

Volume I: Introduction

Executive Summary Glossary of Terms and Acronyms List of Volumes Introduction

Volume II: Finch-Kennedy SmartTrack Station

Appendix A - Initial Preferred Design

- Appendix B Natural Environment Report
- Appendix C Tree Inventory Report
- Appendix D Cultural Heritage Screening Report
- Appendix E Stage 1 Archaeological Assessment
- Appendix F Socio-Economic and Land Use Study
- Appendix G Air Quality Impact Assessment
- Appendix H Noise and Vibration Impact Assessment
- Appendix I Transportation Brief

Volume III: Lawrence-Kennedy SmartTrack Station

- Appendix A Initial Preferred Design
- Appendix B Natural Environment Report
- Appendix C Tree Inventory Report
- Appendix D Cultural Heritage Screening Report
- Appendix E Stage 1 Archaeological Assessment
- Appendix F Socio-Economic and Land Use Study
- Appendix G Air Quality Impact Assessment
- Appendix H Noise and Vibration Impact Assessment
- Appendix I Transportation Brief

Volume IV: Gerrard-Carlaw SmartTrack Station

- Appendix A Initial Preferred Design
- Appendix B Natural Environment Report
- Appendix C Tree Inventory Report
- Appendix D Cultural Heritage Screening Report
- Appendix E Stage 1 Archaeological Assessment
- Appendix F Socio-Economic and Land Use Study
- Appendix G Air Quality Impact Assessment
- Appendix H Noise and Vibration Impact Assessment
- Appendix I Transportation Brief







Environmental Project Report List of Volumes

New Smart Track Stations

Volume V: East Harbour SmartTrack Station

- Appendix A Initial Preferred Design
- Appendix B Natural Environment Report
- Appendix C Tree Inventory Report
- Appendix D Cultural Heritage Screening Report
- Appendix E Stage 1 Archaeological Assessment
- Appendix F Socio-Economic and Land Use Study
- Appendix G Air Quality Impact Assessment
- Appendix H Noise and Vibration Impact Assessment
- Appendix I Transportation Brief

Volume VI: King-Liberty SmartTrack Station

- Appendix A Initial Preferred Design
- Appendix B Natural Environment Report
- Appendix C Tree Inventory Report
- Appendix D Cultural Heritage Studies
- Appendix D1 Cultural Heritage Screening Report
- Appendix D2 Cultural Heritage Evaluation Reports/Statement of Cultural Heritage Value
- Appendix E Stage 1 Archaeological Assessment
- Appendix F Socio-Economic and Land Use Study
- Appendix G Air Quality Impact Assessment
- Appendix H Noise and Vibration Impact Assessment
- Appendix I Transportation Brief

Volume VII: St. Clair-Old Weston Smart Track Station

- Appendix A Initial Preferred Design
- Appendix B Natural Environment Report
- Appendix C Tree Inventory Report
- Appendix D Cultural Heritage Studies
- Appendix D1 Cultural Heritage Screening Report
- Appendix D2 Cultural Heritage Evaluation Reports/Statement of Cultural Heritage Value
- Appendix E Stage 1 Archaeological Assessment
- Appendix F Socio-Economic and Land Use Study
- Appendix G Air Quality Impact Assessment
- Appendix H Noise and Vibration Impact Assessment
- Appendix I Transportation Brief

Volume VIII: Climate Change

Volume IX: Consultation and Engagement

Volume X: Commitments to Future Studies, Permits and Approvals









Environmental Project Report

Volume V- East Harbour SmartTrack Station

July 2018 Revision 0













New SmartTrack Stations - EPR Volume V - East Harbour SmartTrack Station

Issue and Revision Record					
Rev	Date	Originator	Checker	Approver	Description
0	July 2018	Wendy Ng Matt Coffey Stephen Fitzpatrick Sarah Rogers	Chris Bishop	David Hopper	Final
	Signatures:	boly r	Poisher	DHoller	

This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authorization of 4Transit being obtained. 4Transit accepts no responsibility or liability for the consequence of this document being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on the document for such other purpose agrees and will by such use or reliance be taken to confirm their agreement to indemnify 4Transit for all loss or damage resulting therefrom. 4Transit accepts no responsibility or liability other than the person by whom it was commissioned.

To the extent that this report is based on information supplied by other parties, 4Transit accepts no liability for any loss or damage suffered by the client, whether through contract or tort, stemming from any conclusions based on data supplied by parties other than 4Transit and used by 4Transit in preparing this report.







Table of Contents

1.	Introduction	1
	1.1 Description of Study Area 1.1.1 Lakeshore East/Stouffville Rail Corridors 1.1.2 Study Area	1 1 .3
	 1.2 Purpose of the Project	5 5
	Scarborough GO Station) Project 1.2.3 Complement to Stouffville Corridor Rail Service Expansion	5
	1.3 Project Background and Initial Business Case	5
	1.4 Preliminary Design Business Case	6
	1.5 Full Business Case	7
2.	Project Description	7
	2.1 Initial Preferred Design	7
	2.1.1 Design Refinements Subsequent to the Initial Preferred Design	8
	2.2 Key Design Criteria	8
	2.3 Key Station Components, Facilities and Amenities	8
	2.3.1 Flation	8
	2.3.3 Station Circulation	9
	2.3.4 Bicycle Facilities	9
	2.3.5 Landscaping and Streetscaping	9
	2.3.0 Marsh Access	9 Q
	2.3.8 Vehicular Access	9
	2.3.9 Accessible Loading and Unloading	9
	2.3.10 Structures	.10
	2.3.11 Retaining Walls	.10
	2.3.12 Emergency and Service Venicle Comdor Access	10
	2.3.14 Utilities	.10
	2.3.15 Electrification	.10
	2.4 Construction	. 11
	2.5 Operations	. 14
3.	Existing Conditions	.14
	3.1 Natural Environment	. 14
	3.1.1 Methodology	. 14
	3.1.2 Description of Existing Conditions	15
	3.1.2.1 Aquatic Environment	.15
	3.1.2.2 Terrestrial Environment	10
	3.1.2.4 Significant Wildlife Habitat	.17
	3.1.2.5 Species at Risk	17
	3.1.2.6 Significant Natural Heritage Features	. 19
	3.2 Geology and Groundwater	.21
	3.2.1 Methodology	. 21

METROLINX





		3.2.2	Description of Existing Conditions	21
		3.2	2.2.1 Landforms and Physiography	21
		3.2	2.2.2 Soils and Bedrock Geology	21
		3.2	2.2.3 Groundwater Resources 2	21
	3.3	Tree	Inventory	21
		3.3.1	Methodology	22
		3.3.2	Description of Existing Conditions	23
	3.4	Cultu	ural Environment	29
		3.4.1	Built Heritage Resources and Cultural Heritage Resources	29
		3.4	4.1.1 Methodology	29
		3.4	4.1.2 Description of Existing Conditions	30
		3.4.2	Archaeology	33
		3.4	4.2.1 Methodology	33
		3.4	4.2.2 Description of Existing Conditions	33
	3.5	Socio	o-Economic and Land Use	35
		3.5.1	Methodology	35
		3.5.2	Description of Existing Conditions	35
		3.5	5.2.1 Planning Policy Context	35
		3.5	5.2.2 Neighbournood Characteristics	38 40
		3.0	5.2.4 Litilities	+0 10
		3.5	525 Current Development Applications	+0 40
	36		Juality	13
	0.0	361	Methodology	13
		3.6.2	Description of Existing Conditions	46
	37	Noise	e and Vibration	18
	0.7	371	Methodology	48
		3.7.2	Description of Existing Conditions	53
	38	Traffi	ic and Transportation 5	54
	0.0	3.8.1	Methodology	54
		3.8.2	Description of Existing Conditions	56
		3.8	3.2.1 Road Network	56
		3.8	3.2.2 Transit Network	56
		3.8	3.2.3 Cycling, Pedestrian and Trail Network5	58
٨	Fff	orte Ae	seesement Mitigation and Monitoring	58
◄.				,0
	4.1	Meth	nodology5	58
	4.2	Natu	ral Environment5	58
		4.2.1	Overview5	58
		4.2.2	Potential Effects, Mitigation and Monitoring5	59
	4.3	Geol	logy and Groundwater7	78
		4.3.1	Overview7	78
		4.3.2	Potential Effects, Mitigation and Monitoring7	78
	4.4	Tree	۱nventory٤	33
		4.4.1	Overview	33
		4.4.2	Potential Effects, Mitigation and Monitoring	33
	4.5	Cultu	ural Environment) 0
		4.5.1	Overview	<i>3</i> 0
		4.5.2	Archaeology	J2
		4.5.3		3Z
	4.6	Socio	o-Economic and Land Use Characteristics	94
		4.6.1	Overview	14 74
		4.0.2	Potential Effects, Miligation and Monitoring Measures	14

->>> METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

	4.7 Air Quality	
	4.7.1 Overview	
	4.7.2 Potential Effects, Mitigation and M	Ionitoring Measures110
	4.8 Noise and Vibration	
	4.8.1 Overview	
	4.8.2 Potential Effects, Mitigation and M	Ionitoring Measures116
	4.9 Traffic and Transportation	
	4.9.1 Overview	
	4.9.2 Potential Effects, Mitigation and M	lonitoring Measures123
5.	Permits, Approvals and Commitments to F	uture Work125
	5.1 Permits and Approvals	
	5.1.1 Federal	
	5.1.1.1 Canadian Environmental As	sessment Act, 2012 125
	5.1.1.2 Species at Risk Act	
	5.1.1.3 Fisheries Act	
	5.1.2 Provincial	
	5.1.2.1 Conservation Authorities Ac	.t
	5.1.2.2 Endangered Species Act, 2	007126
	5.1.2.3 Environmental Protection A	ct 127
	5.1.2.4 Ontario Water Resources A	ct 127
	5.1.3 Municipal	
	5.2 Commitments to Future Work	
6.	References	

List of Figures

Figure 1-1: Lakeshore East/Stouffville Rail Corridors	1
Figure 1-2: Study Area	4
Figure 3-1: Designated Natural Heritage Features	
Figure 3-2: Tree Inventory - Overall	25
Figure 3-3: Tree Inventory - West	
Figure 3-4: Tree Inventory - Central	27
Figure 3-5: Tree Inventory - East	
Figure 3-6: Cultural Heritage Screening Report Results	
Figure 3-7: Stage 1 Archaeological Assessment Results	
Figure 3-8: Land Use Designations within the Study Area	
Figure 3-9: Key Features	
Figure 3-10: Air Quality Sensitive Receptors	
Figure 3-11: Noise Sensitive Areas	
Figure 3-12: Noise and Vibration Sensitive Receptor Locations	
Figure 3-13: TTC Routes	57
Figure 4-1: Potential Construction Noise Monitoring Locations	119
Figure 4-2: Potential Construction Vibration Monitoring Locations	

List of Tables

Table 1-1: Study Area by Environmental Study	
Table 1-2: Financial and Economic Summary	7
Table 2-1: Utilities within the Study Area	
Table 2-2: Anticipated Construction Activities	
Table 2-3: Anticipated Operation Activities	
Table 3-1: Locally and Regionally Significant Plant Species	

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

Table 3-2: Species at Risk	18
Table 3-3: Properties with Potential or Identified Cultural Heritage Value or Interest	31
Table 3-4: Features within the Study Area	38
Table 3-5: Active Development Applications	41
Table 3-6: Air Monitoring Stations for Contaminants of Concern	46
Table 3-7: Summary of Ambient Background Concentrations within the Study Area	47
Table 3-8: NPC-115 Maximum Noise Emission Levels for Typical Construction Equipment	51
Table 3-9: NPC-118 Maximum Noise Emission Levels for Standard Diesel Heavy Vehicles	51
Table 3-10: City of Toronto Prohibited Vibration Limits	52
Table 3-11: Summary of Impact Rating and Action of Mitigation	53
Table 3-12: NPC-300 Stationary Noise Assessment Criteria	53
Table 3-13: Noise Monitoring Summary by Municipal Address	53
Table 3-14: Vibration Monitoring Summary	54
Table 3-15: East Harbour SmartTrack Station Boarding & Alighting Data (from City of Toronto)	55
Table 4-1: Natural Environment - Potential Effects, Mitigation and Monitoring	60
Table 4-2: Geology and Groundwater - Potential Effects, Mitigation and Monitoring	79
Table 4-3: Tree Inventory - Potential Effects, Mitigation and Monitoring	84
Table 4-4: Table of Anticipated Impacts and Screening Recommendations	91
Table 4-5: Cultural Environment - Potential Effects, Mitigation and Monitoring	93
Table 4-6: Socio-Economic and Land Use Environment - Potential Effects, Mitigation and Monitoring	95
Table 4-7: Summary of COC Concentrations at the Most Affected Sensitive Receptor (Project-Specific	
Effects)1	07
Table 4-8: Summary of Maximum Predicted COC Concentrations at the Most Affected Sensitive Recept	tor
(Cumulative Effects)1	09
Table 4-9: Air Quality Environment - Potential Effects, Mitigation and Monitoring1	11
Table 4-10: Construction Noise Impact Assessment1	14
Table 4-11: Operations Noise Impact Assessment1	14
Table 4-12: Construction Vibration ZOI1	15
Table 4-13: Receptor within the Vibration ZOI1	15
Table 4-14: Operations Vibration Impact Assessment1	16
Table 4-15: Noise and Vibration Environment - Potential Effects, Mitigation and Monitoring1	17
Table 4-16: Mode Splits for East Harbour SmartTrack Station1	22
Table 4-17 East Harbour SmartTrack Station Trip Generation Summary1	22
Table 4-18: Transportation- Potential Effects, Mitigation and Monitoring1	24
Table 5-1: Commitments to Future Work1	29

List of Appendices

- Appendix A: Initial Preferred Design
- Appendix B: Natural Environment Report
- Appendix C: Tree Inventory Plan
- Appendix D: Cultural Heritage Screening Report
- Appendix E: Stage 1 Archaeological Assessment
- Appendix F: Socio-Economic and Land Use Study
- Appendix G: Air Quality Impact Assessment
- Appendix H: Noise and Vibration Impact Assessment
- Appendix I: Transportation Brief







Glossary of Acronyms and Terms

Acronym / Term	Definition
AA	Archaeological Assessment
AAQC	Ambient Air Quality Criteria
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory
	Model
ANSI	Areas of Natural and Scientific Interest
AQIA	Air Quality Impact Assessment
BHR	Built Heritage Resource
BMP	Best Management Practices
CAAQS	Canadian Ambient Air Quality Standards
CEAA	Canadian Environmental Assessment Act
CFIA	Canadian Food Inspection Agency
CHAR	Cultural Heritage Assessment Report
CHER	Cultural Heritage Evaluation Report
CHL	Cultural Heritage Landscapes
CHR	Cultural Heritage Resources
CHSR	Cultural Heritage Screening Report
CHVI	Cultural Heritage Value or Interest
CN/CNR	Canadian National Railway
COC	Contaminants of Concern
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
CP/CPR	Canadian Pacific Railway
CPTED	Crime Prevention Through Environmental Design
CSP	Corrugated Steel Pipe
СТС	Credit Valley, Toronto and Region and Central Lake Ontario
CTMP	Construction Traffic Management Plan
DBH	Diameter at Breast Height
DFO	Fisheries and Oceans Canada
DVP	Don Valley Parkway
EA	Environmental Assessment
EAA	Environmental Assessment Act
EAB	Emerald Ash Borer
EASR	Environmental Activity and Sector Registry
EBA	Event Based Area
ECA	Environmental Compliance Approval
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
EMMP	Environmental Mitigation and Monitoring Plan
EPR	Environmental Project Report
ESA	Endangered Species Act







Acronym / Term	Definition	
ESC	Erosion and Sediment Control	
ESR	Environmental Study Report	
FTA	United States Federal Transit Administration	
FWCA	Fish and Wildlife Conservation Act	
GEXR	Goderich-Exeter Railway	
GFA	Gross Floor Area	
GHG	Greenhouse Gas	
GIN	Groundwater Information Network	
GTA	Greater Toronto Area	
GTS	Georgetown South	
НСМ	Highway Capacity Manual	
HIA	Heritage Impact Assessment	
IBC	Initial Business Case	
IPD	Initial Preferred Design	
ISA	International Society of Arboriculture	
LIO	Land Information Ontario	
LOS	Level of Service	
LRT	Light Rail Transit	
masl	Metres Above Sea Level	
MBCA	Migratory Birds Convention Act	
mbgs	Metres Below Ground Surface	
MNDM	Ministry of Northern Development and Mines	
MNRF	Ministry of Natural Resources and Forestry	
MOE	Ministry of Environment (now Ministry of the Environment and Climate Change)	
MOECC	Ministry of the Environment and Climate Change	
MOEE	Ministry of Environment and Energy (now Ministry of the Environment and Climate	
	Change)	
MOVES	Motor Vehicle Emission Simulator	
MTCS	Ministry of Tourism, Culture and Sport	
MTO	Ministry of Transportation	
MUP	Multi-use Path	
N/A	Not Applicable	
NAPS	National Air Pollution Surveillance	
NHIC	Natural Heritage Information Centre	
NHS	Natural Heritage System	
NPC Noise Pollution Control		
NPV	Net Present Value	
NSA	Noise Sensitive Area	
O. Reg.	Ontario Regulation	
OBBA	Ontario Breeding Bird Atlas	
OCS	Overhead Contact System	

METROLINX





Acronym / Term	Definition	
OHA	Ontario Heritage Act	
OHT	Ontario Heritage Trust	
OMB	OMB Ontario Municipal Board	
OPSS	Ontario Provincial Standard Specification	
OTM	Ontario Traffic Manual	
OWRA	Ontario Water Resources Act	
PDBC	Preliminary Design Business Case	
PHF	Peak Hour Factors	
PHP	Provincial Heritage Properties	
PPS	Provincial Policy Statement	
PPUDO	Passenger Pick-up and Drop-off	
PPV	Peak Particle Velocity	
The Protocol	Ministry of Environment and Energy (now MOECC)/GO Transit Draft Protocol for	
	Noise and Vibration Assessment	
PSW	Provincially Significant Wetland	
PTE	Permission to Enter	
RCD	Reference Concept Design	
RER Regional Express Rail		
RMS	Root-Mean-Square	
RMSV Root-Mean-Square Velocity		
RNFP	Ravine and Natural Feature Protection	
ROW	Right-of-Way	
RTPC Regional Transportation Passenger Centre		
S&G	Standards and Guidelines	
SAR	Species at Risk	
SARA	Species at Risk Act	
SCC	Species of Conservation Concern	
SSE	Scarborough Subway Extension	
SUE	Subsurface Utility Engineering	
SWH	Significant Wildlife Habitat	
SWHTG	Significant Wildlife Habitat Technical Guide	
TAC	Technical Advisory Committee	
TIP	Tree Inventory Plan	
TIS Traffic Impact Studies		
TLI Temporary Limited Interest		
TMC	Turning Movement Counts	
TMP	Transportation Master Plan	
TPAP	Transit Project Assessment Process	
TPSS	Traction Power Substation	
TPZ	Tree Protection Zone	
The Transit Project	New SmartTrack Stations Project	







Acronym / Term	Definition
TRCA	Toronto and Region Conservation Authority
TSMP	Transportation Servicing Master Plan
TSP	Total Suspended Particles
TTC	Toronto Transit Commission
TTIS	Transportation and Traffic Impact Study
TTS	Transportation Tomorrow Survey
US EPA	United States Environmental Protection Agency
v/c ratio	Volume-to-Capacity Ratio
VKT	Vehicle Kilometres Travelled
WTRP	West Toronto Railpath
ZOI	Zone of Influence





1. Introduction

Metrolinx, an agency of the Province of Ontario, and the City of Toronto have proposed the development of a new rail station on the shared Lakeshore East/Stouffville rail corridor within the City of Toronto as part of the New SmartTrack Stations Project (the Transit Project). The East Harbour SmartTrack Station (the Project) will be located on the Lakeshore East/Stouffville rail corridor spanning from the eastern side of the Don Valley Parkway (DVP) to Eastern Avenue with pedestrian access across the DVP and Don River to a secondary entrance on the west side of the Don River in the City of Toronto.

The study area for the proposed Project is discussed in Section 1.1. Further details regarding the design of the proposed Project are provided in Section 2.

Metrolinx and the City of Toronto are evaluating the potential environmental effects of the Transit Project in accordance with the Transit Project Assessment Process (TPAP). The TPAP is a streamlined environmental assessment (EA) process that recognizes and addresses the predictable environmental effects of transit projects and is approved under the *Environmental Assessment Act* (EAA) through Ontario Regulation 231/08 - Transit Projects and Metrolinx Undertakings (O. Reg. 231/08). This Environmental Project Report (EPR) documents the TPAP for the Transit Project and has been prepared in accordance with the Guide to Ontario's Transit Project Assessment Process (Ministry of the Environment and Climate Change, 2014) as detailed in Volume 1 of this EPR.

Volume 9 of the EPR documents the consultation program followed for the Transit Project.

1.1 Description of Study Area

1.1.1 Lakeshore East/Stouffville Rail Corridors

Figure 1-1 shows the Lakeshore East/Stouffville rail corridors with the existing GO stations and proposed SmartTrack stations.

Metrolinx presently operates а commuter (passenger) rail service along both the Lakeshore East (Kingston Subdivision) and Stouffville (Uxbridge Subdivision) rail corridors. Services are operated from Union Station in the City of Toronto to Oshawa GO Station in the City of Oshawa in Durham Region on the Lakeshore East rail corridor, and from Union Station to Lincolnville GO Station in the Town of Whitchurch-Stouffville on the Stouffville rail corridor. The CN Kingston Subdivision connects Toronto with Montreal and is owned by Metrolinx on the section between Union Station and Pickering Junction in Durham Region. Canadian National



Figure 1-1: Lakeshore East/Stouffville Rail Corridors







Railway (CNR) owns the section of Kingston Subdivision east of the Durham Junction. The GO Subdivision, parallel to the CNR Kingston Subdivision, is owned by Metrolinx between the Durham Junction and Oshawa GO Station. North of the CN Kingston Subdivision, the CN Uxbridge Subdivision is used by Metrolinx for the Stouffville rail corridor.

Oriented generally in an east-west direction, the Lakeshore East rail corridor is a triple track corridor between east of Don Yard and Guildwood GO Station, and a double track corridor between Guildwood GO Station and Oshawa GO Station. It is approximately 50 km in length, and includes nine stations (excluding Union Station). The Lakeshore East rail corridor runs through the City of Toronto, as well as the City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa (all in Durham Region). Oriented generally in a north-south direction, the Stouffville rail corridor is at present primarily single track, approximately 50 km in length, and includes 10 primary stations (excluding Union Station). An eleventh station, Scarborough GO Station, is currently served by one Stouffville rail corridor train per day on weekdays. The Stouffville rail corridor runs through the City of Toronto, the City of Markham and Town of Whitchurch-Stouffville (the latter two both in York Region).

On weekday mornings, there are 15 trains on the Lakeshore East rail corridor from Oshawa GO Station to Union Station between 05:07-09:08. These trains stop at all stations except for seven express trains which do not stop at stations between Rouge Hill and Danforth GO Stations (inclusive). There is also one train that begins service at Pickering GO Station. In the opposing direction towards Oshawa GO Station, there are 10 trains between 06:13 and 09:17 stopping at all stations. Two-way service continues every 30 minutes during the weekday offpeak periods. On weekday evenings, there are 12 trains from Oshawa GO Station towards Union Station between 14:36-17:41. Three of these trains do not stop at various stations between Rouge Hill and Danforth GO Stations. There is also one train that begins service at Pickering GO Station. In the opposing direction towards Oshawa GO Stations. There is also one train that begins service at Pickering GO Station. In the opposing direction towards Oshawa GO Stations. There is also one train that begins service at Pickering GO Station. In the opposing direction towards Oshawa GO Station, there are 13 trains between 15:15-18:13. Seven of these trains do not stop at various stations between Danforth and Rouge Hill GO Stations. Two of the trains terminate at Pickering GO Station. On weekends, there is a 30-minute two-way, all-day service.

On weekdays, there are nine trains on the Stouffville rail corridor from Lincolnville GO Station to Union Station between 05:15-10:14. These trains stop at all primary stations except for two trains which do not stop at Danforth GO Station. Eight trains from Union Station to Lincolnville GO Station operate between 15:11-19:18. These stop at all primary stations except for five trains which do not stop at Danforth GO Station. Outside of weekday peak periods, trains operate hourly in both directions between Unionville GO Station in the City of Markham and Union Station. GO buses connect the stations north of Unionville GO Station during these periods. There is presently no train service on operated on weekends. Between Union Station and Scarborough GO Station, the Stouffville line shares tracks with the Lakeshore East line.

As detailed in Section 1.2.2, works were implemented to upgrade infrastructure along the Lakeshore East rail corridor to facilitate the Regional Express Rail Program (RER). As detailed in Section 1.2, works are underway as part of RER to upgrade infrastructure along the Stouffville rail corridor, including introduction of a second track between Scarborough Junction and Unionville GO Station.





In addition to the proposed Project, the shared Lakeshore East/Stouffville rail corridor also includes the proposed Gerrard-Carlaw SmartTrack Station (Volume 4), and the Finch-Kennedy SmartTrack Station (Volume 2) and the Lawrence-Kennedy SmartTrack Station (Volume 3) are proposed on the Stouffville rail corridor.

1.1.2 Study Area

An overall study area was identified for assessment of the potential effects of the Project (Figure 1-2). This study area includes the Project footprint and extends 1 km around the Project footprint. As shown in Table 1-1, environmental study-specific study areas were also identified for assessment of the potential effects of the Project related to each technical discipline being evaluated. These study areas define the geographic extent within which existing environmental conditions are documented and the potential environmental effects of the Project are assessed. The largest of these study areas extends 1 km from the Project footprint. Therefore, the overall study area was set at 1 km to encompass all environmental study-specific study areas. The Project footprint is the area of direct disturbance required for anticipated Project construction and operation activities and represents the anticipated property requirements associated with the Project.

Study	Study Area
Natural Environment Report	Extends 120 m from the Project footprint.
Tree Inventory Plan	Extends 6 m to 12 m from the Project footprint.
Cultural Heritage Screening Report	The Project footprint ¹ and adjacent lands.
Stage 1 Archaeological Assessment	Extends 50 m from the Project footprint ¹ .
Socio-Economic and Land Use Study	Extends 500 m from the Project footprint.
Air Quality Impact Assessment	Extends 1 km from the Project footprint. Specific receptors are discussed in Section 4.
Noise and Vibration Impact Assessment	Extends 300 m from the Project footprint. Specific receptors are discussed in Section 4.
Transportation Brief	Primarily the specific intersections discussed in Section 4.

Table 1-1: Study Area by Environmental Study

As shown in Figure 1-2, the overall study area is in the City of Toronto and is approximately bounded by Parliament Street to the west, Gerrard Street East the north, east of Pape Avenue to the east, and south of Commissioners Street to the south.

¹ This technical study was initiated early, using a version of the study footprint that was not final. The differences between the station footprint used in this technical study differs marginally from that shown in Figure 1-2. As the study footprint extended beyond the probable construction boundary the area is valid, and the difference inconsequential. All background information, analysis and assessment documented is comprehensive and covers the entire area where station effects are to be found.



EH.mxd

Document Path: H:\10000s\10568\GIS\Drawings\01-Smart Tracks EPR\10568GIS001\10568GIS001

POLSON Real Parts of the Ontario					ario N
Legend	DATA SOURCES:	Project	New CreatTreak Stations		
Study Area - 1000 Metres	Roads / Railways - Ontario Open Data Catelogue Watercourses - Land Information Ontario	Project.		arbour Smart Track Stations	
Proposed Project Footprint (approximate)	Project Footprint - Initial Preferred Designs	Figure Title:	East Harbour Sr Stud		
Permanent Watercourse					
Railway		By:	TRANSIT	Date: May (09 2018
	0 50 100 200 300 400 Metres	Version: EH.EPR.100-1	M TORONTO	Figure: 1-2	





1.2 Purpose of the Project

1.2.1 Component of Regional Express Rail and SmartTrack

The Project is considered by Metrolinx and the City of Toronto to be of strategic importance to improve local access to higher order rapid transit. It will play a key role in supporting the wider RER and SmartTrack initiatives as a key transit facility in the downtown Toronto area. The Project is anticipated to facilitate redevelopment of the employment lands east of the Don River.

1.2.2 Complement to Lakeshore East Rail Corridor Expansion (Don River to Scarborough GO Station) Project

Metrolinx completed a separate TPAP, titled Lakeshore East Rail Corridor Expansion (Don River to Scarborough GO Station) Project - Environmental Project Report (September 2017) (Metrolinx, 2017c), for the Lakeshore East rail corridor between the Don River and the Scarborough GO Station in the City of Toronto. The purpose of the study was to improve capacity on this rail corridor and to identify appropriate improvements to enhance the quality of service. The infrastructure improvements identified included the addition of a fourth railway track and associated bridge widenings and culvert modifications. Since the completion of the study, the implementation of the RER - Lakeshore East, West Corridor Expansion Project has commenced with the Request for Qualification for construction of a fourth track between the Don River Bridge and the Scarborough GO Station, as well as widening of bridges, new station building and platform changes, retaining walls, and culvert extensions.

The Lakeshore East west rail corridor expansion works and the proposed East Harbour SmartTrack Station together support the integrated RER and SmartTrack initiatives.

1.2.3 Complement to Stouffville Corridor Rail Service Expansion

Metrolinx completed a separate GO Transit Class Environmental Assessment, Stouffville Rail Corridor Expansion - Environmental Study Report (Metrolinx, 2014), for improvements to the Stouffville rail corridor from Scarborough Junction in the City of Toronto to Unionville GO Station in the City of Markham. The study examined the infrastructure needs to expand service along the corridor and identified appropriate improvements to enhance the quality of service and provide new transit options, including the ultimate twinning of the existing single railway track between Unionville GO Station and south of Kennedy GO Station. Since the completion of the study, implementation of the proposed improvements has commenced with the construction of a second track on a 5 km section of the Stouffville rail corridor from Kennedy Road to Marilyn Avenue. This is the first part of a multi-year project to expand and improve 17 km of corridor from Scarborough Junction to Unionville GO Station.

The ongoing Stouffville rail corridor expansion works support the integrated RER and SmartTrack initiatives, including the development of the Project.

1.3 Project Background and Initial Business Case

In July 2016, Metrolinx issued the Initial Business Case (IBC) for the East Harbour SmartTrack Station (previously referred to as Don Yard/Unilever), titled *RER New Stations Initial Business Case - Downtown East - Lakeshore East/Stouffville/Richmond Hill Corridors* (AECOM, 2016).





This station was recommended by the Metrolinx Board of Directors on June 28, 2016. In Fall 2016, the City of Toronto confirmed the location, general design concept and inclusion of the station in the SmartTrack program. Metrolinx and the City worked together to develop the station design based on an ongoing operational needs assessment, pre-environmental assessment studies, workshops, discussion, and a technical advisory committee process. Design changes are ongoing in coordination with stakeholders.

Since the Initial Business Case concept illustration (2016), the station design has been modified to:

- Include platforms serving Lakeshore East and Stouffville trains.
- Incorporate pedestrian/cyclist connections to the Multi-use Path (MUP) west of the Don River.
- Accommodate the Broadview Avenue extension.
- Relocate the platform between the Don Yard and Unilever sites to optimize access to the existing and emerging land uses.

1.4 Preliminary Design Business Case

In March 2018, Metrolinx issued the Preliminary Design Business Case (PDBC) for the Project within Appendix I of the *New Stations Initial Business Cases Technical Report* (Metrolinx, 2018). The PDBC takes the IBC results and refines them with more detailed costing and analysis of benefits. The PDBC analysis captures evolved design concepts, revised modelling methodology, changes in municipal and provincial plans, and updated operating patterns and service plans since 2016. A summary of the business case is provided in Table 1-2.

The station location is an emerging transit node within a developing and intensifying area. There are planned connections to the Broadview streetcar extension and future Relief Line Subway. The station platforms and pedestrian/cyclist connections are planned to act as a bridge between the west and east side of the Don River, with entrance structures anchoring each side. Cycling facilities adjacent to the station would serve two distinct, but complementary, functions by providing local connections to and from the station and by forming part of the larger cycling network. A MUP connection from the west Don River entrance across to the main entrance can be incorporated to connect to the Don Trail.

Ridership forecasts predict that the East Harbour Station would attract approximately 68,100 daily riders by 2031. The total includes new riders and those that would have otherwise transferred elsewhere. The model results also indicate that the majority of trips forecasted at the station in the AM peak period are comprised of alighting riders; the station is located in the immediate vicinity of a proposed development that is projected to add approximately 50,000 jobs when fully developed. The station would also provide a connection to the Port Lands and Corktown Common, located to the south and west of the station, respectively. The majority of station users are expected to access the station via walking or local transit. Note that the modelling assumes development at the East Harbour site but does not assume implementation of the Broadview Extension or the Relief Line Subway, which are currently unfunded projects.

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

Table 1-2: Financial and Economic Summary

	East Harbour	
2031 Ridership (AM Peak Period) boardings + alightings	17,700	
2031 Ridership (Daily) boardings + alightings	68,100	
Change in Cost from IBC	Increase	
Change in Benefits from IBC	Increase	
Benefits Compared to Cost	Benefits are Positive and Exceed Costs	
Transportation User Benefits (60yr lifecycle)	\$3,846 M	
Travel Time Savings	\$3,779 M	
Vehicle Operating Cost Savings	\$52 M	
Decongestion on Road Network	\$9 M	
Safety Impacts	\$5 M	
Environmental Impacts ²	\$1 M	

1.5 Full Business Case

As part of Metrolinx's business case analysis approach, Metrolinx staff are currently developing full business cases for all the SmartTrack station sites that underwent a PDBC in March 2018.

2. **Project Description**

2.1 Initial Preferred Design

Metrolinx and the City of Toronto have sought to refine and update the station concept presented in the IBC. The result of this is the Initial Preferred Design (IPD, October 2017), as shown in Appendix A. The IPD reflects design, technical feasibility and policy direction received through coordination between the City of Toronto and Metrolinx.

The IPD was used as the basis for evaluation of the Project in the EPR and will be the basis for future work to develop a Reference Concept Design³ (RCD).

The Project is conceived as two island platforms on the existing rail embankment with four station access locations, platform access tunnels, bicycle parking, para-transit lay-by, and a MUP connecting across the Don River to the immediate south of the rail corridor. This station will not include formal Passenger Pick Up/Drop Off (PPUDO) or parking facilities. Platforms are conceived to be constructed on the rail bridge spanning the Don River. A new underpass for the future extension of Broadview Avenue, including vehicle, bicycle and streetcar lanes, is included in the station facilities. There will be protection for a connection to a future Relief Line Subway station and provisions for connections to the future streetcar along the southern

² Environmental impacts refer to the broad cost of transport on local surroundings and the Earth's atmosphere. Environmental impacts capture the effect the potential station has on greenhouse gas emissions through reductions in vehicle kilometres travelled

³ Reference Concept Designs, or functional designs, are used in the Alternative Financing and Procurement (AFP) model as inputs to the development of the Request for Proposal (RFP) to design and construct the Project. The functional design is intended to identify the location of entrances, exits and ancillary station equipment. Functional designs are not intended to provide architectural details. The AFP partner will be developing detailed designs for the Project and these will be subject to public input.

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

extension of Broadview Avenue. Specific station features are described in more detail in Section 2.3.

2.1.1 Design Refinements Subsequent to the Initial Preferred Design

As with any project in the planning phase, refinements may occur as design proceeds. Discipline-specific studies conducted for this EPR Volume based upon the IPD will be reviewed and refined as necessary during detailed design based upon further design refinements. As appropriate, design refinements will be subject to the EPR Addendum process prescribed in O. Reg. 231/08 (see Volume 1 of this EPR).

2.2 Key Design Criteria

The following assumptions guided the development of the IPD:

- The future extension of Broadview south of Eastern Avenue with streetcar service will eventually connect to this station at a new underpass which is subject to a separate EA.
- A MUP will connect the existing Lower Don River Trail over the Don River and Don Valley Parkway to the western end of the south platform and continue on to Broadview Avenue and the Station buildings.
- GO Rail Station Access Plan assumption was as follows:
 - The target modal split by 2031 is 66-68% walking; 12-14% local transit; 6-8% cycling; 16-18% pick-up/drop-off⁴.

2.3 Key Station Components, Facilities and Amenities

The following Project components, facilities and amenities comprise the IPD upon which this EPR Volume is based. Refinements to the design may be made prior to construction as previously noted. These project components are shown in the IPD provided in Appendix A.

2.3.1 Platform

The station platform will be two island platforms located at the top of the rail embankment on a curvature of the rail alignment between Don Valley Parkway and the future Broadview Avenue. Location of the platforms will be confirmed during detail design to optimize the safety of the rail operations and the geometry of the rail tracks realignment. Accessible platform access points (with elevators) for each platform to allow reliable access for riders with mobility challenges will be provided at the main entrance and the secondary entrance. Level boarding for this station will be confirmed during detail design.

2.3.2 Station Entrances

The main station access to both the north and south platforms will be provided from the east and west sides of the future Broadview Avenue extension. The secondary access will be provided midway between the Don Valley Parkway and Broadview (Don Tunnel Entrance). The tertiary access location will be provided at the west end of the site (Corktown Entrance). This provides four access locations to each platform.

⁴ The PPUDO numbers from the GO Access Plan are unreasonably high given there will be no formal PPUDO facilities. It is likely that there will be greater walking, transit and cycling access than originally forecast. Any PPUDO will be handled on street.





2.3.3 Station Circulation

Staircases and elevators will provide access between station levels. Staircases will be covered or enclosed. Elevators will facilitate movement of wheelchairs, walkers, bicycles and scooters between station levels.

Tunnels below the rail corridor and platform will connect the station entrances on either side of the rail corridor. The station will also facilitate neighborhood connectivity across the rail corridor via the future Broadview Avenue Extension.

2.3.4 Bicycle Facilities

As outlined in the GO Rail Station Access Plan (Metrolinx, 2016), bicycle parking spaces will be provided, including secured spaces (within a limited-access room or structure) and covered spaces (protected from weather). Secured spaces will be in the station building or near to the station entrance.

2.3.5 Landscaping and Streetscaping

Space adjacent to the ground-level entrances may include seating, landscaping and lighting. The station entrance areas and signage will promote visibility of the station. Specific landscaping and streetscaping features will be confirmed during detailed design.

2.3.6 Transit Access

Streetcar platforms are anticipated on the future Broadview Avenue Extension to facilitate efficient transit connections to the station. No bus lay-bys will be included on the surrounding streets. Provision will be made to ensure the connection between the streetcar platforms and the Project. Generous sidewalk space and weather protection will be provided where possible.

2.3.7 Active Transportation Access

Pedestrian access to the main station entrance will be provided via sidewalks on both sides of the future Broadview Avenue extension. The tertiary station entrance location west of the Don River is connected to the Lower Don Trail and the Corktown Common. Currently, there are no cycling lanes or direct cycling connections to the site. A pedestrian connection on the north side of the rail corridor, including a new pedestrian bridge, and a MUP on the south side of the rail corridor, including a new multi-use bridge, will be built under this Project to connect the tertiary and main station entrances. Additional cycling facilities may be constructed as the development of the adjacent land evolves.

2.3.8 Vehicular Access

The primary point for vehicle access to the station will be from the future New Street A, which is planned as part of the Unilever Precinct Planning Study. No designated PPUDO will be provided as per City Planning policy. Informal PPUDO activity will occur on-street and is being addressed through the First Gulf development application. No vehicular parking will be provided other than as required for station operations and maintenance staff.

2.3.9 Accessible Loading and Unloading

A para-transit lay-by will be provided. It is anticipated that this will occur from the future New Street A, which is planned as part of the Unilever Precinct Planning Study. This area will be prominently marked through signage and pavement treatment.





2.3.10 Structures

A new underpass at the future Broadview Avenue extension will be constructed to provide for the future extension. Widening of the existing railway bridge over the Don River and Don Valley Parkway is not required. The new station will tie into the existing GO Transit Don Yard west of Don River and be compatible with the conceptual design of the ultimate four-track corridor. A new multi-use bridge south of the Don River Bridge will be constructed. No inwater work is anticipated.

Timing and sequencing of the bridge, track, underpass and station construction will be coordinated with the City.

2.3.11 Retaining Walls

Retaining walls along the south side of the rail corridor will be required to support the widened embankment that accommodate the platforms, the additional rail capacity and a MUP for the Project. North embankment will be graded to existing ground.

2.3.12 Emergency and Service Vehicle Corridor Access

Corridor access for emergency and service vehicles will be provided in coordination with current and planned street and block patterns.

2.3.13 Property Acquisition

No property is likely required on the north side of the corridor given the extent of Metrolinx ownership. Some property may be required on the south side to accommodate the station entrance buildings. Metrolinx is working with a willing developer to find a solution. Property requirements for the two multi-use bridge crossings over the DVP and Don Valley are to be determined. Refinement of property requirements including laydown and staging areas will occur through detailed design.

2.3.14 Utilities

The owners of utility infrastructure located in the study area have been identified and presented in Table 2-1.

Utility Type	Utility Owners	
Power, Cables, Conduits and Lighting	Toronto Hydro	
	Hydro One	
	• Zayo	
Gas and Oil	Enbridge Gas Distribution	
	Imperial Oil	
Communications	Bell Canada	
	Rogers Cable Communications	
	Group Telecom	
Municipal Utilities	City of Toronto - Water, Sanitary, Stormsewer and Wastewater	

Table 2-1: Utilities within the Study Area

2.3.15 Electrification

Electrification is planned for this section of the Lakeshore East/Stouffville rail corridor by 2025, consistent with the *GO Rail Network Electrification TPAP* (Metrolinx, 2017b). Electrification is anticipated to consist of a 25 kV system delivering power to electric trains





using an Overhead Contact System (OCS). The OCS is an aerial supply system that delivers traction power from Traction Power Substations (TPSS) to the electric trains via contact wires and associated supports and structures, including poles and other overhead line hardware and fittings. TPSSs are traction power facilities that transform the utility supply voltage for distribution to the electric trains via the OCS (Metrolinx, 2017b).

A paralleling station⁵ is planned in the vicinity of the Project. Detailed design for electrification, including siting of the paralleling station, will be coordinated with the detailed design of the Project (Metrolinx, 2017b).

2.4 Construction

A description of anticipated construction activities is provided in Table 2-2. These typical activities serve as the basis for the assessment of construction-related potential environmental effects. These activities may be expanded, further refined, or found to be unnecessary as the Project progresses through detailed design and construction.

⁵ There are six Paralleling Station (PS) facilities required to support GO Rail Network Electrification. Each PS will contain two 15 MVA autotransformers that support OCS voltage. As the train moves away from the source of power, the OCS voltage drops. Electric trains can only operate if the OCS voltage remains within acceptable limits. In addition, PSs help reduce flow of return current in rails, contributing to the overall safety of the system.





Table 2-2: Anticipated Construction Activities

Activity	Description	Associated Equipment	
Site Preparation	 Mobilization of equipment and temporary facilities to the site. Clearing and grubbing of vegetation. Erection of temporary and permanent fences. Installation of environmental management features (e.g., erosion and sediment controls). 	 Site compaction equipment and grading equipment. Vegetation removal equipment. Excavation equipment. Haulage/dump trucks. 	
Site Servicing	• Relocation and/or extension of services and utilities on the site; which may include both underground and aerial services and utilities (e.g., sewers, water, electrical, communications, gas). This may also involve installation of utilities within the site.	 Excavation equipment including backhoe, dump trucks, spoil removal equipment, jackhammers. 	
Excavation and Grading	 Excavation and grading activities may involve earth-moving activities and stockpiling, as applicable. Excavated material will be accommodated on-site on the degree practicable, however, where necessary, surplus material will be disposed of off-site. 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. 	 Site compaction equipment and general grading equipment, dump trucks, soil removal equipment. Groundwater pumping equipment. Excavation equipment including backhoe, dump trucks, soil removal equipment, jack hammers. 	
Construction of Buildings and Structures	All buildings and structures will be constructed using standard civil construction techniques.	 Foundation placement equipment. Augured piles or rammed aggregate piers. Drill rigs. Mobile cranes and hoists. Concrete trucks, pumps and vibrators. 	
Construction of MUP Bridges	 All structures will be constructed using standard civil construction techniques. No in-water work is anticipated. 	Mobile cranes and hoists.Flatbed trucks, cranes.	
Construction of Ancillary Facilities	 Ancillary facilities may include electrical transformer/supply equipment, parking areas, exterior yard facilities including lighting, electrification enabling facilities. 	 Flatbed trucks, cranes, concrete trucks. Backhoe, pavement excavation equipment. Mobile cranes and hoists. Concrete trucks, pumps and vibrators. 	





Activity	Description	Associated Equipment
Installation of Trackwork	 Assembly of track, ties and fastenings near the station. 	 Thermal welding. Tie placement (cranes, lifting equipment). Ballast placement equipment. Concrete pouring equipment.
Temporary Track Diversion	 Grading. Temporary drainage. Relocation/Installation of tracks. Temporary relocation of signals, if any. Clear delineation and protection between active rail service and construction work zones. 	 Site compaction equipment and general grading equipment, dump trucks, spoil removal equipment. Thermal welding. Tie placement (cranes, lifting equipment). Ballast placement equipment. Temporary concrete barriers.
Temporary Road Closure	All road closures will follow standard traffic control management guidelines.	• Temporary traffic control devices such as signs, signals, barriers, traffic barrels.
Management of Stormwater	 All precipitation falling within the site will be managed as stormwater within a designed system of collection, conveyance, retention and discharge features. 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. 	 Site compaction equipment and general grading equipment. Groundwater pumping.





2.5 Operations

A description of anticipated operation activities is provided in Table 2-3. These activities represent those with the potential for operations-based environmental effects and serve as the basis for assessment of potential environmental effects. These activities may be expanded, further refined, or found to be unnecessary as the Project progresses through detailed design and during operation.

Activity	Description
General Operations	 New SmartTrack service on the Lakeshore East/Stouffville rail corridor with access provided at the Project. Future Toronto Transit Commission (TTC) streetcar service with access provided to the Project on the planned Broadview Avenue extension and future planned Relief Line. Private vehicles and para-transit vehicles accessing the Project via the access roads from Broadview and Eastern Avenues. Pedestrian and cyclist movements to/from the Project, the surrounding areas and planned MUP.

Table 2-3: Anticipated Operation Activities

3. Existing Conditions

This section of the EPR Volume documents existing environmental conditions within each of the discipline-specific study areas (refer to Table 1-1). The purpose of characterizing existing environmental conditions is to establish baseline conditions against which potential effects are assessed, as detailed in Section 4.

Further details on existing environmental conditions within each of the discipline-specific study areas and the methodologies used to obtain this information are provided in Appendices B through I of this Volume.

3.1 Natural Environment

This section provides an overview of existing natural environment conditions within the natural environment study area. Further details are provided in Appendix B of this Volume.

3.1.1 *Methodology*

The study area for the Natural Environment Report extends 120 m from the Project footprint as defined in the IPD (see Appendix A).

Available background information was collected and reviewed from several sources, including but not limited to Fisheries and Oceans Canada (DFO), the Ministry of Natural Resources and Forestry (MNRF), the City of Toronto and the Toronto and Region Conservation Authority (TRCA).

Aquatic investigations examined the lower Don River and focused on describing generally describing habitat and documenting habitat features with photographs. Fish habitat information was collected where feasible and relevant.







Vegetation communities were mapped and classified using the Ecological Land Classification (ELC) for Southern Ontario system (Lee, et al., 1998) with 2008 and 2013 catalogue code updates (Lee, 2008 and 2013).

A vascular plant species list was completed for the study area.

Prior to site investigations, a desktop screening was completed to identify potential Species at Risk (SAR) habitat and other potential wildlife habitat associated with approximated vegetation communities and watercourses. During the site investigations, all direct wildlife observations and wildlife signs (including browse, tracks/trails, animal scat, bird nesting activity, tree cavities, burrows, excavated holes and vocalizations) were recorded. Incidental wildlife species observations were noted.

Significant Wildlife Habitat (SWH) was identified using the criteria detailed in the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) and the Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 7E (MNRF, January 2015).

A SAR Screening Table was developed to indicate the potential of a given SAR to occur based on habitat and known species distribution and the corresponding potential and severity of effects to the species associated with the proposed works.

3.1.2 Description of Existing Conditions

3.1.2.1 Aquatic Environment

The lower Don River flows through the study area in a southerly direction, flowing beneath the existing rail bridge. The Don River drains a catchment area of approximately 400 square kilometres (km²) which is primarily urbanized. Immediately upstream of the study area, the river is channelized with hardened banks. Further upstream, the river flows through a narrow valley and captures many higher-order watercourses that flow through similar landscapes. Downstream of the study area the river is channelized as described above. The river makes a sharp 90-degree turn before flowing into Lake Ontario approximately 1.2 km southwest of the study area. There are no wetlands located in the study area.

The Don River is a turbid permanent watercourse with a cool-warm thermal regime. The river has been channelized and much of the banks are hardened in the study area. A visual assessment of the river suggests that the river has a 'flat' morphology in the area of the bridge with a mean wetted width of approximately 35 m.

Water depth could not be determined at the time of the field survey and very little instream vegetation was observed. A previous study suggests instream cover is submergent invasive vegetation species (i.e., Eurasian Water-Milfoil (*Myriophyllum spicatum*)). Floating algae (30%) and woody debris (20%) provided the remaining cover (AECOM, 2017).

The riparian areas on the east bank are dominated by hardened bank and impervious surfaces (i.e., the Don Valley Parkway) and occasional trees and manicured grass providing little canopy cover. The west bank appears more 'natural' with shallow water areas and silt/mud between western pier of the rail bridge and the shoreline. Vegetation consists of manicured grasses and occasional trees.

No barriers to fish passage were observed within 200 m of the rail bridge. This section of the Don River provides homogenous, non-limiting habitat in a slow moving, highly impacted

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

system that likely functions as a migration corridor and provides refuge and feeding areas. It is unlikely that this area provides significant or unique habitats for fish.

Fish species known to occur in the Lower Don River watershed include 34 cool and coldwater fish species (To, 2017). Based on the proposed project works, it is not anticipated that a fish community assessment is required. The MNRF has no current fish sampling data for the study area (Andersen, 2017).

No fish community sampling was undertaken for the Project.

3.1.2.2 Terrestrial Environment

The study area is located predominately within the railway corridor and adjacent to commercial and industrial development. As such, natural heritage features are limited.

A total of 47 vascular plant taxa were observed within the study area. Of these 47 vascular plant taxa, 46 were identified to species. Of these identified species, 14 (30%) were native and 33 (70%) were non-native.

Species looked for during surveys include provincially or federally rare species, species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), species designated by the Committee on the Status of Species at Risk in Ontario (COSSARO), species listed on the *Endangered Species Act, 2007* (ESA) or *Species at Risk Act* (SARA), as well as S1 to S3 (critically imperiled, imperiled, or vulnerable) ranked species. A Butternut (*Juglans cinerea*) was observed. The remaining native species were ranked as S5 (Secure - Common and widespread within the province), one ranked as SU (unrankable due to a lack of or conflicting information) and one ranked SNA (not applicable, not suitable for conservation activities.

One species observed is listed as regionally rare by TRCA (2003) ⁶, and none were listed as significant in the City of Toronto (Varga, et al., 2000)⁷, as shown in Table 3-1.

Common Name	Accepted Name	TRCA Rank	City of Toronto Rank
Black-eyed-Susan	Rudbeckia hirta	L4	Not listed

Table 3-1: Locally and Regionally Significant Plant Species

Vegetation communities are presented in the form of units, or discrete areas defined by distinct vegetation types. The vegetation communities present in the study area are all common to southern Ontario and have been highly disturbed. Vegetation community mapping is based on vegetation community delineation previously completed for a separate study (AECOM, 2017) and field investigations completed for the Project. Vegetation communities identified in the study area are: Mineral Cultural Woodland (CUW1), Dry-Moist Old Field Meadow (CUM1-1), Sumac Cultural Thicket (CUT1-1) and Cultural Hedgerow (CUH).

⁶ Codes are defined as follows:

L4: Of concern in urban matrix; generally secure in rural matrix; able to withstand some disturbance.

⁷ Codes are defined as follows:

U: Uncommon native species.

R#: Rare native species (# indicates number of stations for the species in the City of Toronto).

⁺ or I: Introduced species.

X+: Introduced in municipality.





3.1.2.3 Wildlife

A total of five bird species were observed at the time of field investigations. No wildlife species other than birds were observed.

No observations or signs of any mammal species were recorded in the study area during the site investigations; however, the general area likely supports a range of mammals often found in urban environments, including: Raccoon (*Procyon lotor*), Eastern Cottontail (*Sylvilagus floridanus*), Grey Squirrel (*Sciurus carolinensis*), Striped Skunk (*Mephitis mephitis*), and a number of small mammals that often go undetected (e.g., shrews, voles, mice) (Dobbyn, 1994).

Five common and widespread bird species were recorded during the site investigations. The birds observed are expected for the site conditions and include Turkey Vulture (*Cathartes aura*), Rock Pigeon (*Columba livia*), Golden-crowned Kinglet (*Regulus satrapa*), House Sparrow (*Passer domesticus*), and European Starling (*Sturnus vulgaris*). All are common and widespread throughout Southern Ontario (Cadman, Sutherland, Beck, Lepage, & Couturier (eds), 2007). Background resources indicated nearby records of 107 bird species.

Breeding bird surveys were not completed during the site visit due to access limitations. However, suitable bird nesting and foraging habitat is present in the study area. A previous study which includes a portion of the Project's study area found 28 avifauna species and documented breeding evidence for 21 of these species. The species recorded during these surveys are common and disturbance-tolerant. In this study, bird SAR were observed on the property at 21 Don Roadway (WSP, 2017). The presence of Barn Swallows was confirmed in the study area.

Dougan & Associates (2009) identified a small portion of the study area as meadow habitat for migratory birds. However, it has been nine years since this report was published and much of the area is now cultural woodland.

No herpetofauna were observed during the site investigations. Due to the proximity of the Don River to the Project footprint, potential suitable habitat is present for some reptiles and amphibians. For example, areas close to the Don River could potentially support species tolerant of urban conditions, such as American Toad (*Anaxyrus americanus*), Dekay's Brownsnake (*Storeria d. dekayi*), and Eastern Gartersnake (*Thamnophis s. sirtalis*) (Ontario Nature, 2017).

3.1.2.4 Significant Wildlife Habitat

One candidate SWH was identified in the study area:

• Special concern and rare wildlife species (for Snapping Turtle) (Chelydra serpentina).

Through correspondence with the MNRF, records of confirmed SWH in the study area were not identified.

3.1.2.5 Species at Risk

A total of 27 SAR was identified through background research and Agency consultation. Of these, ten were determined to have no potential to occur in the study area, nine have low to minimal potential to occur, five were determined to have moderate potential to occur, two were confirmed to occur in the study area (WSP, 2017) and Butternut was confirmed by 4T.







Only SAR identified with a moderate or high potential to occur or those confirmed present within the study area are shown in Table 3-2 and discussed further.

Common Name	Accepted Name	S-rank ¹	ESA Status ²	SARA Status ³
Aquatic Species at Risk				
American Eel	Anguilla rostrata	S1?	Endangered	No Status
Lake Sturgeon	Acipenser fulvescens	S2	Threatened	No Status
Terrestrial Species at Risk				
Barn Swallow	Hirundo rustica	S4B	Threatened	Threatened
Chimney Swift	Chaetura pelagica	S4B, S4N	Threatened	Threatened
Common Nighthawk	Chordeiles minor	S4B	Special Concern	Threatened
Peregrine Falcon	Falco peregrinus anatum	S3B	Special Concern	Special Concern
Red Mulberry	Morus rubra	S2	Endangered	Endangered
Butternut	Juglans cinerea	S2?	Endangered	Endangered

Table 3-2: Species at Risk

Status Sources:

¹S-Rank (MNRF, 2017)

S1: Critically Imperiled - Critically imperiled in the nation or state/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 state/province.

S2: Imperiled - Imperiled in the nation or state/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 nation or state/province.

S3: Vulnerable - Vulnerable in the nation or state/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 - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: Secure - Common, widespread, and abundant in the nation or state/province.

S#S#: Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SR or ? - Recorded within a nation or subnation, but local status not available or not yet determined. When combined with a global rank of G1 to G3, local status is 'Indeterminate,' but the entity is nevertheless presumed vulnerable, if still extant.

N - rank for non-breeding populations in the province.

B - rank for breeding populations in the province.

²ESA (Endangered Species Act) Status (MNRF, 2018)

³SARA (Species at Risk Act) Status (federal status - listed) (Government of Canada, 2018)

Extinct - A species that no longer exists anywhere.

Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.

Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.

Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.

Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.

Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.

Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

MNRF has no known records of aquatic SAR and DFO SAR Mapping did not show any aquatic SAR or critical habitat within the study area and/or in the general vicinity (Fisheries and Oceans Canada (DFO), 2017). A review of the MNRF NHIC database identified two historical aquatic SAR records with moderate potential to occur in the study area (MNRF, 2017).

Lake Sturgeon is a bottom-dwelling fish found in large rivers and lakes. There is moderate potential for Lake Sturgeon to occur in the Don River within the study area as a foraging transient.







American Eel prefers cool waters in lakes with gravel, sand and silt bottoms. There is moderate potential for American Eel to occur in the Don River within the study area.

Barn Swallows were observed foraging in the study area by WSP (WSP, 2017). Barn swallows were also observed by 4T in the vicinity of the rail bridge crossing the Don River. No nests could be seen but the level of activity suggested active nests may be present under the bridge. Nesting habitat for Barn Swallow is protected under the ESA.

Chimney Swift was confirmed present in chimneys in the study area, specifically on the property at 21 Don Roadway, to the southwest of the rail corridor Right-of-Way (ROW) (WSP, 2017). Chimney Swift could occur as a foraging visitant within the Project footprint, but foraging habitat for this species is not protected under the ESA.

Common Nighthawk has not been identified in the study area; however, there is moderate potential for Common Nighthawk to nest in the study area. Common Nighthawk could potentially nest on rooftops or other suitable areas. This species could also occur as a foraging visitant throughout the study area, particularly over the Don River.

There is moderate potential for Peregrine Falcon to occur as a foraging visitant throughout the study area. There is potentially suitable nesting habitat on taller buildings in the vicinity of the study area. While appropriate foraging habitat exists in the study area for this species, its habitat is not protected by the ESA. Peregrine Falcon is protected under the FWCA.

The study area was searched to confirm presence/absence of Barn Swallows, Chimney Swift Common Nighthawk and Peregrine Falcon in 2018; only Barn Swallows were confirmed exhibiting nesting behavior under the rail bridge.

Red Mulberry has moderate potential to occur in the study area, likely along the edges of the cultural woodland vegetation community. However, a tree inventory conducted by 4T on November 2, 2017 did not identify Red Mulberry.

One Butternut tree was observed by 4T on the north side of the rail corridor in the cultural woodland vegetation (CUW) community.

3.1.2.6 Significant Natural Heritage Features

Significant Natural Heritage Features include any features designated by the MNRF, Conservation Authority or municipality governing the area in which the project is based.

The western portion of the study area, including the Don River, is included in the City's NHS which is protected under Policy 3.4.12 of the City of Toronto Official Plan (City of Toronto, 2015) as an environmentally significant area. No Provincially Significant Wetlands (PSWs), Non-Provincially Significant or Unevaluated Wetlands, Significant Woodlands, Designated or Candidate Areas of Natural and Scientific Interest (ANSIs), or rare or uncommon vegetation communities are present within the study area.

Figure 3-1 shows natural heritage features within the study area.





CUM1-1: Dry-Moist Old Field Meadow CUH: Cultural Hedgerow CUT1-1: Sumac Cultural Thicket

50

•	ogue	Open Data Catal	Railways - Ontario	Roads and F
Figure Title:	Watercourses - Land Information Ontario Project Footprint - Initial Preferred Designs Regulation Limit - Toronto Region Conservation Authority Ravine and Natural Features - City of Toronto			
Prepared By:		rsons and AECON ations - Parsons	communities - Pa on and Photo Loc	Vegetation C Flow Directio
Version: EH.EPR.100-1	400 Metres	300	200	100



3-1

Review:





3.2 Geology and Groundwater

This section provides an overview of existing geology and groundwater conditions within the study area.

Refer to Section 4.3 for geology and groundwater effects assessment, mitigation and monitoring.

3.2.1 *Methodology*

Topographic, surficial geology and bedrock geology mapping available through Natural Resources Canada and the Ontario Geological Survey, as well as other relevant background documentation, was reviewed. Water well records were obtained from the Ministry of the Environment and Climate Change (MOECC).

3.2.2 Description of Existing Conditions

3.2.2.1 Landforms and Physiography

The study area is located in the St. Lawrence Lowland physiographic region of Canada. This landform region is the smallest in Canada and comprises the peninsula of southern Ontario bounded by the Canadian Shield and Lakes Huron, Erie, and Ontario. It extends along the St. Lawrence River to the Atlantic Ocean. Within southern Ontario, the study area is within the Iroquois Plain which lies adjacent to the South Slope Physiographic Region and Lake Ontario (Chapman & Putnam, 1984).

3.2.2.2 Soils and Bedrock Geology

Surficial geology within the study area consists of both glacial till and coarse textured glaciomarine deposits. The glacial till has been characterized as undifferentiated older tills that may contain stratified deposits. The glaciomarine deposits identified are coarse and generally contain sand, gravel, minor silt and clay (Ministry of Northern Development and Mines, 2010).

Bedrock within the study area consists of shale, limestone, dolostone and siltstone. Provincial mapping indicates the bedrock elevation is generally high with little surficial overburden (Ministry of Northern Development and Mines, 2011). Water well and borehole information retrieved from the Groundwater Information Network (GIN) indicates that depth to bedrock in some areas can exceed 20 m (GIN, 2017).

3.2.2.3 Groundwater Resources

The approved Source Protection mapping was reviewed for the Credit Valley, Toronto and Region and Central Lake Ontario (CTC) Source Protection Region (2015). The study area is located within the Highly Vulnerable Aquifer (HVA) and the Event Based Area (EBA), but outside (greater than 20 kilometres) all mapped wellhead protection areas) (Credit Valley, Toronto and Region and Central Lake Ontario (CTC) Source Protection Region, 2015).

Hydrogeological and geo-environmental studies will be completed in support of detailed design to further characterize existing conditions.

No evidence of groundwater seepage was observed during field investigations.

3.3 Tree Inventory

This section provides an overview of existing trees within the study area. Further details are provided in Appendix C of this Volume.





Refer to Section 4.4 for effects assessment, mitigation and monitoring with respect to trees.

3.3.1 *Methodology*

The study area for the Tree Inventory Plan (TIP) extends 6 m beyond the Project footprint (as required by City of Toronto's Private Tree By-law and Parks By-law) except in areas regulated under the Ravine and Natural Features Protection By-law, wherein the study area extends 12 m beyond the Project footprint. These extents capture trees beyond the Project footprint that may be affected by the Project.

A desktop review was undertaken using online mapping, including the City of Toronto's interactive mapping tool. Relevant guidelines and documents were also reviewed and followed to guide the fieldwork component and inform the assessment, including relevant City of Toronto By-laws, the ESA and Canadian Food Inspection Agency (CFIA) directive (D-03-08) (Canada Food and Inspection Agency, 2014).

Trees were identified based on categories as follows:

- 1. Trees with diameters of 30 cm or more situated on private property within the Project Footprint.
- 2. Trees with diameters of 30 cm or more situated on private property, within 6 m of the Project Footprint.
- 3. Trees of all diameters situated on City owned parkland within 6 m of the Project Footprint.
- 4. Trees of all diameters situated within lands designated under City of Toronto Municipal Code, Chapter 658, Ravine Protection.
- 5. Trees of all diameters situated within the City road allowance adjacent to the Project Footprint.

Categories 1 and 2 relate to the City of Toronto Private Tree By-law (City of Toronto, 2015), Category 3 relates to the City of Toronto Parks By-law (City of Toronto, 2017), Category 4 relates to the City of Toronto Ravine and Natural Feature Protection By-law (City of Toronto, 2016) and Category 5 relates to the City of Toronto Trees on City Streets By-law (City of Toronto, 2015).

Site visits were undertaken within the study area. Individual trees greater than 10 cm Diameter at Breast Height (DBH) within the Lakeshore East/Stouffville rail corridor were identified and tagged. Trees on private property where no Permission to Enter (PTE) had been obtained were identified from the rail corridor or city property, where possible. Trees and shrubs less than 10 cm DBH were assessed in the field. Where the canopy of trees overlapped, trees were assessed as a grouping and labelled accordingly.

Parameters were derived from International Society of Arboriculture (ISA) Best Management Practices (International Society of Arboriculture, 2008). These criteria were applied during the fieldwork to provide a holistic assessment of trees within the study area.

A TIP was prepared identifying tree locations and identification numbers/letters within the study area (see Appendix C of this Volume).





3.3.2 Description of Existing Conditions

The site is characterized by urban and industrial uses, with the exception of Corktown Common in the western portion of the study area which consists of a mixture of trails, mowed lawns, and established vegetation. Naturalized vegetation is limited to narrow strips on the north and south sides of the rail corridor. The Don River and the Don Valley Parkway bisect the study area, and the rail corridor runs in a generally southwest to northeast direction. The terrain is generally flat with the exception of the corridor itself which is elevated above the surrounding landscape. Most of the naturalized vegetation occurs on the north and south slopes of the elevated railway corridor.

A narrow strip of naturalized vegetation is located to the north of the corridor, on the west side of the Don River. South of the corridor on the west side of the Don River is the Don Yard: a combination of storage tracks, parking lots, and laydown areas associated with Metrolinx operations.

To the north of the rail corridor, east of the Don River, is another narrow strip of naturalized vegetation beyond the extensive parking lots belonging to adjacent businesses and residences. To the south of the corridor, on the east side of the Don River, is a narrow strip of naturalized vegetation beyond which are industrial land uses, many of which are currently proposed to be redeveloped into new employment uses.

Trees and shrubs observed throughout the study area consist of a high percentage of nonnative species that have either been planted or occurred naturally that range in size from less than 10 cm to approximately 70 cm DBH.

Seventy-seven trees greater than 10 cm DBH were assessed within the rail corridor. A total of 336 trees less than 10 cm DBH were assessed within the rail corridor. A total of 72 trees greater than 10 cm DBH were assessed outside the rail corridor within the study area. Of these trees, 46 trees larger than 10 cm DBH occur within 6 m of the Project footprint (12 m within RNFP regulated areas along the Don River). An additional 13 trees greater than 10 cm DBH located outside of the study area were assessed to provide additional information for the Corktown entrance from the Lower Don River Trail. Appendix A in this Volume's Appendix C provides the identification number of inventoried trees greater than 10 cm DBH, scientific and common names, size, condition, location, minimum Tree Protection Zone (TPZ) and remarks.

Trees within the rail corridor larger than 10 cm DBH consist of (in order of abundance): Manitoba Maple (*Acer negundo*), Siberian Elm (*Ulmus pumila*), White Willow (*Salix alba*), Common Buckthorn (*Rhamnus cathartica*), Tree-of-Heaven (*Ailanthus altissima*), Norway Maple (*Acer platanoides*), Apple (*Malus* sp.), Eastern Cottonwood (*Populus deltoides*), Freeman Maple (*Acer x freemanii*), Russian Olive (*Elaeagnus angustifolia*), Trembling Aspen (*Populus tremuloides*), and White Mulberry (*Morus alba*). Trees within the rail corridor smaller than 10 cm DBH consist mainly of thickets of Staghorn Sumac (*Rhus typhina*) and Tartarian Honeysuckle (*Lonicera tatarica*), with scattered individuals of (in order of abundance): Manitoba Maple, Tree-of-Heaven, Common Buckthorn, Eastern Cottonwood, European Euonymus (*Euonymus europaeus*), Siberian Elm, Apple, and Russian Olive.

City trees and trees on private property within the study area that are larger than 10 cm DBH consist of (in order of abundance): Manitoba Maple, Eastern Cottonwood, Tree-of-Heaven, Trembling Aspen, Freeman Maple, Siberian Elm, and Black Locust (*Robinia pseudoacacia*).







A majority of trees are in good condition; however, some trees show signs and symptoms of abiotic and biotic defects leading to decline.

One Provincially Endangered Butternut (*Juglans cinerea*) tree within the rail ROW (tree number 176) was identified. No Red Mulberry (*Morus rubra*) were identified within the study area.

Figure 3-2 to Figure 3-5 identify the locations of trees that are greater than 10 cm DBH within the study area. Trees less than 10 cm DBH were accounted for but not noted as tree groups.


Legend				DATA	SOURCE	S:			Project:
	Study Area	Existing I	ndividual Tree (Not OLS Surveyed)	Roads and Railways - Ontario Open Data Catalogue					
	Project Footprint (approximate)	•	To Be Preserved	Project	t Footprint - Ini	itial Preferred Des	ario signs Toronto		Figure Title:
	Permanent Watercourse	Ø	To Be Injured	Regula	ation Limit - To	pronto Region Co	nservation Aut	hority	
_, , _	Railway	Ø	To Be Removed						Prepared
665	Ravine and Natural Features	Existing 1	ree Groupings (Not OLS Surveyed)						By:
	TRCA Regulation Limit		To Be Preserved	0 2	.5 50	100	150	200 Metres	Version: EH.EPR.100-1



Legend			DATA SOURCES:
	Study Area	Tree Protection Zone (TPZ) Existing Individual Tree (Not OLS Surveyed)	Roads and Railways - O Watercourses - Land Inf
\times	Project Footprint (approximate)		Project Footprint - Initial Individual Trees - Parsor
	Permanent Watercourse		
	Railway	To Be Removed	
600	Ravine and Natural Features	Existing Tree Groupings (Not OLS Surveyed)	
			0 5 10 20

Project:
Figure Title:
Prepared Bv:



EH.EPR.100-1



Aerial Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





3.4 Cultural Environment

This section provides an overview of existing cultural environment conditions within the study area, including Built Heritage Resources (BHRs) and Cultural Heritage Landscapes (CHLs), and archaeological resources. Further details are provided in Appendices D and E of this Volume of the EPR, respectively.

Refer to Section 4.5 for cultural environment effects assessment, mitigation and monitoring.

3.4.1 Built Heritage Resources and Cultural Heritage Resources

3.4.1.1 *Methodology*

The study area for the Cultural Heritage Screening Report (CHSR) is defined by the Project footprint and immediately adjacent lands, encompassing the broadest area in which cultural heritage resources might be affected.

The CHSR was conducted in accordance with the Metrolinx Interim Cultural Heritage Management Process (Metrolinx, 2013) and the Standards and Guidelines for the Conservation of Provincial Heritage Properties (MTCS, 2010) issued under the *Ontario Heritage Act* (OHA).

The following tasks were undertaken in the preparation of the CHSR:

- Reviewed primary and secondary (e.g., historical maps, images, aerial photographs, tax assessment rolls) source material to provide information about property history and current properties that have known or potential Cultural Heritage Value or Interest (CHVI);
- Conducted an overview of the historic background of the area to address the uses of the land and the development of the area;
- Conducted a property visit to confirm and identify properties with known or potential CHVI;
- Conducted a screening for previously identified cultural heritage resources (CHRs) and potential CHRs;
- Conduct a review of previous CHSRs, Cultural Heritage Evaluation Reports (CHERs), Cultural Heritage Assessment Reports (CHARs) and Heritage Impact Assessments (HIAs) previously prepared by/for Metrolinx; and
- Provided recommendations for further evaluation of potential Provincial Heritage Properties (PHPs), conditional heritage properties or adjacent lands.

The municipal heritage inventory was reviewed to identify whether properties and structures have been previously identified and/or have been designated under the OHA. Consultation with the City of Toronto was conducted to confirm those properties that are listed on the City's Heritage Register or Designated under Parts IV or V of the OHA. The Ontario Heritage Trust (OHT) provided information for properties on the *OHA* register of municipally-designated properties and OHT easements. The Heritage Bridge List was provided by the Ministry of Transportation (MTO).







In June 2018 a CHAR was prepared to build on the findings of the CHSR and to identify potential adverse impacts to identified cultural heritage resources and to recommend mitigation measures to lessen or avoid any identified impacts. The results of this CHAR are included in this Volume of the EPR.

3.4.1.2 Description of Existing Conditions

One property within the study area has previously been identified as having cultural heritage value or interest, 415 Eastern Avenue (Listed on the City of Toronto Heritage Register).

Through the screening process, additional properties have been identified as holding potential CHVI. Table 3-3 lists these properties, which are also shown on Figure 3-6.





Table 3-3: Properties with Potential or Identified Cultural Heritage Value or Interest

Cultural Heritage Resource #	Municipal Address	Previous Heritage Recognition	Description	Image
EH-1	415 Eastern Avenue	Listed.	This property is Listed on the City of Toronto Heritage Register. The CHVI of the property lies in the c.1908 Consumers' Gas Station Building. Potential heritage attributes are limited to the two- storey brick structure and its physical elements.	
EH-2	21 Don Roadway	None. Potential CHVI (identified during screening).	The potential CHVI of this property lies in its collection of industrial buildings associated with the former Lever Brothers Factory. Potential heritage attributes are limited to the extant structures and potential remnant interior fixtures/machinery.	(Source: Kuitenbrouwer, 2012, photo credit Darren Calabrese/National Post)
EH-3	9 Sunlight Park Road	None. Potential CHVI (identified during screening).	Does not have CHVI. This structure was almost entirely gutted and replaced during its 2003 reconstruction (only the structural frame and pre- cast concrete slabs were retained). Does not retain heritage attributes.	(Source: Google Streetview, 2017)



Figure: 3-6

EH.EPR.100-1





3.4.2 Archaeology

3.4.2.1 Methodology

The study area for the Stage 1 Archaeological Assessment (AA) extends approximately 50 m from the Project footprint.

Archaeological activities were carried out in accordance with the Standards and Guidelines (S&G) for Consultant Archaeologists (MTCS, 2011).

The Stage 1 AA (see Appendix E) involved a review of documents including historic maps, aerial photographs and local histories. Inspections of the rail corridor and properties visible from the corridor were conducted.

Archaeological recommendations were made based on background historical research, locations of known or registered archaeological sites, previous AAs, and indicators of archaeological potential as outlined in Section 1.3.1 of the 2011 S&G.

3.4.2.2 Description of Existing Conditions

The Stage 1 AA found that based on the presence of primary water sources (the Don River and Lake Ontario), historic transportation routes (e.g., Eastern Avenue, Lakeshore Boulevard East, Mill Street), and historic shorelines in the vicinity of the Project indicates that the study area holds potential for the recovery of both pre-contact and post-contact period archaeological resources. While the development of the surrounding lands and the rail corridor resulted in disturbances of lands within the study area, a Stage 2 AA is required to determine the extent of that disturbance where deeply buried archaeological resources may be present, as well as in the areas that have been found to be undisturbed. The Lakeshore East/Stouffville rail corridor within the study area has been identified as disturbed and no further archaeological assessment will be required within the corridor.

Figure 3-7 presents the results of the Stage 1 AA, showing areas of archaeological potential requiring Stage 2 AA.



50

200

Figure: 3-7

Review:





3.5 Socio-Economic and Land Use

This section provides an overview of existing socio-economic and land use conditions within the study area. Further details are provided in Appendix F of this Volume.

Refer to Section 4.6 for socio-economic and land use effects assessment, mitigation and monitoring.

3.5.1 *Methodology*

The study area for the Socio-Economic and Land Use Study extends 500 m from the Project footprint.

A desktop review and site visit to determine existing conditions was undertaken for the study area. The desktop review included relevant policy and planning documents at the provincial and municipal levels, and data provided by the City of Toronto, Statistics Canada, TRCA and TTC.

Characteristics of the built environment within the study area were assessed through a site visit. The site visit allowed for verification of desktop data and documentation of socio-economic and land use features in the study area. Photographs from the site visit are provided in Appendix F of this Volume.

3.5.2 Description of Existing Conditions

3.5.2.1 Planning Policy Context

The following provincial and municipal policies were considered in the context of project planning:

- Provincial Policy Statement (PPS) (Ministry of Municipal Affairs and Housing, 2014);
- Growth Plan for the Greater Golden Horseshoe (Ministry of Municipal Affairs, 2017);
- Don Mouth Naturalization and Port Lands Flood Protection Project (DMNP) (TRCA, 2014);
- Metrolinx Regional Transportation Plan (Metrolinx, 2012);
- Union Station Rail Corridor East Enhancements Project;
- TRCA Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (O. Reg. 166/06) (Toronto and Region Conservation Authority, 1990);
- City of Toronto Official Plan (City of Toronto, 2015);
- City of Toronto Secondary Plans and Precinct Plans; and
- The City of Toronto Zoning By-Law No. 438-86 and 569-2013.

Land use designations in the study area are shown on Figure 3-8. The City of Toronto Official Plan designates lands within the study area as *Employment Areas*, *Neighbourhoods*, *Regeneration Areas*, *Mixed-Use Areas*, *Parks*, and *Natural Areas*. The Project footprint is primarily covered by the *Utility Corridors* designation, recognizing the presence of the existing Lakeshore East/Stouffville rail corridor.







Lands within the Project footprint are split zoned. The Project footprint is zoned as followed in the City of Toronto Zoning By-law 569-2013: Employment Industrial - E; and Utility Transportation - UT. These zones permit transportation uses under the condition that the transportation uses must comply with all requirements for a building on the subject lot.



Roads and Railways - Ontario Open Data Catalogue Watercourses - Land Information Ontario

240

120

Project Footprint - Initial Preferred Designs Land Use Designations - Toronto Official Plan 2015 Parcel Fabric, Building Footprints, All Points of Interest - Toronto Open Data

480

Prepared

Version:

By:

720 Metres

New SmartTrack Stations - EPR - Volume V - East-Harbour SmartTrack Station

Study Area - 500 Metres

Permanent Watercourse

Railway

Proposed Project Footprint (approximate)

Land Use Designations

Neighbourhoods

Mixed Use Areas

Employment Areas

Natural Areas

Parks

Regeneration Areas







3.5.2.2 Neighbourhood Characteristics

The study area falls within two neighbourhoods: South Riverdale and the Waterfront Communities-The Island. These neighbourhoods are located within the Old City of Toronto, which now comprises the centre of the amalgamated City of Toronto.

Waterfront Communities - The Island is a rapidly growing neighbourhood featuring a significant amount of new, high-density development, and some existing established neighbourhoods. South Riverdale, while undergoing development, contains a mixture of residential development, as well as more established commercial and industrial neighbourhood with residential land uses.

Table 3-4 summarizes some of the key features of the physical neighbourhood within the study area by category. Key Feature IDs are mapped on Figure 3-9.

Key Feature ID	Feature Type	Feature Name
1	Community Group or Resource	Queen Saulter Library
2	Community Group or Resource	Ralph Thornton Community Centre
3	Recreational Uses	Jimmie Simpson Recreation Centre and Park
4	Recreational Uses	Corktown Common
5	Recreational Uses	Morse Street Development
6	Recreational Uses	McCleary Park
7	Recreational Uses	McCleary Playground
8	Recreational Uses	Saulter Street Parkette
9	Place of Worship (Institutional Use)	St John the Compassionate Missionary
10	Human Services	Toronto Travel clinic
11	Human Services	Clinique De Mode+
12	Human Services	Higi - Medical Clinic
13	Human Services	Oma Chiropractic & Wellness
14	Licensed Child Care	Boulton Avenue Child Care

Table 3-4: Features within the Study Area



ATT	LAKESHC	A 79 10	AN THE CONTRACT	18	E.	PETE	(I have a second		
Legend	Study Area 500 Metros		Licensed Child Care	DAT	A SOUR	CES:			Project:
	Proposed Project Footprint (approximate) Permanent Watercourse	▲ 直	Human Services Community Groups and Resources	Roads Water Projec	s and Railw courses - L ct Footprint	ays - Ontario Ope and Information (- Initial Preferred	en Data Catalogue Dntario Designs	·	Figure Ti
++_	Railway	е 1	Recreational Uses, Parks and Open Space Place of Worship						Prepared By:
		_		0	120	240	480	720 Metres	Versior EH.EPF





3.5.2.3 Aesthetics/Visual Character

The study area is along an existing railway corridor, including railway overpasses of adjacent arterial streets.

The area southeast/south of the Railway Corridor contains inactive industrial land, underdeveloped industrial land uses, and inactive industrial land slated for development, as well as the existing businesses in the vicinity of Lake Shore Boulevard East and the Gardiner Expressway. This portion of the study area has the following characteristics in terms of built form:

• Industrial sites arranged with large surface parking lots.

The area west of the Railway Corridor/East of Cherry Street contains new high-density apartment buildings and the Corktown Common. Also, to the west is the Don Yard, a significant element of the GO Transit network. This portion of the study area has the following characteristics in terms of built form:

 Mixed-use high-rise buildings with massing and step backs to reduce their dominance. The façade is articulated to clearly define the ground-oriented commercial uses along the street.

The area along Eastern Avenue, to the west and east of the Railway Corridor contains commercial and industrial uses. The commercial and industrial uses extend north towards Eastern Avenue and Queen Street East, where there is a transition into more residential neighbourhoods. This portion of the study area has the following characteristics in terms of built form:

- Some older buildings have simple utilitarian designs with few windows, minimal architectural detailing to improve aesthetics, and many blank walls facing the street; and
- Where landscaped areas exist, they are provided along the street frontage.

The area along Eastern Avenue and Queen Street East consists predominantly of light industrial or commercial uses, office space, as well as some low density residential units. The overall built form along the roadways could be described as automobile oriented, with minimal provision for cyclists.

Throughout the study area, buildings are typically oriented toward the street (often with ground floor retail or office space); and buildings are set back from the street.

3.5.2.4 Utilities

The owners of utility infrastructure located in the study area have been identified and are listed in Table 2-1 in Section 2.3.14.

3.5.2.5 Current Development Applications

Table 3-5 provides a description of active development proposals and applications in the study area at the time this EPR was written.







Table 3-5: Active Development Applications

Address File # Map ID	Application Summary	Application Status	Non- Residential Area (sq. m)
460 Front Street East Site Plan Control 17 133928 STE 28 SA MAP ID 1	A Site Plan Control application for Block 16 of the West Donlands. The application proposes to construct a compliant 12-storey mixed-use condominium building with a total of 187 residential units and 819 m ² of commercial retail space along Front Street East. A total of 117 parking spaces (95 residential; 11 visitor; 8 retail) and 202 bicycle parking spaces are proposed. Tier 2 of the Toronto Green Standard is being pursued.	Under Review	819
<u>170 Eastern Avenue</u> Site Plan Approval 16 270213 STE 28 SA MAP ID 2	A Site Plan Approval application to permit the development of River City Phase 4 within the West Donlands. A 13-storey mixed-use building with a total GFA of 11,786 m ² is proposed and 154 residential units. The building will contain 87 parking spaces below grade and will provide 161 bicycle parking stalls.	Under Review	Unknown
210 Eastern Avenue Condominium Approval 16 242573 STE 28 CD MAP ID 3	Application for Draft Plan of Standard Condominium for a 29-storey mixed-use condo building containing 332 residential dwelling units and 180 parking spaces (River City 3). Supporting Minor Variance and Site Plan Approval have been completed.	Under Review	Unknown
<u>79 East Don</u> <u>Roadway</u> Site Plan Approval 16 106006 STE 30 SA MAP ID 4	Proposal for site plan approval related to 5 new mixed-use buildings which are connected via 4 levels of below grade parking, fronting Queen St West is a 6 storey mixed-use building containing commercial space, on the east side of the laneway are 14 and 12 storey mixed-use buildings, fronting onto the east Don Roadway are 14 and 20 storey mixed-use buildings, each building will contain residential units.	Under Review	Unknown
677 Queen Street East Zoning By-law Amendment 14 176212 STE 30 OZ MAP ID 5	Zoning By-law Amendment to permit a mixed-use development with a 4 and 5 storey podium and a height that ranges from 7 storeys along Queen St East to 13 storeys mid-block. A total of 216 residential units are proposed. The existing automotive building would be demolished.	Under Review	Unknown
772 Queen Street East Site Plan Approval 15 175212 STE 30 SA MAP ID 6	Proposal to construct a two storey addition with 11 residential units, the ground floor commercial will remain.	Notice of Approval Conditions issued Oct 13, 2017	Unknown







Address File # Map ID	Application Summary	Application Status	Non- Residential Area (sq. m)
<u>8 De Grassi Street</u> Site Plan Approval 13 241399 STE 30 SA MAP ID 7	Proposed 3 storey mixed-use building with an office use located at the ground and second floor with a single dwelling unit on the third floor. The residential dwelling unit will have a gross floor area of 83.0 m ² .	Under Review	205.6
763 Queen StreetEastSite Plan ApprovalZoning By-lawApplication14 223587 STE 30SA14 223583 STE 30OZMAP ID 8	6-storey (19.5 m) mixed-use building containing commercial uses on the ground floor and 29 residential units above. 11 parking spaces are proposed in a parking sorter system with access via June Callwood Way to the rear of the property.	Under Review	Unknown
897 Queen Street East Site Plan Approval 15 214418 STE 30 SA MAP ID 9	The application is being submitted to permit the development of a 6 storey mixed-use building, which will maintain at grade retail fronting Queen Street East, three grade-related residential units fronting onto the public laneway to the south and 5 storeys of residential units above. In total, 59 residential units are proposed, with a gross floor area of approximately 5,239.2. The proposal includes 37 parking spaces in one level of below-grade parking, including 4 visitor parking spaces, with access from the public laneway. The proposal also includes 97 resident and visitor bicycle parking spaces located at-grade and in the below-grade parking level.	Final Approval Completed Sep 21, 2017	320.7
462 Eastern Avenue Site Plan Approval Official Plan Amendment and Rezoning 16 258376 STE 30 SA 12 148473 STE 30 OZ MAP ID 10	November 30, 2016: Resubmission of Official Plan Amendment and Rezoning applications (2012 148473 STE 30 OZ) by new landowner, along with first submission of Site Plan Approval application, for an updated development scheme: 9-storey mixed-use building with 1,033 m ² of commercial ground floor GFA and 25,691 m ² of residential GFA. 308 units proposed, with 315 parking spaces (including 10 for the proposed ground floor commercial space).	Under Review	1,033
<u>459 Eastern Avenue</u> Site Plan Approval 16 165265 STE 30 SA MAP ID 11	Site Plan Approval for a new 5-storey, 14,975.5 m ² industrial self-storage facility. 40 parking spaces are proposed to be provided. Landscaping enhancements are proposed along Eastern and Booth Avenues.	Under Review	14,975.5







Address File # Map ID	Application Summary	Application Status	Non- Residential Area (sq. m)
<u>385 Eastern Avenue</u> Site Plan Approval 15 108588 STE 30 SA MAP ID 12	Site Plan Approval application to construct a two storey motor vehicle repair garage 1,980 m ² building with 79 parking spaces.	Under Review	1,980
21 Don Roadway and 30 Booth Avenue Zoning By-law Application Subdivision Approval Official Plan Amendment 16 270071 STE 30 OZ 16 270078 STE 30 SB 15 236783 STE 30 OZ MAP ID 13	Official Plan Amendment submitted in 2015 for entire Unilever Precinct geography. Rezoning and subdivision applications for lands in First Gulf's ownership: 21 Don Roadway, 30 Booth Avenue, and 375 and 385 Eastern Avenue. (First Gulf now also owns 415 Eastern Avenue, considered part of the OPA only.) Comprehensive resubmission on January 31, 2018 updates information on the proposal, to permit a proposed 925,314 m ² of employment uses over 14.9 hectares. The existing factory building at 21 Don Valley Parkway proposed to be retained in part and adaptively reused, along with 12 new buildings in generally a tower-on- podium building form. A new network of roads and connections is proposed, generally in keeping with what was previously advanced through the Port Lands and South of Eastern TSMP EA (with Broadview now proceeding to stages 3+4 of the EA process). A new City Park is proposed at the south- west corner of the site, adjacent to future flood protection and stormwater infrastructure. A planning study for this Precinct, the Unilever Precinct Planning Study, is underway.	Under Review	829,833

3.6 Air Quality

This section provides an overview of existing air quality conditions within the study area. Further details are provided in Appendix G of this Volume.

Refer to Section 4.7 for air quality effects assessment, mitigation and monitoring.

3.6.1 *Methodology*

•

The study area for the Air Quality Impact Assessment (AQIA) is bound by one km to the north and south along the Lakeshore East/Stouffville rail corridor from the Project. Sensitive receptors⁸ are limited to within 300 m to either side of the rail corridor and are shown in Figure 3-10. Further information on sensitive receptors is provided in Section 4.7.

Place or residence;

- Child care facility;
- Health care facility;
- Senior citizen's residence;
- Long-term care facility; or
- Educational facility.

⁸ A sensitive receptor for air quality is defined by the Ministry of the Environment and Climate Change (MOECC) in *Ontario Regulation 419/05 - Air Pollution - Local Air Quality* (O. Reg. 419/05), Section 30(8) as a:



p xu

0568GIS002

1568GIS002

Document Path: H:\10000s\10568\GIS\Drawings\01-Smar





Local air quality effects were assessed by estimating contaminant concentrations resulting from the transit operations in three scenarios:

- 1. Current Scenario: conditions currently on the rail corridor (2017);
- 2. No-Build Scenario: 2028 horizon (future scenario) including electrification, Lakeshore East and Stouffville rail corridor expansion, but with no Project; and
- 3. Full Build Scenario: 2028 horizon (future scenario) including electrification, Lakeshore East and Stouffville rail corridor expansion, and the Project.

For the three scenarios, effects of the Project on sensitive receptors within the study area were determined.

The effects were compared to the Ontario Ambient Air Quality Criteria (AAQC) and the Canadian Ambient Air Quality Standards (CAAQS). The air quality thresholds represent desirable levels of contaminants in ambient air and are not enforceable within any of the jurisdictions.

The assessment was conducted using an emission rate calculation method for various train activities in the study area for each scenario. The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used to determine the dispersion of the emissions associated with the three scenarios.

The potential for an adverse effect is considered to exist when the modelled concentration and the ambient background concentration summed for a contaminant exceeds the air quality threshold at a sensitive receptor. If the ambient background concentration of a contaminant already exceeds the threshold, then the potential for an adverse effect already exists, without considering the Project.

Concentrations of the Contaminants of Concern (COCs) resulting from background sources were estimated by analysing historical monitoring data from Environment and Climate Change Canada (ECCC) National Air Pollution Surveillance (NAPS) stations as well as MOECC air monitoring stations in the vicinity of the Lakeshore East/Stouffville rail corridor.

The 90th percentile background concentration for each COC was determined from the stations listed in Table 3-6. The 90th percentile over the five-year data set is considered to be representative of ambient background conditions for averaging periods of 30 minutes, one hour, eight hours, and 24 hours. For COCs with an annual averaging period, the highest recorded annual mean over the five years of data from the designated ambient stations was used.

A credible worst-case analysis has been undertaken for this assessment. The contribution from the Project and the ambient background concentrations can vary from day to day, depending on meteorological conditions and operational characteristics. If the credible worst-case analysis indicates that a significant number of sensitive receptors may be subject to air quality that does not meet the air quality thresholds, then a more detailed analysis will be conducted for that specific receptor/community (mitigation); otherwise, no further local air quality impact assessment is required (Ministry of Transportation, 2012).







Contaminant of Concern	Station ID	Station Name (Location)	Availability of Data
Particulate Matter (PM _{2.5})	MOECC - 33003	Toronto East	2012-2016
Nitrogen Dioxide (NO ₂)	MOECC - 33003	Toronto East	2012-2016
Ozone	MOECC - 33003	Toronto East	2012-2016
Carbon Monoxide (CO)	MOECC - 35125	Toronto West (Resources Road)	2012-2016
Acrolein	NAPS - 60418	Toronto (Ruskin/Perth Street)	2002-2006
Bonzono 1.2 Butadiono	NAPS - 60435	Toronto (461 Kipling Ave)	2009-2013
Denzene, 1,3-Dutadiene	NAPS - 65101	Toronto - Newmarket	2008-2012
Acetaldehyde, Formaldehyde	NAPS - 64401	Egbert CARE	2006-2010
Benzo(a)pyrene	NAPS - 60427	Toronto (223 College Street)	2006-2010

Table 3-6: Air Monitoring Stations for Contaminants of Concern

3.6.2 Description of Existing Conditions

Table 3-7 summarizes ambient background concentrations within the study area.

24-hour benzo(a)pyrene and annual NO₂, benzene and benzo(a)pyrene ambient background concentrations exceed the applicable air quality thresholds. The elevated ambient background levels of these contaminants are a widespread occurrence across urban Ontario, and levels are desired to be decreased by the MOECC.





Table 3-7: Summary of Ambient Background Concentrations within the Study Area

Contaminant	Period	Unit	Background Value 90% Percentile	Threshold	% of Threshold
PM _{2.5}	24 hour	µg/m³	14.3	27.0	53%
PM _{2.5}	Annual	µg/m³	8.7	8.8	99%
NO ₂	one hour	µg/m³	52.7	83	64%
NO ₂	24 hour	µg/m³	43.1	200	22%
NO ₂	Annual	µg/m³	28.2	24	117%
СО	one hour	µg/m³	441	36,200	1%
СО	8 hour	µg/m³	424	15,700	3%
O ₃	one hour	µg/m³	85.1	N/A	N/A
O ₃	24 hour	µg/m³	74.3	N/A	N/A
O ₃	Annual	µg/m³	52.6	N/A	N/A
Acrolein	one hour	µg/m³	-	4.5	-
Acrolein	24 hour	µg/m³	0.2	0.4	59%
Benzene	24 hour	µg/m³	0.85	2.3	37%
Benzene	Annual	µg/m³	0.6	0.45	133%
1,3 Butadiene	24 hour	µg/m³	0.05	10	0.5%
1,3 Butadiene	Annual	µg/m³	0.03	2	2%
Acetaldehyde	30 minutes	µg/m³	-	500	-
Acetaldehyde	24 hour	µg/m³	1.4	500	0.3%
Formaldehyde	24 hour	µg/m³	4.2	65	6.5%
B(a)P	24 hour	µg/m³	0.000182	0.00005	364%
B(a)P	Annual	µg/m³	0.000132	0.00001	1320%

Notes:

Ozone (O_3) concentrations were used to calculate the NO to NO₂ conversion using the Ozone Limiting Method (See Appendix G of this Volume).

'- ': Insufficient data to estimate these values.





3.7 Noise and Vibration

This section provides an overview of existing noise and vibration conditions within the study area. Further details are provided in Appendix H of this Volume.

Refer to Section 4.8 for noise and vibration effects assessment, mitigation and monitoring.

3.7.1 *Methodology*

The study area for the Noise and Vibration Impact Assessment extends 300 m from the Project footprint. Sensitive receptors within identified Noise Sensitive Areas (NSAs) were selected to determine noise and vibration level compliance based on the geographical and land use context and as per the Ministry of Environment and Energy (now MOECC)/GO Transit Draft Protocol for Noise and Vibration Assessment (MOEE/GO Transit, 1995) (the Protocol). Further information on sensitive receptors is provided in Section 4.8.

A site visit was undertaken to confirm the suitability of the selected NSAs and receptor locations.

Noise Sensitive Areas are shown in Figure 3-11. Noise level measurements and vibration measurements were taken along the rail corridor as shown in Figure 3-12.



2	LAKE	SHORE BOULENARD EAST	VILLERS	inner inner	Lake Onta	rio
Legend		DATA SOURCES:	Project:	New SmartTr	ack Station	
	Study Area - 300 Metres	Roads and Railways - Ontario Open Data Catalogue Watercourses - Land Information Ontario				
	Proposed Project Footprint	Project Footprint - Initial Preferred Designs	Figure Title:	East Harbour Sr	nartTrack Stati	ion -
	(approximate)		Figure fille.	Noise Ser	sitive Areas	
	Permanent Watercourse		Prenared /	TDANCIT		
	Railway		By:	TRANSIT	Date: June 1	1 2018
	Existing Noise Sensitive Are	a	PARS		Figure	
	Proposed Development Noi Sensitive Area	Se 0 25 50 100 150	Version: EH.EPR.100-1	Review:	3-11	



100		OULEVARD EAST	VILLERSS	LONNE		
	LAKE	SHORE BU			Lake Onte	ario N
Legend		DATA SOURCES:	Project:	Now SmortT	rock Station	
	Study Area - 300 Metres	Roads and Railways - Ontario Open Data Catalogue Watercourses - Land Information Ontario	Project.	New Smarth	ack Station	
	Proposed Project Footprint (approximate)	Project Footprint - Initial Preferred Designs Receptor Data - Parsons	Figure Title:	East Harbour S	SmartTrack Sta	ation
	Permanent Watercourse					
	Railway		Prepared	TRANSIT	Date: May 1'	1 2018
\wedge	Monitor		Dy. PARS	ONS HATCH WSD	-	
0	Receptor	0 25 50 100 150 Metres	Version: EH.EPR.100-1	Review:	Figure: 3-12	





The following scenarios formed part of the assessment:

- Scenario 1, existing conditions;
- Scenario 2, future conditions without Project, which consists of year 2028 future electric train volumes, but without the Project; and
- Scenario 3, future with Project, which consists of year 2028 future electric train volumes, plus the proposed Project.

The review of construction noise is based on the *Noise Pollution Control Publication 115* (NPC-115) and NPC-118 (part of the *MOE Model Municipal Noise Control By-law* (Ministry of the Environment, 1978)), the United States Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment* (Federal Transit Administration, 2006) and the City of Toronto *Municipal Code Chapter 591 - Noise* (City of Toronto, 2009).

NPC-115 stipulates specific sound emission standards for various pieces of construction equipment. This publication does not set receptor-based sound level limits due to construction activities but rather sets limits for noise generated by each individual piece of equipment.

Table 3-8 lists maximum noise emission levels for typical construction equipment.

Type of Equipment	Quiet Zone Maximum Sound Level (dBA)	Residential Area Maximum Sound Level (dBA)	Distance (m) ³	Power Rating (kW)
Excavation Equipment ¹	83	83	15	< 75
(January 1, 1981 and later)	85	85	15	75 ≤
Pneumatic Equipment ²	85	85	7	-
Portable Compressors (January 1, 1981 and later)	70	76	7	-

Table 3-8: NPC-115 Maximum Noise Emission Levels for Typical Construction Equipment

(1) Excavation equipment includes bulldozers, backhoes, front end loaders, graders, excavators, steam rollers and other equipment capable of being used for similar applications.

(2) Includes pavement breakers.

(3) Distances based on NPC-103 Procedures (Section 6, 7 and 9).

NPC-118 sets sound emission standards for motorized conveyances of various types. This publication does not set receptor-based sound level limits due to heavy vehicle operation but sets limits for noise generated by each individual piece of equipment. Table 3-9 lists maximum noise emission levels for standard diesel heavy vehicles.

Table 3-9: NPC-118 Maximum Noise Emission Levels for Standard Diesel Heavy Vehicles

Date of Manufacture	Maximum Sound Level (dBA)	Distance (m)
Prior to January 1, 1979	100	15
January 1, 1979 and after	95	15

Key elements of the City of Toronto Noise By-law (City of Toronto, 2009) related to construction activities include By-law No. 1400-2007 (Construction Noise) (City of Toronto, 2009) and place limits on the timing of construction activity during nighttime and on Sundays and statutory holidays. The FTA Transit Noise and Vibration Impact Assessment guide (Federal Transit Administration, 2006) includes 90 dBA one-hour Leq day-time and 80 dBA





one-hour L_{eq} nighttime construction noise criteria for residential land uses. It should be noted that these noise levels cannot be enforced in Canada; however, the FTA criteria can be used to help gauge whether construction noise levels at the receptor level are acceptable or not.

There are no federal or provincial construction vibration limits. Vibration levels due to construction are governed municipally, on the basis of the City of Toronto By-law No. 514-2008 (Construction Vibration) (City of Toronto, 2008). As per the By-law, if any structures fall within the Zone of Influence (ZOI), construction vibration monitoring will be undertaken to ensure that the vibration levels are never exceeded. The ZOI is defined as the area of land adjacent to or within the construction site, delineated at a Point of Reception where the Peak Particle Velocity (PPV) is measured to be greater or equal to 5 mm/s. Table 3-10 lists the City of Toronto prohibited vibration limits.

Table 3-10: City of Toronto Prohibited Vibration Limits

Frequency of Vibration (Hz)	Vibration Peak Particle Velocity (mm/s)
Less than 4	8
4 to 10	15
More than 10	25

The operations noise assessment is based on the Protocol. An objective of the Protocol is that the daytime (i.e., 07:00 to 23:00 hours) Equivalent Continuous Sound Level L_{eq} (16 hrs), produced by future rail service operation of the GO Transit project under assessment, does not exceed the higher of:

- a. The ambient sound level (combined with the sound level from existing rail service); or
- b. 55 dBA.

The Protocol also has an objective that the night-time (i.e. 23:00 to 07:00 hours) Equivalent Continuous Sound Level L_{eq} (8 hrs), produced by the future rail service operation of the GO Transit project, does not exceed the higher of:

- a. The ambient sound level (combined with the sound level from existing rail service); or
- b. 50 dBA.

To assess the impact at a Point of Reception, the Adjusted Noise Impact level is used. The Adjusted Noise Impact level is the difference in sound level between pre-project and post-project noise. In accordance with the Protocol, if the difference in sound level is 5 dB or higher, the potential to mitigate will be evaluated based on administrative, operational, economic, and technical feasibility. Table 3-11 summarizes the adjusted noise impact rating and mitigation requirements.





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

Table 3-11: Summary of Impact Rating and Action of Mitigation

Change in Noise Level	Impact Rating	Mitigation Effort Required
0 to 2.99 dB	Insignificant	None
3 to 4.99 dB	Noticeable	None
5 to 9.99 dB	Significant	Investigate the potential of noise control measures to mitigate based
10+ dB	Very Significant	 on administrative, operational, economic and technical feasibility If deemed feasible, the mitigation measures shall ensure that the predicted sound level from the GO transit rail project is as close to, or lower than, the rail service objective.

The review of stationary noise is based on the NPC-300. The effects of stationary noise sources related to the Project, such as the public-address system and ancillary equipment, shall meet the requirements outlined in NPC-300. NPC-300 presents sound level limits based on type of land use and type of stationary sound. The relevant criteria based on the project setting and type of stationary noise produced by the Project are summarized in Table 3-12.

Table 3-12: NPC-300 Stationa	ry Noise Assessment Criteria
------------------------------	------------------------------

Time of Day	Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) ¹		
Time of Day	Outdoor	Plane of Window	
07:00 - 19:00	50	50	
19:00 - 23:00	45	50	
23:00 - 07:00		45	

1 - The sound level limit at a point of reception is the higher of the applicable exclusion limit value given, or the background sound level.

The vibration assessment is also based on the Protocol. Under the Protocol, the desirable objective is that the Root-Mean-Square Velocity (RMSV) produced by the Project does not exceed 0.14 mm/s. However, if the existing vibration levels are above 0.14 mm/s, the future vibration velocity objective is to be no greater than existing vibration levels.

When the vibration velocity at the Point of Reception exceeds the objective by 25%, vibration control measures should be investigated within the constraints of administrative, aesthetic, economic and technical feasibility.

3.7.2 Description of Existing Conditions

Table 3-13 summarizes the noise monitoring undertaken along the rail corridor.

 Table 3-13: Noise Monitoring Summary by Municipal Address

Receptor	Address	Day-time L _{eq} ,16 (dBA)	Night-time L _{eq} ,8 (dBA)
R1	Bayview Ave. Future Development	60	56
R2	361 Eastern Avenue	71	67
R4	31 Saulter Street	62	58
R8	60 McGee Street	56	52

The measured noise levels were well above the 55 dBA daytime and 50 dBA nighttime limits outlined in the Protocol.

Table 3-14 summarizes the vibration monitoring undertaken along the rail corridor.





Table 3-14: Vibration Monitoring Summary

Receptor	Address	Root-Mean-Square (RMS) Vibration Velocity (mm/s)
R1	Bayview Ave. Future Development	0.05
R2	361 Eastern Ave.	0.10
R8	60 McGee Street	0.14

As seen in the table above, the measured vibration levels did not exceed 0.14 mm/s.

3.8 Traffic and Transportation

This section provides an overview of existing traffic and transportation conditions within the study area and the methodology used to obtain this information. Further details are provided in Appendix I of this Volume.

Refer to Section 4.9 for traffic and transportation effects assessment, mitigation and monitoring.

3.8.1 *Methodology*

The transportation study was developed based on the following methodology:

- Reviewing relevant background reports to gather information about the existing and future planned conditions within the study area and the surrounding roadway networks, including background information from the City of Toronto, Metrolinx and TTC, standards and guidelines from relevant municipalities, and traffic data; and
- Following the principles of transportation/traffic analysis theories, best practices and professional engineering judgement to identify issues and evaluate solutions.

As part of a typical methodology for an analysis of this nature, a site visit would be conducted in order to gain a "hands on" perspective of the existing transportation and traffic conditions, and then to serve as input for the analysis of the future conditions. However, since the future conditions for the East Harbour SmartTrack Station will be very different from existing conditions, the value that can be obtained from observing the existing conditions through a site visit is limited. Therefore, a site visit was not conducted.

The following is a list of relevant background information that has been reviewed as part of this study. The understanding of the existing and future conditions within the study area and the surrounding roadway network is further described in Section 3.8.2.1.

- The City of Toronto Zoning By-law (By-law 569-2013) (2016);
- The City of Toronto Official Plan & Secondary Plans (2015);
- The City of Toronto's 10-Year Cycling Network Plan (2016);
- East Harbour Development-Functional Servicing Report (2017);
- Lakeshore East Rail Corridor Expansion Environmental Project Report (EPR) (2016);
- The Don River to Scarborough Junction Transit Project Assessment Process (TPAP) (2017);

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

- RER New Stations Initial Business Case Downtown East (Lakeshore East/Stouffville/Richmond Hill Corridors) (2016);
- Port Lands + South of Eastern Transportation Servicing Master Plan (TSMP) and Environmental Assessment (2017);
- Unilever Precinct Planning Study (2017);
- Relief Line Project Assessment Study (2017); and
- East Harbour Master Plan Transportation Considerations Report (2018).

A Transportation Brief was developed to focus on identifying the number of multi-modal trips and critical movements at the adjacent intersections generated by the station.

The new stations proposed within the core of the City of Toronto, including the East Harbour SmartTrack Station, are all within highly urbanized areas. As no parking is to be provided, most people will walk or cycle to/from the station. The station will be located south of Eastern Avenue with easy transfer access from local transit services on both Eastern Avenue and Broadview Avenue.

Given the existing and proposed high density local development and the availability of easy walking/cycling and transit access, there is likely to be limited PPUDO access to or from the station. This is confirmed by the current activity at similar existing GO Transit stations within the outer downtown area. In addition, many PPUDO trips are likely to be pass-by in nature and are existing trips with the added feature of dropping or picking up someone at the station.

The 2031 forecasted ridership figures for the Project during the A.M. and P.M. peak hours were provided by City Planning, as shown in Table 3-15.

Peak Hour	Total Boardings	Transfer Boardings	Total Alightings	Transfer Alightings
A.M.	420	0 (0%)	5,030	10 (0.2%)
P.M.	3,450	0 (0%)	570	0 (0%)

Table 3-15: East Harbour SmartTrack Station Boarding & Alighting Data (from City of Toronto)

The mode split and trip distribution information were obtained from Metrolinx's GO Rail Station Access Plan (Metrolinx, 2016). The PPUDO mode split for the A.M. peak alighting and P.M. peak boarding periods have been reduced to zero for this analysis, to reflect the idea that PPUDO activities will not occur during these periods. The trips forecasted to be generated by this mode have been proportionally reallocated to the walking, local transit, and cycling modes during these periods. Additionally, it is assumed that the 2031 forecasted targets are identical to the 2028 future year targets (the opening of the station), to be conservative.

In addition, the Metrolinx GO Rail Passenger Survey Report (GO Transit, 2016), and data extracted from the 2011 Transportation Tomorrow Survey (TTS) were also reviewed.





3.8.2 Description of Existing Conditions

3.8.2.1 Road Network

The study area contains the following key corridors, all which are under the jurisdiction of the City of Toronto:

- Arterials Eastern Avenue, Broadview Avenue, and Lake Shore Boulevard East
- Local Sunlight Park Road

The key intersections examined for this study are:

- Eastern Avenue and Broadview Avenue: a four-leg signalized intersection;
- Sunlight Park Road and Broadview Avenue/Broadview Avenue extension: currently a two-way stop-controlled T-intersection; future four-leg configuration is unknown at this time; and
- Lake Shore Boulevard East and Broadview Avenue extension: a future four-leg intersection; configuration unknown at this time.

Turning Movement Counts (TMCs) are available for the existing Eastern Avenue and Broadview Avenue intersection. There are no TMCs available for existing stop-controlled Sunlight Park/Broadview intersection or future intersections in the study area.

3.8.2.2 Transit Network

The Project will be situated on the Stouffville/Lakeshore East GO rail corridor between Union Station (2.8 km to the west) and Danforth GO Station (5.3 km to the northeast).

The TTC serves the study area and the broader surrounding areas. As the station site is located in an intensifying area with both high-density residential and employment uses, connectivity from local transit services is of great significance. King Street, Queen Street, Kingston Road, Broadview Avenue, Eastern Avenue, Esplanade and Cherry Street serve as key transit service corridors. Service details of the local/express routes on these streets are included in Appendix I of this Volume. Figure 3-13 shows existing TTC routes in the study area.







3.8.2.3 Cycling, Pedestrian and Trail Network

Sidewalks provide pedestrians with enhanced connectivity throughout the study area. The existing pedestrian network is well connected, providing sidewalks on both sides of the street and other pedestrian pathways for the majority of roadways in the study area. Locations with intermittent conditions or no sidewalks are outlined in the Appendix I of this Volume.

There are sidewalks and/or pedestrian pathways on all roads in the study area including pedestrian-oriented features that make the study area supportive of people traveling on foot. Details of the features and a description of the formal MUPs in the area (Lower Don Recreation Trial, Lower Don River Trail and the Martin Goodman Trail) are included in Appendix I of this Volume.

Based on a review of the City's 10-Year Cycling Plan and desktop analysis of the boundary road network, there is limited existing cycling infrastructure in the study area., including:

- The Lower Don Recreation Trail, the Lower Don River Trail, and Martin Goodman Trail, providing pedestrian and cyclist connections surrounding the East Harbour SmartTrack Station; and
- Corktown Common which contains an array of connecting trails, MUPs, and bike lanes.

4. Effects Assessment, Mitigation and Monitoring

4.1 Methodology

The methods used to conduct the effects assessment were designed to meet the requirements of the TPAP. During the process the following was considered:

- The key activities associated with the construction and operation of the Project as defined in the IPD and detailed in Section 2 of this Volume;
- Existing environmental conditions of the study area as detailed in Section 3 of this Volume; and
- Issues raised by the public, stakeholders and Indigenous communities during consultation and engagement activities conducted to date and detailed in Volume 9.

Potential environmental effects resulting from the construction and operation of the Project were identified, analyzed, and described. Mitigation measures were then identified to minimize or avoid potential effects. Monitoring activities were also identified where warranted to evaluate effectiveness of proposed mitigation measures and provide feedback for adaptive management.

Where applicable, relevant methodologies undertaken are discussed in this Section.

Volume 8 of this EPR includes a specific discussion on climate change as it pertains to the Transit project.

4.2 Natural Environment

4.2.1 Overview

The Project has the potential to result in temporary (e.g., effects to wildlife due to anticipated vegetation removals) and permanent (e.g., long-term colonization and spread of invasive







species) effects to the natural environment. Potential effects associated with this Project may result from direct loss of habitat as well as indirect and accidental effects resulting from construction, and operations/maintenance activities.

It is anticipated that effects can be mitigated through implementation of well-established and site-specific mitigation measures. The Vegetation Compensation Protocol for Metrolinx RER Projects will be completed in accordance with the Project.

4.2.2 Potential Effects, Mitigation and Monitoring

Potential effects, corresponding mitigation measures and monitoring activities relating to the natural environment are described in Table 4-1.

Further details on potential effects, mitigation and monitoring are provided in Appendix B of this Volume.





Table 4-1: Natural Environment - Potential Effects, Mitigation and Monitoring

Feature	Potential Effects	Mitigation Measures	Monitoring Activities				
Construction	Construction						
Aquatic Environment	 Effects to the Don River are anticipated to be minimal given that no in-water work or work below the High-Water mark is proposed. There is low potential for the Project to directly affect aquatic species, including SAR. No work is anticipated within the floodplain and the water channel and no effect to flood water conveyance is anticipated. Effects associated with the proposed works will be limited to indirect effects of construction activities which may include: Erosion and downstream transport of sediment associated with staging areas, including exposed soils, stockpiled soils or other materials from clearing and grubbing; Entry of debris (e.g., aggregate) from the rail corridor during construction into the Don River; Trampling of riparian vegetation; and Equipment leaks, or spills may occur, resulting in accidental contamination. The Project has potential to impact the External Connection of the existing Urban River Valley feature connecting the Greenbelt to Lake Ontario. 	 No in-water work or work below the High-Water mark is proposed and therefore there is low potential for the Project to directly affect aquatic species, including SAR species. There is potential for the Project to indirectly affect the aquatic environment. Potential effects from the construction of the Project to the aquatic environment can be managed through implementation of the following mitigation measures: Ensure equipment and materials storage is located in designated and properly contained areas located well away from the watercourse. Develop an Erosion and Sediment Control (ESC) Plan prior to construction for implementation throughout construction. The ESC Plan will include consideration of the Greater Golden Horseshoe Area Conservation Authorities' Erosion and Sediment Control (Greater Golden Horseshoe Area Conservation Authorities, 2006) and Ontario Provincial Standard Specification (OPSS) 805 (Erosion and Sediment Control Measures) (Ministry of Transportation, 2015). This plan will encompass all areas of soils disturbance, particularly in the vicinity of the Don River. The ESC plan described for soils mitigation will include the following measures: All disturbed areas/construction zones that drain to the watercourse will be isolated using standard perimeter ESC fencing to isolate the general construction zone up and downstream. The ESC fencing will be heavy duty/reinforced fencing, but with no exposed mesh that might entangle wildlife. Locate all salvaged or stockpiled materials a safe distance from the edge of the watercourse and stabilize to prevent migration of any sediment or other material to the watercourse. 	 On-site inspection and maintenance by an Environmental Inspector will be undertaken on a regular basis (e.g., monthly) or as required (e.g., following storm events) over the course of construction to ensure the effectiveness of ESC and other mitigation measures. 				






Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		disturbed surfaces draining to the watercourse and/or in the floodplains as soon as feasible following construction as described above.	
		 No equipment shall ford or otherwise enter the watercourse; 	
		Control all activity to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment as outlined above, to the watercourse. Conduct storage, refueling or maintenance of equipment at least 30 m away from the watercourse. An Emergency Preparedness and Response Plan will govern spill response.	
		 Retain and protect as much of the natural vegetation as reasonably possible to help ensure bank stability and control erosion. 	
		 During detailed design and prior to construction, a Stormwater Management Report will be completed to determine potential effects and mitigation measures. The report will be completed in consultation with TRCA and the MOECC. Stormwater management design will consider guidance provided by the MOECC Stormwater Management Planning and Design Manual (2003) and MTO Drainage Management Manual (2008), TRCA Storm Water Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation, 2010). 	
		In the event in-water work or work below the High- Water mark is required for the project, the following Best Management Practices for in-water work should be implemented:	
		• Time work in water to respect timing windows to protect fish (work is generally restricted between March 31 and July 1), including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.	
		 Minimize duration of in-water work and conduct instream work during periods of low flow to further 	







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.	
		 Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation. 	
		 Design and plan activities and works in the waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided, and effects to SARA-listed aquatic species, their residences or critical habitat are avoided. 	
		 Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation. 	
		 Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures. 	
		 Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse. 	
		• Control all activity to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment as outlined above, to the watercourse. Conduct storage, refueling or maintenance of equipment at least 30 m away from the watercourse. An Emergency Preparedness and Response Plan will govern spill response.	
		 Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish. 	
		 Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the waterbody during all phases 	







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		of the project. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear. The plan should, where applicable, include:	
		 Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body. 	
		 Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system. 	
		 Site isolation measures (e.g. silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g. dredging, underwater cable installation). 	
		 Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the High-Water mark of nearby waterbodies to prevent re-entry. 	
		 Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction. 	
		 Repairs to erosion and sediment control measures and structures if damage occurs. 	
		 Removal of non-biodegradable erosion and sediment control materials once site is stabilized. 	
		• Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.	
		 Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the 	







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		shoreline or the bed of the waterbody below the ordinary High-Water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.	
		 Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site. 	
		 Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored. 	
		 If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment. 	
		 Remove all construction materials from site upon project completion. 	
		• Ensure that all in-water activities, or associated in- water structures, do not interfere with fish passage, constrict the channel width, or reduce flows, or result in the stranding or death of fish.	
		 Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds. 	
		 Whenever possible, operate machinery on land above the High-Water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody. 	
		 Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. 	
		 Wash, refuel and service machinery and store fuel and other materials for the machinery in such a 	







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		 way as to prevent any deleterious substances from entering the water. Develop mitigation measures in consultation with the TRCA, MNRF, MOECC and DFO, as applicable. 	
		 Measures to mitigate a potential loss of green space and reduce storm runoff will be identified in detailed design. 	
		 A Flood Contingency Plan will be developed during detailed design and prior to construction. 	
		 Staging and storage of construction equipment will be avoided within flood plain areas. 	
		 Infrastructure and utility works will either be completed by Metrolinx as part of this Project, or by utility companies. Metrolinx and its Contractors will follow TRCA regulatory requirements. 	
		Potential effects from construction of the Project to the Urban River Valley feature can be managed through implementation of the following mitigation measures:	
		 Consider maintaining or increasing vegetation protection zones in natural self-sustaining vegetation communities, especially in ecologically sensitive areas (i.e., near the stream and below the stable top of bank). 	
		 Consider incorporating fish habitat improvements in streams and in the adjacent riparian lands. 	
		 Consider landscaping and habitat restoration works to increase the ability of native plants and animals to use valley systems as both wildlife habitat and movement corridors. 	
		 Seek to avoid or minimize adverse impacts associated with the quality and quantity of urban runoff into the valley systems through effective stormwater management. 	
		Potential effects from construction of the Project to the Lower Don Special Policy Area can be managed through implementation of the following mitigation measures:	
		 Metrolinx will undertake detailed design and associated hydraulic modelling studies as 	







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		 necessary to meet the requirements of Lower Don Special Policy Area. The station will be designed, implemented and operated in a manner that meets the flood protection requirements of the Living City Policies. This will include flood proofing to meet applicable guidelines, developing warning and emergency measures, and demonstrating (through modelling) that the development of the station will not result in an increase in flood hazard risk upstream and downstream of the site. This work will be reviewed as part of the Voluntary Project Review process. Cut and Fill: For any works within existing flood hazard areas, Metrolinx will demonstrate through a cut and fill balance analysis that there will be no increases in flood depths and no adverse upstream or downstream hydraulic or fluvial impacts; North-south connection - Metrolinx will design the station amenities (pedestrian connections) within the existing railway berm such that they do not serve as a hydraulic connection between the areas north and south of the station; and that Metrolinx will undertake the necessary studies to demonstrate that the proposed TRCA flood protection features on south and north sides of the station berm. Two new pedestrian bridges over the Don River and accesses on the west of the river - Metrolinx will demonstrate through the necessary studies that proposed new bridges will not create new flooding hazards to adjacent or other properties and that there will be no negative upstream and downstream hydraulic impacts; and that risks to public safety will be addressed by Metrolinx during 	
		the design of the new accesses.	
i errestrial Environment	Both direct and indirect effects to the terrestrial environment are anticipated from construction of the Project.	Potential effects to vascular flora and vegetation communities from construction of the Project can be managed through implementation of the following mitigation measures:	 On-site inspection and maintenance by an Environmental Inspector will be undertaken on a regular basis (e.g., monthly) or as required (e.g., following storm events) over the
	 Direct effects are anticipated from 	 Retain existing vegetation within the study area to 	following storm events) over the





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
	 vegetation removal but are expected to be minimal based on the developed/commercial nature of the study area. Much of the vegetation is non-native, early successional and disturbance tolerant species. Removals will likely affect trees located within the rail corridor. Removal of non-woody vegetation within cultural units is also expected. The vegetation communities within the study area are considered common and widespread across the broader landscape, and no sensitive species were observed. The anticipated vegetation community loss based on the IPD has been estimated as: Cultural meadow 0.12 hectares. Cultural hedgerow 0.67 hectares. 	 the extent practicable. Vegetation removal will be kept to a minimum, limited to within the construction disturbance area and should be scheduled to occur outside of the overall bird nesting season of April 1st to August 31st, following the mitigation measures described for migratory birds. Areas for vegetation removal will be refined during detailed design, if required (e.g., change in construction disturbance area, final staging areas). ESC fencing will be installed (as noted above) prior to vegetation clearing and maintained throughout construction. Construction fencing and/or ESC fencing, where appropriate, will be installed and maintained to clearly define the construction disturbance area and prevent accidental damage to vegetation, or intrusion to adjacent vegetated areas. Fencing will be monitored and repaired as necessary throughout the construction period and will be removed and disposed of accordingly, post-construction. 	 course of construction to ensure the effectiveness of ESC and other mitigation measures. On-site inspection will be undertaken as required during construction to ensure that only specified trees are removed, fencing is intact and there is no damage caused to the remaining trees and adjacent vegetation communities. Construction and/or ESC fencing will be repaired if it is damaged. Any damaged trees will be pruned through the implementation of proper arboricultural techniques, under supervision of an Arborist or Forester. Regular inspections of dust emissions, (frequency to be defined prior to project construction), will be undertaken to confirm dust control watering frequency and rates are adequate. Post-planting monitoring of restoration
	 There is potential for indirect effects to adjacent retained vegetation features during the construction phase, including the following: Vegetation clearing/damage beyond the construction area (e.g., due to air emissions and dust deposition); An increase in downstream runoff that can result in erosion effects on receiving vegetation; Colonization and spread of invasive species; and Spills of fuel and/or application of other hazardous materials (e.g., de-icing substances during winter months). Spills have the potential to affect 	 Re-stabilize all disturbed areas, incorporating revegetation using plantings and native seed mix appropriate to the site conditions. Exposed soils will be revegetated as soon as possible to reduce erosion. Carry out clearing, grubbing, site preparation and tree protection activities with consideration for relevant OPSS (e.g., OPSS 201 (Ministry of Transportation, 2011), OPSS 801.PROV (Ministry of Transportation, 2018)). When practicable, prune or top the vegetation instead of grubbing/uprooting, if required. Implement dust control practices (e.g., wetting with water) in dust-sensitive areas. Any damaged trees will be pruned or removed through the implementation of proper arboricultural techniques, under supervision of an Arborist. 	 areas will occur for one year after installation. One site visit will be conducted during the subsequent growing season to confirm survival of plantings and/or seed mix. Should the plantings and/or seed mix not survive, additional seeding and/or plantings will be undertaken one year thereafter with one additional monitoring visit in the following growing season. Restoration/compensation monitoring will be confirmed through regulatory agency consultation during detailed design. Additional restoration/compensation monitoring may be required based on the results of additional surveys and consultations with regulatory







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
	retained vegetation. • The project study area is within or close to TRCA's Terrestrial Natural Heritage Target System Strategy and may contain areas identified within habitat implementation plans for watersheds.	 Mitigation measures specific to trees will be adhered to, including municipal by-law permitting requirements where applicable, that are summarized in the East Harbour Tree Inventory Plan (Appendix C of this Volume). The Tree Inventory Plan will be further detailed in an Arborist Report. The Arborist Report will contain at a minimum the following information in addition to details of tree location, size, species, conditions and category: Recommendations for tree/vegetation protection and preservation measures for all trees/vegetation that are to be retained; Details of tree pruning; Details of all trees/vegetation recommended for removal, including removal measures; Mitigation and monitoring measures to ensure success of preservation and removal measures; Should vegetation compensation be required, it will be in accordance with the Metrolinx Vegetation Compensation Protocol; and Mapping. Remove and dispose of all construction-related debris following construction-in appropriately designated areas which will be determined during detailed design. Metrolinx is establishing a Vegetation Compensation protocol for Metrolinx RER projects and vegetation that is removed will be compensated for in accordance with the provisions of this protocol: For Municipal/Private Trees: Metrolinx will 	agencies.
		work with each municipality to develop a municipality-wide streamlined tree permitting/compensation approach for municipal and private trees. The goal is to reduce the administrative permitting burden for trees along long stretches of rail corridor.	







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		For Trees within Metrolinx Property: Metrolinx is developing a methodology to compensate for trees located within Metrolinx's property. This will involve categorizing trees community types/ecological value and establishing the appropriate level of compensation. Metrolinx will be looking to partner with Conservation Authorities and municipalities to develop the final compensation plan.	
		 Conservation Authorities: For vegetation removals within Conservation Authority lands where required, applicable removal and restoration requirements will be followed. 	
		 Federal Lands: For vegetation removals within Federally-owned lands where required, applicable removal and restoration requirements will be followed. 	
		• Tree End Use : Metrolinx will develop options for the end use of trees removed from Metrolinx property (e.g., reuse/recycling options).	
		 Machinery is to arrive on site in a clean condition in accordance with the Clean Equipment Protocol for Industry (Halloran et al., 2003). 	
		 Soil stockpiles will be managed in accordance with the Soil Management Plan. Re-stabilize disturbed areas, incorporating re-vegetation using plantings and/or native seed mix appropriate to the site conditions. Ash trees, leaves, logs, or wood chips will not be removed out of the Regulated Area, as identified on the Canadian Food Inspection Agency (CFIA) website (CFIA, 2015). This is necessary to prevent the spread of the Emerald Ash Borer (EAB) to un-infested areas in Ontario. The Contractor must dispose of all wood at a registered Waste Facility. 	
		 Control all activity to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment as outlined above, to the 	





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		watercourses. Conduct storage, refueling or maintenance of equipment at least 30 m away from the watercourse. An Emergency Preparedness and Response Plan will govern spill response.	
		• The Terrestrial Natural Heritage Target System Strategy and habitat implementation plans will be considered in the design, along with the City's Ravine and Natural Feature Protection Bylaw requirements. Metrolinx Vegetation Compensation Protocol is under development in consultation with TRCA to create opportunities to enhance natural heritage and the ecological contributions.	
		 Restoration/compensation will be confirmed through regulatory agency consultation during detailed design. 	
		 Additional restoration/compensation measures may be required based on the results of additional surveys and consultations with regulatory agencies. 	
		 Efforts should be made to coordinate with Toronto Hydro, Toronto Water and other utility companies that may be affected by utility relocations to help minimize the overall impacts of the Project on the natural heritage system. 	
Wildlife	 Effects to wildlife are expected to be minimal given the urban nature of the study area, and that no protected habitats have been identified. The majority of the species utilizing an urban environment are generally common, disturbance-tolerant urban wildlife species to which effects can be managed through the implementation of mitigation measures. Wildlife may be directly affected due to activity and the area of the species of	 The mitigation measures outlined above to protect the terrestrial environment will also protect associated wildlife habitat functions. It is also necessary to ensure the protection of breeding birds and other animals that may nest or otherwise be encountered incidentally where construction is proposed. For the protection of wildlife in general, the following measures are recommended: Any wildlife incidentally encountered during construction will not be knowingly harmed and will be allowed to move away from the construction area on its own if at all possible. 	On-site inspection will be undertaken as required during construction to ensure that only specified trees are removed, fencing is intact and there is no damage caused to the remaining trees and adjacent vegetation communities. Construction and/or ESC fencing will be repaired if it is damaged. Any damaged trees will be pruned through the implementation of proper arboricultural techniques, under supervision of an Arborist or Forester
	to anticipated vegetation removals as a result of construction. This vegetation could provide habitat for common urban wildlife and can be	 In the event that an animal encountered during construction does not move from the construction zone, or is injured, the Environmental Inspector will be notified. 	 Regular inspections of dust emissions (frequency to be defined prior to project construction) will be





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
	 expected to provide nesting habitat for birds. Wildlife may be directly affected due to anticipated vegetation removals as a result of construction. This vegetation could provide habitat for common urban wildlife and can be expected to provide nesting habitat for birds. Birds nesting in these areas may be protected by the MBCA as discussed in Section 2.4 of the Appendix B of this Volume. 	 Implement dust control practices (e.g., wetting with water) in dust-sensitive areas. 	undertaken to confirm dust control watering frequency and rates are adequate.
	 There is potential for wildlife (e.g., snakes, small mammals, etc.) to enter the proposed work areas. The majority of the wildlife species with potential to occur in the study area are common, tolerant species, and to which effects can be managed through the implementation of mitigation measures. Duct and point groated by 		
	Dust and noise created by construction activities may temporarily disturb and displace wildlife present within the study area. These wildlife species are likely accustomed to noise given the urban nature of the study area.		
Migratory Birds	 Clearing of trees, shrubs, ground vegetation and structures has the potential to disturb or destroy nests of migratory birds. Migratory birds may nest within these areas, most of which are protected by the MBCA as discussed in Section 2.4 of Appendix B of this Volume. Potential effects include disturbance to nesting activity or possible loss of any nests present in the year of construction, depending on timing. Any migratory birds that are found nesting in the ROW are protected under the MBCA. 	 To reduce the possibility of contravention of the MBCA, vegetation removal should be scheduled to occur outside of the overall bird nesting season of April 1 to August 31. Some birds may nest before and after this peak bird nesting season due to annual seasonal fluctuations. If a nest of a migratory bird is found within the construction area outside of this nesting period, it still receives protection. If vegetation must be removed during the overall bird nesting season: Nest and nesting activity searches will be conducted in areas defined as simple 	 Regular monitoring, to be defined prior to pre-construction land clearing, will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
	A small portion of land identified as meadow habitat for migratory birds (Dougan & Associates, 2009) may be lost as a result of the Project.	habitat9 by a qualified Biologist no more than 24 hours prior to vegetation removal. Nesting activity will be documented when it consists of confirmed breeding evidence, as defined by OBBA criteria (Cadman et. al., 2007).	
		 If an active nest or confirmed nesting activity of a migratory bird is observed in simple habitat, regardless of the timing window recommended, a species-specific buffer area following ECCC guidelines will be applied to the nest or confirmed nesting activity wherein no vegetation removal will be permitted until the young have fledged from the nest. The radius of the buffer will depend on species, level of disturbance and landscape context (ECCC, 2014), which will be confirmed by a qualified Biologist, but will protect a minimum of 10 m around the nest or nesting activity. 	
		 The results of all nest searches will be documented at the end of each survey day in a Technical Memorandum, including information on the searcher, date, time conducted, weather conditions, habitat type, vegetation community type, observations of breeding activity, observations of confirmed nests including co-ordinates, and, if required, the buffer applied to identified breeding/nesting sites. 	
		 If vegetation removal must occur in complex habitats within the above-listed timing windows and absolutely cannot be avoided, the same Best Management Practices (BMPs) such as nest and nesting activity searches described above will be 	

^{9.} Simple habitats refer to habitats that contain few nesting spots or few species of migratory birds, where identification of active nests or confirmed nesting activity can be completed with confidence. According to ECCC (2014), examples of simple habitat include the following:

- Urban parks consisting mostly of lawn with a few isolated trees;
- Vacant lot with few possible nest sites;
- Previously cleared area where there is a lag between clearing and construction activities (and where ground nesters may have been attracted to nest in cleared areas or in stockpiles of soil); or
- Structure such as a bridge, beacon, tower or building (often chosen as a nesting spot by robins, swallows, phoebes, nighthawks, gulls and others).





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		 undertaken. Suitable human-made structures within the study area should be inspected for evidence of active bird nests during the breeding bird season prior to the onset of construction activities in order to determine appropriate nesting preventative measures (e.g., netting). 	
Significant Wildlife Habitat	• Candidate SWH for Snapping Turtle has been identified within the study area. No direct effects to SWH are anticipated from the construction of the Project because the majority of proposed work is planned to occur within the ROW.	 Mitigation measures recommended for SAR, Terrestrial Environment and Aquatic Environment will also apply to SWH. If construction staging areas are to be located within 30 m of the Don River, turtle exclusion fencing should be installed prior to beginning of works. Further discussions with MNRF regarding the presence of candidate SWH should occur as project design advances. Further field investigations may be required to refine areas identified as candidate SWH. 	• No monitoring activities are anticipated to be required at this time.
SAR	 Eight SAR have moderate potential or are confirmed to occur within the study area. A presence/absence field survey confirmed that Peregrine Falcon, Common Nighthawk, and Chimney Swift were not presently nesting in the study area. However, there is potential for SAR to move through the study area during construction, and therefore could be encountered and disturbed or possibly harmed incidentally by construction activities and/or they may nest in the area between the finalization of this report and commencement of construction. Therefore, there is some risk of harm to these species. Potential constructed-related effects to species at risk are as follows: Peregrine Falcon -There is suitable foraging habitat throughout the study area, and very limited suitable nesting habitat on buildings within 	 There is potential for SAR to move through the study area during construction, and therefore be encountered and disturbed or possibly harmed incidentally by construction activities. Therefore, there is some risk of harm to these species. To protect SAR, the following mitigation measures will be implemented: In the event that a SAR, or potential SAR, is found within the construction area, work that could potentially harm the species will cease. It is recommended that construction timing occur outside of the bird breeding season to ensure no effects to breeding SAR birds, where possible, and where not possible that additional mitigation such as nest surveys be completed, as described above. If a nesting migratory bird (or SAR protected under the ESA) is identified within or adjacent to the construction site, the measures outlined above will be followed. Targeted roost surveys for Chimney Swift should be completed in appropriate chimneys if buildings 	 Regular on-site inspection by an Environmental Inspector, as outlined above. Regular monitoring, to be defined prior to construction, will be undertaken to confirm that activities do not encroach into Barn Swallow nesting areas or disturb active Barn Swallow nesting sites.





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
	 the Project area. Common Nighthawk - There is suitable foraging habitat and some suitable nesting habitat on flat gravel- topped buildings within study area. Chimney Swift -There is limited suitable foraging habitat for this species, which is not protected under the ESA, and moderate potential for nesting habitat in nearby buildings. Barn Swallow - Observed by 4T and WSP. Behaviour observed by 4T suggests nesting activity in the study area beneath the rail bridge. American Eel -There is moderate potential for the species to occur in the Don River and pass through the study area. Lake Sturgeon - There is moderate potential for the species to occur in the Don River and pass through the study area. Red Mulberry - there is moderate potential for the species to occur in wooded areas identified within the study area. Butternut - one tree was confirmed present in the study area. 	 (with chimneys) are proposed for removal within the study area prior to commencement of demolition activities. Repair, maintenance, or demolition of Chimney Swift roost/nesting structure may constitute destruction of critical habitat and the Project must register the activity with the MNRF as part of O. Reg. 242/08 under the ESA. Construction of a bridge adjacent to the existing bridge has the potential to disturb Barn Swallow nests depending on the time of construction. In the event Barn Swallow nests occur on the Don River Bridge and a new bridge is proposed to be built adjacent to the Don River bridge during the nesting season, MNRF should be further consulted on whether the activity should be registered under O. Reg. 242/08 (ESA). Otherwise it is recommended for the new bridge to either be built outside of the nesting season for Barn Swallow (April 1 to August 31), or pre-netted prior to May 1 to dissuade Barns Swallows from nesting on the structure. No in-water work or work below the High-Water mark is proposed and therefore there is low potential for the Project to directly affect aquatic SAR. There is potential for the Project to indirectly affect aquatic SAR through the release or dispersal of materials into the water as a result of construction activities. Mitigation recommended to minimize or eliminate potential effects to aquatic SAR are provided in the 'Aquatic Environment' section. In the event in-water work or work below the High-Water mark is required for the project, Best Management Practices for in-water work are provided in the 'Aquatic Environment' section above. SAR specific mitigation is provided below: Do not ford, place crossing materials or operate machinery on the bed of a waterbody where SARA-listed shellfish occur, or critical habitat or residences of freshwater SARA-listed aquatic species occur. 	





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		 area is identified as part of critical habitat of an aquatic listed species at risk. Work occurring within 25 m of a Butternut tree is prohibited without an authorization from the MNRF. Each Butternut tree that will be removed or impacted must be assessed by a qualified Butternut Health Assessor prior to impacting or removing the tree(s). A Butternut Health Assessment should be undertaken in accordance with MNRF guidelines and results submitted to MNRF for review. The results of the Butternut Health Assessment will determine the next course of action, which may include no further requirement, submission of a Notice of Activity, or compensation and monitoring. 	
Significant Natural Heritage Features	• The western portion of the study area, including the Don River, is included within the City of Toronto's NHS and therefore an environmentally significant area. Depending on construction methodology and design of the Project, the environmentally significant area may be affected by the Project.	 Determine requirements to adhere to policies outlined in the Official Plan with respect to protection of the NHS. 	No monitoring activities are anticipated to be required at this time.
	• The function of the Don River as an environmentally significant area is already subject to ongoing disturbance by adjacent development and the operation of the existing rail line.		
Operations			
Aquatic Environment	 Spills of fuel and/or application of other hazardous materials (e.g., deicing substances during winter months) have the potential to affect surface water quality. Temperature spikes related to increased impervious surfaces and asphalt 'heat islands' have the 	• Control activity to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment, to the watercourse. Conduct storage, refueling or maintenance of equipment at least 30 m away from the watercourse. An Emergency Preparedness and Response Plan will govern spill response.	 No monitoring activities are anticipated to be required at this time.





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
	potential to create harsh environments for fish and other aquatic species.An increase in impervious surface area, which may result in increased stormwater runoff.	 Retain and protect as much of the natural vegetation as reasonably possible to help ensure bank stability and control erosion. Efforts should be taken to prevent or limit temperature spikes through appropriate stormwater management practices and planting/maintaining shade-providing vegetation near new impervious surfaces. 	
Terrestrial Environment	 The rail corridor is an existing operational rail corridor; operational maintenance is ongoing and not new. No potential effects resulting from the Project as they relate to the terrestrial environment are anticipated. Spills of fuel and/or application of other hazardous materials (e.g., deicing substances during winter months) have the potential to affect retained vegetation. 	 Adhere to relevant OPSS for clearing and grubbing (OPSS 201 (Ministry of Transportation, 2011), site preparation and tree protection (OPSS 801.PROV (Ministry of Transportation, 2018)). When practicable, prune or top the vegetation instead of grubbing/uprooting, if required. Any damaged trees will be pruned or removed through the implementation of proper arboricultural techniques, under supervision of an Arborist. Mitigation measures specific to trees will be adhered to, including municipal by-law permitting requirements where applicable, that are summarized in the Tree Inventory Plan (Appendix C of this Volume), which will be further detailed in an Arborist Report, to be completed during detailed design. Arborist Report will contain at a minimum the following information in addition to details of tree location, size, species, conditions and category: Recommendations for tree/vegetation protection and preservation measures for all trees/vegetation that are to be retained; Details of all trees/vegetation recommended for removal, including removal measures; Mitigation and monitoring measures to ensure success of preservation and removal measures; Should vegetation compensation be required, it will be in accordance with the Metrolinx Vegetation Compensation Protocol; 	No monitoring activities are anticipated to be required at this time.





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		and • Mapping.	
Wildlife	• During operations, train traffic associated with the Project (e.g., stopping and starting) will result in noise, which may affect and possibly displace wildlife.	• Wildlife present within the study area are likely somewhat adapted to these effects given the urban nature of the study area and the existing train traffic on the rail corridor. These effects are anticipated to be minor and wildlife fencing is not warranted given the existing level of habitat fragmentation in the study area.	No monitoring activities are anticipated to be required at this time.
Migratory Birds	• The rail corridor is an existing operational rail corridor; operational maintenance is ongoing and not new. No potential effects resulting from the Project as they relate to migratory birds are anticipated.	Since no new effects are anticipated, no mitigation measures specific to migratory birds are required for the operation of the Project.	No monitoring activities are anticipated to be required at this time.
Significant Wildlife Habitat	 No direct or indirect effects SWH are anticipated from the operation of the Project. 	• Since no new effects are anticipated, no mitigation measures specific to SWH are required for the operation of the Project.	No monitoring activities are anticipated to be required at this time.
SAR	• During operations, train traffic associated with the Project will result in noise (e.g., stopping and starting), which may affect and possibly displace SAR. SAR present within the study area are likely somewhat adapted to these effects given the urban nature of the site and existing active rail corridor. These effects are anticipated to be minor.	• Wildlife present within the study area are likely somewhat adapted to these effects given the urban nature of the study area and the existing train traffic on the rail corridor. These effects are anticipated to be minor and wildlife fencing is not warranted given the existing level of habitat fragmentation in the study area.	No monitoring activities are anticipated to be required at this time.
Significant Natural Heritage Features	 No effects to significant natural heritage features are anticipated during operation of the Project. 	• Since no new effects are anticipated, no mitigation measures specific to significant natural heritage features are required for the operation of the Project.	No monitoring activities are anticipated to be required at this time.





4.3 Geology and Groundwater

4.3.1 Overview

No direct or indirect effects to underlying landforms and Iroquois Plain physiography, bedrock geology or groundwater are anticipated during construction or operations. However, hydrogeological and geo-environmental studies will be completed during detailed design to assess potential effects to groundwater during construction dewatering. It is possible that dewatering may result in temporary lowering of the groundwater table and groundwater flow direction. Effects to groundwater users and the natural environment, as a result of dewatering, will be assessed in the hydrogeological study.

4.3.2 Potential Effects, Mitigation and Monitoring

Potential effects, corresponding mitigation measures and monitoring activities relating to geology and groundwater are described in Table 4-2.





Table 4-2: Geology and Groundwater - Potential Effects, Mitigation and Monitoring

Feature	Potential Effects	Mitigation Measures	Monitoring Activities
Construction	•	•	•
Landforms and Physiography	No effects to the underlying landforms or Iroquois Plain physiographic region are anticipated from construction.	• Since no effects are anticipated, no mitigation measures for the underlying landforms or Iroquois Plain physiographic region are required for the construction of the Project.	No monitoring activities are required.
Soils and Bedrock Geology	 No direct or indirect effects to the bedrock geology are anticipated. Clearing of vegetation and excavation of soil associated with the construction of the Project may result in potential for direct and indirect effects to soils during and the construction phase, including: Sedimentation and erosion of soils due to removal of vegetation, or changes in drainage patterns. Soil contamination from chemical/fuel spills. Mixing of topsoil and subsoil layers. 	 Since no effects are anticipated, no mitigation measures for the bedrock geology are required for the construction of the Project. Potential effects from construction of the Project to soils can be managed through implementation of the following mitigation measures: Soil conditions will be confirmed through future geotechnical investigations to be undertaken in support of detailed design Retain existing vegetation within the study area to the extent practicable. Vegetation removal will be kept to a minimum, limited to within the construction disturbance area and should be scheduled to occur outside of the overall bird nesting season of April 1 to August 31, following the mitigation measures described for migratory birds. Areas for vegetation removal will be refined during detailed design, if required (e.g., change in construction disturbance area, final staging areas). Develop an ESC Plan prior to construction for implementation throughout construction. The ESC Plan will include consideration of the Greater Golden Horseshoe Area Conservation Authorities' Erosion and Sediment Control Guideline for Urban Construction (Greater Golden Horseshoe Area Conservation Authorities, 2006) and 	 On-site inspection and maintenance by an Environmental Inspector will be undertaken on a regular basis (e.g., monthly) or as required (e.g., following storm events) over the course of construction to ensure the effectiveness of erosion and sediment control measures and other mitigation measures. The success of compensation vegetation will be monitored in accordance with the Vegetation Compensation Protocol for Metrolinx RER Projects. Post-planting monitoring of restoration areas will occur for one year after installation. One site visit will be conducted during the subsequent growing season to confirm survival of plantings and/or seed mix. Should the plantings and/or seed mix not survive, additional seeding and/or plantings will be undertaken one year thereafter with one additional monitoring visit in the following growing season. Restoration/compensation monitoring will be confirmed through regulatory agency consultation during detailed design. Additional restoration/compensation monitoring may be required based on the results of additional surveys and consultations with regulatory agencies.







Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		OPSS 805 (Erosion and Sediment Control Measures) (Ministry of Transportation, 2015). This plan will encompass all areas of soils disturbance, particularly in the vicinity of the Don River.	
		 Construction fencing and ESC fencing, where appropriate, will be installed and maintained to clearly define the construction disturbance area and prevent accidental damage to vegetation, or intrusion into adjacent vegetated areas. Fencing will be monitored and repaired as necessary throughout the construction period and will be removed and disposed of accordingly, post- construction. 	
		 Re-stabilize disturbed areas, incorporating re-vegetation using plantings and/or native seed mix appropriate to the site conditions. Exposed soils will be stabilized and re- vegetated as soon as possible to reduce erosion. 	
		 A Soil Management Plan will be developed by a Qualified Professional as defined in O. Reg. 153/04 for managing soil materials on-site (includes excavation, location of stockpiles, reuse and off-site disposal). 	
		 Soils needing to be stored temporarily will be stored in such a way as to not interfere with Project activities. 	
		 Topsoil and subsoil will not be mixed or contaminated with any other material. 	
		• The transportation, storage and handling of fuel shall be in accordance with the <i>Technical Standards and Safety Act</i> , 2000.	
		 Machinery and equipment shall be inspected for leaks routinely throughout 	





Feature	Potential Effects	Mitigation Measures	Monitoring Activities
		 the duration of construction. Vehicle maintenance and fuelling will be conducted at the designated and properly contained maintenance areas. To mitigate accidental contamination from equipment leaks or spills, an Emergency Preparedness and Response Plan will govern spill response. 	
		Restoration/compensation will be confirmed through regulatory agency consultation during detailed design.	
		Additional restoration/compensation measures may be required based on the results of additional surveys and consultations with regulatory agencies.	
		 During detailed design and prior to construction, a Stormwater Management Report will be completed to determine potential effects and mitigation measures. The report will be completed in consultation with TRCA and the MOECC. Stormwater management design will consider guidance provided by the MOECC Stormwater Management Planning and Design Manual (2003), MTO Drainage Management Manual (2008), TRCA Storm Water Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation, 2010). 	
Groundwater	Based on secondary source information, no direct or indirect effects to groundwater are anticipated from the construction of the Project. However, hydrogeological and geo-environmental studies will be completed at the next stage of design. It is possible that dewatering may result in temporary lowering of the groundwater table and	• At this time, no effects are anticipated, as such no mitigation measures specific to groundwater are required for the construction of the Project. However, this will be updated based on the findings from the hydrogeological and geo- environmental studies to be completed at the next stage of design.	• No monitoring activities are anticipated to be required at this time. However, further field studies will be undertaken as part of the hydrogeological and geo- environmental studies and monitoring requirements may be identified at that time.





Feature		Potential Effects		Mitigation Measures		Monitoring Activities
		groundwater flow direction. Effects to groundwater users and natural environment, as a result of dewatering, will be assessed in the hydrogeological study.				
Operations						
Landforms and Physiography	•	No effects to the underlying landforms or Iroquois Plain physiographic region are anticipated from the operation of the Project.	•	Since no effects are anticipated, no mitigation measures for the underlying landforms or Iroquois Plain physiographic region are required for the operation of the Project.	•	No monitoring activities are required.
Soils and Bedrock Geology	•	No effects to the soils and bedrock geology are anticipated from the operation of the Project.	•	Since no effects are anticipated, no mitigation measures for the soils and bedrock geology are required for the operation of the Project.	•	No monitoring activities are required.
Groundwater	•	No effects to groundwater are anticipated from the operation of the Project.	•	Since no effects are anticipated, no mitigation measures specific to groundwater are required for the operation of the Project.	•	No monitoring activities are required.





4.4 Tree Inventory

4.4.1 Overview

Tree removals are required to accommodate the Project. An Arborist Report will be completed during detailed design to identify all trees that may be impacted by the Project, including trees to be preserved, removed or injured. Mitigation measures are necessary prior to and during Project implementation to reduce the potential effects to trees associated with the Project. Additionally, recommended monitoring activities help to confirm that mitigation measures are working effectively and provide feedback for adaptive management.

The specific trees that are greater than 10 cm DBH identified in Table 4-3 for removal are shown in Figure 3-2 to Figure 3-5. Trees less than 10 cm DBH were accounted for but not noted as tree groups.

4.4.2 Potential Effects, Mitigation and Monitoring

Potential effects, corresponding mitigation measures and monitoring activities relating to trees are described in Table 4-3.

Further details on potential effects, mitigation and monitoring are provided in Appendix C of this Volume.





Table 4-3: Tree Inventory - Potential Effects, Mitigation and Monitoring

Effect Type	Potential Effects	Mitigation Measures	Monitoring Activity					
Construction	Construction							
Tree Removal	 Trees on Metrolinx property and/or lands immediately adjacent to accommodate the Project require removal. Approximate removals based on field investigations are as follows: City of Toronto Categories 1 to 5 = 11 trees [tree #'s: 8, 9, 25, 42-46, 66-68] Metrolinx ROW = 372 trees [tree #'s: 1-3, 28, 32-34, 36, 73, 85-88, 95, 96, 103, 104, 142-165, 176, and 300 trees <10 cm DBH] TRCA Regulated Area = All trees are located in the TRCA regulated area Trees less than 30 cm DBH on Private Property = 57 trees [tree #'s: 6, 7, 10-24, 26, 27, 29-31, 35, 37-41, 47- 65, 69-78] Total = 440 trees One Butternut tree was identified within the Project footprint and may be impacted or removed as a result of the Project. 	 Metrolinx is establishing a Vegetation Compensation Protocol for Metrolinx RER projects and vegetation that is removed will be compensated for in accordance with the provisions of this protocol: For Municipal/Private Trees: Metrolinx will work with each municipality to develop a municipality-wide streamlined tree permitting/compensation approach for municipal and private trees. The goal is to reduce the administrative permitting burden for trees along long stretches of rail corridor. For Trees within Metrolinx Property: Metrolinx is developing a methodology to compensate for trees located within Metrolinx's property. This will involve categorizing trees community types/ecological value and establishing the appropriate level of compensation. Metrolinx will be looking to partner with Conservation Authorities and municipalities to develop the final compensation plan. Conservation Authorities: For vegetation removals within Conservation Authority lands where required, applicable removal and restoration requirements will be followed. Federal Lands: For vegetation removals within Federally-owned lands where required, applicable removal and restoration requirements will be followed. Tree End Use: Metrolinx will develop options for the end use of trees removed from Metrolinx property (e.g., reuse/recycling options). The opportunity to salvage existing vegetation, particularly sensitive species, for transplanting from within the Project boundaries will be explored. An Arborist Report will be prepared as the design progresses to detail proposed works, impacts and removals on private, conservation authority and/or municipal property. The Arborist Report will include: The identification of all trees on private, conservation authority, and/or municipal property that will be impacted by the Project, including trees to be 	The success of compensation vegetation will be monitored in accordance with the Vegetation Compensation Protocol for Metrolinx RER Projects. Post-planting monitoring of restoration areas will occur for one year after installation. One site visit will be conducted during the subsequent growing season to confirm survival of plantings and/or seed mix. Should the plantings and/or seed mix not survive, additional seeding and/or plantings will be undertaken one year thereafter with one additional monitoring visit in the following growing season. Restoration/compensation monitoring will be confirmed through regulatory agency consultation during detailed design. Additional restoration/compensation monitoring may be required based on the results of additional surveys and consultations with regulatory agencies. On-site inspection will be undertaken as required during construction to ensure that only specified trees are removed, fencing is intact and there is no damage caused to the remaining trees and adjacent vegetation communities. Construction and/or silt fencing will be repaired if it is damaged. Any damaged trees will be pruned through the implementation of proper arboricultural techniques, under supervision of an Arborist or Forester. Regular monitoring, to be defined prior to pre- construction land clearing, will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.					





Effect Type	Potential Effects	Mitigation Measures	Monitoring Activity
		 preserved, removed or injured; Details of proposed work and impacts; Recommendations for protection and preservation measures for all trees/vegetation that are to be retained; Details of tree pruning; Details of all trees/vegetation recommended for removal, including removal measures; Appraised values of trees/vegetation to be removed; Mitigation and monitoring measures recommended to ensure success of preservation and removal measures; Identification of suitable restoration/compensation to accommodate site-specific impacts, mitigation and replacement measures to offset vegetation losses; and Where required, property specific landscaping and/or restoration plans for tree removals permitting and approvals. Work occurring within 25 m of a Butternut tree is prohibited without an authorization from the MNRF. Each Butternut tree that will be removed or impacted must be assessed by a qualified Butternut Health Assessment should be undertaken in accordance with MNRF guidelines and results submitted to MNRF for review. The results of the Butternut Health Assessment will determine the next course of action, which may include no further requirement, submission of a Notice 	
Tree Injury	 Encroachment into the Tree Protection Zone of trees within the Study Area. The following 10 trees will be 'injured': T1- T2, and T4 - T11. Impacts to trees adjacent to the work zone may result in unintended root damage or tree felling: 10 trees 	An Arborist Report will be prepared as the design progresses to detail proposed works, impacts and removals on private, conservation authority and/or municipal property, as discussed above. All removals should be felled into the work area to ensure that damage does not occur to the trees within the TPZ. Upon completion of the tree removals, all felled trees are to be removed from the site, and all brush chipped. All brush, roots and wood debris should be shredded into pieces that are smaller than 25 mm in size to ensure that any insect pests that could be present within the wood are destroyed.	On-site inspection will be undertaken as required during construction to ensure no unauthorized encroachment into vegetated areas and TPZs, as well as monitoring and administering repair of tree protection barriers to ensure proper installation and functionality.





Effect Type	Potential Effects	Mitigation Measures	Monitoring Activity
	• Protected trees that are close to the Project footprint, with a canopy that overhangs the work area, may require pruning of branches to facilitate works.		
Tree Preservation	Trees within the study area will require tree protection barriers. Trees to be preserved are #s 98 to 102, 110, 112 to 114, 117 to 119, 121 to 126, 166, 168-170 and T3. Refer to Appendix A (in this Volume's Appendix C): Table 1 for minimum TPZ distances.	 Install barriers for trees to be preserved. Barriers to consist of following types: Private Property: 2.4 m height plywood barriers (3/4" thick) City Property: 1.2 m height orange plastic web snow fence on a 38x89 mm (2"x4") wood frame Barriers to be installed per details in Appendix D in this Volume's Appendix C. The following activities are prohibited within a TPZ: Demolition, construction, replacement or alteration of permanent or temporary buildings, structures or pathways of any kind; Installation of large stones or boulders; Altering grade by adding or removing soil or fill, excavating, trenching, topsoil or fill scraping, compacting soil or fill, dumping or disturbance of any kind; Storage of construction materials, equipment, wood, branches, leaves, soil or fill, construction waste or debris of any sort; Application, discharge or disposal of any substance or chemical that may adversely affect the health of a tree; Causing or allowing water or discharge, to flow over slopes or through natural areas; Access, parking or movement of vehicles, equipment or pedestrians; Cutting, breaking, tearing, crushing, exposing or stripping tree's roots, trunk and branches; Nailing or stapling into a tree, including attachment of fences, electrical wires or signs; Stringing of cables or installing lights on trees; Soil remediation, removal of contaminated fill; and 	Inspections to ensure barriers have been installed as specified and monitoring during construction to ensure barriers are functioning as specified and to administer any necessary repairs.





Effect Type	Potential Effects	Mitigation Measures	Monitoring Activity
		 Excavating for directional or micro-tunnelling and boring entering shafts. 	
		• Tree protection barriers shall be clearly staked in the field prior to construction to ensure correct positioning of fencing and avoid unnecessary disturbance.	
		 To avoid root zone impacts on trees to be retained, excavated material shall not be stored against the tree protection barrier. 	
Nests of Migratory Birds	Clearing of trees has the potential to disturb or destroy migratory birds or the nests of migratory birds.	 To reduce the possibility of contravention of the MBCA, vegetation removal should be scheduled to occur outside of the overall bird nesting season of April 1 to August 31. Some birds may nest before and after this peak bird nesting season due to annual seasonal fluctuations. If a nest of a migratory bird is found within the construction area outside of this nesting period it still receives protection. If vegetation must be removed during the overall bird nesting season: Nest and nesting activity searches will be conducted in areas defined as simple habitat10 (i.e., the CUM1-1 community) by a qualified Biologist no more than 24 hours prior to vegetation removal. Nesting activity will be documented when it consists of confirmed breeding evidence, as defined by OBBA criteria (OBBA, 2001). If an active nest or confirmed nesting activity of a migratory bird is observed in simple habitat, regardless of the timing window recommended, a species-specific buffer area following ECCC guidelines will be applied to the nest or confirmed nesting activity will be documented will be permitted until the young have fledged from the nest. The radius of the byfer will depend on 	Regular monitoring, to be defined prior to pre- construction land clearing, will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.

^{10.} Simple habitats refer to habitats that contain few nesting spots or few species of migratory birds, where identification of active nests or confirmed nesting activity can be completed with confidence. According to ECCC (2014), examples of simple habitat include the following:

- Urban parks consisting mostly of lawn with a few isolated trees;
- Vacant lot with few possible nest sites;
- Previously cleared area where there is a lag between clearing and construction activities (and where ground nesters may have been attracted to nest in cleared areas or in stockpiles of soil); or
- Structure such as a bridge, beacon, tower or building (often chosen as a nesting spot by robins, swallows, phoebes, nighthawks, gulls and others).





Effect Type	Potential Effects	Mitigation Measures	Monitoring Activity
		 species, level of disturbance and landscape context (ECCC, 2014), which will be confirmed by a qualified Biologist, but will protect a minimum of 10 m around the nest or nesting activity. The results of all nest searches will be documented at the end of each survey day in a Technical Memorandum, including information on the searcher, date, time conducted, weather conditions, habitat type, vegetation community type, observations of breeding activity, observations of confirmed nests including co-ordinates, and, if required, the buffer applied to identified breeding/nesting sites. If vegetation removal must occur in complex habitats within the above-listed timing windows and absolutely cannot be avoided, the same BMPs such as nest and nesting activity searches described above will be undertaken. 	
Operations	•		
Tree Injury	Deterioration in tree vitality or a decline in tree vigour of trees that within the study area adjacent to the Project that could occur over time due to new growing conditions (e.g., sunscald, compaction, root damage, broken branches and TPZ damage).	Maintenance and seasonal pruning or tree removal to prevent woody material from falling onto the rail corridor, by a Certified Arborist or under the supervision of one.	Routine inspections to identify dead trees or limbs adjacent to the Project that require removal or maintenance for safety. Certified Arborist to inspect and assess trees on adjacent lands annually (at a minimum) from the Metrolinx property.
Nests of Migratory Birds	Clearing of trees has the potential to disturb or destroy nests of migratory birds.	 To reduce the possibility of contravention of the MBCA, vegetation removal should be scheduled to occur outside of the overall bird nesting season of April 1 to August 31. Some birds may nest before and after this peak bird nesting season due to annual seasonal fluctuations. If a nest of a migratory bird is found within the construction area outside of this nesting period, it still receives protection. If vegetation must be removed during the overall bird 	Regular monitoring (frequency to be defined prior to vegetation removal) will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.







Effect Type Potential Effects	Mitigation Measures	Monitoring Activity
	 nesting season: Nest and nesting activity searches will be conducted in areas defined as simple habitat¹¹ (i.e., the CUM1-1 community) by a qualified Biologist no more than 24 hours prior to vegetation removal. Nesting activity will be documented when it consists of confirmed breeding evidence, as defined by OBBA criteria (OBBA, 2001). 	
	 If an active nest or confirmed nesting activity of a migratory bird is observed in simple habitat, regardless of the timing window recommended, a species-specific buffer area following ECCC guidelines will be applied to the nest or confirmed nesting activity wherein no vegetation removal will be permitted until the young have fledged from the nest. The radius of the buffer will depend on species, level of disturbance and landscape context (ECCC, 2014), which will be confirmed by a qualified Biologist, but will protect a minimum of 10 m around the nest or nesting activity. The results of all nest searches will be documented at the end of each survey day in a Technical Memorandum, including information on the searcher, date, time conducted, weather conditions, habitat type, vegetation community type, observations of breeding activity, observations of confirmed nests including co-ordinates, and, if required, the buffer applied to identified breeding/nesting sites. If vegetation removal must occur in complex habitats within the above-listed timing windows and absolutely cannot be avoided, the same BMPs such as nest and nesting activity searches described above will be 	

^{11.} Simple habitats refer to habitats that contain few nesting spots or few species of migratory birds, where identification of active nests or confirmed nesting activity can be completed with confidence. According to ECCC (2014), examples of simple habitat include the following:

- Urban parks consisting mostly of lawn with a few isolated trees;
- Vacant lot with few possible nest sites;
- Previously cleared area where there is a lag between clearing and construction activities (and where ground nesters may have been attracted to nest in cleared areas or in stockpiles of soil); or
- Structure such as a bridge, beacon, tower or building (often chosen as a nesting spot by robins, swallows, phoebes, nighthawks, gulls and others).





4.5 Cultural Environment

4.5.1 Overview

There are no directly affected properties within the study area with known or potential CHVI. Properties that were identified as having known or potential CHVI are summarized in Table 4-4.

In June 2018 a CHAR was prepared to build on the findings of the CHSR and to identify potential adverse impacts to identified cultural heritage resources and to recommend mitigation measures to lessen or avoid any identified impacts. The results of this CHAR are provided in Table 4-4.





Table 4-4: Table of Anticipated Impacts and Screening Recommendations

Cultural Heritage Resource #	Municipal Address	Heritage Recognition	Description of Anticipated Impact	Analysis of Potential/Anticipated Impact	Next Steps
EH-1	415 Eastern Avenue Consumers Gas Station.	Listed.	Indirectly Affected Property - no direct impacts anticipated at this time. This property may experience indirect impacts as a result of construction activities.	 Not within Vibration ZOI (structure is >25 m from Project footprint). No indirect adverse impacts identified. 	No further work required.
EH-2	21 Don Roadway	None. Potential CHVI (identified during screening).	Directly Affected Property - a portion of the project footprint/station infrastructure will extend minimally into the property. No indirect impacts anticipated at this time.	 Not within Vibration ZOI (structure is >8 m from Project footprint). No indirect adverse impacts identified. 	No further work required.
EH-3	9 Sunlight Park Road	None. Potential CHVI (identified during screening).	Indirectly Affected Property - no direct impacts anticipated at this time. This property may experience indirect impacts as a result of construction activities.	 Does not have potential CHVI. Does not retain heritage attributes. No impacts to any CHVI or heritage attributes. 	No further work required.





4.5.2 Archaeology

Archaeological recommendations are based on a Stage 1 AA undertaken for this Project. The Stage 1 AA found that based on the presence of primary water sources (the Don River and Lake Ontario), historic transportation routes (e.g., Eastern Avenue, Lakeshore Boulevard East, Mill Street), and historic shorelines in the vicinity of the Project, the study area holds potential for the recovery of both pre-contact and postcontact period archaeological resources. While the development of the surrounding lands and the rail corridor resulted in disturbances of lands within the study area, a Stage 2 AA is required to determine the extent of that disturbance where deeply buried archaeological resources may be present, as well as in the areas that have been found to be undisturbed. The Lakeshore East/Stouffville rail corridor has been identified as disturbed and no further archaeological assessment will be required within the corridor.

Figure 3-7 shows areas of archaeological potential requiring Stage 2 AA

4.5.3 Potential Effects, Mitigation and Monitoring Measures

Potential effects, corresponding mitigation measures and monitoring activities relating to the cultural environment are described in Table 4-5.

Further details on potential effects, mitigation and monitoring are provided in Appendices E and F of this Volume of the EPR.

Recommendations for BHRs and CHLs are based on the CHSR, CHAR, and CHERs undertaken for this Project. No mitigation measures are required; however, if during detailed design the final limits of the East Harbour SmartTrack Station fall outside the current Project footprint, further assessment of potential impacts may be necessary.





Table 4-5: Cultural Environment - Potential Effects, Mitigation and Monitoring

Feature		Potential Effects		Mitigation Measures	Monitoring Activities	
Construction	Construction					
Built and Cultural Heritage	•	Directly Affected Properties - the Project footprint will extend minimally into the property at 21 Don Roadway (EH-2) and is anticipated to result in a property acquisition.	•	Since no potential heritage attributes are located within the Project footprint and given the scale and locations of potential heritage attributes, no direct or indirect effects are anticipated. No mitigation measures have been recommended for the construction of the Project.	No monitoring activities are required.	
	•	 Indirectly Affected Properties -No potential indirect impacts have been identified for the following properties: EH-1 - 415 Eastern Avenue EH-3 - 9 Sunlight Park Road 	•	No mitigation measures are required.	No monitoring activities are required.	
Archaeology	•	Potential for the recovery of both pre- contact and post-contact period archaeological resources.	•	Areas determined to be undisturbed will be subjected to a Stage 2 AA in accordance with Section 2.1.2 of the 2011 S&G prior to construction activities to ensure no cultural heritage resources will be impacted;	Further AA may identify the need for	
			•	Areas determined to be disturbed do not require further assessment;	monitoring	
			•	Should deeply buried archaeological materials be encountered during construction, all work will cease and a professionally licenced archaeologist will be consulted to assess the cultural heritage value and significance of the archaeological deposits; and	construction.	
			•	Areas identified to contain archaeological potential for deeply buried archaeological resources must be subjected to a Stage 2 AA in accordance with Section 2.1.7, Standard 3 or 4 and Guideline 2 of the 2011 S&G prior to construction activities; and		
			•	If final limits of the Project are altered and fall outside the current study area, an additional Stage 1 AA is required to assess the new footprint.		
			•	If human remains are encountered during project work, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the OHA.		
Operation and	Operation and Maintenance					
Built and Cultural Heritage	•	None	•	N/A	N/A	
Archaeology	•	None	•	N/A	N/A	





4.6 Socio-Economic and Land Use Characteristics

4.6.1 Overview

The Project has the potential to result in temporary and permanent socio-economic effects, including construction-related nuisance effects (e.g., increased noise, vibration, and dust), and visual and aesthetic effects. It is anticipated that potential effects can be mitigated through thoughtful Project design, coupled with effective implementation of mitigation measures.

The Project will bring benefits to existing communities along the Lakeshore East/Stouffville rail corridor by providing improved access to the GO Rail network. The Project will bring increased pedestrian and cyclist access to the Project and to the community surrounding the Project by incorporating new cycling and pedestrian paths into its design, including a new multi-use crossing of both the Don River and the Don Valley Parkway. The Project is expected to create public benefit by improving public transportation options. The social and economic benefit of public transit is expected to outweigh any negative residual effects. The Project is anticipated to reduce traffic congestion and promote economic spin offs and redevelopment near the Project. The Project will also provide greater mobility for those without access to, or ability to drive, a car.

4.6.2 Potential Effects, Mitigation and Monitoring Measures

Potential effects, corresponding mitigation measures and monitoring activities relating to the socio-economic and land use environment are described in Table 4-6.

Further details on potential effects, mitigation and monitoring are provided in Appendix F of this Volume.





Table 4-6: Socio-Economic and Land Use Environment - Potential Effects, Mitigation and Monitoring

Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation			
Neighbourhood Characteristics						
Demographics	During Construction: None anticipated.	During Construction: None anticipated at this time.	During Construction: None anticipated at this time.			
Demographics	Additional employment opportunities and revenue opportunities for local businesses.	During Operations: None anticipated at this time.	During Operations: None anticipated at this time.			
Physical Neighbourhood Composition	During Construction: Construction may result in the need for temporary road or lane closures causing access restrictions to nearby residences or businesses. Additional details are provided in the Transportation and Traffic Impact Analysis in Appendix I of this Volume. The final design of the Project may also introduce opportunities for inconsistent design elements such as reducing visibility and creating spaces without character. Enhanced transit service to the nearby residential neighbourhoods may attract development interest and investment in the community. Enhanced transit service to the nearby residential neighbourhoods may also provide the community with further opportunities to engage in active transportation modes. With the proliferation of active transportation related travel, the streetscape, a component of the physical neighbourhood, could be transformed by the City to further accommodate these sustainable modes of transportation.	During Construction: Access to residential and commercial areas will be maintained at all times. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as any future modifications to these schedules as they occur. At a minimum, safety fencing will be used where necessary to separate work areas from pedestrians and/or cyclists. Metrolinx is establishing a Vegetation Compensation Protocol for RER projects. Vegetation that is removed will be compensated for in accordance with this Protocol as documented in the Tree Inventory Plan in Volume 5 - Appendix C of the EPR.	During Construction: On-site inspection and maintenance by an Environmental Inspector will be undertaken on a regular basis (e.g., monthly) or as required (e.g., following storm events) over the course of construction to ensure the effectiveness of ESC and other mitigation measures. Regular inspections of dust emissions (frequency to be defined prior to project construction) will be undertaken to confirm dust control watering frequency and rates are adequate. Site supervisors should monitor the site for wind direction and weather conditions to ensure that high- impact activities be reduced when the wind is blowing consistently towards nearby sensitive receptors. The site supervisor should also monitor for visible fugitive dust and take action to determine the root- cause in order to counteract this. Specific details regarding monitoring should be included in the Air Quality Management Plan.			
	During Operations: Enhanced transit service to the nearby residential neighbourhoods may attract development interest and investment in the	During Operations: None at this time.	During Operations: None at this time.			





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
	community.		
Institutional Uses and Places of Worship	During Construction: Nearby institutional uses or places of worship may experience nuisance effects resulting from noise and vibration and emissions due to construction equipment and other construction related activities. Construction may result in the need for temporary road or lane closures causing access restrictions to nearby local institutional uses. Additional details are provided in the Transportation Brief in Appendix I of this Volume.	During Construction: A Noise and Vibration Control Plan will be developed prior to construction. The plan will include a complaint response protocol and will indicate that surrounding property owners and tenants will be informed of anticipated upcoming construction works, including any work at night. Mitigation is documented in the Noise and Vibration Study in Appendix H of this Volume. An Air Quality Management Plan will be developed for implementation during construction to address construction equipment and vehicle exhaust, fugitive dust and odour. Mitigation is documented in the Air Quality Study in Appendix G of this Volume. Access to institutional uses or places of worship will be maintained at all times. Potentially affected individuals will be notified of initial construction schedules, as well as any future modifications to these schedules as they occur.	During Construction: Regular inspections of dust emissions (frequency to be defined prior to project construction) will be undertaken to confirm dust control watering frequency and rates are adequate. Site supervisors should monitor the site for wind direction and weather conditions to ensure that high- impact activities be reduced when the wind is blowing consistently towards nearby sensitive receptors. The site supervisor should also monitor for visible fugitive dust and take action to determine the root- cause in order to counteract this. Specific details regarding monitoring should be included in the Air Quality Management Plan.
	During Operations: Enhanced transit service to the nearby institutional uses or places of worship may benefit users of these resources. Nearby institutional uses or places of worship may experience nuisance effects resulting from noise and vibration and emissions due to regular operations and maintenance.	During Operations: Operations will be carried out in accordance with applicable regulations and standards, including MOEE/GO Transit Noise and Vibration Protocol (MOEE/GO Transit, 1995) and the Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning Publication NPC 300 (MOECC, 2013). Mitigation is documented in the Noise and Vibration Study in Appendix H of this Volume, and the Air Quality Study in Appendix G of this Volume. Additional mitigation measures to reduce noise effects will be developed as part of detailed design, as required, based on noise modelling and projections.	During Operations: Regular inspections of dust emissions (frequency to be defined prior to project construction) will be undertaken to confirm dust control watering frequency and rates are adequate. Site supervisors should monitor the site for wind direction and weather conditions to ensure that high- impact activities be reduced when the wind is blowing consistently towards nearby sensitive receptors. The site supervisor should also monitor for visible fugitive dust and take action to determine the root- cause in order to counteract this. Specific details regarding monitoring should be included in the Air Quality




Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
			Management Plan.
Recreational Uses Parks and Open Spaces	During Construction: The railway underpass from Corktown Common and connecting into the recreational trail network, as well as the Lower Don River Trail, may be impacted by construction vehicles and equipment working along or underneath the railway, to the west of the Don River. Tree removal may affect the overall recreational and aesthetic experience of existing and future park users.	During Construction: Potential effects to users seeking to access nearby recreational areas and the trail during construction will be mitigated through the installation of appropriate way-finding, regulatory, and warning signs, as per the Construction Traffic Control and Management Plan. Special directional signage may be considered as a means to help pedestrians and cyclists avoid any potential construction activities. At a minimum, safety fencing will be used where necessary to separate work areas from pedestrians and/or cyclists. All stockpiled materials will be fenced and the construction footprint area will be minimized to prevent the construction zone from extending beyond that which is necessary. Metrolinx is establishing a Vegetation Compensation Protocol for RER projects. Vegetation that is removed will be compensated for in accordance with this Protocol as documented in Appendix C of this Volume.	During Construction: Regular inspections of dust emissions (frequency to be defined prior to project construction) will be undertaken to confirm dust control watering frequency and rates are adequate. Site supervisors should monitor the site for wind direction and weather conditions to ensure that high- impact activities be reduced when the wind is blowing consistently towards nearby sensitive receptors. The site supervisor should also monitor for visible fugitive dust and take action to determine the root- cause in order to counteract this. Specific details regarding monitoring should be included in the Air Quality Management Plan.
	During Operations: The project will result in increased connectivity to and from the Lower Don River Trail and the east side of the Don Valley via the new multi-use crossing of both the Don River and the Don Valley Parkway.	During Operations: None anticipated at this time.	During Operations: None anticipated at this time.
Sensitive Land Uses	During Construction: Nearby sensitive land uses may experience nuisance effects resulting from noise and vibration, and emissions and dust emissions due to construction equipment and other construction related activities.	During Construction: A Noise and Vibration Control Plan will be developed prior to construction. The plan will include a complaint response protocol and will indicate that surrounding property owners and tenants will be informed of anticipated upcoming construction works, including any work at night. Mitigation is documented in Appendix H of this Volume. An Air Quality Management Plan will be developed for implementation during construction	 During Construction: Once a detailed construction vibration assessment has been completed, work that may exceed the vibration limits outlined in the City of Toronto bylaw or that may cause structural damage should be monitored. If a structure falls within the ZOI, the following will be required: Pre-construction consultations







Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
		to address construction equipment and vehicle exhaust, potential traffic disruption and congestion, fugitive dust and odour. Mitigation is documented in Appendix G of this Volume.	 between the applicant and owners/occupants; Pre-construction measurements of background vibration levels;
			 Pre-condition survey by means of a photographic record of potentially affected structure façades and all surfaces, including visible sections of building foundations, building cladding, doors, windows, interior wall finishes, surface pavement, sidewalks, signs and trees. Each of the elements should be rated on their general condition (new, good, fair, poor, severe), and visible defects will be photographed; and A vibration monitoring program to confirm that the Prohibited Construction Vibrations are not exceeded. Site supervisors should monitor the site for wind direction and weather conditions to ensure that high-impact activities be reduced when the wind is blowing consistently towards nearby sensitive receptors.
	During Operations:	During Operations:	During Construction:
	Nearby sensitive land uses may experience nuisance effects resulting from noise and vibration and emissions due to regular operations and maintenance.	Operations will be carried out in accordance with applicable regulations and standards, including MOEE/GO Transit Noise and Vibration Protocol (MOEE/GO Transit, 1995) and the Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning Publication NPC 300 (Ministry of the Environment, 2013). Mitigation requirements are documented -Appendix G and Appendix H of this Volume.	None anticipated at this time.
Transit and Trans	sportation Network		
Public Transit	During Construction:	During Construction:	During Construction:





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation	
	Potential temporary disruptions to the existing service along the rail corridor during construction. Construction may result in the need for temporary road or lane closures causing access restrictions to local TTC bus routes.	Notification will be provided in advance of any potential service disruptions. Site-Specific Construction Traffic Control and Management Plans will be prepared and implemented prior to Project construction to maintain reasonable access through work zones, to the extent possible. Metrolinx will consult with the TTC to establish a suitable mitigation strategy to be implemented.	Metrolinx will consult directly with the TTC to establish a suitable monitoring strategy to be implemented. Traffic impacts to be monitored in accordance with the Construction Traffic Control and Management Plan	
	During Operations:	During Operations:	During Operations:	
	Provision of new transit service to nearby residents and workers. The westerly station access supports a connection to the medium-high density development in the vicinity of Corktown Common, and makes possible a connection to streetcars running along the future Broadview Avenue extension for improved GO Transit and TTC connectivity.	None anticipated at this time.	None anticipated at this time.	
Cycling and Infrastructure Network	During Construction: Cyclist movement on the City of Toronto Cycling Infrastructure Network within the neighbourhoods in the study area may experience temporary effects as a result of the construction activities, particularly along the major pathways to the west of the Project footprint along Corktown Common.	During Construction: Potential effects to pedestrian and cycling activities during construction will be mitigated through the installation of appropriate way- finding, regulatory, and warning signs. Special directional signage may be considered to help pedestrians and cyclists avoid any potential construction activities. At a minimum, safety fencing will be used where necessary to separate work areas from pedestrians and/or cyclists. Metrolinx will consult with the City of Toronto to establish a suitable mitigation strategy to be implemented.	During Construction: Cycling network impacts to be monitored in accordance with the Construction Traffic Control and Management Plan.	
	During Operations: The project will result in increased connectivity to the overall cycling network from the Lower Don River Trail and the east side of the Don Valley via the new multi-use crossing of both the Don River and the Don Valley Parkway. Overall multi-modal connectivity to the wider	During Operations: None anticipated at this time.	During Operations: None anticipated at this time.	





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
	subsequently encourage cycling culture and demand in the local neighbourhood.		
Movement	During Construction: Construction may result in the need for temporary road or lane closures causing access restrictions to nearby properties. Pedestrian and cyclist movement within the neighbourhoods may experience temporary effects during construction, as detailed in Appendix I of this Volume. Community connectivity may be temporarily disrupted to facilitate construction of the tertiary access at the West Donlands. There are potential conflicts between pedestrians, cyclists, and motorists associated with construction. Potential hazards include: trucks, heavy equipment, and machinery in operation on the site.	During Construction: Access to residences, businesses, and industrial areas will be maintained at all times. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur. Adequate construction hauling routes will be determined in consultation with the City of Toronto. Site-specific Construction Traffic Control and Management Plans will be prepared and implemented prior to Project construction to maintain reasonable access through work zones, to the extent possible, and include construction signage and safety fencing requirements. Potential effects to pedestrian and cycling activities during construction will be mitigated through the installation of appropriate way- finding, regulatory, and warning signs. It is recommended that temporary construction staging be implemented according to Ontario Traffic Manual (OTM) Book 7 on Temporary Conditions. Minimize disruption to the Lower Don Trail, to the extent feasible while balancing construction schedules and expediting construction activity	During Construction: Traffic impacts to be monitored in accordance with the Traffic Control and Management Plan.
	During Operations:	Appendix I of this Volume of the EPR.	During Operations:
	Potential long-term increase in pedestrian and vehicular traffic as a result of the Project, as detailed Appendix I of this Volume. Increased neighbourhood connectivity with new multiuse pathway bridge across the Don River and Don Valley Parkway, two significant barriers.	Traffic signals should be optimized post- construction to accommodate predicted changes in traffic patterns. Mitigation requirements are documented in the Transportation Brief in Appendix I of this Volume.	None anticipated at this time.
	The Project will bring increased pedestrian and cyclist access to the surrounding community by		





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation				
	incorporating new sidewalks and cycling lanes into its design.						
Utilities							
Utilities	During Construction:Utility relocation and/or service interruptions to nearby properties may be required. Protection of utility infrastructure may also be necessary. These effects could be either temporary or permanent.The following potential utility conflicts were identified in the Project footprint at the time of report preparation:Toronto HydroHydro OneZayoBell CanadaGroup TelecomRogers Cable CommunicationsImperial OilToronto Water	During Construction: Effects to utilities during construction will be confirmed through detailed design. Additional Subsurface Utility Engineering (SUE) investigations may be conducted during detailed design, as required, to confirm existing utilities. A review of existing and proposed future utilities plans, in addition to on-going consultation with utility companies and the City of Toronto, should be conducted during the detailed design stage. Any relocations, service interruptions, or utility protection projects should be identified as early as possible to allow for project coordination and construction management plans to be created with consideration of utility needs. Utility relocations will be coordinated to minimize the overall impacts on existing natural heritage systems. Metrolinx will work with Hydro One during detail design to avoid impacts and/or develop mitigation.	During Construction: None anticipated at this time.				
	During Operations: Access to utilities may require temporary access permission (easements) for maintenance activities.	During Operations: Potential access requirements as a result of maintenance activities to be determined in consultation with the relevant utility owners during detailed design. Any utility conflicts are anticipated to have been identified and resolved prior to the construction stage of the Project. Subsequently, no further mitigation strategies related to utilities are anticipated to be required during the operational stage.	During Operations: None anticipated at this time.				
Property	-						
Property	During Construction: No property is likely required on the north side of the corridor given the extent of Metrolinx	During Construction: Specific property requirements will be determined during detailed design. Ongoing consultation with	During Construction: None anticipated at this time.				





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
	ownership. Some property may be required on the south side to accommodate the station entrance buildings. Metrolinx is working with a willing developer to find a solution. Property requirements for the two multi-use bridge crossings over the DVP and Don Valley are to be determined. Refinement of property requirements including laydown and staging areas will occur through detailed design. Temporary use of adjacent lands may be required for construction purposes (e.g., access, establishment of equipment storage/staging/laydown areas, stockpiling of materials). Temporary access may be required to adjacent properties for maintenance activities.	affected property owners will help identify appropriate site-specific mitigation measures. Access to residences, businesses, and industrial areas will be maintained at all times. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur. The effects to properties will be mitigated by providing fair market value compensation in accordance with applicable laws and through negotiations with affected property owners. At this time, the final design of the station is not available and these requirements will be addressed at future stages of the project. Appropriate agreements will be executed. Temporary use of adjacent lands will be managed through the use of construction easements or Temporary Limited Interests (TLIs).	
	During Operations:	During Operations:	During Operations:
	There is potential for an increase in property values for properties located in close proximity to a transit station due to an increase in transit service.	None anticipated at this time.	None anticipated at this time.
Visual Characteri	istics		
Site and Surroundings	During Construction: Temporary visual and aesthetic effects may also be experienced as a result of temporary storage sites for equipment, staging/laydown areas, stockpiling of materials and other construction activities Tree removal may pose undesirable aesthetic effects to the surrounding local residents, businesses, and institutions.	 During Construction: Construction schedule delays will be avoided to the extent possible in order to minimize the duration of construction and corresponding visual impacts. Tree/vegetation removal as a result of this Project will be addressed and compensated for through Metrolinx's Vegetation Compensation Protocol. Additional potential mitigation measures: Provide a screened enclosure for the development site, with particular attention to the waste disposal and material storage areas. Consider improving the aesthetic quality of 	During Construction: None anticipated at this time.





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
		the enclosure with graphics and/or artistic images that create visual interest for those viewing from the public realm and neighbouring lands.	
		 I he design considerations for buffers and screening of nuisances or unwanted effects should: 	
		 Be appropriately located to obscure the view and access to the nuisances or unwanted impact; and 	
		 Be designed to be relative to the magnitude of the nuisance or unwanted impact. 	
		 Provide temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows. 	
	During Operations: During Operations:		During Operations:
	The station will be situated on the existing rail embankment placing it well above the local grade giving it greater local prominence. Considering development closest to the Project has not yet occurred, any visual impact will be taken care of through the site planning process at the discretion of the developer and the City of Toronto.	Metrolinx will seek to develop an aesthetically pleasing design for public-facing infrastructure in consultation with the City of Toronto and adjacent landowners and through engaging the Metrolinx Design Review Panel.	None anticipated at this time.
	During Construction:	During Construction:	During Construction:
	None anticipated	None anticipated at this time.	None anticipated at this time.
Built Form	During Operations: The visual/aesthetic effects of the completed site will depend upon a variety of characteristics including: form of the development (massing, height, relationship to neighbouring land uses and the public realm); building façade materials; fenestration and visual permeability; landscape design; and, lighting (functional and decorative). The aesthetic quality and effects of the completed station will be the result of a combination of landscaping; compatible building massing, facade design and detailing: and.	 During Operations: A lighting plan should be developed where the quality of light produced, and type of light sources used on the exterior of buildings, signs, parking areas, pedestrian walkways, and other areas of the site, are compatible with, and appropriate to the overall design and use of the site. Mitigation measures may include: External visors on floodlights; Optimal light location, height and settings; Light shields such as walls of hedges; 	During Operations: None anticipated at this time.





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
	public realm design. This project may spur an improvement in the visual environment compared to what exists today, by providing improved street lighting and public visibility. Light spillage effects may occur from lighting at the proposed station required for both the station itself, as well as ancillary infrastructure, such as the surface parking lots. Light reflected on trains at night may increase light spillage into adjacent properties.	 Various intensities and control of lighting of the station and of parking lots for different scenarios; and Shielded fixtures with efficient light bulbs in parking lots surrounding the station. Additional potential mitigation measures: Blank walls that are adjacent to gathering areas, outdoor amenity spaces, and pedestrian walkways should have aesthetic character improved with any combination of architectural detailing, landscape features, art, or other elements that provide visual relief and interest. Paving should be reduced to the minimum necessary to accomplish site circulation and parking needs with other areas set aside for landscaping, or pedestrian ways as needed. The landscape design should add visual interest, define pedestrian zones, and provide visual screens and buffers for incompatible uses. 	
Public Realm	During Construction: Adverse effects may arise from the presence of construction materials; equipment; modular construction trailers for housing on-site offices and facilities, which will either temporarily eliminate the public realm or impede access to it. Potential effects to ability of individuals to use and move through the study area during construction.	During Construction:Provide well connected, clearly delineated, and appropriately signed walkways and cycling route options.Provide temporary lighting and wayfinding signs and cues for navigation around the construction site.All stockpiled materials will be fenced and the construction footprint area will be minimized to prevent the construction zone from extending beyond that which is necessary.	During Construction: None anticipated at this time.
	During Operations: Due to the industrial nature of the area it is expected that the Project and accompanying increases in connectivity will promote improvements to the public realm, particularly along Eastern Avenue. Increased ability for individuals to travel to and through the public realm in the vicinity of the	During Operations: The landscape design and public realm features should add visual interest, define pedestrian zones, distinguish private and public realms, delineate different spaces and use areas on site, contribute to comfort and health of users, provide visual screens and buffers for incompatible uses. The overall site design and station architecture	During Operations: None anticipated at this time.





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation
	station.	should provide necessary infrastructure and the careful arrangement of uses to accordingly provide for accessibility throughout.	
	During Construction:	During Construction:	During Construction:
	None anticipated.	None anticipated at this time.	None anticipated at this time.
	During Operations:	During Operations:	During Operations:
Crime	The project is considered to be supportive in further activating land uses along Queen Street East and Eastern Avenue by increasing pedestrian traffic in the area and bringing new	 The building façade materials and fenestration should allow for passive surveillance and be fitting with the context of the neighbouring uses. 	None anticipated at this time.
Prevention Through Environmental Design	customers in via transit.	 Parking lots should be configured, designed and landscaped as well-defined areas linked to a particular building/station entrance with dedicated pedestrian ways that are safe and convenient. 	
		• The site design should integrate uses, transportation facilities, landscape elements, public spaces and buildings in such a way that they support safe, efficient, and comfortable use.	
Policy Context -	Zoning		
	During Construction:	During Construction:	During Construction:
	None anticipated.	None anticipated at this time.	None anticipated at this time.
Provincial	During Operations:	During Operations:	During Operations:
Policies	The Project achieves policy objectives as outlined in the <i>Provincial Policy Statement</i> , the <i>Growth Plan for the Greater Golden Horseshoe</i> , and the <i>Metrolinx Regional Transportation Plan</i> .	None anticipated at this time.	None anticipated at this time.
	During Construction:	During Construction:	During Construction:
	None anticipated.	None anticipated at this time.	None anticipated at this time.
	During Operations:	During Operations:	During Operations:
Municipal Policies	The project is considered to be supportive of the Official Plan and zoning objectives of the area, as well as supporting the goals set out by the various Secondary and Precinct Plans.	Metrolinx, as a Provincial Crown Agency, is not generally subject to municipal permitting and approval requirements; regardless, Metrolinx works in co-operation with local municipalities to adhere to the intent of the relevant permit/approval requirements to the extent possible.	None anticipated at this time.





Feature	Potential Effect	Mitigation Measures	Monitoring Recommendation				
Current Develop	Current Development Applications						
Current During Construction: Durin No direct effects are anticipated to the lands under development application within the surrounding area. None During Operations: Implementation of the station is likely to make the area more attractive for new growth and development. Durin	During Construction: None anticipated at this time.	During Construction: None anticipated to be required at this time.					
	During Operations: Implementation of the station is likely to make the area more attractive for new growth and development.	During Operations: None anticipated at this time.	During Operations: None anticipated at this time.				





4.7 Air Quality

4.7.1 Overview

The Project's air quality effects were predicted at a selection of representative sensitive receptors within the study area, as shown in Figure 3-10.

The modelling results for the selected COC for the 20 most affected sensitive receptors are reported in Table 4-7. For most of COCs, receptor R1 located 19 m north of the Project is the most affected receptor. More detail about the most affected receptors for each COC is available in Appendix G of this Volume.

Table 4-7 shows the changes in air quality due to the development of the Project. As noted earlier, the Project contribution for both future 2028 scenarios (No-Build Scenario and Full-Build Scenario) are equal and insignificant as there are no transportation emission sources associated with the Project. The comparison of the modelling results between the 2028 scenarios and the 2017 Current Scenario shows the effects to local air quality due to the electrification. The decrease in modelled results from reported values in 2017 to zero in 2028 is an indication of improvement in local air quality in the study area due to electrification. Anticipated increased ridership on the Lakeshore East/Stouffville rail corridor is also expected to reduce passenger car trips, which is not included within this localized assessment.

Since the Project will not add any transportation emission sources such as parking lots, roadways, bus lanes or significant changes to diesel train speed profiles, it is predicted to have an insignificant contribution to and effect on the local air quality of the study area. Details of air dispersion modelling results including maximum, median and percentile values for the 20 most affected receptors is provided in Appendix G of this Volume.

Contaminant	Averaging Period	Current 2017 Conditions (µg/m³)	Future 2028 No-Build (µg/m³)	Future 2028 Future-Build (µg/m³)	Air Quality Threshold (µg/m³)
NO ₂	1 hour	2.260	0.0000	0.0000	83
	24 hour	0.8660	0.0000	0.0000	200
CO	1 hour	0.2505	0.0000	0.0000	36200
	8 hour	0.00422	0.0000	0.0000	15700
PM _{2.5}	24 hour	0.02480	0.0000	0.0000	27
	Annual	0.00804	0.0000	0.0000	8.8
Acetaldehyde	30 minute	3.716E-04	0.0000	0.0000	500
	24 hour	3.406E-04	0.0000	0.0000	500
Acrolein	1 hour	0.00326	0.0000	0.0000	4.5
	24 hour	0.00150	0.0000	0.0000	0.4
Benzene	24 hour	0.00361	0.0000	0.0000	2.3
	Annual	0.00109	0.0000	0.0000	0.45
1,3-Butadiene	24 hour	1.312E-05	0.0000	0.0000	10
	Annual	3.953E-06	0.0000	0.0000	2
Benzo (a)pyrene	24 hour	1.414E-07	0.0000	0.0000	0.00005
	Annual	4.261E-08	0.0000	0.0000	0.00001
Formaldehyde	24 hour	0.01961	0.0000	0.0000	65

Table 4-7: Summary of COC Concentrations at the Most Affected Sensitive Receptor (Project-Specific Effects)







The cumulative effects due to the proposed Project were calculated by aggregating the modelling results with the 90th percentile background ambient concentrations. The cumulative effects were compared to air quality thresholds and the percentage is presented in Table 4-8. As discussed previously, the cumulative effects of the 2028 scenarios are predicted to be equal and slightly higher than ambient background concentrations but significantly lower than Current Scenario due to electrification.

The cumulative air quality effects of the Project are predicted to be below the air quality thresholds, with the exception of annual $PM_{2.5}$ and benzene and 24 hour and annual benzo(a)pyrene, which already exceed the air quality thresholds from 90th percentile ambient background concentrations, as seen in Table 4-8.

The decrease in maximum predicted concentrations from the Current Scenario (2017) to the No-Build and Full-Build Scenarios (2028) is due to the replacement of the majority of diesel locomotives by electric locomotives, except for the eight GO Transit and VIA diesel trains that are not significantly affected by the Project. Comparison of the Full-Build and No-Build Scenarios indicates the operation of the Project has no significant local effect on air quality within the study area.

The cumulative effects are compared with air quality thresholds in Table 4-7 and Table 4-8 and no exceedances of the thresholds were identified, other than annual NO_2 and benzene and 24 hour and annual benzo(a)pyrene as a result of the existing ambient background concentrations; however, the contribution of the Project to those concentrations is negligible. The air quality effects of the Project specifically are expected to be insignificant compared to the air quality thresholds. Comparison of the Project effects shows the COCs associated with the Project are below the air quality thresholds, or results in no quantifiable change to existing condition exceedances. As such the proposed Project is predicted not to have a significant effect on air quality within the study area.





Table 4-8: Summary of Maximum Predicted COC Concentrations at the Most Affected Sensitive Receptor (Cumulative Effects)

Contaminant	Averaging Period	Background Values (µg/m³)	Current Conditions 2017 Cumulative Concentrations (µg/m³)	Air Quality Threshold (µg/m³)	Percent of Threshold 2017
	1 hour	52.7	54.96	83	66.2%
NO ₂	24 hour	43.1	43.97	200	22.0%
	Annual	28.2	28.2248	24	117.6%
<u> </u>	1 hour	441	441.3	36200	1.2%
0	8 hour	424	424.0	15700	2.7%
DM _e a	24 hour	14.3	14.32	27	53.1%
F WI2.5	Annual	8.7	8.70804	8.8	99.0%
Acotaldohydo	30 min.	-	0.000372	500	0.00007%
Acetaldenyde	24 hour	1.4	1.400341	500	0.3%
Acroloin	1 hour	-	0.00326	4.5	0.1%
Acrolem	24 hour	0.2	0.2015	0.4	50.4%
Bonzono	24 hour	0.85	0.85361	2.3	100.1%
Denzene	Annual	0.6	0.60109	0.45	100.4%
1 3-Butadiana	24 hour	0.05	0.0500131	10	0.5%
	Annual	0.03	0.0300395	2	1.5%
	24 hour	0.000182	0.000181929	5.00E-05	363.6%
	Annual	0.000132	0.000132282	1.00E-05	1322.4%
Formaldehyde	24 hour	4.2	4.2196	65	6.5%







4.7.2 Potential Effects, Mitigation and Monitoring Measures

Potential effects, corresponding mitigation measures and monitoring activities relating to air quality are described in Table 4-9.

Further details on potential effects, mitigation and monitoring are provided in Appendix G of this Volume.





Table 4-9: Air Quality Environment - Potential Effects, Mitigation and Monitoring

Feature/Location of Potential Effect	Description of Potential Effect	Mitigation Measures	Monitoring Activity	
Construction		•		
Air Quality	 The construction activities associated with the Project consist of the construction of new structures, platforms, walkways and landscaped areas. Air emissions associated with construction may include: 1. Total Suspended Particles (TSP), Particulate matters less than 10 µm (PM₁₀) and Fugitive dust emissions resulting from: Stockpiling of soils and other friable materials; Granular material loading and unloading activities; Transportation of soils and other friable materials via dump trucks; Movement of heavy and light vehicles on paved and unpaved roads; Soil excavation and filling activities for the new station; Demolition of structures necessary to accommodate the new station; and Cutting of existing concrete. 	 An Air Quality Management Plan will be developed for implementation during construction to address construction equipment and vehicle exhaust, potential traffic disruption and congestion, fugitive dust and odour. Potential mitigation measures that may be included in the Air Quality Management Plan include: Dust suppression measures (e.g., application of water wherever appropriate, or the use of approved non-chloride chemical dust suppressants, where the application of water is not suitable) will conform to recognized standard specifications such as the ChemInfo Services Inc. March 2005 publication "Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities" prepared for Environment Canada. Use of dump trucks with retractable covers for the transport of soils and other friable materials. Minimize the frequency of loading and unloading of soils and other friable materials. Minimize drop heights, use enclosed chutes, and cover bins for debris associated with deconstruction of affected structures. Washing of equipment and/use of mud mats where practical at construction site exits to limit the migration of soil and dust off-site. Dust monitoring in locations where it has been determined that a particulate bound contaminant of concern exists in native soil; 	 Construction activities will be monitored by a qualified Environmental Inspector who will frequently review the efficacy of the mitigation measures and construction best management practices to confirm they are functioning as intended. In the event that mitigation is found to be ineffective, revised mitigation measures designed to improve effectiveness will be implemented. Dust levels will be monitored daily by the Contractor and frequently by the construction inspector to assess the effectiveness of dust suppression measures and adjust as required. Monitoring will continue throughout the construction phase until activities are complete, exposed soils have been stabilized, and construction waste has been removed from site. A complaint response protocol for nuisance effects such as dust will be established. Regular inspections of dust emissions (frequency to be defined prior to project construction) to confirm dust control watering frequency and rates are adequate. Site supervisors will monitor the site for wind direction and weather conditions to ensure that high-impact activities be reduced when the wind is blowing consistently towards nearby sensitive receptors. The site supervisor will also monitor for visible fugitive dust and take action to determine the root-cause in order 	







Feature/Location of Potential Effect	Description of Potential Effect	Mitigation Measures	Monitoring Activity
		• Stockpiling of soil and other friable materials in locations that are less exposed to wind (e.g., protected from the wind by suitable barriers or wind fences/screens, or covered when long-term storage is required) and away from sensitive receptors to the extent possible;	to counteract this. Specific details regarding monitoring will be included in the Air Quality Management Plan.
		Reduction of unnecessary traffic and implementation of speed limits;	
		 Permanent stabilization of exposed soil areas with non-erodible material (e.g., stone or vegetation) as soon as practicably possible after construction in the affected area is completed; 	
		• Ensuring that all construction vehicles, machinery, and equipment are equipped with current emission controls, which are in a state of good repair; and	
		Dust-generating activities should be minimized during conditions of high wind.	
		 Other mitigation techniques can be found in Environment Canada "Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities" (Environment Canada, 2013). 	
Operations and Ma	aintenance	L	
Air Quality	 During the operation of the Project, there are minimal predicted impacts to air quality. Roadway dust, emergency generator exhausts (GHGs and COCs), and any air handling equipment (GHGs and COCs) for conditioned spaces are also potential sources of operation air 	Operations and maintenance of rail infrastructure will be carried out in accordance with applicable regulations and standards, including Environmental Activity and Sector Registry (EASR) and ECA applications (Ontario Reg. 1/17 and 419/05). To improve general air quality around the station during maintenance and operation, several solutions can be implemented, such as:	 An existing complaints procedure is in place during operations to address any concerns raised by neighboring land owners, municipalities or the public; and Metrolinx maintains ongoing inspection schedules to monitor the effectiveness of its GO Transit operations. A complaints procedure is in place to address any concerns raised by neighbouring land owners, municipalities, or the public-at-
	sources of operation air emission sources;	 Signed speed limits on the rail corridor for 	owners, municipalities, or the pub large.





Feature/Location of Potential Effect	Description of Potential Effect	Monitoring Activity	
	 Major source of air emissions will be generated by the combustion engines of passenger cars. Since the Project does not have any parking lots or bus lay-bys, there is no emissions expected from this station while operating; Air emissions from the combustion engines of emergency generators located at the Project (GHGs, COCs); and Air emissions from the combustion of natural gas in heating and ventilation equipment located at the Project (GHGs, COCs). 	 locomotives; Improved walkways and trail connections to increase the number of passengers walking or cycling to access the station; Ensure fleet vehicles are properly maintained and kept in good working condition in terms of engine emission tune-ups; Testing of any standby emergency generators to occur for minimum duration and testing to be conducted one at a time, where applicable; and Adherence to MOECC EASR recommendations for exempt equipment that has minimal air quality impacts, as well as application to the EASR for equipment that qualifies (Ontario Reg. 1/17 Reg.419/05). 	





4.8 Noise and Vibration

4.8.1 Overview

Sensitive receptors within the identified NSAs were selected based on the geographical and land use context in the vicinity of the Project. Noise Sensitive Areas are shown in Figure 3-11 and sensitive receptor locations are shown in Figure 3-12.

Construction noise levels were predicted as per the Roadway Construction Noise Model methodology contained in the FTA *Transit Noise and Vibration Impact Assessment* publication (Federal Transit Administration, 2006). The sound levels at the receptor location for each piece of equipment are then summed to determine the overall construction sound levels at each identified noise receptor. Table 4-10 presents the predicted construction sound levels at each receptor.

Nighttime construction sound levels during the worst-case scenario are expected to exceed the FTA criterion for receptors R2 and R10.

	Distance to	Noise Level, L _{eq} 1hr (dBA)			
Receptor	Construction (m)	Day-time Criterion	Night-time Criterion	Predicted	Exceeds Criterion?
R1	182	90	80	66	No
R2	19	90	80	90	Yes (Night-time)
R3	64	90	80	77	No
R4	124	90	80	70	No
R5	161	90	80	67	No
R6	241	90	80	63	No
R7	281	90	80	56	No
R8	206	90	80	59	No
R9	120	90	80	70	No
R10	5 ¹	90	80	105	Yes (Day and Night)

Table 4-10: Construction Noise Impact Assessment

Note: 1 - Where receptors are located within the project footprint, for analysis purposes it is assumed a minimum distance of 5 m from construction activities would be maintained.

Table 4-11 presents the predicted operations sound levels for all three scenarios.

Table 4-11: Operations Noise Impact Assessment

_		Noise Level (dBA)			Adjusted	Adjusted
Receptor	Period	Existing Rail ¹	Pre-Project ²	Post-Project ³	Impact Level ⁴	Impact Rating⁵
D4	D	59.5	67.2	67.2	0.0	None
RI	N	53.5	61.6	61.6	0.0	None
D0	D	67.8	74.3	74.4	0.1	Insignificant
RZ	N	61.1	68.6	68.7	0.1	Insignificant
D2	D	67.4	71.2	71.3	0.1	Insignificant
K3	N	60.7	66.2	66.3	0.1	Insignificant
R4	D	67.8	71.6	71.7	0.1	Insignificant
	N	61.1	66.6	66.8	0.2	Insignificant





Noise Level (dBA) Adjusted Adjusted Receptor Period Impact Impact Level⁴ Pre-Project² Existing Rail¹ Post-Project³ **Rating**⁵ D 66.2 70.0 70.0 0.0 Insignificant R5 59.5 65.0 0.0 Insignificant Ν 65.0 D 69.9 73.7 73.6 -0.1 None R6 63.2 -0.2 None Ν 69.1 68.9 D 64.8 68.2 68.1 -0.1 None R7 Ν 58.0 63.3 63.1 -0.2 None 67.0 D 70.4 70.3 -0.1 None R8 Ν 60.2 65.4 65.2 -0.2 None D 59.6 66.0 66.0 0.0 None R9 52.9 60.2 None Ν 60.2 0.0 D 64.9 72.6 72.6 0.0 None R10 Ν 58.1 66.4 66.5 0.1 Insignificant

Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

Notes: 1 - Existing and future rail noise levels calculated using CadnaA Version 2018 noise prediction software, using the operational data presented in Tables 2-1 and 4-4 of Appendix H of this Volume.

2 - Pre-project noise level is the combination of the ambient noise and future no-build rail noise.

3 - Post-project noise level is the combination of the ambient noise and future build rail noise.

4 - Adjusted Noise Impact is based on the difference between pre-project and post-project noise levels.

5 - Mitigation is only required when 'significant or greater' impact is predicted.

D - Day-time 16hr L_{eq} (07:00 - 23:00)

N - Night-time 8hr L_{eq} (23:00 - 07:00)

Vibration levels were predicted using the methodology contained in the FTA Transit Noise and Vibration Impact Assessment publication (Federal Transit Administration, 2006).

Table 4-12 shows the two most impactful pieces of equipment and resulting ZOI. It is noted that pile driving is not expected to occur during construction.

Table 4-12:	Construction	Vibration ZO	1
-------------	--------------	--------------	---

Equipment	Reference Peak Particle Velocity at 7.6 m (mm/s)	Zone of Influence (m)	
Auger-Piling/Caisson Drilling/Bulldozer	2.26	4.5	
Vibratory Roller	5.33	8.0	

Table 4-13 lists the receptor that is within the proposed construction zone. No other receptors are less than 8 m away from the edge of proposed construction zone (i.e., ZOI).

Table 4-13: Receptor within the Vibration ZOI

Receptor	Municipal Address	Distance from Construction Zone (m)
R10	Booth Avenue Future Development	5

Note: Where receptors are located within the project footprint, it is assumed a minimum distance of 5 m from construction activities would be maintained.

Table 4-14 summarizes the predicted RMS vibration velocities at the representative receptor locations for each scenario. Although existing vibration levels were measured at three representative locations, the provided profile speeds were used to calculate vibration levels at all receptor locations for existing, future no-build, and future build conditions for consistency in the comparison.





Future build vibration levels at the majority of receptors are expected to be equal to or less than the future no-build vibration levels after implementation of the Project, because future express trains would generally be traveling at the same speeds as existing and future no-build conditions. However, the predicted vibration levels at receptors R3 through R6 are expected to increase above the objective vibration level by 0.02 to 0.03 mm/sec, which corresponds to increases ranging from 8 to 20 percent.

Basantar	Distance to Track	RMS Vibration V	Exceeds	
Receptor	(m)	Objective ¹	Difference	more than 25%?
R1	105	0.140	-0.101	No
R2	31	0.140	-0.016	No
R3	31	0.147	0.030	No
R4	28	0.199	0.028	No
R5	36	0.165	0.020	No
R6	21	0.332	0.028	No
R7	61	0.140	-0.047	No
R8	41	0.151	0.00	No
R9	115	0.140	-0.100	No
R10	50	0.140	-0.023	No

Table 4-14: Operations Vibration Impact Assessment

Note: 1 - Highest value between the Protocol objective vibration velocity of 0.14 mm/s, or measured vibration velocity.

4.8.2 Potential Effects, Mitigation and Monitoring Measures

Potential effects, corresponding mitigation measures and monitoring activities relating to noise and vibration are described in Table 4-15.

Further details on potential effects, mitigation and monitoring are provided in Appendix H of this Volume.

->>> METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

Table 4-15: Noise and Vibration Environment - Potential Effects, Mitigation and Monitoring

Feature/Location of Potential Effect	Potential Effect	Mitigation Measure	Monitoring Activity
Noise - Constructi	on		
Representative receptors shown in Figure 4-1.	Temporarily Increased Sound Levels due to Construction.	 A Construction Noise and Vibration Monitoring and Control Plan will be developed prior to construction. The plan will include a complaint response protocol and will indicate that surrounding property owners and tenants will be informed of anticipated upcoming construction works, including any work at night. A more detailed noise assessment of construction should be completed when the specifics of construction equipment are finalized, prior to construction start. This assessment should consider minimizing construction-related noise levels, while balancing construction schedules and expediting construction activity. Trains passing construction zones may be required to use bells and/or whistles to warn construction personnel for safety reasons. This should be minimized as much as practical while promoting safety. Construction equipment has safety features such as backup alarms (beeping sound). This is for the protection and safety of workers. Consideration will be given to the use of broadband rather than tonal backup beepers. Construction should adhere to the City of Toronto noise by-laws (Noise Control By-Law, Municipal Code Chapter 591, By-law 1400-2007), summarized in Section 3.2.1.2 in Appendix H of this Volume, to the extent possible. To the extent possible, nighttime construction activities should be avoided to reduce the potential impact of construction noise. Certain types of construction work can only be completed when trains are not in service (i.e., outside of business hours). Construction should be planned to minimize the number of nights where noisy nighttime construction should be planned to minimize the number of nights where noisy nighttime construction activities emissions. All construction equipment should be operated with effective muffling devices that are in good working order and idling of construction equipment kept to a minimum to reduce noise from construction activities. Unnecessary noise caused by faulty or no	None anticipated to be required at this time Potential monitoring locations presented in Figure 4-1.
Noise - Operations	3		
Representative receptors shown in Figure 3-12.	Increase of less than 1 dB	None.	None.





Feature/Location of Potential Effect	Potential Effect	Mitigation Measure	Monitoring Activity
Noise - Stationary			
Representative receptors shown in Figure 3-12.	Potential increase in noise levels.	 During detailed/final design, the station public address system, ancillary systems, and any other stationary noise sources shall be designed so that the one-hour equivalent sound level does not exceed the higher of the applicable exclusion limit value given in NPC-300, or the background sound level. 	None.
Vibration - Constru	uction		
Representative receptors shown in Figure 4-2	Temporarily increased vibration levels due to construction.	 A Construction Noise and Vibration Monitoring and Control Plan will be developed prior to construction. The plan will include a complaint response protocol and will indicate that surrounding property owners and tenants will be informed of anticipated upcoming construction works, including any work at night. A more detailed vibration assessment of construction should be completed when the specifics of construction equipment are finalized, prior to construction start. This assessment should consider minimizing construction-related vibration levels, while balancing construction schedules and expediting construction activity. It is recommended that the vibration limits in the City of Toronto by-law not be exceeded. This may entail monitoring of vibration levels during construction. Anticipated vibration levels will be confirmed during detailed design. During detailed design, the predicted ZOI should be updated to confirm which structures fall within it. If a structure falls within the updated ZOI, the following is recommended: Pre-construction consultations with owners/occupants; Pre-construction survey by means of a photographic record of potentially affected structure façades and all surfaces, including visible sections of building foundations, building cladding, doors, windows, interior wall finishes, surface pavement, sidewalks, signs and trees. Each of the elements should be rated on their general condition (new, good, fair, poor, severe), and visible defects should be photographed; and A vibration monitoring program. 	 Consideration should be given to monitoring of vibration during vibration-intensi ve activities, to confirm that levels do not approach those required for structural damage. Complete a vibration monitoring plan during detailed design.
Vibration - Operati	ons		
Representative receptors shown in Figure 3-12.	Increase of less than 25% at four receptor locations.	• During detailed design, the effects of any discontinuities such as crossovers or switches need to be assessed at the adjacent vibration sensitive land uses.	None.





	LANE	SHORE BOULEIARD EAST	WLIPPS	in the second se	Lake Onte	ario N
Legend	Detential Construction Vibrat		Project:	New SmartTr	ack Station	
	Potential Construction Vibrat Monitoring Location Potentially Affected Land Use (Due to Contruction Vibration	Railway e n)	Figure Title: P	East Harbour S otential Construction V	martTrack Stati	on - ring Location
	Proposed Project Footprint (approximate)	** DATA SOURCES: Roads and Railways - Ontario Open Data Catalogu Watercourses - Land Information Ontario Project Footprint - Initial Preferred Designs	Prepared By:	TRANSIT	Date: June 1	14 2018
	Study Area - 300 Metres	Receptor Data - Parsons 0 25 50 100 150	Version: EH.EPR.100-1	Review:	Figure: 4-2	

New SmartTrack Stations - EPR - Volume V - East-Harbour SmartTrack Station





4.9 Traffic and Transportation

4.9.1 Overview

Due to adjacent planned developments, the study area transportation network will differ from existing conditions once the Project is implemented. Planned changes are as follows:

- Broadview Avenue is planned to extend south from Sunlight Park Road to Unwin Avenue, significantly affecting the study area roadway network. New intersections will be created as a result of this extension. These planned intersections are currently under development.
- The intersection at Broadview Avenue and Sunlight Park Road will change from a T-intersection to a four-leg intersection with the Broadview Avenue extension. This intersection is close to the intersection at Eastern Avenue and Broadview Avenue; therefore, the signalization of this intersection may be considered in the long-term.
- The Broadview streetcar service will be extended south on the planned Broadview Avenue extension into the Port Lands; with proposed stops at Eastern Avenue, East Harbour SmartTrack Station (directly below the planned Broadview Avenue underpass) and Lake Shore Boulevard.
- Several planned internal roads will be developed in the adjacent development lands south of the station, including a new east-west street, which will connect Don Roadway to Broadview Avenue and Booth Street.
- The City of Toronto's 10-Year Cycling Plan describes several initiatives to improve cycling infrastructure near the station site, most notably bike lanes/cycle tracks along Eastern Avenue.
- MUPs are planned along the Broadview Avenue extension and Eastern Avenue. MUPs with separate cyclist and pedestrian spaces are proposed along the south side of the rail corridor, connecting the station entrances and providing pedestrian and cycling connectivity between Corktown Common and the Broadview Avenue extension.
- One bicycle parking facility (with both secured and non-secured bicycle parking) will be provided at the northeast quadrant of the Broadview entrance. A second facility will be provided at the Corktown entrance.

As a result of these improvements, as well as overall development and growth in the study area, it is anticipated that there will be an increase in pedestrian and cycling activities.

For the purpose of the transportation study, the amount of vehicular traffic generated by the Project was estimated to determine whether a comprehensive Transportation and Traffic Impact Study (TTIS) is required. Based on the City of Toronto's guidelines, a TTIS is required if a proposed development generates at least 100 net additional peak direction vehicle trips in the peak hour or has a significant impact on critical turning movements at key intersections. This threshold is defined by the City's Guidelines for the Preparation of Transportation Impact Studies, and is used to determine where the site-generated traffic might result in a noticeable change in the level of service on abutting roads, generate the need for transportation infrastructure (e.g., traffic control signals) or require the implementation of mitigating measures such as the construction of separate turn lanes (City of Toronto, 2013).







A full description of the development of the mode split forecast is included in Appendix C of this Volume's Appendix I. Existing local GO Transit station characteristics were used as a basis for the forecast mode split for the Project. As there will be no commuter parking at the station, all auto trips will be attracted and/or generated by informal PPUDO.

The forecast mode splits are shown in Table 4-16.

|--|

Mada	A.M. Peak		P.M. Peak	
Mode	Boarding	Alighting	Boarding	Alighting
Walking	66%	79%	79%	66%
Local Transit	12%	14%	14%	12%
Cycling	6%	7%	7%	6%
Passenger Pick-Up/Drop-Off	16%	0%	0%	16%
Carpool Passengers	0%	0%	0%	0%
Drive and Park	0%	0%	0%	0%

Table 4-17 summarizes the total number of trips that are created by the Project. The number of trips generated for each mode is the number of total boarding/total alighting occurring at the station, multiplied by the mode splits in Table 4-17. Table 4-17 shows the total number of auto trips (PPUDO) generated for the station are less than 100 in all cases.

Table 4-17 East Harbou	r SmartTrack	Station Trip	Generation	Summary
------------------------	--------------	---------------------	------------	---------

Mada	A.M. Peak		P.M. Peak	
Mode	Boarding	Alighting	Boarding	Alighting
Walking	290	3952	2711	376
Local Transit	53	719	493	68
Cycling	26	359	246	34
Passenger Pick-Up/Drop-Off	70	0	0	91
Carpool Passengers	0	0	0	0
Drive and Park	0	0	0	0

The distribution of trips to the road network was determined based on existing trip patterns and existing land use surrounding the station site. Details of the distribution for all modes are included in Appendix I of this Volume.

The assignment of trips to the road network was based on the available routes and access points to the station, as well as the critical intersections surrounding the station area. Details of the assignment for all modes are included in Appendix I of this Volume.

Since the station study area includes a new extension of Broadview Avenue (for which the roadway geometry and configuration are still under development), which will significantly affect the travel patterns to/from the station, the ability for a detailed trip assignment to be completed is limited at this time.

Based on the results in the above sections, there are a maximum of 70 auto trips during the A.M. peak hour and 91 auto trips during the P.M. peak hour generated by the informal





PPUDO. These trips will spread across the entire network to/from the key intersections listed in Section 3.8.2.1.

Compared to the anticipated auto trips generated by the nearby proposed developments, which are expected to have a direct effect on the critical intersections identified within this study, the informal PPUDO trips generated by the Project (estimated very conservatively) are negligible. Given that the configuration of all the key intersections are under development, the ability to ascertain if there will be any operational issues at these intersections is limited at this time; however, it is not anticipated that there will be any major operational issues due to the increased vehicle trips associated with the Project.

Similar to vehicle operations, it is difficult at this time to determine if there will be any operational issues with regards to pedestrian or cyclist operations at the key intersections. The effects of these trips will be spread out across the network and pedestrians and cyclists will use multiple routes to access the station, e.g., Eastern Avenue and Lake Shore Boulevard for pedestrians and cyclists accessing the station to/from the east or west, and entrances on both the east and west sides of the Don River/Don Valley Parkway and north and south sides of the rail corridor. In addition, improvement initiatives for pedestrian and cycling infrastructure and station access have been included in the IPD, e.g., improvements along Eastern Avenue extension. However, due to the significant anticipated increase in pedestrian and cycling activities, it is predicted that there will be operational concerns within the study area. Mitigation measures to address these concerns are presented in Section 4.9.2.

4.9.2 Potential Effects, Mitigation and Monitoring Measures

The minimal number of auto trips generated by the informal PPUDO (70 trips in the A.M. peak hour and 91 trips in the P.M. peak hour, estimated conservatively) are not expected to have significant effects on the existing transportation network relative to other nearby developments and is below the 100-trip threshold as per the City's TIS guidelines.

Should the intersection of Broadview Avenue and Sunlight Park Avenue remain present in the future, further study should be conducted to determine the optimal configuration and traffic control for both this intersection and the intersection of Broadview Avenue and Eastern Avenue in coordination with each other, as these two intersections are closely spaced (approximately 50 m).

Potential effects, corresponding mitigation measures and monitoring activities relating to traffic and transportation are described in Table 4-18.





Table 4-18: Transportation- Potential Effects, Mitigation and Monitoring

Feature	Potential Effect	Mitigation Measure	Monitoring
Operations			
Traffic	Increased potential pedestrian, cyclist and transit activity in the vicinity of the station.	 Ensure station entrance facilities meet the requirements of the Accessibility for Ontarians with Disabilities Act, 2005 (AODA), to the extent possible; Provide bicycle facilities along the south side of the rail corridor, both on the east and west sides of the Don River to facilitate access for cyclists to the station; City of Toronto staff will be requested to include, in their 2-year review of the 10-Year Cycling Network Plan scheduled in 2018, a review of the cycling infrastructure and routes in the vicinity of the Project in order to identify possible improvements to the cycling network (both on-street and on trails) to enhance convenience and safety for cyclists accessing this station. and Review local transit service performance in the study area and adjust as necessary including implementation of new routes. 	Following construction of the new station and local improvements, monitor pedestrian and cyclist activity to determine if additional mitigation measures are required.
Construction			
Construction Effects	Road closure or reduced lanes during construction will temporarily impede traffic flow in the vicinity of the station.	A Construction Traffic Management Plan will be developed prior to construction which will include providing pedestrian and cyclist access through work zones, alerting local transit of potential travel delays/service disruptions in advance of Project construction including road closures; and identification of best detour routes for transit vehicles that minimizes travel time and service disruptions.	Monitor the effectiveness of the traffic management/control strategies and adjust as necessary during the construction period.





5. Permits, Approvals and Commitments to Future Work

5.1 Permits and Approvals

5.1.1 Federal

5.1.1.1 Canadian Environmental Assessment Act, 2012

Under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), the Regulations Designating Physical Activities identify the types of projects that may require a Federal EA. The Project does not constitute a designated project under CEAA 2012.

5.1.1.2 Species at Risk Act

The federal *Species at Risk Act*, 2002 (SARA 2002) provides a framework to ensure the survival of wildlife species and the protection of natural heritage in Canada. Under SARA, the federal government has responsibility for wildlife on federal lands. On private lands, SARA protection applies to: aquatic species listed as endangered, threatened or extirpated in Schedule 1 of SARA; migratory birds protected under the MBCA; and species in certain cases where provincial/territorial measures do not adequately protect a species;

No federal lands, aquatic species or migratory birds protected under the MBCA are anticipated to be impacted by the Project, and as such no permits are required under SARA.

5.1.1.3 Fisheries Act

As there are no anticipated effects to the watercourse within the study area, a Federal *Fisheries Act* Authorization is not required.

5.1.2 Provincial

5.1.2.1 Conservation Authorities Act

The study area is regulated by the TRCA under *Ontario Regulation 166/06 - Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.* To ensure that development has regard for natural hazard features and the natural environment, while conforming to watershed development policies, the TRCA is authorized under Section 28 of the *Conservation Authorities Act* to implement and enforce their own regulation. Under the regulation, no person shall undertake development or permit another person to undertake development in, or on, the areas within the jurisdiction of a Conservation Authority.

Metrolinx, as a Provincial Crown agency, is not generally subject to the *Conservation Authorities Act*. Metrolinx endeavours to minimize effects to natural features protected by the TRCA. Metrolinx will follow the *Voluntary Project Review Process per the Proponents and Projects Exempt from the TRCA Regulatory Approval Process* and request that the TRCA reviews and comments on detailed design activities associated with Project construction, maintenance or emergency activities. Once TRCA concerns are satisfied, a Voluntary Project Review Letter is provided by TRCA staff.

Metrolinx will undertake detailed design and associated hydraulic modelling studies as necessary to meet the requirements of Lower Don Special Policy Area. The station will be designed, implemented and operated in a manner that meets the flood protection requirements of the Living City Policies. This will include flood proofing to meet applicable







guidelines, developing warning and emergency measures, and demonstrating (through modelling) that the development of the station will not result in an increase in flood hazard risk upstream and downstream of the site. This work will be reviewed as part of the Voluntary Project Review process.

Cut and Fill: For any works within existing flood hazard areas, Metrolinx will demonstrate through a cut and fill balance analysis that there will be no increases in flood depths and no adverse upstream or downstream hydraulic or fluvial impacts;

North-south connection - Metrolinx will design the station amenities (pedestrian connections) within the existing railway berm such that they do not serve as a hydraulic connection between the areas north and south of the station; and that Metrolinx will undertake the necessary studies to demonstrate that the proposed station will not negatively impact the proposed TRCA flood protection features on south and north sides of the station berm.

Two new pedestrian bridges over the Don River and accesses on the west of the river -Metrolinx will demonstrate through the necessary studies that proposed new bridges will not create new flooding hazards to adjacent or other properties and that there will be no negative upstream and downstream hydraulic impacts; and that risks to public safety will be addressed by Metrolinx during the design of the new accesses.

5.1.2.2 Endangered Species Act, 2007

The ESA provides specific protection to Endangered and Threatened species and their habitat. Two Threatened SAR and one Endangered SAR were confirmed in the study area: Barn Swallow, Chimney Swift and Butternut respectively.

With respect to Chimney Swift, although 4T did not identify any nests or individuals on June 19, 2018 they still may be encountered incidentally within the study area and/or they may nest in the area between the finalization of this report and commencement of construction. Therefore, future work with respect to SAR is still recommended.

No structures with chimneys that could provide nesting habitat for Chimney Swift are expected to be demolished under the IPD. If this changes during detailed design, targeted roosting surveys for Chimney Swift should be completed in appropriate chimneys prior to commencement of demolition activities. Demolition of Chimney Swift roost/nesting locations may constitute destruction of critical habitat. Repair, maintenance, or demolition of Chimney Swift roost/nesting structure may constitute destruction of critical habitat and the Project must register the activity with the MNRF as part of O. Reg. 242/08 under the ESA.

Barn Swallows were confirmed present in the study area and behaviour suggested nesting in the area, particularly beneath the rail bridge over the Don River. Work on the bridge is not anticipated based on the IPD. However, if work on the bridge is required, the bridge should be inspected for Barn Swallow nests. In the event nests are discovered, the Project must register the activity with the MNRF as part of ESA O. Reg. 242/08 prior to commencement of work.

Construction of a bridge adjacent to the existing bridge has the potential to disturb Barn Swallow nests depending on the time of construction. In the event Barn Swallow nests occur on the Don River Bridge and a new bridge is proposed to be built adjacent to the Don River bridge during the nesting season, MNRF should be further consulted on whether the activity







should be registered as part of the ESA O. Reg. 242/08 with the MNRF. Otherwise it is recommended for the new bridge to either be built outside of the nesting season for Barn Swallow (April 1 to August 31), or pre-netted prior to May 1 to dissuade Barns Swallows from nesting on the structure.

Naturally-occurring Butternut trees of any size and age are protected under the ESA and affecting or removing Butternut is prohibited without an authorization from the MNRF. One Butternut tree was identified within the project footprint and may be affected or removed as a result of the work. Each Butternut tree that will be removed or affected must be assessed by a qualified Butternut Health Assessor prior to removal or affecting the tree(s).

Work occurring within 25 m of a Butternut is prohibited without an authorization from the MNRF. Each Butternut tree that will be removed or impacted must be assessed by a qualified Butternut Health Assessor prior to impacting or removing the tree(s). The Butternut Health Assessment should be undertaken in accordance with MNRF guidelines and results submitted to MNRF for review. The results of the Butternut Health Assessment will determine the next course of action, which may include no further requirement, submission of a Notice of Activity, or compensation and monitoring.

5.1.2.3 Environmental Protection Act

Dewatering during construction may be required to facilitate creation of an isolated dry work area and may require registration on the EASR system (if dewatering is over 50,000 L/day) but under 400,000 L/day) or a Permit to Take Water (if dewatering exceeds 400,000 L/day).

To improve air quality around the station during operation and maintenance, MOECC EASR recommendations for exempt equipment (O. Reg. 524/98) that has minimal air quality impacts, as well as application to the EASR for equipment that qualifies (O. Reg. 1/17 and O. Reg. 419/05) will be adhered to.

5.1.2.4 Ontario Water Resources Act

A Permit to Take Water may be required if dewatering during construction exceeds 400,000L/day.

Approvals for discharge of pumped water will be required, which could include one or a combination of MOECC Environmental Compliance Approval (ECA) (under the *Ontario Water Resources Act* (OWRA), Section 53), Municipal Discharge Permits, and/or Conservation Authority Approval (through the Voluntary Project Review process). The need for these permits will be determined during detailed design.

5.1.3 Municipal

Metrolinx, as a Provincial Crown Agency, is not generally subject to municipal permitting and approval requirements; regardless, Metrolinx works in co-operation with local municipalities to adhere to the intent of the relevant permit/approval requirements to the extent possible. Metrolinx is in the process of establishing a Vegetation Compensation Protocol for RER projects; vegetation that is removed for the Project will be compensated for in accordance with the provisions of this protocol.

Removal and/or damage of woody vegetation located in adjacent lands, beyond the rail corridor, may require municipal tree removal permits. To support the permit applications, an Arborist Report will be completed during detailed design to supplement the Tree Inventory







Plan. Metrolinx will work in co-operation with the City of Toronto in the spirit of meeting by-law requirements, specifically the Private Tree By-law and Trees on City Streets By-law.

Municipal Discharge Permits may also be required for the discharge of pumped water associated with construction dewatering activities.

Construction should adhere to the City of Toronto noise by-laws (Noise Control By-Law, Municipal Code Chapter 591, By-law 1400-2007), to the extent possible. It is recommended that the vibration limits in the City of Toronto bylaw not be exceeded. This may entail monitoring of vibration levels during construction. Anticipated vibration levels will be confirmed during detailed design.

5.2 Commitments to Future Work

Metrolinx is committed to implementing the mitigation measures and monitoring activities outlined in Section 4. Permits, approvals and commitments to future work to be completed during detailed design, as well as during pre-construction and construction, are outlined in Table 5-1.





Table 5-1: Commitments to Future Work

Discipline	Commitments
Detailed Design	
General	 Mitigation measures and monitoring requirements documented in Section 4 of this Volume of the EPR related to detailed design will be implemented. Metroliny will consult with Hydro Ope during detail design in the event that the Broject will affect Hydro Ope infrastructure. Design
	drawings will be provided to Hydro One for review.
Natural Environment	 Metrolinx, as a Provincial Crown agency, is not generally subject to the Conservation Authorities Act. Metrolinx endeavours to minimize effects to natural features protected by the TRCA. Metrolinx will follow the Voluntary Project Review Process per the Proponents and Projects Exempt from the TRCA Regulatory Approval Process and request that the TRCA reviews and comments on detailed design activities associated with Project construction, maintenance or emergency activities. Once TRCA concerns are satisfied, a Voluntary Project Review Letter is provided by TRCA staff.
	 Metrolinx, as a Provincial Crown Agency, is not generally subject to municipal permitting and approval requirements; regardless, Metrolinx works in co-operation with local municipalities to adhere to the intent of the relevant permit/approval requirements to the extent possible. Metrolinx is in the process of establishing a Vegetation Compensation Protocol for RER projects; vegetation that is removed for the Project will be compensated for in accordance with the provisions of this protocol.
	• Efforts will be made to coordinate with Toronto Hydro, Toronto Water and other utility companies that may be affected by utility relocations to help minimize the overall impacts of the Project on the natural heritage system.
	Infrastructure and utility works will either be completed by Metrolinx as part of this Project, or by utility companies. Metrolinx and its Contractors will follow TRCA regulatory requirements.
	 A Soil Management Plan will be developed by a Qualified Professional as defined in O. Reg. 153/04 for managing soil materials on-site (includes excavation, location of stockpiles, reuse and off-site disposal).
	 A Stormwater Management Report will be completed to determine potential effects and mitigation measures. The report will be completed in consultation with TRCA and the MOECC. Stormwater management design will consider guidance provided by the MOECC Stormwater Management Planning and Design Manual (2003), MTO Drainage Management Manual (2008), TRCA Storm Water Management Criteria (2012), and the Low Impact Development Stormwater Management Planning and Design Guide (TRCA/Credit Valley Conservation, 2010).
	Measures to mitigate a potential loss of green space and reduce storm runoff will be identified in detailed design.
	• No in-water works are anticipated at this time; in the event in-water works are identified to be required during detailed design, the project team will consult with TRCA, MNRF and DFO to identify restricted activity timing windows.
	 A Flood Contingency Plan will be developed during detailed design and prior to construction.
	 Potential impacts will be assessed against updated floodplain mapping from TRCA during detailed design.
	 Metrolinx will undertake detailed design and associated hydraulic modelling studies as necessary to meet the requirements of Lower Don Special Policy Area. The station will be designed, implemented and operated in a manner that meets the flood protection requirements of the Living City Policies. This will include flood proofing to meet applicable guidelines, developing warning and emergency measures, and demonstrating (through modelling) that the development of the station will not result in an increase in flood hazard risk upstream and downstream of the site. This work will be reviewed as part of the Voluntary Project Review process.
	Cut and Fill: For any works within existing flood hazard areas, Metrolinx will demonstrate through a cut and fill balance analysis





Discipline	Commitments
	 that there will be no increases in flood depths and no adverse upstream or downstream hydraulic or fluvial impacts; North-south connection - Metrolinx will design the station amenities (pedestrian connections) within the existing railway berm such that they do not serve as a hydraulic connection between the areas north and south of the station; and that Metrolinx will undertake the necessary studies to demonstrate that the proposed station will not negatively impact the proposed TRCA flood protection features on south and north sides of the station berm.
	 Two new pedestrian bridges over the Don River and accesses on the west of the river - Metrolinx will demonstrate through the necessary studies that proposed new bridges will not create new flooding hazards to adjacent or other properties and that there will be no negative upstream and downstream hydraulic impacts; and that risks to public safety will be addressed by Metrolinx during the design of the new accesses.
Geology and Groundwater	 Hydrogeological and geo-environmental studies will be carried out, which may identify recommendations for groundwater mitigation measures and monitoring. These future studies will be circulated to TRCA for review.
	TRCA Geotechnical Engineering Design and Submission Requirements guidelines will be referenced during detailed design.
	 Soil and bedrock conditions, as well as bedrock elevations, will be confirmed through future geotechnical investigations to be undertaken in support of detailed design.
	Ongoing engagement with the CTC source protection authority will be maintained.
Trees	 Removal and/or damage of woody vegetation located in adjacent lands, beyond the rail corridor, may require municipal tree removal permits. To support the permit applications, an Arborist Report will be completed during detailed design to supplement the Tree Inventory Plan. Metrolinx will work in co-operation with the City of Toronto in the spirit of meeting by-law requirements, specifically the Private Tree By-law and Trees on City Streets By-law.
	 An update of the tree removal count of the Project will be completed. This will be based upon a more detailed level of design, with available access permissions and more detailed survey information, to the extent possible.
	 An update of the tree inventory will be completed to account for detailed grading, work zones and proposed clearing, to illustrate TPZ and their protection measures (types and locations), and tree removal zones, in accordance with the completion of an Arborist Report. The Arborist Report will be completed during detailed design and will contain at a minimum the following information in addition to details of tree location, size, species, conditions and category:
	 Recommendations for tree/vegetation protection and preservation measures for all trees/vegetation that are to be retained; Details of tree pruning;
	 Details of all trees/vegetation recommended for removal, including removal measures;
	 Appraised values of trees/vegetation to be removed;
	Mitigation and monitoring measures recommended to ensure success of preservation and removal measures;
	 Should vegetation compensation be required, it will be in accordance with the Metrolinx Vegetation Compensation Protocol; and
	Mapping.
	 An assessment of trees within or adjacent to the work zones, as defined by the detailed design, will be completed as part of an Arborist Report to determine if trees will be affected.
	 Preparation of detailed tree removal, restoration, and compensation plans will be completed in coordination with a Certified Arborist and/or Landscape Architect (licensed to practice in the Province of Ontario) to assist with species selection, planting locations and measures to promote establishment success.





Discipline	Commitments
	 Work occurring within 25 m of a Butternut is prohibited without an authorization from the MNRF. Each Butternut tree that will be removed or impacted must be assessed by a qualified Butternut Health Assessor prior to impacting or removing the tree(s).
	 A Butternut Health Assessment should be undertaken in accordance with MNRF guidelines and results submitted to MNRF for review. The results of the Butternut Health Assessment will determine the next course of action, which may include no further requirement, submission of a Notice of Activity, or compensation and monitoring.
Built Heritage Resources and Cultural Heritage Landscapes	 Recommendations for BHRs and CHLs are based on the CHSR and CHAR undertaken for this Project. Based on these reports, no further work is recommended.
Archaeology	 Archaeological recommendations are based on a Stage 1 AA undertaken for this Project. Archaeological recommendations have been made based on the background historic research, locations of known or registered archaeological sites, previous AAs, and indicators of archaeological potential as outlined in the 2011 S&G.
	These recommendations for detailed design include:
	 Areas determined to be undisturbed will be subjected to a Stage 2 AA in accordance with the 2011 S&G prior to construction activities to ensure no cultural heritage resources will be impacted;
	 Areas determined to be disturbed do not require further assessment
	 Should deeply buried archaeological materials be encountered during construction, all work will cease and a professionally licenced archaeologist will be consulted to assess the cultural heritage value and significance of the archaeological deposits;
	 Areas identified to contain archaeological potential for deeply buried archaeological resources must be subjected to a Stage 2 AA in accordance with Section 2.1.7, Standard 3 or 4 and Guideline 2 of the 2011 S&G prior to construction activities; and
	 If final limits of the Project are altered and fall outside the current study area, an additional Stage 1 AA is required to assess the new footprint.
	 If human remains are encountered during project work, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the OHA.
	• Figure 3-3, in Section 3.4.2 of this EPR Volume, indicates areas of archaeological potential requiring Stage 2 AA. Metrolinx will:
	 Complete all required AA (Stage 2 and Stage 3 if recommended by the Stage 2AA) as early as possible, prior to the completion of detail design, and well in advance of any ground disturbance;
	 Undertake future work in a manner that protects archaeological sites by conserving them in their original location or through archaeological fieldwork, and endeavour to conserve significant archaeological resources in their original location through documentation, protection, and avoidance of impacts. Where activities could disturb significant archaeological resources or areas of archaeological potential, Metrolinx will take appropriate measures to mitigate impacts; and
	 Include provisions in contract as recommended by archaeological assessment(s) (e.g., in case archaeological resources are discovered, protection of sites). All future Stage 2 AA findings will be shared with all First Nations communities that were consulted during the Stage 1 AA process.
Socio-Economic and Land Use	 Confirm effects on utilities. Additional SUE investigations may be conducted, as required, to confirm existing utilities. A review of existing and proposed future utilities plans, in addition to on-going consultation with utility companies and the City of Toronto, will





Discipline	Commitments
Characteristics	be conducted during the detailed design stage.
	 Any relocations, service interruptions, or utility protection projects will be identified as early as possible to allow for project coordination and construction management plans to be created with consideration of utility needs.
	 Specific property requirements will be determined during detailed design. Ongoing consultation with affected property owners will help identify appropriate site-specific mitigation measures. Where access to property is required, ongoing consultation with affected landowners will help identify appropriate site-specific mitigation measures.
	 A lighting plan will be developed where the quality of light produced, and type of light sources used on the exterior of buildings, signs, pedestrian walkways, and other areas of the site, are compatible with, and appropriate to the overall design and use of the site.
	 Metrolinx will work with Hydro One during detail design to avoid impacts and/or develop mitigation.
Air Quality	 To improve air quality around the station during maintenance and operation, MOECC EASR recommendations for exempt equipment (O. Reg. 524/98) that has minimal air quality impacts, as well as application to the EASR for equipment that qualifies (O. Reg. 1/17 and O. Reg. 419/05) will be adhered to during detailed design.
Noise and Vibration	 A more detailed noise assessment of construction will be completed when the specifics of construction equipment are finalized, prior to construction start. This assessment should consider minimizing construction-related noise levels, while balancing construction schedules and expediting construction activity.
	 During detailed design, the station public address system, ancillary systems, and any other stationary noise sources will be designed so that the one-hour equivalent sound level does not exceed the higher of the applicable exclusion limit value given in NPC-300, or the background sound level.
	 A more detailed vibration assessment of construction will be completed when the specifics of construction equipment are finalized, prior to construction start. This assessment will consider minimizing construction-related vibration levels, while balancing construction schedules and expediting construction activity.
	A vibration monitoring plan will be completed during detailed design.
	 During detailed design, the predicted ZOI will be updated to confirm which structures fall within it. If a structure falls within the updated ZOI, the following is recommended:
	 Pre-construction consultations with owners/occupants;
	 Pre-construction measurements of background vibration levels; and
	 Pre-construction survey by means of a photographic record of potentially affected structure façades and all surfaces, including visible sections of building foundations, building cladding, doors, windows, interior wall finishes, surface pavement, sidewalks, signs and trees. Each of the elements should be rated on their general condition (new, good, fair, poor, severe), and visible defects should be photographed.
Traffic and Transportation	City of Toronto staff will be requested to include, in their 2-year review of the 10-Year Cycling Network Plan scheduled in 2018, a review of the cycling infrastructure and routes in the vicinity of the Project in order to identify possible improvements to the cycling network (both on-street and on trails) to enhance convenience and safety for cyclists accessing this station.
Construction ¹²	

¹² Construction phase commitments include pre-construction commitments, completed following detailed design but prior to ground disturbance.




Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

Discipline	Commitments
General	 Mitigation measures and monitoring requirements documented in Section 4 of this Volume of the EPR related to construction will be implemented.
	 An Environmental Mitigation and Monitoring Plan (EMMP) will be developed prior to construction to outline the responsibilities for carrying out monitoring and reporting activities, including timing and frequency of monitoring activities, as well as the compliance process. The EMMP will include all mitigation measures, categorized by Project phase, and will identify the party responsible for implementation.
Natural Environment	 An ESC Plan will be developed prior to construction for implementation throughout construction. The ESC Plan will include consideration of the Greater Golden Horseshoe Area Conservation Authorities' Erosion and Sediment Control Guideline for Urban Construction and OPSS 805 (Erosion and Sediment Control Measures, Ministry of Transportation, 2015). This plan will encompass all areas of soils disturbance, particularly in the vicinity of the Don River.
Geology and Groundwater	 Dewatering during construction may be required to facilitate creation of an isolated dry work area and may require registration on the Environmental Approval Sector Registry (EASR) system (if dewatering is over 50,000 L/day but under 400,000 L/day) or a Permit to Take Water (if dewatering exceeds 400,000 L/day).
	 Approvals for discharge of pumped water will be required, which could include one or a combination of MOECC ECA (OWRA, Section 53), Municipal Discharge Permits, and/or Conservation Authority Approval (through the Voluntary Project Review process). The need for these permits will be determined during detailed design.
	 Municipal Discharge Permits may also be required for the discharge of pumped water associated with construction dewatering activities.
Tree	 Naturally-occurring Butternut trees of any size and age are protected under the ESA and impacting or removing Butternut is prohibited without an authorization from the MNRF. One Butternut tree was identified within the project footprint and may be affected or removed as a result of the work. Each Butternut tree that will be removed or affected must be assessed by a qualified Butternut Health Assessor prior to removal or affecting the trees.
	 The Butternut Health Assessment will be undertaken in accordance with MNRF guidelines and results submitted to MNRF for review. The results of the Butternut Health Assessment will determine the next course of action, which may include no further requirement, submission of a Notice of Activity, or compensation and monitoring.
Archaeology	 Should deeply buried archaeological materials be encountered during construction, all work will cease and a professionally licenced archaeologist will be consulted to assess the cultural heritage value and significance of the archaeological deposits;
	 Areas identified to contain deeply buried archaeological potential will be subjected to a Stage 2 AA in accordance with Section 2.1.7, Standard 3 or 4 and Guideline 2 of the 2011 S&G, prior to construction activities;
	 MTCS will be notified if archaeological resources are encountered or impacted during the course of the EA project work. All activities impacting archaeological resources will cease immediately, and a licensed archaeologist will carry out an archaeological assessment in accordance with the OHA and the Standards and Guidelines for Consultant Archaeologists.
	 If human remains are encountered during project work, all activities will cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services will be contacted. In situations where human remains are associated with archaeological resources, MTCS will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the OHA.
	 No construction activities will take place within the study area prior to the MTCS confirming in writing that all archaeological requirements have been met.





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

Discipline	Commitments
Socio-Economic and Land Use Characteristics	 A Construction Traffic Management Plan will be prepared and implemented prior to Project construction to maintain reasonable access through work zones, to the extent possible.
Air Quality	 An Air Quality Management Plan will be developed for implementation during construction to address construction equipment and vehicle exhaust, fugitive dust and odour.
Noise and Vibration	 Construction will adhere to City of Toronto noise by-laws (Noise Control By-Law, Municipal Code Chapter 591, By-law 1400-2007), to the extent possible. It is recommended that the vibration limits in the City of Toronto bylaw not be exceeded. This may entail monitoring of vibration levels during construction. Anticipated vibration levels will be confirmed during detailed design. A Noise and Vibration Control Plan will be developed prior to construction. The plan will include a complaint response protocol and will indicate that surrounding property owners and tenants will be informed of anticipated upcoming construction works, including any work at night.
Traffic and Transportation	 A Construction Traffic Management Plan will be developed prior to construction which will include providing pedestrian and cyclist access through work zones, alerting local transit of potential travel delays/service disruptions in advance of Project construction including road closures; and identification of best detour routes for transit vehicles that minimizes travel time and service disruptions.
Operations and Maintenance	
General	Mitigation measures and monitoring requirements documented in Section 4 of this Volume of the EPR related to operations will be implemented.

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

6. References

- AECOM. (2016). RER New Stations Initial Business Case Downtown East Lakeshore East/Stouffville/Richmond Hill Corridors.
- AECOM. (2016). RER New Stations Initial Business Case Finch East Stouffville Corridor.
- AECOM. (2016a). Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes. Lakeshore East Rail Corridor Expansion- Don River to Scarborough Go Station (Segment 1) City of Toronto.
- AECOM. (2016b). *Ćultural Heritage Evaluation Report.* Don River Bridge. Kingston Subdivision, Mile 332.15 Toronto, Ontario.
- AECOM. (2016c). Cultural Heritage Evaluation Recommendation Report, Don River Bridge, Lakeshore East, Mile 332.15, Toronto, Ontario.
- AECOM. (2016d). Cultural Heritage Evaluation Recommendation Report, Eastern Avenue Subway, Lakeshore East, Mile 331.89, Toronto, Ontario.
- AECOM. (2017). Lakeshore East Rail Corridor Expansion (Don River to Scarborough GO Station) Project - Natural Environment Effects Assessment Report.
- Andersen, J. J. (2017). Personal Communication with Jeff Andersen, Management Biologist, Aurora District MNRF. Letter dated October 24, 2017.
- Archaeological Services Inc. (ASI). (2016). Rail Network Electrification TPAP Final Cultural Heritage Screening Report, Metrolinx Go Rail Electrification.
- Cadman, M., Sutherland, D., Beck, G., Lepage, D., & Couturier (eds), A. (2007). *Atlas of the Breeding Birds of Ontario, 2001-2005.* Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources and Ontario Nature, Toronto.
- Canada Food and Inspection Agency. (2014). Directive D-03-08: Phytosanitary Requirements to Prevent the Introduction Into and Spread within Canada of the Emerald Ash Borer.
- Canadian Food Inspection Agency. (2017, December). Retrieved from http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/emerald-ashborer/eng/1337273882117/1337273975030
- Chapman, J., & Putnam, D. F. (1984). *Physiography of Southern Ontario*. Ontario Geological Survey, Map P.2715 (coloured). Scale 1:600000.
- City of Toronto. (2008). To amend City of Toronto Municipal Code Chapter 363, Building Construction and Demolition, with respect to regulation of vibrations from construction activity.
- City of Toronto. (2009). Toronto Municipal Code, Chapter 591, Noise.
- City of Toronto. (2013). *Guidelines for the Preparation of Transportation Impact Studies*. Retrieved from City of Toronto:

https://www1.toronto.ca/City%20Of%20Toronto/Transportation%20Services/Files/pdf/TIS_Interne tSecured_20130708.pdf

- City of Toronto. (2015). Article II Trees on City Streets. Toronto Municipal Code Chapter 813, Trees.
- City of Toronto. (2015). Official Plan. Retrieved from City of Toronto: https://www1.toronto.ca/wps/portal/contentonly?vgnextoid=03eda07443f36410VgnVCM10000071 d60f89RCRD
- City of Toronto. (2015). Toronto Municipal Code, Chapter 813, Trees.
- City of Toronto. (2016). Ravine and Natural Feature Protection. Toronto Municipal Code Chapter 658.
- City of Toronto. (2016). Toronto Municipal Code Chapter 658, Ravine and Natural Feature Protection.
- City of Toronto. (2017). Parks. Toronto Municipal Code Chapter 608, Parks.
- City of Toronto. (2017). Toronto Municipal Code Chapter 608, Parks.
- City of Toronto. (2017a). The Toronto Heritage Register. Retrieved from https://www1.toronto.ca/wps/portal/contentonly?vgnextoid=cfc20621f3161410VgnVCM10000071 d60f89RCRD
- Credit Valley, Toronto and Region and Central Lake Ontario (CTC) Source Protection Region. (2015, August). *Approved Source Protection Plan: CTC Source Protection Region.* Retrieved from www.ctcswp.ca
- Dobbyn, J. (1994). Atlas of the Mammals of Ontario. Don Mills: Federation of Ontario Naturalists.

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

ECCC. (2014). *Migratory Birds: Technical Information on Risk Factors.* Retrieved from https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratorybirds/technical-information-risk-factors.html

ECCC. (2014). *Migratory Birds: Technical Information on Risk Factors.* Retrieved from https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratorybirds/technical-information-risk-factors.html

- Federal Transit Administration. (2006). *Transit Noise and Vibration Impact Assessment.* US Department of Transportation.
- Fisheries and Oceans Canada (DFO). (2017). Aquatic Species at Risk Maps: Ontario Southwest (Map 11 of 34). Retrieved from http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm
- GIN. (2017). GIN Basic Map Viewer: Ontario Waterwells. Retrieved from http://gw-info.net
- GO Transit. (2016, April). 2015 GO Rail Passenger Survey-Final Report. Retrieved from GO Transit.
- Government of Canada. (2018). Species at Risk Public Registry. Retrieved from http://www.registrelepsararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1
- Halloran et al. (2003). Clean Equipment Protocol for Industry.
- International Society of Arboriculture. (2008). Best Management Practices .
- Lee. (2008). *ELC Ecosystem Catalogue: 2008 Version.* Retrieved from http://www.conservationontario.on.ca/events_workshops/ELC_portal/index.html
- Lee, H. T., Bakowsky, W. D., Riley, J. L., Bowles, J., Puddister, M., Uhlig, P., & McMurray, S. (1998). *Ecological Land Classification for Southern Ontario: First Approximation and its Application.* Technical Manual ELC-005, Ontario Ministry of Natural Resources, Southcentral Region, Science Development and Transfer Branch.
- Metrolinx. (2012). Regional Transportation Plan.
- Metrolinx. (2013). Interim Cultural Heritage Management Process.
- Metrolinx. (2014). Stouffville Rail Corridor Expansion Environmental Study Report.
- Metrolinx. (2016). GO Rail Station Access Plan Final Report. Retrieved from
 - http://www.metrolinx.com/en/regionalplanning/projectevaluation/studies/GO_Rail_Station_Access _Plan_EN.pdf
- Metrolinx. (2017a). GO Rail Design Requirements Manual.
- Metrolinx. (2017b). GO Rail Network Electrification Transit Project Assessment Process Environmental Project Report.
- Metrolinx. (2017c). Lakeshore East Rail Corridor Expansion (Don River to Scarborough GO Station) Project - Environmental Project Report.
- Metrolinx. (2018). New Stations Initial Business Cases Technical Report.
- Ministry of Municipal Affairs. (2017). Growth Plan for the Greater Golden Horseshoe.
- Ministry of Municipal Affairs and Housing. (2014). Provincial Policy Statement.
- Ministry of Northern Development and Mines. (2010). Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV.
- Ministry of Northern Development and Mines. (2011). 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release---Data 126-Revision 1.
- Ministry of the Environment. (1978). *Model Municipal Noise Control By-Law, incorporating NPC-115, Construction Equipment.* Queen's Printer for Ontario, 1990.
- Ministry of the Environment. (2013). Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning. Publication NPC-300. Queen's Printer for Ontario.
- Ministry of the Environment and Climate Change. (2014). *Guide to Ontario's Transit Project Assessment Process.*
- Ministry of Transportation. (2012). Environmental Guide: Recommended Approach for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects.
- MNR. (2000). Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Science Section. 151pp. + appendices.
- MNRF. (2017). *Natural Heritage Information Centre (NHIC)*. Retrieved from https://www.ontario.ca/page/get-natural-heritage-information
- MNRF. (2017). *Natural Heritage Information Centre (NHIC)*. Retrieved from https://www.ontario.ca/page/get-natural-heritage-information
- MNRF. (2018). Species at Risk in Ontario.

METROLINX





Metrolinx - Regional Express Rail (Package 2) - Technical Advisory Services

- MNRF. (January 2015). Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E. Retrieved from https://www.ontario.ca/document/significant-wildlife-habitat-ecoregional-criteria-schedulesecoregion-7e.
- MOECC. (2013). Environmental Noise Guideline, Stationary and Transportation Sources Approval and Planning Publication NPC 300.
- MOEE/GO Transit. (1995). Draft Protocol for Noise and Vibration Assessment Draft #9.
- MTCS. (2010). Standards and Guidelines for Conservation of Provincial Heritage Properties. Retrieved from http://www.mtc.gov.on.ca/en/publications/Standards_Conservation.pdf
- MTCS. (2011). Standards and Guidelines for Consultant Archaeologists. Ottawa, ON: Queens Printer for Ontario.
- Ontario Geological Survey. (2010). Surficial Geology of Southern Ontario. Ontario Geological Survey, Miscellaneous Release - Data 128 - Revised.
- Ontario Ministry of Tourism Culture and Sport. (2011). *Standards and Guidelines for Consultant Archaeologists.* Ottawa: Queen's Printer for Ontario.
- Ontario Nature. (2017). Ontario's Reptile and Amphibian Atlas. Retrieved from http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php
- RWDI. (2014). GO Stouffville Corridor Expansion Noise and Vibration Assessment.
- Sharpe, D. R. (1980). Quaternary Geology of Toronto and Surrounding Area, Preliminary Map P. 2204, Geological Series. Scale 1:100 000. . Ontario Geological Survey.
- To, T. (2017). Personal Communication with Tony To, Environmental Assessment Planner, City of Toronto. Email dated September 25, 2017.
- Toronto and Region Conservation Authority. (1990). *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.*
- Toronto and Region Conservation Authority. (2007). Toronto and Region Natural Heritage System Strategy - Final. *Unpublished report.*
- Toronto Transit Commission. (2015, June 15). *TTC introduces 10-minutes-or-better service on buses, streetcars*. Retrieved December 1, 2017, from TTC: https://www.ttc.ca/News/2015/June/0615_10min-service.jsp
- TRCA. (2014). Don Mouth Naturalization And Port Lands Flood Protection Project Environmental Assessment. Retrieved from https://trca.ca/conservation/green-infrastructure/don-mouthnaturalization-port-lands-flood-protection-project/don-mouth-environmental-assessment/
- TRCA/Credit Valley Conservation. (2010). Low Impact Development Stormwater Management Planning And Design Guide.
- Varga, S., Leadbeater, D., Webber, J., Kaiser, J., Crins, B., Kamstra, J., . . . Zajc, E. (2000). The Distribution and Status of the Vascular Plants of the Greater Toronto Area.
- WSP. (2017). Natural Heritage Impact Study 15M-00204-02. 21 Don Roadway, Toronto: First Gulf-East Harbour.