and even transit carriers that are rewiring the way riders can easily get to points all around the Greater Golden Horseshoe Region of Ontario. Our analysis shows Clark Station will put 8,100 people and 1,900 jobs within a 10-minute walk of the subway by 2041, which will feature transit hubs that will provide seamless connections to local and regional travel options.One of the most important bus connections will be with the future extension of Viva Orange service, which will bring convenient access to areas like the Bathurst-and-Centre corridor and Promenade Centre, which is expected to be home to more than 11,000 people and almost 6,000 jobs in the years to come. Metrolinx is exploring opportunities with our project partners to include Royal Orchard and Cummer stations.As planning and design work on the project continues, Metrolinx is working with our municipal partners to incorporate urban design elements that accommodate multi-use pedestrian paths that will provide a pleasant walking experience.Stations along the Yonge North Subway Extension will serve communities in Richmond Hill, Markham, Vaughan and Toronto. The design concept and requirements for transit connections are being refined based on the needs identified by the TTC, York Region Transit, and other local stakeholders. Metrolinx is seeking input from the TTC and City of Toronto and will share more details about the Steeles Station transit hub when the Preliminary Design Business Case is finalized.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<ul style="list-style-type: none">Will more traffic lights along Steeles Avenue West be required?How will you help make the subway more accessible for Royal Orchard residents?	<ul style="list-style-type: none">Metrolinx is coordinating with municipalities and local transit agencies to integrate Steeles Station with all modes of transportation and align with the City of Toronto’s Yonge Street North Transportation Master Plan, City of Vaughan’s Yonge Steeles Urban Design & Streetscape Study, City of Markham’s Yonge Street Corridor Secondary Plan and proposed development applications in the area.As planning and design work on the project continues, Metrolinx will work with municipal partners to ensure subway stations are safe, convenient and accessible. At Steeles Station, this includes new traffic signals at Steeles and Yonge to provide better pedestrian crossings opportunities, underground connections to the station with future developments, and integrating with future bus transit facilities.Metrolinx is conducting a comprehensive traffic analysis in collaboration with municipalities and local transit agencies. At Steeles Station, this analysis looks at station access and will ensure reliable and efficient bus operations.The design concept and requirements for the bus terminal are being refined based on the needs identified by the TTC, York Region Transit, and other local stakeholders. Metrolinx is seeking input from the TTC and City of Toronto and will share more details about the Steeles Station transit hub when the Preliminary Design Business Case is finalized.As planning and design work on the project continues, Metrolinx is working with our municipal partners to incorporate urban design elements that accommodate multi-use pedestrian paths that will provide a pleasant walking experienceAt Steeles Station, this includes new traffic signals at Steeles and Yonge to provide better pedestrian crossings opportunities, underground connections to the station with future developments, and integrating with future bus transit facilities.Metrolinx expects to release the results of the traffic analysis and the proposed design in early 2022.The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the project's design, alignment, and benefits.As planning and design work on the project continues, Metrolinx will work with municipal partners to ensure subway stations are safe, convenient and accessible.The Yonge North Subway Extension has been designed to support vibrant urban development along the route that creates faster, easier connections to rapid transit so that people can get out from behind the wheel. Those connections include local transit routes, TTC bus service, York Region local and Viva express bus service, Richmond Hill GO service, Highway 407 GO bus service, access with PRESTO (which automatically applies transfers and gives the user the lowest cost of a ride), as well as active transportation like walking and cycling.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Property Impacts	<ul style="list-style-type: none">What if people do not want to move?How is Metrolinx going to assume risks?What insurance will Metrolinx provide to residents against damage to their properties either during construction or subsequent operation period?Why are project risks to be assumed by the contractors?Is Metrolinx or decision makers providing the residents a guarantee that the Project and subsequent operating trains will not impact properties?Will there be damage to homes due to Option 3?Are you going to expropriate homes?Does expropriation include land transfer tax and real estate fee?	<p>The below summary addresses the various property concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">Metrolinx recognizes how important your property is to you and Metrolinx is committed to providing clear, accurate information as soon as possible. If Metrolinx confirms that your property is needed, you will receive written notification directly from us. Our commitment is to ensure that owners and tenants do not experience a financial loss.Metrolinx may need to acquire some property underground to build the tunnels and support future subway service. Sometimes an entire property is needed, and sometimes just part of it is needed; some property needs are temporary to support construction, and others are permanent to support new infrastructure. Subsurface easements allow for the use of space under the ground, below homes.Permits are needed for work that would add, change or extend a structure on the property, such as a shed or an extension on a home. They are also needed for excavation or drainage work, like when building a pool. You won’t need a permit for work inside your home, like renovating a kitchen or bathroom.Permits help Metrolinx understand what work might be happening along the priority transit project corridor and avoid conflicts that might delay transit construction or your plans. Metrolinx wants to work with you to coordinate construction activities and timing – not prevent you from making improvements. It is not expected that plans will be impacted in the large majority of cases. If some changes to your plans are required, Metrolinx will work with you on a solution.We hold ourselves to the highest standards when it comes to safety. The Yonge North Subway Extension is no exception. Metrolinx will ensure the strong, industry-leading safety standards are in place through construction and operations.Metrolinx is still very early in the planning and design process and have not identified impacted property owners.If you live near a proposed project and you have not been contacted by Metrolinx yet, it could be for one of two reasons: either no impacts to your property are anticipated, or teams may not be at the stage where they are able to confirm if your property is needed, though it may be confirmed through further design work.Metrolinx strives to communicate with property owners early and often so that there is ample time to work through solutions. We understand that residents and businesses want those details and Metrolinx will reach out to impacted property owners at the earliest opportunity.The Planning Act requires municipal planning departments to notify companies operating a railway line regarding proposed development activity within 300 metres of the railway line. Metrolinx is the owner and/or operator of railway property, including the portion of the CN Rail corridor behind Shieldmark. Metrolinx reviews and comments on development applications within 300 metres of any rail corridor and within 60 metres of light rail transit, subway corridors and future

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
				<p>transit projects. These comments are standard for any minor variance application in proximity to our rail corridor, as they help to avoid any land use conflicts, and make applicants aware of all possible impacts that could be associated with building close to our transit corridor.</p> <ul style="list-style-type: none">• Some properties in the Royal Orchard neighbourhood are in proximity to both the CN rail corridor, which carries Metrolinx’s Richmond Hill GO train service, and the proposed alignment of the Yonge North Subway Extension. Any comments received about impacts 300m from the rail corridor would have been related to the existing Richmond Hill GO line, not the Yonge North Subway Extension.• More detailed information on the review process can be found in our Adjacent Development Guidelines.• Ultimately, the risks associated with the project rests with Metrolinx. When Metrolinx contracts for construction work, it requires its contractors to carry insurance policies that are appropriate for the work being done.• Metrolinx establishes clear processes to investigate and document the existing conditions before construction, and require ongoing monitoring during and after construction to protect against and prevent damage to property. In the event that there are damages, Metrolinx is involved in the process to ensure it is done fairly and equitably for the property owner.• Our job is to make sure that any impacts to communities are minimal and that they are far outweighed by the benefits new transit options bring.• Where we need to acquire property to support new transit infrastructure, it is our responsibility to compensate property owners fairly, not necessarily because the subway will impact their property, but because they own the land that is needed. Whenever we need to acquire property to support a new transit project, we ensure that owners and tenants experience no financial loss.• Metrolinx has a transparent and unbiased process in place to determine fair market value through appraisals and negotiations. Metrolinx will enlist the services of a third-party appraisal expert to estimate the value of the property. Market factors at the time of the acquisition will inform the assessment and will be based on comparable sales of similar properties in similar locations and situations.• Metrolinx strives to limit the amount of property we need to support the construction and operation of important and much-needed transit infrastructure. Metrolinx will only look to acquire property that is absolutely necessary to support critical transit construction.• Expropriation is a process that enables a government agency like Metrolinx to acquire property without a direct agreement with the owner for the purpose of building public infrastructure, while still ensuring that owners are compensated at fair market value in keeping with the Expropriations Act.• Expropriation is only initiated if it becomes clear that an agreement might not be reached within the required timelines for the specific transit project. The preferred approach is always to negotiate directly with owners to reach amicable, mutually beneficial agreements.• Even when expropriation is initiated, Metrolinx continues to negotiate with owners in the hope of reaching an agreement.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Tunnelling	<ul style="list-style-type: none">• Tunnel boring is most economical and effective when you proceed on a straight alignment.• How much space is there on Yonge Street at Holy Cross Cemetery available for subway and roads?• Tunnel depth under residential areas.	<p>The below summary addresses the various construction concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">• The route Metrolinx is moving forward with allows us to build a fourth station within the \$5.6 billion funding envelope because it minimizes the amount of tunneling needed. With the other underground options, only three stations could be built.• Running subway trains along the existing CN rail corridor in the northern end of the route makes it possible to build a fourth station – and that is why we need to run a tunnel from Yonge Street to connect to it. By running the extension at surface level along the existing CN railway corridor means we can finish the project sooner and reduces the need for complex, time-consuming, and costly construction of tunnels and underground stations. This approach also protects for a simpler and less costly further extension of the subway in the future.• The width of the Yonge Street right-of-way at the cemetery is approximately 36 metres. Based on the previous work and our analysis, there is sufficient space in the Yonge Street right-of-way adjacent to the cemetery, to accommodate the subway tunnels and a station at Langstaff Road.• The tunnels along the Yonge North Subway Extension will be built to strict design and engineering standards and will be much deeper underground than in many areas of Toronto’s existing subway network. The bottoms of the tunnels – where trains pass over the tracks – will be at least 20 metres deep in the Royal Orchard community – roughly as deep as a six-storey building is tall. Metrolinx is confident that high-quality, modern tunnels built to the latest industry standards will ensure future subway services will not be a disruption for the community.• It’s important to note that we’re going to be using noise and vibration solutions for the project that are proven to work. A big benefit is that they’ll be based on modern and up-to-date industry standards, which have significantly improved since the first subway lines in the GTA were built many decades ago. We expect to have more detailed information about potential impacts in the coming months as further design work is refined and we move forward with environmental assessments, but our goal will be to minimize impacts to communities as much as possible as we deliver major transit benefits to them.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Noise and Vibration	<ul style="list-style-type: none">How long do rubber pucks last and at what rate do they deteriorate?How does the deterioration affect noise and vibration?How many ventilation shafts and emergency exit buildings will you need under our community?Vibration of trains at York University.	<p>The below summary addresses the various noise and vibration concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">Metrolinx is looking at a wide array of proven noise and vibration solutions for the project, including resilient fasteners, floating slab and ballast mats to help cushion the tracks and reduce noise and vibration. Rail dampers can also be used to help reduce the noise from passing trains. These types of solutions have been used around the world, including on the recently completed Toronto-York Spadina Subway Extension.Emergency exit buildings will be needed at various points between stations and are only used in the unlikely event of an emergency in the tunnel that would require people to safely get to the surface. Our design team is working to determine the number of emergency exit buildings needed along the entire route of the subway, with a specific focus to reduce the number needed in residential areas. Emergency exit buildings are single storey structure that are much smaller than a house and can be designed in a variety of ways to fit the look and feel of the area around them.Metrolinx will make sure that future subway service will be unobtrusive and difficult to notice, ensuring communities will be peaceful and quiet when the subway is in service. Our aim is to make sure there are no significant differences between levels of noise and vibration experienced in Royal Orchard today and what those levels will be when the extension is in service. Additional details will be shared about the solutions we'll be putting in place in the coming months as further design work is refined and we conduct and consult on environmental assessments.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Construction Impacts	<ul style="list-style-type: none">Will residential owners have any impact to their use and enjoyment of their home during or after construction?What is Metrolinx's plan to accommodate increased traffic congestion on local and arterial roads as drivers drop-off, pick-up, and attempt to find parking to access the new subway stations?	<p>The below summary addresses the various construction concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">Metrolinx is going to be using noise and vibration solutions for the project that are proven to work. A big benefit is that they will be based on modern and up-to-date industry standards, which have significantly improved since the first subway lines in the GTA were built many decades ago.Metrolinx will make sure that future subway service will be unobtrusive and difficult to notice, ensuring communities will be peaceful and quiet when the subway is in service. Our aim is to make sure there are no significant differences between levels of noise and vibration experienced in Royal Orchard today and what those levels will be when the extension is in service.Metrolinx will have more detailed information about the solutions Metrolinx will be putting in place in the coming months as further design work is refined and we conduct and consult on environmental assessments.Metrolinx will be working with our municipal and regional partners to develop a plan that will keep pedestrian and vehicle traffic moving and make sure people can get where they need to go easily while construction is happening. Our plan considers factors like; how people will access local businesses quickly and easily; and how to minimize impacts on TTC, York Region Transit and GO services. Potential traffic impacts are being studied through an updated environmental assessment.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Line 1 Crowding	<ul style="list-style-type: none">How will changes related to this extension relieve crowding at Finch Station?Has Metrolinx tried to predict the number of riders that currently go to Finch Station, plus the new riders north of Finch Station and the effect this may have on being able to board the subway?What actions are being planned to address possible boarding issues as a result of trains being full by the time they arrive at Finch?	<p>The below summary addresses the various Line 1 crowding concerns heard at the Virtual Open House event.</p> <ul style="list-style-type: none">The Yonge North Subway Extension will not come online until the Ontario Line goes into service, which will significantly reduce crowding on Line 1.The Yonge North Subway Extension is also one of four (4) projects under the Subway Program that are designed to spread demand across the transit network as it expands.Our analysis shows about 59,300 riders would get on the subway at Finch Station by 2041, if the extension was not built.In comparison, building the Yonge North Subway Extension would put a combined 94,100 riders on the subway daily. By 2041, this would bring 48,800 people within walking distance of the new stations and would give 26,000 more people access to rapid transit compared to a scenario where the extension was not built.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Early Works	<ul style="list-style-type: none">Why was there drilling along the railway in September 2021?	<p>The below summary addresses the early works question heard at the Virtual Open House event.</p> <ul style="list-style-type: none">Investigative drilling is taking place within the road allowance and on select private properties, like the CN Rail right-of-way, to help advance design work for the project. It is to assess underground conditions and does not necessarily mean the property will be impacted. The samples we take from below the surface will inform our work as we look at how we can build the subway even deeper, and under fewer homes in the Royal Orchard community.
October 20 th Virtual Open House	Metrolinx Engage/Zoom	Miscellaneous	<ul style="list-style-type: none">Will all the workers who will be working on school property be required to obtain the vulnerable sector check?	<ul style="list-style-type: none">Yes, workers on school property will be required to obtain the vulnerable sector check.

6.3.7 Summary of Virtual Open House – Winter 2021/2022

Live virtual public events were held on December 16, 2021, January 5, 2022, February 17 and 23, 2022, and March 2 and 10, 2022 between 6:30pm and 8:30pm, so that Metrolinx could solicit public input and incorporate it into the Project, wherever feasible.

A live question-and-answer session with Project experts was held during each of these events where the public was able ask questions and share feedback via comments while the session was ongoing. The Virtual Open House materials are documented in **Appendix I.3**.

6.3.7.1 December 16th – Virtual Open House

A Virtual Open House was organized for members of the public to share project updates, information on route improvements, the Transit Action Ontario Proposal, early works at Finch Station, preliminary noise and vibration results, geotechnical investigations, and exploring locations for a community office. As expected, there were a number of the attendees from the Royal Orchard community of Thornhill. During this Virtual Open House questions from the community were focused on noise and vibration and specifics on property requirements with the adjusted route. The session was open to all members of the public.

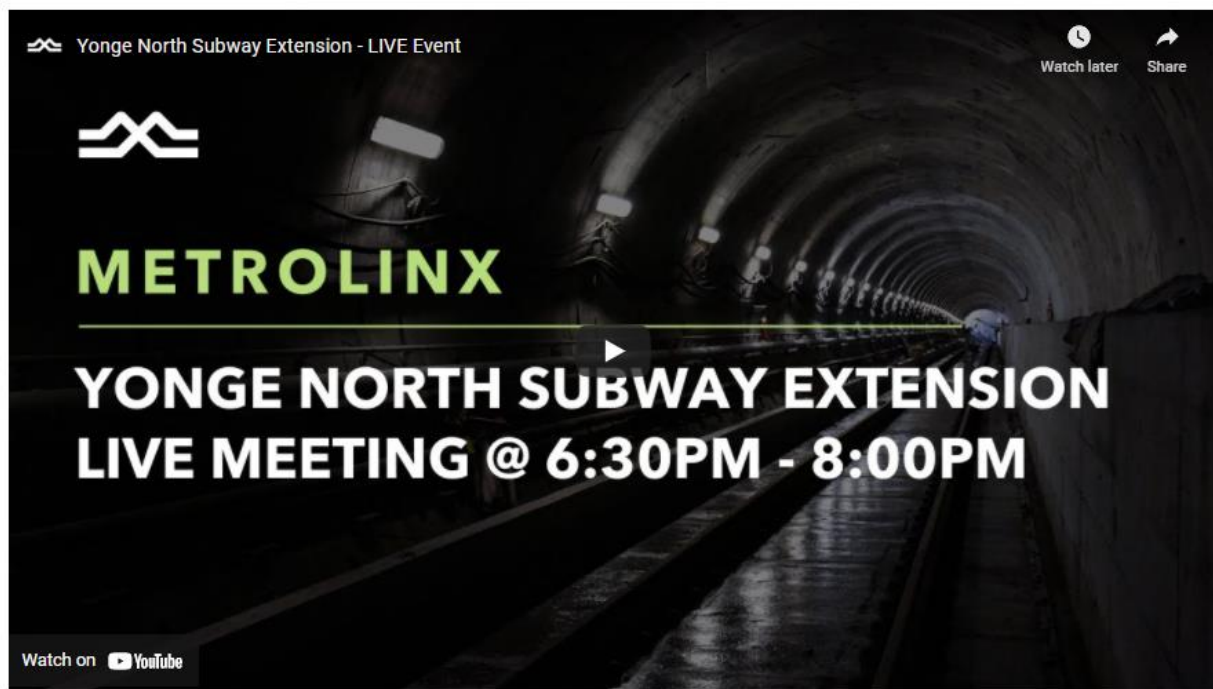
Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook and Twitter;
- Posted on the Metrolinx.com/itshappening website;
- Posting to the Project webpage (MetrolinxEngage.com/YongeSubwayExt) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

This VOH provided an update and an overview of Project benefits, the adjusted route, early works activities, community and stakeholder engagement opportunities, and next steps in the EPR Addendum process.

All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.3** and a video recording of the event is available at www.youtube.com/watch?v=ts6DP61q8TE.

Yonge North Subway Extension LIVE - December 16, 2021



Call-In With Your Question

As we continue to evolve the virtual engagement format, we are adding a call-in option for tonight's event. To ask your question by voice, join the Zoom meeting here. We aim to keep each question and subsequent answer to 3 minutes allowing for as many call-in questions as possible.

NOTE: please ensure you have the latest version of Zoom installed.

[Join Zoom](#)

Agenda

- 6:30: Meeting Begins/ Opening Remarks
- 6:35: Yonge north Subway Extension Project Update
- 7:00: Questions and Answers
- 8:00: Wrap up & Closing Remarks

Presentation Materials

[YNSE - Presentation PDF →](#)

Figure 6-8 YNSE December 16, 2021 Virtual Open House Metrolinx Engage Webpage

6.3.7.1.1 Summary of Virtual Open House

Approximately 371 individuals participated in the Virtual Open House live session; a lower attendance was expected given the nearing holidays. Participants had the opportunity to join the virtual live stream event via Metrolinx's Engage Website and Zoom. A total of 85 comments were received via Zoom and the Metrolinx Engage Website with 733 votes received (i.e., combined number of likes and dislikes). Questions were also received via Zoom, both within the chat box and verbally. Staff from the Project team were in attendance to moderate the session and answer questions live. The Virtual Open House was extended by 30 minutes to answer as many questions as possible, particularly for live question askers in the Zoom Room. Elected Officials were also present during this Virtual Open House, including MP Melissa Lantsman, Councillor Keith

Irish, Deputy Mayor Don Hamilton, Mayor Frank Scarpitti, Acting Mayor Joe DiPaola, and Councillor Karen Cilevitz.

6.3.7.1.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The key comments, questions or concerns were related to adjusted route, noise and vibration impacts, Station location, and property impacts. Participants expressed various concerns about the impacts that tunneling may have on their community, such as noise and vibration, potential property damage and increased congestion due to municipal plans for growth along the alignment.

6.3.7.1.3 Other Comments

Other comments received were related to need for Bridge and High Tech Stations, property requirement and compensation, tunnel depth, funding for the Project, and operations near the Holy Cross Cemetery. The session ended with the Initial Business Case being shared in the Zoom chat box. Participants were also invited to sign-up for the e-mailing list to receive newsletters to stay informed about the Project and be notified of upcoming public events.

6.3.7.2 January 5th – Virtual Open House

A Virtual Open House was organized for members of the public to share project information on the adjusted alignment, the Transit Action Ontario Proposal and Metrolinx's analysis, and updates on upcoming community office and sound demonstrations. As this was the 2nd Virtual Open House to present the adjusted alignment, slightly fewer attendees participated, as expected. There were also a number of the attendees from the Royal Orchard community of Thornhill. During this Virtual Open House questions from the community were focused on noise and vibration, the Transit Action Ontario Proposal and specifics on property requirements with the adjusted route. The session was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook and Twitter;
- Posted on the Metrolinx.com/itshappening website;
- Posting to the Project webpage (MetrolinxEngage.com/YongeSubwayExt) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

This VOH provided another opportunity for the public to learn and ask questions about the adjusted alignment, provide an update on early works activities, and share community and stakeholder engagement opportunities.

All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.3** and a video recording of the event is available at www.youtube.com/watch?v=t1HfhiTjS_E.

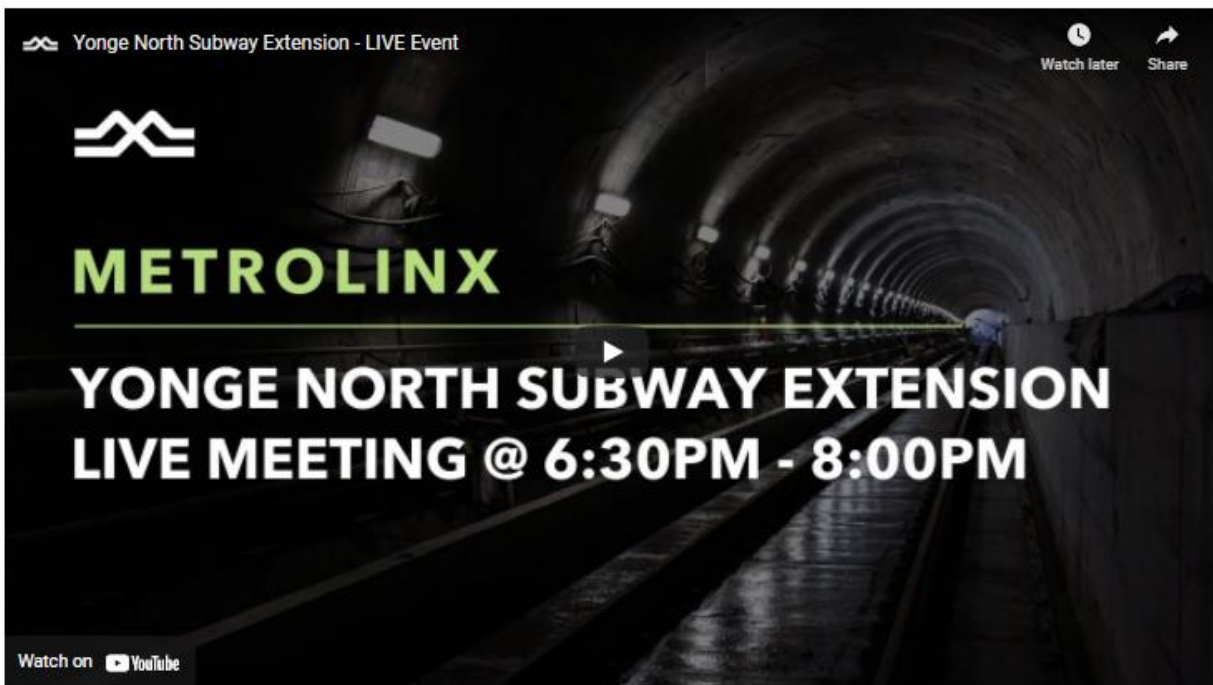
Yonge North Subway Extension LIVE - January 5, 2022

Join the Yonge North Subway Extension team LIVE to have your questions answered.

Please join us on January 5, where our project team will present information and answer your questions on the updated route for the project. The panel will include experts from project team.

Metrolinx will provide a brief presentation followed by a question-and-answer session. Our virtual platform will allow you to vote on the questions you'd most like answered, and the order our experts take them in will be based on popularity (total votes). We encourage you to submit and vote on questions now. You may also submit questions during the meeting.

Ask a Question



Call-In With Your Question

As we continue to evolve the virtual engagement format, we are adding a call-in option for tonight's event. To ask your question by voice, join the Zoom meeting [here](#). We aim to keep each question and subsequent answer to 3 minutes allowing for as many call-in questions as possible.

NOTE: please ensure you have the latest version of Zoom installed.

Join Zoom

Agenda

- 6:30: Meeting Begins/ Opening Remarks
- 6:35: Yonge north Subway Extension Project Update
- 7:00: Questions and Answers
- 8:00: Wrap up & Closing Remarks

Figure 6-9 YNSE January 5, 2022 Virtual Open House Metrolinx Engage Webpage

6.3.7.2.1 Summary of Virtual Open House

Approximately 360 individuals participated in the Virtual Open House live session. Participants had the opportunity to join the virtual live stream event via Metrolinx's Engage Website and Zoom. A total of 61 comments were received via the Metrolinx Engage Website with 782 votes received (i.e., combined number of likes and dislikes). Questions were also received via Zoom, both within the chat box and verbally.

Staff from the Project team were in attendance to moderate the session and answer questions live. The Virtual Open House was extended by 30 minutes to answer as many questions as possible, particularly for live question askers in the Zoom Room. Elected Officials were also present during this Virtual Open House, including MPP Paul Calandra and Mayor Scarpitti.

6.3.7.2.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The key comments, questions or concerns raised during this meeting were presented at previous Virtual Open Houses or through correspondence and included opposition to the subway tunneling under the Royal Orchard community, route alternatives and impacts to property and the community.

6.3.7.3 February 17th – Virtual Open House

A series of Virtual Open Houses were organized following the public release of the Environmental Project Report Addendum for members of the public, to share project updates, including an overview of the EPR Addendum, summary of findings for the tunneled and surface segments, and an engagement overview.

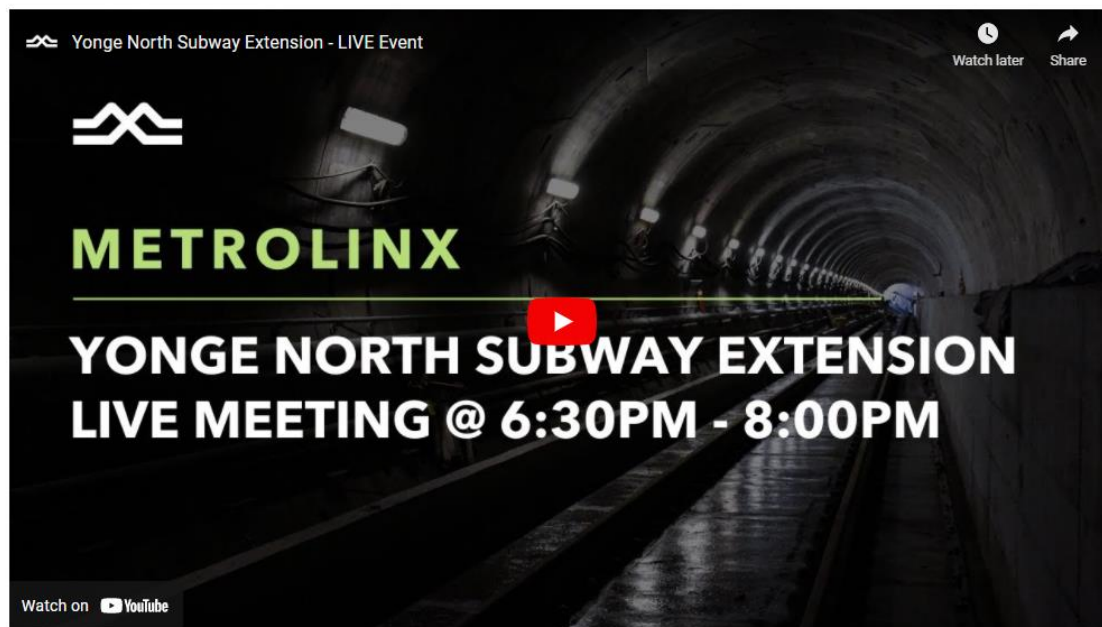
This was the eighth Virtual Open House for the YNSE Project, and the first of the series of four related to the EPR Addendum. This Virtual Open House was held on February 17th, 2022, presented the EPR Addendum and provided an overview of the report and its findings. The session was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook and Twitter;
- Posted on the [Metrolinx.com/itshappening](https://www.metrolinx.com/itshappening) website;
- Posting to the Project webpage ([MetrolinxEngage.com/YongeSubwayExt](https://www.metrolinxengage.com/YongeSubwayExt)) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

This VOH provided an overview of Project benefits, purpose and summary of transit project environmental assessment, overview of the Environmental Project Report Addendum, and a summary of the Addendum findings. All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.3** and a video recording of the event is available [here](#).

Yonge North Subway Extension LIVE - February 17, 2022



Agenda

- 6:30: Meeting Begins/ Opening Remarks
- 6:35: Environmental Project Report Addendum
- 7:00: Questions and Answers
- 8:30: Wrap up & Closing Remarks

6.3.7.3.1 Summary of Virtual Open House

Approximately 190 attendees joined the Virtual Open House via live stream and Zoom. This was a lower number of attendees than past Virtual Open Houses, and attendees were able to post and up-or down-vote questions on Metrolinx Engage before and during the meeting. Fewer questions were posted in advance than in previous events. Participants could also ask questions live via voice by joining the Zoom meeting room, or by posting questions in the Zoom chat. The Zoom meeting room had substantially fewer attendees than past Virtual Open Houses; however, engagement increased during the second half of the live Q&A period.

Staff from the Project team were in attendance to moderate the session and answer questions live. Elected Officials were also present during this Virtual Open House, including Mayor Frank Scarpitti, Councillor Godwin Chan, Deputy Mayor Tom Vegh, and CAO Bruce MacGregor.

6.3.7.3.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

Most questions focused on noise and vibration and property requirements. Unlike past Virtual Open Houses, there were no questions on the route of the Yonge North Subway Extension and whether the route could return to Yonge Street.

6.3.7.3.3 Other Comments

A total of 37 questions were posted on the Metrolinx Engage page, with 221 votes (likes and dislikes) received in total. No other comments were received.

6.3.7.4 February 23rd – Virtual Open House

This was the ninth Virtual Open House for the YNSE Project, and the second of the series of four related to the EPR Addendum. This virtual open house was held on February 23, 2022, and focused on an overview of the EPR Addendum report and the report findings associated with the tunnelled segment of the proposed alignment, particularly noise and vibration, natural environment, cultural heritage, and soil and groundwater. The session was open to all members of the public.

Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook and Twitter;
- Posted on the [Metrolinx.com/itshappening](https://www.metrolinx.com/itshappening) website;
- Posting to the Project webpage ([MetrolinxEngage.com/YongeSubwayExt](https://www.metrolinxengage.com/YongeSubwayExt)) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.3** and a video recording of the event is available [here](#).

Yonge North Subway Extension LIVE - February 23, 2022

Please join us on February 23, 2022 from 6:30pm to 8:30pm to ask your questions and learn about the [Environmental Project Report \(EPR\) Addendum](#), focused on topics like noise and vibration, air quality, communities (socio-economic and land use), archaeology and heritage properties, soil and groundwater for the tunnelled segment of the route. The EPR Addendum was released on February 10, 2022 and is [open for public review and feedback](#) until **March 14, 2022**.

The panel will include experts from our project team. Live captioning will be provided. Our virtual platform will allow you to vote on the questions you'd most like answered, and the order our experts take them in will be based on popularity (total votes). We encourage you to [submit and vote on questions now](#). You may also submit questions during the meeting. We have a call-in option via our Zoom room so participants can also ask their questions live.

If you cannot attend, the video recording will be available on this page after the event, and future events will be announced in our [e-newsletter](#).



Call-In With Your Question

As we continue to evolve the virtual engagement format, we are adding a call-in option for tonight's event. To ask your question by voice, [join the Zoom meeting here](#). We aim to keep each question and subsequent answer to 3 minutes allowing for as many call-in questions as possible.

NOTE: please ensure you have the latest version of Zoom installed.

[Join Zoom](#)

Agenda

- 6:30: Meeting Begins/ Opening Remarks
- 6:35: Environmental Project Report Addendum
- 7:00: Questions and Answers
- 8:30: Wrap up & Closing Remarks

6.3.7.4.1 Summary of Virtual Open House

Approximately 187 attendees joined the Virtual Open House via live stream and Zoom. This was approximately the same number of attendees as the first EPR Addendum Virtual Open House.

Attendees were able to post and up-or down-vote questions on Metrolinx Engage before and during the Virtual Open House, and fewer questions were posted in advance than in previous events. Participants could also ask live via voice by joining the Zoom meeting room, or by posting questions in the Zoom chat. The Zoom

meeting room had substantially fewer attendees than past Virtual Open Houses, but participants were very engaged in discussion.

Staff from the Project team were in attendance to moderate the session and answer questions live. The only Elected Official present during this Virtual Open House was Mayor Frank Scarpitti.

6.3.7.4.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The majority of questions focused on noise, vibration and property impacts. Most of the participants identified themselves as Royal Orchard neighbourhood residents and voiced concerns regarding Metrolinx's commitment to limit noise and vibration levels, and compensation for property potential damage, and perceived decrease in home value.

6.3.7.4.3 Other Comments

A total of 24 questions were posted on the Metrolinx Engage page, with 118 votes (likes and dislikes) received in total. No other comments were received.

6.3.7.5 March 2nd – Virtual Open House

This was the tenth virtual open house for the YNSE Project, and the third of the series of four related to the EPR Addendum. This virtual open house was held on March 2, 2022, and focused on the overview of EPR Addendum findings for the surface segment of the route, particularly noise and vibration, natural environment, and air quality. The session was open to all members of the public.

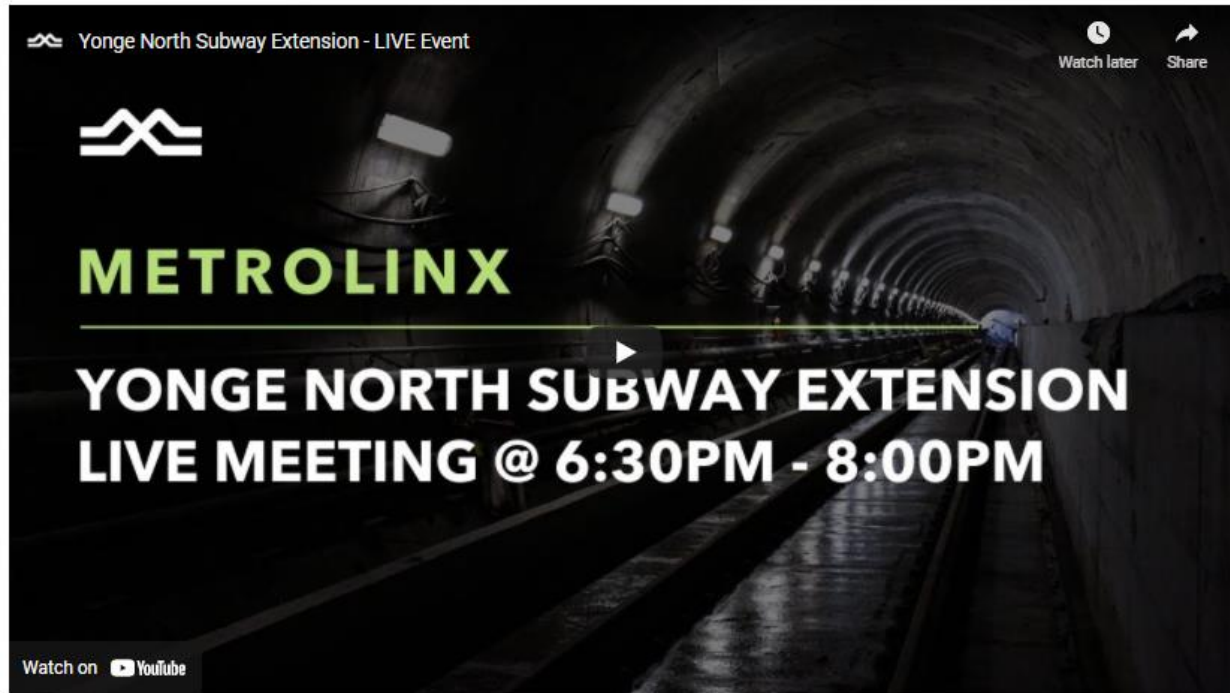
Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook and Twitter;
- Posted on the [Metrolinx.com/itshappening](https://metrolinx.com/itshappening) website;
- Posting to the Project webpage ([MetrolinxEngage.com/YongeSubwayExt](https://metrolinxengage.com/YongeSubwayExt)) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.3** and a video recording of the event is available [here](#).

Yonge North Subway Extension LIVE - March 2, 2022

Please join us on March 2, 2022 from 6:30pm to 8:30pm to ask your questions and learn about the Environmental Project Report (EPR) Addendum, focused on topics like noise and vibration, air quality, communities (socio-economic and land use), archaeology and heritage properties, soil and groundwater for the at-grade segment of the route. The EPR Addendum was released on February 10, 2022 and is [open for public review and feedback](#) until **March 14, 2022**.



Call-In With Your Question

As we continue to evolve the virtual engagement format, we are adding a call-in option for tonight's event. To ask your question by voice, join the [Zoom meeting here](#). We aim to keep each question and subsequent answer to 3 minutes allowing for as many call-in questions as possible.

NOTE: please ensure you have the latest version of Zoom installed.

[Join Zoom](#)

Agenda

- 6:30: Meeting Begins/ Opening Remarks
- 6:35: Environmental Project Report Addendum
- 7:00: Questions and Answers
- 8:30: Wrap up & Closing Remarks

6.3.7.5.1 Summary of Virtual Open House

Approximately 188 attendees joined the Virtual Open House via live stream and Zoom. This was approximately the same number of attendees as the first and second EPR Addendum Virtual Open Houses.

Attendees were able to post and up-or down-vote questions on Metrolinx Engage before and during the meeting, and fewer questions were posted in advance than in previous events. Participants could also ask live via voice by joining the Zoom meeting room, or by posting questions in the Zoom chat. The Zoom meeting room had substantially fewer attendees than past Virtual Open Houses, but participants were very engaged in discussion.

Staff from the Project team were in attendance to moderate the session and answer questions live. The only Elected Officials present during this Virtual Open House were Mayor Frank Scarpitti and Councillor Irish.

6.3.7.5.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The majority of questions focused on the CN Rail corridor, vegetation replacement, property impacts, and timing of property notifications. Even though this session focused on the surface segment, the majority of the participants identified themselves as Royal Orchard neighbourhood residents, and voiced concerns similar to those voiced during the previous open houses; specifically, compensation for property damage and health concerns related to tunnelling and construction.

6.3.7.5.3 Other Comments

A total of 18 questions were posted on the Metrolinx Engage page, with 89 votes (likes and dislikes) received in total. No other comments were received.

6.3.7.6 March 10th – Virtual Open House

This was the eleventh virtual open house for the YNSE Project, and the fourth of the series of four related to the EPR Addendum. This virtual open house was held on March 10, 2022, and focus areas included the EPR Addendum, feedback received from the public on noise, vibration and natural environment, and project feedback on tunnelling, emergency exit buildings and property requirements. The session was open to all members of the public.

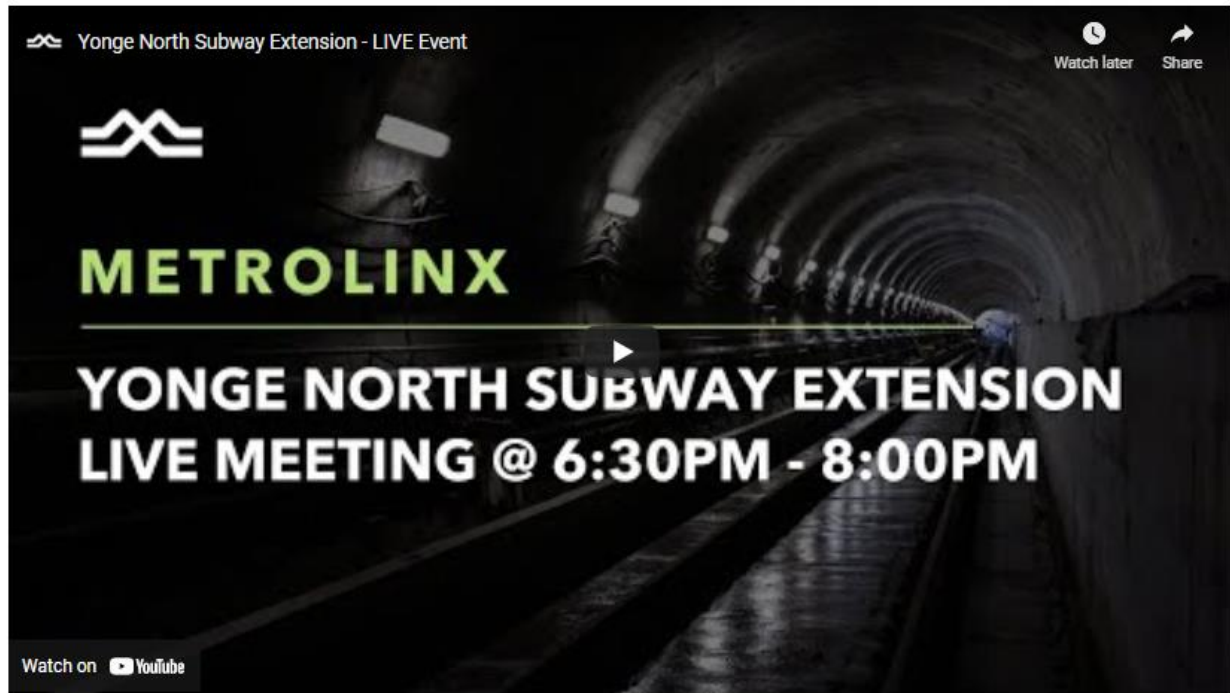
Notice of Virtual Open House was distributed through the following:

- Announcements made on Metrolinx social media accounts: Facebook and Twitter;
- Posted on the [Metrolinx.com/itshappening](https://www.metrolinx.com/itshappening) website;
- Posting to the Project webpage ([MetrolinxEngage.com/YongeSubwayExt](https://www.metrolinxengage.com/YongeSubwayExt)) approximately two weeks before the live sessions; and,
- Announcement posted on the Metrolinx Engage Updates and News sections along with a link to sign up for the Virtual Open House.

All VOH materials were made available on the Metrolinx Engage website and will remain available for the public to view at any time. A copy of all materials is included in **Appendix I.3** and a video recording of the event is available [here](#).

Yonge North Subway Extension LIVE - March 10, 2022

Please join us on March 10, 2022 from 6:30pm to 8:30pm to ask your questions and learn about the [Environmental Project Report \(EPR\) Addendum](#), focused on topics like noise and vibration, air quality, communities (socio-economic and land use), archaeology and heritage properties, soil and groundwater, and what we've heard from the community on the report so far. The EPR Addendum was released on February 10, 2022 and is [open for public review and feedback until March 14, 2022](#).



Call-In With Your Question

As we continue to evolve the virtual engagement format, we are adding a call-in option for tonight's event. To ask your question by voice, join the [Zoom meeting here](#). We aim to keep each question and subsequent answer to 3 minutes allowing for as many call-in questions as possible.

NOTE: please ensure you have the latest version of Zoom installed.

[Join Zoom](#)

Agenda

- 6:30: Meeting Begins/ Opening Remarks
- 6:35: Environmental Project Report Addendum
- 7:00: Questions and Answers
- 8:30: Wrap up & Closing Remarks

6.3.7.6.1 Summary of Virtual Open House

Approximately 139 attendees joined the Virtual Open House via live stream and Zoom, fewer than the number of attendees that participated in previous Virtual Open Houses in the EPR Addendum series. Attendees were able to post and up-or down-vote questions on Metrolinx Engage before and during the meeting and substantially fewer questions were posted in advance than previous events, as well as fewer votes on those questions. There were only four questions posted on Engage, whereas previous EPR Addendum VOHs had at least 18 questions posted in advance. Participants could also ask questions live via voice by joining the Zoom meeting room, or by posting questions in the Zoom chat.

6.3.7.6.2 Key Feedback Received Related to the Yonge North Subway Extension EPR Addendum Scope

The majority of the questions focused on noise and vibration, construction and traffic mitigation measures, transit corridor lands and property notifications. Most of the Zoom room participants identified themselves as Royal Orchard neighbourhood residents, and voiced similar concerns to the previous open houses regarding the designation of transit corridor lands under the *Building Transit Faster Act*.

6.3.7.6.3 Other Comments

Four questions were posed on the Metrolinx Engage page that received 8 votes in total (combined number of likes and dislikes).

6.3.8 Metrolinx's Responses to Public Comments Received Winter 2021/2022

Table 6-7 summarizes the key issues/comments/questions related to the Yonge North Subway Extension that were raised by the public as part of the Winter 2021/2022 Virtual Open Houses, and how they were considered by Metrolinx. Copies of all public comments received and responses that were issued can be found in **Appendix I.3**.

Table 6-7 Summary of Comment Key Themes and Questions Received Winter 2021/2022

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Bridge and High Tech Station	<ul style="list-style-type: none">• Need for High Tech and Bridge Station• Will Bridge station be designed like a side by side station where the YNSE will connect directly with the Richmond Hill GO and potentially a future northern extension of the Ontario Line?	<ul style="list-style-type: none">• Bridge and High Tech stations will support York Region’s growth plans for the Langstaff Gateway and Richmond Hill Centre urban grow centres, which have been in place for many years in response to the demand for housing and employment opportunities in the region. Since those areas are expected to grow significantly in the years to come, these stations will help make sure any growth is sustainable by contributing a large portion of the riders that will use the subway extension.• Located between Highway 7 and Highway 407, Bridge Station will create vital connections between the subway and the Richmond Hill GO line, as well as GO bus, Viva Bus Rapid Transit and local bus services that run along the two major highways. It’s also worth noting that the station at High Tech Road would put the subway within walking distance for more than half of the residents expected to live in the Richmond Hill Centre area by 2041.• Bridge Station will make it easier to get around the region by providing convenient connections to the subway, GO trains, and regional and local bus services. Metrolinx is exploring how we can strengthen the connections between transit lines to give riders more travel options and improve the customer experience. Additional details will be shared when the Preliminary Design Business Case is finalized.
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Public Consultation	<ul style="list-style-type: none">• Municipal opposition to Option 3• Why are the people in Royal Orchard being ignored?	<ul style="list-style-type: none">• Input from municipal and regional planners informed the development of the Initial Business Case and supplementary analysis. The insight we gathered from our partners helped us thoroughly understand the current land use characteristics, growth planned in each community served by the extension, and how that development will affect transit needs in the future. Metrolinx will be working closely with our partners as the design and planning process moves forward.• Metrolinx will continue to work with communities, municipalities and other partners such as the TTC and York Region Transit on further development of the operating plan for the extension as the project design and development progress.• Final decisions on project scope, including the route of the subway extension and station locations, will be made by the Province of Ontario, in consultation with government partners. These decisions will be informed by updated environmental studies, feedback from communities, and detailed technical work done by Metrolinx.• Metrolinx has refined plans for the subway extension that will result in deeper tunnels and a route that travels under far fewer residential properties in the Royal Orchard community than the previous route. The changes were in response to the feedback we’ve heard through engaging with municipalities and consulting with communities across York Region and Toronto over the past eight months. They mean that the subway tunnels will follow a route that travels mostly under Bay Thorn Drive wherever possible once they turn east from Yonge Street to connect with the rail corridor. The previous route went under 40 homes and an additional 23 properties, whereas the new route goes under 20 homes and 15 additional properties.• The tunnels below the Royal Orchard neighbourhood will be at a minimum depth of 21 metres and as deep as 50 metres below the surface, averaging a more significant depth through much of the community compared to previous plans. These refinements will keep things peaceful and quiet in the neighbourhoods along the route while still delivering all the benefits of the subway extension for York Region.
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Alignment	<ul style="list-style-type: none">• Due to potentially rising costs to build Option 3, will Option 1 and Option 2 be reconsidered?• Is the deeper tunnel requirement adding to the projected cost of the project?• Curves in subway alignment.• Impacts of revised route to property.• Re-routing options.• Subsurface property compensation.• How many single-family homes on Bay Thorn Drive will be affected directly by trains going underground?• As it was mentioned in the previous meetings, the option for tunneling under the cemetery instead of residential properties will be considered. Can you update us regarding this, and progress for this	<ul style="list-style-type: none">• Options 1 and 2 have already been evaluated through our business case process. Metrolinx also recently completed an additional detailed review of a proposal from the community for an alternative route that would stay along Yonge Street before curving to travel along the northern boundary of Holy Cross Cemetery towards the railway corridor. This proposal is not an improvement over our current plans because of significant cost increases that would limit our ability to include important benefits in the project, like a fourth station and the potential for additional stations.• The curve in the adjusted route meets current TTC subway track standards for curves and grades, while maintaining vibration levels in Royal Orchard below the levels of what humans can feel.• The other options we analyzed would also hinder the ability of the Langstaff Gateway urban growth centre to realize longstanding regional and municipal growth plans because the proposal essentially splits the development into two parts and would place restrictions on the envisioned growth.• The total cost of the green alignment stays the same as the total cost of reference alignment.• The tunnels along the Yonge North Subway Extension will be built to strict design and engineering standards and will be much deeper underground than in many areas of Toronto’s existing subway network. The bottoms of the tunnels – where trains

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
December 16, January 5, February	Metrolinx Engage/Zoom	Decision-Making	<p>consideration? Can you clearly mention why tunneling under the cemetery was not considered as one of the options in the first proposals?</p> <ul style="list-style-type: none">If merging with the exiting railway corridor is so important what about avoiding the Royal Orchards neighborhood and change the alignment underneath the Holy Cross Cemetery?	<p>pass over the tracks – will be at least 20 metres deep in the Royal Orchard community – roughly as deep as a six-storey building is tall. Metrolinx is confident that high-quality, modern tunnels built to the latest industry standards will ensure future subway services will not be a disruption for the community.</p> <ul style="list-style-type: none">The refined plans for the subway extension will result in deeper tunnels that follow a route that travels mostly under Bay Thorn Drive wherever possible once they turn east from Yonge Street to connect with the rail corridor.Input from municipal and regional planners informed the development of the Initial Business Case and supplementary analysis. The insight we gathered from our partners helped us thoroughly understand the current land use characteristics, growth planned in each community served by the extension, and how that development will affect transit needs in the future.In addition to the route options we looked at through our business case analysis, we recently completed a detailed review of a proposal from the community for an alternative route that would stay along Yonge Street before curving to travel along the northern boundary of Holy Cross Cemetery towards the railway corridor.Detailed evaluations of each option can be found in the Initial Business Case and addendum, published in March 2021. The approach we’re taking will help people all over York Region because it means we can include more stations along the subway extension, providing more congestion relief to existing transit lines and roadways. If we were to follow the other routes studied through the Initial Business Case, Metrolinx would only be able to build three stations Running the subway along the CN rail corridor in the northern end of the extension will create better, faster connections with GO trains and bus rapid transit services in an area that is poised for growth.Metrolinx has refined plans for the subway extension that will result in deeper tunnels and a route that travels under far fewer single-family residential properties in the Royal Orchard community than the previous route. The changes mean the subway tunnels will follow a route that travels mostly under Bay Thorn Drive wherever possible once they turn east from Yonge Street to connect with the rail corridor. The previous route went under 40 homes and an additional 23 properties, whereas the new route goes under 20 homes and 15 additional properties.The adjusted route will travel below 8111 Yonge and the depths of the tunnels beneath the building will be very deep, approximately 50 metres below surface level. The tunnel boring machine used in construction is able to adjust to different types of soil and rock, including bedrock, to safely and effectively tunnel below properties with little or no settlement at the surface. The tunnels will be surrounded by thick reinforced concrete and will be built to strict design and engineering standards.Our approach to compensation for subsurface rights under a property is treated the same way as if we were taking a portion of a front or back lawn. That property has value and will be compensated for that value. Our property team will work closely with residents on developing a valuation, at our cost, and compensating residents accordingly. Our preferred approach is through amicable negotiations and settlement and we would only start an expropriation process, if it is necessary, to protect project timelines.The tunnels below the Royal Orchard neighbourhood will be at a minimum depth of 21 metres and as deep as 50 metres below the surface, averaging a more significant depth through much of the community compared to previous plans. These refinements will keep things peaceful and quiet in the neighbourhoods along the route while still delivering all the benefits of the subway extension for York Region.Through our analysis, we found that running the subway tunnels below Holy Cross Cemetery would have made it necessary to relocate hundreds of burial sites since the tunnels would not be deep enough in this area. This could have affected thousands of people and added significantly to project timelines because we would need to identify, locate and get in touch with any next of kin to notify them of our plans before any burials are moved. With those issues in mind, planning and design teams advanced the analysis of the northern section of the route immediately after the Initial Business Case (IBC) was drafted and submitted for endorsement by the Metrolinx Board. Metrolinx has refined plans for the subway extension from Option 3 that will result in deeper tunnels and a route that travels under far fewer single-family homes in the Royal Orchard community than the previous route. The changes mean the subway tunnels will follow a route that travels mostly under Bay Thorn Drive wherever possible once they turn east from Yonge Street to connect with the rail corridor.
			<ul style="list-style-type: none">Why is Metrolinx not tunnelling under the graveyard?	<ul style="list-style-type: none">Through our analysis, Metrolinx found that running the subway tunnels below Holy Cross Cemetery would have made it necessary to relocate hundreds of burial sites since the tunnels would not be deep enough in this area. This could have

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
17/23, March 2/10 Virtual Open House			<ul style="list-style-type: none">• Will the current plan have to go under or through Holy Cross Cemetery?• Do you have permission from the cemetery to go through their property?• Do you have permission from CN to go through their corridor?• Letters to property owners.• How are the burial sites beside (or below) the alignment being affected by the Transit Lands Corridor buffer area?• Do you have a plan to tunnel under the CN railway?• How can it be safer to tunnel under the CN railway than at Yonge Street and Highway 407?• With the revised alignment there will be two relatively sharp turns, but if the route was up Yonge Street there would be just one curve by the north end of the Cemetery. Why has this route been chosen?• What is the logic for High Tech and Bridge stations?• Why are you bypassing and throwing away all of the city plans for Markham? Why is a developer or infrastructure company the name and face of the Bridge and High Tech developments? Who elected them? How do they benefit from the designation of TOC or an MZO?• Which level of government, provincial, federal, regional (York), local (Markham) have approved this option and who were the people who have signed off on this option for each level who have reviewed it. Can these project approval documents be reviewed for each government authority?	<p>affected thousands of people and added significantly to project timelines because we would need to identify, locate and get in touch with any next of kin to notify them of our plans before any burials are moved. With those issues in mind, planning and design teams advanced the analysis of the northern section of the route immediately after the Initial Business Case (IBC) was drafted and submitted for endorsement by the Metrolinx board. The refined route proposal presented alongside the IBC is the recommended path forward, and will be analyzed further in the Preliminary Design Business Case, which will guide the next phase of the project.</p> <ul style="list-style-type: none">• The adjusted route ensures better placement of stations so as to minimize the disruption to Richmond Hill Centre, while also maximizing the developments and growth within that community. The Yonge North Subway Extension has two stations at the heart of Langstaff Gateway and Richmond Hill Centre, an area that is set to become a vibrant regional hub where people will live and work.• The new route will create a multi-modal transit hub at Bridge Station, which connects the subway to GO train, GO bus, York Region Viva bus rapid transit and the local bus network. Bridge Station will be accessible from Highway 7 and will remove approximately 130 buses on the roadways per peak hour from travelling into Richmond Hill Centre. Our plan will bring the many people who will live near Bridge and High Tech stations within a 10-minute walk of rapid transit. Bridge Transit Hub will be accessible from a multiple use path connecting Markham and Richmond Hill, it will bridge also both sides of the rail corridor East/West.• Building the subway at surface level along the existing CN railway corridor reduces the need for complex and costly construction of tunnels and underground stations. Metrolinx will also be able to complete the project sooner than if the subway was tunneled the entire length of the route. It also protects for a future potential northern extension of the subway by better utilizing the existing railway transportation corridor.• The route Metrolinx is moving forward with allows us to build a fourth station within the \$5.6 billion funding envelope because it minimizes the amount of tunneling needed. With the other underground options, only three stations could be built.• Running subway trains along the existing CN rail corridor in the northern end of the route makes it possible to build that fourth station – and that’s why we need to run a tunnel from Yonge Street to connect to it. By running the extension at surface level along the existing CN railway corridor means we can finish the project sooner and reduces the need for complex, time-consuming, and costly construction of tunnels and underground stations. This approach also protects for a simpler and less costly further extension of the subway in the future.• The letters were intended to open the lines of communication with residents and homeowners along the northern section of the route to create opportunity and connection for further conversations. These letters were shared only with single-family homeowners. Metrolinx has been and will continue to engage with all interested stakeholders as the design and planning process moves forward, including Holy Cross Cemetery.• Metrolinx would never move ahead with a design that is not safe for our neighbours, our customers and our employees. The detailed studies and all the consultations we’re doing right now will help us make sure we put all the right noise and vibration solutions in place so there are no significant differences between what is experienced in the Royal Orchard community today and what will be experienced when the extension is in service. We want to make sure the neighbourhoods we serve will stay peaceful and quiet, and remain sought-after places to live in.• In addition to the route options we looked at through our business case analysis, we recently completed a detailed review of a proposal from the community for an alternative route that would stay along Yonge Street before curving to travel along the northern boundary of Holy Cross Cemetery towards the railway corridor.• Metrolinx studied this proposal from every angle, but in the end we concluded the proposal is not an improvement over our current plans because of significant cost increases that would limit our ability to include important benefits in the project, like a fourth station and the potential for additional stations.• Bridge and High Tech stations will support York Region’s growth plans for the Langstaff Gateway and Richmond Hill Centre urban grow centres, which have been in place for many years in response to the demand for housing and employment opportunities in the region. Since those areas are expected to grow significantly in the years to come, these stations will help make sure any growth is sustainable by contributing a large portion of the riders that will use the subway extension.

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December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Stations	<ul style="list-style-type: none">Is there going to be a station at Royal Orchard?Will there be any direct access ramps for buses to directly enter/exit between Highway 407 and the bus terminal?Please provide details of the Clark Station & bus terminal: which corners of the intersection will the 2 subway entrances and bus terminal be located; at-grade or below grade; will existing structures be impacted (demolished/altered); anticipated timeline for construction (earliest start date and number of years to complete once construction commenced); impact of construction on disruption of traffic flow; environmental impact of construction (noise/vibrations/air quality) on residential properties (i.e., existing condominiums on northwest and southwest corners); post-construction environmental impact on those residential condominium properties; impact of construction and post-construction on property values of those residential condominium properties.I know that a station at 16th Avenue isn't currently planned. However, the tail tracks for the project go as far north as this important road for York Region. Wouldn't it be a quick win to do a simple surface level station at 16th Avenue which could help enable TOD at the nearby mall and provide more access for local residents?We know that Cummer and Royal Orchard Stations may or may not be built depending on funding. It was stated that Metrolinx is working to find funding options. My question is, what do those discussions involve? Are there any specific details that can be provided? What is the probability that we will see one of them get built, and which one if so?Where will the bus terminal at Steeles and Clark stations be located? How large will they be? Will they be at grade or underground?Will the Yonge-Steel station be the first one that can be operated? Do we need to wait until the whole project is completed?	<ul style="list-style-type: none">The provincial government is currently in discussions with York Region, the City of Richmond Hill and the City of Markham concerning including Royal Orchard Station in the project. Metrolinx is advancing the planning work for Royal Orchard Station and have labelled it as potential until that work concludes and funding commitments are confirmed.The design concept and requirements for the bus terminal are being refined based on the needs identified by the TTC, York Region Transit, and other local stakeholders. Metrolinx is seeking input from the TTC and City of Toronto and will share more details about the Steeles Station transit hub when the Preliminary Design Business Case is finalized.The footprint of Clark Station in the EPR Addendum represents the area we're considering for the station box location – it is larger than the area Metrolinx will ultimately need. The final location of Clark Station will be confirmed as we refine our plans through further analysis. We take the time to do detailed studies on what's needed so we can limit our construction footprint and be certain that we're only acquiring properties that are absolutely necessary to get transit built.When it comes to managing traffic during construction, we'll be working closely with municipalities, local transit agencies and future construction partners to introduce coordinated plans and solutions that will minimize disruptions and keep people moving.We'll make sure communities get plenty of notice ahead of time using all available communications channels, and we'll use clear and highly visible signage to make driving, cycling or walking around construction areas as easy as possible. These plans will be brought forward to future community liaison committees for discussion.The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the project's design, route, and benefits. The design for Clark Station will be evaluated in more depth through the PDBC and we'll have more information to share once it's finalized.Extending Line 1 subway service to 16th Avenue would mean the tracks would have to travel north of that area so that subway trains have room to cross between the northbound and southbound tracks after they reach the end of the line. One of the benefits of the latest plans for the Yonge North Subway Extension is that they protect for further extension of the line in the future by positioning the northern end of the project along the existing railway corridor. Through our analysis we determined that the \$5.6 billion funding envelope announced for the project can accommodate up to four stations, if the extension follows the recommended route.There are four confirmed stations at Steeles, Clark, Bridge and High Tech. Steeles, Bridge and High Tech were determined essential for maximizing the benefits of the project. These stations will significantly improve access to frequent rapid transit and support the growth of the neighbourhoods they serve. Clark Station will offer riders seamless connections to the planned extension of the Viva Orange bus rapid transit line, which serves communities along Highway 7.
		Funding	<ul style="list-style-type: none">Federal, provincial and municipal funding.Is this funding agreement with York Region already in effect?What is required (i.e. in terms of financial resources and additional time) to restore plans for the previous routing which was identified by the original EA?	<ul style="list-style-type: none">Metrolinx and Infrastructure Ontario are moving the project forward under the Subway Program, which includes three other rapid transit expansions that will get the region moving — the Ontario Line, the Eglinton Crosstown West Extension, and the Scarborough Subway Extension.The provincial government has committed almost \$17 billion toward the Subways Program, as a whole.York Region has pledged to contribute proportional funding to the capital construction costs of the project through a preliminary agreement with the provincial government. The final contribution from the region will be subject to further refinements to the project's budget and scope.The federal government has made a \$10.4 billion funding commitment to Ontario's four priority subway projects, including the Yonge North Subway Extension.
		Business Case	<ul style="list-style-type: none">Why is a subway extension proposed as opposed to an expansion of GO Transit service?	<ul style="list-style-type: none">The extension will give customers one seamless subway ride between Richmond Hill and downtown Toronto, reducing commute times by as much as 22 minutes. For example, a trip from the Yonge Street and Langstaff Road area in Markham to the intersection of Yonge and Queen in downtown Toronto that takes 70 minutes today will take 48 minutes when the extension goes into service.
		Transit Connections	<ul style="list-style-type: none">How will the construction of YNSE impact the operation of buses on Yonge Street?	<ul style="list-style-type: none">Metrolinx will be working with our municipal and regional partners to develop a plan that will keep pedestrian and vehicle traffic moving and make sure people can get where they need to go easily while construction is happening. Our plan considers

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
17/23, March 2/10 Virtual Open House		and Local Area Planning	<ul style="list-style-type: none">• What mitigations measures will be implemented to ensure travel time and reliability of transit services?• What is the concept for the Intermodal Langstaff Gateway? Can you show us how all (six?) modes will be interconnected? What will it look like?	<p>factors like; how people will access local businesses quickly and easily; and how to minimize impacts on TTC, York Region Transit and GO services. Potential traffic impacts are being studied through an updated environmental assessment. We expect to release a draft report on the findings in the weeks to come.</p> <ul style="list-style-type: none">• Located between Highway 7 and Highway 407, Bridge Station will bring together as many as six existing and future regional transit services. The Bridge Station transit hub will offer fast and simple connections to Viva bus rapid transit and regional GO buses that travel on those major roadways, as buses won’t have to divert far off their routes in order to connect to the subway. The station will also provide an easy transfer to the Richmond Hill GO train because it will be connected to the existing Langstaff GO station. Transferring between buses or trains will be simple and quick for riders because the station is planned to be built at-grade along the existing railway corridor, meaning there will be no need for lengthy descents to underground platforms. This will make it easier for people to transfer to other modes of transportation to get where they need to go. Metrolinx is exploring how we can strengthen the connections between transit lines to give riders more travel options and improve the customer experience. More details will be shared about the design of the station when the Preliminary Design Business Case is finalized.
December 16, January 5, February 17/23, March 2/10 Virtual Open House		Property Impacts	<ul style="list-style-type: none">• Letters to property owners/timeline• What addresses received letters?• Is the proposed subway route parallel to or under the CN rail?• Do you have permission from CN to go through their corridor?• Why are no other construction options being considered?• Why is the option of using cut and cover or building elevated not being considered?• What factors taken into account for compensation?• Property requirements.• Will Metrolinx compensate me for tunneling under my grass?• How will fair market value of my property be calculated?	<ul style="list-style-type: none">• Metrolinx strives to limit the amount of property we need to support the construction and operation of important and much-needed transit infrastructure. Metrolinx will only look to acquire property that is absolutely necessary to support critical transit construction.• Where we need to acquire property to support new transit infrastructure, it is our responsibility to compensate property owners fairly, not necessarily because the subway will impact their property, but because they own the land that is needed. Whenever we need to acquire property to support a new transit project, we ensure that owners and tenants experience no financial loss.• We have a transparent and unbiased process in place to determine fair market value through appraisals and negotiations. Metrolinx will enlist the services of a third-party appraisal expert to estimate the value of the property. Market factors at the time of the acquisition will inform the assessment and will be based on comparable sales of similar properties in similar locations and situations.• When Metrolinx confirms the property needs for the project, they will reach out to property owners to explain in detail what is needed and whether that need is permanent or temporary.• The route will be at surface level along the existing CN railway corridor. This reduces the need for complex and costly construction of tunnels and underground stations. Metrolinx will also be able to complete the project sooner than if the subway was tunneled the entire length of the route. It also protects for a future potential northern extension of the subway by better utilizing the existing railway transportation corridor.• Metrolinx will be adding dedicated subway tracks to the existing railway corridor and looking at ways to keep the footprint of the project as small as possible as we build new infrastructure. We’re completing further planning and design work to confirm the precise route the subway will take through the CN Railway corridor, as well as the requirements for the two surface-level stations and train storage facility. More details will be shared when the Preliminary Design Business Case is finalized.• Modern tunneling technology has been proven around the world to be an efficient way to build underground subways. The subway extension to Vaughan was recently completed using tunnel boring machines for most of the route. Tunneling allows the subway to be built deeper below the surface, which is not practical with cut-and-cover methods. Being able to build the subway deeper underground means there will be no direct impacts to the homes, buildings and roads at the surface. Subway stations are typically built using cut-and-cover methods because they are significantly larger and have entrances that need to be built at surface level.• Our approach to compensation for subsurface rights under a property is treated the same way as if we were taking a portion of a front or back lawn. That property has value and will be compensated for that value. Our property team will work closely with residents on developing a valuation, at our cost, and compensating residents accordingly. Our preferred approach is through amicable negotiations and settlement and we would only start an expropriation process to protect project timelines. It is important to note, that although we know noise and vibration will be nearly imperceptible, Metrolinx is compensating residents for the value of the land Metrolinx is acquiring.

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				<ul style="list-style-type: none">Metrolinx will reach out to owners individually once property needs are confirmed so that we can have one-on-one conversations about supports that are tailored to their unique needs.If Metrolinx confirms that your property is needed, you will receive written notification directly from us. Our commitment is to ensure that owners and tenants do not experience a financial loss.After that, Metrolinx will arrange to meet with the property owner to answer any questions they may have, including how much property is needed and why, how the acquisition process works, and expected timelines. Multiple meetings will take place throughout the property acquisition process to ensure property owner has the information and support they need.Metrolinx may need to acquire some property underground to build the tunnels and support future subway service. Sometimes an entire property is needed, and sometimes just part of it is needed; some property needs are temporary to support construction, and others are permanent to support new infrastructure. Subsurface easements allow for the use of space under the ground, below homes.Metrolinx will compensate owners with fair market value for any property that is needed. It’s important to note that Metrolinx compensates property owners even when the infrastructure Metrolinx is building is deep underground and no space is occupied at surface level.The tunnels below the Royal Orchard neighbourhood will be at a minimum depth of 21 metres and as deep as 50 metres below the surface, averaging a more significant depth through much of the community compared to previous plans. These refinements will keep things peaceful and quiet in the neighbourhoods along the route while still delivering all the benefits of the subway extension for York Region.Metrolinx has a transparent and unbiased process in place to determine fair market value through appraisals and negotiations. Metrolinx will enlist the services of a third-party appraisal expert to estimate the value of the property. Market factors at the time of the acquisition will inform the assessment and will be based on comparable sales of similar properties in similar locations and situations.Our approach to compensation for subsurface (deep underground) rights under a property is treated the same way as if we were taking a portion of a front or back lawn. That property has value and will be compensated for that value. Our property team will work closely with residents on developing a valuation and compensating residents accordingly. Our preferred approach is through amicable negotiations and settlement, and we would only start an expropriation process to protect project timelines. It is important to note, that although we know noise and vibration will be nearly imperceptible, Metrolinx is compensating residents for the value of the land Metrolinx is acquiring.Metrolinx will reach out to owners individually once property needs are confirmed so that we can have one-on-one conversations about supports that are tailored to their unique needs.Compensation is determined by the pricing and valuation methods prescribed by the Expropriations Act (1990). Our property team will work closely with you on developing a valuation, at our cost, and compensating you accordingly. Market factors at the time of the acquisition will inform the valuation and will be based on comparable sales of similar properties in similar locations and situations. If you wish to complete your own appraisal to determine or confirm fair market value, Metrolinx can compensate you for that.Metrolinx is in discussions with CN about our plans for the Yonge North Subway Extension as planning and design for the project continues. Metrolinx has a longstanding relationship with CN – we share rail corridor throughout our existing GO network and have done so for years. Metrolinx is confident they will be able to effectively work together to move this important project forward.
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Noise and Vibration	<ul style="list-style-type: none">Can Metrolinx guarantee no noise and vibration to homes above the subway?What effect will boring have on the stability of our home and what level of noise and vibration can we expected and for how long?Noise concerns on human health.Depth of tunnel.Have the negatives of the subway coming to grade been considered?	<ul style="list-style-type: none">Noise and vibration levels in the Royal Orchard community were already expected to be extremely low with no significant differences from today’s levels, and the refinements we’ve made to the route will make them even lower. Ongoing ground studies and environmental assessments in the Royal Orchard community will inform project designs and help deliver the best noise and vibration solutions for local neighbourhoods.Our goal when we plan and design large projects like this is to minimize impacts as much as possible, and there are unique challenges we face no matter where we build.Metrolinx is confident that we can effectively manage any project impacts through robust planning, design work and community consultations. We expect to have more detailed information in the coming months as further design work is

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<ul style="list-style-type: none">Concerns regarding the noise levels of trains exiting the tunnel at Bridge Station.Even low levels of noise and vibration can cause physical, emotional and especially, in children, neurological consequences. Your routing goes right under an elementary school at shallow levels. Have you factored in future treatment costs if your assumptions of mitigation were wrong.The subway travels from Richmond Hill station to the maintenance facility at around 16th Ave. There are numerous residential buildings in the area that would experience an increase in noise from subway end of line activity.How many residential homes will be affected by these "minor sounds and vibrations" and how many times per day will they experience this?With Metrolinx having no experience with the proposed technology, how can you mitigate based merely on your modelling, which is only a simulation and not real-world experience reflective of soil, water and other conditions beneath our homes? Why should we take at face value what you tell us given the lack of transparency exhibited since the announcement about option 3?	<p>refined and we move forward with environmental assessments, but our goal will be to minimize impacts to communities as much as possible as we deliver major transit benefits to them.</p> <ul style="list-style-type: none">Metrolinx is going to be using noise and vibration solutions that have been proven to work on modern subway lines all over the world, including the extension of the western leg of Toronto’s Line 1 subway. Our designs will be based on up-to-date industry standards, which have significantly improved since the first subway lines in the GTA were built many decades ago.Our early studies show that by using available, proven technology, vibration levels are predicted to be below what humans can feel. We estimate that noise levels will be nearly imperceptible, about as quiet as the average whisper or rustling leaves in the distance.Metrolinx is determined to make the project the best possible fit for the communities it will serve. Metrolinx will continue to work closely with our regional and municipal partners as we advance our plans and we’re committed to sharing the latest updates of our plans with the community.Metrolinx will make sure that future subway service will be unobtrusive and difficult to notice, ensuring communities will be peaceful and quiet when the subway is in service. Our aim is to make sure there are no significant differences between levels of noise and vibration experienced in Royal Orchard today and what those levels will be when the extension is in service.Metrolinx has access to a wide range of solutions to address noise and vibration that simply were not available decades ago, when most of the GTA’s existing subway lines were built. Metrolinx will use modern solutions that are tested and proven across the globe and recently in Toronto to extend the western leg of Line 1 to Vaughan.In fact, based on what we have observed inside buildings that sit above the tunnels and the conditions we’ve studied in Royal Orchard, we know the sounds and vibrations from subway trains traveling in the Yonge North Subway Extension’s tunnels will be very difficult to hear and feel. Metrolinx will do everything practicable to make sure people who live along the subway extension barely notice it.The tunnels will be surrounded by thick reinforced concrete and will be built to strict design and engineering standards. Metrolinx is confident that high-quality, modern tunnels built to the latest industry standards will ensure future subway services will not be a disruption for the community.Metrolinx is looking at a wide array of proven noise and vibration solutions for the project, including resilient fasteners, floating slab and ballast mats to help cushion the tracks and reduce noise and vibration. Rail dampers can also be used to help reduce the noise from passing trains. These types of solutions have been used around the world, including on the recently completed Toronto-York Spadina Subway Extension. More details will be shared about the solutions Metrolinx is putting in place in the coming months as further design work is refined and we conduct and consult on environmental assessments.Noise and vibration are created where the train wheels interact with the tracks, and Metrolinx is investing in modern railway track technology that dampens both the noise and vibration created at this point from train operations. This will ensure that there are no significant differences between levels of noise and vibration experienced in the Royal Orchard community today and what those levels will be when the subway extension is in service.In the shallowest section of tunnels that will run below single-family homes and a local school, our current designs have the bottoms of the tunnels at a minimum depth of 21 metres (19.5 metres to where the train wheels interact with the tracks). This will result in the train wheels interacting with the tracks at a sufficient depth to further keep noise and vibration levels nearly imperceptible.There is more than one strategy to reduce noise impacts for the nearby communities than just at the source. In instances where reducing the noise at the source will not do the trick, Metrolinx will look to reduce noise at the receptor – i.e., your ears. This usually means putting a barrier between you and the noise, and one type of barrier is a noise wall.Ground-borne noise was assessed as per the FTA (Federal Transit Administration) criteria. FTA criteria apply to rooms, and the closest room to the underground alignment is assumed to be in the basement. We assessed both ground-borne noise and vibration along the alignment. The difference between levels of outdoor vibration and indoor vibration on the basement floors or walls is very minor. Notably, in order to achieve ground-borne noise levels of 35 dBA or lower within an occupied space in a basement, the ground-borne vibration levels as measured on the basement floor or walls would need to be well below 0.10 mm/s and so would be imperceptible. In other words, meeting the 35 dBA ground-borne noise limit ensures ground-borne vibration levels are below the 0.10 mm/s limit.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
				<ul style="list-style-type: none">• To keep noise levels in the area around the train storage facility near today’s levels, we’re looking at solutions that could include installing a noise barrier along the western edge of the facility and using moveable tracks that reduce the gap between rails that cross one another, reducing noises and vibration from subway trains that pass over them. Our goal is to make sure there are no significant differences between what’s experienced in the community today and what will be experienced when the extension is up and running.• The findings of the updated environmental studies show that by using the proven solutions available, noise and vibration levels from subway operations will be so faint in the Royal Orchard community that they’ll be very difficult to notice. By using modern subway technology available to us, levels of ground-borne vibration are predicted to be below 0.0.10 mm/s (millimetres per second), which is practically imperceptible to human senses. Ground-borne noise levels are predicted to be below 30dBA (weighted decibels are a unit of measurement that best reflects how sound is perceived by the human ear), which is comparable to an average whisper.
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Tunnelling	<ul style="list-style-type: none">• What is the total width of the two tunnels?• Where exactly will the subway come above ground and how much wider will the overall railway bed be?• When will residents receive notice if the city property under their house will be tunneled under? For example, Bay Thorn Drive. It shows the tunnel under the middle of the street but given the widths of the tunnel, it will need to go under city property. When will residents be more informed. Where can residents get this information.• Aren't there many, many possible unforeseen challenges of boring through bedrock under a condo building? Time, complexity, the unknown costs more. How have you budgeted for that?• You have stated that the tunneling will start at the north end. Why wouldn't you start at Finch and work north? Logically that makes more sense, so that it's easier to accommodate changes in assumptions based on how things actually develop. For example, there may be some major event such that it would make sense to stop at Steeles.• Residents want to know what is the expected depth under each home as per your current plans? And not only the depth of the track from the floor of our basement (foundation) but also what is the depth of the top of the tunnel under the floor of the basement.• Impact on surface traffic flow while tunnel digging is occurring	<ul style="list-style-type: none">• The width of the tunnel changes along the alignment. In the Royal Orchard community, the alignment was designed to the minimum allowable width in accordance with industry and best practice standards.• The subway will come to the surface at the portal structure located just south of Langstaff Road. The surface segment is approximately 1.6 km long, extending from the portal structure, along the CN Rail corridor, to the Train Storage Facility. We’ll be adding dedicated subway tracks to the existing railway corridor and looking at ways to keep the footprint of the project as small as possible as we build new infrastructure. We’re completing further planning and design work in consultation with our partners at CN Railway to confirm the precise route the subway will take through the rail corridor, as well as the requirements for the two surface-level stations and train storage facility. Metrolinx will have more details to share when the Preliminary Design Business Case is finalized.• We recognize how important your property is to you and Metrolinx is committed to providing clear, accurate information as soon as possible. Metrolinx is still working on confirming our property needs, but we have been contacting property owners early in the process to share information about the project, and to offer the opportunity for further conversations so we can explain what some impacts might be, and when we expect to confirm those details. Metrolinx will need to acquire property to build the tunnels and support future subway service, and some property may also be needed at the surface to accommodate emergency exit buildings and ventilation shafts along the route. In any case, Metrolinx will compensate owners with fair market value for any property that is needed. It’s important to note that Metrolinx compensates property owners even when the infrastructure Metrolinx is building is deep underground and no space is occupied at surface level. When we confirm our property needs for the project, we’ll reach out to property owners through a letter that clearly indicates what is needed and whether the impact is permanent or temporary.
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Construction Impacts	<ul style="list-style-type: none">• Will our neighbourhood look like Eglinton Avenue during construction?• Where will construction start?• When would construction begin on Bay Thorn Drive?• Will construction be noisy?• Please provide details on noise, vibrations, duration and road closures during construction in the neighbourhood.• Replacing/enhancing trees and vegetation along rail corridor• Will there be trees removed along the tunnel route in the RO neighbourhood. Is it necessary to remove any old large trees that are over the tunnels?	<ul style="list-style-type: none">• The planned date to begin the main construction on the project is late 2023. Metrolinx will have more information about construction timelines as we progress through the next phase of planning and design, but we remain committed to an in-service date of 2029-2030, after the Ontario Line is in service.• Metrolinx will be working with our municipal and regional partners to develop a plan that will keep pedestrian and vehicle traffic moving and make sure people can get where they need to go easily while construction is happening. Our plan considers factors like; how people will access neighbourhood streets and local businesses quickly and easily; and how to minimize impacts on TTC, York Region Transit and GO services. Potential traffic impacts are being studied through an updated environmental assessment.• Metrolinx will help residents and businesses through construction by offering noise and traffic mitigation and local business supports like promotional signage, wayfinding, and construction hoarding.• Metrolinx is committed to addressing any noise and vibration due to construction and operation of the extension.• Metrolinx will work with communities to ensure a comprehensive array of measures are in place to address noise or vibration impacts and to ensure designs are sensitive and respectful of communities.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
				<ul style="list-style-type: none">Metrolinx is going to be using noise and vibration solutions for the project that are proven to work. A big benefit is that they'll be based on modern and up-to-date industry standards, which have significantly improved since the first subway lines in the GTA were built many decades ago. Metrolinx will make sure that future subway service will be unobtrusive and difficult to notice, ensuring communities will be peaceful and quiet when the subway is in service. Our aim is to make sure there are no significant differences between levels of noise and vibration experienced in Royal Orchard today and what those levels will be when the extension is in service.Metrolinx is committed to protecting as many trees as possible while building the Yonge North Subway Extension. Vegetation removal will be reduced to the greatest extent possible and limited to the construction footprint. Tree protection zone fencing will protect/prevent tree injuries, while construction is happening and any vegetated areas that are temporarily disturbed will also be restored/re-vegetated.If any trees need to be removed, Metrolinx will work with the municipalities to provide compensation in accordance with Metrolinx's Vegetation Guideline, which provides a landscape science-based approach that exceeds the requirements of applicable bylaws and regulations.
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Other	<ul style="list-style-type: none">What benefit does this future route have for our neighbourhood?Why do the authors of the questions get listed as anonymous?When can we expect to see the data and analysis and/or the updated environmental assessment that is necessary to address the concerns of the neighbourhood and commenting agencies? Without this, Option 3 or variations has no legal standing as it is not an approved route.How many tracks will there be north of high tech? For how long? And store how many trains?We have a park that begins at Kirk and travels north or south to Royal Orchard. What are the plans for this park if option 3 is inevitable?How will Metrolinx accommodate the community in the future? Is there a plan for tree's, plants and wildlife?It is said that a project through our community will take more than 10 years?Has your Environmental Report Addendum been independently evaluated by a third party who is competent?Appendix A shows the track route and study area. Can you please state the TOTAL distance of 2 tracks plus the gap between the 2 tracks what will this be - it is unclear.Why is there no study on the psychological impact of this development on existing residents as part of the overall Environmental study? Psychological safety of impacted people needs to be included in your study which is totally absent right now.The Royal Orchard station in the EA is south of Royal Orchard down a hill; how will this be accessible?Lack of Detailed Information in EA Addendum on Soils GroundwaterDoes this project cross the York-Durham Sewage System?You have done a lot of work and continue to commit your time and effort to make this a better place for all of us and I wanted to thank you and let you know that your efforts are greatly appreciated! You will undoubtedly encounter negative comments, but keep going, to make this better for everyone.	<ul style="list-style-type: none">Extending subway service through Vaughan, Markham and Richmond Hill will bring a world-class level of convenience and a better quality of life to the communities it serves. It will provide faster, easier access to downtown Toronto, York Region and all points in between.The Yonge North Subway Extension will expand travel options along York Region's Viva bus rapid transit lines and provide more Line 1 subway riders with a seamless journey. These benefits will also provide better access to jobs and offset traffic congestion as drivers get out from behind the wheel in favour of using the subway.Community members have the option to remain anonymous when asking a question on Metrolinx Engage page.The EPR addendum that was published on February 10th has been reviewed by a wide range of government agencies, including the Ministry of the Environment, Conservation and Parks, the Toronto and Region Conservation Authority, Ministry of Heritage, Sport, Tourism and Cultural Industries, Indigenous Nations, and all municipalities along the route of the extension.The Yonge North Subway Extension is approximately 8 kilometers long and the two tunnels will be approximately 6 metres apart.The Yonge North Subway Extension will meet or exceed all necessary accessibility standards. The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the project's design, route, and benefits.No, the YNSE route it does not cross the York-Durham Sewage System.Growth plans within York Region need to be supported by a strong foundation of fast, reliable rapid transit with convenient connections to the regional transportation network that will keep people moving and give them more options to move around – whether those people are new to the community or have lived there for many years. For example, you'll save as much as 15 minutes on a trip from northern York Region to midtown Toronto by getting on the GO train at Bloomington GO Station and transferring to the subway at Bridge Station, which will be connected to the existing Langstaff GO Station. Bridge Station will create vital connections between the subway and the Richmond Hill GO line, as well as GO bus, Viva Bus Rapid Transit and local bus services that run along the two major highways.Soil and groundwater investigations are most useful for informing detailed design and construction planning; it's not typical of a TPAP to have detailed info about soil and groundwater. That will follow later during detailed design.

Source		Key Theme(s)	Key Questions/Areas of Interest	Response Summary
			<ul style="list-style-type: none">There will be no business case for Georgina residents to take the subway. Why are all new Georgina homes, even those in Pepperlaw going to be responsible for paying a DC?	
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Emergency Exit Building	<ul style="list-style-type: none">Can you please explain an Emergency Exit Building? Size, appearance and impact on the community. Specifically, the EEB planned on the residential area of Bay Thorn Drive.Can you please provide a diagram of the emergency exit buildings and how much land they will require. Has any land been purchased for these buildings yet? Particularly in the Royal Orchard Community itself. Bay Thorn Drive? Thorny Brae?	<ul style="list-style-type: none">Our design team is working to determine the exact location of the emergency exit buildings needed along the entire route of the subway extension, with a specific focus to reduce the number needed in residential areas. Emergency exit buildings are single storey structures that are smaller than a house and can be designed in a variety of ways to fit the look and feel of the area around them. Emergency exit buildings will be needed at various points along the tunneled section of the route and are only used in the unlikely event of an emergency in the tunnel that would require people to safely get to the surface.Emergency exit buildings will be needed at various points along the tunneled section of the route and are only used in the unlikely event of an emergency in the tunnel that would require people to safely get to the surface.
December 16, January 5, February 17/23, March 2/10 Virtual Open House	Metrolinx Engage/Zoom	Train Storage Facility	<ul style="list-style-type: none">Are all the current properties south of the 16th street bridge being taken over by this project? Does that include the currently planned city park on Norther Heights? This area is residential and growing with the plan for many more condos in this immediate area which will continue to modernize this corner of RH. And it seems now it will be turned into an industrial train yard. There is already a lack of public parking and greenspace in this area due to the condo building. Please address the plans for land use in this area and vision for the build.	<ul style="list-style-type: none">Metrolinx and the City of Richmond Hill have discussed potential impacts related to the proposed train storage facility (TSF) and the City’s planned Great Lands Interim Local Park, which is to be located immediately east of Northern Heights Drive. These lands do not overlap with the TSF and a multi-use trail will separate the two.The facility needed for the Yonge North Subway Extension will be used to store, inspect and clean subway trains while they are not in service. Placing a train storage facility at surface level is a standard practice, and it’s critical to keep it above ground to stay within the \$5.6 billion funding envelope for the project. Cities like Vancouver, Chicago, and New York all have ground level train storage facilities that successfully integrate into residential areas while meeting the needs of their transit networks. This change brings the proposal in line with the TTC’s five subway train storage facilities, which are all above ground.Metrolinx will continue to work closely with municipal and regional partners to make sure we get the most benefits out of the design while minimizing local impacts.The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the project's design, route, and benefits. We expect to release the PDBC in early 2023.

6.4 Engagement with Community Groups

Table 6-8 summarizes key questions and areas of interest that were raised during engagement events with community groups in the Project Study Area, as well as responses provided by Metrolinx. Copies of all public comments received and responses that were issued can be found in **Appendix I.5**.

Table 6-8 Summary of Engagement with Community Groups

Community Group	Meeting Date	Meeting Focus	Key Theme(s)	Key Questions/Areas of Interest	Response Summary
Royal Orchard Ratepayers Association	March 31, 2021	Project Overview	<ul style="list-style-type: none">IBC Options AnalysisSubway Alignment Design/ ConstructionTunnelingScopeConsultation	<ol style="list-style-type: none">IBC Option 3 selection processRationale for change in alignment since the 2009 Environmental AssessmentChallenges and sensitivities related to tunneling under residential homes and the Holy Cross CemeteryNumber, locations, and design of proposed EEBsConsultation with CN	<ol style="list-style-type: none">An options analysis was conducted as part of the IBC process. Option 3 was chosen to optimize benefits and is the only option that allows for the construction of four (4) stations within the funding envelope.When the Project came under Metrolinx’s responsibility, various alternative alignments were analyzed to achieve overarching goals and connect key nodes within the area.With the Option 3 refinement, Metrolinx will minimize challenges related to tunneling under the community and cemetery by setting the tunnel deeper.The EEBs will typically be around 760 metres apart. They will be a single storey building.Metrolinx will collaborate with and engage CN on an ongoing basis throughout the design process.
Thornhill Golf & Country Club	April 7, 2021	Project Overview	<ul style="list-style-type: none">StationsMitigation MeasuresTunneling	<ol style="list-style-type: none">Possibility of providing for a connection between Royal Orchard Station and the Thornhill Club’s facilitiesImportance of maintaining vehicular access between Yonge Street and the Thornhill Club’s facilities during construction and operationsRequest for a future technical meeting to discuss tunneling impacts	<ol style="list-style-type: none">Potential station connections will be considered throughout the design process and subject to further discussion.Access disruptions will be minimized to the extent possible.A future meeting can be arranged once further details regarding tunnel design are available.
Richmond Hill Board of Trade	May 5, 2021	Project Overview	<ul style="list-style-type: none">IBC Options AnalysisProject BenefitsConsultationStations	<ol style="list-style-type: none">Rationale for the proposed alignmentKey benefits and overarching ridership projections for IBC Option 3Communications and community relations initiativesStation spacing and station branding	<ol style="list-style-type: none">An options analysis was conducted as part of the IBC process. Option 3 was chosen to optimize benefits and is the only option that allows for the construction of four (4) stations within the funding envelope.Benefits and projections are available within the YNSE IBC.Communications initiatives for the Project include ongoing public consultation (Virtual Open Houses, Metrolinx Engage, and community-focused consultation) and engagement with key Project stakeholders.Station locations are under analysis and will be selected and designed to optimize benefits to the community.
Keep York Moving	May 6, 2021	Neighbourhood Station Analysis	<ul style="list-style-type: none">StationsTransit ConnectivityParkingLand Use / Socio-EconomicConsultation	<ol style="list-style-type: none">Station plans and amenities (including bus connections, parking, passenger drop off facilities, and fare structure)Land use planning and Census Data in the catchment areaEngagement with developersRequest that Metrolinx utilize data from the community coalition survey that Keep York Moving administered	<ol style="list-style-type: none">Station plans, including amenities, transit connections, parking, and fares, are under development and will be finalized through the ongoing design process.The socio-economic and land use existing conditions and impact assessment study will capture this information.Key stakeholders including developers will be engaged and consulted on an ongoing basis regarding Project plans.This data will be used to help inform the YNSE Strategic Case.
Connecting the Community	May 25, 2021	Project Overview	<ul style="list-style-type: none">Train Storage FacilityLand Use / Socio-EconomicParking	<ol style="list-style-type: none">Construction timeline for the Train Storage FacilityInclusion of projections/ data from the Richmond Hill Official PlanIncorporation of parking	<ol style="list-style-type: none">The target date for construction to begin on the main contract(s) is late 2023. Lessons learned from past projects will be used to guide decision-making and steps taken along the way to reduce the risk of delays or cost overruns.The Project will support and account for forecast growth in the City of Richmond Hill. Applicable provincial and municipal plans and policies will be reviewed as part of the socio-economic and land use existing conditions and impact assessment study.The next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the Project's design, alignment, and benefits. Parking will be evaluated in more depth through the PDBC.

Community Group	Meeting Date	Meeting Focus	Key Theme(s)	Key Questions/Areas of Interest	Response Summary
Richmond Hill Council Accountability Committee	May 26, 2021	Project Overview	<ul style="list-style-type: none">Land Use / Socio-EconomicStationsTrain Storage Facility	<ol style="list-style-type: none">Incorporation of the Project into the Richmond Hill Growth Plan 2041 and consideration of growth projectionsDistances between stationsLocation/ design of train storage facility	<ol style="list-style-type: none">The Project will support and account for forecast growth in the City of Richmond Hill. Applicable provincial and municipal plans and policies will be reviewed as part of the socio-economic and land use existing conditions and impact assessment study.Station locations are under analysis and will be selected and designed to optimize benefits to the community.The Train Storage Facility will be located at the north end of the alignment and will be placed at-grade. This is a standard practice and will allow the Project to remain within the funding envelope.
Ladies’ Golf Club of Toronto	May 27, 2021	Project Overview and Upcoming Permit to Enter for Due Diligence Work	<ul style="list-style-type: none">Subway Alignment Design / ConstructionFieldworkTunnelingConstruction Impacts	<ol style="list-style-type: none">Design of the East Don River crossing, as the 2009 study had proposed bridging the alignment over the river.Inquiry about the exact location of the PTEStart location for tunnelingImpacts of construction on the Eglinton Crosstown works and potential traffic congestion	<ol style="list-style-type: none">The Project will involve tunneling below the East Don River, as this is the most cost-effective option.A description and/or mapping of the PTE location for the proposed site visits will be provided as part of the PTE agreement.Tunneling will begin from the Langstaff Gateway area from the north, heading south.Tunneling impacts will be minor on the surface and construction impacts will be mostly related to station-building. Once a final decision is made on stations to be included in the Project scope, impacts will be better known. In the event of a road closure, as much advance notice as possible will be given.
Royal Orchard Community Liaison Committee	June 17, 2021	Noise & Vibration/ Geotechnical Investigations	<ul style="list-style-type: none">StationsNoise and Vibration	<ol style="list-style-type: none">Rationale for developing a future transit hub at Bridge Station rather than High Tech.Noise and Vibration investigations and potential impacts	<ol style="list-style-type: none">The proposed location of Bridge Station would maximize Project benefits, as this location offers an existing GO Station, a bus corridor with existing services, a direct connection to road traffic, and proximity to Langstaff Gateway Urban Growth Centre.Noise and Vibration studies are underway to measure existing levels, inform projections, and develop adequate mitigation and monitoring measures for both construction and operations.
Vaughan Chamber of Commerce	June 21, 2021	Project Overview	<ul style="list-style-type: none">TimelineTransit Connectivity	<ol style="list-style-type: none">Timeline for constructionFare integration within York Region	<ol style="list-style-type: none">The target date for construction to begin on the main contract(s) is late 2023. Lessons learned from past projects will be used to guide decision-making and steps taken along the way to reduce the risk of delays or cost overruns.Through ongoing collaboration with York Region Transit, the fare structure will be developed to ensure optimal integration and seamless travel for users.
Thornhill Ratepayers Association	June 24, 2021	Steeles Station Briefing	<ul style="list-style-type: none">Transit ConnectivitySubway Alignment Design / ConstructionLand Use / Socio-Economic	<ol style="list-style-type: none">Role and design of the Steeles bus terminalDepth of the sewer systemTiming of the Project with the proposed Steeles Rapid Transit ProjectTraffic impacts and renderings of future development	<ol style="list-style-type: none">The placement of the terminal on the intersection is still under evaluation, with a focus on integration with development lands and urban structures. From a scale standpoint, it will consist of 10-12 platforms.The sewer system is about 20 metres below ground, below the bottom of the subway tunnels.The Metrolinx RTP has identified the Steeles Avenue Rapid Transit as high performing, considering the demands for transit along the corridor. The business case process could start as early as next year.Design renderings for nearby development concept will be shared once available. Traffic analyses will determine potential impacts and mitigation measures, and decisions on road operations will rest with municipalities.
Willowdale Business Improvement Association	July 2, 2021	Finch Station Briefing	<ul style="list-style-type: none">Transit ConnectivityScopeConstruction Impacts	<ol style="list-style-type: none">Movement of bus connections for VIVA and TTC from FinchScope of early works at FinchService closures and disruptionsNotifications for upcoming work	<ol style="list-style-type: none">No changes are anticipated for the major bus routes. Some of the side routes may shift from Finch to Steeles Station.Some of the rail tracks will be replaced, and communications rooms will be added. No disruption is anticipated other than occasional weekend service.Service closures will occur over a few weeks, and no major service times will be impacted. No access points to local businesses will be closed.E-blasts, circulation of notices through community groups, elected officials, and door-to-door drops, and meetings will occur.

Community Group	Meeting Date	Meeting Focus	Key Theme(s)	Key Questions/Areas of Interest	Response Summary
8111 Condo Board	July 12, 2021	Project Overview	<ul style="list-style-type: none">IBC Options AnalysisConsultationSubway Alignment Design / ConstructionConstruction ImpactsNoise and Vibration	<ol style="list-style-type: none">Potential for other assessing optionsRole of public consultationDesign and distance between proposed EEBsNoise and vibration impacts for people living above during constructionConcerns from York University faculty and students due to disruptions associated with the subway running beneath them	<ol style="list-style-type: none">The focus of the Project is on maximizing benefits, and this is why Option 3 was selected.The IBC is the first step in the process and provides a road map. Consultation, along with environmental assessment and geotechnical study findings, will provide further information for advancing the Project.The EEBs will typically be around 760 metres apart. They will be a single storey building.When the TBMs are underneath a home there would be a faint rumble.During construction, concerns were expressed, however there have been no concerns since then.Metrolinx offered to plan a field trip to York University with the Condo Board and members of the Royal Orchard Community Liaison Committee.
York Regional Transit Bus Terminal Pop-Up	September 22, 2021	High Tech and Richmond Hill Centre Station Pop-Up	<ul style="list-style-type: none">Transit-Oriented-Development (TOD) AnnouncementTransit Connectivity	<ol style="list-style-type: none">Completion of subwayTimeline for constructionDistance from station to Langstaff GO	<ol style="list-style-type: none">The subway is projected to be completed for 2030, after the Ontario Line is in service.Construction will begin in 2023.Langstaff GO is approximately 400 metres from Richmond Hill Station
Royal Orchard Community Liaison Committee	October 12, 2021	Fall 2021 Virtual Open House	<ul style="list-style-type: none">Project Update/Preparation for Upcoming ConsultationMental Health	<ol style="list-style-type: none">Overview of the October 20, 2021 Virtual Open House presentation, including:<ol style="list-style-type: none">Project updatesInformation on tunnel constructionThe upcoming environmental addendum and preliminary noise and vibration resultsProperty compensation processUpdates on the upcoming community office and sound demonstrations,Discussion from Royal Orchard residents on mental health impacts	N/A
Royal Orchard Ratepayers Association	January 18, 2022	SAR Permit D and EPR Addendum	<ul style="list-style-type: none">Species at RiskEPR AddendumSoil and Groundwater	<ol style="list-style-type: none">Permit under Ontario <i>Endangered Species Act</i> and EPR Addendum processesGroundwater conditions and potential impacts in vicinity of Pomona CreekSoil conditions under St. Anthony’s School and Pomona Creek	<ol style="list-style-type: none">Permit under the Ontario <i>Endangered Species Act</i> being sought by Metrolinx and EPR Addendum are independent processes and are not tied together under the approvals of the TPAP, which guides completion of the EPR Addendum.<ol style="list-style-type: none">A conservative approach was taken to include Redside Dace on the list of species for the permit even though watercourse crossings are below-grade at Pomona Creek and Don River and no impacts are anticipated.Commitments in the EA become contractually binding to the constructors when the project is funded and proceeds to construction phase. They’re written into contract documents and Project specifications.The subway tunnel will be travelling at such a depth that it will not impact Pomona Creek. No impacts to long-term dewatering nor to groundwater are anticipated. Soil and groundwater will be examined in further detail prior to tunneling construction via the Groundwater and Soil & Excavated Materials Management Plans. Metrolinx adheres to Permit to Take Water conditions, and excess soil regulations, governed by MECP.The geotechnical program at St. Anthony’s will provide the information needed to choose the correct technologies when working with construction partners, who have considerable experience successfully building in other areas, overseen by Metrolinx who hold the local experience. Metrolinx is working with the school board to coordinate upcoming borehole drilling.

Community Group	Meeting Date	Meeting Focus	Key Theme(s)	Key Questions/Areas of Interest	Response Summary
Willowdale Business Improvement Association	January 20, 2022	Finch Early Works Briefing	<ul style="list-style-type: none"> Timelines Planned Mitigation Future Community Engagement 	<ol style="list-style-type: none"> Community and business notifications for work Timeline Snow and garbage removal Business engagement during construction 	<ol style="list-style-type: none"> A detailed communications plan will be developed, and the team will be canvassing and dropping notices of work by hand that will include a detailed map and information on traffic signage. Notices will be posted on the project website and emailed to the contact lists. Members of the public can subscribe to a bi-weekly newsletter that will include notices for the construction work. Metrolinx is closely aligned with the City to ensure that there are no compounding impacts from the work. Work is all happening in very close coordination with the city and Metrolinx is looking at their entire capital program and at the amalgamated impact to minimize it as much as possible, or approach it with a “touch once” philosophy, minimizing the number of times work needs to be done in a location. Metrolinx prepared snow removal drawings as part of the contract which captures boundary demarcation for snow for the Finch Early Works RFP and are aware that there is a passenger pick up and drop off and bus pickup in the area and that the site needs to be kept clean and remain accessible. The City of Toronto has specific guidelines as to what the contractor needs to meet if they are working within a city right-of-way. Business owners will be approached on this subject for feedback and community concerns. Engagements like this are very important.
Environmental Project Report Property Letter Drop	February 9, 2022	EPR Addendum Publication	<ul style="list-style-type: none"> The purpose of this drop was to be transparent about the property impacts shown in the EPR Addendum and reinforce YNSE team’s commitment to working with property owners and community members. 	N/A	N/A
Community Engagement Pop-Up at Yonge and Steeles	February 16, 2022	EPR Addendum Publication and Benefits of the Project	<ul style="list-style-type: none"> Project Route Construction Impact Traffic Impact Project Timeline 	Community Relations team met with 3 condo property managers and 3 business owners along Yonge St. All three businesses agreed to share YNSE VOH Postcard with their customers.	N/A
Community Engagement Pop-Up at Yonge and Finch	February 24, 2022	EPR Addendum Publication and Benefits of the Project	<ul style="list-style-type: none"> Traffic Impact Property Impact Project Timelines Construction Start Date Project Route 	Community Relations team met with 4 condo property managers and 9 business owners along Yonge St. Three property managers agreed to share the YNSE VOH Postcard with their residents (500+ units).	N/A
Community Engagement Pop-Up at Thornhill Community Centre and Library	March 1, 2022	EPR Addendum Publication and Benefits of the Project	<ul style="list-style-type: none"> Project Route Construction Impact Project Timeline 	Community Relations team met community members at Thornhill Community Centre and Library and had 15 meaningful interactions with community members.	

Community Group	Meeting Date	Meeting Focus	Key Theme(s)	Key Questions/Areas of Interest	Response Summary
Royal Orchard Ratepayers Association	March 7, 2022	EPR Addendum	<ul style="list-style-type: none">Soil and groundwaterEEB operationsNatural EnvironmentNoise & Vibration	<ol style="list-style-type: none">Excess soil and how it will be transportedImpacts to nearby schools and traffic during EEB operation in the event of an emergencyRequest for site-specific geotechnical dataGroundwater conditions near Pomona CreekSoil type/composition for noise and vibration studyNoise and vibration during operationNoise and vibration during construction	<ol style="list-style-type: none">Soil quantities will be determined when working with the Contractor. MX confirmed that the Contractor will not be transporting soil through residential areas.Any impacts to local traffic and nearby facilities like schools or emergency stations/fire stations are looked at comprehensively during the pre-construction phase when exact location of surface requirements are known. At this time, EEB locations are to be determined. MX will work closely with the municipalities on the traffic management plans to be conducted in the future.Tunnel and structures below ground will be designed to be watertight to avoid long-term dewatering. Modern tunneling technologies are being proposed to minimize groundwater intrusion into the tunnel during tunnel operation. MX to look into what tunnel profiling and hydrogeology/groundwater-specific data is available to include in the updated EPR AddendumThe noise & vibration assessment assumes the worst-case in terms of soil conditions and is very conservative. Mx is committed to minimizing the noise and vibration impacts on this project. Where the tunnel will travel below single-family residential homes, this includes ensuring that ground-borne sound levels will be kept below 30 dBA and that vibration levels will be imperceptible.TBMs will operate continuously, passing at a rate of 10-15m per day. Noise and vibration impacts, if any, would be short lived at any location. Notifications will be provided in advance to those communities.
Community Engagement Pop-Up at Finch GO Bus Terminal	March 8, 2022	EPR Addendum Publication and Benefits of the Project	<ul style="list-style-type: none">Construction ImpactProject TimelineFinch Early Works	Community Relations team interacted with TTC staff, 7 Businesses, Anderson College staff, and Home First Society Emergency Shelter shift manager. One of the businesses agreed to distribute VOH Postcards and YNSE Project Facts among with their customers.	N/A
Community Engagement Pop-Up at Richvale Library	March 16, 2022	EPR Addendum Publication and Benefits of the Project	<ul style="list-style-type: none">Bridge and High Tech DevelopmentsProject TimelineTrain Storage Facility	The Community Engagement team interacted with 47 residents, and library staff. 40+ VOH Postcards and Project Factsheets were distributed during this pop-up. Community members were interested in the train storage facility, and the proposed developments at Bridge and High Tech and their potential traffic impacts in the neighbourhood.	

6.5 Engagement with Indigenous Nations

Metrolinx is committed to building meaningful and long-term relationships with Indigenous Nations. Through its Indigenous Relations Office (IRO), Metrolinx engages with Indigenous Nations on several projects on an ongoing basis. The following presents an overview of the engagement that has taken place with Indigenous Nations to-date in support of the Yonge North Subway Extension project in meeting Environmental Assessment requirements.

6.5.1 Background

In 2018, Metrolinx made a commitment to build positive and meaningful relationships with Indigenous Peoples, in alignment with its strategic objectives. To that end, the IRO was established in 2019 with a mandate to build and grow relationships with Indigenous Nations, organizations, businesses and customer-residents. As part of this work, the IRO provides guidance to the organization with respect to engaging Indigenous Nations on projects and is dedicated to working towards establishing and maintaining meaningful relationships with Indigenous Nations.

6.5.2 Engagement with Indigenous Nations and Organizations

In 2020, the IRO became the sole point of contact for Indigenous Nations within Metrolinx and, in that capacity, supports the organization in coordinating engagement and communication with Nations related to all projects and Metrolinx activities. The IRO is working to identify best practices for engagement with each Indigenous Nation that has Treaty rights and/or territorial interests where Metrolinx operates. General feedback from Indigenous Nations regarding Metrolinx's current engagement approach includes:

- Ensure consistent, timely and transparent communication through a single point of contact.
- Ensure appropriate engagement across the project lifecycle, with a specific focus on review and participation in natural environment, cultural heritage, archaeological studies and reports, and the development of mitigation and compensation plans as well as environmentally or culturally sensitive construction activities.
- Indigenous Nations cannot keep pace with the growing volume of engagement from Metrolinx and, in some cases, do not have the in-house technical expertise to facilitate meaningful review and comment on project materials. As such, many Nations have requested that Metrolinx consider long term relationship and capacity building through regular meetings, evaluation of funding requests and negotiation of relationship framework agreements.

Metrolinx recognizes that meaningful engagement with Indigenous Nations requires moving beyond simply sharing information regarding project milestones and technical reports that are largely related to the Environmental Assessment process, and is actively working toward deeper engagement with Indigenous Nations on matters of interest to each Nation — including, but not limited to, natural environment, heritage and cultural resources, and other environmentally sensitive activities across the entire project lifecycle.

As an interim step, Metrolinx is putting processes in place to streamline communication and limit the administrative burden placed on Indigenous Nations by:

- Establishing the IRO as the single point of contact within Metrolinx to coordinate the timing of communications across projects and limit the number of Metrolinx staff that contact Indigenous Nations
- Preparing and sending monthly forecasts consolidating requests for feedback and reminders of deadlines to help Indigenous Nations plan for upcoming engagement activities
- Establishing administrative tools and strategies for sharing and tracking the review of materials and associated comments

- Building meaningful relationships through standing monthly meetings, phone calls, emails, and project-specific meetings.

The nature of establishing a single point of contact for Indigenous Nations across all Metrolinx projects often means that engagement can occur in both formal and informal ways, which are summarized below.

6.5.3 List of Indigenous Nations and Organizations

The following Indigenous Nations were identified as being potentially interested in the Yonge North Subway Extension project. The IRO supported the development of this list, which was sent to the Ministry of Transportation (MTO) and Ministry of Environment, Conservation and Parks (MECP) for feedback and approval:

- Haudenosaunee Confederacy Chiefs Council
- Huron Wendat Nation
- Métis Nation of Ontario
- Mississaugas of the Credit First Nation
- Kawartha Nishnawbe First Nation
- Six Nations of the Grand River
- Williams Treaties First Nations
 - Alderville First Nation
 - Beausoleil First Nation
 - Chippewas of Georgina Island
 - Chippewas of Rama First Nation
 - Curve Lake First Nation
 - Hiawatha First Nation
 - Mississaugas of Scugog Island First Nation

6.5.4 Formal Notices & Reports

As part of engagement on the Yonge North Subway Extension, the IRO shared the following project notices and reports with identified Indigenous Nations:

- Project Introduction Letter March 22, 2021*
- Draft YNSE EPR Addendum for Review – October 28, 2021
- Notice of EPR Addendum – February 10, 2022

* Due to an internal oversight, Mississaugas of Scugog Island First Nation received the Project Introduction letter on April 8, 2021. Metrolinx noted the discrepancy to the Nation.

6.5.4.1 Feedback:

- On March 22, 2021, Mississaugas of the Credit First Nation expressed interest in the project and requested a meeting with Metrolinx. A meeting was held on May 4, 2021.
- On March 28, 2021, Huron-Wendat Nation requested GIS Shapefiles to support their review of the project. Shapefiles were shared with Huron-Wendat Nation on two separate occasions, most recently on November 25, 2021.
- On November 9, 2021, Huron-Wendat Nation expressed interest in the project and requested a meeting. A meeting was held on November 25, 2021.

- On December 14, 2021, Curve Lake First Nation shared comments with Metrolinx which addressed both the Natural Environment Impact Assessment Report for the Draft YNSE EPR Addendum Review, as well as the application for a Species-at-Risk Permit. Metrolinx sent comment responses to Curve Lake First Nation on March 28, 2022.
- On March 14, 2022, Mississaugas of Scugog Island First Nation shared comments with Metrolinx which addressed the YNSE EPR Addendum, the Natural Environment Impact Assessment Report and the Stage 1 AA Report. Metrolinx sent comment responses to Mississaugas of Scugog Island First Nation on April 4, 2022.
- On March 14, 2022, Curve Lake First Nation shared comments with Metrolinx which addressed the YNSE EPR Addendum. Metrolinx sent comment responses to Curve Lake First Nation on April 4, 2022.
- On January 7, 2022, Haudenosaunee Development Institute, as agents of the Haudenosaunee Confederacy Chiefs Council, stated that until meaningful engagement has taken place, they object to all Metrolinx projects within Haudenosaunee territory. The Haudenosaunee Development Institute requested an extension of the stated deadline. Metrolinx provided a letter response on April 13, 2022.

6.5.5 Archaeology

Metrolinx recognizes the significance of archaeology to many Indigenous Nations. As such, Metrolinx endeavors to offer opportunities for participation of Indigenous Nations in archaeological fieldwork. Metrolinx has also made commitments to share archaeological assessments with Indigenous Nations for feedback in draft form prior to submission to the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) and to ensure opportunities for Indigenous Nations to participate in archaeological monitoring for the Yonge North Subway Extension project. Metrolinx aims to incorporate comments and feedback from Indigenous Nations into archaeological assessments.

For the Yonge North Subway Extension project, Indigenous Nations have been sent the following archaeological reports for review and comment and invitations for field work:

- Draft Stage 1 Archaeological Assessment Review which was shared with the Draft YNSE EPR Addendum Review - October 28, 2021
- Draft Stage 1 Archaeological Assessment Report which was shared with the Notice of EPR Addendum – February 10, 2022
- Project Update – Stage 1 Archaeological Assessment Report and Invitation for Participation in Royal Orchard Park Stage 2 Archeological Monitoring - March 10, 2022
- Project Update – Invitation for Participation in Royal Orchard Park and Hendon Park Stage 2 Archaeological Assessment - March 28, 2022

6.5.5.1 Feedback

- On April 20, 2021, Mississaugas of the Credit First Nation requested information regarding Metrolinx's plan to conduct a Stage 1 Archaeological Assessment. Metrolinx provided these details to the Mississaugas of the Credit First Nation on April 20, 2021.
- On December 14, 2021, Curve Lake First Nation provided feedback on the Draft Stage 1 AA Report for the Draft YNSE EPR Addendum Review. Metrolinx provided responses to Curve Lake First Nation on March 28, 2022.
- On November 9, 2021, Huron-Wendat Nation provided feedback regarding archaeology and requested a meeting to discuss. Meetings and correspondence took place between November 2021 and January 2022. The nature of this correspondence is considered confidential pursuant to section

15.1(1)(b) of the *Freedom of Information and Protection of Privacy Act* ("FIPPA") and is not reflected in detail in this record of consultation.

- On March 16, 2022, Curve Lake First Nation shared a comment with Metrolinx regarding the updates to the Stage 1 AA Report shared on February 10, 2021, regarding a land acknowledgement within the Stage 1 AA Report.
- On March 14, 2022, MCFN acknowledged receipt of the Stage 1 AA Report and did not have any questions, comments or concerns after reviewing the report.

Metrolinx made a commitment to Indigenous Nations to include Indigenous monitors in all archaeological fieldwork being completed for the Yonge North Subway Extension. Stage 2 Archaeological Assessment is proposed for late April 2022 and Metrolinx will be working with interested Indigenous Nations to ensure their participation.

- On March 11, 2022, Mississaugas of the Credit First Nation stated that they would like to participate in any Stage 2 AA work conducted by Metrolinx.
- On March 16, 2022, Curve Lake First Nation stated that they would like to participate in any Stage 2 AA work conducted by Metrolinx.
- During the March 25, 2022, meeting with MSIFN, they stated that they do not have the capacity to participate in any Stage 2 AA work.
- On March 29, 2022, Chippewas of Rama First Nation stated that they will not be able to participate in the April 2022 Stage 2 AA work and requested field notes be provided to them.
- On March 29, 2022, Six Nations of the Grand River stated that they would like to participate in any Stage 2 AA work conducted by Metrolinx.

6.5.6 Natural Environment

During the course of this project, Metrolinx learned that many Nations had an interest in participating in natural environment field studies and environmentally sensitive construction activities. Metrolinx committed to ensuring opportunities for Indigenous Nations to participate in such activities for the Yonge North Subway Extension project. The following Nations have indicated that they would like to be involved in monitoring for natural environment field studies and select environmentally sensitive construction activities such as, but not limited to, natural environment surveys, tree removals or in-water works:

- Curve Lake First Nation
- Mississaugas of the Credit First Nation
- Huron Wendat Nation

In response to this interest, an invitation for participation in such works was shared with Mississaugas of the Credit and Curve Lake First Nation:

- On May 25, 2021, an invitation to participate in upcoming natural environment field work including anuran call surveys, breeding bird surveys, vegetation inventory and classification, and fish habitat assessments was sent. In addition, targeted surveys for species at risk (SAR) potentially impacted by the YNSE project, such as barn swallow, butternut, chimney swift, redbreasted dace, and bat SAR.
- The fieldwork took place over several weeks and regular updates providing details of the fieldwork were provided to Curve Lake First Nation and Mississaugas of the Credit First Nation.

6.5.6.1 Feedback

- On July 5, 2021, Curve Lake First Nation responded to Metrolinx's invitation to participate, noting that they would not be able to send an Environmental Liaison on the short notice of the fieldwork. They also expressed concern that some of the work had already begun prior to the email invitation.

As Metrolinx continues to develop its Indigenous Relations Program, all Indigenous Nations will be provided the opportunity to participate in any future natural environment studies or environmentally sensitive construction activities. Metrolinx is also committed to endeavoring to provide more advance notice to Indigenous Nations.

Indigenous Nations were also sent information related to Metrolinx's permit applications under the *Endangered Species Act* related to SAR for the Yonge North Subway Extension project:

- Application for a permit under the *Endangered Species Act* and the proposed Amendment to 17(2)(d) Permit – December 10, 2021
- Notification that the Proposal for the 17(2)(d) Permit was posted on the Environmental Registry of Ontario (ERO) on January 7th, 2022, for a 30-day public review period – January 7, 2022

6.5.6.2 Feedback

- On December 14, 2021, Curve Lake First Nation shared comments and feedback on the SAR Permit application. This feedback is considered confidential pursuant to section 15.1(1)(b) of FIPPA and is not included as part of this consultation record. Metrolinx provided comment responses on March 28, 2022.
- On December 17, 2021, Chippewas of Rama First Nation noted that they did not have any comments on the proposed activities related to the SAR Permit. The Nation asked to continue to be informed of developments on this project and stated an interest in providing further comments as the project developed.
- December 13, 2021 & January 7, 2022 - the Haudenosaunee Development Institute, as agents of the Haudenosaunee Confederacy Chiefs Council, stated that the Nation would require further information and capacity funding in order to be able to respond on the application.
- On March 16, 2022, Mississaugas of Scugog Island First Nation shared comments and feedback on the SAR Permit. They had requested that the draft permit and future environmental management plans be circulated to them for review. They also raised concerns regarding impacts to Black Ash in the Pomona Creek area. Metrolinx provided comment responses on April 4, 2022.

6.5.7 Meetings

The IRO facilitated the following meetings to discuss the Yonge North Subway Extension project:

- Curve Lake First Nation – May 25, 2021, October 26, 2021, November 23, 2021 & March 23, 2022
- Mississaugas of the Credit First Nation – May 4, 2021
- Huron-Wendat Nation - November 25, 2021, December 7, 2021 & March 22, 2022
- Mississaugas of Scugog Island First Nation – March 16, 2022 and March 25, 2022

Meeting minutes are not included as part of the record of consultation as these discussions are sensitive and confidential.

6.5.7.1 Formal Feedback

Table 6-9 Indigenous Nations Formal Feedback and Metrolinx Response

Indigenous Nation	Formal Feedback	Metrolinx Response
Alderville First Nation	To date Alderville First Nation has not expressed concerns to Metrolinx about the Yonge North Subway Extension project.	Metrolinx continues to welcome opportunities to meet with Alderville First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Alderville First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.
Beausoleil First Nation	To date Beausoleil First Nation has not communicated or expressed concerns to Metrolinx about the Yonge North Subway Extension project.	Metrolinx continues to welcome opportunities to meet with Beausoleil First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Beausoleil First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.
Chippewas of Georgina Island	To date Chippewas of Georgina Island has not communicated or expressed concerns to Metrolinx about the Yonge North Subway Extension project.	Metrolinx continues to welcome opportunities to meet with Chippewas of Georgina First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Chippewas of Georgina First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.
Curve Lake First Nation	Curve Lake First Nation expressed concern about impacts to the Don River and requested that extreme care be taken to avoid impact. Curve Lake First Nation requested to be engaged throughout detailed design and construction and continues to expect to be invited to all archaeological, natural environment field studies and environmentally sensitive construction activities, including a request to conduct a ceremony	Metrolinx appreciates Curve Lake First Nation's feedback and will work to incorporate its comments into the project reports. Metrolinx will continue to provide information, updates and technical reports for review and comment throughout the rest of the project. Metrolinx will continue to invite Curve Lake First Nation to all archaeological and natural environment field work, as well as environmentally sensitive construction activities for the Yonge North Subway Extension project and provide fieldnotes as requested. Metrolinx will evaluate

Indigenous Nation	Formal Feedback	Metrolinx Response
	<p>prior to construction commencement.</p> <p>Curve Lake First Nation also submitted comments regarding:</p> <p>Oral History in the Stage 1 Archaeological Assessment Report</p> <p>Federal Policy Context</p> <p>Order of EPR Addendum Section 6 and Appendix I.¹</p>	<p>opportunities for ceremony prior to construction as requested.</p>
Chippewas of Rama First Nation	<p>To date Chippewas of Rama First Nation has not expressed concerns to Metrolinx about the Yonge North Subway Extension project. Chippewas of Rama requested to continue to receive information and updates regarding this project.</p>	<p>Metrolinx continues to welcome opportunities to meet with Chippewas of Rama First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Chippewas of Rama First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.</p>
Haudenosaunee Development Institute, on behalf of the Haudenosaunee Confederacy Chiefs Council	<p>Haudenosaunee Development Institute, as agents of the Haudenosaunee Confederacy Chiefs Council, have expressed concerns surrounding the subway program stating that consent from the Nation has not been given and has requested all work including any environmental assessments cease and desist.</p>	<p>Metrolinx continues to engage in conversations with Haudenosaunee Confederacy Chiefs Council regarding best practices for engagement, opportunities to provide capacity support and the Nation's concerns with regard to the level of consultation on Metrolinx projects. Metrolinx continues to welcome opportunities to meet with Haudenosaunee Confederacy Chiefs Council to discuss the Yonge North Subway Extension project; providing information, updates and technical reports. Metrolinx continues to invite Haudenosaunee Confederacy Chiefs Council to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.</p>
Hiawatha First Nation	<p>To date Hiawatha First Nation has not communicated or expressed concerns to Metrolinx about the Yonge North Subway Extension project.</p>	<p>Metrolinx continues to welcome opportunities to meet with Hiawatha First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Hiawatha First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive</p>

Indigenous Nation	Formal Feedback	Metrolinx Response
		construction activities for the Yonge North Subway Extension project.
Huron-Wendat Nation	Huron-Wendat Nation expressed interest in being engaged throughout all stages of the project. Huron-Wendat Nation requested to have archaeological monitors present throughout construction activities.	Metrolinx will continue to meet with Huron-Wendat Nation to discuss and provide regular updates on the Yonge North Subway Extension project; Metrolinx continues to provide information and technical reports to Huron-Wendat Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities, including the request for archaeological monitoring during construction for the Yonge North Subway Extension project.
Kawartha Nishnawbe First Nation	To date Kawartha Nishnawbe First Nation has not communicated or expressed concerns to Metrolinx about the Yonge North Subway Extension project.	Metrolinx continues to welcome opportunities to meet with Kawartha Nishnawbe First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Kawartha Nishnawbe First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.
Mississaugas of the Credit First Nation	Mississaugas of the Credit First Nation have expressed an interest in being engaged throughout the project including opportunities participate in all archaeological and natural environment field studies, as well as environmentally sensitive construction activities.	Metrolinx will continue to meet with Mississaugas of the Credit First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Mississaugas of the Credit First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.
Métis Nation of Ontario	To date Métis Nation of Ontario has not expressed concerns to Metrolinx about the Yonge North Subway Extension project.	Metrolinx continues to welcome opportunities to meet with the Métis Nation of Ontario to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to the Métis Nation of Ontario and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities.
Mississaugas of Scugog Island First Nation	Mississaugas of Scugog Island First Nation has submitted	Metrolinx continues to welcome opportunities to meet with Mississaugas of Scugog Island

Indigenous Nation	Formal Feedback	Metrolinx Response
	<p>comments to Metrolinx about the Yonge North Subway Extension project.</p> <p>Metrolinx participated in meetings with Mississaugas of Scugog Island First Nation in relation to comments regarding the SAR Permit and Mississaugas of Scugog Island First Nation requested to receive pre-construction environmental protection plans.</p>	<p>First Nation to discuss the Yonge North Subway Extension project; Metrolinx continues to provide information, updates and technical reports to Mississaugas of Scugog Island First Nation and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.</p> <p>Metrolinx would appreciate any feedback from Nations on the SAR Permit Package. Any comments received will be addressed outside of the formal permit approval process, which is proceeding in parallel.</p> <p>Metrolinx commits to sharing pre-construction environmental protection/management plans with all Nations, once available. Any comments received will be addressed as a separate process between Metrolinx and the Nation.</p>
Six Nations of Grand River	To date Six Nations of Grand River has not expressed concerns to Metrolinx about the Yonge North Subway Extension project.	Metrolinx will continue to meet with Six Nations of Grand River to discuss Metrolinx projects including the Yonge North Subway Extension; Metrolinx continues to provide information, updates and technical reports to Six Nations of Grand River and extend invitations to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.

6.5.8 Additional Engagement

In addition to the formal engagement outlined above, the IRO contacted or communicated with Indigenous Nations on the Yonge North Subway Extension project through:

- Forecasting upcoming communication across all projects to each Nation on a monthly basis
- Providing regular email reminders to each Nation regarding deadlines across all projects
- Receiving feedback and answering questions over the phone or during non-project specific meetings or engagements

Consultation with Indigenous Nations will continue as planning progresses. Correspondence records with Indigenous Nations are provided in **Appendix I6** of this Report. A copy of the Updated EPR Addendum along with the Notice of Updated EPR Addendum will be provided to Indigenous Nations on April 14, 2022.

6.6 Engagement with Technical Stakeholders

A number of federal, provincial, and municipal review agencies were consulted at various stages of the Project. As part of the Pre-Planning Phase, a comprehensive Stakeholder Contact List of review agencies was developed, and this list was refined and updated as the Project progressed based on feedback received regarding the addition of new or replacement contacts, see **Section 5.2.1** for the full list. The following section summarizes the consultation activities undertaken with review agencies. Consultation will continue as part of subsequent project phases, as required.

6.6.1 Provincial Agencies

Meeting materials with provincial agencies can be found in **Appendix I.7**.

6.6.1.1 Ministry of Heritage, Sport, Tourism and Cultural Industries (MHSTCI)

6.6.1.1.1 Summary of Meeting Held on February 23, 2021

The purpose of this February 23, 2021, meeting was to provide an introduction of the Project and background on the current EPR Addendum to MHSTCI and answer any preliminary questions. Overview of previous and current cultural heritage studies and what is being proposed for the current EPR addendum was provided. It was noted that a Cultural Heritage Report (CHR) is currently under preparation and is to be completed by late Spring 2021. The meeting also included an overview of the Project Study Area and how it has been defined as recommended by the Ontario Ministry of Transportation (MTO)'s Environmental Guide for Built Heritage and Cultural Heritage Landscapes (2013) and consistent with typical approaches taken for transit projects.

MHSTCI requested to include further clarity on Cultural Heritage mapping to illustrate what was assessed in 2009 EPR/ 2014 EPR Addendum and what has been newly identified. As well, a request was made to receive electronic versions of Cultural Heritage studies completed for 2009 EPR and 2014 EPR Addendum, including appendices. As well, the OneT+ team was asked to ensure rationale for Study Area buffer is included in Cultural Heritage Report (also provide a clear description of what indirect vs. direct impacts entail). MHSTCI inquired about whether there is any opportunity to provide this report earlier to ensure sufficient time for review and recommendations. It was noted that completion of the CHR is dependent upon permission from Metrolinx to conduct field work in the restricted area between John Street and High Tech Road. MHSTCI inquired about why non-intrusive field work conducted from the public ROW is restricted. Metrolinx noted that with the current sensitivity in this section, any type of surveying is restricted- however Metrolinx will take this feedback and work towards advancing non-intrusive field work.

The meeting concluded with a discussion on the proposed timeline for the CHR and whether a draft CHR can be submitted to the MHSTCI sooner than spring 2021, contingent on Metrolinx granting necessary fieldwork permissions.

6.6.1.2 Ministry of Transportation (MTO)

6.6.1.2.1 Summary of Meeting Held on December 7, 2020

The purpose of this December 7, 2020, meeting was to provide the Ministry of Transportation (MTO) with an update on the Bridge Station design. Metrolinx provided an overview of key changes in the alignment from the 2009 EPR specifically with regards to the proposed Bridge Station, now proposed west of the CN corridor replacing Langstaff Station on Yonge Street, and the Bridge Station bus terminal, now proposed at Bridge Station extending east-west between Highway 407 and Highway 7. No concerns were raised by the MTO staff regarding the proposed Bridge Station.

Metrolinx also provided an overview of potential connections to Highway 407 ETR and Highway 407 Transitway. MTO noted potential issues with the proposed ramps as shown, particularly due to the substandard design elements (curve radii, etc.). MTO noted that construction and maintenance obligations and costs with respect to these ramps would need to be determined between MX/IO, MTO, and 407 ETR. MTO also noted that future expansion of Highway 407, to support these ramps or for other purposes, would require space shown to be occupied by Bridge bus terminal. As well, MTO noted that 407 ETR would need to be engaged should ramp connections between Highway 407 and Bridge bus terminal be pursued. MTO finally noted that there may not be an appetite to revisit or amend the 407 Transitway EPR, however staff from the 407 Transitway team should be engaged to discuss this aspect of the Project. Relevant staff are not present at this meeting.

6.6.1.3 Ministry of the Environment, Conservation and Parks (MECP)

A letter from the Ministry of the Environment, Conservation and Parks (MECP) was received on June 12, 2021 which identified Indigenous Nations that may have an interest in the Project. The letter included direction on the consultation process as per *O. Reg 231/08*.

6.6.2 Municipal Agencies

Meeting materials with municipalities can be found in **Appendix I.8**.

6.6.2.1 City of Markham

6.6.2.1.1 Summary of Meeting Held on April 26, 2021

Metrolinx was invited to present the Yonge North Subway Extension at the City of Markham Development Service Committee Meeting on April 26, 2021. The Commissioner of Development Services addressed the Committee and provided a brief background of the YNSE Project. Metrolinx provided an overview of the work completed to-date on the YNSE Project followed by a presentation by on the Project scope, including an overview of the proposed subway alignment in the Initial Business Case; alternate alignment options considered during review; preliminary strategies identified for minimizing potentially adverse community impacts; and next steps in the Project timeline. The presentation concluded with a brief presentation on the YNSE Project community and stakeholder engagement plan, including an overview of upcoming and ongoing public consultation activities.

Various concerns were expressed by the participated with regard to the IBC Option 3, including potential disruptions, displacement, and other adverse impacts to the Royal Orchard community as a result of tunneling under existing residential and other sensitive land uses, including those related to sustained noise and vibration, mental and physical distress, damage to property foundations, depreciation of property values, and environmental impacts.

6.6.2.1.2 Summary of Meeting Held on November 18, 2021

The purpose of this meeting held on November 11, 2021 was to provide a YNSE project update and overview of the EPR Addendum and Impact Assessment Studies, seek City of Markham feedback regarding proposed YNSE infrastructure that overlaps with City of Markham areas of interest, as well as a discussion of next steps.

OneT+ described the anticipated timeline for the EPR Addendum and the studies that were completed to support it. OneT+ confirmed that EPR Addendum mapping is consistent with the IBC. The City of Markham questioned whether tree removals associated with the Project will be subject to the Metrolinx Vegetation Compensation Protocol. OneT+ confirmed that municipal by-laws will be followed, and permits will be obtained for any wooded areas that are not part of Metrolinx lands. Additionally, TRCA Regulated Areas are subject to the most stringent measures for vegetation compensation

An overview of the design components in the City of Markham was discussed, which included the trackwork and alignment, the launch shaft location, the crossings of the East Don River and Pomona Creek, EEB and TPSS locations, and station locations (i.e., Steeles Station, Clark Station, and Royal Orchard Station).

As the discussion continued, OneT+ provided an overview of the community outreach associated with the Royal Orchard neighbourhood and noted that multiple meetings have been held to provide opportunities to ask questions and share feedback. The City of Markham noted that comments heard from residents include concerns regarding tunnel depths and inquired whether any documentation is available that addresses depths from grade versus residential basements. OneT+ noted that materials touching on this topic are being developed. The Noise and Vibration analysis accounted for basement impacts and not purely measuring from the ground surface. The City of Markham noted that they will be providing more detailed comments in their EPR Addendum review related to this topic.

The meeting concluded with a high-level snapshot of upcoming milestones for the EPR Addendum, acknowledgement of future consultation with the City of Markham and requested that the City of Markham provide their feedback on the EPR Addendum by November 29, 2021.

6.6.2.2 City of Richmond Hill

6.6.2.2.1 Summary of Meeting Held on December 18, 2020

The purpose of this December 18, 2020, meeting was to provide an overview of the at-grade segment of the alignment that include portal structure, at-grade stations (Bridge and High Tech), and the Train Storage Facility. Several site requirements were identified along with the challenges that come with it such as capacity, resilience, and property constraints. Metrolinx explained how the proposed Multi-use Trail can be achieved parallel to the subway at-grade alignment and what the constraints (pinch points: below and north of High Tech Road or Below Bantry Bridge) were as well as alternatives. The Multi-use Trail would be approximately a 5m wide trail including 3m with 1m on each side as a buffer zone that is required along the length of the surface subway alignment. Metrolinx further noted that the impacts with the existing 16th Avenue Bridge and future bridge widening would need to be identified.

Main concerns expressed by the City was whether the Train Storage Facility would be able to support or protect for a future station; the property requirements at 16th Avenue and ability to fit the 3-track setup, or whether more properties are required. The City inquired whether Metrolinx is able to share examples of similar storage yard/ facilities that are currently present.

The meeting concluded with a discussion to determine current status of and identify opportunities for future road network for the Yonge Carrville /16th Key Development Area and road network. The City requested to review the locations of the Multi-use Trail with the introduction of noise walls and asked Metrolinx to share examples where subway infrastructure has been integrated with existing development or blended in with the character of the neighborhood.

6.6.2.2.2 Summary of Meeting Held on July 29, 2021

A second meeting with the City of Richmond Hill took place on July 29, 2021. The purpose of this meeting was to provide an update on the Train Storage Facility (TSF). The presentation focused on the Project status, the proposed TSF layout, multi-use trail (MUT), environmental impacts and mitigation measures, potential noise wall considerations, identification of property requirements and images and renderings of the TSF and MUT. Metrolinx noted that the TSF designs are currently a work in progress and material shown were a “snapshot” of progress. The team is currently progressing into a Stop and Plot 2 and coordinating with TTC feedback on operations and maintenance for facilities. A summary of comments received related to the MUT and TSF was also provided.

Metrolinx described the proposed TSF layout, which will include storage for 15 subway trains between Bantry Avenue and North of 16th Avenue, a multi-use trail, a potential noise wall, three structures and a parking area, and modifications of existing culvert at German Mills Creek. An overview of the multi-use trail was also provided, which will include protection and space-proofing (3m trail plus a 1m buffer on either side, equals 5m) based on *City of Richmond Hill Standards and Specification Manual Div. C Section C1.6 Section 2.2.1 Off Road Multi Use Trails*.

The meeting concluded with a slideshow of images and renderings of the aerial and perspective views for the train storage facility and multi-use trail. Items required following the meeting were receiving input from City of Richmond Hill on needs and requirements for facilities, determining temporary and permanent property requirements, finalize design requirement for German Mills culvert, coordinating with TTC on operational and maintenance requirements, due diligence works including Geotechnical and Surveys and finalizing track layouts.

6.6.2.2.3 Summary of Meeting Held on November 25, 2021

During the Meeting held on November 25, 2021, the City of Richmond Hill expressed that rather than running through the presentation, that the meeting be focused on key issues within the City as they relate to the EPR Addendum. Therefore, aspects of design included in the EPR Addendum including the subway alignment, tunnels, stations, emergency exit buildings (EEB), traction power substations (TPSS), ancillary structures, train storage facility (TSF), launch and extraction shafts were the focus of this meeting.

The City of Richmond Hill expressed concerns regarding community disturbance and impacts from the construction and operation of the train storage facility; as an industrial type facility is not ideal in residential communities and noise and vibration impacts are anticipated. The City also indicated that the greenway running along-side the proposed TSF within Richmond Hill is currently protected for 15 meters of development adjacent to the CN corridor, and stressed the importance that protecting for the proposed multi-use path for the community. Metrolinx acknowledged that these impacts to Richmond Hill will be documented in the Socio-Economic and Land Use Existing Conditions and Impact Assessment Report and a continued discussion will be required to address these issues.

The City acknowledged that the CN railway is an active corridor which does not have modern sound barriers/mitigation measure associated with it, therefore, the potential impacts from the TSF will overall be subject to more advanced and stringent mitigation measures. Metrolinx confirmed that a minimum 5.5m tall noise barrier along the western extent of the TSF will also be implemented, subject to further detailed design and that additional mitigation measures applicable to the Project will also be used to mitigate impacts associated with both construction and operation activities.

Richmond Hill identified that there is no discussion in the EPR Addendum currently, regarding east-west connectivity within the overall corridor or Richmond Hill, and noted that the ability to secure an east-west connection is critical and will need to line up with the lands being secured by Richmond Hill. Various agreements between Metrolinx and Richmond Hill will be required outside of the TPAP process in order to address future connectivity.

Richmond Hill inquired whether the impacts identified during this meeting will be documented in the upcoming publishing of the EPR Addendum, and indicated that they would like to see the main issues addressed either in the EPR Addendum or through separate correspondence of how they will be mitigated. Metrolinx concluded the meeting by acknowledging that coordination between Metrolinx and Richmond Hill will continue, and feedback will be elevated to the Project Delivery Team to further resolve concerns.

6.6.2.3 City of Toronto

6.6.2.3.1 Summary of Meeting Held on November 23, 2021

A meeting with the City of Toronto took place on November 23, 2021. The purpose of this meeting was to provide a project update and overview of the EPR Addendum and Impact Assessment Studies, seek City of Toronto feedback regarding proposed YNSE infrastructure that overlaps with City of Toronto areas of interest, as well as a discussion of next steps. Metrolinx described the aspects of design assessed by the EPR Addendum including the subway alignment, tunnels, stations, emergency exit buildings (EEB), traction power substations (TPSS), ancillary structures, train storage facility (TSF), launch and extraction shafts. The studies undertaken to support the EPR Addendum were further described and it was noted that the 90% EPR Addendum has been circulated for municipal review.

The City of Toronto inquired when Metrolinx expects that the arborist report will be submitted for review. Metrolinx responded that the line-wide report is aligned with the RCD report, which is expected in January 2022. Secondly, the City of Toronto inquired about the latest design options of the TPSS located at Yonge and Steeles. Metrolinx clarified that discussions on exact locations of features are ongoing and items presented during this meeting are aligned with the 90% EPR Addendum. The meeting concluded with a high-level snapshot of upcoming EPR Addendum milestones and Metrolinx requested that the City provide their feedback/comments on the EPR Addendum by November 29, 2021.

6.6.2.4 City of Vaughan

6.6.2.4.1 Summary of Meeting Held on November 18, 2021

A meeting with the City of Vaughan took place on November 18, 2021. The purpose of this meeting was to provide a project update and overview of the EPR Addendum and Impact Assessment Studies, seek City of Vaughan feedback regarding proposed YNSE infrastructure that overlaps with City of Vaughan areas of interest, as well as a discussion of next steps. The project update included key milestones for completion of the anticipated reference concept design, Draft EPR Addendum review by Government Agencies, field investigations for noise and vibration monitoring archaeological assessment, natural environment studies and visual site reconnaissance, public consultation (i.e., Virtual Open Houses) and community outreach completed to date.

An overview of the design components in the City of Vaughan was provided, including the alignment running underground, the crossing of the East Don River, EEB and TPSS locations, and station locations (Steeles Station, Clark Station, and Royal Orchard Station). Elements of the East Don River crossings were further discussed, and it was noted that potential impacts are very minimal due to the below grade tunnelling beneath the watercourses. Mitigation measures associated with impacts are the storing and stabilizing of stockpiled materials away from surface water and stabilizing disturbed areas through re-vegetation with native species.

The City of Vaughan questioned how land will be secured and/or protected for the various infrastructure requirements associated with the Project, considering the uncertainty surrounding station configurations. Metrolinx responded that we have assessed a larger footprint that accommodates the uncertainty surrounding station configurations. The City of Vaughan addressed concerns that buildings in cultural heritage districts are much older and more sensitive to impacts. Technical vibration analysis has been undertaken and Metrolinx has identified sensitive receptors that have the potential to be impacted. Commitments made within the EPR Addendum are binding and therefore do not need to be repeated in the Project Agreement verbatim. The PSOS/Project Agreement Technical Document places further environmental obligations on the Design-Builder to re-assess potential impacts resulting from the Project on the basis of a more mature design and stipulates regular monitoring and reporting. The meeting concluded with a high-

level snapshot of upcoming EPR Addendum milestones and Metrolinx requested that the City provide their feedback/comments on the EPR Addendum by November 29, 2021.

6.6.2.5 York Region

6.6.2.5.1 Summary of Meeting Held on November 25, 2021

The purpose of this meeting held November 25, 2021 was to provide a YNSE project update and overview of the EPR Addendum and Impact Assessment Studies, seek York Region feedback regarding proposed YNSE infrastructure that overlaps with York Region areas of interest, as well as a direction of next steps.

An overview of the design components within the York Region were discussed and included an overview of the trackwork and alignment, the launch shaft location, the crossings of the East Don River and Pomona Creek, train storage facility, and station locations. Furthermore, OneT+ gave a summary of the confirmed Steeles and Clark Stations, potential Royal Orchard Station, confirmed Bridge Station, and confirmed High Tech Station within York Region.

As the discussion progressed, key areas of interest were noted which included the East Don River and Pomona Creek Crossing, The Royal Orchard Community, The Launch Shaft and Portal Structure, ATYNSE Surface Segment Works & Train Storage Facility, Multi-use trail extending from Langstaff Road to Carrville Road and the German Mills Creek Crossing located on north of 16th Avenue. OneT+ described elements of the East Don River and Pomona Creek crossings and noted that potential impacts are very minimal due to the below grade tunneling beneath the watercourses. The YNSE project will use modern tunneling methods to carefully dig tunnels deep below the surface and use the latest technology to limit noise and vibration from trains passing over the rails.

The York Region noted that there is no discussion in the EPR regarding parking and inquired whether this was covered off in the original EA or if it will be included in the traffic analysis. OneT+ explained that that parking is not included in the RCD and potential impacts to parking during construction will be assessed through a separate study to be completed during the next stage of design. Also, commuter parking at Bridge Station is not included within the current RCD (or EPR Addendum); however, the RCD is subject to change and there remains time to further discuss and reach agreement on things such as commuter parking.

The meeting concluded with a high-level snapshot of upcoming EPR Addendum milestones and Metrolinx noted that a Virtual Open House is planned for the beginning of December.

6.6.2.6 Various Municipalities

6.6.2.6.1 Summary of Meeting Held on February 24 & 25, 2021 – RCD & PSOS Development Meeting

A series of two full-day meetings was held with the City of Toronto, City of Markham, City of Richmond Hill, City of Vaughan, York Region, Toronto Transit Commission (TTC), Ministry of Transportation (MTO), and Infrastructure Ontario (IO). The purpose of these meetings was to provide an overview MX/IO's approach to P3 contracts and Delivery Model; introduce the Project scope; the initial business case process and the process for developing the preliminary design business case; overview of the first preliminary draft Reference Concept Design (RCD) and Project Specific Output Specifications (PSOS); explain the status of the Project; collect feedback from reviewers and how comments will be managed through the design development phase; and ensure meaningful engagement and collaboration between Mx/IO and key stakeholders on the technical details of the Project design. Summary of Meeting Held on May 7, 2021 – Environmental Kick-off Meeting

The purpose of this May 7, 2021 meeting was to provide an overview of the Project, planning and implementation timeline for the YNSE, environmental studies undertaken, as well as the Project schedule and key Project milestones. Representatives from City of Toronto, City of Markham, City of Richmond Hill and York Region were present at the virtual meeting. York Region inquired whether the TPAP schedule provides

adequate time to capture transit projects that are currently underway or proposed in the area. Metrolinx explained that the current EPR Addendum work is advancing based on the Study Area conditions as they are understood at this time, and that future changes to the Project will be addressed on an as-needed basis. Areas of overlap will be confirmed between the proposed YNSE Project and other approved transit projects to help accommodate proposed infrastructure as necessary.

City of Toronto inquired about the proposed benefits of including all proposed stations for future-proofing purposes and the extension of the EA coverage to allow for the addition of stations without a further addendum. Metrolinx confirmed that EA coverage would allow for stations not initially selected to be added at a later date and noted that the current EPR Addendum coverage would extend for ten (10) years, after which time another assessment would need to be completed.

Metrolinx provided a summary of public and stakeholder engagement as well as key comments and concerns received from the public to date. It was noted that further meetings with municipalities will be scheduled as part of the EPR Addendum process.

The meeting concluded with a roundtable discussion addressing concerns related to the train storage facility, sensitive features within zone of influence, as well as appropriate incorporation of proposed infrastructure associated with the extension, such as a greenway and MUT.

6.6.3 Conservation Authorities

Meeting materials with the conservation authorities can be found in **Appendix I.9**.

6.6.3.1 Toronto and Region Conservation Authority (TRCA)

6.6.3.1.1 Summary of Meeting Held on March 30, 2021

During this March 30, 2021 meeting, Metrolinx provided an overview of the Project, locations along the proposed alignment that overlap with TRCA Regulated Limit, and potential need for a Voluntary Project Review (VPR) for various components of the Project.

TRCA raised a number of concerns regarding adding language on toe erosion and appropriate setbacks including mitigations in the Project Agreement and/or EPR Addendum. TRCA inquired about the level of detail that will be shared with them with regards to the groundwater impacts and expressed concerns about erosive flows at the location of EEB-5 and stone armoring. Metrolinx noted that the EEB-5 location will include consideration to ensure erosion impacts and slope stability issues are eliminated or minimized, as possible.

Other queries/concerns raised by the TRCA included whether culvert assessment for the culverts identified along the alignment were completed; whether additional constraints at the German Mills crossing location were identified due to the urban nature of this location and surrounding existing developments and infrastructure, and if so, the design needs to ensure that any cuts will result in a stable slope. TRCA also inquired about retaining walls at the train storage facility tail track and requested that it be included in the Project Agreement.

Additionally, Metrolinx provided an overview of culverts currently identified along the YNSE alignment as well as anticipated timeline for assessments and surveys that are currently underway. The meeting concluded with discussions on Permits, Licenses and Agreements (PLA) and the potential need for the TRCA VPR. Metrolinx noted that further discussion regarding VPR requirements will be required and will be scheduled accordingly with TRCA.

6.6.3.1.2 Summary of Meeting Held on November 11, 2021

The purpose of this meeting held on November 11, 2021, was to provide a YNSE project update and overview of the EPR Addendum and Natural Environment Studies, and seek TRCA feedback regarding proposed YNSE infrastructure that overlaps with TRCA Regulated Area.

OneT+ described the anticipated timeline for the EPR Addendum and the studies that were completed to support it. It was confirmed that potential stations are being assessed within the EPR Addendum based on the latest Metrolinx Initial Business Case (i.e., Royal Orchard Station and Cummer Station).

As the discussion continued, OneT+ provided an overview of EEB-3 and TPPS-4, which are presented within the EPR Addendum as being within the TRCA Regulated Area. There is an existing culvert beneath the proposed EEB location that will be re-routed should this location be carried forward. TRCA recommended moving the EEB outside of the floodplain, as there are safety concerns with evacuating the public to an area prone to flooding during an emergency. If it is not feasible to relocate EEB-3 outside of the floodplain, floodproofing all openings shall be required, as well as a detailed hydraulic assessment for the culvert adjustment.

OneT+ then provided an overview of proposed infrastructure in the vicinity of German Mills Creek. OneT+ indicated that the culvert upgrade will be required to support a train storage facility, which will ultimately increase capacity; thereby reducing flood elevations, improving fish passage, reducing erosion risk in the channel, and is the least environmentally impactful option compared to other options considered (i.e., compensation fill cuts elsewhere within the floodplain). TRCA noted that since in-stream manipulation and configuration of watercourses is likely, it is critical to engage a fluvial geomorphologist as hydraulic modelling shall be conducted. OneT+ responded that they are aware of the requirements and that a fluvial geomorphologist will be engaged for the channel design as the design progresses.

The meeting concluded with a high-level snapshot of upcoming milestones for the EPR Addendum, acknowledgement of future consultation with TRCA and requested that TRCA provide their feedback on the EPR Addendum by November 29, 2021.

6.6.4 Transportation and Transit Organizations

6.6.4.1 Canadian National (CN)

Meetings with CN are ongoing and held on a bi-weekly basis. Items discussed include but are not limited to:

- Options analysis / track alignment
- CN requirements
- CN/Metrolinx collaboration
- Technical solutions associated with launch shaft
- Construction schedule
- Early works surface segment
- CN approvals / agreements

6.6.4.2 York Region and York Region Transit

6.6.4.2.1 Summary of Meeting Held on November 10, 2020

The purpose of this November 10, 2020, meeting was to provide an overview of the bus routes and routings and bus bays and layover spaces at both Clark Station and High-Tech Station. Metrolinx provided an overview of the general bus loop design standards; bus electrification plans and needs and bus terminal Operation and Maintenance practices and needs. York Region shared plans to implement electrification over the next 20-30

years with York Region Transit (YRT) currently trialing 1 charging station at the Newmarket bus terminal. The meeting was concluded with inquiries related to timelines for review and feedbacks as well as the bus terminal needs.

6.6.4.2.2 Summary of Meeting Held on November 11, 2020

A second meeting with YRT occurred on November 11, 2020, to provide the Region with an overview of preliminary design of the proposed bus terminal at Bridge Station; general bus loop design standards; bus electrification plans and needs; and bus terminal Operation and Maintenance practices and needs. The meeting concluded with requests from York Region and YRT of the formula and analysis used in previous studies to calculate bus bay needs.

6.6.4.2.3 Summary of Meeting Held on December 8, 2020

A third meeting was held with YRT on December 8, 2020, to provide an update on the Bridge Station design and what the previous and current alignments entail. The updates included a proposed overpass at Langstaff Road to accommodate for the Bridge Station main entrance at that level; and potential connections to Highway 407 ETR, the Highway 407 Transitway to GO Transit, and York Region Transit (YRT). Main areas of concerns included bus routes and connections to the proposed Bridge Station bus terminal, number of bus bays, clearances for buses and it was requested that the design be looked at in detail to resolve any potential bottleneck at the connection serving all the bus routes. Other concerns included how the proposed Passenger Pickup & Drop-off serving vehicles other than public transit and bus service of the Langstaff Gateway area will interface with the Bridge Station bus terminal. YRT requested that road network and secondary plan information from local municipalities be factored into the Project design. The meeting concluded with inquiries about the operational model for the subways program and what the provisions were for subway shutdowns. Metrolinx noted that the Bridge Station bus terminal should be able to accommodate replacement shuttle bus service for TTC subway Line 1 during subway shutdown.

6.6.4.2.4 Summary of Meeting Held on June 17, 2021

At the June 17, 2021, York Regional Council, Metrolinx presented updates to the Yonge North Subway Extension. Items discussed included Project scope, timelines, and an overview of noise and vibration impacts and mitigations. A question-and-answer session took place following the presentation that addressed questions related to community building, Option 3 concerns, station locations, parking, noise and vibration.

6.6.4.3 Toronto Transit Commission

6.6.4.3.1 Summary of Meeting Held on November 12, 2020

The purpose of this November 12, 2020, meeting was to provide an overview of the bus routes and routings and bus bays and layover spaces at Cummer Station, Metrolinx also provided the general bus loop design standards, bus electrification plans and needs and bus terminal Operation & Maintenance practices and needs. Metrolinx also proposed to discuss them further as needed by Toronto Transit Commission (TTC).

Concerns raised by TTC included the number of trips that would be made per hour and locations for mid-route changing. TTC requested that Metrolinx consider accommodating emergency shuttle buses at Cummer and other YNSE stations. TTC noted that they prefer that layover spaces are sized to accommodate articulated buses, with one layover space minimum per route. They also requested that the bus loop designs should be per the TTC Design Manual and should accommodate two articulated buses laying over. Further concerns were raised on how the bus facilities are to be maintained. It was noted that the maintenance agreement will be worked out with transit operators in an agreement and will be contracted out. The TTC service planning staff would like to have a discussion with Metrolinx staff regarding an updated cost/benefit analysis and operating cost savings for decisions related to Cummer Station. The meeting concluded with TTC agreeing to provide data on emergency shuttle bus use on Line 1.

6.6.4.4 Richmond Hill Centre Terminal Stakeholders Meeting

6.6.4.4.1 Summary of Meeting Held on May 21, 2021

The purpose of this meeting held on May 21, 2021, was to identify the needs for the temporary relocation of the GO Bus platform and the temporary replacement of the pedestrian bridge at High Tech Station. Representatives from various agencies were present at the virtual meeting, including CN, MTO, Hydro One, 407 ETR, TTC, City of Toronto, City of Markham, City of Richmond Hill and York Region. An overview of the at-grade segment was given (High Tech & Bridge Station), as well as a construction timeline for the YRT bus terminal (GO Transit Platforms) and Richmond Hill Centre pedestrian bridge. Questions focused on the inclusion of the proposed multi-use trail in the Project scope, recommendations for cycling and pedestrian connectivity, anticipated future service levels, and accommodation of the nearby Hydro One corridor. The meeting concluded with a discussion of stakeholders' needs regarding the temporary GO bus platform and pedestrian bridge.

6.7 Engagement with Elected Officials

Consultation with elected officials and was carried out throughout the course of the Project through written correspondence and meetings. In addition, elected officials were circulated invitations to public meetings and notified of flyer distribution and environmental studies within their constituent communities, as applicable. Engagement with elected officials can be found in **Appendix I.10. Table 6-10** below provides a summary of all correspondence with elected officials undertaken as part of the Project to date.

Table 6-10 Summary of Correspondence with Elected Officials during Public Consultation

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
City of Markham	Frank Scarpitti	Mayor	N/A	March 18, 2021	Notice of IBC Release	Email
				May 5, 2021	Notice of May 6 th Metrolinx briefing to Keep York Moving	Email
				May 12, 2021	General invitation to Mayoral briefing prior to May 19 th Virtual Open House	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House / Invitation to January 5 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Upcoming Virtual Open House Series	Email
City of Markham	Don Hamilton	Deputy Mayor	N/A	March 18, 2021	Notice of IBC Release	Email
				April 22, 2021	Follow up to Markham General Committee Council presentation	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Markham	Jim Jones	Regional Councillor	Markham	March 18, 2021	Notice of IBC Release	Email
				April 22, 2021	Follow up to Markham General Committee Council presentation	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Markham	Joe Li	Regional Councillor	Markham	March 18, 2021	Notice of IBC Release	Email
				April 22, 2021	Follow up to Markham General Committee Council presentation	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Markham	Jack Heath	Regional Councillor	Markham	March 18, 2021	Notice of IBC Release	Email
				April 22, 2021	Follow up to Markham General Committee Council presentation	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Markham	Keith Irish	Councillor	Ward 1	March 18, 2021	Notice of IBC Release	Email

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
				April 22, 2021	Follow up to Markham General Committee Council presentation	Email
				May 12, 2021	Notice of environmental studies in select portions of community	Flyer and email
				May 12, 2021	General invitation to Councillor’s briefing prior to May 19 th Virtual Open House	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Markham	Andy Taylor	CAO		February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Markham	Alan Ho	Councillor	Ward 2	April 22, 2021	Follow up to Markham General Committee Council presentation	Email
City of Markham	Reid McAlpine	Councillor	Ward 3	April 22, 2021	Follow up to Markham General Committee Council presentation	Email
City of Markham	Karen Rea	Councillor	Ward 4	April 22, 2021	Follow up to Markham General Committee Council presentation	Email
City of Markham	Andrew Keyes	Councillor	Ward 5	April 22, 2021	Follow up to Markham General Committee Council presentation	Email
City of Markham	Amanda Collucci	Councillor	Ward 6	April 22, 2021	Follow up to Markham General Committee Council presentation	Email
City of Markham	Isa Lee	Councillor	Ward 8	April 22, 2021	Follow up to Markham General Committee Council presentation	Email
City of Richmond Hill	Dave Barrow	Mayor		October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Richmond Hill	Mary Dempster	City Manager		February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Richmond Hill	Joe DiPaola	Acting Mayor/Regional Councillor	N/A	March 18, 2021	Notice of IBC Release	Email
				April 9, 2021	Confirmation of Bayview Glen VOH date	Email
				April 12, 2021	Notice of delivery of April 21 st VOH flyers to Bayview Glen community	Flyer and email
				May 12, 2021	General invitation to Mayoral briefing prior to May 19 th Virtual Open House	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Richmond Hill	Carmine Perrelli	Regional Councillor	Richmond Hill	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Richmond Hill	Godwin Chan	Councillor and Regional Councillor (A)	Ward 6	March 18, 2021	Notice of IBC Release	Email
				April 8, 2021	Confirmation of Bayview Glen VOH date	Email
				April 12, 2021	Notice of delivery of April 21 st VOH flyers to Bayview Glen community	Flyer and email
				March 24, 2021	Engagement approach for YNSE – particularly in the Bayview Glen community	Phone and email
				May 4, 2021	Notice of environmental studies in ward	Flyer and email
				May 12, 2021	General invitation to Councillor’s briefing prior to May 19 th Virtual Open House	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Richmond Hill	David West	Councillor	Ward 4	March 18, 2021	Notice of IBC Release	Email
				March 24, 2021	Engagement approach for YNSE	Phone and email
City of Richmond Hill	Karen Cilevitz	Councillor	Ward 5	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Toronto	John Tory	Mayor		March 18, 2021	Notice of IBC Release	Email
				May 12, 2021	General invitation to Mayoral briefing prior to May 19 th Virtual Open House	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Toronto	John Filion	Councillor	Ward 18	March 18, 2021	Notice of IBC Release	Email
				May 4, 2021	Notice of environmental studies in ward	Flyer and email
				May 27, 2021	Invitation to pre-engagement briefing prior to May 19 th Virtual Open House	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Toronto	Chris Murray	City Manager		February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Vaughan	Maurizio Bevilacqua	Mayor		March 18, 2021	Notice of IBC Release	Email
				May 12, 2021	General invitation to Mayoral briefing prior to May 19 th Virtual Open House	Email
				May 27, 2021	Notice of May 6 th Metrolinx briefing to Keep York Moving	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Vaughan	Jim Harnum	City Manager		February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Vaughan	Nick Spensieri	Deputy City Manager		February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Vaughan	Mario Ferri	Deputy Mayor/Regional Councillor	Vaughan	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Vaughan	Gino Rosati	Regional Councillor	Vaughan	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Vaughan	Linda Jackson	Regional Councillor	Vaughan	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
City of Vaughan	Alan Shefman	Councillor	Ward 5	March 18, 2021	Notice of IBC Release	Email
				May 12, 2021	General invitation to Councillor’s briefing prior to May 19 th Virtual Open House	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
Town of Aurora	Tom Mrakas	Mayor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Aurora	Harold Kim	Councillor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Aurora	Wendy Gaertner	Councillor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Aurora	Sandra Humfries	Councillor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Aurora	Michael Thompson	Councillor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Aurora	Rachel Gilliland	Councillor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Aurora	John Gallo	Councillor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of East Gwillimbury	Virginia Hackson	Mayor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of East Gwillimbury	Loralea Carruthers	Councillor	Ward 1	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of East Gwillimbury	Terry Foster	Councillor	Ward 1	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of East Gwillimbury	Tara Roy-DiClemente	Councillor	Ward 2	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of East Gwillimbury	Joe Persechini	Councillor	Ward 2	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of East Gwillimbury	Scott Crone	Councillor	Ward 3	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of East Gwillimbury	Cathy Morton	Councillor	Ward 3	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Georgina	Robert Grossi	Regional Councillor	Georgina	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Georgina	Mike Waddington	Councillor	Ward 1	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Georgina	Dan Fellini	Councillor	Ward 2	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Georgina	Dave Neeson	Councillor	Ward 3	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Georgina	Frank Sebo	Councillor	Ward 4	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Georgina	Dave Harding	Councillor	Ward 5	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Township of King	Steve Pellegrini	Mayor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Township of King	Jordan Cescolini	Councillor	Ward 1	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Township of King	David Boyd	Councillor	Ward 2	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Township of King	Jakob Schneider	Councillor	Ward 3	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Township of King	Bill Cober	Councillor	Ward 4	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Township of King	Debbie Schaefer	Councillor	Ward 5	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Township of King	Avia Eek	Councillor	Ward 6	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	Tom Vegh	Deputy Mayor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	John Taylor	Mayor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	Grace Simon	Councillor	Ward 1	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
Town of Newmarket	Victor Woodhouse	Councillor	Ward 2	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	Jane Twinney	Councillor	Ward 3	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	Trevor Morrison	Councillor	Ward 4	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	Bob Kwapis	Councillor	Ward 5	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	Kelly Broome	Councillor	Ward 6	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Newmarket	Christina Bisanz	Councillor	Ward 7	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Whitchurch-Stouffville	Iain Lovatt	Mayor		April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Whitchurch-Stouffville	Ken Ferdinands	Councillor	Ward 1	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Whitchurch-Stouffville	Maurice Smith	Councillor	Ward 2	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Whitchurch-Stouffville	Hugo Kroon	Councillor	Ward 3	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Whitchurch-Stouffville	Rick Upton	Councillor	Ward 4	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Whitchurch-Stouffville	Richard Bartley	Councillor	Ward 5	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
Town of Whitchurch-Stouffville	Sue Sherban	Councillor	Ward 6	April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
York Region	Wayne Emmerson	Regional Chair		March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Ali Ehsassi	MP	Willowdale	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Majid Jowhari	MP	Richmond Hill	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Peter Kent	MP	Thornhill	March 18, 2021	Notice of IBC Release	Email
York Region	Bruce MacGregor	CAO		February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Melissa Lantsman	MP	Thornhill	October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Caroline Mulroney	MPP	York-Simcoe	March 18, 2021	Notice of IBC Release	Email
				April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Christine Elliott	MPP	Newmarket-Aurora	March 18, 2021	Notice of IBC Release	Email
				April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
York Region	Daisy Wai	MPP	Richmond Hill	March 18, 2021	Notice of IBC Release	Email
				May 4, 2021	Notice of environmental studies in riding	Flyer and email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				December 15, 2021	Metrolinx CEO Open Letter to the Community	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Gila Martow	MPP	Thornhill	March 18, 2021	Notice of IBC Release	Email
				March 26, 2021	Notice of delivery of March 2021 Royal Orchard Project Update Flyer	Flyer and email
				May 3, 2021	Notice of environmental studies in riding	Flyer and email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				December 15, 2021	Metrolinx CEO Open Letter to the Community	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email

Municipality	Name	Title	Ward/Riding	Date of Issuance	Topic	Correspondence
York Region	Michael Parsa	MPP	Aurora-Oak Ridges-Richmond Hill	March 18, 2021	Notice of IBC Release	Email
				April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Paul Calandra	MPP	Markham-Stouffville	March 18, 2021	Notice of IBC Release	Email
				April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Stan Cho	MPP	Willowdale	March 18, 2021	Notice of IBC Release	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				December 8, 2021	General invitation prior to December 16 th Virtual Open House	Email
				December 10, 2021	Reminder of upcoming December 16 th Virtual Open House	Email
				December 15, 2021	Metrolinx CEO Open Letter to the Community	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email
York Region	Stephen Lecce	MPP	King-Vaughan	March 18, 2021	Notice of IBC Release	Email
				April 28, 2021	General invitation to May 5 th Virtual Open House for northern York Region municipalities	Email
				October 13, 2021	General invitation prior to October 20 th Virtual Open House	Email
				October 18, 2021	Reminder of upcoming October 20 th Virtual Open House	Email
				February 10, 2022	Notice of Environmental Project Report Addendum and Virtual Open House Series	Email

6.7.1 Meetings with Elected Officials

Meeting materials with elected officials be found in **Appendix I.10**

6.7.1.1 Pre-IBC Briefing for MPPs – March 12, 2021

Prior to the release of the Initial Business Case (IBC), Metrolinx provided a briefing to the Thornhill and Richmond Hill Member of the Provincial Parliament. The meeting was held via a virtual teleconference on March 12, 2021. Attendees were as follows:

- Daisy Wai, MPP (Richmond Hill)
- Gila Martow, MPP (Thornhill)

Metrolinx presented the reference alignment recommended in the IBC and associated benefits. Discussion topics included parking, potential impacts anticipated in the Ryal Orchard community, and connectivity to transit, which Metrolinx noted will be primarily provided at Steeles and Bridge stations, and connectivity the *World on Yonge* development via walkway.

6.7.1.2 Presentation to Councillor David West's Community Conversation Group – April 29, 2021

On April 29, 2021, Metrolinx provided a Project update presentation to the Community Conversations group; a monthly meeting organized by the City of Richmond Hill's Councillor David West primarily for the residents of Ward 4. Approximately 55 individuals attended the meeting, which was held virtually.

Metrolinx presented general information about the Project including an overview of the reference alignment, a summary of proposed design components, and a status update. Following the presentation, a question-and-answer session took place, during which participants inquired about the exact location of the proposed train storage facility.

6.7.1.3 Briefing for MP Judy Sgro – May 11, 2021

Metrolinx provided a briefing to Judy Sgro, MP (Humber River – Black Creek) on the Project. The meeting was held virtually on May 11, 2021. Items discussed included the details of the proposed alignment and associated infrastructure. Metrolinx provided proposed design details and described environmental impact assessment results available at the time of the meeting.

6.7.1.4 Briefing for MPP Stan Cho – October 15, 2021

A briefing occurred on October 15, 2021 with MPP Stan Cho's at his office to discuss the Finch Early Works project within the YNSE. This is an important element for YNSE at its southern end, near the existing Finch subway station. Items discussed included the potential traffic impacts and disruption, and planned mitigation, as well as opening channels for future community engagement within the area.

6.7.1.5 Briefing for MPP Gila Martow – October 18, 2021

This briefing with MPP Martow covered project updates, information on tunnel construction, the upcoming environmental addendum and preliminary noise and vibration results, property compensation process, and updates on Metrolinx upcoming community office and sound demonstrations.

6.7.1.6 Briefing for Councillor Lafrate – October 19, 2021

This briefing with Councillor Lafrate covered project updates, information on tunnel construction, the upcoming environmental addendum and preliminary noise and vibration results, property compensation process, and updates on Metrolinx upcoming community office and sound demonstrations.

6.7.1.7 Briefing for Mayor Scarpitti – October 19, 2021

This briefing with Mayor Scarpitti covered project updates, information on tunnel construction, the upcoming environmental addendum and preliminary noise and vibration results, property compensation process, and updates on Metrolinx upcoming community office and sound demonstrations.

6.7.1.8 Briefing for MPP Gila Martow – November 8, 2021

The briefing for MPP Martow covered topics including the broader network connections with the YNSE, the alignment, noise and vibration impacts, and property requirements. The YNSE team concluded the meeting with providing MPP Martow's office with information on the passenger pick-up and drop-off relative to the 407 and the current reference alignment.

6.7.1.9 Briefing for Councillor John Filion – November 15, 2021

Briefing with Toronto Councillor John Filion (City of Toronto, Ward 18) to discuss the Finch Early Works project within the YNSE. This is an important element for YNSE at its southern end, near the existing Finch subway station. Councillor Filion and staff were briefed on upcoming timelines, planned mitigation, as well as opening channels for future community engagement within his ward.

6.7.1.10 Briefing for MPP Daisy Wai & MPP Billy Pang – February 4, 2022

This briefing provided information on the upcoming release of the EPR Addendum. Topics discussed included project benefits, the proposed changes since the previous environmental assessments in 2009 and 2014, and an overview of the EPR Addendum findings, the timeline and tactics for the public review period, and the public engagement plan.

6.7.1.11 Briefing for Mayor Scarpitti & Councillor Irish – February 8, 2022

This briefing provided information on the upcoming release of the EPR Addendum. Topics discussed included project benefits, the proposed changes since the previous environmental assessments in 2009 and 2014, and an overview of the EPR Addendum findings, the timeline and tactics for the public review period, and the public engagement plan.

6.7.1.12 Briefing for Councillors Jim Jones, Alan Shefman, Karen Cilevitz and Godwin Chan – February 8, 2022

This briefing provided information on the upcoming release of the EPR Addendum. Topics discussed included project benefits, the proposed changes since the previous environmental assessments in 2009 and 2014, and an overview of the EPR Addendum findings, the timeline and tactics for the public review period, and the public engagement plan.

6.8 Draft EPR Addendum Circulation

As part of seeking comments and feedback prior to issuing the Notice of EPR Addendum, a copy of the Draft EPR Addendum, including copies of supporting technical studies (included as EPR Addendum Appendices) was circulated to over 26 federal, provincial, municipal review agencies comprising the Government Review Team, as well as Indigenous Nations and conservation authorities in October 2021. Note that Indigenous Nations engagement, including circulation of the Draft EPR Addendum is outlined in **Section 6.5**. The complete list of review agencies and organizations who received a copy of the Draft EPR Addendum has been provided in **Table 6-11**. A cover letter was included with the submission, which provided background information on the project, a description of the Draft EPR Addendum content and Appendices, contact information, and described how comments could be submitted to the project team. The cover letter also

outlined specific sections of the Draft EPR Addendum that each review agency may be most interested in (where applicable) in order to assist in navigating the reports and to help focus their review. A copy of the cover letter can be found in **Appendix I.11**, along with a copy of the e-mail which was sent to each contact.

**Table 6-11 List of Review Agencies and Conservation Authorities
Who Received the Draft EPR for Review**

Review Agency/ Conservation Authority	Draft EPR Addendum Sent	Date Comments Received
Fisheries and Oceans Canada (DFO)	October 28, 2021	No Review Comments Received
Impact Assessment Agency (IAA) of Canada	October 28, 2021	No Review Comments Received
Transport Canada (TC)	October 29, 2021	No Review Comments Received
Ministry of Environment, Conservation and Parks (MECP)	October 28, 2021	December 3, 2021
Ministry of Transportation (MTO)	October 28, 2021	November 30, 2021
Infrastructure Ontario (IO)	October 28, 2021	No Review Comments Received
Ministry of Indigenous Affairs (MIA)	October 29, 2021	No Review Comments Received
Ministry of Heritage, Sport, Tourism and Cultural Industries (MHSTCI)	October 28, 2021	November 29, 2021
Ministry of Economic Development, Job Creation and Trade (MEDJCT)	October 29, 2021	No Review Comments Received
Ministry of Municipal Affairs and Housing (MMAH)	October 29, 2021	No Review Comments Received
Ministry of Natural Resources and Forestry Services (MNRF)	October 29, 2021	No Review Comments Received
Ministry of Education (ME)	October 29, 2021	No Review Comments Received
Ministry of the Solicitor General (MSG)	October 29, 2021	No Review Comments Received
Ontario Growth Secretariat (OSG)	October 29, 2021	No Review Comments Received
Ontario Heritage Trust (OHT)	October 29, 2021	November 29, 2021
Ontario Provincial Police (OPP)	October 29, 2021	No Review Comments Received
City of Toronto	October 28, 2021	November 29, 2021
York Region	October 28, 2021	December 8, 2021
City of Vaughan	October 28, 2021	December 8, 2021
City of Richmond Hill	October 28, 2021	November 29, 2021
City of Markham	October 28, 2021	December 8, 2021
Toronto and Region Conservation Authority (TRCA)	October 28, 2021	November 29, 2021
Toronto Transit Commission (TTC)	October 28, 2021	Returned with No Comment.
Hydro One	October 28, 2021	No Review Comments Received
407 ETR	October 28, 2021	No Review Comments Received
Canadian National (CN) Rail	October 28, 2021	No Review Comments Received

Ten (10) review agencies provided comments on the Draft EPR Addendum. Each comment/question received from the 10 review agencies following circulation of the Draft EPR Addendum was responded to via detailed comment/response tables that were prepared and submitted back to each review agency prior to EPR Addendum publication. **Appendix I.11** contains each comment (verbatim) submitted by each specific review agency as well as how the comment was considered and responded to by Metrolinx. The Draft EPR Addendum has been updated prior to the EPR Addendum publication, with the EPR Addendum incorporating agency feedback, where applicable.

6.9 Notice of EPR Addendum

In accordance with Section 15 of *O. Reg. 231/08*, a Notice of Project Report (EPR) Addendum was issued on February 10, 2022. The Notice provided the public, Indigenous Nations and organizations, review agencies and other interested parties with information about the project, the EPR Addendum review process, how to access the EPR Addendum (posted online to the Metrolinx www.metrolinxengage.com/en/yonge-north-subway-extension website) and how comments may be submitted. The Notice of EPR Addendum was published in 13 newspapers with circulation in the project Study Area, as summarized in **Table 6-12**.

The Notice of EPR Addendum also included the following information (a copy of the Notice can be found in **Appendix I.12**):

- Information as to how members of the public may examine the EPR Addendum and obtain copies;
- A description of project changes since the publication of the original EPR;
- A map of the proposed subway alignment;
- Implementation of the Issues Resolution Process;
- A statement that within 35-days after receipt of the Notice of Updated EPR Addendum, the Minister may issue a notice to Metrolinx allowing the changes to the Project in accordance with the Updated EPR Addendum. The Minister may also not issue a notice. The Minister may issue a notice if they are of the opinion that:
 - the way in which Metrolinx addressed a concern raised in the issues resolution process would cause unreasonable delay to the implementation of the Project, and the conditions in the Minister's notice modify the way in which the concern is addressed in the Updated EPR Addendum without causing unreasonable delay to the implementation of the Project; or
 - the change may have an adverse impact on the existing Aboriginal or treaty rights of the Aboriginal peoples of Canada, and the conditions may prevent, mitigate or remedy the adverse impact.

Table 6-12 Notice of EPR Addendum Newspaper Publications

Publication	Dates Published
Toronto Star	February 10, 2022
Vaughan Citizen	February 20, 2022
North York Mirror	February 20, 2022
Richmond Hill/Thornhill Liberal	February 10, 2022
Markham Economist & Sun	February 10, 2022
Le Metropolitain	February 10, 2022
Toronto L'Express	February 12, 2022

Publication	Dates Published
Sharhre	February 10, 2022
Salam Press	February 10, 2022
Iran Star	February 10, 2022
Korean Times Daily	February 11, 2022
Ming Pao	February 10, 2022
Sing Tao	February 10, 2022

The Notice of EPR Addendum was provided to the following parties:

- Director, Environmental Assessment Services, Environmental Assessment Branch, Ministry of the Environment, conservation and Parks (MECP);
- Director, Central Region MECP;
- The following Indigenous Nations:
 - Haudenosaunee Confederacy Chiefs Council
 - Huron Wendat Nation
 - Métis Nation of Ontario
 - Mississaugas of the Credit First Nation
 - Kawartha Nishnawbe First Nation
 - Six Nations of the Grand River
 - Williams Treaties First Nations
 - Alderville First Nation
 - Beausoleil First Nation
 - Chippewas of Georgina Island
 - Chippewas of Rama First Nation
 - Curve Lake First Nation
 - Hiawatha First Nation
 - Mississaugas of Scugog Island First Nation
- All members of the public, review agencies, municipalities, elected officials, and other stakeholders with e-mail addresses included in the Project Contact List.

6.9.1 Public Review Period

Upon issuing the Notice of EPR Addendum, the EPR Addendum and supporting Appendices (environmental and technical studies) were made available for review by the public, Indigenous Nations, review agencies, and other interested parties. Specifically, the EPR addendum was posted online to the Metrolinx project website as follows: www.metrolinxengage.com/en/yonge-north-subway-extension.

In accordance with Section 15 of *O. Reg. 231/08*, interested parties are eligible to submit written comments on the Project to Metrolinx within the posted review period. Metrolinx established an issues resolution process to attempt to resolve any concerns raised by reviewers in a way that does not cause unreasonable delay to the implementation of the Project (see **Section 6.10** and **Section 6.11**).

The review period commenced on February 10, 2022 and concluded on March 14, 2022.

Following the review period and within 65 days of the issuance of the Notice of EPR Addendum, Metrolinx has updated the EPR Addendum with a description of the issues resolution process, what Metrolinx did to address any concerns raised by reviewers, and any impacts to the timeline for implementation of the Project as a result of how concerns have been addressed.

6.9.2 Minister's Review Period

Following the Notice of Updated EPR Addendum, the Minister has up to 35-days to issue a notice only if the Minister is of the opinion that:

- the way in which Metrolinx addressed a concern raised during the issues resolution process would cause unreasonable delay to the implementation of the Project, and the conditions in the Minister's notice modify the way in which the concern is addressed in the updated EPR Addendum without causing unreasonable delay to the implementation of the Project; or
- the change may have an adverse impact on the existing aboriginal or treaty rights of the aboriginal peoples of Canada, and the conditions may prevent, mitigate or remedy the adverse impact.

The Minister may also choose to inform Metrolinx that no notice will be issued.

The implementation of the transit project may proceed if no notice is received with the up to 35-day period, the Minister informs Metrolinx that no notice will be issued, or if the requirements of the Minister's notice have been satisfied.

6.10 Issues Resolution Process and Final Yonge North Subway Extension EPR Addendum

The YNSE ERP Addendum was made available to the public, technical stakeholders, Elected Officials, Indigenous Nations and other interested persons for review from February 10, 2022, to March 14, 2022. During this time, interested parties had the opportunity to submit written comments to Metrolinx.

In accordance with Section 15 (22.8) of O. Reg. 231/08, Metrolinx developed an issues resolution process to attempt to resolve any concerns raised by interested persons and Indigenous Nations, in a way that does not cause unreasonable delay to the implementation of the Yonge North Subway Extension Project. The issues resolution process involved a detailed review and consideration of comments, as well as development of responses to comments.

In accordance with Section 15 (22.8) of O. Reg. 231/08 **Section 6.11** includes:

- A description of the issues resolution process in respect of any concerns raised by Indigenous Nations and interested persons;
- A description of the concerns raised by Indigenous Nations and interested persons during the issues resolution process and the outcome of the process, including what, if anything, Metrolinx did or will do in respect of the concerns raised; and
- A description of any impacts to the timeline for implementation of the Yonge North Subway Extension Project.

6.11 Description of Metrolinx Responses to Concerns Expressed by Indigenous Nations and Interested Persons

In accordance with Section 15 (22.8) of O. Reg. 231/08, the following section provides a description of the approach Metrolinx took to respond to concerns expressed by Indigenous Nations and interested persons, including government review agencies and other technical stakeholders.

Prior to the publication of the YNSE EPR Addendum, Indigenous Nations, government review agencies and technical stakeholders were provided the opportunity to review the draft report. Comments received during this period were addressed by Metrolinx throughout the report prior to publication and are documented in **Appendix I.13**.

During the EPR Addendum review period, Metrolinx received comments from two Indigenous Nations, approximately fifty public comments, one comment from a stakeholder group, and eleven comments from technical stakeholders and review agencies. A summary of key themes and feedback received during the review period, what Metrolinx is doing in response to the feedback received, and potential timelines implications is provided in **Table 6.13** below.

In addition, Metrolinx updated **Section 6.0** to include activities that took place following the EPR Addendum publication.

Table 6-13 Summary of Key Themes of Feedback Received, Metrolinx Actions in Response to Feedback, and Implications to the Yonge North Subway Extension Timeline

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
Public	<ul style="list-style-type: none">Project Alignment (Option 3)	<ul style="list-style-type: none">Request for inclusion of information for Project alignment Options 1 & 2 and “apples to apples” comparison with Option 3 within the EPR Addendum.Inquiry as to why Option 3 was selected and concerns regarding the alignment below the Royal Orchard community..	<ul style="list-style-type: none">Confirmation that the EPR Addendum is not intended to document a route selection or evaluation exercise and instead presents a re-assessment of the project as it is currently envisioned. The Initial Business Case (IBC)³ provides a comparison between options 1, 2 and 3, where option 3 was the determined to be the preferred option.Confirmation that plans for Option 3 have been refined and will result in deeper tunnels that travel under fewer single-family homes in the Royal Orchard community than the previous route. The route ensures the better placement of stations to minimize the disruption to Richmond Hill Centre, while also maximizing the developments and growth within that community and will create a multi-modal transit hub at Bridge Station, which connects the subway to GO train, GO bus, York Region Viva bus rapid transit and the local bus network.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Vertical Profile	<ul style="list-style-type: none">Request to add the vertical profile cross-section.	<ul style="list-style-type: none">Addition of vertical alignment figure in Section 2.1 of the updated EPR Addendum.Development of comment response, and inclusion of the comment in the Consultation section (Section 6) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Land Use	<ul style="list-style-type: none">Inquiry as to why the study does not include the future plan for the North Yonge Street Corridor.Inquiry regarding the Richmond Hill Centre Secondary Plan.Inquiry regarding land use designations and parks/open space.Request to add Royal Orchard Park label to Study Area mapping.Request to indicate alignment proposed to run directly beneath St. Anthony Catholic School.	<ul style="list-style-type: none">Confirmation that the approach within the Environmental Project Report Addendum has been to place greater emphasis on land use plans that have been approved through either the City’s Official Plan or enacted by-laws, and that Metrolinx continues to support the City as they determine the level of development that can be supported by the existing and improved transportation network and planned higher order transit system, including the YNSE as it is currently envisioned.Confirmation that the Yonge North Subway Extension conforms to the Richmond Hill Secondary Plan. The density of people and jobs planned for the Richmond Hill Centre is based on the completion of the YNSE, including High Tech and Bridge Stations, along with the provisions of a mix of uses and servicing required to support the forecasted growth for the area. The core of the Secondary Plan Area includes the planned High Tech Station as part of the Yonge North Subway Extension, and the southern boundary of the Secondary Plan Area includes the planned Bridge Station.Confirmation that the land use designations within the EPR Addendum were mapped and described based on a review of applicable policies and plans from provincial and municipal sources. Land use designations were standardized across the various municipalities into eight categories, based on land use type. A Parks/Open Space/Recreation Area designation was given to public or private lands where generally little development occurs aside from recreational or cultural facilities, so not all lands designated this way would be actual park space.Inclusion of Royal Orchard Park label to Appendix C Study Area Mapping.Revision to Section A 3.11.2.4 of the Land Use Existing Conditions and Impact Assessment Report to clarify the alignment runs directly beneath St. Anthony Catholic School.Development of comment response and sharing of information (Appendix I.13).Inclusion of comment received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Hydrogeology & Groundwater	<ul style="list-style-type: none">Comments regarding the lack of site-specific details of the subsurface conditions pertaining to the alignment section in the Royal Orchard neighbourhood.Concern about soil subsidence as a result of tunnelling under the Royal Orchard neighbourhood, and the generic nature of the mitigation measures.	<ul style="list-style-type: none">Confirmation that the detailed site-specific information regarding subsurface (soil and groundwater) conditions is typically not part of an EPR or an EPR Addendum as these data are collected over time to inform detailed design/construction planning and guide soil and groundwater management plans development. With data collection taking place over months, geotechnical investigations are typically completed in parallel with the drafting of an EPR/EPR Addendum. As a result, subsurface conditions information presented within an EPR/EPR Addendum reflects a summary of information from secondary sources such as previously completed studies, as well as information from the ongoing geotechnical and hydrogeological investigations available at the time of report preparation. Confirmation that the discussion of subsurface conditions in Section 4.3 of the Addendum will be expanded.Confirmation that soil subsidence/displacement during tunnelling is well understood, and provision of examples of the various methods modern tunnel boring machines (TBMs) use to control subsidence. Confirmation that soil subsidence/displacement has been identified as a	None.

³ Project alignment options 1, 2 and 3 were considered in the YNSE IBC, with Option 3 being carried forward and forming the basis of this EPR Addendum.

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
		<ul style="list-style-type: none">Request to add average depth range information for hydrostratigraphic layers and groundwater, correlated to the depth of the subway tunnels in each of the segments, and a request for profile information on the subsurface conditions.	<ul style="list-style-type: none">potential environmental impact in the EPR Addendum, along with a number of corresponding mitigation measures was proposed. And that additional, site-specific mitigation measures may be identified prior to construction, once project detailed design is further progressed and more information is available about site-specific subsurface conditions along the alignment.Confirmation that the average depth range for hydrostratigraphic layers & groundwater is not yet available for the entirety of the alignment. Confirmation that the discussion of subsurface conditions within Section 4.3 of the EPR Addendum has been expanded based on the information that has been interpreted at specific sections along the alignment.Development of comment responses and sharing of information (Appendix I.13).Inclusion of additional subsurface conditions information in Section 4.3 of the Updated EPR Addendum, and inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	
Public	<ul style="list-style-type: none">Traffic	<ul style="list-style-type: none">Request for explanation of terms used in the Transportation Report and their units.Inquiry regarding mitigation measures to reduce disruptions to public transit, sidewalks and pedestrian paths.Concern that the Bridge and High Tech Stations traffic study isn't completed prior to EPR Addendum release	<ul style="list-style-type: none">Provision of technical terms' definitions and confirmation that a glossary of definitions will be included in the Transportation Existing Conditions and Impact Assessment Report.Confirmation that the preferred strategy is to avoid disruptions to the public through close coordination between Metrolinx, local municipalities and municipal transit providers before and during construction. The public will be notified well in advance and conditions will be monitored to make adjustments where required.Confirmation that the Bridge and High Tech Stations traffic study is identified to be completed following the EA process as it requires inputs such as road geometry that are not available during the EA process and will be generated as part of the project detailed design.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Stations	<ul style="list-style-type: none">Questions regarding the inclusion of Royal Orchard StationQuestion regarding the criteria for the location of a station at Cummer/Drewry and Yonge and how revised plan compares to other planned stations.Question regarding the need for Bridge and High Tech Stations	<ul style="list-style-type: none">Confirmation that the latest plans for the project include four confirmed stations (Steeles, Bridge, High Tech and Clark), and that Metrolinx is moving planning and design work forward for Cummer Station and Royal Orchard Station in case they can be included in the project, and that the province is working with regional and municipal partners to explore potential funding opportunities to support additional stations.Confirmation that the study evaluated the benefits and trade-offs of station locations to inform decisions on which stations to be included in the project. The ridership model completed in support of the Neighbourhood Stations Analysis evaluation completed as part of the Initial Business Case shows that Cummer Station does not attract as many riders to the extension as expected due to its closer proximity to other nearby major subway stations (specifically, Finch and Steeles stations).Clarification that, since the neighbourhoods surrounding Bridge and High Tech stations are expected to grow significantly in the years to come, these stations will contribute a large portion of the riders that will use the extension, especially those who transfer to the subway from a bus. Provision of further details regarding transit connectivity and planning for these stations.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Climate Change	<ul style="list-style-type: none">Inquiry regarding stormwater management and flood mitigation/climate change and comments regarding environmental changes occurring as a result of climate change and their potential impacts on the project.	<ul style="list-style-type: none">Confirmation that the YNSE will be subject to the requirements of a federal climate lens, which will include a detailed assessment of how the project will be designed to anticipate, prevent, withstand, and adapt from climate change and its associated effects on the environment, including stormwater management and flood mitigation. The Metrolinx Sustainability Strategy (2015-2022) and the Metrolinx Climate Adaptation Strategy provide additional detail on how the uncertainties associated with climate change will be addressed by applying robust solutions that are effective, economical and efficient.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Archaeology	<ul style="list-style-type: none">Inquiry regarding Stage 1 Archaeological Assessment findings.Comments regarding impacts of potentially required Stage 2 AA to Royal Orchard Park	<ul style="list-style-type: none">Confirmation that the Stage 1 Archaeological Assessment was completed for the Project by a licensed archaeologist in accordance with the Standards and Guidelines for Consultant Archaeologists. Any areas that retain archaeological potential that will be disturbed as part of constructing the YNSE will be subject to a field survey to identify archaeological resources in accordance with the Standards and Guidelines.	None.

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
			<ul style="list-style-type: none">Confirmation that at this time, project construction-related ground disturbance in the Royal Orchard Park is not anticipated as tunnelling activities will be below surface. Confirmation that, site-specific geotechnical investigations (borehole drilling) is required to be completed in Spring 2022, that would need to be accompanied by a Stage 2 archaeological assessment. Confirmation that notifications for the borehole drilling work were sent to the Royal Orchard community the week of March 28th 2022and that for any other upcoming fieldwork, communications will occur with the local community related to the nature, extent and duration of the work prior to work commencement.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	
Public	<ul style="list-style-type: none">2022 YNSE EPR Addendum and the 2009 YSE EPR assessment and technical study approach	<ul style="list-style-type: none">Comments noting differences in assessment approach between the 2022 YNSE EPR Addendum and the 2009 YSE EPR.Comment regarding the Natural Environment study area in the 2009 EPR appearing larger than the natural Environment study area in the 2022 EPR Addendum.	<ul style="list-style-type: none">Confirmation that while the 2009 EPR included an evaluation of potential alternatives that was informed by consultation and outreach, these efforts are not a requirement of the TPAP. Clarification that one of the main differences between the TPAP and a traditional environmental assessment is that the TPAP begins with a selected transit project that forms the basis for assessment – i.e., O. Reg 231/08 does not require proponents to examine alternatives to a particular transit project or alternative ways of delivering a transit project (such as through alternative route alignments). This is because the impacts of transit projects are well known, predictable and can be readily mitigated through the use of Best Management Practices (BMPs) and standard mitigation measures.Confirmation that the 2022 YNSE Natural Environment Study Area has been defined as the Project footprint (based on the currently available conceptual design information) plus a 120 m buffer for consideration of potential negative impacts, as recommended by the Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (MNR 2010). A number of the existing secondary source data search areas extend well beyond this Study Area (e.g., wildlife atlases, such as the Ontario Breeding Bird Atlas use a 10 km grid system). The Natural Environment Study Area in the 2009 NE Report includes a 500 m buffer on either side of Yonge Street between Finch Avenue and Carville Avenue/16th Avenue as described in Section 1.0 of the report. The 500 m buffer includes the review of secondary source data from the Toronto and Region Conservation Authority (TRCA), Ministry of Natural Resources (MNR) and Environment Canada (EC). However, field investigations completed by Ecoplans Limited focused on the natural features fall generally within 100 m of Yonge Street. This is consistent with the current study approach.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Project Implementation	<ul style="list-style-type: none">Inquiry regarding the start of construction and completion of the project.Inquiry regarding travel times.	<ul style="list-style-type: none">Confirmation that the planned date to begin main construction is late 2023. Metrolinx will have more information about construction timelines as we progress through the next phase of planning and design, but we remain committed to an in-service date of 2029-2030, after the Ontario Line is in service.Confirmation that Metrolinx is still in the early phases of the project and that a detailed understanding of travel times will be made public in the Preliminary Design Business Case (PDBC).Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public	<ul style="list-style-type: none">Other	<ul style="list-style-type: none">Comments regarding incorrect street names on mapping.	<ul style="list-style-type: none">Updates to key maps found in Appendix C.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Public and Stakeholders	<ul style="list-style-type: none">Train Storage Facility	<ul style="list-style-type: none">Questions regarding the location of the train storage facility.	<ul style="list-style-type: none">Confirmation that the proposed location of the Train Storage Facility can be found on page 26 of YNSE Concept Design Map. The exact location and size of the facility will be confirmed during future project phases. Confirmation that Metrolinx will continue to work closely with municipal and regional partners to make sure we get the most benefits out of the design while minimizing local impacts. Clarification that the next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC) (expected to be released in early 2023), which will further refine the project's design, route, and benefits.Development of comment responses and sharing of information (Appendix I.13).	

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
			<ul style="list-style-type: none">Inclusion of comments received in the Consultation section (Section 6) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	
Community Groups and Stakeholders	<ul style="list-style-type: none">Commuter Parking	<ul style="list-style-type: none">Inquiry regarding absence of a commuter parking lot at Langstaff / Longbridge that was previously included in the 2009 EPR.	<ul style="list-style-type: none">Confirmation that the Reference Concept Design that forms the basis for assessment in the current EPR Addendum does not include a commuter parking lot in the vicinity of Langstaff Road and Longbridge Road. Clarification that the next stage in planning for the Yonge North Subway Extension includes the release of the Preliminary Design Business Case (PDBC), which will further refine the project's design, route, and benefits. Parking will be evaluated in more depth through the release of the PDBCDevelopment of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Community Groups and Stakeholders	<ul style="list-style-type: none">Permits	<ul style="list-style-type: none">Concern regarding Metrolinx seeking a a socio-economic permit under the Endangered Species.Comments regarding CN Rail permits required.	<ul style="list-style-type: none">Confirmation that Metrolinx is committed to complying with the provisions of the provincial Endangered Species Act (ESA). Clarification that the ESA provides for authorizations to allow projects to proceed as long as certain protective requirements are followed aimed at protecting and recovering species at risk, and that permits under the ESA, including the one being sought by Metrolinx for the YNSE, may only be issued under certain circumstances and contain conditions that must be followed to minimize the adverse effects and ensure the project will not jeopardize the survival or recovery of protected species.Confirmation that discussions with CN Rail are ongoing and that Metrolinx will continue to engage CN Rail as design progresses and to obtain necessary permits/approvals.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Community Groups and Stakeholders / Public	<ul style="list-style-type: none">Consultation	<ul style="list-style-type: none">Comments regarding inconsistency between the number of Government Review Team agencies that received the Draft EPR Addendum and the number of agencies that provided feedback.	<ul style="list-style-type: none">Confirmation that the EPR Addendum included all feedback that was provided by the review agencies within Appendix I.11 (GRT Circulation), and the Updated EPR Addendum to be issued following the Public Review Period will document any further comments received, as well as Metrolinx's responses. Metrolinx will continue to engage review agencies, CN Rail and other technical stakeholders during the detailed design and construction phase of the project, as required.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Community Groups and Stakeholders / Public	<ul style="list-style-type: none">Noise & Vibration	<ul style="list-style-type: none">Comments related to the presentation of operational noise and vibration assessment results and efficacy of operational noise and vibration mitigation measures along the tunnelled segment of the alignment through the Royal Orchard neighbourhood.Request to refer to construction and operational noise and vibration threshold levels as damaging impacts, rather than nuisance effects.Request for Metrolinx to quantify and include its public commitments regarding “nearly imperceptible” and “practically imperceptible” levels of noise and vibration in the Royal Orchard neighborhood.	<ul style="list-style-type: none">Confirmation that the EPR Addendum currently presents predicted future ground-borne noise and vibration levels *without mitigation* and the reductions that need to be provided by the mitigation measures to achieve the applicable limits first. Mitigation measures – solutions such as floating slab track – that will be effective in achieving the required reductions are presented in a separate table in the report. Clarification that subject to further refinement as the design progresses, mitigation would entail installing floating slab track between approximately the north end of Royal Orchard Station and the south end of the portal. Confirmation that floating slab systems are highly effective at controlling ground-borne noise and that a reduction of more than 25 dB in the A-weighted sound levels can be achieved with this system in place. Confirmation that, in the Royal Orchard neighbourhood, ground-borne noise levels of less than 30 dBA and vibration levels of less than 0.05 mm/s can be achieved.Confirmation that the term “nuisance” used to describe the potential noise and vibration effects associated with construction phase of the project in the Socio-Economic and Land Use Characteristics Report, and that further details regarding the assessment of the potential noise and vibration impacts can be found in the Noise and Vibration Report.Confirmation that the industry standard criteria for ground-borne noise and vibration at residential receptors are 35 dBA and 0.10 mm/s, respectively. Confirmation that, in a mature residential neighbourhood where tunnels are below residential homes, Metrolinx is committed to achieving ground-borne noise levels of less than 30 dBA and ground-borne vibration levels of less than 0.05 mm/s, and that these commitments will be included in the Updated EPR Addendum. Based on the depths through the residential community, floating slab track can	None.

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
		<ul style="list-style-type: none">Request for Metrolinx to provide supporting evidence that technologies used to mitigate noise and vibration have been proven to provide reductions, and requests for Metrolinx to develop a long-term post-construction monitoring program of ground-borne noise and vibration levels along the alignment through the Royal Orchard neighbourhood, and contingency plans should noise/vibration limits be exceeded.Inquiries and comments regarding the lack of site-specific geotechnical/soil conditions information and what role this played in the operational noise and vibration assessment for the alignment segment in the Royal Orchard community.Comments regarding the lack of noise and vibration monitoring in Royal Orchard homes and buildings that will be tunnelled under.Comments about lack of identified health and learning impacts associated with noise and vibration.Questions and comments regarding noise and vibration associated with tunnelling activities under the Royal Orchard neighbourhood, including noise and vibration limits and impacts associated with the temporary service locomotives and a request for rubber-tired vehicles to be specified.	<p>achieve sound levels of less than 30 dBA. The corresponding ground-borne vibration level would be less than 0.05 mm/s, and would be imperceptible.</p> <ul style="list-style-type: none">Confirmation that Metrolinx is committed to achieving ground-borne noise levels of less than 30 dBA and ground-borne vibration levels of less than 0.05 mm/s through the Royal Orchard community. Though subject to further refinement as the design progresses, this would entail installing floating slab track approximately between the north end of Royal Orchard Station and the south end of the portal. Provision of reference to the “State-of-the-Art Review: Prediction of Groundborne Noise and Vibration from Rail Transit Trains – UMTA-MA-06-0049-83-4/DOT-TSC-UMTA-83-3” document, which is a study that established that reductions of over 25 dBA were achieved using the double tie floating slab track. Provision of information about complaint frequency for the existing Sheppard Subway line in Toronto that utilized floating slab track and where complaints number received to date was 9, including only one since 2012. Confirmation that the modern floating slab track system, continual track and vehicle maintenance, and regular inspections are anticipated to ensure compliance with the noise and vibration exposure limits as committed to by Metrolinx.Confirmation that the assumptions regarding soil conditions are conservative in nature, and that according to the US Federal Transit Administration procedures, this is likely to overpredict impacts without mitigation applied. Mitigation measures are then applied to meet standards that are based on the over-predicted values. Confirmation that the completion of vibration propagation testing is carried out during the detailed design phase, as the design progresses and undergoes refinement.Clarification that baseline noise and vibration measurements are typically completed nearby existing major sources of noise and/or vibration. In the case of ground-borne vibration and ground-borne noise, the applicable limits from the MECP and the FTA are based on absolute levels and therefore existing levels/existing conditions measurements of ground-borne noise and ground-borne vibration were not collected along the tunnelled portion of the alignment where project operation may result in ground-borne noise and ground-borne vibration.Clarification that the YNSE project follows the requirements of the Ontario Regulation 231/08: Transit Projects and Metrolinx Undertakings. Provision of details regarding Metrolinx’s assessment and management process for noise and vibration, which includes commitments to mitigation to avoid any significant impacts, specifying contractual construction and operations noise and vibration limits to limit both short-term and longer-term exposure, completion of site-specific construction noise and vibration management plans, installation of construction noise and vibration mitigation, real-time monitoring of construction noise and vibration levels to allow for adaptive management as required; and installation of operational noise and vibration mitigation to meet EA commitments.Confirmation that prior to construction commencement, the contractor will update the noise and vibration assessments and submit detailed noise and vibration management plans to Metrolinx for review and approval. If the applicable noise and vibration limits are projected to be exceeded, appropriate mitigation measures will be used to reduce noise and vibration. Examples of such measures are outlined in the EPR Addendum report. During construction, noise and vibration levels will be monitored to ensure applicable limits are not exceeded and mitigation measures are effective. Before construction begins, Metrolinx will establish a comprehensive communications program to inform local communities about the project scope, schedule, and noise and vibration management strategies. Provision of clarifications regarding temporary service locomotives operation, including applicable noise and vibration limits, impact assessment approach. Confirmation that the applicable noise and vibration limits are to be adhered to regardless of whether a rail-based system or rubber-tired vehicles are used.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	
Community Groups and Stakeholders	<ul style="list-style-type: none">Natural Environment	<ul style="list-style-type: none">Questions regarding the tunnel depth underneath Pomona Creek.Comments regarding the potential groundwater impacts associated with groundwater seepage into Pomona Creek.Comments regarding absence of primary fish data collection for Pomona Creek and lack of documentation of groundwater seepage evidence.	<ul style="list-style-type: none">Confirmation that at Pomona Creek, the top of the subway tunnel will be approximately 17 m below the bed of the creek and is not anticipated to negatively impact aquatic ecosystems.Confirmation that though groundwater seepage was not noted during the field assessment of the Pomona Creek segment associated with the proposed tunnel crossing under the creek, this information will be further considered in the context of future hydrogeologic assessments and during the development of the Groundwater Management and Dewatering Plan. Clarification that, as the tunnels are well below the creek bed and no long-term dewatering has been identified in the context of the Pomona Creek crossing as the tunnels will be water-tight, no impacts or mitigation are anticipated.Clarification that the secondary fish community data coupled with incidental observations during field work were considered to provide a suitable characterization of the creek’s fish community and confirmation that no impacts to the aquatic ecosystem are anticipated as the subway tunnel is approximately 17 m, or well below the bed of the creek and there are no in-water works proposed. Confirmation that	None.

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
		<ul style="list-style-type: none">Comment regarding the general nature of mitigation measures and monitoring activities.	<p>groundwater seepage evidence was not noted during field investigations, likely due to the fact that a relatively short segment of the creek was assessed, adjacent to the proposed underground tunnel crossing, however Metrolinx will consider this information as part of future hydrogeologic assessments.</p> <ul style="list-style-type: none">Confirmation that the mitigation and monitoring requirements shown in the EPR Addendum are specific to the project and that, prior to construction, the Contractors will be submitting detailed, site-specific natural environment management plans to be reviewed and approved by Metrolinx. These plans will consider local context of construction sites and may include additional mitigation measures.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	
Community Groups and Stakeholders	<ul style="list-style-type: none">Air Quality	<ul style="list-style-type: none">Questions regarding air quality assessment methodology, including generation of wind roses, temperature and precipitation patterns, inclusion of climate change, and landscape considerations.Concerns regarding odour and other air quality concerns associated with ventilation grids and shafts.	<ul style="list-style-type: none">Confirmation that the approach used within the current EPR Addendum has been accepted by the MECP and Environment and Climate Change Canada and that the two air dispersion models used to assess air quality impact assessments within the EPR Addendum (AERMOD and CAL3QHCR) are both approved by MECP and the Ministry of Transportation. Provision of clarifications regarding generation of wind roses, temperature and precipitation patterns, inclusion of climate change, and landscape considerations.Confirmation that ventilation grids will be used on as needed basis and during emergency situations. These ventilation shafts are not continuous sources of air emissions during the operational phase of the project. Based on our current analysis, there are no vents or grates required in the project area east of Yonge, through Royal Orchard, to the tunnel portal just south of Langstaff. Further investigations will confirm the ventilation infrastructure required for the full route and Metrolinx will continue to keep the communities updated as we move through the next phases of design.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Community Groups and Stakeholders	<ul style="list-style-type: none">Property Impacts	<ul style="list-style-type: none">Comments regarding property impacts in the Royal Orchard community and request to disclose the number of private homes that will be tunnelled under in the EPR Addendum.Request for the right to comment further as the process continues in order to evaluate any impacts to current and future land uses. Request for inclusion in future circulations and consultations.Request to clarify that St. Anthony Catholic Elementary School is located directly above the proposed alignmentComment noting that compared with Options 1 and 2, Option 3 complicates the property requirements by requiring additional residential properties, and an expanded CN/GO railway corridor.	<ul style="list-style-type: none">Confirmation that the nuances of the alignment are discussed extensively throughout the EPR Addendum through sections dedicated to describing existing conditions (Section 4) and the assessment of potential impacts and identification of mitigation measures (Section 5), and that this is supplemented through detailed mapping within the Appendix A to the EPR Addendum. Confirmation that Metrolinx has begun engagement with property owners in the Royal Orchard community and will continue these efforts as project planning progresses. In December 2021, Metrolinx shared letters with the Royal Orchard residents whose home, front yard or back yard are directly above the planned tunnels.Confirmation that stakeholders will be included in future circulations and consultations to ensure adequate opportunity to evaluate potential impacts.Revision made within Section A3.11.2.4 of the Land Use Existing Conditions and Impact Assessment to indicate that the alignment is proposed to run directly beneath St. Anthony Catholic Elementary School.Confirmation that Metrolinx has taken the comments from the community and elected leaders and completed a detailed technical review that improved the initial alignment design. This new design (Option 3 Adjusted Route) provides for deeper tunnels that are under fewer homes in the Royal Orchard neighbourhood.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Community Groups and Stakeholders	<ul style="list-style-type: none">Built Heritage Resources and Cultural Heritage Landscapes	<ul style="list-style-type: none">Comments regarding level of assessment for homes in the Royal Orchard neighbourhood in comparison to heritage homes and requests to apply the same scope of impact assessment used for built heritage resources and cultural heritage landscapes to analyze the impact on 50 plus year old homes.	<ul style="list-style-type: none">Confirmation that the assessment of heritage resources contained within the EPR Addendum was completed in accordance with applicable legislation and guidance documents issued by the MHSTCI. and that residential properties were also carefully considered. Confirmation that Metrolinx has taken the comments from the community and elected leaders and completed a detailed technical review that improved the initial alignment design, and that this new design, Option 3 Adjusted Route, provides for deeper tunnels that are under fewer homes in the Royal Orchard neighbourhood.Development of comment responses and sharing of information (Appendix I.13).	None.

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
			<ul style="list-style-type: none">Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	
Community Groups and Stakeholders	<ul style="list-style-type: none">EEBs	<ul style="list-style-type: none">Comment regarding uncertainty of EEB locations, home proximity to EEBs, contingency plans and management during evacuation.	<ul style="list-style-type: none">Confirmation that the design team is working to determine the exact location of the EEBs needed along the entire route of the subway extension, with a specific focus to reduce the number needed in residential areas. Applicable safety standards require EEBs to be located within a set maximum distance from the next point of egress.Confirmation that EEBs are anticipated to be used only in exceedingly rare situations when it is necessary to protect the health and safety of transit riders and operators. Should such extremely rare situations arise, passengers, once at surface, would be moved from an EEB, for example via a shuttle service provided by the subway operator. As the EEBs are not part of a station, they are not intended to be used for routine activities and are in place solely to facilitate emergency access for firefighters and egress for passengers. Metrolinx will continue to engage residents as design plans progress and specific locations of EEBs are confirmed.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
Indigenous Nations	<ul style="list-style-type: none">Environmental ImpactsMitigation & Monitoring	<ul style="list-style-type: none">Mississaugas of Scugog Island First Nation provided comments related to concerns of impacts on environmentally sensitive lands associated with crossing location of Pomona Creek, migratory breeding bird impacts, monitoring and mitigation activities.	<ul style="list-style-type: none">Confirmation that no direct impacts to Pomona Creek are anticipated and commitment to share pre-construction management plans for review. Reaffirmation of commitment to adhere to the potential natural environment mitigation measures and monitoring activities outlined in the EPR Addendum.Commitment to continue to engage MSIFN during future project phases including invitations to participate in natural environment fieldwork.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
	<ul style="list-style-type: none">Cultural Awareness TrainingCompliance Monitoring and Restoration	<ul style="list-style-type: none">Curve Lake First Nation provided comments related to treaty boundaries, environmental damages contingencies, technical accuracies, and recommendations for future monitoring and restoration.	<ul style="list-style-type: none">Commitment to continue to engage CLFN for participation in future field investigations and construction as well as contingency plans for environmental damages.Continue discussions with CLFN to address comments regarding treaty boundaries and inherent rights.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.
	<ul style="list-style-type: none">Consent from Nation	<ul style="list-style-type: none">Haudenosaunee Development Institute, as agents of the Haudenosaunee Confederacy Chiefs Council, have expressed concerns surrounding the subway program stating that consent from the Nation has not been given and has requested that all work including any environmental assessments cease and desist.	<ul style="list-style-type: none">Metrolinx continues to engage in conversations with Haudenosaunee Confederacy Chiefs Council regarding best practices for engagement, opportunities to provide capacity support and the Nation’s concerns with regard to the level of consultation on Metrolinx projects. Metrolinx continues to welcome opportunities to meet with Haudenosaunee Confederacy Chiefs Council to discuss the Yonge North Subway Extension project; providing information, updates and technical reports.Metrolinx continues to invite Haudenosaunee Confederacy Chiefs Council to archaeological and natural environment field work and environmentally sensitive construction activities for the Yonge North Subway Extension project.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	
Holy Cross Catholic Cemetery & Funeral Home	<ul style="list-style-type: none">Impacts to Holy Cross Cemetery	<ul style="list-style-type: none">Holy Cross Cemetery expressed concerns regarding Project impacts to the cemetery.Concerns with Transit Corridor Lands designation impacting regular cemetery operations.	<ul style="list-style-type: none">Confirmation that there would be no direct permanent impacts to HCC lands from the YNSE Project. Discussions between Metrolinx and HCC are ongoing regarding regular cemetery operations within Transit Corridor Lands.Development of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.

Source	Key Themes	Key Feedback	Metrolinx Actions in Response to Feedback	YNSE Timeline Implications
Technical Stakeholders – Provincial and Municipal Agencies	<ul style="list-style-type: none">Traffic and TransportationNoise & VibrationCultural HeritageArchaeological AssessmentPermits	<ul style="list-style-type: none">The City of Markham provided comments related to mitigation measures during construction for traffic and transportation, reduced number of station entrances, feedback on Steeles Station configuration, and road network monitoring activities.The City of Toronto provided a comment related to traffic and transportation, regarding an incorrect coding of lane configurations at Yonge and Hendon.The City of Vaughan provided documentation of Item 7, Report No. 6, of the Committee of the Whole which was adopted, as amended, by the Council of the City of Vaughan at its meeting of February 15, 2022. Items raised specific to the EPR Addendum were regarding reconsideration of YNSE to Yonge Street and station entrances in the City of Vaughan.The Ministry of the Environment, Conservation and Parks (MECP) provided recommendations for an additional noise and vibration assessment approach during the detailed design phase.The Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) provided comments related to the cultural heritage and archaeological assessments, existing conditions, and commitments to future work.The Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNR) provided comments noting that a permit under the Public Lands Act is not required.The Toronto and Region Conservation Authority (TRCA) provided comments related to future submission requirements as the Project proceeds.	<ul style="list-style-type: none">Metrolinx provided the following response to the City of Markham’s comments:<ul style="list-style-type: none">Confirmation that the proposed mitigation measures would be included in the Project AgreementClarification that the EPR Addendum assesses the currently proposed YNSE RCD and will continue to engage with City of Markham during future project phasesConfirmation that the road network monitoring activities would be included in the Traffic Management Plan(s)Development and delivery of comment responses to the City of Markham, and inclusion of comments in the consultation section of the YNSE EPR Addendum and Appendix I.13 as part of the consultation record.Metrolinx provided the following response to the City of Toronto’s comments:<ul style="list-style-type: none">Confirmation that the lane configuration is in line with the instructions in City of Toronto Synchro 11.0 guidelines. No changes were made to the coding of lane configurations.Development and delivery of comment responses to the City of Toronto, and inclusion of comments in the consultation section of the YNSE EPR Addendum and Appendix 1.13 as part of the consultation record.Metrolinx provided the following in response to the City of Vaughan’s letter:<ul style="list-style-type: none">Confirmation that the IBC conducted a comparative analysis that identified Option 3 as the preferred option. The EPR Addendum assessed the refined Option 3, which avoids cemetery lands.A summary of the EPR Addendum review processConfirmation that the conceptual mapping in the EPR Addendum shows conservative footprint estimations for the stations and other infrastructure, as Metrolinx design team is working to determine the exact locations.Development and delivery of comment responses to the City of Vaughan, and inclusion of comments in the consultation section of the YNSE EPR Addendum and Appendix 1.13 as part of the consultation record.Metrolinx provided the following in response to the MECP’s comments:<ul style="list-style-type: none">Confirmation that MECP’s recommendations for detailed design phase will be followed.Development and delivery of comment responses to MECP, and inclusion of comments in the consultation section of the YNSE EPR Addendum and Appendix 1.13 as part of the consultation record.Development and delivery of comment responses to the MHSTCI, and inclusion of comments in the consultation section of the YNSE EPR Addendum and Appendix 1.13 as part of the consultation record. Updates were made to the following sections of the EPR Addendum to address feedback received from MHSTCI.<ul style="list-style-type: none">Section 4.5.1.2 – clarifying that the section reflects the preliminary screening carried out before and separate from the Stage 1 Archaeological AssessmentSection 4.6.1 – clarifying that the section is intended to present the methodology that was utilized for the Existing Conditions Assessment contained within Part 1 of the Cultural Heritage Existing Conditions and Impact Assessment ReportSection 5.4.3 – clarifying that the Stage 1 AA will not be considered final until it has been entered into the Ontario Public Register of Archaeological ReportsSection 5.5.5 – a clause regarding the need for Ministerial Consent for properties that meet, or have the potential to meet O. Reg. 10/06Section 7.0 – referring the reader to Section 5.0 for an exhaustive list of future work commitmentsDevelopment and delivery of comment responses to the MNDMNR, and inclusion of comments in the consultation section of the YNSE EPR Addendum and Appendix 1.13 as part of the consultation record.Development and delivery of comment responses to the TRCA, and inclusion of comments in the consultation section of the YNSE EPR Addendum and Appendix 1.13 as part of the consultation recordDevelopment of comment responses and sharing of information (Appendix I.13).Inclusion of comments received in the Consultation section (Section 6.0) of the Updated EPR Addendum and Appendix I.13 as part of the consultation record.	None.

6.12 Commitments to Future Consultation

Metrolinx is committed to continuing stakeholder and public engagement and consultation beyond the regulatory requirements set out in Ontario Regulation 231/08. Specifically, Metrolinx will:

- Maintain the Engagement webpage (Project website) (MetrolinxEngage.com/YongeSubwayExt) so that interested parties can access updated Project information;
- Maintain the Project Distribution List to help ensure all interested parties receive Project updates; and
- Continue discussions with members of the public, local stakeholders and Indigenous Nations with respect to potential impacts and mitigation throughout the YNSE Project planning and construction, as appropriate.

7.0 Commitments to Future Work

Commitments to future work include implementation of the mitigation measures and monitoring activities outlined in this report, obtaining the required permits and approvals, and completing the required future studies.

Mitigation measures and monitoring activities are outlined in **Section 5.12**. Permits and approvals as well as future studies are described in sections below. Please note this is not an exhaustive listing of future work commitments and this section should be read in conjunction within the commitments made elsewhere, including those made within **Section 5.0**.

As commitments to future work were also identified as part of the previous 2009 EPR and 2014 Addendum, Metrolinx undertook the following actions as part of the current YNSE EPR Addendum process:

- Reviewed, refined where necessary, and carried forward applicable mitigation and monitoring measures identified through the previous 2009/2014 reports;
- Reviewed, refined where necessary, and carried forward any applicable commitments identified through the previous 2009/2014 reports; and
- Identified new commitments through technical studies and stakeholder consultation and included these in the current EPR Addendum.

7.1 Permits and Approvals

Metrolinx will secure necessary federal, provincial, and municipal permits and approvals as required for implementation of the Project. Permits and approvals obtained for the proposed works, as outlined in the following sections, may identify the need for additional mitigation. Any additional mitigation measures required in connection with a permit or approval shall be implemented. Required permits and approvals will be confirmed during detailed design.

A range of municipal permits and approvals may be required for the Project, particularly as pertaining to municipally owned lands and infrastructure. Metrolinx will obtain all required permits and approvals. However, Metrolinx as a Crown Agency of the Province of Ontario is exempt from certain municipal processes and requirements. In these instances, Metrolinx will engage with the municipalities to incorporate municipal requirements as a best practice, where practical, and may obtain associated permits and approvals.

Permits and approvals specific to the project include, but are not limited to:

- Water, sanitary, and storm servicing will be reviewed during detailed design. The relevant municipalities will be consulted during detailed design with respect to municipal water, sanitary, and storm sewer systems.
- Applications under the municipal sewer use by-laws may be submitted for review and information to municipalities relating to any sewer discharge that may be required due to construction activities, to be confirmed as part of detailed design.
- Permits related to municipal tree by-laws will be obtained as appropriate and as outlined in Metrolinx's Vegetation Guideline (2020), as amended from time to time.
- Planning approvals (including Site Plan Approval) for above-grade structures and facilities.
- Transportation-related permits and approvals will be required and obtained prior to construction, as required (e.g., street occupation permits, road cut permits and right-of-way construction permits).

Communication and engagement with municipalities shall continue as design and construction planning progress.

7.1.1 Department of Fisheries and Oceans Canada (DFO)

7.1.1.1 Fisheries Act, 1985 and Species at Risk Act, 2002

DFO's Fish and Fish Habitat Protection Program ensures compliance with relevant provisions under the *Fisheries Act* and the *Species at Risk Act*. It reviews proposed works, undertakings and activities that may impact fish and fish habitat.

Further engagement with DFO through a Request for Review may be required and will be carried out as needed to determine if the proposed in-water works associated with the German Mills Creek culvert replacement will affect fish and fish habitat and necessitate a Letter of Advice or an Authorization under the *Fisheries Act*. A permit under the *Species at Risk Act* is not currently anticipated to be required.

7.1.2 Canadian National Railway (CN)

A CN Work Permit may be required for any work proposed in the CN right-of-way. Additionally, a Railway Crossing Agreement may be required for utility crossings in the CN corridor. Necessary permits and agreements will be confirmed during the detailed design phase of the Project and obtained prior to works commencement.

7.1.3 NAV Canada

Under the NAV Canada Land Use Program, all proposals for land use near airports and air navigation infrastructure must be assessed before construction begins. The Project is in proximity to the Toronto Buttonville Municipal Airport- most closely at 16th Avenue, where it is approximately 5.5 km away. Examples of land use considerations include line of sight obstructions, development of new flight paths, electronic interference with equipment, and resolution of light pollution issues.

Metrolinx will engage with NAV Canada as detailed design advances to determine whether approval is required under the Land Use Program. The need for approval will be dependent upon detailed construction plans related to the location of cranes and other construction equipment which could potentially result in sight obstructions.

7.1.4 Ministry of the Environment, Conservation and Parks (MECP)

7.1.4.1 Ontario Water Resources Act, 1990

As per Ontario Regulation 63/16 under the *Ontario Water Resources Act*, water taking for construction site dewatering in excess of 50,000 litres per day and under 400,000 litres per day requires registration in the Environmental Activity and Sector Registry (EASR). As per Section 34 of the *Ontario Water Resources Act*, when proposed dewatering exceeds 400,000 liters per day, a Permit to Take Water (PTTW) is required. Requirements for water taking permits will be determined during detailed design and obtained prior to any dewatering exceeding 50,000 litres per day.

7.1.4.2 Environmental Protection Act, 1990

Activities regulated under the *Environmental Protection Act*, Chapter E. 19, must be carried out in accordance with the Act, applicable regulations and the guidelines administered by MECP. This may require obtaining an environmental compliance approval (ECA) under Part II.1 of the Act or registering in the Environmental Activity and Sector Registry under Part II.2. Permits and approvals specific to the Project include, but are not limited to:

- ECAs for air and noise- may be required for the TSF and other Project components such as TPSSs; and
- ECAs for sewage- may be required for sewer relocation, modifications, and diversions to existing storm and sanitary sewers associated with the construction of stations and other structures.

7.1.4.3 Safe Drinking Water Act, 2002

In accordance with the *Safe Water Drinking Act*, MECP approval is required in the form of a 'Schedule C' Drinking Water Works Permit (DWWP) Amendment to authorize additions, modifications, replacements, extensions or otherwise alter a Drinking Water System not identified under a 'Schedule B' DWWP. Through ongoing consultation and detailed design, the need for approval for watermain relocations and other modifications associated with the Project will be determined.

The Transfer of Review Program is a program currently associated with the issuance of Certificates of Approval respecting sewage works and drinking water systems. The types of drinking water works covered by the program depend on individual agreements between the Ministry and the designated municipal authority, and they usually include watermains and water booster pumping stations. Under this program, designated municipal authorities conduct a review of the application for approval on behalf of the Ministry. The municipal authority then submits the application to the Ministry together with their recommendations for approval, or comments explaining why an application is not recommended for approval.

MECP is intending to include an authorization for future specified alterations to the drinking water system in the DWWP, subject to conditions imposed within the permit in which case the application for the specified alterations would not be required before proceeding with the undertaking. It is anticipated that a significant portion of alterations including additions, modifications, replacements, and extensions of drinking water system components currently reviewed under the Transfer of Review Program, including watermains, will be pre-authorized through the DWWP.

7.1.4.4 Endangered Species Act, 2007

All requirements of the *Endangered Species Act* will be met. Species-specific mitigation, monitoring, surveys, and corrective action will be implemented in accordance with permits and approvals under the ESA, and in consultation with MECP, as necessary.

7.1.4.5 Fish and Wildlife Conservation Act, 1997

A Licence to Collect Fish for Scientific Purposes, under the *Fish and Wildlife Conservation Act*, from the MNDMNRF to move or salvage fish.

7.1.5 Ministry of Transportation (MTO)

The proposed design may necessitate various permits and approvals from MTO, which include but are not limited to:

- Building and Land Use Permit- may be required for at-grade and below-grade subway structures located within 395 m of the centreline of any provincial highway, including Highway 407 ETR;
- Sign Permit- may be required for any temporary or permanent signs (including traffic control) within 400 m of any provincial highway or the erection or alteration of a sign located on a property within 400 m of any provincial highway, including Highway 407 ETR; and
- Encroachment Permit- may be required for any installation or works, upon, under or within the limits of a provincial highway right-of-way or permit control area placed by someone other than MTO.

7.1.6 Conservation Authorities

Metrolinx will consult with Toronto and Region Conservation Authority with respect to project construction activities in regulated areas in relation to Ontario Regulation 166/06: Toronto and Region Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.

7.1.7 Utilities

Coordination with owners of impacted publicly owned and relevant private utilities will be undertaken as design and construction planning progress. Potential utility conflicts shall be reviewed in consultation with each utility company as part of detailed design. Implementation and construction obligations shall be undertaken pursuant to the crossing agreements with each of the utility companies as required. Any associated permits and approvals will be obtained prior to construction.

7.1.8 Hydro One Limited

Prior to performing any due diligence and/or investigations work on land owned by Hydro One, a License of Land for Temporary Use will be obtained as required and held until work is completed.

Additionally, should an easement be required on Hydro One lands, a Grant of Easement will be obtained. Ongoing consultation will determine whether an easement is necessary as part of detailed design.

7.1.9 Technical Standards and Safety Authority (TSSA) and Electrical Safety Authority (ESA)

Standard permits will be required for station construction, including TSSA Approval for the Use of Remote Stopping under the Elevator Code and an ESA Plan Review of Electrical Drawings. These permits will be acquired prior to any electrical or elevator installation.

7.2 Applicability of Commitments from Previous EPR(s)

As part of the previous TPAP studies completed in 2009 and 2014, a number of commitments to future work were identified based on the understanding of the Project at the time. These commitments were reviewed as part of preparing this EPR Addendum document and refined as per the current Project conceptual design and current regulatory requirements.

7.3 Future Studies

7.3.1 Natural Environment

The following natural environment field investigations may be undertaken in the appropriate timing window (as per the applicable protocol) prior to construction commencement, as required

- Bat maternity roost and habitat survey during leaf-off conditions;
- Breeding bird surveys within appropriate nesting habitat; and
- Fish habitat assessment during high-flow conditions.

7.3.1.1 Bat Species at Risk Surveys

Species – specific surveys (i.e., acoustic monitoring) for bat Species at Risk following the Survey Protocol for Species at Risk within Treed Habitats: Little Brown Myotis, Northern Myotis and Tri-coloured Bat (Ministry of Natural Resources and Forestry, 2017) or newer protocol if it becomes available from Ministry of the Environment, Conservation and Parks, will be required for tree removals proposed within potential bat SAR

habitat to confirm potential impacts and necessary level of compensation under the *Endangered Species Act*, and any applicable permits obtained. Total tree removal areas (including both temporary and permanent removals) in suitable bat SAR habitat are recommended to be calculated based on at least 60% design to inform compensation requirements.

If demolition of potentially suitable buildings is required as planning progresses, detailed searches for potential entry points from all sides of the building and exit surveys following the Ministry of the Environment, Conservation and Parks protocols should be completed. Surveys should be completed prior to scheduled construction to confirm habitat use by bat SAR and to identify potential for disturbance of the species during construction in order to confirm authorization requirements under the *Endangered Species Act*.

7.3.1.2 Migratory Breeding bird surveys and Pre-Construction Nest Surveys

Breeding bird surveys, within appropriate nesting habitat, should be completed following the Ontario Breeding Bird Atlas Protocol (2001).

All structures that are anticipated to be demolished, modified or replaced to facilitate the construction of the YNSE shall be inspected for nests or nesting activity of *Migratory Birds Convention Act* protected birds. These surveys can occur at any time of year but must be completed prior to the onset of construction activities.

7.3.1.3 Fish Habitat Assessment

Surveys during low flow periods (e.g., late summer/fall, sometimes winter) are beneficial to assess presence, quality, connectivity, and fish use of refuge habitats that have little to no base flows or minimal depths seasonally (MTO 2020); however, site-specific information and photos during high flows may be beneficial, in conjunction with modeling data, to support design of watercourse crossings and/or enhancement of existing structures.

7.3.2 Transportation

A supplementary study in the area of future Bridge and High Tech stations is underway that will determine the potential temporary (construction period) and permanent impacts to traffic, as well as identify mitigation measures, following finalization of geometrical designs in that area. The reason for the supplementary study is that this area is expected to see major demand growth as result of future residential/business developments, the addition of the planned parking building (by others), its proximity to Highway 7 and 407ETR, and addition of the two stations (i.e. Bridge and High Tech).

This study is intended to evaluate the traffic operations during temporary construction staging and future conditions for different station options and updates the transportation needs around Bridge and High Tech stations. An area-wide multi-resolution model will be developed to study the area through a more comprehensive and meticulous evaluation of all modes of transportation. This model will help in assessment of different station options and determination of mitigation measures and strategies in support of traffic and transit operations. These mitigation measures are expected to range from geometry improvements to utilization of traffic control technologies (e.g., transit signal priority).

8.0 References

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