Stouffville Rail Corridor Grade Separations Project: Revised Final Environmental Project Report

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Note to Reader

This Stouffville Rail Corridor Grade Separations Project: Revised Final Environmental Project Report has been updated to reflect the specific additions/revisions outlined in the Errata to the Environmental Project Report, dated February 11, 2021, including revisions to the following Environmental Technical Studies:

- Appendix A4-6 Havendale Road Socio-Economic and Land Use Study
- Appendix A6-2 Noise and Vibration Study Stouffville Corridor, GO Rail Network Electrification Project
- Appendix A7 Transportation Impact Assessment
- Appendix A8-1 Stouffville Rail Corridor Grade Separations Project: Markham, Ontario, Tree Inventory Report
- Appendix A8-2 Stouffville Rail Corridor Grade Separations Project: Toronto, Ontario, Tree Inventory Report

As such, this Stouffville Rail Corridor Grade Separations Project: Revised Final Environmental Project Report and associated Environmental Technical Studies identified in the preceding list, supersede the previous versions dated December 2020 and January 2021.

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Sign-off Sheet

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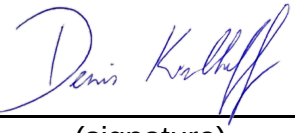
Prepared by  (signature)

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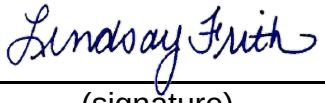
Prepared by  (signature)

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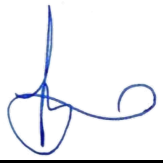
Prepared by  (signature)

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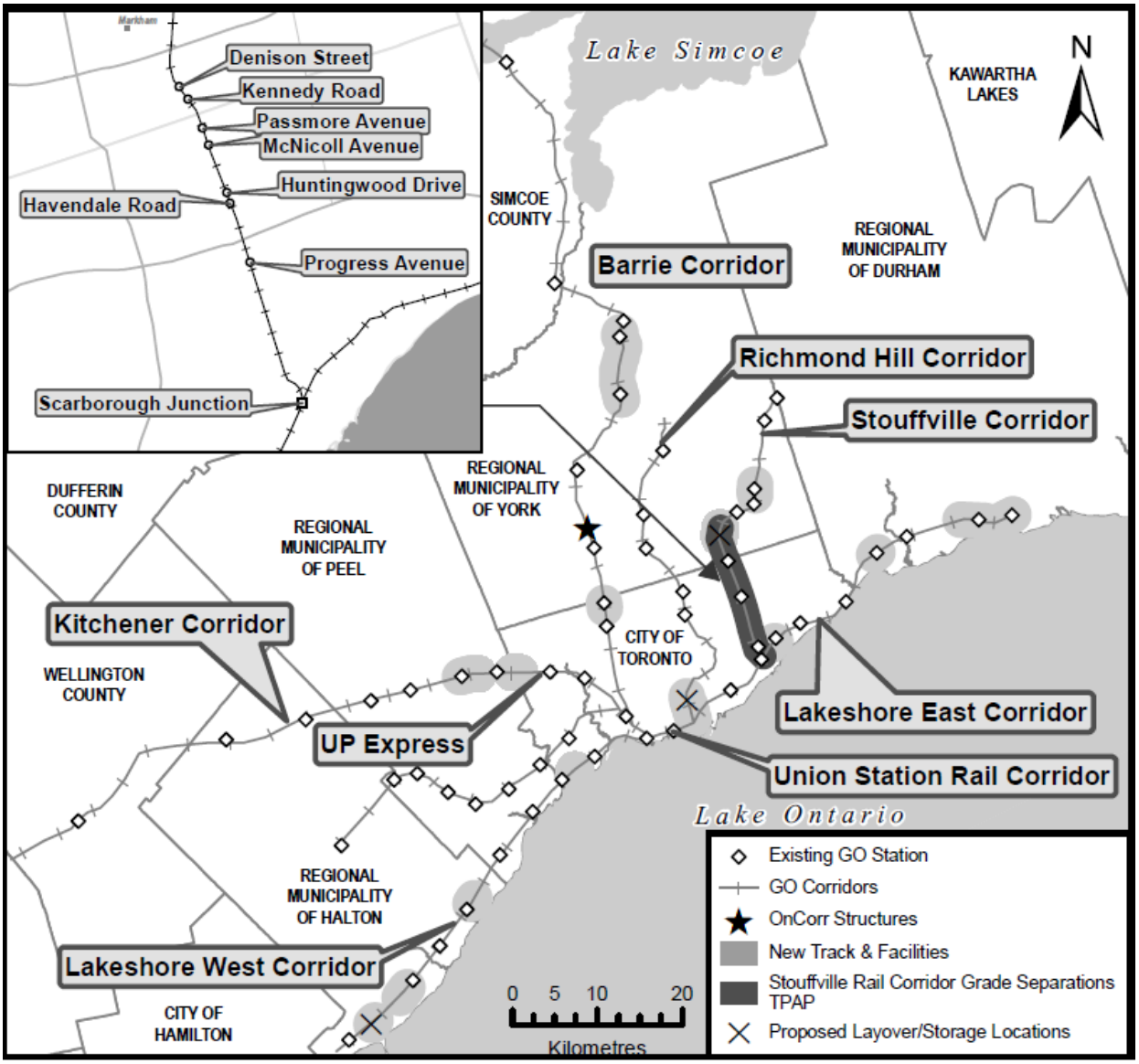
Executive Summary

Project Overview

Metrolinx is completing a Transit Project Assessment Process (TPAP) under *Ontario Regulation (O. Reg.) 231/08, Transit Project and Metrolinx Undertakings*. Metrolinx is expanding its services as part of the GO Expansion Program which will increase services both in terms of train frequency and availability across its seven rail corridors. Metrolinx is committed to providing new travel choices for commuters, significantly increasing transit ridership, cutting journey times and helping manage congestion across the Greater Golden Horseshoe (GGH). GO Expansion Program is an investment program that will transform GO Rail into a comprehensive regional rapid transit network system that provides the expanded mobility the GGH needs to accommodate growth and maintain a high quality of life and prosperous economy. With major investment in GO Rail infrastructure, Metrolinx will be quadrupling GO Rail service and nearly doubling GO Rail ridership. By 2055, annual ridership is expected to exceed 200 million, compared to 105 million without GO Expansion. Ongoing Metrolinx initiatives are shown in Figure ES.1. The long-term goal and vision of the GO Expansion Program is to provide 15-minute two-way all-day service along the Stouffville Rail Corridor. Infrastructure modifications are being planned to support the introduction of additional trains on the Stouffville Rail Corridor. Reducing the number of at-grade rail crossings along the Stouffville Rail Corridor will enhance on time performance and operational flexibility/reliability.

Figure ES.1: Ongoing Metrolinx Initiatives



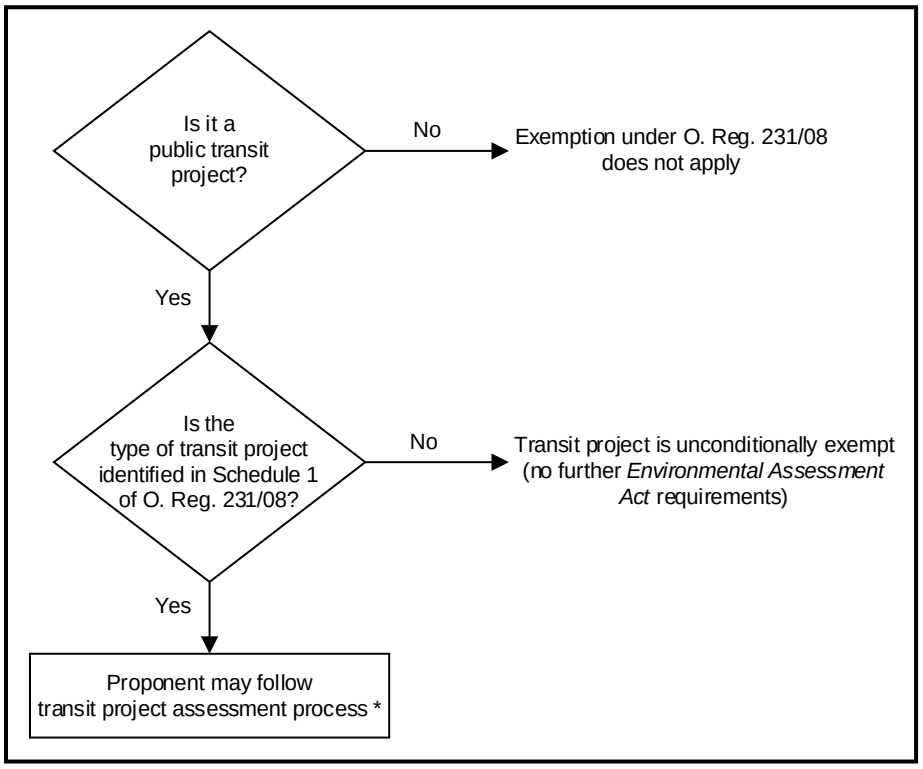
The purpose of the proposed Project is to accommodate the expansion of the Stouffville Rail Corridor through grade separations or road closure at seven crossings, which will reduce traffic conflicts. The Project will facilitate the GO Expansion Program, including the construction of the previously approved new track and accommodating increased train frequency along the corridor.

This Environmental Project Report (EPR) documents the findings of the TPAP with respect to existing environmental conditions, potential effects assessment, associated mitigation and monitoring, stakeholder and public consultation, and commitments to future work.

Study Process

This EPR was prepared in accordance with *O. Reg. 231/08, Transit Projects and Metrolinx Undertakings* (Transit Projects Regulation). Under Ontario Regulation (O. Reg.) 231/08, certain types of transit projects can follow the TPAP, an Ontario Ministry of the Environment, Conservation and Parks (MECP) approved, streamlined approach to Environmental Assessments (EA). The method for determining if the TPAP is an appropriate assessment process for a proposed project is described in Figure ES.2.

Figure ES.2: Determination of Applicability of TPAP



The Project meets the TPAP requirements as presented in Schedule 1 of *O. Reg. 231/08*, as it relates to the following undertakings:

> *1. (1) – 5. Construction of new grade separation*
>
> *2. (1) – 4. Construction or modification of tracks required to increase the commuter rail service (including a change to All-Day Service) on an existing rail corridor, including such activities as,*
>
> *ii. modification of existing mainline tracks*
>
> *iv. construction, reconstruction or widening of structures*

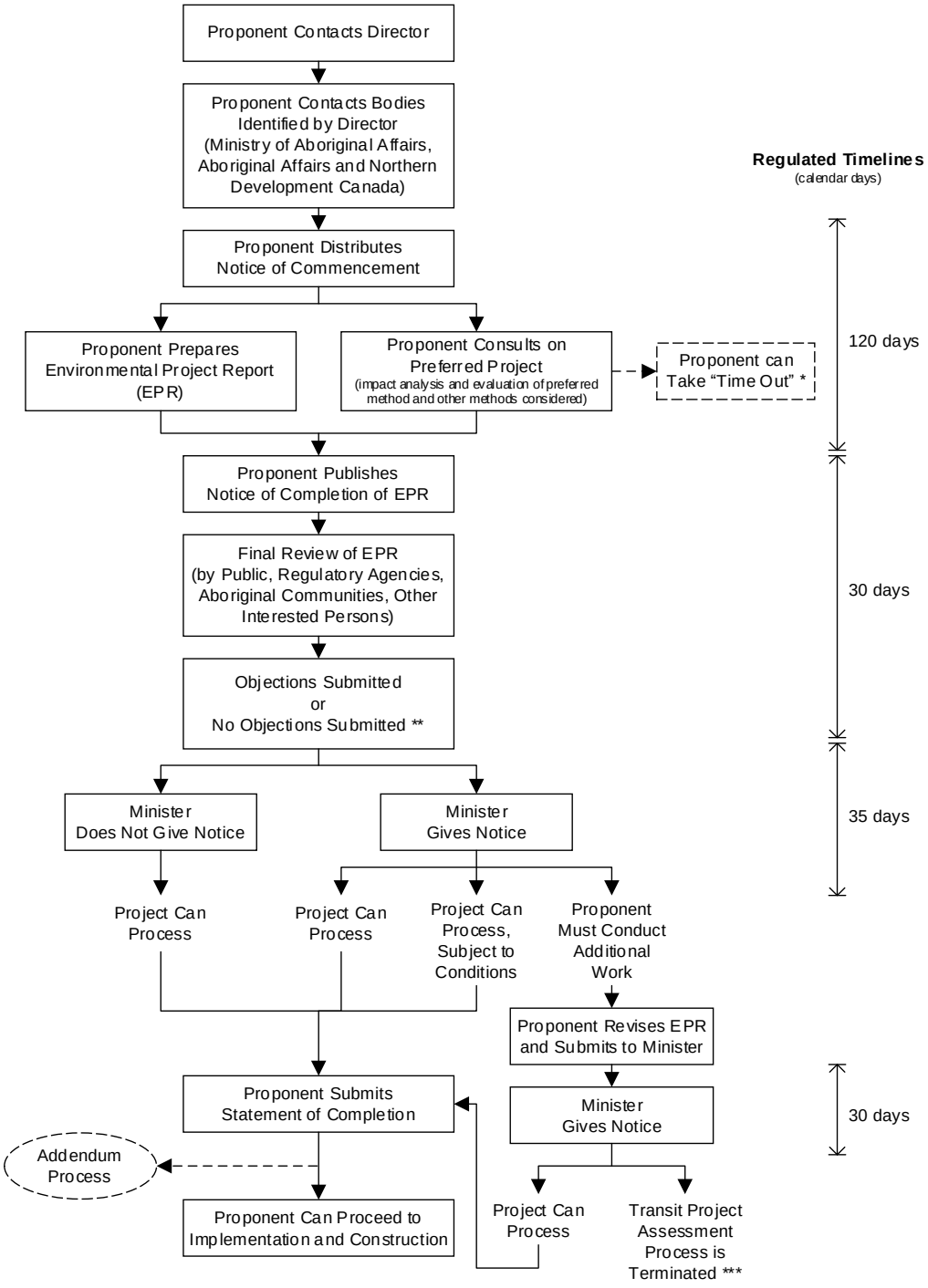
The TPAP is a proponent-driven, self-assessment process that provides a defined framework for the proponent to follow in order to complete the assessment of the potential environmental effects and decision-making within a 120-day regulated assessment timeline. Following this period, the regulation provides a 30-day public and agency review, and a further 35-day MECP review. By following the TPAP, the Transit Projects Regulation exempts the proponent of the transit project from the requirements under Part II of the *Environmental Assessment Act* (EAA).

Prior to formal commencement of the TPAP, proponents are urged to undertake introductory activities and consultation through pre-planning activities. The proponent initiates the TPAP by issuing the Notice of Commencement following completion of the Pre-Planning activities and the regulated 120-day timeframe commences.

The Pre-Planning phase involved a number of key activities, which were undertaken in preparation for the commencement of this TPAP. A series of environmental technical studies were undertaken in 2016/2017 to support the Project when it was first initiated. Archaeology, cultural heritage, natural environment, traffic, air quality, noise/vibration and socio-economic studies were completed for Denison Street, Kennedy Road and McNicoll Avenue. To confirm the validity of the previously completed archaeology, cultural heritage, natural environment, traffic and socio-economic studies at these locations, a gap analysis was undertaken in 2019 to identify information gaps or other updates required based on the potential for changes in information such as, but not limited to, Project design, municipal planning, landscape, and land use. Environmental and technical studies were undertaken for the remaining grade separation locations in 2019 and 2020, including updates to the previously completed reports as required.

Further details describing the TPAP requirements, activities, and associated timelines are provided in Section 1.6 of this EPR. The steps and timelines in the TPAP are illustrated in Figure ES.3.

Figure ES.3: Steps in the Transit Project Assessment Process



Project Components

The Stouffville Rail Corridor generally runs in a north-south direction from Lincolnville GO Station, in the Town of Whitchurch-Stouffville, to Scarborough Junction, located just northeast of the Scarborough GO Station, in the City of Toronto. From Scarborough Junction, service continues west to Union Station along the Lakeshore East Rail Corridor.

The Project includes proposed modifications required to meet the service goals of the GO Expansion Program and to reduce the number of road and at-grade rail crossings along the Stouffville Rail Corridor (refer to Section 1.1).

For the purposes of this EPR, grade separations are proposed at the following locations:

- Denison Street, Markham
- Kennedy Road, Markham
- Passmore Avenue, Toronto
- McNicoll Avenue, Toronto
- Huntingwood Drive, Toronto
- Havendale Road, Toronto
- Progress Avenue, Toronto

With the exception of Havendale Road, either a road over rail or a road under rail grade separation was identified as the preferred option at each location. For Havendale Road, road closure is proposed, with a grade-separated multi-use crossing to maintain pedestrian and cycle traffic. Grade separation of the road is not feasible at this location because of the narrow road right-of-way (ROW) and the potential impacts on existing houses between Farmington Crescent and Scotland Road.

In addition, the feasibility of maintaining effective access and business operations for properties surrounding the proposed grade separation at Passmore Avenue is still being explored with property owners and the City of Toronto, to confirm a preferred mitigation plan. While we expect to move forward with the grade separation, Metrolinx is still working with the City of Toronto and affected businesses to find a design solution that will fit the needs of the City, businesses and GO Expansion. The Passmore Avenue grade separation will be studied in a separate EPR Addendum following the Statement of Completion for the Stouffville Rail Corridor Grade Separations TPAP.

A summary of the preferred design for each of the grade separation locations is provided in Table ES.1. Further details for each of the grade separations are provided in subsequent sections.

Table ES.1: Preferred Grade Separation Option by Location

Crossing Location	Proposed Design
Denison Street	Road Under Rail
Kennedy Road	Road Under Rail
Passmore Avenue	Road Under Rail
McNicoll Avenue	Road Under Rail
Huntingwood Drive	Road Under Rail
Havendale Road	Road Closure with Multi-Use Crossing
Progress Avenue	Road Over Rail

Assessment of Potential Effects and Proposed Mitigation Measures

The Project has the potential to create changes to the existing environmental conditions that may result in both positive and negative effects. These changes have been considered through consultation with the public, municipalities, stakeholders and Indigenous Nations throughout the Pre-Planning and TPAP phases of the Project. Following identification of existing conditions, an assessment of potential effects and proposed mitigation measures was completed based on the following information:

- An assessment and evaluation of the potential effects that the Project may have on the environment
- A description of any measures proposed to mitigate any negative effects that the Project may have on the environment
- A description of the means to monitor or verify the effectiveness of the proposed mitigation measures to reduce or eliminate adverse effects

Section 4.0 of this report presents the conclusions of the effects assessment in more detail, and Section 4.11 highlights potential effects, mitigation measures, and monitoring requirements. The potential effects of the Project are well understood and can be addressed through the proposed mitigation measures. The following table (Table ES.2) is a summary of potential effects associated with the proposed Project that will require mitigation measures, and anticipated monitoring activities. A potential effect is denoted by a "●". If no potential effects are anticipated, a "-" is indicated.

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Table ES.2: Potential Effects, Mitigation Measures and Monitoring

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Natural Environment						
Aquatic Environment	Removal or impacts to wetland, aquatic and riparian vegetation; erosion and sedimentation to wetlands/waterbodies from construction; risk of contamination to wetlands/waterbodies as a result of spills.	-	-	Denison Street	• Consult with TRCA to assess requirement for restoration of natural areas at Progress Avenue and Kennedy Road. • Construction activities will maintain the buffers established during the design phase to minimize potential negative impacts to wetlands and waterbodies. • Shorelines or banks disturbed by construction activities will be immediately stabilized by any activity associated with the project to prevent erosion and/or sedimentation, through re-vegetation with native species suitable for the site in adherence with the Metrolinx Vegetation Guideline (2020). • An Erosion and Sediment Control Plan, in accordance with the *Erosion and Sediment Control Guide for Urban Construction* (TRCA 2019), will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the wetland or waterbody. • A Spill Prevention and Response Plan will be developed before work commences and implemented during construction to ensure procedures and policies are in place during construction to minimize impacts to wetlands or waterbodies. • In wetland areas where vernal pooling occurs, prior to dewatering isolated work areas, wildlife will be captured and relocated to suitable habitat outside of the work area. • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the MNRF.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures.
		●	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		●	-	Progress Avenue		
Aquatic Environment	Potential for direct, in-water impacts to fish and fish habitat.	-	-	Denison Street	• All requirements of the *Fisheries Act* and the *Endangered Species Act*, 2007 (ESA) will be met. • In the event that in-water and/or near water construction works are required, the restricted construction activity timing windows (July 1st to March 31st) and appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including the Conservation Authority, MECP, Ministry of Natural Resources and Forestry (MNRF) and Fisheries and Oceans Canada (DFO). In-water works will be planned to respect timing windows (July 1st to March 31st) to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed. • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the MNRF.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
		-	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		●	-	Progress Avenue		
Terrestrial Environment	Tree/vegetation removal, injury and protection.	●	-	Denison Street	• If final limits of the Project Footprint are altered and fall outside of the assessed study area, an additional Arborist Report, or an addendum to the existing Arborist Report, will be prepared which meets regulatory requirements and is completed by an I.S.A. Certified Arborist. The report will also be completed with	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and
		●	-	Kennedy Road		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		•	-	Passmore Avenue	regard to the Metrolinx Vegetation Guideline (2020), the *Ontario Forestry Act R.S.O. 1990*, the *Endangered Species Act*, TRCA Compensation Guidelines and other regulations, municipal by-laws and best management practices as applicable. • If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with the Metrolinx Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties. • Pruning of branches will be conducted through the implementation of proper arboricultural techniques. • Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries in accordance with local by-law requirements. • Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx Vegetation Guideline (2020), will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections. • Compensation for tree/vegetation removals will be undertaken in accordance with provisions outlined in the Metrolinx Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties. • Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and Species at Risk (SAR), and features, e.g., Designated Natural Areas and Significant Wildlife Habitat. Refer to Natural Environment commitment tables for additional details. • A permit is required prior to the commencement of work for the Injury or removal of trees regulated by municipal Tree Protection By-Laws. • Retain existing vegetation within the Assessment Area to the extent practicable. Removals will be kept to a minimum to limit direct effects to vegetation communities and vascular flora, as well as indirect effects (e.g., soil compaction and changes to topography and drainage). • Large diameter tree removal should be avoided to the extent possible. • A permit is also required for the alteration of grade and placement of fill or refuse within an area regulated by Chapter 658, Ravine and Natural Feature Protection, of the Toronto Municipal Code [applicable to Progress Avenue only]. • As part of the Arborist Report, all trees within or adjacent to the Study Area that will be removed or injured as part of the Project will be inventoried, including Butternut and any other SAR vegetation. SAR vegetation will be subject to permitting and approval requirements under Applicable Law, prior to the commencement of construction. • Each Butternut that may potentially be removed or impacted must be assessed by a qualified Butternut Health Assessor, in accordance with MNRF *Butternut Assessment Guidelines* (2014). The Assessor will prepare a Health Assessment Report for submission to MECP to determine the next course of action.	identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. • The success of vegetation compensation activities will be monitored in accordance with the Metrolinx Vegetation Guideline (2020). The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning. • Monitoring requirements will be undertaken in accordance with conditions of permits and approvals. • Monitoring and management of trees/vegetation within the rail corridor right-of-way will be undertaken in accordance with the Integrated Vegetation Management (IVM)Program within the Metrolinx *Vegetation Guideline* (2020). Low maintenance plantings are encouraged for all future plantings within Metrolinx corridors.
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Terrestrial Environment	Potential for the spread of emerald ash borer, *Agrilus planipennis* (Fairmaire) associated with removal, handling and transport of ash trees.	●	-	Denison Street	• Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive 'D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the emerald ash borer, *Agrilus planipennis* (Fairmaire)'. To comply with this Directive, all ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. • Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Terrestrial Environment	Direct loss of landscape trees (i.e., urban forest cover).	●	-	Denison Street	• Project compensation will follow the requirements of the Metrolinx Vegetation Guideline (2020). • Avoid large diameter tree removal to the extent possible. • Establish tree protection to extent possible.	• Monitor tree protection buffer fencing for integrity. • Repair as required.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Terrestrial Environment	Footprint Impacts. Potential for the establishment of invasive species and other incompatible species	●	●	Denison Street	• An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM Program. The Guideline's selection criteria will be used to assess the vegetation present as compatible or incompatible, and manage it, if necessary, in a way which meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness. • A Clean Equipment Protocol will be developed and implemented for the Project in accordance with the Peterborough Stewardship Council and Ontario Invasive Plant Council (May 2016) Clean Equipment Protocol for Industry. The Clean Equipment Protocol will require that machinery arrive on site in a clean condition, and the access and movement of vehicles and equipment will be managed to control the introduction and spread of invasive species. Vehicles	• The presence, density, and location of compatible and incompatible species will be monitored as per the frequency and methodology established in the Bi-Annual Monitoring Program within the Metrolinx Vegetation Guideline (2020). The Bi-Annual Monitoring Program is made up of pre-treatment and post-treatment monitoring
		●	●	Kennedy Road		
		●	●	Passmore Avenue		
		●	●	McNicoll Avenue		
		●	●	Huntingwood Drive		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	●	Havendale Road	and equipment entering and leaving a site will be inspected for cleanliness and absence of invasive species.	events that will be carried out via field, aerial, and high-rail vehicle or train surveys conducted by qualified specialists.
		●	●	Progress Avenue		
Wildlife	Disturbance, displacement or mortality of wildlife	●	-	Denison Street	• Prior to construction, investigation of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate. • If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and/or its habitat. For example, construction activities will cease or be reduced, and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife. • Wildlife exclusion fencing will be installed around the construction area to protect wildlife and mitigate the ingress of wildlife onto the site as recommended by a qualified biologist. • Construction sites will be regularly maintained; litter and debris will be removed as soon as possible to deter the presence of wildlife on-site. • Construction activities and facility design will minimize off-site noise, vibration and light disturbance to nearby wildlife, to the extent possible. • Visual inspections will be completed of and around equipment and vehicles left overnight to avoid effects to wildlife.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. • Regular inspections under and around equipment and vehicles left overnight will be conducted.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Significant Wildlife Habitat	Disturbance or destruction of Migratory Butterfly Stopover Areas used by Monarch Butterflies (low probability, no milkweed observed).	●	-	Denison Street	• Opportunities to plant milkweed or forage vegetation outside of and within the rail ROW will be undertaken, where possible, and in accordance with the Metrolinx Vegetation Guideline (2020). • If vegetation clearing will proceed when Monarch larvae may be present (April 1 to September 30), milkweed plants should be inspected for Monarch larvae prior to their removal. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified biologist. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis). Entire milkweed plants should be transplanted. • Provide mitigation measures for additional migratory butterfly species as required.	• Regular monitoring will be undertaken during construction to prevent unauthorized effects to the Migratory Butterfly Stopover Areas.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Migratory Breeding Birds and Nests	Disturbance or destruction of migratory birds and/or nests.	•	-	Denison Street	• All works must comply with the *Migratory Birds Convention Act* (MBCA), including timing windows for the general nesting period (April 1 to August 31 in Ontario). • If activities are proposed to occur during the general nesting period, a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by a qualified biologist with experience conducting nest searches will be required no more than 48 hours prior to vegetation removal. If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection. • Any nest found will be protected with a buffer zone determined by a setback distance appropriate to the species, the level of the disturbance and the landscape context, until the young have permanently left the vicinity of the nest. • If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		
Species at Risk	Habitat loss, disturbance and/or mortality to Barn Swallow (detailed design will determine if construction activities have the potential to disturb potential nesting structures).	•	-	Denison Street	• Field surveys will be undertaken prior to construction to confirm the number of nests present at the known locations and whether the nests remain active. • Where loss or disturbance cannot be avoided (e.g., due to work on bridges), all requirements under the ESA will be met, including any registration, compensation, replacement structures and/or permitting requirements. • If construction activities are scheduled during the nesting season for Barn Swallow (April 1 to August 31), a nest search will be undertaken by a qualified biologist to confirm that no Barn Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize effects. • Additional monitoring measures will be developed with the MECP, if required.
		•	-	Kennedy Road		
		-	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		•	-	Progress Avenue		
Species at Risk - Bats	Habitat loss, disturbance and/or mortality to SAR Bats.	-	-	Denison Street	• Disturbance to bat roosting habitat will be avoided during the bat roosting period of April 1 to September 30 in accordance with MECP requirements.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the MECP, if required.
		•	-	Kennedy Road		
		-	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		-	-	Huntingwood Drive		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	-	Havendale Road		
		●	-	Progress Avenue		
Significant Natural Features	No potential effects during construction and operations as there are no Significant Natural Areas within the Natural Environment Assessment Area.	-	-	Denison Street	• As no effects are anticipated, no mitigation measures are required.	• No monitoring activities are required.
		-	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		-	-	Progress Avenue		
Geology and Groundwater						
Landforms and Physiography	No effects to landforms or physiographic environmental components are anticipated as a result of construction activities.	-	-	All locations	• As no effects are anticipated, no mitigation measures are required.	• No monitoring activities are required.
Bedrock Geology	No effects to bedrock geology are anticipated as a result of construction activities.	-	-	All locations	• As no effects are anticipated, no mitigation measures are required.	• No monitoring activities are required.
Soils	Construction operations could expose contaminated materials and/or result in the spreading of contaminated materials	●	-	All locations	• Develop a Soil and Excavated Materials Management Plan (SEMMP) for the handling, management and disposal of all excavated material (i.e., soil, rock and waste) that is generated or encountered during the Works. The plan will be overseen by a Qualified Person (QP) pursuant to *Ontario Regulation 153/04* under the *Environmental Protection Act* and will comply with *Ontario Regulation 406/19* (On-Site and Excess Soil Management – to be enacted into law on January 1, 2021), the Ministry of the Environment, Conservation and Parks (MECP), formerly the Ministry of the Environment and Climate Change (MOECC)'s *Management of Excess Soils: A Guide for Best Management Practices*, (MECP, April 2019, as amended) and all Applicable Law. The plan will describe how to address the management of the excavated materials, imported materials, contaminated materials, and impacted railway ties, including handling, transportation, testing, documentation and reuse and disposal of excavated	• A Soil and Excavated Material Monthly Monitoring Report will be submitted by the Constructor for Metrolinx review on a monthly basis that includes monitoring and performance data related to the management of excavated materials. • Upon completion of the work, the Constructor will submit a Soil and Excavated Material

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
					materials generated as part of the works and in accordance with applicable regulatory requirements and the project contract documents/agreement as applicable. • Non-soil materials, including railway bedding, railway ties, or ballast materials encountered during the earthworks will also require waste classification as documented by testing where applicable to determine management and disposal requirements as per *Ontario Regulation 347* (as amended) and All Applicable Law. • The SEMMP will be reviewed and approved by Metrolinx prior to construction.	Management Implementation Report to Metrolinx.
Groundwater Resources	Construction operations could expose groundwater and associated contamination	•	-	All locations	• Develop a Groundwater Management and Dewatering Plan (GMDP) to guide the handling, management, and disposal of groundwater encountered during the Works. The GMDP will be overseen by a QP and will comply with Ontario Regulations 406/19 (On-Site and Excess Soil Management – to be enacted into law on January 1, 2021), 64/16 and 387/04, as amended under the Ontario *Water Resources Act.* • The GMDP will describe the handling, transfer, testing, monitoring, disposal of groundwater generated as part of the Works and in accordance with applicable regulatory requirements and the project contract documents/agreement as applicable. The GMDP will outline general groundwater monitoring considerations during the Works and provide guidance for groundwater monitoring following the Works where considered applicable. • The GMDP will describe the anticipated groundwater quantity and dewatering Zone of Influence that will be encountered during the Works, and if approvals are needed for the water taking, such as a Permit to Take Water (PTTW) from the MECP, or an Environmental Activity Sector Registry (EASR). • The GMDP will describe the storage, transfer, and disposal and or treatment of the groundwater collected during the Works, and approvals for the water disposal, and or treatment if applicable based on the quantity and quality. • The GMDP will be reviewed and approved by Metrolinx prior to construction.	• A Groundwater Management Monthly Dashboard Report will be developed by the Constructor for Metrolinx review to document performance monitoring data/results and any corrective actions implemented. • Upon completion of the work, the Constructor will submit a Groundwater Management and Dewatering Implementation Report to Metrolinx.
Cultural Environment						
Archaeological Resources	Potential for the disturbance of unassessed or documented archaeological resources	•	-	Denison Street	• Additional Stage 1 AA for Denison Street; Stage 2 AA for Denison Street, McNicoll Avenue, Kennedy Street, Havendale Road, Huntingwood Drive, and Progress Avenue; and Stage 3 and 4, where recommend by previous stages will be undertaken by a licensed archaeologist early in and prior to the completion of detail design and submitted to MHSCTI for review. Metrolinx and/or Project Co will confirm that any AA reports submitted to MHSTCI for review have been entered into the Ontario Public Register of Archaeological Reports prior to commencing any ground disturbing activities. • Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting	• Performance of the work will occur within land previously subject to an Archaeological Assessment. • Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered. • Further AA may identify the need for monitoring during construction.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	-	Progress Avenue	from subsequent Archaeological Assessment Reports and/or subsequent changes to Applicable Law. • All work shall be performed in accordance with Applicable Law, including but not limited to the *Ontario Heritage Act*, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) Standards and Guidelines for Consultant Archaeologists (2011), and the MHSTCI document, Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario (2011). • In the event that archaeological resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment (AA) of the resources may be required. If it is determined that there is a potential for Indigenous artifacts, Metrolinx should be contacted, and Applicable Law will be followed. • If final limits of the Project Footprint are altered and fall outside of the assessed Archaeological Assessment Area, additional AA will be conducted by a professionally licensed archaeologist prior to disturbance and, prior to construction activities. This will include completing all required AAs resulting from the Stage 1 AA (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance. • For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional AA will be conducted by a professionally licensed archaeologist prior to disturbance. • If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act.* If the human remains are determined to be of Indigenous origin, Metrolinx should be contacted, and all applicable law must be adhered to. • All AA findings will be shared with Indigenous Nations, as per Metrolinx's *Guide to Engaging with Indigenous Communities* (2020).	
Built Heritage Resources and Cultural Heritage Landscapes	For any additional potentially affected Cultural Heritage Resources/properties not previously identified within a previous Metrolinx/GO	●	-	Denison Street	• If the project study limits change or there is a change in impact that is not captured or documented in previously completed Metrolinx and/or GO Transit EPRs and/or ESRs post EA/TPAP, and which causes any additional heritage properties to be impacted by the proposed design/infrastructure, all applicable legislation will be followed to carry out additional impact assessment work and heritage studies to identify any known or potential built heritage resources and	• Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/ properties as per the recommendations contained in any/all of the following
		●	-	Kennedy Road		
		●	-	Passmore Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
	Transit EA/TPAP/Other Study	●	-	McNicoll Avenue	cultural heritage landscapes, and to identify potential impacts and appropriate mitigation measures.	documents: Cultural Heritage Reports - Existing Conditions and Preliminary Impact Assessment, Cultural Heritage Evaluation Reports (CHERs), Heritage Impact Assessments (HIAs) and Strategic Conservation Plans (SCPs).
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Socio-Economic and Land Use						
Neighbourhood Characteristics	Property acquisition – permanent and temporary	●	-	Denison Street	• Specific property requirements will be determined during detailed design. Where access to property is required, ongoing consultation with affected landowners will help identify appropriate site-specific mitigation measures. • Select staging/laydown areas in accordance with Metrolinx procedures. Staging/laydown areas should be located in areas that minimize adverse effects to sensitive receivers.	• Follow Metrolinx guidance with respect to monitoring requirements at construction staging/laydown areas.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Neighbourhood Characteristics	Nuisance effects from construction activities	●	-	Denison Street	• Mitigation measures related to potential air quality and noise and vibration nuisance effects are outlined in the relevant sections of this table. . • An Erosion and Sediment Control Plan will be developed in accordance with the Greater Golden Horseshoe Area Conservation Authorities' *Erosion and Sediment Control Guideline for Urban Construction* (December, 2006), as amended from time to time, that addresses sediment release to adjacent properties and roadways. • Develop a Communications Protocol in accordance with the established guidelines, which will indicate how and when surrounding property owners and tenants will be informed of anticipated upcoming construction works, including work at night, if any. Develop a Complaints Protocol in accordance with the contract documents.	• When applicable, monitoring related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration commitment tables. • Erosion and sediment control monitoring to be conducted as per contract documents. • Number and resolution of complaints received.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Neighbourhood Characteristics	Land use and access disruption	●	-	Denison Street	• Provide well connected, clearly delineated, and appropriately signed walkways and cycling route options, with clearly marked detours where required. • Provide temporary lighting and wayfinding signs and cues for navigation around the construction site. • Develop a plan to reduce the effects of light pollution in accordance with the contract documents. • Access to businesses during working hours will be maintained, where feasible. Where regular access cannot be maintained, alternative access and signage will be provided. • Metrolinx to communicate all changes associated with land use access to impacted properties throughout the duration of the construction phase. • Communicate changes to traffic and land use access associated with the Huntingwood Drive grade separation with the staff at Sir William Osler High School. • Metrolinx to consult with local businesses associated with the Passmore Avenue and Progress Avenue grade separation regarding the construction of new public roads required to maintain access to affected locations.	• Temporary access paths, walkways, cycling routes and fencing should be monitored. • Number and resolution of complaints received.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Neighbourhood Characteristics	Safety concerns associated with the Havendale Road multi-use crossing resulting from a single point of egress on the ramps, concealed corners due to multiple ramp turns, lack of clear sightlines from street level and on the ramps, and the potential for materials to be thrown from the bridge and ramps)	-	-	Denison Street	• The design of the preferred option for the multi-use crossing will be further refined during detailed design, taking into consideration the potential effects identified in this EPR for the bridge or tunnel option, as applicable. • Additional lighting to provide increased visibility and eliminate dark/concealed areas for both the bridge and tunnel options. • Noise barriers placed along the rail corridor adjacent to the Havendale Road multi-use crossing may be transparent to provide increased visibility across the rail corridor for the bridge option.	• None anticipated at this time
		-	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	●	Havendale Road		
		-	-	Progress Avenue		
Neighbourhood Characteristics	Visual effects from construction areas/activities	●	-	Denison Street	• A screened enclosure for the development site will be provided, with particular attention to the waste disposal and material storage areas. • Consideration will be given to providing temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows, and where necessary. • Construction schedule delays will be avoided to the extent possible in order to minimize the duration of construction and corresponding visual impacts. • Metrolinx will consider maintenance of vegetation to the extent possible during construction and replanting of vegetation to maintain natural buffers where appropriate and feasible.	• Construction activities will be monitored by a qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans and within specified areas.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	-	Havendale Road		
		●	-	Progress Avenue		
Visual Impacts and Aesthetic Effects	Light trespass, glare and light pollution effects	●	-	All locations	Construction: • The Constructor will perform the Works in such a way that any adverse effects of construction lighting are controlled or mitigated in such a way as to avoid unnecessary and obtrusive light with respect to adjoining residents, communities and/or businesses. Construction and Operations: • Comply with all local applicable municipal by-laws and Ministry of Transportation (MTO) practices for lighting in areas near or adjacent to highways and roadways regarding outdoor lighting for both permanent operations and temporary construction activities, and incorporate industry best practices provided in *ANSI/IES RP-8-18 – Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting*, as described in the contract documents.	• Measure illuminance levels using an illuminance meter in accordance with ANSI/IES RP-8-18 Chapter 4. • Number and resolution of complaints received.
			●	Havendale Road		
Visual Impacts and Aesthetic Effects	Visual effects during operation	-	●	Denison Street	• Retaining walls, tunnel walls, and abutments that are public facing or accessible to the walking-public will have plain surface finishes acceptable by the local road authority and will require anti-graffiti coating treatment (if artwork will be installed by the municipality, anti-graffiti coating shall be applied after artwork installation). On all other wall treatment cases, a patterned concrete finish acceptable by the local road authority and anti-graffiti coating will be applied. • Havendale Road: – If a bridge is constructed at Havendale Road, Metrolinx will consider options to increase the visibility/transparency of the Havendale multi-use crossing structure and guardrails the use of tempered laminated glass panels or low profile barriers. – Consideration of fencing to address privacy concerns adjacent to the Havendale multi-use crossing.	• None anticipated at this time.
		-	●	Kennedy Road		
		-	●	Passmore Avenue		
		-	●	McNicoll Avenue		
		-	●	Huntingwood Drive		
		-	●	Havendale Road		
		-	●	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Visual Impacts and Aesthetic Effects	Loss of privacy	•	-	Denison Street	• The surrounding community will be notified of initial construction plans, as well as any future modifications as they occur. • The ability to see from the Havendale Road multi-use crossing into private property is anticipated to be limited given the location of the bridge and ramps. • Metrolinx will consider maintenance of vegetation to the extent possible and replanting of vegetation to maintain natural buffers where appropriate and feasible. • Consideration of fencing to address privacy concerns adjacent to the Havendale multi-use crossing.	• None anticipated at this time.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	•	Havendale Road		
		•	-	Progress Avenue		
Utilities	Utility serviceability effects due to design requirements and construction	•	-	Denison Street	• Develop and implement a detailed Utility Infrastructure Relocation Plan that identifies all utilities anticipated to be impacted by the construction works, all relevant utility agencies and authorities, and outlines the approach to the utility relocation process. The Utility Infrastructure Relocation Plan will be developed in accordance with the contract documents. • Additional surveys shall be performed prior to construction to field locate and verify the existing utilities within the project area and document their condition. • Perform all work identified in the Utility Infrastructure Relocation Plan to protect, support, safeguard, remove, and relocate all Utility Infrastructure. • Obtain permits and consents from and with all Utility Companies with respect to the design, construction, installation, servicing, operation, repair, preservation, relocation, and or commissioning of Utility Infrastructure. • Ensure minimizing impact to the Train Service Plans and to continuity of service and disruption to property owners and customers of the Utility Companies to the satisfaction of the Utility Companies and Metrolinx.	• Maintain regular communication and coordination through issuance of regular progress reports and updates to applicable utility agencies. • Record all installation tolerances and how they are to be monitored. • Perform inspection and testing to ensure successful utility relocation and safe and efficient installation. • In the event of potential impacts to critical utilities, instrumentation and monitoring shall be carried out to protect the critical utilities and structures and reduce risks of damage due to construction activities.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Utilities	Future Utility Maintainability	-	●	Denison Street	• Where new utility crossings are proposed, application for a new utility crossing agreement will be required. Where modifications to an existing utility crossing takes place, updates to an existing utility crossing will be needed. • Post-construction inspections of the new utility infrastructure shall be undertaken for applicable works upon completion of the construction works to document condition. • Obtain as-built plans of the relocated infrastructure from utility agencies per as-built preparation standards *CSA S250-11 – Mapping of Underground Utility Infrastructure* (2011), as amended from time to time.	• Develop and implement tracking system for as-built deliverables.
		-	●	Kennedy Road		
		-	●	Passmore Avenue		
		-	●	McNicoll Avenue		
		-	●	Huntingwood Drive		
		-	●	Havendale Road		
		-	●	Progress Avenue		
Air Quality						
Air Quality	Construction related air pollution may pose risks to human health and wellbeing	●	-	All Project Components	• Prior to commencement of construction, develop and implement a detailed Construction Air Quality Management Plan (AQMP). The AQMP will: – Demonstrate compliance with the specific air quality criteria and limits in the Metrolinx *Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment* (2019). – Define the Project's air quality impact zone and identify all sensitive receptors within this area. – Assess the baseline air quality by continuous measurement of local ambient concentrations of $PM_{2.5}$ and PM_{10} over a minimum period of one week, where large local sources of pollution, such as highways, directly affect the zone of influence of the Project. – Estimate and document the predictable worst-case air quality impacts of the Project on sensitive receptors within the air quality impact zone, develop appropriate mitigation measures, demonstrate their effectiveness, and commit to their timely implementation. – Monitor continuously any contaminant, in addition to $PM_{2.5}$ and PM_{10}, which is predicted to exceed its relevant air quality exposure criterion during any phase of the Project and at any receptor. – Include explicit commitment to the implementation of all applicable best practices identified in the Environment Canada document, *Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities* (2005). • Develop a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction. • Refer to the Construction Phase Air Quality Impact Assessment Report (Appendix A5) for further detailed mitigation measures.	• Develop and implement Weekly Air Quality Monitoring Plans that document how air quality monitoring has been conducted and compliance assessed to effectively prevent unacceptable rates of air emissions in accordance with the following guidelines: – The construction related air contaminants of primary concern are in the form of particulate matter, with the principal construction related fractions of $PM_{2.5}$ and PM_{10} - particulate matter of less than 2.5 and 10 micron in diameter, respectively. Other contaminants of concern include crystalline silica and oxides of nitrogen. The list of contaminants will be expanded with any and all air pollutants that may be produced as a result of the work. – The criteria for $PM_{2.5}$, PM_{10} and crystalline silica are provided in Metrolinx's

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
						Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment (2019). The applicable criteria for all other air contaminants of concern are to be found in the various schedules of *Ontario Regulation 419/05*. – Siting of the monitors should generally follow the guidelines provided in the Ministry of the Environment, Conservation and Parks (MECP) *Operations Manual for Air Quality Monitoring in Ontario* (2018). • Refer to the Construction Phase Air Quality Impact Assessment Report (Appendix A5) for detailed monitoring activities.
Air Quality	Exhaust emissions of diesel powered trains contribute to local and regional air pollution	-	•	All Project Components	<u>Mitigation Measures</u>: • A detailed Operations Air Quality Management Plan will be developed and implemented to limit the generation and dispersion of airborne particulate matter, NO_X and other air contaminants associated with the project operations. • New traction engines or propulsion systems and new auxiliary engines and power units will meet higher emission standards (i.e., Tier 4 diesels rather than lower tier diesels). • Engines and their emission control equipment will be maintained to manufacturers' specifications. • Rebuilt diesel engines will meet Tier 4 emission standards at the time of major engine rebuilds. • Unnecessary train / engine / propulsion system idling will be minimized through technical and operational measures. • Unnecessary non-revenue equipment runs will be minimized through design and planning. <u>Mitigation Criteria</u>: • Diesel engines used for traction and auxiliary power in locomotives and DMUs are subject to corresponding US EPA and Transport Canada heavy-duty diesel engine exhaust emission standards for CO, PM, NOx and HC	• On-site inspections will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. • Annually, test train propulsion and auxiliary power units, which produces exhaust emissions and ensure that they remain in compliance with applicable Transport Canada heavy-duty diesel engine exhaust emission standards for CO, PM, NOx and HC. Engine testing will include: – Testing at no load – Testing at 50% load – Testing at 100% load • Test rebuilt traction and auxiliary power diesel engines, before being placed into service, to the exhaust

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
						emission standards they are rebuilt to meet. • Develop an Air Sampling and Monitoring Plan and submit an annual report summarizing all sampling and monitoring results accumulated over the preceding year.
Noise and Vibration						
Construction and Maintenance-related Noise	Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health. The severity of the noise effects resulting from construction projects varies, depending on: • Scale, location and complexity of the project. • Construction methods, processes and equipment deployed. • Total duration of construction near sensitive noise receptors. • Construction activity periods (days, hours, time period). Number and proximity of noise-sensitive sites to construction area(s).	•	-	All Project Components	• Prior to commencement of construction, develop and submit a detailed Construction Noise Management Plan. • The Construction Noise Management Plan shall: – Document and commit to all measures to be taken for meeting the noise exposure limits documented in the Metrolinx *Guide for Noise and Vibration Assessment* (2020) at every directly exposed sensitive receptor and throughout the entire project. – Determine the Zone of Influence for construction related noise based on the noise exposure limits outlined in the Metrolinx *Guide for Noise and Vibration Assessment* (2020) and taking into consideration the construction site, staging and laydown sites and hauling routes, each stage of the construction (including demolition), the overall construction schedule along with the schedule of each major component and associated major construction processes and equipment usage. – Identify all sensitive receptors that fall within the Zone of Influence for construction related noise. Mitigation measures will be proposed for these sensitive receptors, and the effects of the proposed mitigation measures will then be evaluated using noise modelling. If results of the modelling indicate that any sensitive receptors still remain within the Zone of Influence for construction related noise, then the following shall apply: ✓ Additional mitigation is proposed and subsequently modelled until the sensitive receptor does not fall within the Zone of Influence; or ✓ If mitigation strategies are not viable, receptor based mitigation will be proposed. • The Construction Noise Management Plan will include the temporary/permanent noise barriers indicated in the applicable noise and vibration construction impact assessment report (2020). Where additional work sites are identified which were not assessed as part of the applicable noise and vibration construction impact assessment report (2020), or where construction activities at any given site differ from those considered in this report, conduct modelling to evaluate the need for additional noise barriers as part of the Construction Noise Management Plan.	• The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and noise related complaints: – Monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. At these locations, monitor noise continuously at each geographically distinct, active construction site with one monitor located strategically to capture the highest exposure level based on planned construction activities and the number, geographic distribution and proximity of noise sensitive receptors. Develop weekly reports describing the monitoring conducted and summarizing the data collected for the reporting period. The reports will include but not be limited to the number and duration of any incident during which any of the noise exposure limits documented in the Metrolinx *Guide for Noise and Vibration Assessment* (2020) were exceeded, the probable cause of each

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
						exceedance, the incident-specific measure(s) implemented, the resulting mitigated noise levels and the complaints investigation procedure. – Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction.
Operational Noise (*Trains)*	Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health. If operations are projected to cause a 5-dB increase or greater in the average energy equivalent noise (referred to as "Leq") relative to the existing noise level or the MECP objective of 55 dBA for daytime and 50 dBA for night-time, whichever is higher, then mitigation is required.	-	●	Linear Facilities	<u>Mitigation per TPAP Study Report (Noise Barriers):</u> • Deploy the noise barriers defined in the *Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020* (RWDI). • Maintain noise barriers so as to ensure their continued effectiveness in noise reduction. • If deviating from the assessments made in the *Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020* (RWDI), comply with the noise impact and assessment criteria in the Metrolinx *Guide for Noise and Vibration Assessment* (2020). <u>Mitigation at the Source:</u> • Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below. <u>Mitigation Criteria:</u> • Meet the following long-term day-time/ night-time maximum noise exposure objectives at all noise sensitive receptors across the system, where background noise levels allow their realization: – 10-year objective: 70/60 dBA – 20-year objective: 60/50 dBA – 25-year objective: 55/50 dBA • Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol. • Meet the ground-borne (vibration induced) noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol. • Meet any additional future criteria or guidance developed by regulatory agencies, as applicable.	• Measure and document the Leq (16-hour) and Leq (8-hour) noise levels, under predictable worst-case conditions, at locations where new noise mitigation barriers have been provided per the 2020 noise and vibration studies and per the Metrolinx Enhanced Mitigation Program. Outdoor measurements will be carried out in accordance with MECP requirements and US FTA Report No. 0123, *Transit Noise and Vibration Impact Assessment Manual* (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s). • Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to noise emissions as part of maintenance to ensure continued compliance with manufacturer specifications. • Assess the condition and performance of the rail tracks and switches with respect to noise as part of maintenance to ensure continued compliance with manufacturer specifications.

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Construction and Maintenance-related Vibration	Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures.	●	-	All Project Components	• Adhere to the following vibration exposure limits: – Vibration, as a human irritant, is assessed in terms of its average level. Vibration velocity should not exceed 0.14 mm/s or current conditions (whichever is higher) by more than 25%. – As a threat to buildings, vibration is assessed in terms of its peak value. The Zone Of Influence for vibration shall be the area where structures are expected to experience vibration peak particle velocities that exceed 5 mm/s. Vibration velocity should be limited to 8-22 mm/s, depending on vibration frequency. These limits are prescribed by the *City of Toronto* by-law *Vibration: Chapter 363 dated November 27, 2019* for typical structures (not building with special needs). • Adhere to the ground-borne (vibration induced) noise exposure criteria in the US FTA Report No. 0123, *Transit Noise and Vibration Impact Assessment Manual* (2018). • Develop and implement a detailed Construction Vibration Management Plan for Metrolinx review and approval with minimum requirements outlined below: – Complete a detailed construction related vibration assessment prior to the commencement of construction that includes assessment of the vibration Zone Of Influence. The Zone Of Influence for vibration shall be established by using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), *Transit Noise and Vibration Impact Assessment Manual* (2018). – Complete pre-construction condition surveys for properties within the vibration Zone Of Influence of the planned work to establish their condition and establish a baseline prior to any work beginning. – Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures. – Identify buildings, where vibration sensitive activities such as sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures. – Establish a 15-metre setback distance between the construction vibration source and nearby buildings, where possible, to minimize impacts. If this is not possible, then monitor the vibration levels associated with the activity. – Select construction/maintenance methods and equipment with the least vibration impacts. – In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available.	• The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints: – Monitor vibration continuously at structures where the Construction Vibration Management Plan indicates that structures are deemed to be within the Zone Of Influence for construction related vibration or at additional structures as requested by Metrolinx. – The type of Vibration Monitoring Program that is established is based on the vibration Zone Of Influence, the project location, duration, presence of night-time activity, and receptor proximity. The monitoring types include: ✓ Type 1: Monitoring continuously throughout the project (for receptors within the Zone Of Influence). ✓ Type 2: Monitoring during most impactful phases of the project only (for receptors outside of the Zone Of Influence but within 50 m of the boundary of the construction site). ✓ Type 3: Monitoring in response to complaints only (for receptors outside of the Zone Of Influence and beyond 50 m of the boundary of the construction site).

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
						• Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction.
Operational Vibration (*Trains)*	Vibration can cause annoyance, interfere with human activity and affect human health. It may also cause building damage. A change in vibration levels may occur where there are changes in track alignment, addition of new track, and changes to or addition of special track work. Vibration levels may also change with changes in rail vehicle specifications and operating conditions.	-	•	Linear Facilities	<u>Mitigation per TPAP Study Report</u>: • Deploy mitigation recommended in the *OnCorr Noise and Vibration Study Report* (RWDI). Review and update the vibration assessment during the design of new infrastructure at representative receptor locations to ensure compliance with the vibration exposure criteria in the MOEE/GO Transit *Draft Protocol for Noise and Vibration Assessment* (1994). <u>Mitigation at the Source</u>: • Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below. <u>Mitigation Criteria</u>: • Meet the ground-borne vibration criteria in the 1995 MOEE/GO Transit Noise and Vibration Protocol.	• Measure and document the vibration impacts, under predictable worst-case conditions, of each distinct type of GO Transit train consistently operating in the corridor of interest at locations where the 2020 noise and vibration studies recommends mitigation of vibration impacts. Measurements will be carried out at or near representative vibration sensitive receptors in accordance with MECP requirements and US FTA Report No. 0123, *Transit Noise and Vibration Impact Assessment Manual* (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s). • Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to vibration levels as part of maintenance to ensure continued compliance with manufacturer specifications. • Assess the condition and performance of the rail tracks and switches with respect to vibration levels as part of maintenance to ensure continued compliance with manufacturer specifications.

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Traffic and Transportation						
Road Network	Construction may result in the need for temporary road or lane closures changing access to nearby land uses.	●	-	Denison Street	• Traffic Control and Management Plan(s) will be developed prior to construction to maintain reasonable access through work zones, to the extent possible. • Access to nearby land uses will be maintained to the extent possible. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur. • Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate wayfinding, regulatory, and warning signs. • Traffic signal timing optimization may be assessed/implemented to increase capacity of affected intersections and to aid in the movement of traffic. Traffic signal timing adjustments would require coordination between Metrolinx and the relevant municipality, and will be undertaken if required, to determine appropriate changes to traffic signal timings. • Existing sidewalks and crossings will be maintained to the extent possible. • Construction schedules will be shared with the public in advance of any construction works to reduce traffic during peak hours.	• Traffic impacts to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period. • Cycling network impacts to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Road Network	Removal of rail crossings / road closure may require modifications to traffic signal timing at adjacent intersections.	-	●	Denison Street	• Traffic signal timing optimization may be assessed/implemented to increase capacity of affected intersections and to aid in the movement of traffic. Traffic signal timing adjustments would require coordination between Metrolinx and the relevant municipality, and will be undertaken if required, to determine appropriate changes to traffic signal timings.	• Traffic impacts to be monitored in accordance with municipal requirements
		-	●	Kennedy Road		
		-	●	Passmore Avenue		
		-	●	McNicoll Avenue		
		-	●	Huntingwood Drive		
		-	●	Havendale Road		
		-	●	Progress Avenue		
Traffic Network	Construction may result in access restrictions to local bus routes, temporary changes in bus stop shelters/locations and temporary disruptions	●	-	Denison Street	• Ensure that the public is notified in advance of any potential service disruptions. • Consult with local transit agencies to establish a suitable mitigation strategy to be implemented.	• Traffic impacts to be monitored in accordance with the Traffic Control and Management Plan and adjusted as necessary during the construction period.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
	to the existing rail corridor.	-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		●	-	Progress Avenue		
Cycling, Pedestrian and Trail Network	Temporary effects on cyclists / pedestrians such as temporary partial or full sidewalk closures.	●	-	Denison Street	• Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate way finding, regulatory, and warning signs. • Special directional signage will be considered to help pedestrians and cyclists avoid any potential construction activities. • Existing sidewalks and crossings will be maintained to the extent possible. • Construction schedules will be shared with the public in advance of any construction works to reduce traffic during peak hours.	• Cycling network effects to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Cycling, Pedestrian and Trail Network	Effects on the flow of cyclists / pedestrians during operations	-	●	Havendale Road	• Once the new Havendale multi-use crossing is operational, properly marked and well-connected walkways and cycling routes will be provided, as well as appropriate signage for the terminated road and road detours where required. • Design elements were incorporated into the exit of the ramp structure on both sides of the rail corridor at the Havendale multi-use crossing, providing cyclists with indirect access to Havendale Road and preventing the potential for cyclists to inadvertently exit directly onto Havendale Road.	• No monitoring required.
Stormwater Management						
Potential Impacts and Proposed Mitigation Measures for Stormwater and Site Drainage	The proposed construction activities pose a potential impact due to sediment transport into adjacent natural areas including watercourses, wetlands and municipal drainage infrastructure.	●	●	Denison Street	• Prepare and implement a Drainage and Stormwater Report, an Erosion and Sediment Control Plan, detailed drainage design and erosion and sediment control drawings in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual (2003), Toronto and Region Conservation Authority's (TRCA) Erosion and Sediment Control Guideline for Urban Construction (2019), as amended from time to time, and the guidelines and regulatory requirements of the Conservation Authority having jurisdiction. • The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial and federal requirements, as	• Turbidity levels within discharges from sites to be monitored visually. Turbidity levels will be monitored upstream and downstream of sites at watercourse crossings or adjacent to watercourses. Turbidity levels within discharges from sites and within receiving storm sewers will also be monitored visually
		●	●	Kennedy Road		
		●	●	Passmore Avenue		
		●	●	McNicoll Avenue		
		●	●	Huntingwood Drive		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
	The proposed works may result in increases to impervious areas, with potential effects to water quantity and quality. In addition to the increases in impervious coverage, there may be alterations to the local drainage system, both overland (major drainage system) and storm sewers (minor drainage system).	•	•	Havendale Road	amended, as well as the requirements of Conservation Authorities having jurisdiction. • A detailed assessment of proposed ditches along the rail corridor is required to ensure adequate drainage conveyance in accordance with municipal requirements and American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (2019). • Infiltration requirements for municipalities will be determined as per the design guidelines and standards. • Kennedy Road: To offset the potential impacts to wetlands, the grades and drainage system on the periphery of the grade separation may need to be designed to result in minor local drainage diversions to the wetland features. An annual water budget for existing, future (without mitigation) and future (with mitigation) would have to be conducted. Input from a terrestrial biologist is required to review the annual water budget variations for existing and future conditions. • Progress Avenue: Any proposed bridge expansions and culvert replacements will be sized to maintain or improve local flood levels and supported by hydrologic/hydraulic calculations and/or models. Creek bed and banks design will include geomorphological input for scour and erosion prevention, and creation of appropriate fish habitat. • Progress Avenue: A hydraulic assessment of each crossing and any proposed bridge expansions (replacements) is required to determine proposed flood levels and associated creek bed and bank treatments to prevent scour and erosion and facilitate fish passage. Where applicable, the regulatory model(s) will be obtained from the local Conservation Authority to assess the hydraulic impacts along regulated watercourses. • Develop and implement a Spill Prevention and Response Plan in accordance with the Project Agreement.	to determine potential impacts from construction. • Grab samples for existing watercourses and/or wetlands, when runoff from the site discharges to a watercourse and/or wetland will be conducted for pre-construction, during construction, and post construction conditions until the site is considered stabilized. Grab samples for watercourses and wetlands will be taken for non-precipitation event and for precipitation events to obtain a reasonable understanding of the turbidity levels. Post-construction monitoring of wetland areas may be required depending on input from Conservation Authorities. • Monitoring will be conducted for potential oil spills and containment of spills to be conducted as per provincial requirements. • Functionality of stormwater quantity controls including peak flows and water levels for storm events within the design range. Monitoring would require local rainfall data. • Infiltration targets, measured by flow monitoring on infiltrative Low Impact Development Best Management Practices. • Stormwater quality measures will be assessed to provide a minimum 80% Total Suspended Solids removal as per the MECP *Stormwater Management Planning and Design Manual* (2003).
		•	•	Progress Avenue		

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Consultation Process

Metrolinx consulted with government agencies, municipalities, elected officials, members of the public (including local residents, businesses and interest groups), and Indigenous Nations through various communication methods during both the Pre-Planning and TPAP activities.

Consultation for this Project occurred in two main stages – Pre-Planning activities undertaken prior to the Notice of Commencement of the TPAP on September 8, 2020; and regulated TPAP consultation activities undertaken following the Notice of Commencement of the TPAP. Pre-Planning activities included obtaining input from government agencies, municipalities, elected officials, members of the public, interested parties, and Indigenous Nations. Figure ES.3 shows how public consultation is integrated into steps of the TPAP.

Following the Pre-Planning activities, the TPAP follows six required key steps that include consultation activities (illustrated in Figure ES.3):

1 Contact with the MECP and identification of interested agencies and Indigenous Nations.

2 Issuance of the Notice of Commencement of TPAP.

3 Assessment process and consultation with project stakeholders (government agencies, municipality, elected officials, members of the public) and Indigenous Nations.

4 Issuance of the Notice of Completion of the EPR (within 120 days following the Notice of Commencement).

5 Provision of 30 days for government agencies, elected officials, members of the public, and Indigenous Nations to review the EPR.

6 35 days for the Minister of the Environment, Conservation and Parks to review the EPR, followed by the submission of a Statement of Completion by the proponent.

A summary of consultation activities is provided below and detailed in Section 6.0.

Project Website

The Project website www.metrolinxengage.com was maintained to service as a virtual library of materials from public meetings and other Project reports and documentation, as well as a posting location for public notices. The project website also acted as a forum for the public to provide comments on the Project as an alternative to attending

public meetings. A copy of the draft and final environmental studies and display boards were made available for review.

Stakeholder and Indigenous Nations Consultation and Engagement

Metrolinx provided an opportunity to review agencies, the municipalities, Indigenous Nations, adjacent property owners, adjacent business owners, and community groups to participate in meetings and discussions.

Public Meetings

Metrolinx hosted a series of Public Meetings in February 2020 to share general information about the Project and the GO Expansion Program. The purpose of the Public Meetings was to introduce the Project and Project team to the community, to provide information early in the process and allow the public to have input and provide feedback. At the two Public Meetings featuring the Project, there were 80 and 25 attendees on February 18, 2020 and February 26, 2020, respectively.

Due to the COVID-19 pandemic and related concerns regarding social distancing and indoor gathering restrictions, a second series of Public Meetings were hosted virtually from August 18, 2020 to September 1, 2020. The purpose of the public meeting was to provide additional details regarding the Project, including results of the environment studies undertaken in support of the Project. There were over 1,000 webpage views.

A third and final series of virtual Public Meetings were hosted from November 27, 2020 to December 11, 2020. The purpose of the public meeting was to provide current information regarding the grade separations at Passmore Avenue and Progress Avenue, results from the Traffic Impact Study and construction sequencing considerations.

Notifications and Newspaper Advertisements

A Notice of Public Meeting #1 was prepared to invite residents, agencies, municipalities, Indigenous Nations and other interested persons to attend the meeting to learn about the Project and provide their questions and/or comments to members of the Project Team. This Notice was also published in the Toronto Star (February 1 and 8, 2020), Le Metropolitain (January 30 and February 6, 2020) and L'Express (January 31 and February 7, 2020) as well as being advertised through radio announcements on 680 News and 97.3 FM, from January 27 through to February 8, 2020.

On August 18, 2020, notifications were posted on Metrolinx social media platforms and emails were sent to contacts on the distribution list to advertise Public Meeting #2.

The Notice of Commencement was published in newspapers beginning on September 8, 2020 and distributed via email to the contact list as well as via a posting to www.metrolinxengage.com. The Notice of Commencement was also provided via bulk mailout to properties within 100 metres on either side of rail corridors where GO Expansion infrastructure is proposed.

Between November 27, 2020 and December 11, 2020, notifications for Public Meeting #3 were posted on Metrolinx social media platforms and emails were sent to contacts on the distribution list. Notification was also provided via bulk mailout to properties within 100 metres on either side of rail corridors where GO Expansion infrastructure is proposed.

The Notice of Completion was published in newspapers beginning on January 5, 2021 and distributed via bulk mailout (properties within 100 m of Project Footprint) and via email to the contact list. The Notice of Completion was also posted to www.metrolinxengage.com.

Project Updates Distribution List

Potentially interested parties (including members of the public, property owners, review agencies, Indigenous Nations, elected officials, and interested groups) were initially identified through review of the MECP Government Review Team (GRT) list, reaching out to local and regional municipal bodies and agencies with jurisdiction in the Study Area, obtaining a list of Indigenous Nations contacts from the MECP and MTO, and obtaining a list of property owners within close proximity to the Study Area. The contact list for the Project has evolved throughout the EA process, based on the level of interest expressed by individuals or additional guidance received by regulatory bodies. A stakeholder mailing list and mailing distribution map were prepared and are included in Appendix B.

Project E-mail

A direct email address (GOExpansionTPAP@metrolinx.com) was created and monitored regularly by Metrolinx staff. In addition, a regional email was provided for public feedback in response to the public meetings. Project stakeholders were encouraged to provide feedback via YorkRegion@metrolinx.com and TorontoEast@metrolinx.com.

Mailings

Project notices were mailed to all residents, agencies, municipalities, Indigenous Nations and other interested persons on the distribution list via Canada Post. On January 31, 2020, in advance of the first public meeting, a letter was sent to potentially impacted property owners notifying the recipients that their property may be affected by

the Project. A similar letter was sent on August 12, 2020 in advance of the second public meeting.

Climate Change Considerations

The MECP has prepared a guide titled *Considering Climate Change in the Environmental Assessment Process* (MECP 2017), to describe how EA processes can incorporate consideration of climate change effects. Considering climate change in accordance with the guide is meant to result in a project that is more resilient to future changes in climate and helps maintain the ecological integrity of the local environment in the face of a changing climate.

The climate change assessment contained in this EPR focuses on the various design and mitigation measures that will support climate change mitigation and adaptation during construction and operations of the Project.

Since the Project will be operational for the foreseeable future, it will likely be affected by future climate change-related events such as droughts or intense precipitation. As a result, designs, construction and operation stages of the Project should consider the potential for these future events. The Project will continue to take climate change considerations into account as the design progresses.

Future Commitments and Monitoring

O. Reg. 231/08 requires future commitments, including required permits and approvals to be documented as part of the TPAP. The intent of this requirement is to facilitate project implementation in accordance with project-specific mitigation measures and monitoring activities described in this EPR in a manner that does not result in negative impact on matters of provincial interest related to the natural environment or to cultural heritage value or interest, or on constitutionally protected Aboriginal or treaty rights.

This EPR outlines the commitments made by Metrolinx as a part of the TPAP to continue to obtain permits and approvals required for the construction of improvements to, and, as applicable, ongoing operations of the Project. Metrolinx has also committed to monitoring and adaptive management of mitigation measures throughout construction activities.

All applicable permits, approvals, and monitoring requirements under environmental laws will be reviewed, confirmed and obtained by Metrolinx prior to the construction of the Project. A complete table of future commitments is provided in Section 7.0 of this EPR.

As part of future commitments, an Addendum to the EPR may be required if Project developments result in a significance change from what was assessed in this EPR during the approvals, detailed design, and construction processes. The TPAP includes provisions in *O. Reg. 231/08* for proponents to make changes to a transit project after the Statement of Completion is submitted to the Director of the Environmental Assessment and Permissions Branch of the MECP and the MECP Regional Director. In compliance with *O. Reg. 231/08*. Metrolinx will prepare an addendum to the EPR if there is a proposed change to the Project that is inconsistent with the EPR after the Statement of Completion is issued. A change that is inconsistent with the EPR is generally defined as one for which the effects have not been accounted for in the EPR, either directly or through a contingency planning approach in which a worst-case scenario has been contemplated and a protocol for addressing change has been included in the EPR. Further details describing the EPR addendum process and requirements are provided in Section 1.8 of this EPR.

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Glossary of Terms and Acronyms

AA	Archaeological Assessment
ANSI	Areas of Natural and Scientific Interest
AODA	*Accessibility for Ontarians with Disabilities Act*
AQ	Air Quality
AQMP	Air Quality Management Plan
Assessment Area	Geographic area examined for discipline-specific Project studies
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CC	Coefficient of Conservatism
CHER	Cultural Heritage Evaluation Report
CHRs	Cultural Heritage Resources
CHSR	Cultural Heritage Screening Report
CHVI	Cultural Heritage Value or Interest
CN	Canadian National Railway
COI	Contaminants of Interest
CPTED	Crime Prevention Through Environmental Design
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EAA	*Environmental Assessment Act*
EASR	Environmental Activity Sector Registry
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification

EMMP	Environmental Mitigation and Management Plan
EMS	Emergency Medical Services
EPB	electrification protection barriers
EPR	Environmental Project Report
ESA	*Endangered Species Act*, 2007 (Ontario)
ESC	Erosion and Sediment Control
ESR	Environmental Study Report
GGH	Greater Golden Horseshoe
GHG	Greenhouse Gas
GMDP	Groundwater Management and Dewatering Plan
GPS	Global Positioning System
GRT	Government Review Team
GTHA	Greater Toronto and Hamilton Area
HIA	Heritage Impact Assessment
I.S.A.	International Society of Arboriculture
IAA	*Impact Assessment Act*
IO	Infrastructure Ontario
IPCC	The Intergovernmental Panel on Climate Change
IVM	Integrated Vegetation Management
LIO	Land Information Ontario
MBCA	*Migratory Birds Convention Act*
MECP	Ministry of the Environment, Conservation and Parks
MHSTCI	Ministry of Heritage, Sport, Tourism and Culture Industries

MMA	Ministry of Municipal Affairs
MMAH	Ministry of Municipal Affairs and Housing
MNRF	Ministry of Natural Resources and Forestry
MOECC	Ministry of the Environment and Climate Change
MTCS	Ministry of Tourism, Culture and Sport
MTO	Ministry of Transportation
N&V	Noise and Vibration
NAPS	National Air Pollution Surveillance Network
NHIC	Natural Heritage Information Centre
O. Reg.	Ontario Regulation
O. Reg. 231/08	*Ontario Regulation 231/08, Transit Projects and Metrolinx Undertakings* (a.k.a. Transit Projects Regulation)
OCS	Overhead Catenary System
OHT	Ontario Heritage Trust
OPSS	*Ontario Provincial Standard Specification*
OWRA	*Ontario Water Resources Act, R.S.O. 1990, c. O.40*
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
pH	Potential of Hydrogen
PHC	Petroleum Hydrocarbon
POR	Points of Reception
PPS	Provincial Policy Statement, 2014
PSW	Provincially Significant Wetlands
PTTW	Permit to Take Water

PWQO	Provincial Water Quality Objective
QP	Qualified Person
RER	Regional Express Rail
RoC	Record of Consultation
ROW	Right-of-Way
RTP	Regional Transportation Plan
SAR	Species at Risk
SARA	*Species at Risk Act (Federal)*
SARO	Species at Risk in Ontario
SASP	Site and Area Specific Policies
SCP	Strategic Conservation Plan
SCS	Site Condition Standards
SEMMP	Soil and Excavated Materials Management Plan
SOCC	Species of Conservation Concern
STEAM	Sound from Trains Environmental Analysis Method
SWH	Significant Wildlife Habitat
SWHTG	Significant Wildlife Habitat Technical Guide
SWM	Stormwater Management
TAC	Technical Advisory Committee
TC	Transport Canada
TCLP	Toxicity Characteristic Leaching Procedure
TIA	Transportation Impact Assessment
TMC	Turning Movement Counts

TPAP	Transit Project Assessment Process
TPZ	Tree Protection Zone
TRCA	Toronto and Region Conservation Authority
TSS	Total Suspended Soils
TTC	Toronto Transit Commission
TTS	Transportation Tomorrow Survey
VIA	VIA Rail Canada
VOCs	Volatile Organic Compounds
YRT	York Region Transit
ZOI	Zone of Influence

Units and Measurements

bgs	below ground surface
cm	centimetre
ha	hectare
km	kilometre
m	metre
m asl	metre above sea level
m bgs	metre below ground surface
mm	millimetre

1.0 Introduction and Study Process

Metrolinx is expanding its services as part of the GO Expansion Program which will increase services both in terms of train frequency and availability across its seven rail corridors. Metrolinx is committed to providing new travel choices for commuters, significantly increasing transit ridership, cutting journey times and helping manage congestion across the Greater Golden Horseshoe (GGH). The GO Expansion Program is an investment program that will transform GO Rail into a comprehensive regional rapid transit network system that provides the expanded mobility the GGH needs to accommodate growth and maintain a high quality of life and prosperous economy. Metrolinx completed a full business case for the GO Expansion Program to illustrate the proposed investment program, its benefits and costs, and core requirements to successfully implement the program to decision makers, the public, and funding partners (Metrolinx 2018a). The long-term goal and vision of the GO Expansion Program is to provide 15-minute two-way all-day service along the Stouffville Rail Corridor. With major investment in GO Rail infrastructure, Metrolinx will be quadrupling GO Rail service and nearly doubling GO Rail ridership. By 2055, annual ridership is expected to exceed 200 million, compared to 105 million without GO Expansion. Ongoing Metrolinx initiatives are shown in Figure 1.1. Infrastructure modifications are being planned to support the introduction of additional trains on the Stouffville Rail Corridor. Reducing the number of at-grade rail crossings along the Stouffville Rail Corridor will enhance on time performance and operational flexibility/reliability.

The Stouffville Rail Corridor generally runs in a north-south direction from Lincolnville GO Station, in the Town of Whitchurch-Stouffville, to Scarborough Junction, located just northeast of the Scarborough GO Station, in the City of Toronto (Figure 1.1). From Scarborough Junction, service continues west to Union Station along the Lakeshore East Rail Corridor.

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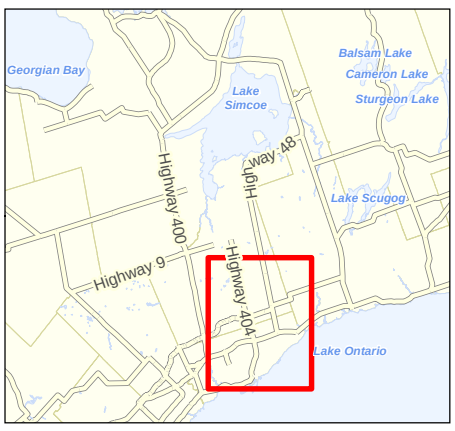

Legend

- Station Location
- Proposed Grade Separation Location
- Stouffville Train Line
- Expressway / Highway
- Major Road
- Minor Road
- Railway

0 3,500 7,000 metres

1:142,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery Date, 2017.

Stantec

Project Location — Prepared by BCC on 2020-12-16
Greater Toronto Area
Ontario

Client/Project — 165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
1.1

Title
Stouffville Rail Corridor

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The Project will address seven existing at-grade road-rail crossings along the Stouffville Rail Corridor at the following roadways:

- City of Markham
  - Denison Street (Mile 51.98[1])
- Regional Municipality of York (York Region)
  - Kennedy Road (Mile 52.40)
- City of Toronto
  - Passmore Avenue (Mile 53.16)
  - McNicoll Avenue (Mile 53.61)
  - Huntingwood Drive (Mile 54.88)
  - Havendale Road (Mile 55.16)
  - Progress Avenue (Mile 56.72)

The Project is being assessed in compliance with the Transit Project Assessment Process (TPAP) under *Ontario Regulation* (O. Reg.) *231/08, Transit Projects and Metrolinx Undertakings* under the *Environmental Assessment Act* (EAA). Further information on the TPAP can be found in Section 1.6.

1.1 Project Proponent

The EAA defines “proponent” as a person who:

a) Carries out or proposes to carry out an undertaking; or

b) Is the owner or person having charge, management or control of an undertaking.

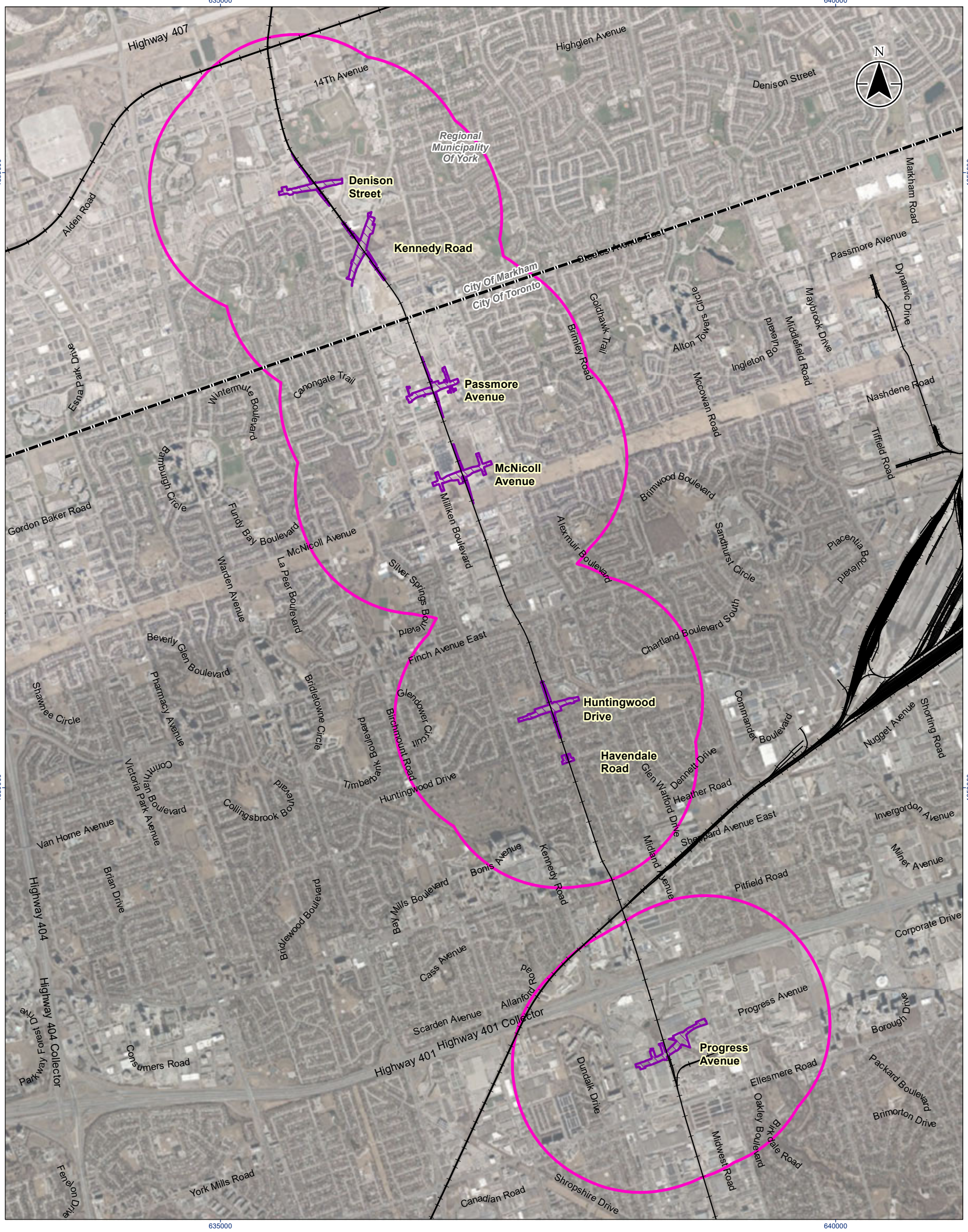
[1] A mile marker indicates distance along the rail network. For the Uxbridge Subdivision, which includes the Stouffville Rail Corridor, originates at Lincolnville, Town of Whitchurch-Stouffville, at Mile 39.00 and terminates at Scarborough Junction, City of Toronto, at Mile 61.03. Historically, the Uxbridge Subdivision originated in Lindsay at Mile 0.00.

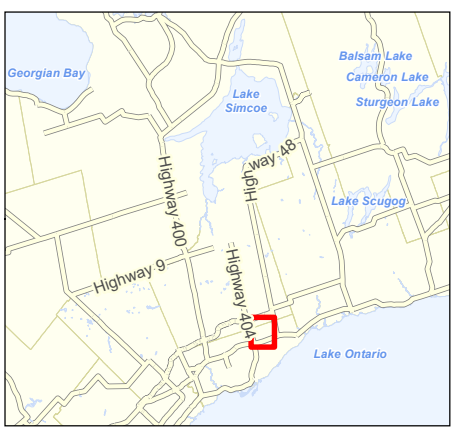
For the purposes of this Environmental Project Report (EPR), Metrolinx is the proponent of the Stouffville Rail Corridor Grade Separations Project.

1.2 Project Overview and Purpose of the Transit Project

Metrolinx is completing a TPAP under *O. Reg. 231/08*, to assess potential environmental impacts of the proposed Stouffville Rail Corridor Grade Separations Project, and to provide mitigation measures. The purpose of the proposed Project is to accommodate the expansion of the Stouffville Rail Corridor through grade separations or road closure at seven crossings. These improvements will reduce train and traffic conflicts, while maintaining pedestrian and cycling access. The Project will facilitate the GO Expansion Program, including the construction of the previously approved new track and accommodating increased train frequency along the corridor.

As part of the GO Expansion Program, new tracks will be built on the Stouffville Rail Corridor, to support increased service along the corridor, that were assessed and approved as part of Stouffville Corridor Rail Service Expansion Class EA (see Section 1.3.3 for further details). Given the increased train frequency with the proposed level of service, Metrolinx has identified the need to reduce the number of road and at-grade rail crossings along the Stouffville Rail Corridor to enhance on time performance and operational flexibility/reliability. Seven locations have been identified along the Stouffville Rail Corridor in which a grade separation or road closure is required. The locations are where the Stouffville Rail Corridor crosses the following roadways: Denison Street and Kennedy Road in the City of Markham and Passmore Avenue, McNicoll Avenue, Huntingwood Drive, Havendale Road and Progress Avenue in the City of Toronto (see Figure 1.2). The grade separations involve either a road under rail or road over rail option, depending on the conditions at each location (with the exception of Havendale Road). In the case of a road under rail grade separation, the road is depressed so that it crosses underneath the rail corridor, which remains at its current grade. Conversely, for a road over rail grade separation, the road is elevated so it crosses above the rail corridor. For Havendale Road, road closure is proposed, with a grade-separated multi-use crossing to maintain pedestrian and cycle traffic. Further details on each of the grade separations, including figures, can be found in Section 2.0.





Legend

- Project Footprint
- Study Area
- Railway
- Upper Tier Municipality
- Municipal Boundary

0 810 1,620 metres

1:32,250 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery Date, 2018.

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA

METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
1.2

Title
Study Area – Stouffville Rail Corridor Grade Separations

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1.3 Planning Context and Other Projects

The following provincial and regional plans, policies and initiatives have helped inform this assessment and the design considerations for the proposed Project:

- Provincial and Regional Plans and Initiatives:
  - GO Expansion Program (GO Expansion Full Business Case; Metrolinx 2018a)
  - 2041 Regional Transportation Plan (Metrolinx 2018b)
  - Metrolinx Five-Year Strategy 2017 – 2022 (Metrolinx 2017a)
  - Provincial Policy Statement (PPS) (Ministry of Municipal Affairs and Housing (MMAH), 2020)
  - Growth Plan for the Greater Golden Horseshoe (GGH), 2019 (Ministry of Municipal Affairs and Housing (MMAH), 2019
- Municipal Plans and Policies:
  - Developing Toronto's Transit Network Plan to 2031 (City of Toronto 2016)
  - City of Toronto Official Plan, 2015

In addition, other studies have been completed in the area of the Project and have helped inform the preparation of this EPR. These include:

- GO Rail Network Electrification TPAP (2017)
- Stouffville Corridor Rail Service Expansion GO Transit Class (EA) (2014)

These policies, plans and studies and their relevance to the Project are described below.

1.3.1 Provincial and Regional Plans and Initiatives

1.3.1.1 GO Expansion Program (GO Expansion Full Business Case)

Metrolinx is transforming the GO Transit system by introducing more services and a better rail network and plans to quadruple GO rail service to over 6,000 weekly trips within the next ten years. Metrolinx completed a full business case for the GO Expansion Program to illustrate the proposed investment program, its benefits and costs, and core requirements to successfully implement the program to decision makers, the public, and funding partners (Metrolinx 2018a). Metrolinx is committed to providing new travel choices for commuters, significantly increasing transit ridership, cutting journey times and helping manage congestion across the GGH. As part of these commitments, Metrolinx is planning for expanded service on the Stouffville Rail Corridor, and in order to support the increased train service, rail improvements to the corridor are required, including the proposed grade separations.

1.3.1.1.1 GO Expansion Program

Metrolinx has initiated a review of previous planning work against current system requirements and expansion objectives to evaluate the need for new or redesigned infrastructure to support GO Expansion. The GO Expansion Program is intended to support the planning, design and construction of new infrastructure within existing GO rail corridors and includes consideration of the need for new structures or facilities (such as grade separations and layover sites), track work and electrification systems.

As part of the GO Expansion Program, corridor-wide studies have been undertaken for operational air quality, operational noise and vibration, and vegetation removal and compensation. Additional planning work to update previous studies related to electrification and other infrastructure is also proceeding, along with new EA processes such as for this Project. As applicable, information from the corridor-wide studies was integrated into the EPR as relevant.

1.3.1.2 2041 Regional Transportation Plan

The 2041 Regional Transportation Plan (2041 RTP) for the GTHA builds upon Metrolinx' 2008 transportation plan, 'The Big Move', and identifies the process through which governments and transit agencies will work to create an integrated, multi-modal regional transportation system that serves the need of residents, businesses and institutions (Metrolinx 2018b). The 2041 RTP supports the Province of Ontario's 2019 Growth Plan. Five strategies with associated priority actions such as optimizing the transportation system, connecting more of the region with frequent rapid transit and integrating transportation and land use are included within the 2041 RTP.

A major focus of the 2041 RTP (included in Strategy 1 and 2) is to continue building and improving upon the GO Expansion Program initiated under 'The Big Move'. To support the increased train service, rail corridor improvements are required, including the seven grade separations and other enhancements along the Stouffville Rail Corridor.

1.3.1.3 Metrolinx Five-Year Strategy 2017 – 2022

The Metrolinx Five-Year Strategy shapes Metrolinx decision making, influences investment and project priorities, as well as how they are delivered. The strategy outlines four strategic priorities, one of which is to lead the transformation of regional mobility (Metrolinx 2017a). The approach to achieving this priority includes expanding the transit network. The Project will help support this priority by providing key infrastructure to facilitate expanded service levels on the Stouffville Rail Corridor.

1.3.1.4 Provincial Policy Statement, 2020

The PPS was created under the *Planning Act* and serves as a policy direction document on matters of provincial interest related to land use planning and development. The PPS promotes transit-supportive land use patterns where transit is planned, exists or may be developed. It also promotes land uses that minimize the length and number of vehicle trips that support current and future use of transit and active transportation. Key policies within the PPS that apply to this Project are described below.

Policy 1.6.7.1 of the PPS states that "Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs" (MMAH 2020).

Long-term economic prosperity is described in Policy 1.7 as promoting opportunities for economic development and community investment-readiness (1.7.1 (a), MMAH 2020), while providing for an efficient, cost-effective and reliable multi-modal transportation system that is integrated with adjacent systems (1.7.1 (g), MMAH 2020). The Project is consistent with the objectives of the PPS that outline the need for transit and related facilities be planned to meet current and future needs, and the provision for an efficient and cost-effective multi-modal transportation system that supports Ontario's economic prosperity.

1.3.1.5 Growth Plan for the Greater Golden Horseshoe, 2019

Prepared and approved under the *Places to Grow Act,* 2005*, A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019* (The Growth Plan), which was built upon and replaced the 2006 Growth Plan (as amended in 2012, 2013, and 2017)), is a long-term planning document that is designed to plan for growth and development in a way that supports economic prosperity, protects the environment, and helps communities achieve a high quality of life (MMAH 2019). The Growth Plan identifies growth areas and growth targets, including the promotion of intensification. The Growth Plan also encourages growth near transit corridors, by providing connectivity among transportation modes and multi-modal access to jobs, housing, and schools (Policy 3.2.2.2 (b) (d)). The Stouffville Rail Corridor is identified as a Priority Transit Corridor, which includes all forms of rapid transit. The Growth Plan also identifies that public transit should be fast, convenient and affordable as part of an integrated transportation network. The Plan encourages increasing the capacity of existing transit systems (Policy 3.2.3.2 (d)), and facilitation of improved linkages between and within municipalities (Policy 3.2.3.2 (e)). In addition, the Growth Plan also identifies Provincially Significant Employment Zones and set out policies that protects these employment areas as they are critical to the local and provincial economy (Policy 2.2.2.12). The Project supports the continued and increased use of GO Transit along the Stouffville Rail Corridor as it supports increased service levels.

1.3.2 Municipal Plans and Policies

1.3.2.1 York Region Transportation Master Plan

The Transportation Master Plan (York Region 2016) is a high-level policy document that identifies a number of priorities for moving people and goods throughout and into York Region by 2041. Objective #1 of the plan is to *Create a World Class Transit System*. The plan states that York Region will have a World Class Transit System when there is a seamless interconnected system of subways, rapidways, a frequent transit network and other services that meet the needs of all York Region residents and businesses. Specifically, the plan refers to maximizing the potential of Regional Express Rail (RER). The Project supports York Region’s plans for developing the transit system in the region and the Project aligns with their objective of maximizing the potential of RER.

1.3.2.2 York Region Official Plan

The York Region Official Plan (York Region 2019) provides policies to guide economic, environmental and community building decisions to manage growth. The policies in this plan aim to strengthen the connections between the natural and built environment, job opportunities, human services, transportation and public health. There are several policies within the plan that promote the use and development of transit systems and states that a well-integrated public transit system in York Region is essential to enhancing the quality of life for residents and workers. The Project aligns with this plan as it will promote the use of transit by offering increased service levels.

1.3.2.3 Developing Toronto's Transit Network Plan to 2031

The Developing Toronto's Transit Network Plan Phase 1 Staff Report (City of Toronto 2016a) brings together all transit projects currently under study in the City of Toronto in order to consider each within the context of their contribution to the transit network as a whole. The report recommends focusing on GO RER integration options that propose an urban service frequency on the Stouffville Rail Corridor. The Project supports this recommendation by accommodating service increase on this rail corridor.

1.3.2.4 City of Toronto Official Plan

The City of Toronto Official Plan (City of Toronto 2015) is intended to ensure that the City of Toronto evolves, improves and realizes its full potential in areas such as transit, land use development, and the environment. The Official Plan states that the integration of transportation and land use planning is critical to achieving the overall aim of increasing accessibility throughout the City of Toronto. The Plan protects the integrity of City of Toronto's transportation network and provides for its planned expansion through the designation of public right-of-way (ROW) and transit corridors. This Project aligns with the strategies in the Official Plan by promoting public transportation and accessibility.

1.3.2.5 City of Markham Official Plan

The City of Markham Official Plan (City of Markham 2014) provides the land use planning, urban design and transportation framework to support a vision for growth, by providing for a variety of housing and job choices, services, community facilities and open space, and a high-quality public realm, all accessible by a transportation network that includes non-automobile options such as transit, cycling and walking. Policy 7.1.7.3 of the plan states that is it is the policy of Council to advocate for the grade separation of road and rail crossings where warranted. This includes the dedication of ROW to construct future grade separations where there is an existing at-grade crossing of a

Regional or City of Markham road and a rail corridor. The Project directly supports this policy by proposing grade separations at two existing at-grade crossings within the City of Markham.

1.3.3 Previous Projects and Studies Completed

1.3.3.1 GO Rail Network Electrification TPAP

The population of the GGH is increasing, and with it, traffic congestion. As part of the GO Expansion Program, Metrolinx is committed to providing electrification as an alternative for the GO Transit system to bring 15-minute, two-way service to core parts of the network.

The GO Rail Network Electrification undertaking will entail design and implementation of a traction power supply system and power distribution components including: an Overhead Contact System along the rail corridors, electrical feeder routes, and a number of traction power facilities located within the vicinity of the rail corridors. The purpose of the GO Rail Network Electrification project is to convert six GO-owned rail corridors from diesel to electric propulsion, including the Stouffville Rail Corridor (from Scarborough Junction (off Lakeshore East Rail Corridor) to Lincolnville GO Station). In order to electrify the system, there is new infrastructure that needs to be built as well as modifications to existing infrastructure (such as existing GO Stations and Maintenance Facilities).

A Notice of Completion for the GO Rail Network Electrification TPAP was issued on October 11, 2017. Following the Ministry of the Environment, Conservation and Parks (MECP) Minister's review, the Minister issued a Notice to Proceed (approved without conditions) on December 11, 2017. A Statement of Completion was submitted to MECP on December 17, 2017, identifying Metrolinx intent to proceed with the transit project in accordance with the EPR. A Significant Addendum to the GO Rail Network Electrification EPR is now being undertaken to assess additional electrification infrastructure required for new tracks and layover facilities (which are being studied as part of a separate Metrolinx study called "New Track & Facilities TPAP") proposed across various portions of the GO rail network that were not previously examined as part of the 2017 EPR.

Relevant existing conditions data and effects assessment results/recommendations from the GO Rail Network Electrification EPR have been drawn upon and included in this assessment. The Project will be designed to accommodate any new infrastructure required to support the GO Rail Network Electrification Project.

1.3.3.2 Stouffville Corridor Rail Service Expansion GO Transit Class EA

As part of the GO Expansion Program, portions of the Stouffville Rail Corridor require additional track capacity to support increasing GO service on the Stouffville Rail Corridor. The Stouffville Corridor Rail Service Expansion Project assessed the addition of a second railway track and associated infrastructure modifications on the Stouffville Rail Corridor between the Unionville and the Scarborough GO Stations.

The Environmental Study Report (ESR) for the Stouffville Corridor Rail Service Expansion was completed under the GO Transit Class EA in July 2014. The construction of the approved additional track will be facilitated by the construction of the Project. Relevant existing conditions data and effect assessment results/ recommendations from the Stouffville Corridor Rail Service Expansion ESR have been drawn upon and included in this assessment. The Project will be designed to accommodate any new infrastructure required to support the GO Rail Network Electrification Project.

1.4 Description of the Study Area

The TPAP Study Area for the Project includes the Project Footprint at each of the seven locations and a one kilometre (km) buffer around each of the Project Footprints. The Study Area is located in the City of Toronto and the City of Markham and is presented in Figure 1.2.

The Project Footprint represents the area required to carry out all physical works and activities either directly for infrastructure or for associated Project uses (e.g., construction laydown areas). The one km buffer area has been included as part of the Study Area as it is recognized that some effects may be experienced outside the Project Footprint. This buffer area represents an area where effects associated with Project construction and/or operation could potentially occur. For example, the off-site migration of dust and noise. Collectively, these areas represent the geographic range over which the potential effects associated with the Project could occur.

The Study Area represents the geographic area within which the required technical studies were completed in support of this EPR. For each technical study, discipline-specific Assessment Areas have been defined based on the anticipated area of effect within the Study Area. The environmental technical studies include Assessment Areas and Project Footprints based on initial conceptual designs for assessment purposes. Design refinements have continued in parallel to the TPAP which may not be reflected in the technical studies, but have been considered in the effects assessment, mitigation and monitoring (Section 4.0). Assessment Areas are described in greater detail in Section 3.0 of this EPR and summarized in Table 1.1.

Table 1.1: Assessment Areas for Technical Studies

Technical Studies	Assessment Area
Biophysical Environment	
Natural Environment Technical Report	Project Footprint plus 120 m surrounding area
Tree Inventory Report	Project Footprint for recommended actions (i.e., retain and protect or remove) Project Footprint plus a 30 m buffer to delineate the potential presence of threatened, rare or endangered trees
Air Quality Evaluation	Construction: Project Footprint plus 500 m surrounding area; Truck haul route(s) boundaries plus 100 m surrounding area Operation: Stouffville Rail Corridor (from St. Clair Avenue East, Toronto to Lincolnville GO Station)
Noise and Vibration Assessment	Construction Noise: Project Footprint plus 383 m Construction Vibration: Project Footprint plus 383 m Operation: Stouffville Rail Corridor (from St. Clair Avenue East, Toronto to Lincolnville GO Station);
Social and Economic Environment	
Socio-Economic and Land Use Study	Refer to Transportation Impact Assessment (TIA) Areas below.
Transportation Impact Assessment (TIA)	• Denison Street site: network approximately bounded by 14th Avenue, Kennedy Road, Steeles Avenue, and Warden Avenue • Kennedy Road site: network approximately bounded by Denison Street, Old Kennedy Road, Steeles Avenue, and Birchmount Road • Passmore Avenue site: network approximately bounded by Steeles Avenue, Midland Avenue, Kennedy Road, and McNicoll Avenue • McNicoll Avenue site: Steeles Avenue, Midland Road, Finch Avenue, and Birchmount Road • Huntingwood Drive site: network approximately bounded by Finch Avenue East, Midland Avenue, Sheppard Avenue East, and Kennedy Road • Havendale Road site: network approximately bounded by Huntingwood Drive, Midland Avenue, Sheppard Avenue East, and Kennedy Road • Progress Avenue site: network approximately bounded by Sheppard Avenue East, Midland Avenue, Ellesmere Road, and Kennedy Road

Technical Studies	Assessment Area
Cultural Environment	
Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment	Project Footprint plus 50 m surrounding area
Stage 1 Archaeological Assessment Report	Project Footprint plus 50 m surrounding area

1.5 Pre-Planning Activities

A feasibility study for the Stouffville Rail Corridor Grade Separations was completed in 2016 to confirm the preferred approach to accommodate the proposed level of service, which is described further in Section 2.0. In advance of commencing the TPAP for the proposed Project, Metrolinx consulted with project stakeholders (including government agencies, municipalities, elected officials, and members of the public) and Indigenous Nations to determine the level of interest in the Project and to get feedback on the preliminary design details. Key activities were undertaken before, and in preparation for the commencement of the TPAP.

Although not required under the legislation, the MECP recommends that pre-planning activities are undertaken in advance of commencing the TPAP (MOECC 2014). The TPAP is a time-limited process, therefore pre-planning allows proponents to enter the TPAP well-prepared, and with an understanding of, and proposed resolution for the key issues. Pre-planning activities undertaken in advance of releasing the Notice of Commencement of this TPAP included the development of a draft EPR, updating design decisions based on input received from consultation activities, and circulating the draft EPR and technical studies for review to the Government Review Team (GRT).

The following sections outline the planning process conducted during the key phases of the Project prior to commencing the TPAP, namely:

- Environmental Technical Studies
- Pre-Planning Consultation

1.5.1 Environmental Technical Studies

Technical studies were undertaken to support the preparation of the EPR to determine the existing environmental conditions within and in the vicinity of the Study Area and to assess the extent of the potential effects associated with the proposed improvements, identify appropriate mitigation measures and inform progressive design decisions.

A series of environmental technical studies were undertaken in 2016/2017 to support the Project when it was first initiated. Archaeology, cultural heritage, natural environment, traffic, air quality, noise/vibration and socio-economic studies were completed for Denison Street, Kennedy Road and McNicoll Avenue. To confirm the validity of the archaeology, cultural heritage, natural environment, traffic and socio-economic studies, a gap analysis approach was undertaken in 2019 to identify information gaps or other updates required based on the potential for changes in information such as, but not limited to, project design, municipal planning, landscape, and land use. A gap analysis of the 2016/2017 air quality and noise and vibration studies was not completed as new studies will be prepared to align with the corridor-wide approach (refer to Section 1.3.1.1.1).

Natural, technical, social and cultural conditions were characterized through the completion of the following Project-specific environmental technical studies:

- Biophysical Environment
  - Natural Environment Technical Report
  - Tree Inventory
  - Construction Phase Air Quality Impact Assessment Report
  - Construction Noise and Vibration Assessment
  - Corridor-wide technical studies for air quality and noise and vibration assessed the operational effects of the proposed GO Expansion service levels. As applicable to the Project, the results of these studies have been incorporated into this assessment.
    - Regional Air Quality Study GO Rail Network Electrification Project
    - Noise and Vibration Study, Stouffville Corridor, GO Rail Network Electrification Project
- Social and Economic Environment
  - Socio-Economic and Land Use Study
  - Transportation Impact Assessment

- Cultural Environment
  - Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment
  - Stage 1 Archaeological Assessment Report
  - Memorandum Summarizing Archaeological Assessment Reports Completed within Footprint of McNicoll Avenue Grade Separation and Considerations Regarding Forthcoming

The results of these studies are summarized in Section 3.0. The detailed environmental technical studies are available in Appendix A.

1.5.2 Pre-Planning Consultation

Consultation for this Project occurred in two main stages – Pre-Planning activities undertaken prior to the Notice of Commencement of the TPAP on September 8, 2020; and regulated TPAP consultation activities undertaken following the Notice of Commencement of the TPAP.

Pre-Planning consultation involved the majority of early consultation to inform the development of the preliminary design and the preparation of this EPR. This included input related to the planning and completion of the technical studies.

Pre-Planning activities included consultation to help inform the eventual TPAP and were undertaken to help inform design decisions and identify possible environmental effects and required mitigation measures. Pre-Planning consultation activities included obtaining input from government agencies, municipalities, elected officials, members of the public, and Indigenous Nations . A key venue for Pre-Planning consultation was the hosting of regular Technical Advisory Committee (TAC) meetings between the City of Toronto and Metrolinx and the City of Markham, York Region and Metrolinx. The TAC meetings provided an opportunity for the municipalities to provide input into the development of the design of the Project. In addition, the draft EPR and environmental technical studies were circulated to the GRT for review and comment as part of Pre-Planning consultation.

Details of Pre-Planning consultation activities, comments and questions received, and Metrolinx responses are provided in Section 6.2 of this EPR.

1.6 Transit Project Assessment Process (TPAP)

This EPR has been prepared in accordance with the EAA and *O. Reg*. *231/08*: *Transit Projects and Metrolinx Undertakings* (O. Reg. 231/08).

The EAA defines the environment as:

- Air, land and water
- Plant and animal life, including human life
- The social, economic and cultural conditions that influence the life of humans or a community
- Any building, structure, machine or other device or thing made by humans
- Any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities
- Any part of or combination of the foregoing and the interrelationships between any two or more of them

An EA is required for all large-scale projects undertaken by public bodies that have the potential to affect the environment. These projects require approval from the Government of Ontario before proceeding to the next phase.

O. Reg. 231/08 acknowledges that certain types of transit projects have more predictable environmental effects that are more readily managed, and that a more streamlined approach to EA is appropriate for these projects. This EA process for transit projects is known as the TPAP and involves a planning process that protects the environment but shortens the timeline for the completion of transit projects approval to six months for commencement, review and approval. By following the TPAP for certain approved projects, the Transit Projects Regulation exempts the proponent of the transit project (i.e., Metrolinx) from the requirements under Part II of the EAA.

O. Reg. 231/08 describes the requirements of the TPAP for transit projects and defines the types of transit projects that can be assessed under the TPAP. Schedule 1 of *O. Reg. 231/08* describes the types of undertakings to which the TPAP applies.

The Project meets the TPAP requirements as presented in Schedule 1 of O. Reg.231/08, as it relates to the following undertakings:

1. (1) – 5. Construction of new grade separation

2. (1) – 4. Construction or modification of tracks required to increase the commuter rail service (including a change to All-Day Service) on an existing rail corridor, including such activities as,

ii. modification of existing mainline tracks

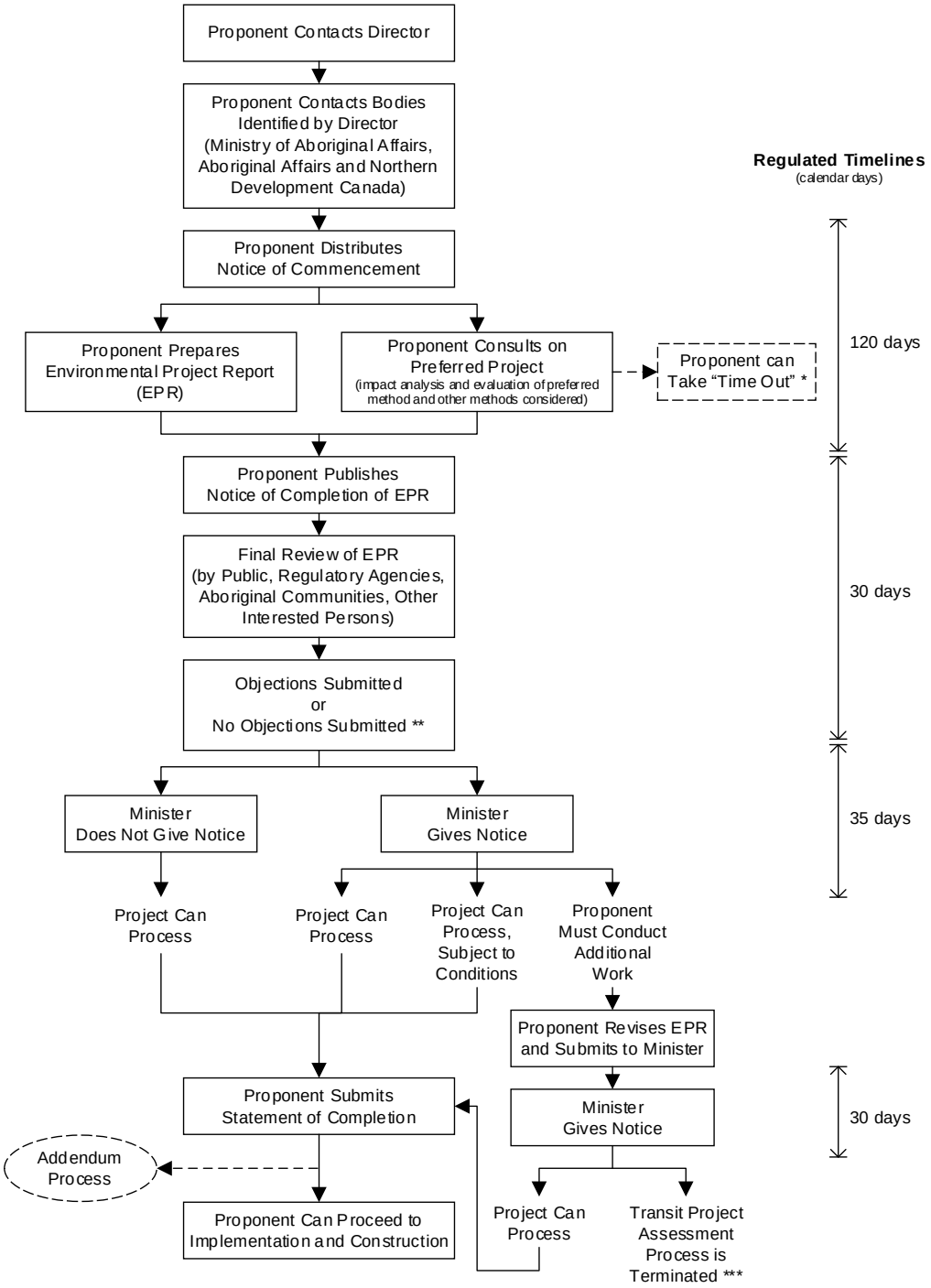
iv. construction, reconstruction or widening of structures

The TPAP is focused on an assessment of the environmental effects of a transit project and allows for decision-making to be completed within approximately six months. The TPAP follows six key steps, illustrated in Figure 1.3 (below). The six key steps were completed for the Project as follows:

Table 1.2: TPAP Key Steps and Dates of Completion

TPAP Key Step	Date Completed
Contact with the MECP and identification of interested agencies and Indigenous Nations.	Letter sent to MECP on September 13, 2019. Confirmation from MECP on September 17, 2019.
Issuance of the Notice of Commencement of TPAP.	September 8, 2020
Assessment Process and Consultation with project stakeholders (government agencies, municipalities, elected officials, and members of the public) and Indigenous Nations.	September through to December 2020
Issuance of the Notice of Completion of the EPR (up to 120 days following the Notice of Commencement).	January 5, 2021
Provision of 30 days for the government agencies, municipalities, elected officials, members of the public, and Indigenous Nations (and other interested persons) to review the EPR.	January 6, 2021 through to February 4, 2021
35 days for the Minister of the Environment, Conservation and Parks to review the EPR, followed by the submission of a Statement of Completion by the proponent.	February 5, 2021 through to March 11, 2021

Figure 1.3: The Transit Project Assessment Process (MOECC 2014)



A TPAP study must assess the potential effects of a proposed project on the natural, technical, social, and cultural environments, and identify mitigation measures to reduce or eliminate any potential negative effects. Monitoring activities will also be proposed to monitor or verify the effectiveness of the proposed mitigation to reduce or eliminate adverse effects. Technical, safety, and economic considerations are also included in the assessment of effects and determination of project feasibility. Public consultation is an important component of the TPAP, and this TPAP study has provided opportunities to government agencies, municipalities, elected officials, members of the public, Indigenous Nations, and other interested persons such as businesses and special interest groups to review and comment on Project documents and decisions. Given the universally recognized benefits of transit projects, *O. Reg. 231/08* does not require proponents to document the planning alternatives to public transit (alternatives to the undertaking), or the rationale and planning alternatives to the particular transit project. Identification of the selected project is completed within the Pre-Planning phase (described in Section 1.5) and may include feasibility studies, master planning, preliminary environmental technical studies (inventories, potential effects), consideration of project alternatives, and pre-consultation activities with the public, regulatory agencies, Indigenous Nations and other interested parties.

The details of the steps followed for this TPAP, and the outcome of those steps are described in Sections 2.0 through 7.0 of this EPR.

1.7 Objection Process, Minister's Review and Statement of Completion

The submission of this EPR and the issuance of the Notice of Completion trigger the beginning of the 30-day public/agency review period. During this time, if government agencies, municipalities, elected officials, members of the public, Indigenous Nations or other interested persons have concerns about the transit project described herein, objections can be submitted to the MECP. After the 30-day review period has ended, any objections received will not be considered, and the Minister has 35-days within which certain authority may be exercised.

Persons wishing to submit an objection for the Minister to consider should provide the following information:

- Name, mailing address, organization or affiliation (where applicable), daytime telephone number, email address (where possible)
- Contact details of the proponent, including name, address, and phone number
- Brief description of the proponent's undertaking

- Basis for why further study is required, including identification of any negative impacts concerning a matter of provincial importance that relates to the natural environment or has cultural heritage value or interest (CHVI), or a constitutionally protected Aboriginal or treaty right that was not identified in the proponent's EPR

- Summary of how the person(s) objecting has participated in the Project's consultation process

Whether there is a public objection or not, the Minister may act within the 35-day period to issue one of the following three notices to the proponent:

1. A notice to proceed with the transit project as planned in its EPR

2. A notice that requires the proponent to take further steps, which may include further study or consultation

3. A notice allowing the proponent to proceed with the transit project subject to conditions

The Minister may give notice allowing the proponent to proceed with its transit project but can only take action if there is a potential for a negative effect on a matter of Provincial importance that relates to the natural environment or has CHVI, or on a constitutionally protected Aboriginal or treaty right. If the Minister issues a notice to proceed with the transit project as planned, or if the Minister does not act within the 35-day period, Metrolinx will issue a Statement of Completion and proceed to implementation.

Where issues related to such matters or constitutionally protected Aboriginal or treaty rights remain unresolved during the up to 120-day consultation and documentation period, the proponent can initiate a "time out" to address these issues. No time out has been taken for this transit project.

Where issues related to such matters or constitutionally protected Aboriginal or treaty rights remain unresolved at the time of Notice of Completion, the Minister may request that the proponent give further consideration to the transit project, for example by conducting additional investigations and consultation. Following additional investigation and consultation and submission of a Revised EPR, the Minister may allow Notice to Proceed or, if of the opinion that the Revised EPR does not appropriately address the negative impact, may provide notice terminating the TPAP and requiring the proponent to comply with Part II of the EAA or an approved Class EA before proceeding with the transit project.

The TPAP will be completed when Metrolinx submits a Statement of Completion to the Director of the Environmental Assessment and Permissions Branch of the MECP and the MECP Regional Director. Metrolinx will also post the Statement of Completion on the Project website, at www.metrolinxengage.com. The Statement of Completion will indicate that Metrolinx intends to proceed with the transit project in accordance with either:

1. The EPR

2. The EPR subject to conditions set out by the Minister

3. The Revised EPR

Construction or implementation of a transit project subject to the TPAP cannot begin until the requirements of the process have been met. Subject to these requirements, the transit project may proceed once additional required permits and approvals are received.

1.8 TPAP Addendum Process

The transit project presented in this EPR is not a static plan, nor is the context in which it is being assessed, reviewed, approved and constructed. *O. Reg. 231/08* includes an addendum process for proponents to make changes to a transit project after the Statement of Completion is submitted to the MECP. An addendum to the EPR may be required if Project developments during the approvals, detailed design, and construction processes result in design variations from what was assessed in the EPR. This addendum process is intended to address the possibility that in implementing a transit project, certain modifications may be made that are inconsistent with the EPR. A change that is inconsistent with the EPR is generally defined as one for which the effects have not been accounted for in the EPR.

If a proponent wishes to make a change to a transit project that is inconsistent with the EPR, the proponent must prepare an EPR addendum. This must contain:

- a description of the change

- the reasons for the change

- the proponent's assessment and evaluation of any impacts that the change might have on the environment

- a description of any proposed measures for mitigating any negative impacts that the change might have on the environment

- a statement of whether the proponent is of the opinion that the change is significant (or not) and the reasons for the opinion

If the proponent considers the change to the transit project to be significant, the proponent must publish a Notice of EPR Addendum in a local newspaper and post the notice on its website. The notice must also be provided to the Director of the Environmental Assessment Branch of the MECP, the Regional Director of the MECP, every property owner within 30 m of the site of the change, Indigenous Nations that were given the Notice of Commencement, and any other person who the proponent thinks may be interested in the change to the transit project.

The process and timelines for making objections and for the Minister to act with respect to the proposed change are essentially the same as in the process following the Notice of Completion (see Section 1.7).

Currently, Metrolinx has identified the potential need for an EPR Addendum to address the Passmore Avenue grade separation. Additional consultation will be required with property owners near the Passmore Avenue grade separation location and the City of Toronto, to confirm a preferred mitigation plan to maintain effective access and business operations. While we expect to move forward with the grade separation, Metrolinx is still working with the City of Toronto and affected businesses to find a design solution that will fit the needs of the City, businesses and GO Expansion. The Passmore Avenue grade separation will be studied in a separate EPR Addendum following the Statement of Completion for the Stouffville Rail Corridor Grade Separations TPAP.

1.9 Environmental Project Report Organization

The documentation of the TPAP, as provided in this EPR, will be submitted to the MECP within 120 days of publishing the Notice of Commencement. This EPR documents the existing environmental conditions within the Study Area (and discipline-specific Assessment Areas where applicable), the potential environmental effects of the Project, recommended mitigation measures, the consultation process followed, and future commitments for the Project. This EPR fulfills the requirements of Section 3.2.4 (Documentation requirements) of Ontario's Guide to Environmental Assessment Requirements for Transit Projects (MOECC 2014) as presented in Table 1.3.

Table 1.3: TPAP Documentation Requirements

Required Information	Section within this EPR
A statement of the purpose of the transit project and a summary of background information relating the transit project.	Section 1.2
A final description of any other design methods that were considered once the project commenced the transit project assessment process.	Section 2.0
A map showing the site of the transit project.	Figure 1.2
A description of the local environmental conditions at the site of the transit project.	Section 3.0
A description of all studies carried out, including a summary of all data collected or reviewed and a summary of all results and conclusions.	Section 3.0, Appendix A
The assessments, evaluation and criteria for any impacts of the preferred design method (described above) that were considered once the project's transit project assessment process commenced (does not include pre-planning work).	Section 4.0
A description of any proposed measures for mitigating any negative impacts the transit project might have on the environment.	Section 4.0
If mitigation measures are proposed, a description of the proposal for monitoring or verifying the effectiveness of mitigation measures.	Section 7.0
A description of any municipal, provincial, federal or other approvals or permits that may be required.	Section 7.0
A consultation record including: a description of the consultations and follow up efforts carried out with interested persons, including Indigenous Nations; a list of the interested persons, including Indigenous Nations who participated in the consultations; summaries of the comments submitted by interested persons including Indigenous Nations; summary of any discussions with Indigenous Nations including discussions of any potential impacts of the Project on constitutionally protected Aboriginal or Treaty Rights, and copies of all written comments submitted by Indigenous Nations; and, a description of what the proponent did to respond to concerns expressed by interested persons including Indigenous Nations.	Section 6.0, Appendix B
If a "time out" was taken during the transit project assessment process, a summary of each issue including: a description of the issue; a description of what the proponent did to respond to the issue and the results of those efforts; the dates that notices for the "time out" were given to the Director, MECP Environmental Assessment and Permissions Branch, and the Regional Director (MECP Central Region Office).	Not Applicable – No time out has been taken

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2.0 Project Description

2.1 Key Project Components

The Project includes proposed modifications required to meet the service goals of the GO Expansion Program and to reduce the number of road and at-grade rail crossings along the Stouffville Rail Corridor (refer to Section 1.1).

For the purposes of this EPR, grade separations are proposed at the following locations:

- Denison Street, Markham
- Kennedy Road, Markham
- Passmore Avenue, Toronto
- McNicoll Avenue, Toronto
- Huntingwood Drive, Toronto
- Havendale Road, Toronto
- Progress Avenue, Toronto

Locations of each of the grade separations are shown in Figure 1.2.

The Stouffville Rail Corridor Grade Separations Feasibility Study was completed in 2016 (Stantec 2016) to assess options for grade separation at these locations, including:

- Rail under road – rail corridor is depressed to allow the track to cross under the road with the road elevation remaining the same
- Road under rail – roadway is depressed to allow the road to pass under the tracks with the rail elevation remaining the same
- Rail over road – rail corridor is raised to allow the track to cross over the road with the road elevation remaining the same
- Road over rail – roadway is raised to allow the road to pass over the rail with the rail elevation remaining the same

- Road closure – roads that cross the rail corridor would be closed at each end, through the construction of cul-de-sacs or similar methods, restricting traffic access
- Crossing upgrades – additional crossing upgrades such as supplementary warning devices or traffic control mechanisms would be considered to improve traffic flow and safety
- Do nothing – no construction or other improvements would be implemented

The study considered safety, operations, cost and social/environmental considerations in confirming a preferred approach to best support GO Expansion Program and Metrolinx operational objectives. With the exception of Havendale Road, either a road over rail or a road under rail grade separation was identified as the preferred option at each location. For Havendale Road, road closure is proposed, with a grade-separated multi-use crossing to maintain pedestrian and cycle traffic. Grade separation of the road is not feasible at this location because of the narrow road ROW and the potential impacts on existing houses between Farmington Crescent and Scotland Road. A summary of the preferred design for each of the grade separation locations is provided in Table 2.1. Further details for each of the grade separations are provided in subsequent sections.

Table 2.1: Preferred Grade Separation Option by Location

Crossing Location	Proposed Design
Denison Street	Road Under Rail
Kennedy Road	Road Under Rail
Passmore Avenue	Road Under Rail
McNicoll Avenue	Road Under Rail
Huntingwood Drive	Road Under Rail
Havendale Road	Road Closure with Multi-Use Crossing
Progress Avenue	Road Over Rail

The conceptual design shown in this EPR includes mitigation measures to reduce or eliminate environmental effects, and to improve environmental features or functions where possible, based on the recommendations of supporting studies. The Project details provided herein are considered conceptual and are subject to refinement as planning progresses. Measures and dimensions are approximate and may vary as they are refined during the detailed design process.

2.1.1 Denison Street

A road under rail grade separation is proposed at Denison Street that will accommodate the existing two lanes of traffic in each direction. The roadway will be excavated to achieve the minimum vertical and horizontal clearance and slope requirements based on applicable City of Markham standards, allowing the rail corridor to remain at-grade. There will be a minimum clearance of 5.3 m between the top of the roadway and the bottom of the rail bridge.

Elevated sidewalks will be provided on both sides of Denison Street and will be designed to City of Markham and *Accessibility for Ontarians with Disabilities Act* (AODA) standards. At a minimum, existing infrastructure will be maintained. An existing trail along the north side of Denison Street will be integrated into the elevated sidewalk along the road under rail grade separation.

The rail bridge will accommodate two tracks, and design and type will be determined as design progresses. The bridge design will address standard maintenance issues, such as the inclusion of de-icing requirements. As required and in accordance with applicable standards, lighting will be placed under the new bridge to improve visibility for traffic, pedestrians and cyclists. Artificial lighting will be incorporated as per applicable lighting standards.

Retaining walls are proposed to limit grading impacts on adjacent properties. Retaining walls will be constructed for almost the entire length of Denison Street, from Clayton Drive to Gorvette Road/Milliken-Meadows Drive, with associated grading behind the retaining walls. In conjunction with the City of Markham, Metrolinx will determine the appropriate finish(es) for the retaining walls based on municipal planning and urban design policies and objectives, surrounding land uses, adjacent built form, and pedestrian, cycle and automobile traffic levels.

The key design features of the Denison Street grade separation are shown on Figure 2.1. An artistic conceptual rendering is shown on Figure 2.2.

2.1.1.1 Changes to Existing Access

The grade separation at Denison Street will result in the closure of one entrance to each of two existing buildings (at 1490 Denison Street and 1525 Denison Street). Both buildings have existing alternate accesses through the intersection of Denison Street and Clayton Drive, and Gorvette Road, respectively. New entrances are not proposed.

Due to roadway widening, the existing bus stop located on the north side of Denison Street at the intersection with Clayton Drive will be relocated to fit within the new ROW.

Refer to Section 4.6.2.2.1 for further information regarding changes to access and bus stop relocations.

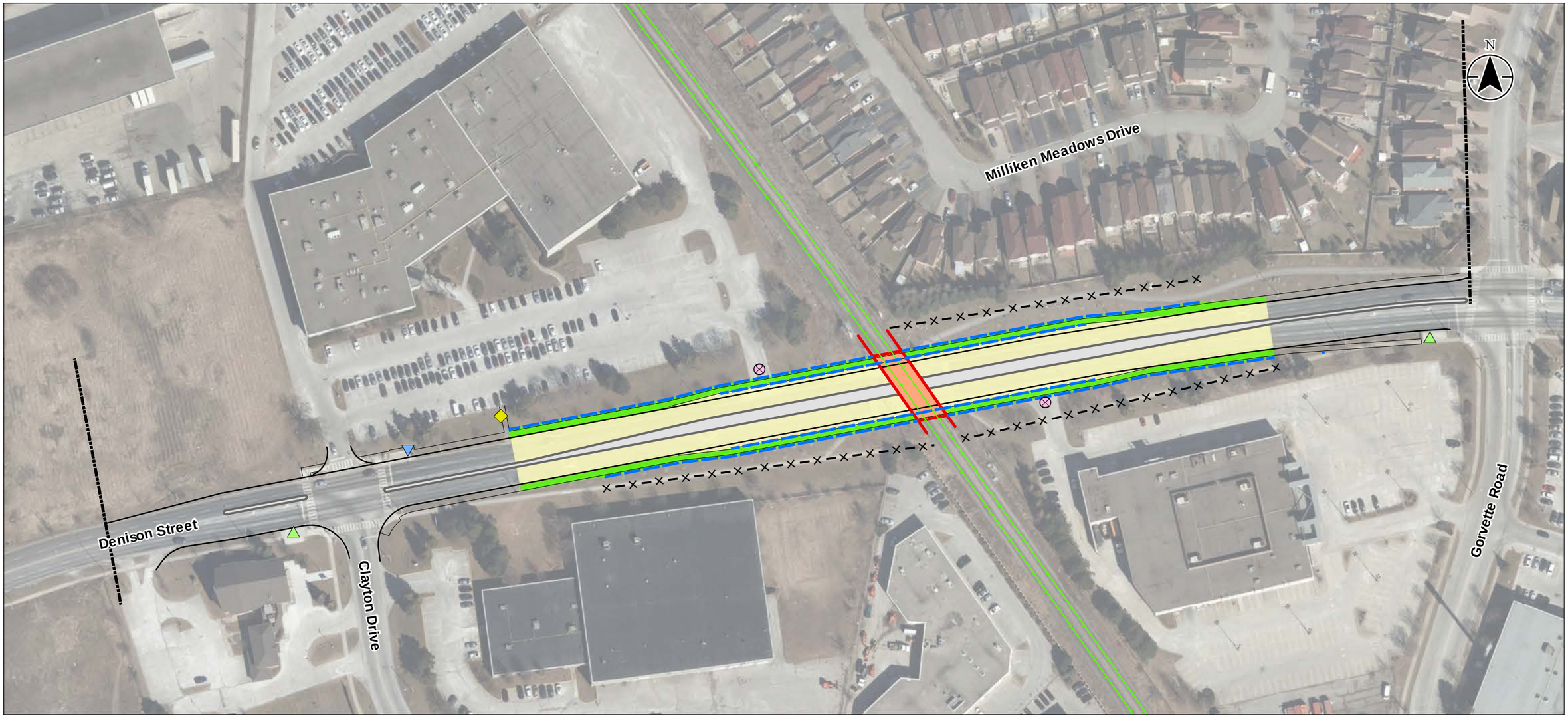
2.1.1.2 Temporary Disturbance

During construction, temporary disturbance will be required for a work zone, construction laydown area, rail diversion and a road detour.

Denison Street will be diverted to the south. At a minimum, one lane of traffic will be maintained in each direction.

A sidewalk, aligning with the City of Markham's standards, will be constructed along one side of the detour and will be at-grade.

The tracks will be temporarily shifted to the west to accommodate construction of the rail bridge.



Legend

- Canon Canada Sidewalk Connection
- Entrance Closure
- Maintained Bus Stop
- Relocated Bus Stop
- Limits of Work
- GO Track
- Retaining Wall
- Fence
- Rail Bridge
- Median
- Depressed Road
- Elevated Sidewalk

0 25 50 metres

1:1,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 CSRS MTM 10

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Project Location Prepared by BCC on 2020-12-17

Greater Toronto Area
Ontario

Client/Project 165011004 REVA

METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.

2.1

Title

Denison Street Grade Separation

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Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.2

Title
Denison Street Grade Separation Artistic Conceptual Rendering

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2.1.1.3 Utility Conflicts

Potential effects on utilities are anticipated during construction including electricity, communications cables, gas, hydro, sanitary sewers, storm sewers, a traffic light and watermains. Relocation and/or realignment of the utilities will occur in consultation with the City of Markham and other applicable utility owners.

Stormwater servicing for the depressed corridor will follow City of Markham requirements and operational standards. The Project will be developed in accordance with municipal requirements and standards and in consideration of the anticipated conflicts the Project may have with existing stormwater management infrastructure. A summary of the preliminary stormwater management recommendations is provided in Section 4.10.2.1, and a detailed stormwater management report will be developed for the Project to support the detail design.

2.1.2 Kennedy Road

A road under rail grade separation is proposed at Kennedy Road, which is a regional road, that will accommodate two lanes of traffic in each direction. The roadway will be excavated to achieve the minimum vertical and horizontal clearance and slope requirements based on applicable York Region standards, allowing the rail corridor to remain at-grade. There will be a minimum clearance of 5.3 m between the top of the roadway and the bottom of the rail bridge.

Elevated sidewalks and raised cycle tracks will be provided on both sides of Kennedy Road to match existing conditions and will be designed to York Region and AODA standards.

The rail bridge will accommodate two tracks, and design and type will be determined as design progresses. The bridge design will address standard maintenance issues, such as the inclusion of de-icing requirements. As required and in accordance with applicable standards, lighting will be placed under the new bridge to improve visibility for traffic, pedestrians and cyclists. Artificial lighting will be incorporated as per applicable lighting standards.

Discussions with York Region are ongoing to confirm if the structure will be widened to accommodate a potential future road lane capacity increase to six traffic lanes and a multi-use path in accordance with York Region’s ongoing Municipal Class Environmental Assessment Study of Kennedy Road between Steeles Avenue and Major Mackenzie Drive in the City of Markham.

Retaining walls are proposed to limit grading impacts on adjacent properties. Retaining walls will be constructed for almost the entire length of Kennedy Road, from Clayton Drive to Gorvette Road. In conjunction with the City of Markham, Metrolinx will determine the appropriate finish(es) for the retaining walls based on municipal planning and urban design policies and objectives, surrounding land uses, adjacent built form, and pedestrian, cycle and automobile traffic levels.

The key design features of the Kennedy Road grade separation are shown on Figure 2.3. An artistic conceptual rendering is shown on Figure 2.4.

2.1.2.1 Changes to Existing Access

The grade separation at Kennedy Road will result in the closure of one entrance to an existing building (7380-7510 Kennedy Road). The building has two other existing alternate accesses and a new entrance is not proposed.

Due to roadway widening, the existing bus stop located on the south side of the road just west of the rail ROW will be located closer to Clayton Drive to avoid conflict with the grade separation.

Refer to Section 4.6.3.2 for further information regarding changes to access and bus stop relocations.

2.1.2.2 Temporary Disturbance

During construction, temporary disturbance will be required for a work zone, construction laydown, rail diversion and a road detour.

Kennedy Road will be diverted to the south. The detour will maintain two traffic lanes (i.e., one in each direction) at a minimum.

A sidewalk, aligning with the York Region's standards, will be constructed along one side of the detour and will be at-grade.

The tracks will be temporarily shifted to the north to accommodate construction of the rail bridge.

2.1.2.3 Utility Conflicts

Potential effects to utilities are anticipated during construction including hydro, communications cables, gas, sanitary sewers, storm sewers, traffic lights and watermains. Relocation and/or realignment of the utilities will occur in consultation with

the City of Markham, York Region, City of Toronto (i.e., for the 1,500 mm watermain) and other applicable utility owners.

Stormwater servicing for the depressed corridor will follow City of Markham and York Region requirements and operational standards. The Project will be developed in accordance with municipal requirements and standards and in consideration of the anticipated conflicts the Project may have with existing stormwater management infrastructure. A summary of the preliminary stormwater management recommendations is provided in Section 4.10.3.1, and a detailed stormwater management report will be developed for the Project to support the detail design.

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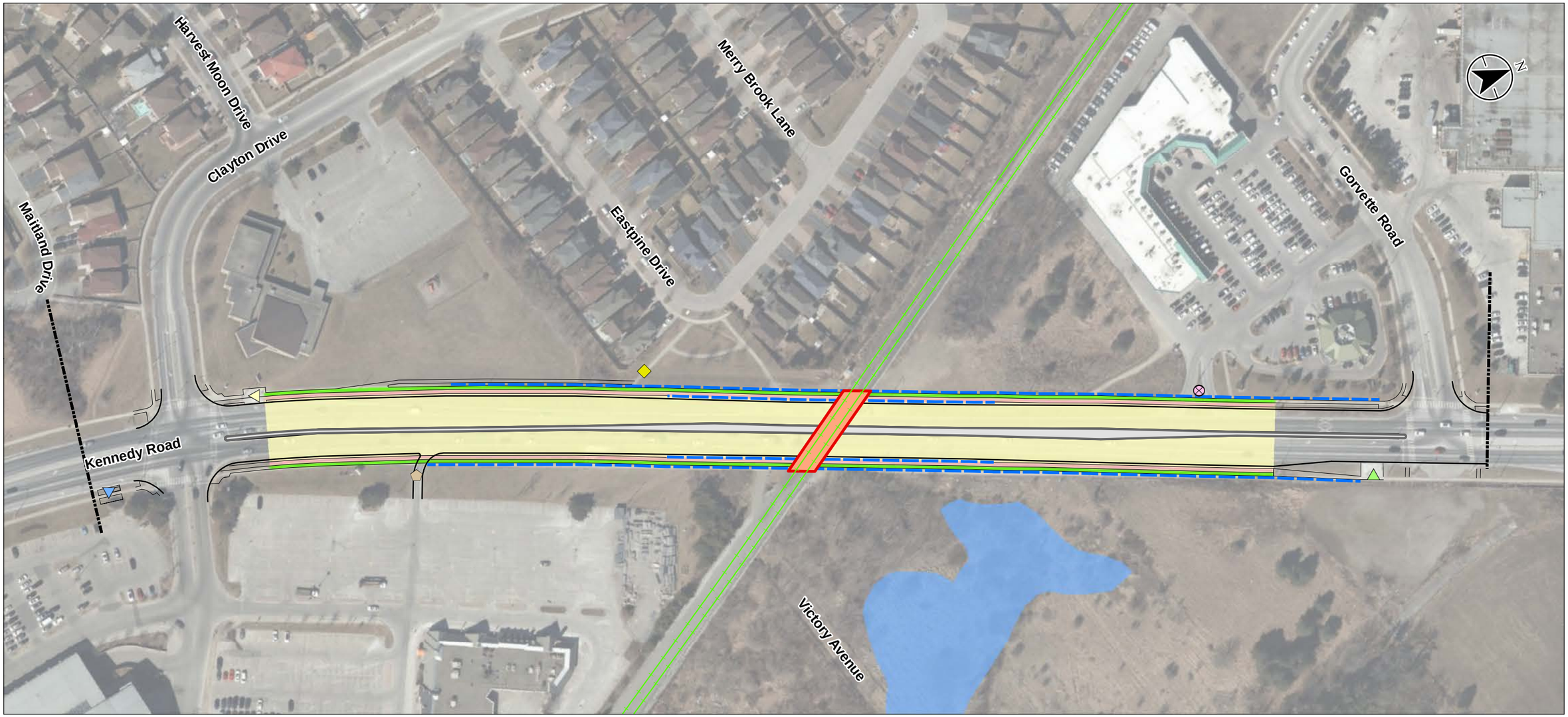

Legend

- Maintained Exit
- Reinstated Sidewalk Connection
- Maintained Bus Stop
- Reinstated Bus Stop
- Relocated Bus Stop
- Entrance Closure
- GO Track
- Limits of Work
- Retaining Wall
- Rail Bridge
- Median
- Depressed Road
- Elevated Cycle Track
- Elevated Sidewalk
- Wetland

0 30 60 metres

1:1,750 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-17

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
2.3

Title
Kennedy Road Grade Separation

Notes
1. Coordinate System: NAD 1983 CSRS MTM 10
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Project Location Greater Toronto Area Ontario	Prepared by BCC on 2020-12-16
Client/Project METROLINX STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT	165011004 REVA
Figure No. **2.4**	
Title **Kennedy Road Grade Separation Artistic Conceptual Rendering**	

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2.1.3 Passmore Avenue

A road under rail grade separation is proposed at Passmore Avenue that will accommodate the existing two lanes of traffic in each direction. The roadway will be excavated to achieve the minimum vertical and horizontal clearance and slope requirements based on applicable City of Toronto standards. There will be a minimum clearance of 5.3 m between the top of the roadway and the bottom of the rail bridge.

Elevated sidewalks and intermediate-level cycle tracks will be provided on both sides of Passmore Avenue and will be designed to City of Toronto and AODA standards.

The rail bridge will accommodate two tracks, and design and type will be determined as design progresses. The bridge design will address standard maintenance issues, such as the inclusion of de-icing requirements. As required and in accordance with applicable standards, lighting will be placed under the new bridge to improve visibility for traffic, pedestrians and cyclists. Artificial lighting will be incorporated as per applicable lighting standards.

Retaining walls will be constructed along both sides of Passmore Avenue from approximately Milliken Boulevard to Silver Star Boulevard to limit grading impacts on adjacent properties. In conjunction with the City of Toronto, Metrolinx will determine the appropriate finish(es) for the retaining walls based on municipal planning and urban design policies and objectives, surrounding land uses, adjacent built form, and pedestrian, cycle and automobile traffic levels.

The key design features of the Passmore Avenue grade separation are shown on Figure 2.5. An artistic conceptual rendering is shown on Figure 2.6.

2.1.3.1 Changes to Existing Access

The feasibility of maintaining effective access and business operations for properties surrounding the proposed grade separation at Passmore Avenue is still being explored with property owners and the City of Toronto, to confirm a preferred mitigation plan. While we expect to move forward with the grade separation, Metrolinx is still working with the City of Toronto and affected businesses to find a design solution that will fit the needs of the City, businesses and GO Expansion. The Passmore Avenue grade separation will be studied in a separate EPR Addendum following the Statement of Completion for the Stouffville Rail Corridor Grade Separations TPAP.

Based on the current conceptual design, two new permanent public roads are planned be constructed to the north and south of Passmore Avenue on the west side of the rail corridor in order to maintain access to existing buildings. The final alignment of the

public roads will be confirmed during detailed design. In addition, new entrances off existing and proposed extensions of Silver Star Boulevard and Milliken Boulevard will provide access to four businesses (30, 50, 65 and 70 Passmore Avenue) where entrances to these businesses from Passmore Avenue will be removed due to the grade separation.

A bus stop will be relocated to accommodate the grade separation.

Refer to Section 4.6.4.2 for further information regarding changes to access and bus stop relocations.

2.1.3.2 Temporary Disturbance

During construction, temporary disturbance will be required for a work zone, construction laydown area, access road, and a rail diversion.

A road detour to the south of Passmore Avenue running east-west will be required during construction. At a minimum, one lane of traffic will be maintained in each direction along Passmore Avenue. Access from Passmore Avenue to Silver Star Boulevard will be closed during construction.

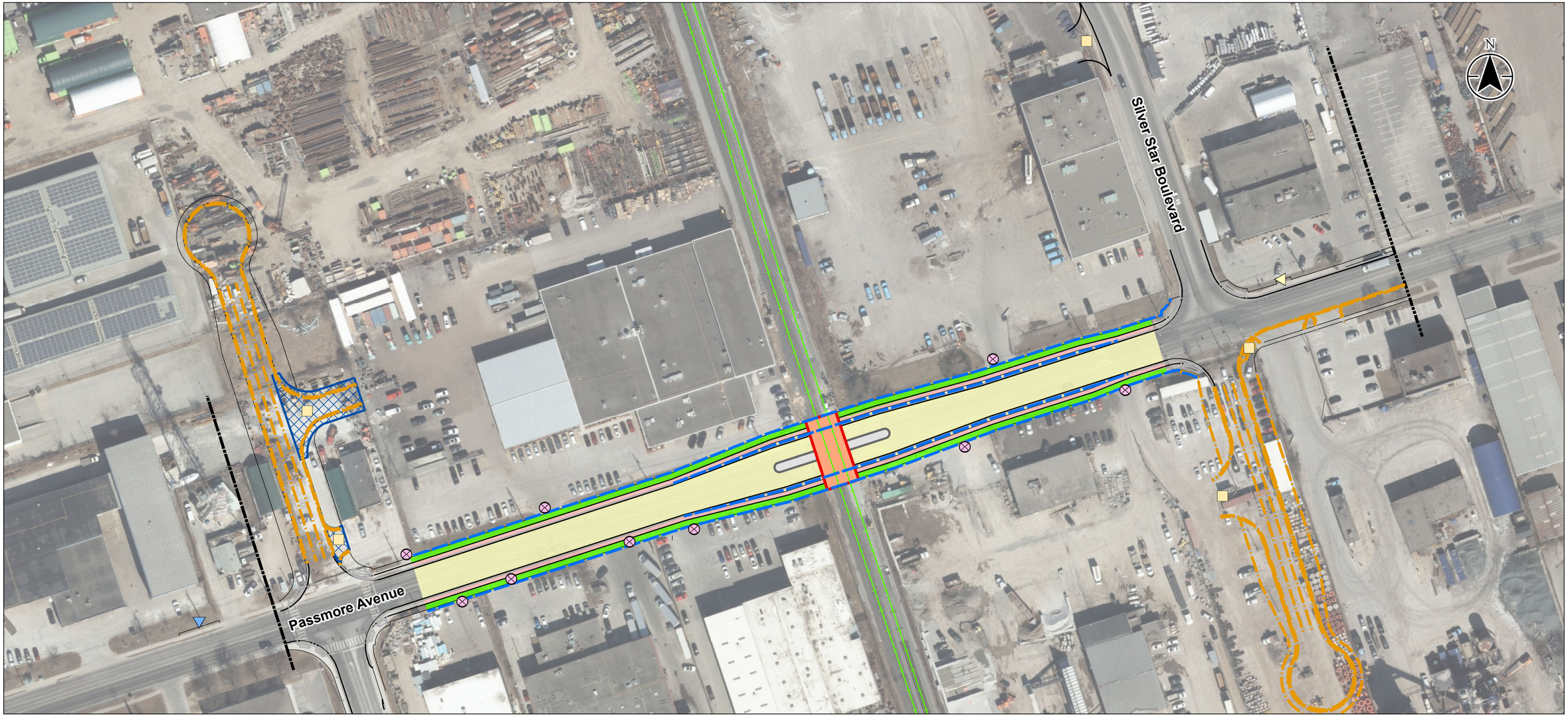
A sidewalk, aligning with the City of Toronto's standards, will be constructed along one side of the detour and will be at-grade.

The tracks will be temporarily shifted to the east to accommodate construction of the rail bridge.

2.1.3.3 Utility Conflicts

Potential effects to utilities are anticipated during construction including communications cables, gas, hydro, sanitary sewers, storm sewers, watermains and traffic lights. Relocation and/or realignment of the utilities will occur in consultation with the City of Toronto and other applicable utility owners.

Stormwater servicing for the depressed corridor will follow City of Toronto requirements and operational standards. The Project will be developed in accordance with municipal requirements and standards and in consideration of the anticipated conflicts the Project may have with existing stormwater management infrastructure. A summary of the preliminary stormwater management recommendations is provided in Section 4.10.4.1, and a detailed stormwater management report will be developed for the Project to support the detail design.



Legend

- New Entrance
- Reinstated Bus Stop
- Relocated Bus Stop
- Entrance Closure
- Limits of Work
- GO Track
- Access Road
- Retaining Wall
- Permanent Access Roads
- Rail Bridge
- Median
- Depressed Road
- Elevated Cycle Track
- Elevated Sidewalk

0 25 50 metres

1:1,500 (At original document size of 11x17)

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Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-17

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
2.5

Title
Passmore Avenue Grade Separation

Notes
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Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.6

Title
Passmore Avenue Grade Separation
Artistic Conceptual Rendering

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2.1.4 McNicoll Avenue

A road under rail grade separation is proposed at McNicoll Avenue that will accommodate the existing two lanes of traffic in each direction. The roadway will be excavated to achieve the minimum vertical and horizontal clearance and slope requirements based on applicable City of Toronto standards, while allowing the rail corridor to remain approximately at-grade with a minimal rise of 0.1 m. There will be a minimum clearance of 5.3 m between the top of the roadway and the bottom of the rail bridge. A minimum of 1.8 m depth of cover will be maintained over the 2,100 mm metro watermain.

An elevated sidewalk will be provided on the north side of McNicoll Avenue and an elevated sidewalk and new bi-directional intermediate-level cycle tracks will be constructed to the south of McNicoll Avenue; both will be designed to City of Toronto and AODA standards. The sidewalks and cycle tracks will include a protective barrier to separate pedestrians/cyclists from vehicular traffic.

The rail bridge will accommodate two tracks, and design and type will be determined as design progresses. The bridge design will address standard maintenance issues, such as the inclusion of de-icing requirements. As required and in accordance with applicable standards, lighting will be placed under the new bridge to improve visibility for traffic, pedestrians and cyclists. Artificial lighting will be incorporated as per applicable lighting standards.

Several retaining walls will be constructed to limit grading impacts on adjacent properties. Retaining walls will be built for the majority of the extent of the road under rail structure, with minor grading near the end points. In conjunction with the City of Toronto, Metrolinx will determine the appropriate finish(es) for the retaining walls based on municipal planning and urban design policies and objectives, surrounding land uses, adjacent built form, and pedestrian, cycle and automobile traffic levels.

The key design features of the McNicoll Avenue grade separation are shown on Figure 2.7. An artistic conceptual rendering is shown on Figure 2.8.

2.1.4.1 Changes to Existing Access

The grade separation at McNicoll Avenue will result in the closure of one entrance to an existing building (2155 McNicoll Avenue). The building has an existing alternate access on Silver Star Boulevard which will be maintained, and a new entrance off of McNicoll Avenue is not feasible due to the grade difference.

A sidewalk and stair connection to the future China City Development Inc. (located at the corner of McNicoll Avenue and Silver Star Boulevard) will be maintained.

Refer to Section 4.6.5.2 for further information regarding changes to access and bus stop relocations.

2.1.4.2 Temporary Disturbance

During construction, temporary disturbance will be required for work zones, construction laydown areas, and road detours.

McNicoll Avenue will be diverted to the south between Milliken Boulevard and Silver Star Boulevard, maintaining one lane of traffic in each direction at a minimum. The intersection of McNicoll Avenue and Silver Star Boulevard will be temporarily realigned, and McNicoll Avenue east of Silver Star Boulevard will have eastbound lane reductions but stay within the same general footprint as the existing road. Access from McNicoll Avenue to Milliken Boulevard (northbound) and Silver Star Boulevard (northbound) will be closed during construction.

A temporary multi-use path, aligning with the City of Toronto standards, will be constructed along one side of the detour between Milliken Boulevard and Silver Star Boulevard. Existing access to the hydro corridor multi-use path will be maintained during construction.

Legend

- Reinstated Bus Stop
- Entrance Closure
- Limits of Work
- GO Track
- Retaining Wall
- Median
- Rail Bridge
- Lowered Road
- Reinstated Sidewalk
- Bi-directional Cycle Track

0 30 60 metres

1:2,000 (At original document size of 11x17)

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Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-17

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
2.7

Title
McNicoll Avenue Grade Separation

Notes
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Project Location Greater Toronto Area Ontario	Prepared by BCC on 2020-12-16
Client/Project METROLINX STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT	165011004 REVA
Figure No. **2.8**	
Title **McNicoll Avenue Grade Separation Artistic Conceptual Rendering**	

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2.1.4.3 Utility Conflicts

The depressed road will be constructed above an existing 2,100 mm metro watermain, but it is anticipated that direct impacts can be avoided by implementing a design that will maintain minimum cover over the watermain (including optimization of the rail bridge and a slight raise of 0.1 m in the rail corridor).

Potential effects to other utilities are anticipated during construction including communications cables, gas, hydro, sanitary sewers, storm sewers, and watermains. Relocation and/or realignment of the utilities will occur in consultation with the City of Toronto and other applicable utility owners.

Stormwater servicing for the depressed corridor will follow City of Toronto requirements and operational standards. The Project will be developed in accordance with municipal requirements and standards and in consideration of the anticipated conflicts the Project may have with existing stormwater management infrastructure. A summary of the preliminary stormwater management recommendations is provided in Section 4.10.5.1, and a detailed stormwater management report will be developed for the Project to support the detail design.

2.1.5 Huntingwood Drive

A road under rail grade separation is proposed at Huntingwood Drive that will accommodate the existing two lanes of traffic in each direction. The roadway will be excavated to achieve the minimum vertical and horizontal clearance and slope requirements based on applicable City of Toronto standards, while allowing the rail corridor to remain at-grade. There will be a minimum clearance of 5.3 m between the top of the roadway and the bottom of the rail bridge.

Elevated sidewalks and sidewalk-level cycle tracks will be provided on both sides of Huntingwood Drive and will be designed to City of Toronto and AODA standards.

The rail bridge will accommodate two tracks, and design and type will be determined as design progresses. The bridge design will address standard maintenance issues, such as the inclusion of de-icing requirements. As required and in accordance with applicable standards, lighting will be placed under the new bridge to improve visibility for traffic, pedestrians and cyclists. Artificial lighting will be incorporated as per applicable lighting standards.

Retaining walls will be constructed along a portion of both sides of Huntingwood Drive to limit grading impacts on adjacent properties. In other areas, grading will contour the land towards the grade separated Huntingwood Drive. In conjunction with the City of Toronto, Metrolinx will determine the appropriate finish(es) for the retaining walls based on municipal planning and urban design policies and objectives, surrounding land uses, adjacent built form, and pedestrian, cycle and automobile traffic levels. Due to the proximity of Sir William Osler High School and Lynnwood Heights Junior Public School, the grade separation area will be fenced for safety from approximately east of Belgreen Avenue to west of Kittery Boulevard (refer to Figure 2.9).

The key design features of the Huntingwood Drive grade separation are shown on Figure 2.9. An artistic conceptual rendering is shown on Figure 2.10.

2.1.5.1 Changes to Existing Access

There will be no change in existing access as a result of the grade separation. Two bus stops will be reinstated. As per TTC's request, the bus stops located at Huntingwood Drive and Kittery Boulevard will be removed.

2.1.5.2 Temporary Disturbance

During construction, temporary disturbance will be required for a work zone, construction laydown area, rail diversion and road detour.

A road detour to the north of Huntingwood Drive will be required during construction. At a minimum, one lane of traffic will be maintained in each direction.

A temporary sidewalk will also be constructed along one side of the detour in accordance with City of Toronto standards.

The tracks will be temporarily shifted to the east to accommodate construction of the rail bridge. As a result of the rail detour, there will be temporary disturbance to Sir William Osler High School (i.e., track field area).

2.1.5.3 Utility Conflicts

Potential effects to utilities are anticipated during construction including communications cables, gas, hydro, sanitary sewers, storm sewers, and watermains. Relocation and/or realignment of the utilities will occur in consultation with the City of Toronto and other applicable utility owners.

Stormwater servicing for the depressed corridor will follow City of Toronto requirements and operational standards. The Project will be developed in accordance with municipal requirements and standards and in consideration of the anticipated conflicts the Project may have with existing stormwater management infrastructure. A summary of the preliminary stormwater management recommendations is provided in Section 4.10.6.1, and a detailed stormwater management report will be developed for the Project to support the detail design.

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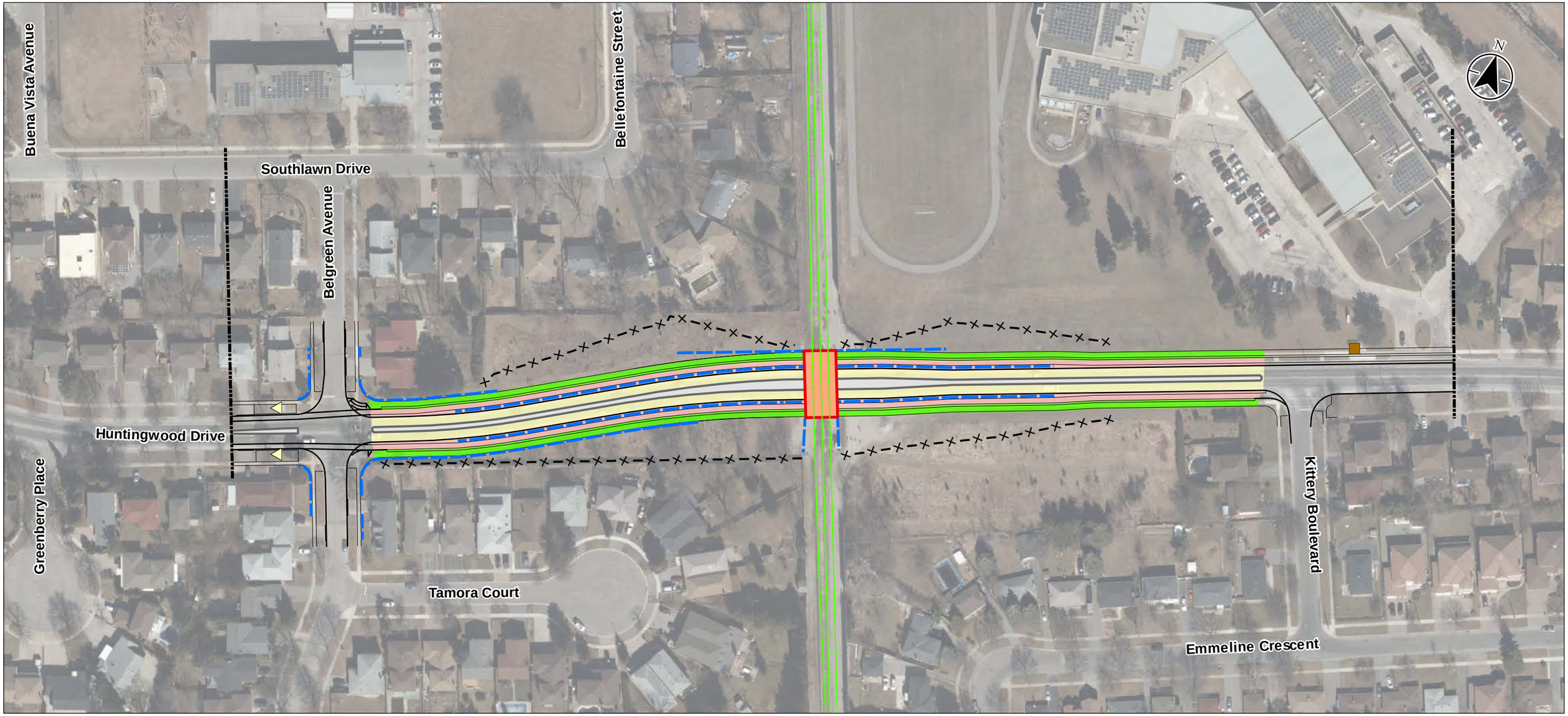

Legend

- Reinstated Bus Stop
- Removal of bus stop at TTC's request
- GO Track
- Rail Bridge
- Limits of Work
- Retaining Wall
- Fence
- Median
- Depressed Road
- Elevated Cycle Track
- Elevated Sidewalk

0 25 50 metres

1:1,500 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-17

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.9

Title
Huntingwood Drive Grade Separation

Notes
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Project Location
Greater Toronto Area
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Prepared by BCC on 2020-12-16

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.10

Title
Huntingwood Drive Grade Separation
Artistic Conceptual Rendering

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2.1.6 Havendale Road

Road closure with a multi-use crossing is proposed at Havendale Road. A new multi-use crossing will be constructed to the north of Havendale Road and cul-de-sacs will be provided on either end of the terminated Havendale Road to meet City of Toronto transportation standards. The multi-use crossing will be set-back from the road to maintain sight lines along Havendale Road. To maintain pedestrian and cyclist connectivity, Metrolinx is considering options for the new multi-use crossing to either pass over or under the rail corridor (through a new bridge or tunnel). For both options, ramps and crossings will be designed to a minimum width of 3 m. There is potential to add stairs during detailed design to help reduce the travel time/distance. The design of the multi-use crossing will be further refined during detailed design, taking into consideration the potential effects identified in this EPR.

The crossing will be compliant with the AODA and will meet City of Toronto standards, at a minimum. Design will address standard maintenance issues, such as the inclusion of de-icing requirements.

The bridge option benefits from natural lighting during the day but will require artificial lighting at night. Guardrails will be designed to reduce visual impact and maximize natural lighting. The tunnel option will require artificial lighting due to full cover, while retaining walls and structural elements will be limited where feasible to maximize natural lighting. Where required, artificial lighting will be incorporated as per applicable lighting standards. If the bridge option is chosen, electrification protection barriers (EPB) will be installed to protect pedestrians from direct contact with live parts of the Overhead Catenary System (OCS). These barriers also provide an obstacle to debris that may be thrown onto the rail corridor from overhead, which protect against damage to the electrification infrastructure passing under bridges. The tunnel option would not require EPBs.

A multi-use pathway connection to Havendale Park on the west side of the rail corridor could be provided.

The key design features of the Havendale Road multi-use crossing (bridge option) are shown on Figure 2.11, and an artistic conceptual rendering is shown on Figure 2.12. The key design features of the tunnel option are shown on Figure 2.13.

2.1.6.1 Changes to Existing Access

Havendale Road will be closed at either side of the rail corridor to vehicular traffic. Pedestrian and cyclist movement will be maintained across the corridor, although altered from existing conditions.

The acquisition of three full properties and two partial properties may be required to accommodate the multi-use crossing structure and ramps (bridge or tunnel) and the cul-de-sacs.

2.1.6.2 Temporary Disturbance

During construction, temporary disturbance will be required for a work zone and construction laydown area. It is anticipated that these areas can be accommodated within the footprint of the properties that may be acquired.

2.1.6.3 Utility Conflicts

Potential effects to utilities are anticipated during construction including a utility pole, hydro, a light standard, telecommunications, a fire hydrant and a watermain valve. Relocation and/or realignment of the utilities will occur in consultation with the City of Toronto and other applicable utility owners.

Stormwater servicing will follow City of Toronto requirements and operational standards. The Project will be developed in accordance with municipal requirements and standards and in consideration of the anticipated conflicts the Project may have with existing stormwater management infrastructure. A summary of the preliminary stormwater management recommendations is provided in Section 4.10.7.1, and a detailed stormwater management report will be developed for the Project to support the detail design.

322000

Belgreen Avenue

Havendale Road

Stainforth Drive

Fulbert Crescent

Agincourt Drive

N

322000

Legend

- Road Closure
- GO Track
- Multi-Use Bridge
- Private Property Acquisition

0 10 20 metres

1:750 (At original document size of 11x17)

Notes

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Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.11

Title
Havendale Road Multi-Use Crossing – Bridge Option

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0 25 50 metres

1:1,500 (At original document size of 11x17)

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Project Location
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Ontario

Prepared by BCC on 2020-12-16

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.12

Title
Havendale Road Multi-Use Crossing Artistic Conceptual Rendering

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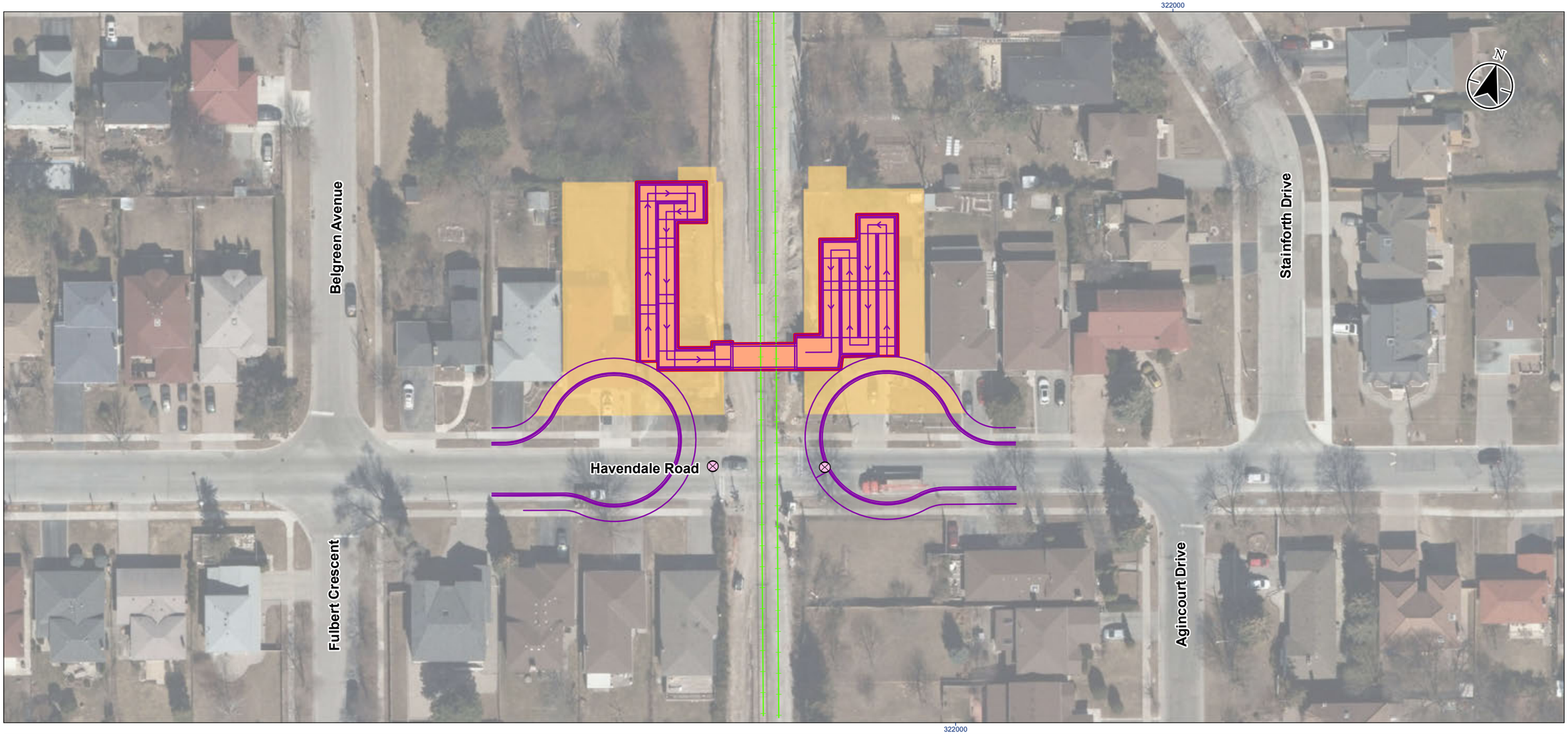

Legend

- Road Closure
- GO Track
- Multi-Use Tunnel
- Private Property Acquisition

0 10 20 metres

1:750 (At original document size of 11x17)

Notes

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Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.13

Title
Havendale Road Multi-Use Crossing – Tunnel Option

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2.1.7 Progress Avenue

A road over rail grade separation that will accommodate the existing two lanes of traffic in each direction is proposed for Progress Avenue to cross both the rail corridor and West Highland Creek. The roadway and bridges will be designed to achieve the minimum vertical and horizontal clearance and slope requirements based on applicable City of Toronto standards, while allowing the rail corridor to remain at-grade. The bridge over the rail corridor will be designed to accommodate the height requirements for the electrification initiative (refer to Section 1.3.3.1), a minimum clearance distance of 7.1 m from the top of the railway. The Progress Avenue bridge over West Highland Creek will have an approximate 3.9 m clearance over the creek. Bridge design will be determined as design progresses and will meet applicable City of Toronto and Toronto and Region Conservation Authority (TRCA) standards. The bridge designs will address standard maintenance issues, such as the inclusion of de-icing requirements.

Sidewalks will be provided on both sides of Progress Avenue and will be designed to City of Toronto and AODA standards. A sidewalk along the east side of William Kitchen Road will be provided to allow continued pedestrian access to 1 William Kitchen Road. Stairs and/or a ramp from Progress Avenue to 45 Progress Avenue may be provided to allow continued pedestrian access to businesses along the new public roadway.

Due to the proposed grade separation of Progress Avenue, several new permanent public roads will be required to maintain entry to existing buildings and properties. Public road routing will be designed to maintain frontage and direct access to public roads, to the extent feasible. Two permanent access roads are anticipated to provide entrances for seven impacted properties. Road, bridge and sidewalk design will meet applicable City of Toronto and AODA standards. A new private one-way access road will be constructed at-grade that will allow shunt trucks to move from 80 to 111 Progress Avenue.

Two rail tracks will pass beneath Progress Avenue following construction of the grade separation. EPBs will be installed to protect pedestrians and travelers from direct contact with live parts of the OCS. These barriers also provide an obstacle to debris that may be thrown onto the rail corridor from overhead, which protect against damage to the electrification infrastructure passing under bridges.

Several retaining walls will be constructed to limit grading impacts on adjacent properties. Retaining walls will be built for the majority of the extent of the road over rail structure with additional retaining walls along William Kitchen Road. In conjunction with the City of Toronto, Metrolinx will determine the appropriate finish(es) for the retaining walls based on municipal planning and urban design policies and objectives,

surrounding land uses, adjacent built form, and pedestrian, cycle and automobile traffic levels.

The key design features of the Progress Avenue grade separation are shown on Figure 2.14. An artistic conceptual rendering is shown on Figure 2.15.

2.1.7.1 Changes to Existing Access

Access to William Kitchen Road from Progress Avenue will be closed during construction.

Two bus stops will be relocated to the east of their existing locations to accommodate the grade separation.

Businesses fronting Progress Avenue within the Project Footprint will lose direct access to Progress Avenue due to changes in the grade of the roadway. Alternative entrances will be provided to impacted businesses either directly from Progress Avenue or from new permanent public roads including to 11, 21, 31, 45, 55, 65, 80, and 85 Progress Avenue. The number of entrances to properties fronting Progress Avenue will be maintained, with three exceptions. There are currently two entrances to 45 Progress Avenue, which will be reduced to one entrance from a new public road. The Progress Avenue entrance to 34 Progress Avenue and 1 William Kitchen Road will be removed; the existing entrances on William Kitchen Road will be maintained.

A permanent public access to 60 Progress Avenue is not feasible based on the reference concept design. This property may be acquired. Similarly, 77 Progress Avenue may be acquired to facilitate the permanent public access road to 55 and 65 Progress Avenue.

2.1.7.2 Temporary Disturbance

During construction, temporary disturbance will be required for a work zone, construction laydown area, road detour and access roads.

Progress Avenue will be diverted to the south of its existing alignment during construction. At a minimum, one lane of traffic will be maintained in each direction. The diversion will require a new at-grade bridge over West Highland Creek. It is anticipated that this bridge will be used post-construction and following the return of Progress Avenue to its ultimate alignment, to provide continued access to existing businesses. Subject to further design, a temporary road detour and access roads will provide continued access to businesses during construction. The temporary access road alignments may be maintained into operations to provide permanent access.

A sidewalk, aligning with the City of Toronto's standards, will be constructed along one side of the detour and will be at-grade.

2.1.7.3 Utility Conflicts

Potential effects to utilities are anticipated during construction including communications cables, gas, hydro, sanitary sewers, storm sewers, and watermains. Relocation and/or realignment of the utilities will occur in consultation with the City of Toronto and other applicable utility owners.

Stormwater servicing will follow City of Toronto requirements and operational standards. The Project will be developed in accordance with municipal requirements and standards and in consideration of the anticipated conflicts the Project may have with existing stormwater management infrastructure. A summary of the preliminary stormwater management recommendations is provided in Section 4.10.8.1, and a detailed stormwater management report will be developed for the Project to support the detail design.

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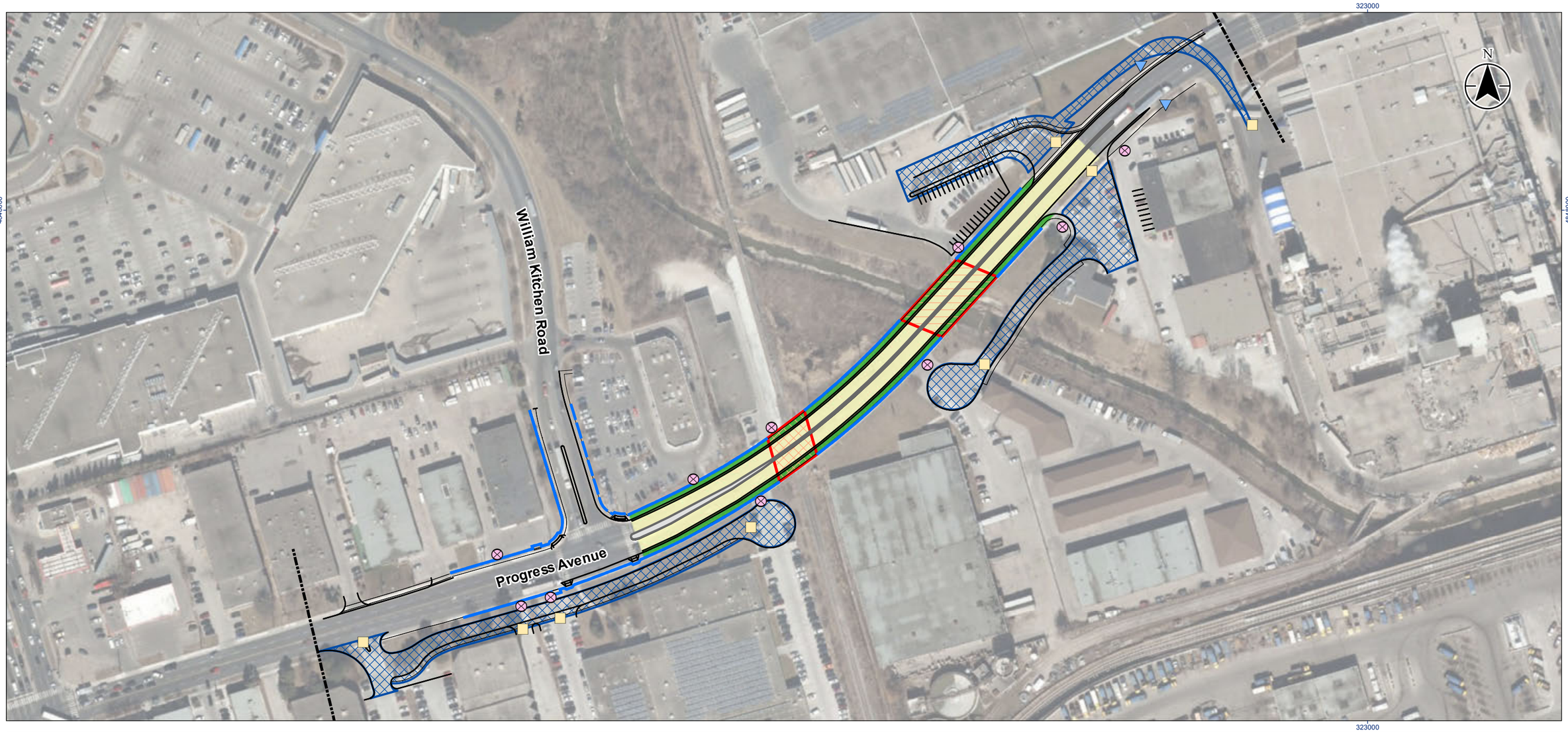

Legend

- New Entrance
- Relocated Bus Stop
- Entrance Closure
- Limits of Work
- Retaining Wall
- Median
- Road Bridge Crossing GO Tracks
- Road Bridge Crossing West Highland Creek
- Permanent Access Roads
- Elevated Roadway
- Reinstated Sidewalk

0 30 60 metres

1:2,000 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
2.14

Title
Progress Avenue Grade Separation

Notes
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Project Location
Greater Toronto Area
Ontario

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Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
2.15

Title
Progress Avenue Grade Separation
Artistic Conceptual Rendering

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2.2 Construction

Preliminary construction staging plans are provided below. This description provides a conceptual approach for implementing the Project; however, final construction sequencing will be confirmed as design advances.

Construction of the road under rail grade separations (i.e., for Denison Street, Kennedy Road, Passmore Avenue, McNicoll Avenue, and Huntingwood Drive) will follow the same general sequencing. Utilities identified as in conflict with construction activities and/or Project infrastructure will be relocated. The detour road at each location will be constructed adjacent to the existing roadway, without substantial effects to traffic. Once construction of the detour road is complete, the detour road will be tied into the existing road/ROW and the affected portion of existing road will be closed for use during construction. Rail detours will also be constructed adjacent to the existing rail corridor. The road under rail area will be excavated and the rail bridge installed, with necessary grading and retaining walls. Once the rail bridge is installed, the rail detour will be removed, and trains will run along the existing rail corridor. Excavation of the area beneath the rail detour will be undertaken. Road works will follow, replacing the main road, cycling facilities and sidewalks to the conditions outlined in Section 2.1. Guardrails, fencing, pavement markings, signage, lighting and traffic control measures will be put in place. The road detour will be removed, and areas affected during construction will be rehabilitated to applicable standards.

As with the road under rail construction, road over rail construction at Progress Avenue will commence with relocation of utilities where required. A road detour will be constructed south of the existing Progress Avenue and will include an at-grade crossing of the tracks. A new bridge will be constructed over West Highland Creek for the detour; however, this bridge will also be used post-construction to provide ongoing access to the properties at 55 and 65 Progress Avenue. The main road over rail grade separation will require installation of a number of retaining walls before the bridge structure is put in place. A portion of the detour road will remain in place to provide access to existing business. Additional access roads for properties on both sides of the corridor will be constructed to maintain frontage on publicly access roads. Portions of the road detour that are not required post-construction will be removed and areas affected during construction will be rehabilitated to applicable standards. EPBs will be installed to protect the energized equipment.

Havendale Road will be permanently closed to traffic in advance for construction of the bridge and cul-de-sacs. If the bridge option is chosen, construction will commence with the footings and piers for the bridge and the ramps. The bridge superstructure, consisting of a prefabricated steel truss, will be erected onto the piers by crane. A track block will be required during erection. The concrete decking for both the bridge and the ramps would then be placed, followed by railings, glazing, and joint systems. EPBs will be installed to protect the energized equipment. If the tunnel option is chosen, a staged construction will be required under the tracks with the tunnel constructed in two stages with a track protection system (shoring) between the stages. Excess soil removal is required for the ramps and for tunneling beneath the rail corridor, and 4.3 m high retaining walls (final height dependent on design) required adjacent to the rail corridor.

Activities associated with construction are described in Table 2.2. These activities have the potential to interact with the existing environment and are used to determine the potential environmental effects of the Project during construction (refer to Section 4.0). Mitigation measures and monitoring requirements are described in Section 4.11. Further refinements to the construction activities may be made as detailed design progresses.

Table 2.2: Anticipated Construction Activities

Activity	Description	Associated Equipment
Site Preparation	• Delivery of equipment and materials to the laydown area • Removal of vegetation, buildings and infrastructure • Installation of erosion and sediment control measures • Installation of temporary fencing	• Grading and grubbing equipment (if required) • Excavation equipment including backhoe, dump trucks, and soil removal equipment
Modifications to Utilities	• Removal and realignment of the utilities as required • Encasement where needed for protection	• Concrete pouring equipment • Excavation equipment including backhoe, dump trucks, soil removal equipment, jack hammers
Excavation and Grading	• Excavation of soils • Grading, sloping and contouring • Grading of areas associated with track detours • Progressive excavation for retaining walls	• Grading equipment • Excavation equipment including backhoe, dump trucks, and soil removal equipment

Activity	Description	Associated Equipment
Construction of Bridges	• Installation of temporary and permanent barriers for track and road safety • Excavation and pile driving • Construction of new bridge and trackwork • Construction of sidewalks • Reconstruction of road • Removal of temporary shoring and barriers	• Small cranes • Pile driving rigs • Excavators, Backhoes, Loaders, Dump trucks. • Concrete mixer trucks • Truck cranes. • Bulldozers, Compaction rollers, Road rollers • Road paving machines
Construction of the Havendale Multi-use Crossing (bridge option)	• Removal of three existing residences • Installation of appropriate foundations and piers • Assembly and launching of the main bridge structure • Installation of east and west ramps and associated retaining walls (if necessary)	• Pile driving rigs, cranes, concrete trucks • Excavator • Bulldozer
Construction of the Havendale Multi-use Crossing (tunnel option)	• Removal of three existing residences • Installation of retaining walls • Excavation (local areas with limited disturbance) • Installation of concrete caissons • Concrete work for tunnel construction	• Backhoes, loaders, dump trucks, concrete trucks • Augering machines for caisson construction, concrete mixer trucks • Excavator • Bulldozer, compaction rollers • Concrete pouring equipment
Temporary Lane Closures/Detours	• Temporary lane closures, realignments and detours • Lane closures will follow standard traffic control management guidelines	• Temporary traffic control devices such as signs, signals, barriers, traffic barrels
Temporary Track Diversion	• Assembly of track, ties and fastenings • Connection of temporary diversions and removal following completion of the new permanent tracks	• Thermal welding • Tie placement (cranes, lifting equipment) • Ballast placement equipment • Concrete pouring equipment

Activity	Description	Associated Equipment
Construction of Retaining Walls	• Local excavations • Installation of soldier piles and caissons • Construction of cap beams and permanent struts where required • Temporary struts where required and excavation to final track levels • Installation of drive points and construction of facing between walls • Track work and drainage • Construction of exterior facing, drainage, and barriers (e.g., fencing)	• Backhoes, loaders, dump trucks • Cranes for soldier pile installation, augering machines for caisson construction, concrete mixer trucks • Bulldozer, compaction rollers
Laydown Areas	• Designation of areas to be used for laydown of materials and construction staging • As appropriate, use of gravel or other materials for the areas	• Grading and grubbing equipment (if required) • Excavation equipment including backhoe, dump trucks, and soil removal equipment • Generator for site trailers
Groundwater Dewatering	• The need for dewatering during construction activities will be confirmed during detailed design	• Groundwater pumping
Management of Stormwater	• During construction, stormwater management will follow best management practices and align with applicable standards, municipal standards and requirements, and regulatory requirements • Surface flows will be discharged to municipal storm sewers • Installation of erosion and sediment control measures	• Grading equipment

2.3 Operations

Operational activities associated with the Project are listed in Table 2.3.

These activities have the potential to interact with the existing environment and are used to determine the potential environmental effects of the Project during operations (refer to Section 4.0). Mitigation measures and monitoring requirements are described in Section 4.11. Further refinements to the operations activities may be made as detailed design progresses and during operations.

Once modified (i.e., through relocation or encasement), the operations associated with utilities will revert back to the applicable owner and any potential effects associated with operations are not evaluated in this report.

Table 2.3: Anticipated Operations Activities

Activity	Description
General Operations	Maintenance of the: • rail bridges • multi-use crossing at Havendale Road • retaining walls • electrification barriers • stormwater and sanitary infrastructure • vegetation • snow clearing • debris/garbage clean-up • graffiti management • lighting replacement

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3.0 Existing Conditions

This Section of the EPR describes the existing environmental conditions within the Study Area (and discipline-specific Assessment Areas, where applicable). The existing conditions are used as the basis for measuring the potential environmental effects of the proposed works and to inform the identification of appropriate avoidance or mitigation measures.

The following subsections describe the key environmental components of the site:

- Natural Environment
  - Aquatic Environment
  - Terrestrial Environment
  - Wildlife
  - Significant Wildlife Habitat
  - Species at Risk
  - Significant Natural Heritage Features
- Tree Inventory
- Geology and Groundwater
  - Landforms and Physiography
  - Soils and Bedrock Geology
  - Groundwater Resources
- Cultural Environment
  - Built Heritage Resources and Cultural Heritage Landscapes
  - Archaeology

- Socio-Economic and Land Use
  - Planning Policy Context
  - Neighbourhood Characteristics
  - Aesthetics/Visual Character
  - Utilities
- Air Quality
- Noise and Vibration
- Traffic and Transportation
  - Road Network
  - Transit Network
  - Cycling, Pedestrian and Trail Network

Detailed information for each of the environmental components, including discipline-specific Assessment Areas, is provided in the background reports located in Appendix A.

3.1 Natural Environment

The following sections describe existing conditions and the methodology used to identify existing conditions related to the natural environment.

3.1.1 Methodology

A desktop screening was conducted to confirm and update aquatic and terrestrial information, including potential species at risk (SAR) and rare species, designated natural areas (i.e., Areas of Natural and Scientific Interest (ANSI), Provincially Significant Wetlands (PSW), and Environmentally Significant Areas) and other relevant natural heritage data within the Natural Environment Assessment Area for each grade separation location and from secondary sources (as available, including existing Lakeshore East Expansion Project, Network Electrification Project, Stouffville Corridor Rail Service Expansion Project), and municipal official plans. This screening was completed through aerial photo interpretation and a review of relevant federal and provincial databases and other planning documents as follows:

- Ministry of Natural Resources and Forestry's (MNRF) Land Information Ontario (LIO) database (MNRF 2019)
- MNRF's Natural Heritage Information Centre (NHIC) database (MNRF 2019)
- Species at Risk in Ontario (SARO) List
- Ontario Breeding Bird Atlas (Cadman et al. 2007)
- Online eBird database (eBird 2019)
- Ontario Butterfly Atlas (Toronto Entomologists' Association 2018)
- Ontario Mammal Atlas (Dobbyn 1994)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2019)
- Fisheries and Oceans Canada Species at Risk Mapping (Fisheries and Oceans Canada 2019)
- Natural Heritage and Hydrologic Study – Milliken Secondary Plan Area (North-South Environmental Inc. 2016)

Field investigations were conducted by ecologists for each grade separation. Terrestrial natural heritage features examined included vegetation communities, vegetation species, breeding birds, candidate significant wildlife habitat (SWH) including potential bat roost locations, and potential SAR habitat. Incidental wildlife observations were also recorded during field investigations.

Ecological Land Classification (ELC) mapping was completed using the ELC field guide for Southern Ontario (Lee et al. 1998), including the 2008 updated catalogue. Vegetation communities were first identified on aerial imagery and then confirmed in the field. SAR and rare species were recorded by location using a hand-held Global Positioning System (GPS). Surveys were conducted during a suitable season to identify potential SAR and provincially rare species.

Breeding bird surveys were conducted, consisting of recording all species of birds that were seen or heard within each of the surveyed vegetation communities. A highest breeding evidence code was assigned to each of the species based on the field observation. All birds seen or heard in suitable habitat during the breeding season were assumed to be breeding within the Natural Environment Assessment Area.

A bat maternity colony survey was conducted during leaf-off. The survey protocol followed the recommended methods in the MNRF Guelph District *Bat and Bat Habitat Surveys of Treed Habitats* (MNRF 2017) which was based in part on the *Bat and Bat Habitat Guidelines* (MNRF 2011).

Wildlife habitat assessments took place concurrently with vegetation surveys to identify potential significant wildlife habitat features. The wildlife habitat assessment was conducted according to the Significant Wildlife Habitat Technical Guide (SWHTG; MNR 2000), Ecoregion Criteria Schedules (MNRF 2015) and the Natural Heritage Reference Manual (MNR 2010). Significant Wildlife Habitat features documented during field studies were carried forward to the effects assessment. In addition, incidental wildlife observations were recorded during all field investigations. All wildlife species identified by sight, sound or distinctive signs were recorded.

Habitat assessments took place concurrently with vegetation surveys, to identify suitable habitat for significant species, including potential SAR and provincially rare species. The assessment was based on a list of significant species that have the potential to occur within the Natural Environment Assessment Area obtained from the background review. The assessment included provincially SRank (S1-S3) which are those species considered provincially rare/unique or species locally rare (L1-L3) flora within the municipality, or highly sensitive plants of conservation concern (Coefficient of Conservatism (CC) = 9-10)) most susceptible to change. Locations where field encounters of SAR and provincially rare species and/or their habitat were identified with hand-held GPS units.

Aquatic fieldwork was completed to confirm drainage patterns and identify if any unmapped watercourses were present within the Natural Environment Assessment Area.

The Natural Environment Assessment Area for each grade separation location is provided in Appendix A1.

3.1.2 Description of Existing Conditions

3.1.2.1 Denison Street

3.1.2.1.1 Aquatic Environment

Based on the desktop review of the location, Denison Street is not near any major watercourse features. Field investigations confirmed that no watercourses exist within the Natural Environment Assessment Area.

3.1.2.1.2 Terrestrial Environment

The Natural Environment Assessment Area is largely developed and urbanized with some street trees along boulevards, and is located within the Deciduous Forest Region, D.1 – Niagara (Rowe 1972). A review of the NHIC database identified the following vegetation SAR and provincially rare species with records in, or adjacent to the Natural Environment Assessment Area (Table 3.1). All species in Table 3.1 were recorded prior to 1983 and are considered historical records.

Table 3.1: Vegetation – NHIC Records of SAR and Provincially Rare Species – Denison Street

Type	Species	Provincial Status (S-rank)	SARO List
Plant	Biennial Gaura (*Oenothera gaura*)	S3	-
Plant	Lurking Leskea (*Plagiothecium latebricola*)	S2	-

MNRF confirmed no current records of vegetation SAR for the Natural Environment Assessment Area.

Meadow vegetation was documented in the rail ROW and fallow lots in the Natural Environment Assessment Area. Forests and wetlands were not documented during field investigations and are considered absent. The meadow habitat quality generally demonstrated a high degree of disturbance that is typical of urban environments, including a high proportion of non-native and invasive plant species. No rare or unique communities were documented.

3.1.2.1.3 Wildlife

The Natural Environment Assessment Area is highly urbanized, surrounded by residential, commercial and industrial/institutional land uses. Generally, the rail corridor provides limited wildlife habitat, including narrow areas of old field and regenerating woody vegetation. Incidental encounters with wildlife and evidence of wildlife were limited to urban tolerant species. Other common species that are acclimatized to urban conditions are also expected to occur in the Natural Environment Assessment Area.

No bird nests were confirmed at the Natural Environment Assessment Area; however, nests of common urban adapted species are expected to occur.

No incidental wildlife observations were recorded during the field investigations, however, common species that are tolerant of urban conditions are expected to occur throughout the Natural Environment Assessment Area.

3.1.2.1.4 Significant Wildlife Habitat

Field investigation confirmed that no Significant Wildlife Habitat is present within the Natural Environment Assessment Area.

3.1.2.1.5 Species at Risk

A review of the NHIC database (MNRF 2019) identified the following records within 1 km of the Natural Environment Assessment Area (Table 3.2). All species in Table 3.2 were recorded prior to 1982 and are considered historical records.

Table 3.2: Wildlife and Wildlife Habitat – NHIC Records of SAR and Provincially Rare Species – Denison Street

Type	Species	Provincial Status (S-rank)	SARO List
Insect	Clamp-tipped Emerald (*Somatochlora tenebrosa*)	S2S3	-
Insect	Green-striped Darner (*Aeshna verticalis*)	S3	-
Insect	Swamp Darner (*Epiaeschna heros*)	S2S3	-
Insect	Painted Skimmer (*Libellula semifasciata*)	S2	-
Reptile	Eastern Musk Turtle (*Sternotherus odoratus*)	S3	Special Concern

The Stouffville Corridor Rail Service Expansion ESR (Burnside 2014) concluded that there was no suitable habitat for the insect SAR identified in the NHIC results, neither was there any suitable habit for the reptile SAR.

MNRF confirmed no current records of SAR near the Natural Environment Assessment Area.

Barn Swallow, Chimney Swift, and Common Nighthawk are known to nest on buildings in urban environments, and Little Brown Myotis is known to roost in buildings in urban environments. In addition, suitable habitat for Eastern Meadowlark is present in the meadow communities. However, field investigations did not record any significant species in the Natural Environment Assessment Area.

A tree survey for bat habitat was carried out within the Natural Environment Assessment Area on May 3, 2019 and no potential bat roosting trees (i.e., cavities, snag, peeling bark) were observed.

No flora SAR, provincially (S1-S3) or locally (L1-L3) rare flora, or highly sensitive (CC = 9-10) plant species were documented during field investigations. Forty-one species of vascular plants were recorded from the Natural Environment Assessment Area, of which 14 (34%) were native. All native plants documented had a rank of S5, indicating they are common and secure within Ontario.

3.1.2.1.6 Significant Natural Heritage Features

A review of the NHIC and LIO data did not identify any records of Significant Natural Heritage features, including PSW, ANSI, Provincial Parks, Conservation Reserves or known areas of SWH in the Natural Environment Assessment Area. These findings were confirmed with MNRF and significant natural areas are considered to be absent from the Natural Environment Assessment Area.

3.1.2.2 Kennedy Road

3.1.2.2.1 Aquatic Environment

Based on the desktop review of the location, Kennedy Road is not near any major watercourse features. Field investigations confirmed that no watercourses exist within the Natural Environment Assessment Area.

3.1.2.2.2 Terrestrial Environment

The Natural Environment Assessment Area is largely developed and urbanized with some street trees along boulevards, and is located within the Deciduous Forest Region, D.1 – Niagara (Rowe 1972). A review of the NHIC database identified the following vegetation SAR and provincially rare species with records in, or adjacent to the Natural Environment Assessment Area (Table 3.3). All species in Table 3.3 were recorded prior to 1983 and are considered historical records.

Table 3.3: Vegetation – NHIC Records of SAR and Provincially Rare Species – Kennedy Road

Type	Species	Provincial Status (S-rank)	SARO List
Plant	Biennial Gaura (*Oenothera gaura*)	S3	-
Plant	Lurking Leskea (*Plagiothecium latebricola*)	S2	-

MNRF confirmed no current records of vegetation SAR for the Natural Environment Assessment Area.

Nine distinct vegetation communities were identified in the Natural Environment Assessment Area, including treed, meadow, wetland and agricultural areas. Vegetation communities generally demonstrated a high degree of disturbance that is typical of urban environments, including a high proportion of non-native and invasive plant species.

A wetland complex is present on the east side of Kennedy Road and the rail corridor. This area has not been surveyed pending landowner access approval. Assessment of this area will include general wetland area assessment. Vegetation was assessed from the roadside on June 7, 2016 and on April 28, 2020 due to access restrictions. Species recorded included Manitoba maple, swamp maple, white elm, green ash, shrub willows, red-osier dogwood, riverbank grape, reed canary grass and European reed. Species recorded have relatively low CC values and are considered to have low sensitivity (TRCA 2017). No rare or unique communities were documented.

3.1.2.2.3 Wildlife

The Natural Environment Assessment Area is highly urbanized, surrounded by residential, commercial and industrial/institutional land uses, with a natural area on the east side of Kennedy Road and the rail corridor. Generally, the rail corridor provides limited wildlife habitat, including narrow areas of old field and regenerating woody vegetation. Incidental encounters with wildlife and evidence of wildlife were limited to urban tolerant species. Other common species that are acclimatized to urban conditions are also expected to occur in the Natural Environment Assessment Area.

No bird nests were confirmed at the Natural Environment Assessment Area; however, nests of common urban adapted species are expected to occur. Potential breeding habitat (i.e., thicket swamp) for an area sensitive species (Alder Flycatcher) was identified during breeding bird surveys completed by North-South Environmental Inc. (2016).

In addition, wetland investigations were conducted from the roadside due to access restrictions, and only Red-winged Blackbird was recorded, which may be breeding in the feature. According to TRCA (2017), Red-winged Blackbird is not a sensitive species. Other urban tolerant breeding birds likely also use the wetland; however, high or medium sensitivity species are considered unlikely.

No incidental wildlife observations were recorded during the field investigations, however, common species that are tolerant of urban conditions are expected to occur throughout the Natural Environment Assessment Area.

3.1.2.2.4 Significant Wildlife Habitat

Field investigations and SWH assessments identified one candidate SWH type associated with the wetland: amphibian breeding habitat. Amphibian surveys were conducted on May 14 and June 19, 2019 and on April 28, 2020. One Spring Peeper, one American Toad and one Northern Leopard Frog were observed calling during the May 2019 survey, and one Green Frog was heard calling during the June 2019 survey. No amphibians were heard calling during the April 2020 survey. The low numbers of calling amphibians do not qualify the habitat as significant habitat for breeding amphibians according to the Significant Wildlife Habitat Criteria Schedules for EcoRegion 7E (MNRF 2015).

3.1.2.2.5 Species at Risk

A review of the NHIC database (MNRF 2019) identified the following records within 1 km of the Natural Environment Assessment Area (Table 3.4). All species in Table 3.4 were recorded prior to 1982 and are considered historical records.

Table 3.4: Wildlife and Wildlife Habitat – NHIC Records of SAR and Provincially Rare Species – Kennedy Road

Type	Species	Provincial Status (S-rank)	SARO List
Insect	Clamp-tipped Emerald (*Somatochlora tenebrosa*)	S2S3	-
Insect	Green-striped Darner (*Aeshna verticalis*)	S3	-
Insect	Swamp Darner (*Epiaeschna heros*)	S2S3	-
Insect	Painted Skimmer (*Libellula semifasciata*)	S2	-
Reptile	Eastern Musk Turtle (*Sternotherus odoratus*)	S3	Special Concern

The Stouffville Corridor Rail Service Expansion ESR (Burnside 2014) concluded that there was no suitable habitat for the insect SAR identified in the NHIC results, neither was there any suitable habit for the reptile SAR.

MNRF confirmed no current records of SAR near the Natural Environment Assessment Area.

Suitable habitat for Western Chorus frog is present in the forest and wetland complex on the east side of Kennedy Road and the rail corridor, however, based on the frog call surveys completed in 2016 (North-South Environmental Inc. 2016), 2019 and 2020, this species is absent from the Natural Environment Assessment Area.

In addition, investigations conducted during spring 2019 observed some shallow areas of standing water considered to have a short hydroperiod. As a result, potential for high and moderate sensitive amphibians, turtles, mammals or fish is unlikely (TRCA 2017). Relatively tolerant species may be possible, such as American Toad, which may use small shallow isolated pools if present. According to TRCA (2017), American Toad is considered to have moderate sensitivity.

Suitable habitat for Eastern Meadowlark is present in the meadow and thicket located on the east side of Kennedy Road and the rail corridor, and Eastern Wood Pewee may nest in the deciduous forest and woodland on the east side of Kennedy Road and the rail corridor. Neither Eastern Meadowlark nor Eastern Wood Pewee were identified during the breeding bird surveys completed by North-South Environmental Inc. (2016). Therefore, these species are considered absent from the Natural Environment Assessment Area.

Chimney Swift and Common Nighthawk are known to nest on buildings in urban environments. However, neither Chimney Swift nor Common Nighthawk were identified during the breeding bird surveys (North-South Environmental Inc. 2016). Therefore, these species are considered absent from the Natural Environment Assessment Area.

Barn Swallow was observed during field investigations foraging in the meadow on the east side of Kennedy Road and the rail corridor, however, a nesting location was not identified. Little Brown Myotis may be using the deciduous forest and/or woodlands during the summer months as maternity roosts.

A tree survey for bat habitat was carried out on May 3, 2019 and April 28, 2020 and no good quality potential bat roosting trees (i.e., cavities, snag, peeling bark) were observed.

As the detailed design progresses, further studies should be completed to confirm if candidate bat maternity colony roots are present in the wetland, and to confirm if barn swallows are nesting within the Natural Environment Assessment Area. If required, surveys for breeding bird SAR should occur during June – early July, and bat use surveys of maternity roosts should occur during June.

No flora SAR, provincially (S1-S3) or locally rare (L1-L3) flora, or highly sensitive (CC = 9-10) plant species were documented during field investigations. Thirty-six (36) species of vascular plants were recorded from the Natural Environment Assessment Area, of which 15 (42%) were native. Thirteen (87%) of the native plants documented had a rank of S5, indicating they are common and secure within Ontario, and two species (13%) had a rank of S4 (apparently secure) or S4? (apparently secure, rank under review).

3.1.2.2.6 Significant Natural Heritage Features

A review of the NHIC and LIO data did not identify any records of significant natural heritage features, including PSW, ANSI, Provincial Parks, Conservation Reserves or known areas of SWH in the Natural Environment Assessment Area. These findings were confirmed with MNRF and significant natural areas are considered to be absent from the Natural Environment Assessment Area.

3.1.2.3 Passmore Avenue

3.1.2.3.1 Aquatic Environment

Based on the desktop review of the location, Passmore Avenue is not near any major watercourse features. Field investigations confirmed that no watercourses exist within the Natural Environment Assessment Area.

3.1.2.3.2 Terrestrial Environment

The Natural Environment Assessment Area is largely developed and urbanized with some street trees along boulevards, and is located within the Deciduous Forest Region, D.1 – Niagara (Rowe 1972). A review of the NHIC database identified the following vegetation SAR and provincially rare species with records in, or adjacent to the Natural Environment Assessment Area (Table 3.5):

Table 3.5: Vegetation – NHIC Records of SAR and Provincially Rare Species – Passmore Avenue

Type	Species	Provincial Status (S-rank)	SARO List
Plant	Butternut (*Juglans cinerea*)	S3?	Endangered
Plant	Red Mulberry (*Morus rubra*)	S2	Endangered

Note: S-rank followed by a “?” indicates the rank is still uncertain.

MNRF confirmed no current records of vegetation SAR for the Natural Environment Assessment Area. One naturalized hedgerow was identified in the Natural Environment Assessment Area which was mostly comprised of commercial and industrial properties consisting of buildings, paved parking lots and disturbed bare ground. The composition of the naturalized hedgerow includes red oak, white birch, trembling aspen, Norway maple and Manitoba maple. The Project Footprint area includes ornamental and streetscape trees that are found along roadways and parking lots. No rare or unique communities were documented.

3.1.2.3.3 Wildlife

The Natural Environment Assessment Area is highly urbanized, surrounded by commercial and industrial land uses, and provides limited wildlife habitat in the form of a naturalized hedgerow and ornamental planted trees.

A total of 6 bird species were observed during the breeding bird survey. Species were either provincially ranked as common species in Ontario or had no rank as they are not considered suitable targets for conservation activities. All species were presumed to be breeding in the Natural Environment Assessment Area with the exception of Ring-billed Gull, which was observed as a flyover. No bird nests were confirmed in the Natural Environment Assessment Area; however, nests of common urban adapted species are expected to occur.

No incidental wildlife observations were recorded during the field investigations; however, common species that are tolerant of urban conditions are expected to occur throughout the Natural Environment Assessment Area.

3.1.2.3.4 Significant Wildlife Habitat

Field investigation confirmed that no Significant Wildlife Habitat is present within the Natural Environment Assessment Area.

3.1.2.3.5 Species at Risk

A review of the NHIC database (MNRF 2019) identified the following records within 1 km of the Natural Environment Assessment Area (Table 3.6).

Table 3.6: Wildlife and Wildlife Habitat – NHIC Records of SAR and Provincially Rare Species – Passmore Avenue

Type	Species	Provincial Status (S-rank)	SARO List
Insect	Monarch (*Danaus plexippus*)	S4B, S2N	Special Concern
Bird	Bank Swallow (*Riparia riparia*)	S4B	Threatened
Bird	Barn Swallow (*Hirundo rustica*)	S4B	Threatened
Bird	Bobolink (*Dolichonyx oryzivorus*)	S4B	Threatened
Bird	Chimney Swift (*Chaetura pelagica*)	S4B	Threatened
Bird	Common Nighthawk (*Chordeiles minor*)	S4B	Special Concern
Bird	Eastern Meadowlark(*Sturnella magna*)	S4B	Threatened
Bird	Eastern Wood-Pewee (*Contopus virens*)	S4B	Special Concern
Bird	Peregrine Falcon (*Falco peregrinus*)	S4B	Special Concern
Mammal	Little Brown Myotis (*Myotis lucifugus*)	S4	Endangered
Mammal	Northern Myotis (*Myotis septentrionalis*)	S3?	Endangered
Mammal	Tri coloured Bat (*Perimyotis subflavus*)	S3?	Endangered

Note: S-rank followed by a "?" indicates the rank is still uncertain.

MNRF confirmed no current records of SAR near the Natural Environment Assessment Area.

Barn Swallow, Chimney Swift, and Common Nighthawk are known to nest on buildings in urban environments, and Little Brown Myotis is known to roost in buildings in urban environments. However, field investigations did not record any of these species in the Natural Environment Assessment Area.

No potential bat roost trees were observed in the Natural Environment Assessment Area during the bat roost assessment.

No flora SAR, provincially (S1-S3) or locally rare (L1-L3) flora, or highly sensitive (CC = 9-10) were documented during the botanical inventory. Fourteen (14) species were recorded within the Natural Environment Assessment Area, of which 6 (43%) were native. All of the native plants documented had a provincial rank of S5, indicating they are common and secure within Ontario.

3.1.2.3.6 Significant Natural Heritage Features

A review of the NHIC and LIO data did not identify any records of significant natural heritage features, including PSW, ANSI, Provincial Parks, Conservation Reserves or known areas of SWH in the Natural Environment Assessment Area. These findings were confirmed with MNRF and significant natural areas are considered to be absent from the Natural Environment Assessment Area.

3.1.2.4 McNicoll Avenue

3.1.2.4.1 Aquatic Environment

Based on the desktop review of the location, there are no aquatic habitat features within the Assessment Area. Field investigations confirmed that no watercourses exist within the Natural Environment Assessment Area.

3.1.2.4.2 Terrestrial Environment

The Natural Environment Assessment Area is largely developed and urbanized with some street trees along boulevards, and is located within the Deciduous Forest Region, D.1 – Niagara (Rowe 1972). A review of the NHIC database identified the following vegetation SAR and provincially rare species with records in, or adjacent to the Natural Environment Assessment Area (Table 3.7). All species in Table 3.7 were recorded prior to 1983 and are considered historical records.

Table 3.7: Vegetation – NHIC Records of SAR and Provincially Rare Species – McNicoll Avenue

Type	Species	Provincial Status (S-rank)	SARO List
Plant	Biennial Gaura (*Oenothera gaura*)	S3	-
Plant	Lurking Leskea (*Plagiothecium latebricola*)	S2	-

MNRF confirmed no current records of vegetation SAR for the Natural Environment Assessment Area.

Six distinct vegetation communities were identified in the Natural Environment Assessment Area, including treed, meadow, wetland and agricultural areas. Vegetation communities generally demonstrated a high degree of disturbance that is typical of urban environments, including a high proportion of non-native and invasive plant species. No rare or unique communities were documented.

3.1.2.4.3 Wildlife

The Natural Environment Assessment Area is highly urbanized, surrounded by residential, commercial and industrial/institutional land uses. Generally, the rail corridor provides limited wildlife habitat, including narrow areas of old field and regenerating woody vegetation. Incidental encounters with wildlife and evidence of wildlife were limited to urban tolerant species. Other common species that are acclimatized to urban conditions are also expected to occur in the Natural Environment Assessment Area.

One nest was confirmed in the Natural Environment Assessment Area, which was an active American Kestrel nest located in the side of building, north of McNicoll Avenue and Kennedy Road. No other bird nests were confirmed; however, nests of common urban adapted species are expected to occur.

No incidental wildlife observations were recorded during the field investigations, however, common species that are tolerant of urban conditions are expected to occur throughout the Natural Environment Assessment Area.

3.1.2.4.4 Significant Wildlife Habitat

Field investigations and SWH assessments identified a candidate SWH regarding amphibian breeding habitat/movement corridors present in the wetland south of McNicoll Avenue and west of the rail corridor. However, these were not confirmed as SWH for the Natural Environment Assessment Area. In addition, a candidate open country/early successional breeding bird is present in the meadow communities. However, these were not confirmed as SWH.

3.1.2.4.5 Species at Risk

A review of the NHIC database (MNRF 2019) identified the following records within 1 km of the Natural Environment Assessment Area (Table 3.8). All species in Table 3.8 were recorded prior to 1982 and are considered historical records.

Table 3.8: Wildlife and Wildlife Habitat – NHIC Records of SAR and Provincially Rare Species – McNicoll Avenue

Type	Species	Provincial Status (S-rank)	SARO List
Insect	Clamp-tipped Emerald (*Somatochlora tenebrosa*)	S2S3	-
Insect	Green-striped Darner (*Aeshna verticalis*)	S3	-
Insect	Swamp Darner (*Epiaeschna heros*)	S2S3	-
Insect	Painted Skimmer (*Libellula semifasciata*)	S2	-
Reptile	Eastern Musk Turtle (*Sternotherus odoratus*)	S3	Special Concern
Reptile	Spiny Softshell (*Apalone spinifera*)	S3	Threatened
Reptile	Milksnake (*Lampropeltis triangulum*)	S3	-

The Stouffville Corridor Rail Service Expansion ESR (Burnside 2014) concluded that there was no suitable habitat for the insect SAR identified in the NHIC results, neither was there any suitable habit for the reptile SAR. Milksnake may be associated with meadows; however, candidate hibernacula features were not identified during field investigations.

MNRF confirmed no current records of SAR near the Natural Environment Assessment Area.

Suitable habitat for Eastern Meadowlark is present in the meadow located on the south side of McNicoll Avenue and west of the rail corridor. However, no Eastern Meadowlark has been observed during field studies in candidate suitable habitat.

A tree survey for bat habitat was carried out on May 3, 2019 and no potential bat roosting trees (i.e., cavities, snag, peeling bark) were observed.

No flora SAR, provincially (S1-S3) or locally rare (L1-L3) flora, or highly sensitive plant (CC = 9-10) species were documented during field investigations. Forty-six (46) species of vascular plants were recorded from the Natural Environment Assessment Area, of which 17 (37%) were native. Ninety-four percent (94%) of the native plants documented had a rank of S5, indicating they are common and secure within Ontario, and one species (6%) had a rank of S4 (apparently secure).

3.1.2.4.6 Significant Natural Heritage Features

A review of the NHIC and LIO data did not identify any records of significant natural heritage features, including PSW, ANSI, Provincial Parks, Conservation Reserves or known areas of SWH in the Natural Environment Assessment Area. These findings were confirmed with MNRF and significant natural areas are considered to be absent from the Natural Environment Assessment Area.

3.1.2.5 Huntingwood Drive

3.1.2.5.1 Aquatic Environment

Based on the desktop review of the location, there are no aquatic habitat features within the Natural Environment Assessment Area. Field investigations confirmed that no watercourses exist within the Natural Environment Assessment Area.

3.1.2.5.2 Terrestrial Environment

The Natural Environment Assessment Area is largely developed and urbanized, mostly comprised of single-family residences with mowed lawn and ornamental planted trees, and is located within the Deciduous Forest Region, D.1 – Niagara (Rowe 1972). Vegetation communities generally demonstrated a high degree of disturbance that is typical of urban environments, including a high proportion of non-native and invasive plant species. Two culturally influenced woodland communities undergoing restoration were identified in the Natural Environment Assessment Area, which was mostly comprised of single-family residences with mowed lawn and ornamental planted trees. There is a school in the northeast corner of the Natural Environment Assessment Area that is also comprised of mowed lawn and ornamental planted trees. Typical vegetation species in the Natural Environment Assessment Area include Norway spruce, Manitoba maple, silver maple, staghorn sumac, red-osier dogwood, smooth brome, Kentucky bluegrass. A review of the NHIC database identified no vegetation SAR and provincially rare species with records in, or adjacent to the Natural Environment Assessment Area.

3.1.2.5.3 Wildlife

The Natural Environment Assessment Area is highly urbanized, surrounded by residential and institutional land uses, and provides limited wildlife habitat.

A total of 11 bird species were observed during the breeding bird survey. All species were presumed to be breeding in the Natural Environment Assessment Area and they are all provincially ranked as common species in Ontario. No bird nests were confirmed in the Natural Environment Assessment Area; however, nests of common urban adapted species are expected to occur.

No incidental wildlife observations were recorded during the field investigations; however, common species that are tolerant of urban conditions are expected to occur throughout the Natural Environment Assessment Area.

3.1.2.5.4 Significant Wildlife Habitat

Habitat for species of conservation concern (SOCC) includes habitat for those species that are not covered under the *Endangered Species Act* (ESA) including species ranked as special concern and provincially ranked as S1-S3. Data from the background review and field surveys were used to assess the potential for habitat of species of conservation concern to occur within the Natural Environment Assessment Area.

Overall, the Natural Environment Assessment Area is highly urbanized, surrounded by residential and institutional land uses, which provides limited wildlife habitat in general. No Significant Wildlife Habitat was identified within the Natural Environment Assessment Area.

3.1.2.5.5 Species at Risk

There were no recent records (within the past 30 years) of SAR or provincially-rare species identified in the NHIC database during a search on November 22, 2018.

A wildlife atlas search conducted on November 22, 2018 and a desktop habitat assessment prior to conducting field investigations identified SAR species as having the potential to reside in the Natural Environment Assessment Area (Table 3.9).

Table 3.9: Background Review of SAR and Provincially Rare Species

Type	Species	Provincial Status (S-rank)	SARO (Provincial) List	SARA (Federal) List
Insect	Monarch (*Danaus plexippus*)	S4B, S2N	Special Concern	Special Concern
Bird	Bank Swallow (*Riparia riparia*)	S4B	Threatened	Threatened
Bird	Barn Swallow (*Hirundo rustica*)	S4B	Threatened	Threatened
Bird	Bobolink (*Dolichonyx oryzivorus)*	S4B	Threatened	Threatened
Bird	Chimney Swift (*Chaetura pelagica*)	S4B	Threatened	Threatened
Bird	Common Nighthawk (*Chordeiles minor*)	S4B	Special Concern	Threatened
Bird	Eastern Meadowlark (*Sturnella magna*)	S4B	Threatened	Threatened

Type	Species	Provincial Status (S-rank)	SARO (Provincial) List	SARA (Federal) List
Bird	Eastern Wood-Pewee (*Contopus virens)*	S4B	Special Concern	Special Concern
Bird	Peregrine Falcon (*Falco peregrinus)*	S4B	Special Concern	Special Concern
Mammal	Little Brown Myotis (*Myotis lucifugus*)	S4	Endangered	Endangered
Mammal	Northern Myotis (*Myotis septentrionalis*)	S3?	Endangered	Endangered
Mammal	Tri coloured Bat (*Perimyotis subflavus*)	S3?	Endangered	Endangered

Note: S-rank followed by a "?" indicates the rank is still uncertain.

These species were further assessed during field investigations, but no suitable habitat for any of the species listed on Table 3.9 was identified in the Natural Environment Assessment Area. In addition, no potential bat roost trees were observed in the Natural Environment Assessment Area during the bat roost assessment.

No flora SAR, provincially (S1-S3) or locally rare (L1-L3) flora, or highly sensitive plant (CC = 9-10) species were documented during the botanical inventory. Twenty-two (22) species of vascular plants were recorded from the Natural Environment Assessment Area, of which 13 (59%) were native. All native plants documented had a provincial rank of S5, indicating they are common and secure within Ontario.

3.1.2.5.6 Significant Natural Heritage Features

A review of the NHIC and LIO data did not identify any records of significant natural heritage features, including PSW, ANSI, Provincial Parks, Conservation Reserves or known areas of SWH in the Natural Environment Assessment Area. These findings were confirmed with MNRF and significant natural areas are considered to be absent from the Natural Environment Assessment Area.

3.1.2.6 Havendale Road

3.1.2.6.1 Aquatic Environment

The Natural Environment Assessment Area was examined for the presence of aquatic features. Based on the desktop review of the location, Havendale Road is not near any major watercourse features. Field investigations confirmed that no watercourses exist within the Natural Environment Assessment Area.

3.1.2.6.2 Terrestrial Environment

The Natural Environment Assessment Area is largely developed and urbanized, mostly comprised of single-family residences with mowed lawn and ornamental planted trees, and is located within the Deciduous Forest Region, D.1 – Niagara (Rowe 1972). There is a City park (Havendale Park) in the northwest corner of the Natural Environment Assessment Area that is also comprised of mowed lawn and ornamental planted trees, including Norway spruce, Scot's pine, Red oak, Little leaf linden, Norway maple, and American elm, all of which have a provincial rank of S5, indicating they are common and secure within Ontario. A review of the NHIC database identified no vegetation SAR and provincially rare species with records in, or adjacent to the Natural Environment Assessment Area.

MNRF confirmed no current records of vegetation SAR for the Natural Environment Assessment Area.

3.1.2.6.3 Wildlife

The Natural Environment Assessment Area is highly urbanized, surrounded by residential and recreational land uses with mowed lawn and ornamental planted trees. Generally, the rail corridor provides limited wildlife habitat, including narrow areas of old field and regenerating woody vegetation. Incidental encounters with wildlife and evidence of wildlife were limited to urban tolerant species. Other common species that are acclimatized to urban conditions are also expected to occur in the Natural Environment Assessment Area.

A total of 5 bird species were observed during the breeding bird survey. All species were presumed to be breeding in the Natural Environment Assessment Area and they are all provincially ranked as common species in Ontario. No bird nests were confirmed in the Natural Environment Assessment Area; however, nests of common urban adapted species are expected to occur.

No incidental wildlife observations were recorded during the field investigations, however, common species that are tolerant of urban conditions are expected to occur throughout the Natural Environment Assessment Area.

3.1.2.6.4 Significant Wildlife Habitat

Field investigation confirmed that no Significant Wildlife Habitat is present within the Natural Environment Assessment Area.

3.1.2.6.5 Species at Risk

A review of the NHIC database (MNRF 2019) identified the following records within 1 km of the Natural Environment Assessment Area (Table 3.10).

Table 3.10: Wildlife and Wildlife Habitat – NHIC Records of SAR and Provincially Rare Species – Havendale Road

Type	Species	Provincial Status (S-rank)	SARO List
Insect	Monarch (*Danaus plexippus*)	S4B, S2N	Special Concern
Bird	Bank Swallow (*Riparia riparia*)	S4B	Threatened
Bird	Barn Swallow (*Hirundo rustica*)	S4B	Threatened
Bird	Bobolink (*Dolichonyx oryzivorus*)	S4B	Threatened
Bird	Chimney Swift (*Chaetura pelagica*)	S4B	Threatened
Bird	Common Nighthawk (*Chordeiles minor*)	S4B	Special Concern
Bird	Eastern Meadowlark (*Sturnella magna*)	S4B	Threatened
Bird	Eastern Wood-Pewee (*Contopus virens*)	S4B	Special Concern
Bird	Peregrine Falcon (*Falco peregrinus*)	S4B	Special Concern
Mammal	Little Brown Myotis (*Myotis lucifugus*)	S4	Endangered
Mammal	Northern Myotis (*Myotis septentrionalis*)	S3?	Endangered
Mammal	Tri coloured Bat (*Perimyotis subflavus*)	S3?	Endangered

Note: S-rank followed by a “?” indicates the rank is still uncertain.

MNRF confirmed no current records of SAR near the Natural Environment Assessment Area.

Barn Swallow, Chimney Swift, and Common Nighthawk are known to nest on buildings in urban environments, and Little Brown Myotis is known to roost in buildings in urban environments. None of these species were recorded during field investigations and there were no suitable structures observed in the Natural Environment Assessment Area. In addition, no potential bat roost trees were observed in the Natural Environment Assessment Area during the bat roost assessment.

No flora SAR, provincially (S1-S3) or locally rare (L1-L3) flora, or highly sensitive (CC = 9-10) plant species were documented in the park. Six (6) tree species were recorded in the park, of which 2 (33%) were native. All of the native trees documented had a provincial rank of S5, indicating they are common and secure within Ontario.

3.1.2.6.6 Significant Natural Heritage Features

A review of the NHIC and LIO data did not identify any records of significant natural heritage features, including PSW, ANSI, Provincial Parks, Conservation Reserves or known areas of SWH in the Natural Environment Assessment Area. These findings were confirmed with MNRF and significant natural areas are considered to be absent from the Natural Environment Assessment Area.

3.1.2.7 Progress Avenue

3.1.2.7.1 Aquatic Environment

Highland Creek drains approximately 102 km^2 of land within the City of Toronto with approximately 85% of the drainage area consisting of urban land uses. Highland Creek is divided into four branches including the Main Branch, Centennial Creek, the East Highland, and the West Highland Creek (TRCA 1999). West Highland Creek originates north of the Natural Environment Assessment Area and generally flows in a north to south direction through the Natural Environment Assessment Area. The channel is concrete lined with a wetted width that ranged from 2.0 m to 3.0 m, and depths that ranged from 0.10 m to 0.30 m. The Bendale Branch of West Highland Creek is located within the Natural Environment Assessment Area. The Bendale Branch has a permanent flow regime and warmwater thermal regime (MNRF 2019).

Historically, Highland Creek supported 40 species of fish, with some studies (TRCA 1999) identifying 23 species, including four introduced species. The change in fish community is reflective of human impacts to the creek that have resulted in degraded conditions (TRCA 1999). Background data obtained from the TRCA Open Data Portal indicates that Highland Creek supports the following fish species (TRCA 2019):

- Black Crappie (*Pomoxis nigromaculatus*)
- Blacknose Dace (*Rhinichthys atratulus*)
- Bluegill (*Lepomis macrochirus*)
- Bluntnose Minnow (*Pimephales notatus*)
- Brook Stickleback (*Culaea inconstans*)

- Brown Bullhead (*Ameiurus nebulosus*)
- Central Stoneroller (*Campostoma anomalum*)
- Chinook Salmon (*Oncorhynchus tshawytscha*)
- Common Shiner (*Luxilus cornutus*)
- Creek Chub (*Semotilus atromaculatus*)
- Emerald Shiner (*Notropis atherinoides*)
- Fathead Minnow (*Pimephales promelas*)
- Goldfish (*Carassius auratus*)
- Lake Chub (*Couesius plumbeus*)
- Longnose Dace (*Rhinichthys cataractae*)
- Mimic Shiner (*Notropis volucellus*)
- Northern Redbelly Dace (*Chrosomuseos*)
- Pumpkinseed (*Lepomis gibbosus*)
- Rainbow Darter (Etheostoma caeruleum)
- Rainbow Trout (*Oncorhynchus mykiss*)
- Rock Bass (*Ambloplites rupestris*)
- Round Goby (*Neogobius melanostomus*)
- Sand Shiner (*Notropis stramineus*)
- Sea Lamprey (*Petromyzon marinus*)
- Threespine Stickleback (*Gasterosteus aculeatus*)
- White Sucker (*Catostomus commersonii*)
- Yellow Perch (*Perca flavescens*)

Most of the above species are known to inhabit small watercourses. Species such as Bluntnose Minnow, Creek Chub, Fathead Minnow, and Longnose Dace are likely to inhabit habitat found within the Natural Environment Assessment Area. Species such as Black Crappie, Chinook Salmon, Emerald Shiner and Rainbow Trout prefer large rivers and lakes and are more likely to inhabit the lower reaches of Highland Creek rather than habitat within the Natural Environment Assessment Area.

Within the Natural Environment Assessment Area, West Highland Creek provides fish habitat; however, the habitat diversity is low in the concrete-lined channel. The presence of a barrier to fish passage approximately 10 m downstream of Progress Avenue likely limits passage of small bodied species upstream of Progress Avenue.

Highland Creek within the Natural Environment Assessment Area provides limited, poor quality amphibian habitat. There were high flows observed in West Highland Creek during the surveys. High flows are not suitable for breeding amphibians, as their egg masses have the potential to be swept downstream. Slower flows occurred where sparse vegetation grew along the edge of the creek; however, there would still be a potential for disturbance to egg masses. The bottom of the creek in the survey location was lined with concrete, also making the survey location unsuitable for amphibians, as amphibians utilize soft substrate to evade predators. Despite poor conditions observed for breeding amphibians, during surveys one Spring Peeper, one American Toad, two Green Frogs and one Northern Leopard Frog were heard calling in the West Highland Creek upstream of the Progress Avenue Bridge. Two Spring Peepers and one Green Frog were heard downstream of the bridge.

3.1.2.7.2 Terrestrial Environment

The Natural Environment Assessment Area is largely developed and urbanized with some street trees along boulevards, and is located within the Deciduous Forest Region, D.1 – Niagara (Rowe 1972). A review of the NHIC database identified the following vegetation SAR and provincially rare species with records in, or adjacent to the Natural Environment Assessment Area (Table 3.11):

Table 3.11: Vegetation – NHIC Records of SAR and Provincially Rare Species – Progress Avenue

Type	Species	Provincial Status (S-rank)	SARO List
Plant	Butternut (*Juglans cinerea*)	S3?	Endangered
Plant	Red Mulberry (*Morus rubra*)	S2	Endangered

Note: S-rank followed by a “?” indicates the rank is still uncertain.

MNRF confirmed no current records of vegetation SAR for the Natural Environment Assessment Area.

Three natural vegetation community types were identified in the Natural Environment Assessment Area, including a swamp thicket, woodlands and naturalized hedgerows. Vegetation communities generally demonstrated a high degree of disturbance that is typical of urban environments, including a high proportion of non-native and invasive plant species.

The Project Footprint area includes ornamental and streetscape trees that are found along roadways and parking lots. This includes significant trees identified by the City of Toronto at 11 to 31 Progress Avenue. These trees are maintained, relatively large and exist within an area that is largely lacking in canopy cover.

No rare or unique communities were documented.

3.1.2.7.3 Wildlife

The Natural Environment Assessment Area is highly urbanized, surrounded by residential, commercial and industrial/institutional land uses. Generally, the Natural Environment Assessment Area provides limited wildlife habitat, including narrow areas of old field and regenerating woody vegetation.

A total of 10 bird species were observed during the breeding bird survey (see Appendix A1-7, Appendix E), including Barn Swallow (see section 3.1.2.7.5). Other bird species observed in the Natural Environment Assessment Area were either provincially ranked as common and secure species in Ontario or had no rank as they are not considered suitable targets for conservation activities. All species were presumed to be breeding in the Natural Environment Assessment Area, with the exception of Ring-billed Gull, which was observed as a flyover. No bird nests were confirmed in the Natural Environment Assessment Area; however, nests of common urban adapted species are expected to occur.

No incidental wildlife observations were recorded during the field investigations; however, common species that are tolerant of urban conditions are expected to occur throughout the Natural Environment Assessment Area.

3.1.2.7.4 Significant Wildlife Habitat

Field investigation confirmed that no Significant Wildlife Habitat is present within the Natural Environment Assessment Area.

3.1.2.7.5 Species at Risk

A review of the NHIC database (MNRF 2019) identified the following records within 1 km of the Natural Environment Assessment Area (Table 3.12).

Table 3.12: Wildlife and Wildlife Habitat – NHIC Records of SAR and Provincially Rare Species – Passmore Avenue

Type	Species	Provincial Status (S-rank)	SARO List
Insect	Monarch (*Danaus plexippus*)	S4B, S2N	Special Concern
Bird	Bank Swallow (*Riparia riparia*)	S4B	Threatened
Bird	Barn Swallow (*Hirundo rustica*)	S4B	Threatened
Bird	Bobolink (*Dolichonyx oryzivorus*)	S4B	Threatened
Bird	Chimney Swift (*Chaetura pelagica*)	S4B	Threatened
Bird	Common Nighthawk (*Chordeiles minor*)	S4B	Special Concern
Bird	Eastern Meadowlark (*Sturnella magna*)	S4B	Threatened
Bird	Eastern Wood-Pewee (*Contopus virens*)	S4B	Special Concern
Bird	Peregrine Falcon (*Falco peregrinus*)	S4B	Special Concern
Mammal	Little Brown Myotis (*Myotis lucifugus*)	S4	Endangered
Mammal	Northern Myotis (*Myotis septentrionalis*)	S3?	Endangered
Mammal	Tri coloured Bat (*Perimyotis subflavus*)	S3?	Endangered

Note: S-rank followed by a “?” indicates the rank is still uncertain.

MNRF confirmed no current records of SAR near the Natural Environment Assessment Area.

Barn Swallow, a provincially and federally threatened species, was observed foraging over the swamp thicket and West Highland Creek. There were no Barn Swallow nests observed under the Progress Avenue bridge; however, approximately 10 individuals were observed circling near a storage facility adjacent to the creek on the south side of Progress Avenue. This likely indicates the presence of Barn Swallow nests on the buildings or in close proximity to the buildings.

Chimney Swift and Common Nighthawk are known to nest on buildings in urban environments, and Little Brown Myotis is known to roost in buildings in urban environments. None of these species were recorded during field investigations in the Natural Environment Assessment Area. In addition, no potential bat roost trees were observed in the Natural Environment Assessment Area during the bat roost assessment.

No flora SAR, provincially (S1-S3) or locally rare (L1-L3) flora, or highly sensitive (CC = 9-10) plant species were documented in the park. Sixteen (16) species of vascular plants were recorded within the Natural Environment Assessment Area, of which 9 (56%) were native (see Appendix A1-7, Appendix D). All of the native plants documented had a provincial rank of S5, indicating they are common and secure within Ontario. Dog-strangling vine, a highly invasive species, was identified in the Natural Environment Assessment Area.

3.1.2.7.6 Significant Natural Heritage Features

A review of the NHIC and LIO data did not identify any records of significant natural heritage features, including PSW, ANSI, Provincial Parks, Conservation Reserves or known areas of SWH in the Natural Environment Assessment Area. These findings were confirmed with MNRF and significant natural areas are considered to be absent from the Natural Environment Assessment Area.

3.2 Tree Inventory

The tree inventory and assessment for the sites was completed on September 11, 14, 15 and 24, 2020.

Trees within the Project Footprints were inventoried and geolocated. The data collected for each tree includes tree species, general health condition, diameter at breast height (DBH) or diameter class, dripline radius, height, hazard probability and various other parameters were collected. The tree locations were recorded with a hand-held GPS unit.

A Tree Management Plan was prepared as part of the Tree Inventory to identify the approximate existing tree locations, tree tag identification numbers, the adjusted dripline radius as well as the recommended action for each inventoried tree (i.e., remove or retain and protect).

The sites were reviewed for threatened, rare or endangered trees. A 30 meter buffer from the limit of construction was used to delineate the potential presence of threatened, rare or endangered trees. The Tree Inventory Reports (Stantec 2021q; 2021r) are available in Appendix A8.

3.2.1 Description of Existing Conditions

3.2.1.1 Denison Street

A total of 59 trees were inventoried within the Denison Street Project Footprint.

Tree species included in the inventory are: Norway Maple (*Acer platanoides*), White Spruce (*Picea glauca*), Red Pine (*Pinus resinosa*), Service Berry (*Amelanchier sp.*), Common Hawthorn (*Crataegus monogyna*), Austrian Pine (*Pinus nigra*), Crimson King Norway Maple (*Acer platanoides* 'Crimson King'), Colorado Spruce (*Picea pungens*), Ash (*Fraxinus sp.*), and Russian Olive (*Elaeagnus angustifolia*).

No threatened, rare or endangered species were observed on site.

3.2.1.2 Kennedy Road

A total of 124 trees were inventoried within the Kennedy Road Project Footprint.

Tree species included in the inventory are: Ginkgo (*Gingkgo biloba*), Manitoba Maple (*Acer negundo*), White Willow (*Salix alba*), Norway Maple (*Acer platanoides*), Sycamore (*Platanus occidentalis*), Black Walnut (*Juglans nigra*), White Elm (*Ulums Americana*), White Spruce (*Picea glauca*), Colorado Spruce (*Picea pungens*), Ash (*Fraxinus sp.*) Red Oak (*Quercus rubra*), Scots Pine (*Pinus sylvertris*), Red Maple (*Acer Rubrum*), Elm (*Ulmus sp.*), Trembling Aspen (*Populus tremuloides*), Honey-Locust (*Gleditsia triacanthos*), Norway Spruce (*Picea abies*), Dogwood (*Cornus sp.*), Bur Oak (*Quercus marcocarpa*), Poplar (*Populus sp.*), Silver Maple (*Acer saccharinum*), Eastern White Cedar (*Thuja occidentalis*) and Hackberry (*Celtis occidentalis*).

No threatened, rare or endangered species were observed on site.

3.2.1.3 Passmore Avenue

A total of 40 trees were inventoried within the Passmore Avenue Project Footprint.

Tree species included in the inventory are: Manitoba Maple (*Acer negundo*), White Willow (*Salix alba*), Norway Maple (*Acer platanoides*), Apple (*Malus sp.*), Paper Birch (*Betula papyrifera*), Red Pine (*Pinus resinosa*), Kentucky Coffee-Tree (*Gymnocladus dioicus*), Sugar Maple (*Acer saccharum*), Silky dogwood (*Cornus amonum*), Russian Olive (*Elageaguns angustifolia*) Red Oak (*Quercus rubra*), Red Maple (*Acer rubrum*), Honey-Locust (*Gleditsia triacanthos*),Dogwood (*Cornus sp.*), and Bur Oak (*Quercus marcocarpa*).

Seven Kentucky coffee-trees (*Gymnocladus dioicus*) were observed within the Passmore Avenue surveyed area. Kentucky coffee-tree is designated ‘Threatened’ in Canada under the *Species at Risk Act* (SARA).

3.2.1.4 McNicoll Avenue

A total of 113 trees were inventoried within the McNicoll Avenue Project Footprint.

Tree species included in the inventory are: Elm (*Ulmus sp.*), Red Oak (*Quercus rubra*), White Oak (*Quercus alba*), Sugar Maple (*Acer saccharum*), Freeman Maple (*Acer x freemanii*), Black Locust (*Robinia pseudoacacia*), Ash (*Fraxinus sp.*), Red Maple (*Acer rubrum*), Basswood (*Tilia americana*), Kentucky Coffee-Tree (*Gymnocladus diocius*), Russian Olive (*Elaeaguns angustifolia*), Manitoba Maple (*Acer negundo*), Norway Maple (*Acer platanoides*), White Oak (*Quercus alba*), Cherry (*Prunus sp.*), Apple (*Malus sp.*), Common Pear (*Pyrus communis*), Ginkgo (*Ginkgo biloba*), Hackberry (*Celtis occidentalis*), Honey-Locust (*Gleditsia triacanthos*), European Buckthorn (*Rhamnus cathartica*), and Sycamore (*Platanus occidentalis*).

Five Kentucky coffee-trees (*Gymnocladus dioicus*) were observed within the surveyed area. Kentucky coffee-tree is designated ‘Threatened’ in Canada under the *Species at Risk Act* (SARA).

3.2.1.5 Huntingwood Drive

A total of 108 trees were inventoried within the Huntingwood Drive Project Footprint.

Tree species included in the inventory are: Basswood (*Tilia americana*), Black Locust (*Robinia pseudoacacia*), Black Walnut (*Juglans nigra*), Colorado Spruce (*Picea pungens*), Eastern White Cedar (*Thuja occidentalis*), Elm (*Ulmus sp.*), Freeman Maple (*Acer x freemanii*), Honey-Locust (*Gleditsia triacanthos*), Manitoba Maple (*Acer negundo*), Norway Maple (*Acer platanoides*), Paper Birch (*Betula papyrifera*), Pin

Cherry (*Prunus pensylvanica*), Poplar (*Populus sp.*), Red Maple (*Acer rubrum*), Road Oak (*Quercus rubra*), Red Pine (*Pinus resinosa*), Silver Maple (*Acer saccharinum*), Sycamore Maple (*Acer pseudoplatanus*), Trembling Aspen (*Populus tremuloides*), White Mulberry (*Morus alba*), White Pine (*Pinus strobus*), White Spruce (*Picea glauca*), and White Willow (*Salix alba*)

No threatened, rare or endangered species were observed on site.

3.2.1.6 Havendale Road

A total of 11 trees were inventoried for the Havendale Road Project Footprint.

Tree species included in the inventory are: Honey-Locust (*Gledistsia triancanthos*), Bur Oak (*Quercus macrocarpa*), Silver Maple (*Acer platanoides*), Cherry sp. (*Prunus sp.*), Maple sp. (*Acer sp*.), Norway Maple *(Acer platanoides*), White Pine (*Pinus strobus*), and White Spruce (*Picea glauca*).

No threatened, rare or endangered species were observed on site.

3.2.1.7 Progress Avenue

A total of 57 trees were inventoried within the current Progress Avenue Project Footprint.

Tree species included in the inventory are: Colorado Spruce (*Picea pungens*), Elm sp. (*Ulmus sp.*), Common Pear (*Pyrus communis*), Hackberry (*Celtis occidentalis*), Honey-Locust (*Gleditsia triacanthos*), Manitoba Maple (*Acer negundo*), Norway Maple *(Acer platanoides*), Paper Birch (*Betula papyrifera*), Red Maple (Acer rubrum), Red Pine (*Pinus resinosa*), and Willow sp. (*Salix sp*.).

No threatened, rare or endangered species were observed on site.

3.3 Geology and Groundwater

Geology refers to surface and below-ground conditions of the organic and inorganic compounds that make up the soil and rock that support plant and animal life and human activities and structures, including chemical or other compounds that may have entered the soil as a result of human activities.

Groundwater refers to below-ground water conditions, including the flow of water from the surface into the groundwater, and the presence or absence of drinking water wells.

3.3.1 Methodology

Stantec completed geotechnical investigations in 2019 and 2020 (Stantec 2019a; 2020a d, e, f, g, h). The studies included a literature review and a field investigation. Further details are provided in Stantec (2019a; 2020a d, e, f, g, h).

Stantec also completed a field investigation that included soil and groundwater sampling in 2019 and 2020 (Stantec 2019b, c; 2020b, d, i, j, k). Chemical analysis results were compared to analytical parameters specified under *O. Reg. 153/04*, depending on Site Condition Standards (SCS), which are presented in Table 1 to Table 9 of the Provincial *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011*.

Soil samples were analysed for some or all of the following parameters: pH, metals and inorganics, petroleum hydrocarbon (PHC) fractions F1 to F4, polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), herbicides and pesticides, as well as waste classification (i.e., Toxicity Characteristic Leaching Procedure (TCLP)) and ignitability. Groundwater samples were compared to Provincial Water Quality Objectives (PWQO) and were analysed for some or all of the following parameters: metals and inorganics, PHC F1 to F4, PAHs, BTEX, VOCs, PCBs and herbicides and pesticides. Groundwater samples were also analysed for storm and sewer use by-law parameters. Further details are provided in Stantec (2019b, c; 2020b, d, i, j, k).

3.3.2 Description of Existing Conditions

3.3.2.1 Denison Street

3.3.2.1.1 Landforms and Physiography

The Project Study Area is located in the physiographic region known as the South Slope, the southern slope of the Oak Ridges Moraine, characterized by drumlinized till plains. The South Slope in this area is underlain by bedrock of the Georgian Bay formation, characterized by shale and limestone (Chapman and Putnam 1984).

3.3.2.1.2 Soils and Bedrock Geology

The surficial geology typically consists of surficial glaciolacustrine deposits of fine sands, silts and clays underlain by glacial till generally described as sandy silt to clayey silt till interbedded with silt, clay, sand and gravel (Halton Till). The Halton Till is typically 3 to 6 m thick but can be up to 30 m locally. Bedrock in the Denison Street Project Footprint is typically a minimum of 45 m below ground surface (bgs) (Stantec 2020h).

Potentially contaminating activities that have occurred at the Denison Street Project Footprint or on neighbouring properties within 250 m include the existing rail tracks and spurs, the potential for importation of fill of unknown quality, plastics (including fiberglass) manufacturing and processing, electronic and computer equipment manufacturing, garage/maintenance of railcars, and gasoline storage in fixed tanks (Stantec 2019b).

The results of the analytical testing on soils samples indicated that all parameters were below the Table 2 SCS. In addition, all parameters were below the Table 1 (Background) SCS as well, with the exception of sodium adsorption ratio. The results of the waste classification sample (TCLP) indicated that results met the O. Reg. 347 Schedule 4 Leachate Quality Criteria and soil would be considered non-hazardous (Stantec 2019b).

3.3.2.1.3 Groundwater Resources

The Project Footprint does not intersect any significant groundwater recharge areas, highly vulnerable aquifers or well head protection areas as identified in the Approved Protection Plan: CTC Source Protection Region (CTC Source Protection Region 2015).

One potable water well was identified within 50 m of the Denison Street Project Footprint. It was installed in 1950. The property was redeveloped in the 1990s and municipal water and sewers were added in the area in the 1980s, so it is unlikely that this water well is still in use. The water well record indicated that the soil was primarily clay, and no bedrock was encountered to a completion depth of 46 m bgs (Stantec 2019e).

Static groundwater levels were reported at depths of 0.3 to 5.9 m bgs. A deep-seated hydrologic regime was reported with a static groundwater level at 15.8 to 30 m bgs. Sandy silt till soils formed the predominant stratum encountered and horizontal hydraulic conductivity values for this stratum ranged from 3×10^{-7} m/s to 4×10^{-8} m/s (Stantec 2020h).

Groundwater flow direction could not be determined by Stantec due to the limited monitoring data available (Stantec 2019b). Inferred regional groundwater flow direction was stated as south, towards West Highland Creek, located approximately 2 km to the south (Stantec 2019b).

The measured concentrations of parameters analysed in groundwater samples were all below the Table 2 SCS. In addition, parameters were below the PWQO (calculated or interim) with the exception of zinc and phenanthrene in one sampling location. Groundwater analytical results also indicated that groundwater does not meet the

sanitary use criteria of the York Region Storm and Sanitary Sewer Use By-Law. Groundwater exceeded the storm water bylaws criteria for Total Suspended Soils (TSS), manganese and oil and grease (Stantec 2019b).

3.3.2.2 Kennedy Road

3.3.2.2.1 Landforms and Physiography

The Project Study Area is located in the physiographic region known as the South Slope, the southern slope of the Oak Ridges Moraine, characterized by drumlinized till plains. The South Slope in this area is underlain by bedrock of the Georgian Bay formation, characterized by shale and limestone (Chapman and Putnam 1984).

3.3.2.2.2 Soils and Bedrock Geology

The surficial geology typically consists of surficial glaciolacustrine deposits of fine sands, silts and clays underlain by glacial till generally described as sandy silt to clayey silt till interbedded with silt, clay, sand and gravel (Halton Till). The Halton Till is typically 3 to 6 m thick but can be up to 30 m locally. Bedrock in the Kennedy Road Project Footprint is typically a minimum of 45 m bgs (Stantec 2019a).

Potentially contaminating activities that have occurred at the Kennedy Road Project Footprint or on neighbouring properties within 250 m include the existing rail tracks and spurs and the potential for importation of fill of unknown quality (Stantec 2019c).

The results of the analytical testing on soils samples indicated that all parameters were below the Table 2 SCS. In addition, all parameters were below the Table 1 (Background) SCS, with the exception of sodium adsorption ratio. The results of the waste classification sample (TCLP) indicated that results met the O. Reg. 347 Schedule 4 Leachate Quality Criteria and soil would be considered non-hazardous (Stantec 2019fj).

3.3.2.2.3 Groundwater Resources

The Project Footprint does not intersect any significant groundwater recharge areas, highly vulnerable aquifers or well head protection areas as identified in the Approved Protection Plan: CTC Source Protection Region (CTC Source Protection Region 2015).

One potable water well was identified within 50 m of the Kennedy Road Project Footprint. It was installed in 1972. The area was redeveloped in the 1990s and municipal water and sewers were added in the area in the 1980s, so it is unlikely that this water well is still in use. The water well record indicated that the soil was primarily

clay and sand, and no bedrock was encountered to a completion depth of 65 m bgs (Stantec 2019f).

Static groundwater levels were reported at depths of 0.3 to 5.9 m bgs. A deep-seated hydrologic regime was reported with a static groundwater level at 15.8 to 30 m bgs. Sandy silty clay formed the predominant stratum encountered and horizontal hydraulic conductivity values for this stratum ranged from 3×10^{-8} m/s to 1×10^{-9} m/s (Stantec 2019a). The inferred groundwater flow direction was to the southeast, toward West Highland Creek (Stantec 2019c).

The measured concentrations of parameters analysed in groundwater samples were all below the Table 2 SCS and the PWQO (calculated or interim) with the exception of cobalt, which exceeded the Table 2 SCS, and cadmium, chromium, cobalt, nickel, uranium and phenanthrene, which exceeded the PWQO. Groundwater analytical results also indicated that groundwater met the sanitary use criteria of the City of Toronto Storm and Sanitary Sewer Use By-Law and the York Region Storm and Sanitary Sewer Use By-Law. Groundwater exceeded the storm water bylaws criteria for TSS, mercury, manganese and oil and grease (Stantec 2019c).

3.3.2.3 Passmore Avenue

3.3.2.3.1 Landforms and Physiography

The Project Study Area is located in the physiographic region known as South Slope, the southern slope of the Oak Ridges Moraine, characterized by drumlinized till plains. The South Slope in this area is underlain by bedrock of the Georgian Bay formation, characterized by shale and limestone (Chapman and Putnam 1984).

3.3.2.3.2 Soils and Bedrock Geology

The surficial geology typically consists of surficial glaciolacustrine deposits of fine sands, silts and clays underlain by glacial till generally described as sandy silt to clayey silt till interbedded with silt, clay, sand and gravel (Halton Till). The Halton Till is typically 3 to 6 m thick but can be up to 30 m locally. Bedrock in the Passmore Avenue Project Footprint is typically a minimum of 45 m bgs (Stantec 2019f).

Potentially contaminating activities that have occurred at the Passmore Avenue Project Footprint or on neighbouring properties within 250 m include the existing rail tracks and spurs, the potential for importation of fill of unknown quality, gasoline storage in fixed tanks, metal fabrication, electronic and computer equipment manufacturing, concrete, cement and lime manufacturing and pesticides manufacturing, processing, bulk storage and large-scale applications (Stantec 2020i).

The results of the analytical testing on soils samples indicated that all parameters were below the Table 3 SCS and Table 1 (Background) SCS, with the exception of electrical conductivity and sodium adsorption ratio (both tables), and PHC and Molybdenum (Table 1 SCS). The results of the waste classification sample (TCLP) indicated that results met the O. Reg. 347 Schedule 4 Leachate Quality Criteria and soil would be considered non-hazardous (Stantec 2020i).

3.3.2.3.3 Groundwater Resources

The Project Footprint does not intersect any significant groundwater recharge areas, highly vulnerable aquifers or well head protection areas as identified in the Approved Protection Plan: CTC Source Protection Region (CTC Source Protection Region 2015).

One potable water well was identified within 250 m of the Passmore Avenue Project Footprint. It was installed for the service station at 3381 Kennedy Road in 1960. Since municipal water and sewers were installed in this area in the mid-1980s and the service station at 3381 Kennedy Road was redeveloped in the early 1990s, it is unlikely that this commercial water well is still in use. The water well records indicated that the soil was primarily sand and silt, and no bedrock was encountered to a completion depth of 45 m bgs (Stantec 2019g).

Static groundwater levels were reported at depths of 0.3 to 5.9 m bgs. A deep-seated hydrologic regime was reported with a static groundwater level at 15.8 to 30 m bgs. Sandy silty clay till soils formed the predominant stratum encountered and horizontal hydraulic conductivity values for this stratum ranged from 1×10^{-6} m/s to 7×10^{-8} m/s (Stantec 2020e). Groundwater flow direction was interpreted to the west toward West Highland Creek located approximately 320 m west of the Site (Stantec 2020i).

The measured concentrations of parameters analysed in groundwater samples were all below the Table 3 SCS, with the exception of pentachlorophenol and chloride and sodium. In addition, parameters were below the PWQO (calculated or interim) with the exception of boron, cobalt, pentachlorophenol and copper. Groundwater analytical results also indicated that groundwater met the sanitary use criteria of the City of Toronto Storm and Sanitary Sewer Use By-Law. Groundwater exceeded the storm water standards for TSS and manganese (Stantec 2020i).

3.3.2.4 McNicoll Avenue

3.3.2.4.1 Landforms and Physiography

The Project Study Area is located in the physiographic region known as the South Slope, the southern slope of the Oak Ridges Moraine, characterized by drumlinized till plains. The South Slope in this area is underlain by bedrock of the Georgian Bay formation, characterized by shale and limestone (Chapman and Putnam 1984).

3.3.2.4.2 Soils and Bedrock Geology

The surficial geology typically consists of surficial glaciolacustrine deposits of fine sands, silts and clays underlain by glacial till generally described as sandy silt to clayey silt till interbedded with silt, clay, sand and gravel (Halton Till). The Halton Till is typically 3 to 6 m thick but can be up to 30 m locally. Bedrock in the McNicoll Avenue Project Footprint is typically a minimum of 45 m bgs (Stantec 2020f).

Potentially contaminating activities that have occurred at the McNicoll Avenue Project Footprint or on neighbouring properties within 250 m include the existing rail tracks and spurs, the potential for importation of fill of unknown quality, gasoline storage in fixed tanks, metal fabrication, commercial autobody shops, vehicles and associated parts manufacturing and transformer manufacturing, processing and use (Stantec 2020j).

The results of the analytical testing on soils samples indicated that all parameters were below the Table 3 SCS. In addition, all parameters were below the Table 1 (Background) SCS, with the exception of electrical conductivity and sodium adsorption ratio. The results of the waste classification sample (TCLP) indicated that results met the O. Reg. 347 Schedule 4 Leachate Quality Criteria and soil would be considered non-hazardous (Stantec 2020j).

3.3.2.4.3 Groundwater Resources

The Project Footprint does not intersect any significant groundwater recharge areas, highly vulnerable aquifers or well head protection areas as identified in the Approved Protection Plan: CTC Source Protection Region (CTC Source Protection Region 2015).

Two potable water wells were identified within 50 m of the McNicoll Avenue Project Footprint. They were installed in the 1950s and likely associated with the industrial property at 3660 Midland Avenue. The property was divided and redeveloped in the 1990s and municipal water and sewers were added in the 1990s, so it is unlikely that these wells are still in use. The water well records indicated that the soil was primarily clay and no bedrock was encountered to a completion depth of 64 m bgs (Stantec 2019h).

Static groundwater levels were reported at depths of 0.3 to 5.9 m bgs. A deep-seated hydrologic regime was reported with a static groundwater level at 15.8 to 30 m bgs. Sandy silty clay till soils formed the predominant stratum encountered and horizontal hydraulic conductivity values for this stratum ranged from 2×10^{-8} m/s to 4×10^{-9} m/s (Stantec 2020f).

Groundwater flow direction could not be determined due to the linear arrangement of the monitoring wells. However, the inferred regional groundwater flow direction is west towards Highland Creek, located approximately 320 m to the west (Stantec 2020j).

The measured concentrations of parameters analysed in groundwater samples were all below the Table 3 SCS. In addition, parameters were below the PWQO (calculated or interim) with the exception of boron and cobalt. Groundwater analytical results also indicated that groundwater met the sanitary use criteria of the City of Toronto Storm and Sanitary Sewer Use By-Law. Groundwater exceeded the storm water standards for TSS and manganese (Stantec 2020j).

3.3.2.5 Huntingwood Drive

3.3.2.5.1 Landforms and Physiography

The Project Study Area is located in the physiographic region known as South Slope, the southern slope of the Oak Ridges Moraine, characterized by drumlinized till plains. The South Slope in this area is underlain by bedrock of the Georgian Bay formation, characterized by shale and limestone (Chapman and Putnam 1984).

3.3.2.5.2 Soils and Bedrock Geology

The surficial geology typically consists of surficial glaciolacustrine deposits of fine sands, silts and clays underlain by glacial till generally described as sandy silt to clayey silt till interbedded with silt, clay, sand and gravel (Halton Till). The Halton Till is typically 3 to 6 m thick but can be up to 30 m locally. Bedrock in the Huntingwood Project Footprint is typically a minimum of 45 m bgs (Stantec 2020g).

Potentially contaminating activities that have occurred at the Huntingwood Drive Project Footprint or on neighbouring properties within 250 m include the existing rail tracks and spurs, the potential for importation of fill of unknown quality, gasoline storage in fixed tanks (Stantec 2020k).

The results of the analytical testing on soils samples indicated that all parameters were below the Table 3 SCS and Table 1 (Background) SCS). The results of the waste classification sample (TCLP) indicated that results met the O. Reg. 347 Schedule 4 Leachate Quality Criteria and soil would be considered non-hazardous (Stantec 2020k).

3.3.2.5.3 Groundwater Resources

The Project Footprint does not intersect any significant groundwater recharge areas, highly vulnerable aquifers or well head protection areas as identified in the Approved Protection Plan: CTC Source Protection Region (CTC Source Protection Region 2015).

No potable water well was identified within 250 m of the Huntingwood Drive Project Footprint. Stratigraphy provided on a well record for a monitoring well installed at 2677 Kennedy Road indicated that the soil was sand overlain by fill material. No bedrock was encountered (up to 7.2 m bgs) (Stantec 2019i).

Static groundwater levels were reported at depths of 0.3 to 5.9 m bgs. A deep-seated hydrologic regime was reported with a static groundwater level at 15.8 to 30 m bgs. Sandy silty clay till soils formed the predominant stratum encountered and horizontal hydraulic conductivity values for this stratum ranged from 2×10^{-7} m/s to 3×10^{-9} m/s (Stantec 2020g). The inferred groundwater flow direction was to the east towards East Highland Creek (Stantec 2019i).

The measured concentrations of parameters analysed in groundwater samples were all below the Table 3 SCS. In addition, parameters were below the PWQO (calculated or interim) with the exception of cobalt. Groundwater analytical results also indicated that groundwater met the sanitary use criteria of the City of Toronto Storm and Sanitary Sewer Use By-Law. Groundwater exceeded the storm water standards for TSS and manganese (Stantec 2020k).

3.3.2.6 Havendale Road

3.3.2.6.1 Landforms and Physiography

The Project Study Area is located in the physiographic region known as South Slope, the southern slope of the Oak Ridges Moraine, characterized by drumlinized till plains. The South Slope in this area is underlain by bedrock of the Georgian Bay formation, characterized by shale and limestone (Chapman and Putnam 1984).

3.3.2.6.2 Soils and Bedrock Geology

The surficial geology typically consists of surficial glaciolacustrine deposits of fine sands, silts and clays underlain by glacial till generally described as sandy silt to clayey silt till interbedded with silt, clay, sand and gravel (Halton Till). The Halton Till is typically 3 to 6 m thick but can be up to 30 m locally. Bedrock in the Havendale Road Project Footprint is typically a minimum of 45 m bgs (Stantec 2020c).

Potentially contaminating activities that have occurred at the Havendale Road Project Footprint or on neighbouring properties within 250 m include the existing rail tracks and spurs and the potential for importation of fill of unknown quality (Stantec 2019j).

The results of the analytical testing on soils samples indicated that all parameters were below the Table 1 and Table 3 SCS, with the exception of electrical conductivity and sodium absorption ratio.

3.3.2.6.3 Groundwater Resources

The Project Footprint does not intersect any significant groundwater recharge areas, highly vulnerable aquifers or well head protection areas as identified in the Approved Protection Plan: CTC Source Protection Region (CTC Source Protection Region 2015).

Several potable water wells were identified within 250 m of the Havendale Road Project Footprint. Most of these potable water wells were installed for domestic use in the 1940s and 1950s. Since municipal water and sewers were installed in this area in the late 1980s, it is unlikely that these domestic water wells are still in use. A 2004 water well record indicated that an irrigation well was installed on the golf course at 2481 Birchmount Road. Since this well was installed after municipal water was available in the area, it is possible that the golf course still uses this well for irrigation. Based on the water well records reviewed, the soil stratigraphy is primarily clay, silt, and sand. No bedrock was encountered (up to 72 m bgs) (Stantec 2019j).

Static groundwater levels recorded in the monitoring wells were at 4.4 m and 6.1 m below the existing ground surface (elevations of approximately 176.5 m and 175.1 m) (Stantec 2020r). The horizontal hydraulic conductivity of the sandy silt till soils are less than 3 x 10-8 m/s, based on test results of Stantec (2020r) The groundwater flow direction cannot be inferred due to the limited number of monitoring wells. The regional groundwater flow direction is expected to be to the northeast towards East Highland Creek (Stantec 2020s).

The measured concentrations of parameters analysed in groundwater samples were all below the Table 1. Sodium and chloride exceeded Table 3 SCS levels. Cyanide, chrominum, uranium and chrysene exceeded the parameters for PWQO. The site meets TCLP criteria and the soil would be considered non-hazardous waste. Groundwater would be suitable for discharge to the City of Toronto Storm and Sanitary sewer system. Groundwater exceeded the storm water standards for TTS, total cyanide and total manganese (Stantec 2019i).

3.3.2.7 Progress Avenue

3.3.2.7.1 Landforms and Physiography

The Project Study Area is located in the physiographic region known as South Slope, the southern slope of the Oak Ridges Moraine, characterized by drumlinized till plains. The South Slope in this area is underlain by bedrock of the Georgian Bay formation, characterized by shale and limestone (Chapman and Putnam 1984).

3.3.2.7.2 Soils and Bedrock Geology

The surficial geology typically consists of surficial glaciolacustrine deposits of fine sands, silts and clays underlain by glacial till generally described as sandy silt to clayey silt till interbedded with silt, clay, sand and gravel (Halton Till). The Halton Till is typically 3 to 6 m thick but can be up to 30 m locally. Bedrock in the Progress Avenue Project Footprint is typically a minimum of 45 m bgs (Stantec 2020a).

Potentially contaminating activities that have occurred at the Progress Avenue Project Footprint or on neighbouring properties within 250 m include the existing rail tracks and spurs, garages and maintenance and repair of railcars, marine vehicles and aviation vehicles, the potential for importation of fill of unknown quality, metal fabrication, plastics manufacturing and processing, pulp and paper manufacturing, ink manufacturing, processing, and bulk storage, and gasoline storage in fixed tanks (Stantec 2020b).

The results of the analytical testing on soils samples indicated that all parameters were below the Table 3 SCS, with the exception of electrical conductivity and sodium adsorption ratio. In addition, all parameters were below the Table 1 (Background) SCS, with the exception of electrical conductivity and sodium adsorption ratio. The results of the waste classification sample (TCLP) indicated that results met the O. Reg. 347 Schedule 4 Leachate Quality Criteria and soil would be considered non-hazardous (Stantec 2020b).

3.3.2.7.3 Groundwater Resources

The Project Footprint does not intersect any significant groundwater recharge areas, highly vulnerable aquifers or well head protection areas as identified in the Approved Protection Plan: CTC Source Protection Region (CTC Source Protection Region 2015).

No potable water well was identified within 250 m of the Progress Avenue Project Footprint. According to well records for three deep test holes drilled in 1969 at 80 and 111 Progress Avenue, soil is primarily comprised of clay with occasional zones of sand. Shale bedrock was encountered at approximately 70 m bgs (Stantec 2019k).

Static groundwater levels were reported at depths of 0.3 to 5.9 m bgs. A deep-seated hydrologic regime was reported with a static groundwater level at 15.8 to 30 m bgs. Sandy silty clay till soils formed the predominant stratum encountered and horizontal hydraulic conductivity values for this stratum ranged from 1×10^{-7} m/s to 4×10^{-8} m/s (Stantec 2020a). Groundwater flow direction was inferred to the northeast towards West Highland Creek. It should be noted that the majority of the monitoring wells are located west of the Creek and the groundwater flow direction is expected to be different east of the Creek (Stantec 2020b).

The measured concentrations of parameters analysed in groundwater samples were all below the Table 1 and Table 3 SCS with the exception of electrical conductivity and sodium absorption ratio. In addition, parameters were below the PWQO (calculated or interim) with the exception of cobalt and pH. Groundwater analytical results also indicated that groundwater met the sanitary use criteria of the City of Toronto Storm and Sanitary Sewer Use By-Law. Groundwater exceeded the storm water standards for TSS and nonylphenol ethoxylate (total) (Stantec 2020b).

3.4 Cultural Environment

The following sections describe existing conditions related to the cultural environment, including protected heritage property, built heritage resources, cultural heritage landscapes, archaeological resources and areas of archaeological potential.

3.4.1 Built Heritage Resources and Cultural Heritage Landscapes

Built heritage resources include buildings, structures, monuments, installations, or other similar features that contribute to a property's CHVI as identified by a community (MMAH 2020). Cultural heritage landscapes refer to specific areas that may have been modified by human activity, such as buildings, structures, spaces, views, archaeological sites or other natural elements that are valued collectively for their interrelationship, meaning or association (Government of Ontario 2020).

3.4.1.1 Methodology

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was completed to provide an inventory of existing heritage conditions and a preliminary assessment of Project potential impacts. The Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment involved an assessment of built heritage resources and cultural heritage landscapes within the Cultural Heritage Assessment Area of each grade separation locations and considered the potential effects to built heritage resources and cultural heritage landscapes of the proposed grade separations at the existing at-grade rail crossings along the Stouffville Rail

Corridor. The Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was supported by Cultural Heritage Screening Reports (CHSRs) previously completed for Denison Street, Kennedy Road, and McNicoll Avenue (Stantec 2017a, 2017b, 2017c) and field surveys.

As noted above, heritage reports were completed for portions of the Cultural Heritage Assessment Areas in 2017. The Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (Stantec 2021p), includes a gap analysis to review the previous reports to determine which areas had not been previously assessed.

Listings of provincially and locally designated properties, districts, and easements for each municipality were collected from the City of Toronto, the Ontario Heritage Trust (OHT), and the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). Consultation with agencies and municipalities within which the Project is proposed was undertaken to determine the presence of designated, listed, or otherwise recognized heritage properties within or adjacent to the Cultural Heritage Assessment Areas. In addition, a field visit was conducted to confirm existing conditions of previously identified heritage resources and identify any new potential heritage resources, including both potential Built Heritage Resources and components of cultural heritage landscapes, to supplement the findings of the desktop review.

Where a built heritage resource or cultural heritage landscape was identified within or across the Cultural Heritage Assessment Areas, an assessment of potential impacts as a result of the Project was undertaken. The assessment of potential impacts was undertaken according to MHSTCI's *Information Bulletin 3: Heritage Impact Assessment* (Information Bulletin 3) (approved January 31, 2017) (MHSTCI 2017). The Cultural Heritage Assessment Areas for each grade separation location are provided in Appendix A2.

3.4.1.2 Description of Existing Conditions

3.4.1.2.1 Denison Street

The Denison Street Cultural Heritage Assessment Area is composed primarily of structures that were constructed in the late 20th or early 21st century. No known and potential built heritage resources and cultural heritage landscapes were identified within the Cultural Heritage Assessment Area.

3.4.1.2.2 Kennedy Road

The Kennedy Road Cultural Heritage Assessment Area is composed of primarily structures constructed in the late 20th or early 21st century. No known and potential built

heritage resources and cultural heritage landscapes were identified within the Cultural Heritage Assessment Area.

3.4.1.2.3 Passmore Avenue

The Passmore Avenue Cultural Heritage Assessment Area is composed of commercial buildings, with some containing industrial yards and attached warehouses. Buildings in the Cultural Heritage Assessment Area were constructed between 1950 and 1980, determined through aerial photography, with the majority of structures constructed between 1970 and 1980.

3.4.1.2.4 Screening of the Passmore Avenue Cultural Heritage Assessment Area determined that there were no properties identified to contain a potential built heritage resource or cultural heritage landscape. McNicoll Avenue

The McNicoll Avenue Cultural Heritage Assessment Area is composed primarily of structures constructed in the late 20th or early 21st century. No known and potential built heritage resources and cultural heritage landscapes were identified within the Cultural Heritage Assessment Area.

3.4.1.2.5 Huntingwood Drive

The Huntingwood Drive Cultural Heritage Assessment Area, situated just north of Havendale Road, is also set within a residential neighbourhood. Residences in the Cultural Heritage Assessment Area were constructed between 1970 and 1980, determined through aerial photography, and display a mixture of mid to late 20th century architecture. Sir William Osler High School was also built in the Cultural Heritage Assessment Area during this period. The Cultural Heritage Assessment Area is currently experiencing a high-level of modern infill, particularly along Southlawn Drive, Bellefontaine Street, and Petworth Crescent. Several examples were noted where structures were either in the process of being demolished or being replaced with new construction.

Screening of the Huntingwood Avenue Cultural Heritage Assessment Area determined that there were no properties identified to contain potential built heritage resources or cultural heritage landscapes.

3.4.1.2.6 Havendale Road

The Havendale Road Cultural Heritage Assessment Area is contained within a residential neighbourhood. Residences in the Cultural Heritage Assessment Area were primarily constructed between 1969 and 1980, with three modern infill structures. This date range was determined through aerial photography, and development was

influenced by the development of Highway 401 to the south. The majority of residences are similar Mid-Century Modern structures that typically display a one storey massing with a low-pitched hip roof, brick cladding, a partial porch, and an attached garage.

Screening of the Havendale Road Cultural Heritage Assessment Area determined that there were no properties identified to contain potential built heritage resources or cultural heritage landscapes.

3.4.1.2.7 Progress Avenue

The Progress Avenue Cultural Heritage Assessment Area is composed of a mixture of commercial and institutional structures. Structures in the Cultural Heritage Assessment Area date to the 1960s and 1970s, determined through aerial photography, with the majority constructed between 1960 and 1964. Much of this development was influenced by the construction of Highway 401 to the north.

Screening of the Progress Avenue Cultural Heritage Assessment Area determined that there were no properties identified to contain potential built heritage resources or cultural heritage landscapes.

3.4.2 Archaeological Resources

Archaeological resources include artifacts, archaeological sites, marine archaeological sites, as defined under the *Ontario Heritage Act*. The identification and evaluation of such resources are based upon archaeological fieldwork undertaken in accordance with the *Ontario Heritage Act.*

3.4.2.1 Methodology

A Stage 1 AA consists of a review of geographic, land use and historical information for the property and the relevant surrounding area, a property visit to inspect its current condition and contacting MHSTCI to find out whether, or not, there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further Archaeological Assessment (e.g., Stage 2-4) as necessary.

The Stage 1 AAs were shared with the following Indigenous Nations for review on March 13, 2020 and April 30, 2020:

- Williams Treaties First Nations
  - Alderville First Nation

  - Beausoleil First Nation
  - Chippewas of Georgina Island First Nation
  - Chippewas of Rama First Nation
  - Curve Lake First Nation
  - Hiawatha First Nation
  - Mississaugas of Scugog Island First Nation
- Mississaugas of the Credit First Nation
- Huron-Wendat Nation
- Kawartha Nishnawbe First Nation
- Métis Nation of Ontario
- Six Nations of the Grand River
- Haudenosaunee Confederacy Chiefs Council

The Stage 1 AAs were submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. The Stage 1 AAs were entered into the Ontario Public Register of Archaeological Reports. Further Archaeological Assessment is required in certain areas. The Stage 1 AAs are included in Appendix A3 together with the MHTSCI letter confirming that each report has been entered into the Register.

A Stage 1 AA was undertaken for the following Assessment Areas:

- Denison Street - on August 1, 2017 by Stantec Consulting under Project Information Form (PIF)# 392-0184-2016. The Stage 1 AA was submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. On October 5, 2017 the Stage 1 AA was entered into the Ontario Public Register of Archaeological Reports. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 6
- Kennedy Road - on August 1, 2017 by Stantec Consulting under PIF # P392-0182-2017.The Stage 1 AA was submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. On October 10, 2017, the Stage 1 AA was entered into the Ontario Public Register of Archaeological Reports.

Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 6

- Passmore Avenue - on May 4, 2020 by Stantec Consulting under PIF # P392-0256-2020.The Stage 1 AA was submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. No further Archaeological Assessment is recommended as depicted in Appendix A3, Figure 13

- McNicoll Avenue - on August 1, 2017 by Stantec Consulting under PIF # P392-0186-2017.The Stage 1 AA was submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. On October 2, 2017, the Stage 1 AA was entered into the Ontario Public Register of Archaeological Reports. Recommendations for Stage 2 and Stage 3 AA requirements are depicted in Appendix A3, Figure 6 and in Supplementary Documentation (e.g., ossuary). See report and/or letter for extensive recommendations

- Huntingwood Drive - on May 4, 2020 by Stantec Consulting under PIF# P392-0258-2020.The Stage 1 AA was submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 12

- Havendale Road - on May 4, 2020 by Stantec Consulting under PIF # P392-0255.The Stage 1 AA was submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 11

- Progress Avenue - on May 4, 2020 by Stantec Consulting under PIF # P392-0255-2019.The Stage 1 AA was submitted to the MHSTCI as a condition of licensing in accordance with the *Ontario Heritage Act*. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 14

Archaeological Assessments are provided in Appendix A3.

3.4.2.2 Description of Existing Conditions

3.4.2.2.1 Denison Street

The majority of the Denison Street Archaeology Assessment Area has been documented to have been subject to previous deep and extensive disturbance. However, based on the results of the 2017 Stage 1 AA, portions of the Study Area (both within and up to 50 m outside of the project footprint) meet the criteria for archaeological potential and required Stage 2 AA, including an area along Denison Street (northern side) at the west end of the Archaeology Assessment Area and a small area near the

intersection between the rail corridor and Denison Street. These lands require further Stage 2 AA by test pit survey at five-meter intervals prior to any proposed effects of the Project. Some lands (both within and up to 50 m outside of the project footprint) are considered to have been probably subject to previous disturbance but further investigation is required to confirm this. Based on the review of the MHSTCI Ontario Public Register of Archaeological Reports undertaken in November 2019, the recommendations within Stantec's 2017 Stage 1 AA for Stage 2 AA remain, however with the modification of the Project Footprint, a new area will be assessed through a Stage 1 AA to be undertaken in conjunction with the planned Stage 2 AA. The updated Stage 1 AA will be scheduled so that any additional Archaeology Assessment requirements can be completed during the detailed design process.

3.4.2.2.2 Kennedy Road

The majority of the Kennedy Road Archaeology Assessment Area has been documented to have been subject to previous deep and extensive disturbance. However, based on the results of the property inspection, parts of the Archaeology Assessment Area (both within and up to 50 m outside of the project footprint) meet the criteria for archaeological potential and required Stage 2 AA, including the east side area along the rail corridor and Kennedy Road, as well as the area north of Kennedy Road and along the rail corridor (near intersection). These lands require further Stage 2 AA by a combination of test pit survey and pedestrian survey at five metre intervals, where appropriate, prior to any proposed effects of the Project. Based on the review of the MHSTCI Ontario Public Register of Archaeological Reports undertaken in November 2019, the recommendations within Stantec's 2017 Stage 1 AA for Stage 2 AA remains.

3.4.2.2.3 Passmore Avenue

Based on the background research as well as the results of the property inspection, the Passmore Avenue Archaeology Assessment Area is considered to possess low to no archaeological potential and do not require further Archaeological Assessment. Therefore, Stage 2 AA is not required.

3.4.2.2.4 McNicoll Avenue

The majority of the McNicoll Avenue Archaeology Assessment Area has been documented to have been subject to previous deep and extensive disturbance. However, based on the results of the property inspection, parts of the Archaeology Assessment Area (both within and up to 50 m outside of the project footprint) meet the criteria for archaeological potential and required Stage 2 AA, including the areas north of McNicoll Avenue on both sides of the rail corridor. These lands require further Stage

2 AA by pedestrian survey at five metre intervals, where appropriate, prior to any proposed effects of the Project. Based on the review of the MHSTCI Ontario Public Register of Archaeological Reports undertaken in November 2019, there are six previous Archaeological Assessments, which address parts of the Archaeology Assessment Area, including Stantec's 2017 assessment. These previous AA reports indicate that the entire McNicoll Avenue Grade Separation Project Footprint has been assessed by Stage 1 AA and parts of the Project Footprint have been assessed by Stage 2 AA. Portions of the Project Footprint recommended for Stage 2 AA in Stantec's 2017 Stage 1 AA have been assessed under the above-mentioned reports and have been recommended for no further assessment. The recommendations of Stantec's 2017 Stage 1 AA for Stage 2 AA of the southwest quadrant of the McNicoll Avenue Grade Separation Project Footprint remains.

Based on the presence of an ancestral Huron-Wendat village site (Alexandra Site AkGt 53) located within one km of the Assessment Area, an ossuary potential model was conducted during the 2017 Stage 1 AA (Stantec 2017f) in accordance with the expectations of the City of Toronto (City of Toronto 2016c). The model evaluated whether lands within the Archaeological Assessment Area are within 1,000 m of the Alexandra site as well as within 300 m of a watercourse. Based on this model, some lands with the Archaeology Assessment Area are considered to possess potential for an ancestral Huron-Wendat ossuary. No lands within the Project Footprint, however, were determined to be captured within this ossuary potential model.

3.4.2.2.5 Huntingwood Drive

The majority of the Huntingwood Drive Archaeology Assessment Area has been documented to have been subject to previous deep and extensive disturbance. However, based on the results of the property inspection, parts of the Archaeology Assessment Area were identified to possess archaeological potential and required Stage 2 AA, including an area near the intersection between Huntingwood Drive and the rail corridor (south side), and an area along the rail corridor (west side) in the southern part of the Archaeology Assessment Area (baseball diamond field). Stage 2 Archaeological Assessment must be completed in accordance with the MHSTCI 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Once the final design and construction impacts are determined, a full and detailed Stage 2 AA work plan will be developed by the proponent's archaeological consultant.

3.4.2.2.6 Havendale Road

The majority of the Havendale Road Archaeology Assessment Area has been documented to have been subject to previous deep and extensive disturbance. However, based on results of the property inspection, parts of the Archaeology

Assessment Area were identified to possess archaeological potential and required Stage 2 AA, including one area along the rail corridor (west side) on the northern part of the Archaeology Assessment Area. Stage 2 Archaeological Assessment must be completed in accordance with the MHSTCI 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Once the final design and construction impacts are determined, a full and detailed Stage 2 Archaeological Assessment work plan will be developed by the Client's archaeological consultant.

3.4.2.2.7 Progress Avenue

The majority of the Progress Avenue Archaeology Assessment Area has been documented to have been subject to previous deep and extensive disturbance. Visual property inspection confirmed that parts of the Archaeology Assessment Area retain archaeological potential, including a registered archaeological site, site AkGt-9.

While site AkGt-9 is registered as undergoing disturbance at its original date of registration, it has not been formally investigated. Some lands within 70 m of site AkGt-9 are considered likely to have been subject to previous disturbance; however, a Stage 2 AA by test pit survey at judgmental intervals is required to confirm whether any such disturbance has completely removed archaeological potential or whether evidence of site AkGt-9 remains *in situ.*

These areas will require a Stage 2 AA, including an area near the intersection between Progress Avenue and Midland Avenue (northwest side), and a small area between the rail corridor and William Kitchen Road. Stage 2 Archaeological Assessment must be completed in accordance with the MHSTCI' 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Once the final design and construction impacts are determined, a full and detailed Stage 2 Archaeological Assessment work plan will be developed by the Client's archaeological consultant.

3.5 Socio-Economic and Land Use

The following section describes existing conditions related to the social and economic environment. This includes descriptions of the political and policy designations associated with the Socio-Economic and Land Use Assessment Areas and the land uses allowed as a result. It also includes a description of the ways in which people use the land within the Socio-Economic and Land Use Assessment Areas.

3.5.1 Methodology

The socio-economic and land use characteristics of the Socio-Economic and Land Use Assessment Area are subject to an extensive and complex land use policy regime that

is aimed at encouraging transit-supportive intensification and managing growth in a rapidly changing context. The existing environment was reviewed, and the potential effects of the Project were assessed through an extensive data gathering process, with regional, provincial and municipal source information listed in Section 1.3.

Further information sources included:

- Project document and supporting studies (e.g., design drawings, technical presentations, traffic impact assessment)
- Information on existing institutional uses found on the Open Data Catalogue (City of Toronto, 2018a)
- Statistics Canada Census information (Statistics Canada 2017a)

GIS-based overlay mapping and analysis tools were used to identify current and anticipated land uses within the Socio-Economic and Land Use Assessment Area. Geospatial data used in the analysis were obtained from the City of Toronto Open Data Catalogue (City of Toronto 2019). The following geospatial layers were reviewed:

- Neighbourhood boundaries
- Zoning by-laws
- Development applications
- Places of worship
- School locations
- GO Station locations
- Watercourses
- Parks and recreation facilities
- Fire services, paramedic and ambulance services, and police station locations

Identified data gaps include the lack of geospatial information on privately-owned institutions and select land uses from the City of Toronto Open Data Catalogue. Data gaps were resolved using publicly available geospatial services (e.g., Google Maps) and address-listing databases (e.g., Yelp, YellowPages). GIS-based overlay mapping and analysis tools were used to determine property counts within the Assessment Area (City of Toronto 2018a).

For Projects which overlapped with the City of Markham and York Region, consultation via letters and emails were submitted in 2016 requesting information regarding any approved infrastructure plans within the Socio-Economic and Land Use Assessment Area. A further conference call held with York Region and the City of Markham on October 13, 2016 to discuss the Project, the information request and other questions the Region and City may have. In addition, information was obtained from the City of Markham and York Region Official Plans (City of Markham 2014, York Region 2019).

The Socio-Economic and Land Use Assessment Areas for each grade separation location and full detail on land use conditions can be found in Appendix A4.

3.5.2 Planning Policy Context

The Project is located is within the Greater Golden Horseshoe (GGH) region. In 2019, the Province of Ontario undertook the Growth Plan for the GGH introduced under the *Places to Grow Act*, 2005. The Growth Plan vision is to build stronger, prosperous communities by better managing growth in the region. In the Growth Plan, the Stouffville Rail Corridor is identified as one of the priority transit corridors that connects a network of urban growth centres within the GGH.

The City of Toronto Official Plan policies provide a foundation for improving inter-regional transportation systems. The proposed grade separation proposal will assist with providing safer, faster and more accessible public transit.

Relevant objective of the York Region Official Plan objective is to provide transit service that is convenient and accessible to all residents and workers of York Region.

The City of Markham Official Plan polices advocate for the grade separation of road and rail crossings where warranted including the dedication of ROW to construct future grade separations where there is an existing at-grade crossing of a Regional or City road and a rail corridor.

The Project conforms to the provincial and municipal land use policies which prioritize developments in major transit corridors through an increase in a mix of land uses that are supportive of future transit use. Project construction and operations will adhere to all applicable planning and regulation standards and requirements, where feasible, in accordance (as applicable) with the City of Toronto, City of Markham, York Region and AODA standards. Generally, the Project is consistent with the Official Plan objectives to support pedestrian and cyclist movement and reduce traffic conflicts along the rail corridor. Section 1.3 provides additional information on the planning context of the Assessment Area.

3.5.3 Description of Existing Conditions

3.5.3.1 Denison Street

3.5.3.1.1 Neighbourhood Characteristics

The total combined area of Census Tracts (5350401.04, 5350401.05, 5350401.13, 5350401.17, 5350401.18, 5350401.19, 5350401.23) intersected by the Socio-Economic and Land Use Assessment Area is 20.64 km^2 (Statistics Canada 2017a).

In 2016, the total population of the Socio-Economic and Land Use Assessment Area was 30,595 persons (48.7% male and 51.3% female), an increase of 8.0% from 2011. Approximately 13% of the population were children (0-14 years), 12% youth (15-24 years), 44% working age (25-54 years), 15% pre-retirement (55-64 years) and 16% seniors (65+ years) (Statistics Canada 2017b).

Of the 11,327 private dwellings in the Socio-Economic and Land Use Assessment Area, 92.2% were occupied by usual residents. Of occupied dwellings, 44% were single-detached houses, 38% apartments in a building that has five or more storeys, and 18% other attached dwellings (comprised of 56% duplex, 25% row-houses, 14% semi-detached houses and 5% apartments in buildings with fewer than five storeys) (Statistics Canada 2017b).

The percentage of owner-occupied housing (76%) in the Socio-Economic and Land Use Assessment Area is greater than renter households (24%). The median shelter costs for owner-and-tenant-occupied households in 2016 was $1,299 and $1,336 per month, respectively.

In 2016, 17% of labour force residing in in the Socio-Economic and Land Use Assessment Area took public transit to work. Of the commuting labour force, 16% traveled for 60 minutes or over to reach their usual place of work.

The Socio-Economic and Land Use Assessment Area has a number of schools, parks and places of worship. The majority of these features are outside of the Area.

3.5.3.1.2 Built Form, Topography, and Visual Character

The Denison Street Socio-Economic and Land Use Assessment Area is comprised of a combination of residential, mixed use, greenway, and business park employment areas. Lands within the area are generally flat with no prominent natural features. Commercial establishments border Denison Street to the west, south, and east of the rail corridor, with a low-density residential area located to the north. The boulevard along Denison Street includes landscaping such as trees and grassy areas, which partially shield

commercial establishments and the residential areas from the street (Figure 2.1). A vegetation buffer also visually shields the residential area from the rail corridor.

3.5.3.1.3 Utilities

A preliminary list of the owners of utilities in the Denison Street Socio-Economic and Land Use Assessment Area is presented below in Table 3.13. However, further utility conflicts may be identified as the Project progresses through detailed design.

Table 3.13: Utilities within the Denison Street Socio-Economic and Land Use Assessment Area

Utility Type	Owners
Fire Hydrants, Watermains, Sanitary Sewers and Storm Sewers, Traffic and Street Lights	City of Markham
Pipelines and Gas Distribution Infrastructure	Enbridge Gas Inc.
Hydro Infrastructure, Utility Poles and Street Lighting	Hydro One
Railway Signals and Infrastructure	Metrolinx
Communications Infrastructure	Bell Canada, Rogers Communications Inc., Canadian National Railway (CN) (fibre optic cable)

Source: Stantec Consulting Ltd. 2021b. Stouffville Rail Corridor Grade Separations Project: Denison Street – Socio-Economic and Land Use Study. Markham, ON.

3.5.3.2 Kennedy Road

3.5.3.2.1 Neighbourhood Characteristics

The total combined area of Census Tracts (5350401.04, 5350401.13, 5350401.17, 5350401.18, 5350401.19) intersected by the Socio-Economic and Land Use Assessment Area is 10.67 km^2 (Statistics Canada 2017a). In 2016, the total population of the Assessment Area was 26,230 persons (48.9% male and 51.1% female), an increase of 9.0% from 2011. Approximately 13% of the population were children (0-14 years), 12% youth (15-24 years), 44% working age (25-54 years), 14% pre-retirement (55-64 years) and 17% seniors (65+ years) (Statistics Canada 2017b).Of the 9,265 private dwellings in the Assessment Area, 93.3% were occupied by usual residents. Of occupied dwellings, 48% were single-detached houses, 32% apartments in a building that has five or more storeys, and 20% other attached dwellings (comprised of 11% semi-detached houses, 60% duplex, 24% row-houses, and 5% apartments in buildings with fewer than five storeys) (Statistics Canada 2017b).

The percentage of owner-occupied housing (77%) in the Socio-Economic and Land Use Assessment Area is greater than renter households (23%). The median shelter costs for owner-and-tenant-occupied households in 2016 was $1,321 and $1,489 per month, respectively. In 2016, 17% of labour force residing in in the Assessment Area took public transit to work. Of the commuting labour force, 16% traveled for 60 minutes or more to reach their usual place of work. Land use facilities such educational, institutions (schools), medical facilities, and religious institutions are present within the Socio-Economic and Land Use Assessment Area.

Within the Socio-Economic and Land Use Assessment Area there are a number of schools, parks and places of worship. The majority of these features are outside of the Project Footprint.

3.5.3.2.2 Built Form, Topography, and Visual Character

The Socio-Economic and Land Use Assessment Area is comprised primarily of low-density residential housing to the west of the rail corridor with limited business or residential frontage along Kennedy Road, and limited streetscaping trees along the Kennedy Road. A green area with a wetland complex is present on the east side of Kennedy Road and the rail corridor. A vegetation buffer visually shields the residential area from the railway track.

3.5.3.2.3 Utilities

A preliminary list of the owners of utilities in the Socio-Economic and Land Use Assessment Area is presented below in Table 3.14.

Table 3.14: Utilities within the Kennedy Road Socio-Economic and Land Use Assessment Area

Utility Type	Owners
Fire Hydrants, Watermains, Sanitary Sewers and Storm Sewers; Traffic and Street Lights	Region of York, City of Toronto
Pipelines and Gas Distribution Infrastructure	Enbridge Gas Inc.
Hydro Infrastructure, Utility Poles and Street Lighting	Hydro One
Communications Infrastructure	Bell Canada, Rogers Communications Inc., Telus Communications Inc., CN (fibre optic cable)

Source: Stantec Consulting Ltd. 2021c. Stouffville Rail Corridor Grade Separations Project: Kennedy Road – Socio-Economic and Land Use Study. Markham, ON.

3.5.3.3 Passmore Avenue

3.5.3.3.1 Neighbourhood Characteristics

There are two neighbourhood profiles within and surrounding the Passmore Avenue Assessment Area: Milliken and Steeles. Milliken has an area of 9.38 km^2 and Steeles has an area of 4.5 km^2. Populations are 26,572 and 24,623 respectively (City of Toronto 2019).

The working age population represents the largest demographic across all neighbourhood profiles. Single detached houses occupy the largest dwelling classification across neighbourhoods. Owner-occupied households dominated against renter occupied households in all neighbourhood profiles (City of Toronto 2019).

Of the labour force, between 23% and 24% of residents from these neighbourhood profiles take public transit to work. Of these commuting forces, 19% to 22% of those who take public transit traveled for 60 minutes or longer to reach their usual place of work (City of Toronto 2019).

Passmore Avenue and its surrounding areas are zoned primarily as Employment Industrial (73%), with the remaining zoning categories consisting of Residential, Open Space, Commercial Residential, Commercial, Institutional, Utility, and Transportation.

Passmore Avenue is designated as a Provincially Significant Employment Zone under the *Places to Grow Act* and, as such, is identified as being critical to the local and provincial economy.

Social, economic and community features are present within 400 m of the Project Footprint including Places of Worship, Schools, and Parks.

3.5.3.3.2 Built Form, Topography, and Visual Character

The Socio-Economic and Land Use Assessment Area is comprised of a commercial and industrial visual character, with no prominent natural features. It consists of primarily employment industrial properties in all directions from the rail corridor. No residential properties exist to the immediate of the rail corridor and are located beyond the industrial properties. Train movements are visible from numerous employment industrial properties along the rail track near the Passmore Avenue crossing.

3.5.3.3.3 Utilities

A preliminary list of the owners of utilities along the Passmore Avenue Socio-Economic and Land Use Assessment Area is presented below (Table 3.15). Additional utility conflicts may be identified as the Project progresses through detailed design.

Table 3.15: Utilities within the Passmore Avenue Socio-Economic and Land Use Assessment Area

Utility Type	Owners
Fire Hydrants, Watermains, Sanitary Sewers and Storm Sewers, Traffic and Street Lights	City of Toronto
Gas Distribution Infrastructure	Enbridge Gas Inc.
Hydro Infrastructure, Utility Poles and Street Lighting	Toronto Hydro
Communications Infrastructure	Bell Canada, Rogers Communications Inc.

Source: Stantec Consulting Ltd 2021d. Stouffville Rail Corridor Grade Separations Project: Passmore Avenue – Socio-Economic and Land Use Study.

3.5.3.4 McNicoll Avenue

3.5.3.4.1 Neighbourhood Characteristics

There are five neighbourhood profiles within and surrounding the McNicoll Avenue Socio-Economic and Land Use Assessment Area: Agincourt North, Agincourt South-Malvern West, L'Amoreaux, Milliken, and Steeles. Milliken is the largest neighbourhood with an area of 9.38 km^2 followed by Agincourt South-Malvern West at 7.83 km^2 in area and Agincourt North at 7.40 km^2 in area. L'Amoreaux has the highest population (43,993 persons) compared to all other neighbourhoods ranging from approximately 24,000 to 29,000 persons (City of Toronto 2019).

The working age population represents the largest demographic across all neighbourhood profiles. Single detached houses occupy the largest dwelling classification across neighbourhoods with owner-occupied households dominating against renter occupied households (City of Toronto 2019).

Of the labour force, residents from Agincourt North and L'Amoreaux commuted to work via public transit the most (28% and 33%, respectively). Of these commuting forces, 23% in Agincourt North and 23% in L'Amoreaux traveled for 60 minutes or longer to reach their usual place of work (City of Toronto 2019).

McNicoll Avenue and its surrounding areas are designated as zoning areas of primarily Residential with the remaining zoning categories consisting of Commercial Residential, Employment Industrial, Institutional, Open Space, and Utility and Transportation.

McNicoll Avenue is designated as a Provincially Significant Employment Zone under the *Places to Grow Act* and, as such, is identified as being critical to the local and provincial economy.

No community facilities were identified within the McNicoll Avenue Project Footprint however, several places of worship, schools, and one medical facility, are located within the Socio-Economic and Land Use Assessment Area.

3.5.3.4.2 Built Form, Topography, and Visual Character

The general visual character of the McNicoll Avenue Socio-Economic and Land Use Assessment Area is suburban with employment industrial and commercial residential lands surrounded by residential neighbourhoods (Figure 2.7). The Assessment Area has level topography, with no prominent visible natural features.

The rail corridor crosses McNicoll Avenue via an at-grade road crossing between Kennedy Road and Midland Avenue. Employment industrial properties are located north and south of the rail crossing, with utility properties (a powerline) located south of the rail crossing, running parallel to McNicoll Avenue. Residential neighborhoods are located southwest of Kennedy Road and east of Midland Avenue. Train movements are visible from numerous employment industrial properties along the rail track near the McNicoll Avenue crossing. There is currently development on the parcels of land to the north east (2150 McNicoll Avenue) and north west (2080 McNicoll Avenue) of the rail corridor. These developments are not present in the aerial view of existing conditions

3.5.3.4.3 Utilities

A preliminary list of the owners of utilities in the Socio-Economic and Land Use Assessment Area is presented below in Table 3.16. However, further utility conflicts may be identified as the Project progresses through detailed design.

Table 3.16: Utilities within the McNicoll Avenue Socio-Economic and Land Use Assessment Area

Utility Type	Owners
Watermains, Sanitary Sewers and Storm Sewers	City of Toronto
Pipelines and Gas	Enbridge Gas Inc.
Hydro and Street Lighting	Hydro One, City of Toronto
Communications	Bell Canada, Rogers Communications Inc., Telus Communications Inc., CN (fibre optic cable), Group Telecom

Source: Stantec Consulting Ltd 2021e. Stouffville Rail Corridor Grade Separations Project: McNicoll Avenue – Socio-Economic and Land Use Study. Markham, ON

3.5.3.5 Huntingwood Drive

3.5.3.5.1 Neighbourhood Characteristics

There are five neighbourhood profiles within and surrounding the Huntingwood Drive Socio-Economic and Land Use Assessment Area: Agincourh North, Tam O'Shanter-Sullivan, Agincourt South-Malvern West, L'Amoreaux and Milliken. Milliken is the largest neighbourhood with an area of 9.38 km^2 followed by Agincourt South-Malvern at 7.83 km^2 in area. L'Amoreaux has the highest population (43,993 persons) compared to all other neighbourhoods ranging from approximately 23,000 to 27,000 persons (City of Toronto 2019).

The working age population represents the largest demographic across all neighbourhood profiles. Single detached houses occupy the largest dwelling classification across neighbourhoods with owner-occupied households dominating against renter occupied households (City of Toronto 2019).

Of the labour force, residents from Tam O'Shanter-Sullivan and L'Amoreaux commuted to work via public transit the most (35% and 33%, respectively). Of these commuting forces, 21% in Tam O'Shanter-Sullivan and 23% in L'Amoreaux traveled for 60 minutes or longer to reach their usual place of work (City of Toronto 2019).

Huntingwood Drive and its surrounding areas are designated as zoning areas of primarily Residential with the remaining zoning categories consisting of Commercial Residential, Residential Apartment, Open Space, Institutional and Employment Industrial.

Social, economic and community features are present within 400 m of the Socio-Economic and Land Use Assessment Area including Places of Worship, Schools, Parks, Recreational, Institutional Uses (Hospital, Long-term Care facilities), Emergency Medical Services (EMS) and Police Stations.

3.5.3.5.2 Built Form, Topography, and Visual Character

The Huntingwood Drive Socio-Economic and Land Use Assessment Area is comprised of a suburban visual character with a small amount of parkland. It consists of primarily of low-density residential housing located north and south of the rail crossing. Vegetation buffers visually shield residential neighbourhoods are from the railway tracks. A vegetation buffer also visually shields Sir William Osler High School, located to the east of the railway tracks. Limited high-rise businesses are located approximately 1.5 km south of the Project Alignment. Havendale Park is the closest park to the Project Footprint (153 m) followed by Knott Park (171 m). The existing view of the Project Alignment along Huntingwood Drive is shown in Figure 2.9.

3.5.3.5.3 Utilities

Table 3.17 is a preliminary list of utilities within the Huntingwood Drive Socio-Economic and Land Use Assessment Area.

Table 3.17: Utilities within the Huntingwood Drive Socio-Economic and Land Use Assessment Area

Utility Type	Owners
Watermains, Sanitary Sewers and Storm Sewers, Street Lights	City of Toronto
Pipelines and Gas Distribution Infrastructure	Enbridge Gas Inc.
Hydro Infrastructure, Utility Poles and Street Lighting	Toronto Hydro
Railway Signals and Infrastructure	Metrolinx
Communications Infrastructure	Bell Canada, Rogers Communications Inc., Cogeco Peer 2, CN

Source: Stantec Consulting Ltd. 2021f. Stouffville Rail Corridor Grade Separations Project: Huntingwood Drive – Socio-Economic and Land Use Study. Markham, ON

3.5.3.6 Havendale Road

3.5.3.6.1 Neighbourhood Characteristics

There are four neighbourhood profiles within and surrounding the Havendale Road Socio-Economic and Land Use Assessment Area: Agincourt South-Malvern West, Tam O'Shanter-Sullivan, L'Amoreaux and Agincourt North. Agincourt South-Malvern West is the largest neighbourhood with an area of 7.83 km^2 followed by Agincourt North at 7.4 km^2 in area. L'Amoreaux has the highest population (43,993 persons) compared to all other neighbourhoods ranging from approximately 24,000 to 29,000 persons (City of Toronto 2019).

The working age population represents the largest demographic across all neighbourhood profiles. Apartments occupy the largest dwelling classification across neighbourhoods, with the exception of Agincourt North where 37% of occupied dwellings were single-detached houses. Owner-occupied households dominated against renter occupied households in all neighbourhood profiles (City of Toronto 2019).

Of the labour force, between 28% and 35% of residents from these neighbourhood profiles take public transit to work. Of these commuting forces, 21% to 23% of those who take public transit traveled for 60 minutes or longer to reach their usual place of work (City of Toronto 2019).

Havendale Road and its surrounding areas are zoned primarily as Residential (66%), with the remaining zoning categories consisting of Commercial Residential, Open Space, Institutional, Residential Apartment, Commercial, Utility and Transportation.

3.5.3.6.2 Built Form, Topography, and Visual Character

The visual character of the Havendale Road Socio-Economic and Land Use Assessment Area is predominantly suburban with a small amount of parkland and mixed-use properties. Assessment Area has level topography, with no prominent visible natural features.

The rail corridor intersects Havendale Road via an at-grade road crossing between Kennedy Road and Midland Avenue (Figure 2.11). Single-family residential buildings surround the rail corridor. Havendale Park and Donalda Park are nearby the Project Footprint.

The rail corridor is shielded along each side with trees, vegetation, and noise barriers, which run parallel to the tracks north and south of the Project alignment. Train movements may still be visible from numerous residences near the road-rail crossing despite some shielding from vegetation and noise barriers. High-rise residential towers

located north of Sheppard Avenue East overlook the Socio-Economic and Land Use Assessment Area.

3.5.3.6.3 Utilities

A preliminary list of the owners of utilities along the Havendale Road Socio-Economic and Land Use Assessment Area is presented below in Table 3.18. Additional utility conflicts may be identified as the Project progresses through detailed design.

Table 3.18: Utilities within the Havendale Road Socio-Economic and Land Use Assessment Area

Utility Type	Owners
Watermains, Sanitary Sewers and Storm Sewers, Street Lights	City of Toronto
Pipelines and Gas Distribution Infrastructure	Enbridge Gas Inc.
Hydro Infrastructure, Utility Poles and Street Lighting	Toronto Hydro
Railway Signals and Infrastructure	Metrolinx
Communications Infrastructure	Bell Canada, Rogers Communications Inc., Cogeco Peer 2

Source: Stantec Consulting Ltd. 2021g. Stouffville Rail Corridor Grade Separations Project: Havendale Road – Socio-Economic and Land Use Study. Markham, ON.

3.5.3.7 Progress Avenue

3.5.3.7.1 Neighbourhood Characteristics

There are five neighbourhood profiles within and surrounding the Progress Avenue Assessment Area: Dorset Park, Bendale, Agincourt South-Malvern West, Wexford/ Maryvale, and Tam O'Shanter-Sullivan. Wexford/Maryvale is the largest neighbourhood with an area of 10.2 km^2 followed by Agincourt South-Malvern West at 7.83 km^2 in area. Bendale has the highest population (29,960 persons) compared to all other neighbourhoods ranging from approximately 23,500 to 28,000 persons (City of Toronto 2019).

The working age population represents the largest demographic across all neighbourhood profiles. Apartments occupy the largest dwelling classification across neighbourhoods, with the exception of Wexford/Maryvale where 52% of occupied dwellings were single-detached houses. Owner-occupied households dominated against renter occupied households in all neighbourhood profiles (City of Toronto 2019).

Of the labour force, between 29% and 39% of residents from these neighbourhood profiles take public transit to work. Of these commuting forces, 19% to 24% of those who take public transit traveled for 60 minutes or longer to reach their usual place of work (City of Toronto 2019).

Progress Avenue and its surrounding areas are zoned primarily as Employment Industrial (33%), with the remaining zoning categories consisting of Residential, Commercial Residential, Utility and Transportation, Open Space, Residential Apartment, Institutional, and Commercial.

Social, economic and community features are present within 400 m of the Assessment Area including Places of Worship, Schools, and a primary watercourse. Properties such as self-storage, warehouses, Tim Horton's and offices are located along both sides of Progress Avenue, west and east of the rail crossing. Other social, economic and community features present within 400 m of the Assessment Area include Places of Worship, Schools, and a primary watercourse (West Highland Creek).

3.5.3.7.2 Built Form, Topography and Visual Character

The visual character of the Progress Avenue Socio-Economic and Land Use Assessment Area is a mixture of suburban, commercial, and industrial with a small amount of parkland (Figure 2.14). It has a relatively level topography, with the exception of the West Highland Creek, which bisects the Assessment Area in a shallow ravine, flowing south towards Lake Ontario. It consists of primarily employment industrial properties in all directions from the rail corridor. Warehouses and other industrial buildings are located along both sides of Progress Avenue, west and east of the rail crossing. Train movements are visible from numerous businesses and offices near the road-rail crossing, despite some vegetation shielding. High-rise residential towers located west of Kennedy Road overlook the assessment area.

3.5.3.7.3 Utilities

A preliminary list of the owners of utilities along the Progress Avenue Socio-Economic and Land Use Assessment Area is presented below in Table 3.19. Additional utility conflicts may be identified as the Project progresses through detailed design.

Table 3.19: Utilities within the Progress Avenue Socio-Economic and Land Use Assessment Area

Utility Type	Owners
Fire Hydrants, Watermains, Sanitary Sewers and Storm Sewers, Traffic and Street Lights	City of Toronto
Pipelines and Gas Distribution Infrastructure	Enbridge Gas Inc.
Hydro Infrastructure, Utility Poles and Street Lighting	Toronto Hydro
Railway Signals and Infrastructure	Metrolinx
Communications Infrastructure	Bell Canada, Rogers Communications Inc., Cogeco, Telus

Source: Stantec Consulting Ltd. 2021h. Stouffville Rail Corridor Grade Separations Project: Progress Avenue – Socio-Economic and Land Use Study. Markham, ON.

3.6 Air Quality

Air quality refers to the presence or absence of substances in the air that could cause harm to humans in large enough quantities. This includes substances in gaseous or solid (particulate) form.

3.6.1 Methodology

3.6.1.1 Construction

The Air Quality Assessment Area was identified based on the Project Footprint and geographic limits within which the Air Quality (AQ) impact was assessed. The Project Footprint encompasses the area potentially affected by the extent of proposed physical works (i.e., roadway detours, temporary laydown areas, retaining walls, existing new bridges, tunnels, and railway realignment). The Air Quality Assessment Area includes the Project Footprint and a 500 m buffer around the Project Footprint.

Background air quality levels for representative contaminants of interest (COI) were established based on review and analyses of ambient monitoring data available from the National Air Pollution Surveillance Network (NAPS) and the MECP. Sensitive receptors were identified in the Assessment Area for each location. One of the seven grade separation locations was selected (i.e., Huntingwood Drive) for the detailed quantitative assessment and air dispersion modelling, based on a review of the available Project design, construction duration, the expected Project footprint and the receptor types / proximity to the construction area. A maximum construction emission scenario was developed based on available construction equipment and scheduling

data, identification of laydown and staging areas, and road and rail detours. Construction emissions were then quantified using standard methods and references (refer to Appendix A5), and dispersion modelling using U.S. EPA AERMOD model predicted changes in air quality during construction.

Construction impacts, unlike with train operations, are difficult if not impossible to predict at the environmental assessment stage when the construction schedule, methods, equipment, the operating mode and location of the equipment, and many other relevant variables are not defined. Hence, this element of environmental assessment constitutes an investigation or a stress test of potential worst-case air quality impacts of construction and guidance on how these impacts can be addressed. The principal utility of this assessment is to inform the development and execution of the project's construction air quality management plan.

The construction phase impacts may arise from construction and related activities along the corridor, and at staging and laydown sites. Impacts may also arise from rail or road detours necessitated by the construction. As part of this investigation or stress test, worst-case assumptions are made on methods of construction, equipment and their operation to estimate potential impacts. These potential impacts are compared with applicable air quality criteria and standards to identify a zone of influence for the project, where ambient air concentration of relevant pollutants (primarily particulate matter and oxides of nitrogen) may, at times, exceed applicable air quality criteria or standards. In those instances, where there are sensitive receptors within a zone of influence, appropriate best practices, mitigation measures and air quality monitoring is recommended.

Air quality analysis focused on the potential changes in ambient air quality that can be expected from the proposed Project and included recommendations for additional mitigation and monitoring, where exceedances may be expected even with the application of standard mitigation measures. Full detail on the noise and vibration assessment can be found in Appendix A5.

3.6.1.2 Operations

The Stouffville Rail Corridor Grade Separations Project is part of the Metrolinx system improvements to be undertaken for enabling frequent rail service along the Stouffville Rail Corridor, as part of the GO Expansion Program. With the completion of construction, expansion and reconfiguration of the infrastructure, electrification of the corridor, decommissioning of temporary facilities, and optimization of rail operations, Metrolinx will have created the necessary conditions for more frequent and efficient future rail service.

Diesel trains are the most significant source of air contaminant emissions of GO Transit rail service. The local air quality impacts during operations have been assessed only for the rail corridors and rail corridor segments in which the future (2037) diesel train activity is expected to exceed the corresponding pre-project (2015) diesel train activity. The future conditions refer to post-project conditions in 2037 when the GO Transit Rail System is expected to have reached the design capacity of the expanded and improved infrastructure.

The Stouffville Rail Corridor will be electrified as a part of the GO Expansion Program, providing overall benefits to air quality from the electrified service.

The Stouffville Rail Corridor is not going to experience any significant diesel train activity, with the majority of train service (approximately 337 out of 351 weekday trips) being delivered with electric trains. Hence, the Stouffville Rail Corridor has not been assessed for local air quality impacts during the operational phase. However, the regional air contaminants and GHG emission implications of the future service across the system (including the Stouffville Rail Corridor) were studied in a system-wide regional air quality study (refer to Appendix A5).

3.6.2 Description of Existing Conditions

3.6.2.1 Denison Street

Air COI for the Project are the products of diesel and gasoline combustion (from road traffic, diesel locomotives and construction equipment), and dust generated from construction operations and route detours.

The background air quality concentrations were based on review and analyses of ambient monitoring data from available NAPS operated monitoring stations located closest to or most representative of the Project locations. Ambient monitoring data from the NAPS program provides accurate and long-term air quality data of a uniform standard across Canada. Background ambient air quality concentrations established for this Project are expected to be conservative (over-estimation of actual ambient concentrations in the Project area), as the closest available stations (such as Toronto, Toronto West, Etobicoke) are located in more urban areas or close to the highway, where concentrations are expected to be higher.

Background levels for the contaminants of interest are well below their applicable objectives within the Air Quality Assessment Area with the exception of benzene and B(a)P. The annual background concentration of benzene exceeds the criteria by 11%. Background concentrations of B(a)P for both 24-hour and annual averaging periods are

more than twice and eight times the criteria, respectively. Exceedances of the ambient air quality criteria for B(a)P are commonly measured in Ontario, including rural areas.

3.6.2.2 Kennedy Road

Given the close proximity of the grade separations, the background air quality is comparable across all locations. Refer to Section 3.6.2.1 for a description of existing conditions.

3.6.2.3 Passmore Avenue

Given the close proximity of the grade separations, the background air quality is comparable across all locations. Refer to Section 3.6.2.1 for a description of existing conditions.

3.6.2.4 McNicoll Avenue

Given the close proximity of the grade separations, the background air quality is comparable across all locations. Refer to Section 3.6.2.1 for a description of existing conditions.

3.6.2.5 Huntingwood Drive

Given the close proximity of the grade separations, the background air quality is comparable across all locations. Refer to Section 3.6.2.1 for a description of existing conditions.

3.6.2.6 Havendale Road

Given the close proximity of the grade separations, the background air quality is comparable across all locations. Refer to Section 3.6.2.1 for a description of existing conditions.

3.6.2.7 Progress Avenue

Given the close proximity of the grade separations, the background air quality is comparable across all locations. Refer to Section 3.6.2.1 for a description of existing conditions.

3.7 Noise and Vibration

Noise and vibration are the perceptible sound and movement that can be generated by an energy source and can result in nuisance or, if strong enough, effects to human health or built structures.

3.7.1 Methodology

The updated noise and vibration (N&V) assessments have three elements:

- noise impacts of operations
- vibration impacts of operations
- noise and vibration impacts of construction

The rest of this text provides the rationale for the update, followed by a brief description of the methodology used in each of the three elements of the update.

3.7.1.1 Construction

A predictive noise analysis was carried out to evaluate noise effects on sensitive receptors (i.e., representative locations with noise sensitive areas, including residences, daycares, schools, and churches) associated with proposed construction and operations for the Project. The methodology for the predictive analysis was in accordance with the MECP and GO Transit Draft Protocol for Noise and Vibration Assessment (the MECP/GO Draft Protocol). This analysis includes a review of existing noise sources and existing points of reception (PORs) that may be affected by noise sources. The Noise and Vibration Assessment Area for the Project was defined using set back distances defined within applicable guidance document to determine the Zone of Influence (ZOI). The most stringent criteria for the Project construction noise (nighttime construction noise criteria for residential receptors) dictated a setback distance of 383 m from the edge of the Project Footprint which was defined as the Noise and Vibration Assessment Area for the Project.

Noise and vibration analysis focused on the changes in noise and vibration that can be expected from the Project. Full detail on the noise and vibration assessment can be found in Appendix A6.

3.7.1.2 Operations

The potential noise and vibration impacts of increased train service along the Stouffville Rail Corridor was originally assessed by RWDI in 2017, as part of the GO Electrification EA. Reassessment of potential noise and vibration impacts were completed by RWDI in 2020 as part of the GO Expansion Program to account for the changes to the future service levels and proposed infrastructure since 2017. The scope of 2017 and 2020 noise and vibration assessments are provided below.

3.7.1.2.1 Scope

3.7.1.2.1.1 Description of the 2017 Electrification Study

Metrolinx and Hydro One (as co-proponents) jointly completed the GO Rail Network Electrification TPAP (in 2017 to convert six Metrolinx-owned rail corridors from diesel to electric propulsion) (Refer to Section 1.3.3.1). The 2017 EPR assessed the environmental effects associated with:

- the increase in rail traffic associated with the conversion from diesel to electric propulsion;
- infrastructure improvements; and
- installation of proposed traction power supply and power distribution components.

Since 2017, Metrolinx developed a reference concept design that details how increased passenger service will be delivered for the GO Expansion Program in the future. This work led to further proposed changes to rail infrastructure and a revised future train service schedule, referred to as “TSS1+”, including descriptions of train type, (diesel locomotive, electric locomotive), and train consists.

These proposed changes required a reassessment of potential noise and vibration effects and the associated consideration of mitigation measures. RWDI completed individual noise and vibration assessments for the GO corridors/corridor segments to be electrified. This included a noise and vibration assessment for the Stouffville Rail Corridor (as detailed below).

3.7.1.2.1.2 Scope and Study Area for Corridor/Network Assessments

The Stouffville Rail Corridor Grade Separations Project is part of the Metrolinx system improvements to be undertaken for enabling frequent rail service along the Stouffville Rail Corridor, as part of GO Expansion. With the completion of construction, expansion and reconfiguration of the infrastructure, electrification of the corridor, decommissioning

of temporary facilities, and optimization of rail operations, Metrolinx will have created the necessary conditions for more frequent and efficient future rail service.

The noise and vibration implications of this future service and the associated electrification infrastructure are assessed in a corridor-wide noise and vibration study by RWDI (RWDI, 2020b), as part of an Amendment to the 2017 GO Rail Network Electrification TPAP. For more information on the corridor-wide noise and vibration study report is provided in Appendix A6.

The future conditions refer to post-Project conditions in 2037 when the GO Transit Rail System is expected to have reached the design capacity of the expanded and improved infrastructure. Electrification and grade separations are key components of the improved infrastructure. The pre-Project conditions are assessed for the year 2015, in which all GO Transit rail service was delivered by diesel fuel powered trains.

The future (2037) noise and vibration conditions are assessed under a predictable worst-case post-project scenario including the following assumptions:

- Maximum planned service levels along the Stouffville Rail Corridor.
- Additional 10% (above and beyond the maximum) rail service during each of the 5 peak hours of weekday rail service.
- Future revenue rail service in these segments (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 trips per day will be fueled by diesel powered trains.

The future noise levels in the Noise and Vibration Assessment Area of the Project represent the cumulative effects of all revenue and non-revenue rail service (including freight rail service) along the Stouffville Rail Corridor. The train operating conditions (train speed and propulsion unit power output) reflect rail operator practices and are informed by recorded train speed and notch setting profiles. These modelling inputs along with the rest of the modelling methodology are documented in the Noise and Vibration Study for the Stouffville Corridor (RWDI 2020) (refer to Appendix A6). Unlike noise, vibration is assessed as an individual train pass-by effect rather than as a cumulative effect. Future vibration impacts are modelled with the United States Federal Transit Administration computer model calibrated with measurements to better reflect local conditions.

3.7.1.2.1.3 Study Inputs & Predictable Worst-Case Scenario

Metrolinx provided pertinent information, such as existing and future train volumes, trip log data including throttle and speed profiles, and track diagrams, for incorporation within this assessment. Where information was not available, assumptions were documented for approval by Metrolinx.

The information provided was used to assess a predictable worst-case scenario, which includes a description of rail traffic, types of locomotives (e.g., diesel, electric), size of consists (e.g., one locomotive and six rail cars, two locomotives with twelve rail cars), etc. The intention was to capture the worst-case scenarios that may be implemented in the future to deliver the required service levels.

The predictable worst-case scenario is based on the minimum infrastructure requirements to achieve a service goal. Regulations and policies based on operational and safety considerations limit the service levels that can be achieved for a given infrastructure design.

3.7.1.2.1.4 Model Selection

The MOEE/GO Protocol stipulates the use of a model known as Sound from Trains Environmental Analysis Method (STEAM) for predicting rail traffic sound levels. STEAM was developed by the MECP (MOE, 1990). As a result of consultations with Metrolinx, the noise modelling for the 2017 EPR and for the current assessment deviated from this guidance in that the rail traffic sound levels were modelled using the “Federal Noise and Vibration Impact Assessment” (the “FTA Protocol”; FTA, 2018) and the “Federal Railroad Administration High-Speed Ground Transportation Noise and Vibration Impact Assessment” (the “FRA Protocol”; FRA, 2012).

The FTA and FRA algorithms are included in Cadna/A, a software package used in the assessment. Cadna/A also includes the stationary source algorithms in ISO 9613 (ISO 1994, ISO 1996) used in the assessment.

Details regarding the implications of using of FTA/FRA in lieu of STEAM are outlined in the GO Rail Network Electrification EPR.

3.7.1.2.1.5 Receptors

Operational Rail Receptors for this assessment include the following sensitive land uses:

- Residences

- Hotels, motels and campgrounds
- Schools, universities, libraries and daycare centres
- Hospitals and clinics, nursing/retirement homes
- Churches and places of worship
- Planned residential developments with approved building permits from the City of Toronto
- Vacant lots that are currently zoned for residential use

Receptors within the Study Area are mainly residential houses located adjacent to the LSE Rail Corridor.

In general, areas of receptors were identified using publicly available address point databases or through visual identification using publicly available satellite aerial images. Data was provided by the City of Toronto on approved building permits for new residential uses, and zoning information. This information was reviewed and included in the assessment. All vacant lots within the Study Area were considered. Representative receptors were chosen to simplify the presentation of results for a much larger number of receptors assessed. The MOEE/GO Protocol considers both daytime and nighttime receptors.

3.7.1.2.1.6 Rail Noise Sources

Sources associated with GO rail activity include:

- Moving trains (applicable to all trains)
- Idling trains at each Station (applicable to all trains)
- Road crossings signals such as horns and whistles (applicable to all trains)
- Engine bells from trains at each Station (applicable to all trains)
- Crossovers and Switches (applicable to all trains)
- Wheel squeal (applicable to all trains)
- Pantograph (applicable to electric trains only)

Other sources of noise include:

- Rail Yard and Maintenance Facilities
- Electric Traction Power Facilities
- Layover Sites

3.7.1.2.1.7 Vibration

The assessment focus is on changes to vibration effects resulting from the Project. The proximity of all receptors within the rail corridor to changes in track alignment or special trackwork are assessed.

3.7.1.2.1.8 Existing Barriers

Existing noise barriers are those built as of August 2019 or planned barriers identified during Environmental Assessments completed prior to August 2019. Existing barriers do not include barriers triggered by the 2017 assessment. Existing barriers were included in the Pre-project, and Post-project modelling scenarios.

Existing barriers were identified by conducting an investigation using publicly available aerial photography and street-level imagery, as well as Metrolinx's internal RailView software. The approximate location and height of the barriers were identified and recorded during this exercise.

3.7.2 Description of Existing Conditions

3.7.2.1 Denison Street

The area surrounding the Stouffville Rail Corridor at Denison Street consists of a mix of commercial and residential uses in the City of Markham. The Noise and Vibration Assessment Area train-related operations include moving and idling trains. The acoustical environment is dominated by traffic from the surrounding road and rail network.

Pre-project levels are approximately 3-4 dB lower than the 2022 predicted daytime sound levels. Predicted nighttime sound levels are approximately 1-3 dB higher than the modeled pre-Project levels.

Sound levels during daytime hours are higher due to increased road and rail traffic and other activities (urban hum) when compared to the nighttime sound levels. Sound levels measured during weekends were observed to be lower than during weekdays, in part since there is a decreased train traffic along the rail corridor on weekends.

3.7.2.2 Kennedy Road

The area surrounding the Stouffville Rail Corridor at Kennedy Road consists of a mix of commercial and residential uses in the City of Markham. The Noise and Vibration Assessment Area train-related operations include moving and idling trains. The acoustical environment is dominated by traffic from the surrounding road and rail network.

Pre-project levels are approximately 3-4 dB lower than the 2022 predicted daytime sound levels. Predicted nighttime sound levels are approximately 1-3 dB higher than the modeled pre-Project levels.

Sound levels during daytime hours are higher due to increased road and rail traffic and other activities (urban hum) when compared to the nighttime sound levels. Sound levels measured during weekends were observed to be lower than during weekdays, in part since there is a decreased train traffic along the rail corridor on weekends.

3.7.2.3 Passmore Avenue

The area surrounding the Stouffville Rail Corridor at Passmore Avenue consists of a mix of industrial, farmland and residential uses in the City of Toronto. The Noise and Vibration Assessment Area train-related operations include moving and idling trains. The acoustical environment is dominated by traffic from the surrounding road and rail network.

Pre-project levels are approximately 1-3 dB lower than the 2022 predicted daytime sound levels. Predicted nighttime sound levels are approximately 1-4 dB higher than the modeled pre-Project levels.

Sound levels during daytime hours are higher due to increased road and rail traffic and other activities (urban hum) when compared to the nighttime sound levels. Sound levels measured during weekends were observed to be lower than during weekdays, in part since there is a decreased train traffic along the rail corridor on weekends.

3.7.2.4 McNicoll Avenue

The area surrounding the Stouffville Rail Corridor at McNicoll Avenue consists of a mix of industrial, commercial and residential uses in the City of Toronto. The Noise and Vibration Assessment Area train-related operations include moving and idling trains. The acoustical environment is dominated by traffic from the surrounding road and rail network.

Pre-project levels are approximately 1-3 dB lower than the 2022 predicted daytime sound levels. Predicted nighttime sound levels are approximately 1-4 dB higher than the modeled pre-Project levels.

Sound levels during daytime hours are higher due to increased road and rail traffic and other activities (urban hum) when compared to the nighttime sound levels. Sound levels measured during weekends were observed to be lower than during weekdays, in part since there is a decreased train traffic along the rail corridor on weekends.

3.7.2.5 Huntingwood Drive

The area surrounding the Stouffville Rail Corridor at Huntingwood Drive consists of residential uses in the City of Toronto. The Noise and Vibration Assessment Area train-related operations include moving and idling trains. The acoustical environment is dominated by traffic from the surrounding road and rail network.

Pre-project levels are approximately 2-5 dB lower than the 2022 predicted daytime sound levels. Predicted nighttime sound levels are approximately 1-2 dB higher than the modeled pre-Project levels.

Sound levels during daytime hours are higher due to increased road and rail traffic and other activities (urban hum) when compared to the nighttime sound levels. Sound levels measured during weekends were observed to be lower than during weekdays, in part since there is a decreased train traffic along the rail corridor on weekends.

3.7.2.6 Havendale Road

The area surrounding the Stouffville Rail Corridor at Havendale Road consists of residential uses in the City of Toronto. The Noise and Vibration Assessment Area train-related operations include moving and idling trains. The acoustical environment is dominated by traffic from the surrounding road and rail network.

Pre-project levels are approximately 2-5 dB lower than the 2022 predicted daytime sound levels. Predicted nighttime sound levels are approximately 1-2 dB higher than the modeled pre-Project levels.

Sound levels during daytime hours are higher due to increased road and rail traffic and other activities (urban hum) when compared to the nighttime sound levels. Sound levels measured during weekends were observed to be lower than during weekdays, in part since there is a decreased train traffic along the rail corridor on weekends.

3.7.2.7 Progress Avenue

The area surrounding the Stouffville Rail Corridor at Progress Avenue consists of a mix of commercial and industrial uses in the City of Toronto. The Noise and Vibration Assessment Area train-related operations include moving and idling trains. The acoustical environment is dominated by traffic from the surrounding road and rail network.

Sound levels during daytime hours are higher due to increased road and rail traffic and other activities (urban hum) when compared to the nighttime sound levels. Sound levels measured during weekends were observed to be lower than during weekdays, in part since there is a decreased train traffic along the rail corridor on weekends.

3.8 Traffic and Transportation

Traffic (i.e., vehicular, cyclist and pedestrian) and transportation elements of the environment encompass all infrastructure and activities that help people to move from place to place.

3.8.1 Methodology

Available mapping was reviewed to better understand the existing transportation conditions within the Traffic and Transportation Assessment Area. The latest available Turning Movement Counts (TMC) at signalized intersections, signal timing plans, travel time data, and collision data were provided by the City of Toronto. Inputs from the MTO Greater Golden Horseshoe Transportation Demand Model (GGHMv4) were supplied by Metrolinx. Additional data was collected in June 2019, which included up-to-date turning movement counts at key intersections in the Assessment Area. Further information sources included:

- Highway Capacity Manual (HCM 6th Edition)
- Transportation Tomorrow Survey (TTS)
- Guidelines for the Preparation of Transportation Impact Studies (TIS) for the City of Toronto
- Guidelines for Using Synchro 9 (including SimTraffic 9) for the City of Toronto

The Traffic and Transportation Assessment Areas for each grade separation location and full detail on existing conditions can be found in Appendix A7.

3.8.2 Description of Existing Conditions

3.8.2.1 Denison Street

3.8.2.1.1 Road Network

Denison Street is a four lane Local Collector road with a posted maximum speed limit of 60 km/h (Stantec 2021a). This stretch of Denison Street has five intersections at the following cross-streets:

- Warden Avenue (signalized)
- Birchmount Road (signalized)
- Clayton Drive (signalized)
- Gorvette Road (signalized)
- Kennedy Road (signalized)

3.8.2.1.2 Transit Network

There are 12 bus transit routes within the area, seven of which are operated by York Region Transit (YRT) and five are operated by the TTC. TTC Route #17 Birchmount splits at Steeles Avenue with only the A branch travelling north of Steeles Avenue. The major transit corridor through the Assessment Area is centred on Steeles Avenue which services the local Pacific Mall. Table 3.20 shows the bus headways by route.

Table 3.20: Bus Headways by Route – Denison Street Traffic and Transportation Assessment Area

Agency	Route	AM Peak[1]	Midday[2]	PM Peak[3]	Off-Peak[4]
YRT	2 – Milliken	20-25 mins	25-40 mins	20-25 mins	30-35 mins
YRT	8 – Kennedy	15 mins	30-35 mins	15 mins	15-30 mins
YRT	14 – 14th Avenue	27 mins	35 mins	20 mins	30-60 mins
YRT	203 –Milliken GO Shuttle	20 mins	N/A	30 mins	N/A
YRT	302 – Unionville Express	30 mins	N/A	30 mins	N/A
YRT	304 – Mount Joy Express	25 mins	N/A	30-40 mins	N/A

Agency	Route	AM Peak[1]	Midday[2]	PM Peak[3]	Off-Peak[4]
YRT	VIVA Green	15-20 mins	N/A	15-20 mins	N/A
TTC	17A – Birchmount	30 mins	N/A	30 mins	N/A
TTC	17B/C – Birchmount	7 mins	13 mins	10 mins	12 mins
TTC	43 – Kennedy	10 mins	10 mins	10 mins	10 mins
TTC	53 – Steeles East	3 mins	5 mins	3 mins	10 mins
TTC	57 – Midland	9 mins	12 mins	9 mins	15 mins
TTC	68B – Warden	30 mins	40 mins	25 mins	40 mins

Notes:
1) AM Peak Period is defined as 6:30 – 9:30 a.m.
2) Midday Period is defined as 9:30 a.m. – 3:30 p.m.
3) PM Peak Period is defined as 3:30 – 6:30 p.m.
4) Off-Peak Period is defined as past 6:30 p.m.

3.8.2.1.3 Cycling, Pedestrian and Trail Network

The Traffic and Transportation Assessment Area is served by two active transportation routes. Bike lanes on McNabb Street between Warden Avenue and Birchmount Road and a Signed Route on Birchmount Road between McNabb Street and Steeles Avenue. A multi-use trail currently runs on the north side of Denison Street from the east side of the rail corridor connecting to Milliken Meadows Drive. This trail terminates at the rail corridor and does not have any connectivity along Denison Street to the west of the rail corridor.

3.8.2.2 Kennedy Road

3.8.2.2.1 Road Network

Kennedy Road is a four lane Major Arterial road with a posted maximum speed limit of 60 km/h (Stantec 2021a). This stretch of Kennedy Road has four intersections at the following cross-streets:

- Denison Street (signalized)
- Gorvette Road (signalized)
- Clayton Drive (signalized)
- Steeles Avenue (signalized)

3.8.2.2.2 Transit Network

There are eight bus transit routes within the Traffic and Transportation Assessment Area, three of which are operated by YRT and five are operated by the TTC. TTC Route #17 Birchmount splits at Steeles with only the A branch travelling north or Steeles. The major transit corridor through the Traffic and Transportation Assessment Area is centred on Steeles Avenue which services the local Pacific Mall. Table 3.21 shows the bus headways by route.

Table 3.21: Bus Headways by Route – Kennedy Road Traffic and Transportation Assessment Area

Agency	Route	AM Peak[1]	Midday[2]	PM Peak[3]	Off-Peak[4]
YRT	2 – Milliken	20-25 mins	25-40 mins	20-25 mins	30-35 mins
YRT	8 – Kennedy	15 mins	30-35 mins	15 mins	15-30 mins
YRT	203 –Milliken GO Shuttle	20 mins	N/A	30 mins	N/A
TTC	17A – Birchmount	30 mins	N/A	30 mins	N/A
TTC	17B/C – Birchmount	7 mins	13 mins	10 mins	12 mins
TTC	43 – Kennedy	10 mins	10 mins	10 mins	10 mins
TTC	53 – Steeles East	3 mins	5 mins	3 mins	10 mins
TTC	57 – Midland	9 mins	12 mins	9 mins	15 mins
TTC	68B – Warden	30 mins	40 mins	25 mins	40 mins

Notes:
1) AM Peak Period is defined as 6:30 – 9:30 a.m.
2) Midday Period is defined as 9:30 a.m. – 3:30 p.m.
3) PM Peak Period is defined as 3:30 – 6:30 p.m.
4) Off-Peak Period is defined as past 6:30 p.m.

3.8.2.2.3 Cycling, Pedestrian and Trail Network

The Traffic and Transportation Assessment Area is served by two active transportation routes. Signed Routes on Birchmount Road between McNabb Street and Steeles Avenue and on Old Kennedy Road between Aldergrove Drive and Steeles Avenue.

3.8.2.3 Passmore Avenue

3.8.2.3.1 Road Network

Passmore Avenue is a four lane collector road with a posted maximum speed limit of 50 km/h (City of Toronto 2018b). Collector roads have traffic volumes of approximately 2,500 to 8,000 vehicles per day and have less than 1,500 bus passengers per day (City of Toronto 2020a). They are designed to provide access to property along with traffic movement. Sidewalks are provided on both sides of the street and there are signalized intersections at arterial roads.

This stretch of Passmore Avenue has four intersections at the following cross-streets:

- Midland Avenue (signalized)
- Silver Star Boulevard (signalized)
- Milliken Boulevard (signalized)
- Kennedy Road (signalized)

Based on a 2016 Transportation Tomorrow Survey, existing transportation demand in the Assessment Area was determined using a model split approach between the Assessment Area and City of Toronto. The results indicated that the Assessment Area was predominately car oriented, with 71% of trips taken by automobile, compared to 21% by transit, 7% by walking, 1% by cycling, and 1% other.

3.8.2.3.2 Transit Network

There are 5 bus transit routes within the Traffic and Transportation Assessment Area, all of them operated by the TTC. Public transit corridors with the most frequent operations were centered on the arterial roads of Kennedy Road, Midland Avenue, and Steeles Avenue East. TTC Routes 43 and 343 (night) currently use Passmore Avenue, with Route 43 operating all day, every day on Kennedy Road between Kennedy Station and Steeles Avenue. There are no eastbound bus transit routes or bus stops serving this direction on Passmore Road.

Existing public transit service routes within the Traffic and Transportation Assessment Area are presented in Table 3.22 identifying peak periods and approximate frequency.

Table 3.22: Bus Headways by Route – Passmore Avenue Traffic and Transportation Assessment Area

Route[1]	AM Peak[2]	Midday[3]	PM Peak[4]	Off-Peak[5]
42A – Cummer	14 minutes	13 minutes	15 minutes	17 minutes
43A – Kennedy	10 minutes	10 minutes	10 minutes	10 minutes
53 – Steeles East	6 minutes	7 minutes	6 minutes	10 minutes
57 – Midland	8 minutes	13 minutes	9 minutes	15 minutes
343 – Kennedy	-	-	-	30 minutes
953 – Steeles East Express	7 minutes	N/A	7 minutes	N/A

Notes:
1) Timing is approximate
2) AM Peak Period is defined as 6:30 – 9:30 a.m.
3) Midday Period is defined as 9:30 a.m. – 3:30 p.m.
4) PM Peak Period is defined as 3:30 – 6:30 p.m.
5) Off-Peak Period is defined as past 6:30 p.m.

Source: Toronto Transit Commission. 2019. TTC busses. In Schedules and maps.

3.8.2.3.3 Cycling, Pedestrian and Trail Network

The Finch Hydro Corridor Multi-Use Trail provides dedicated cycling infrastructure within the Traffic and Transportation Assessment Area (City of Toronto 2020b). The Finch Hydro Corridor Multi-Use Trail is an approximately 6.5-kilometre paved multi-use trail that runs in the hydro corridor along McNicoll Avenue from Silver Springs Boulevard to Middlefield Road. The trail crosses the rail corridor at-grade. In addition, Passmore Avenue between Kennedy Road and Midland Avenue has been identified as an area of study in the City of Toronto's Cycling Network Plan (City of Toronto 2020c). This passes directly through the Project Footprint and may see further cycling amenities developed going forward.

3.8.2.4 McNicoll Avenue

3.8.2.4.1 Road Network

McNicoll Avenue is a four lane Minor Arterial road with a posted maximum speed limit of 50 km/h (City of Toronto 2018b). Minor arterial roads serve 8,000 to 20,000 vehicles and 1,500 to 5,000 bus passengers per day (City of Toronto 2020a). They are designed to move traffic with some property access control. Sidewalks can be found on both sides of minor arterial roads and intersections are controlled by traffic signals. This stretch of McNicoll Avenue has five intersections at the following cross-streets:

- Midland Avenue (signalized)
- Silver Star Boulevard (signalized)
- Milliken Boulevard (signalized)
- Kennedy Road (signalized)
- Birchmount Road (signalized)

Based on a 2016 Transportation Tomorrow Survey, existing transportation demand in the Assessment Area was determined using a model split approach between the Assessment Area and City of Toronto. The results indicated that the Assessment Area was predominately car oriented, with 71% of trips taken by automobile, compared to 21% by transit, 7% by walking, 1% by cycling, and 1% other.

3.8.2.4.2 Transit Network

There are 10 bus transit routes within the Traffic and Transportation Assessment Area, two of which are operated by YRT and eight are operated by the TTC. TTC Route #17 Birchmount splits at Steeles Avenue but is a combined route with all branches through this study. The major transit corridors through the Traffic and Transportation Assessment Area are centred on the arterial roads of Birchmount Road, Kennedy Road, Midland Avenue, Steeles Avenue, McNicoll Avenue and Finch Avenue all offering headways of 15 minutes or less. Table 3.23 shows the bus headways by route.

Table 3.23: Bus Headways by Route – McNicoll Avenue Traffic and Transportation Assessment Area

Agency	Route	AM Peak[1]	Midday[2]	PM Peak[3]	Off-Peak[4]
YRT	8 – Kennedy	15 mins	30-35 mins	15 mins	15-30 mins
YRT	203 –Milliken GO Shuttle	20 mins	N/A	30 mins	N/A
TTC	17A – Birchmount	30 mins	N/A	30 mins	N/A
TTC	17B/C – Birchmount	7 mins	13 mins	10 mins	12 mins
TTC	39 – Finch East	5 mins	7 mins	6 mins	9 mins
TTC	42A – Cummer	12 mins	12 mins	12 mins	10 mins
TTC	43A – Kennedy	10 mins	10 mins	10 mins	10 mins
TTC	53 – Steeles East	3 mins	5 mins	3 mins	10 mins
TTC	57 – Midland	9 mins	12 mins	9 mins	15 mins
TTC	939 – Finch Express	4 minutes	5 minutes	4 minutes	10 minutes
TTC	953 – Steeles East Express	7 minutes	N/A	7 minutes	N/A

Notes:
1) AM Peak Period is defined as 6:30 – 9:30 a.m.
2) Midday Period is defined as 9:30 a.m. – 3:30 p.m.
3) PM Peak Period is defined as 3:30 – 6:30 p.m.
4) Off-Peak Period is defined as past 6:30 p.m.

3.8.2.4.3 Cycling, Pedestrian and Trail Network

The Finch Hydro Corridor Multi-Use Trail provides dedicated cycling infrastructure within the Traffic and Transportation Assessment Area. The Finch Hydro Corridor Multi-Use Trail is an approximately 6.5-kilometre paved multi-use trail that runs in the hydro corridor along McNicoll Avenue from Silver Springs Boulevard to Middlefield Road. The trail crosses the rail corridor at-grade at the marked multi-use trail crossing along McNicoll Avenue. A signed cycling route on Silver Star Boulevard connects McNicoll Avenue to the Finch Hydro Corridor Multi-Use Trail.

L'Amoreaux Trail also runs through the Traffic and Transportation Assessment Area from the L'Amoreaux woodlot off Birchmount Road and Sanwood Boulevard to the L'Amoreaux Sports Complex at Birchmount Road and Silver Springs Boulevard. The L'Amoreaux Trail is a hard-packed multi-use trail that runs through parkland with a road crossing at McNicoll Avenue. In addition, Passmore Avenue between Kennedy Road and Midland Avenue has been identified as an area of study in the City of Toronto's Cycling Network Plan (City of Toronto 2020a). The planned cycling infrastructure

crosses the rail corridor at-grade and may see further cycling amenities developed going forward.

3.8.2.5 Huntingwood Drive

3.8.2.5.1 Road Network

Huntingwood Drive is classified as minor arterial road (City of Toronto 2018b) with a posted speed limit of 50 km/h. Minor arterial roads handle an estimated 8,000 to 20,000 vehicles per day with 1,500 to 5,000 bus passengers per day (City of Toronto 2020a). Traffic movement is the primary function of minor arterial roads. Sidewalks are provided on both sides of the street.

This stretch of Huntingwood Drive has two intersections at the following cross-streets:

- Kennedy Road (signalized)
- Midland Avenue (signalized)

Based on a 2016 Transportation Tomorrow Survey, existing transportation demand in the Assessment Area was determined using a model split approach between the Assessment Area and City of Toronto. The results indicated that the Assessment Area was predominately car oriented, with 71% of trips taken by automobile, compared to 21% by transit, 7% by walking, 1% by cycling, and 1% other.

3.8.2.5.2 Transit Network

There are seven bus transit routes within the Traffic and Transportation Assessment Area, all of them operated by the TTC. Public transit corridors with the most frequent operations were centered on the arterial roads of Kennedy Road, Midland Avenue, Sheppard Avenue, and Finch Avenue.

Existing public transit service routes within the Traffic and Transportation Assessment Area are presented in Table 3.24, identifying peak periods and approximate frequency.

In addition to public transit, school buses accessing Sir William Osler High School travel along Huntingwood Drive to transport students to and from the school.

Table 3.24: Bus Headways by Route – Huntingwood Drive Traffic and Transportation Assessment Area

Route[1]	AM Peak[2]	Midday[3]	PM Peak[4]	Off-Peak[5]
39 – Finch East	5 minutes	8 minutes	7 minutes	10 minutes
43 – Kennedy	10 minutes	10 minutes	10 minutes	10 minutes
57 – Midland	8 minutes	13 minutes	9 minutes	15 minutes
85 – Sheppard East	10 minutes	10 minutes	10 minutes	10 minutes
169 – Huntingwood	20 minutes	30 minutes	30 minutes	30 minutes
939 – Finch Express	4 minutes	5 minutes	4 minutes	10 minutes
985 – Sheppard East Express	6 minutes	12 minutes	5 minutes	12 minutes

Notes:
1) Timing is approximate
2) AM Peak Period is defined as 6:30 – 9:30 a.m.
3) Midday Period is defined as 9:30 a.m. – 3:30 p.m.
4) PM Peak Period is defined as 3:30 – 6:30 p.m.
5) Off-Peak Period is defined as past 6:30 p.m.

Source: Toronto Transit Commission 2019. TTC busses. In Schedules and maps.

3.8.2.5.3 Cycling, Pedestrian and Trail Network

There are two main pieces of cycling infrastructure within the Traffic and Transportation Assessment Area: the Huntingwood Drive signed route and the East Highland Creek Trail (City of Toronto 2020a). The Huntingwood Drive signed route runs along Huntingwood Drive from Ridgecrest Drive to McCowan Road. The Huntingwood Drive signed route runs directly through the Project Footprint and crosses the Stouffville Rail Corridor at-grade. The East Highland Creek Trail is a hard-packed multi-use trail that runs along Highland Creek from Finch Avenue to Heather Road. Together, this cycling infrastructure allows for both north-south and west-east movement via bicycle within the Traffic and Transportation Assessment Area.

3.8.2.6 Havendale Road

3.8.2.6.1 Road Network

Havendale Road is a two-lane collector road with a regulatory speed limit of 50 Km/h (Stantec 2021a). The posted speed limit of Havendale Road has been reduced to 40 Km/h by the City of Toronto as per their Vision Zero Report. Collector roads handle

an estimated 2,500 to 8,000 vehicles per day with less than 1,500 bus passengers per day (City of Toronto 2020a). Collector roads are designed for traffic movement and to provide access to property. They have signalized intersections at major arterial roads and sidewalks are found on both sides of the roadway.

This stretch of Havendale Road has two intersections at the following cross-streets:

- Kennedy Road (signalized)
- Midland Avenue (signalized)

Major arterial roads within the Traffic and Transportation Assessment Area include Kennedy Road, Midland Avenue, and Sheppard Avenue East. These roads are expected to have vehicle volumes of greater than 20,000 vehicles per day and have more than 5,000 bus passengers per day (City of Toronto 2020a).

Based on a 2016 Transportation Tomorrow Survey, existing transportation demand in the Assessment Area was determined using a model split approach between the Assessment Area and City of Toronto. The results indicated that the Assessment Area was predominately car oriented, with 71% of trips taken by automobile, compared to 21% by transit, 7% by walking, 1% by cycling, and 1% other.

3.8.2.6.2 Transit Network

There are five bus transit routes within the Traffic and Transportation Assessment Area, all of them operated by the TTC. Public transit corridors with the most frequent operations were centered on the arterial roads of Kennedy Road, Midland Avenue, and Sheppard Avenue. There are no bus transit routes or bus stops located on Havendale Road.

Existing public transit service routes within the Traffic and Transportation Assessment Area are presented in Table 3.25, identifying peak periods and approximate frequency.

Table 3.25: Bus Headways by Route – Havendale Road Traffic and Transportation Assessment Area

Route[1]	AM Peak[2]	Midday[3]	PM Peak[4]	Off-Peak[5]
43 – Kennedy	10 minutes	10 minutes	10 minutes	10 minutes
57 – Midland	8 minutes	13 minutes	9 minutes	15 minutes
85 – Sheppard East	10 minutes	10 minutes	10 minutes	10 minutes
169 – Huntingwood	20 minutes	30 minutes	30 minutes	30 minutes

Route[1]	AM Peak[2]	Midday[3]	PM Peak[4]	Off-Peak[5]
985 – Sheppard East Express	6 minutes	12 minutes	5 minutes	12 minutes

Notes:
1) Timing is approximate
2) AM Peak Period is defined as 6:30 – 9:30 a.m.
3) Midday Period is defined as 9:30 a.m. – 3:30 p.m.
4) PM Peak Period is defined as 3:30 – 6:30 p.m.
5) Off-Peak Period is defined as past 6:30 p.m.

Source: Toronto Transit Commission 2019. TTC busses. In Schedules and maps.

3.8.2.6.3 Cycling, Pedestrian and Trail Network

There are two main pieces of cycling infrastructure within the Traffic and Transportation Assessment Area: the Huntingwood Drive signed route and the East Highland Creek Trail (City of Toronto 2020b). The Huntingwood Drive signed route runs along Huntingwood Drive from Ridgecrest Drive to McCowan Road. The Huntingwood Drive signed route crosses the Stouffville Rail Corridor at-grade. The East Highland Creek Trail is a hard-packed multi-use trail that runs along Highland Creek from Finch Avenue to Heather Road. Together, this cycling infrastructure allows for both north-south and west-east movement via bicycle within the Traffic and Transportation Assessment Area. No cycling routes are identified on Havendale Road.

3.8.2.7 Progress Avenue

3.8.2.7.1 Road Network

Progress Avenue is classified as minor arterial road (City of Toronto 2018b) with a posted speed limit of 50 km/h. Minor arterial roads handle an estimated 8,000 to 20,000 vehicles per day, and with 1,500 to 5,000 bus passengers per day (City of Toronto 2020a). Traffic movement is the primary function of minor arterial roads. Sidewalks are provided on both sides of the street.

This stretch of Progress Avenue has four intersections at the following cross-streets:

- Kennedy Road (signalized)
- William Kitchen Road (signalized)
- Access to Atlantic Packaging (signalized)
- Midland Avenue (signalized)

Major arterial roads within the Traffic and Transportation Assessment Area include Ellesmere Road, Birchmount Road, Kennedy Road, Midland Avenue, Brimley Road, and Sheppard Avenue East. These roads are expected to have vehicle volumes of greater than 20,000 vehicles per day and have more than 5,000 bus passengers per day (City of Toronto 2020a).

There are numerous collector roads and local roads within the Traffic and Transportation Assessment Area (City of Toronto 2020a).

Based on a 2016 Transportation Tomorrow Survey, existing transportation demand in the Assessment Area was determined using a model split approach between the Assessment Area and City of Toronto. The results indicated that the Assessment Area was predominately car oriented, with 71% of trips taken by automobile, compared to 21% by transit, 7% by walking, 1% by cycling, and 1% other.

3.8.2.7.2 Transit Network

The Line 3 Scarborough Subway, which is operated by the TTC, runs through the Traffic and Transportation Assessment Area. Line 3 runs from Eglinton Avenue East and Kennedy Road north and east to the Scarborough Town Centre, and continues east to the area of McCowan Road and Progress Avenue (Toronto Transit Commission, 2019a). Line 3 connects to Line 2 Bloor-Danforth at Kennedy Station. There are two subway stops located within the Traffic and Transportation Assessment Area: Ellesmere Station and Midland Station. Trains along Line 3 operate every 4-5 minutes during the rush hours and every 5-6 minutes outside of rush hours (Toronto Transit Commission, 2019a). Bus connections are available at both stations.

There are eight bus transit routes within the Traffic and Transportation Assessment Area, all of them operated by the TTC. Public transit corridors with the most frequent operations were centered on the arterial roads of Ellesmere Road, Birchmount Road, Kennedy Road, Midland Avenue, Brimley Road, and Sheppard Avenue East. Route 43B, Kennedy to Scarborough Centre via Progress, travels through the Project Footprint and crosses the Stouffville Rail Corridor (Toronto Transit commission, 2019b).

Existing public transit service routes within the Traffic and Transportation Assessment Area are presented in Table 3.26 identifying peak periods and approximate frequency.

Table 3.26: Bus Headways by Route – Progress Avenue Traffic and Transportation Assessment Area

Route[1]	AM Peak[2]	Midday[3]	PM Peak[4]	Off-Peak[5]
17 – Birchmount	7 minutes	15 minutes	9 minutes	13 minutes
21 – Brimley	11 minutes	27 minutes	11 minutes	14 minutes
43B – Kennedy	10 minutes	10 minutes	10 minutes	10 minutes
57 – Midland	8 minutes	13 minutes	9 minutes	15 minutes
85 – Sheppard East	10 minutes	10 minutes	10 minutes	10 minutes
95 – York Mills	4 minutes	10 minutes	5 minutes	10 minutes
985 – Sheppard East Express	6 minutes	12 minutes	5 minutes	12 minutes
995 – York Mills Express	11 minutes	15 minutes	10 minutes	Not Applicable

Notes:
1) Timing is approximate
2) AM Peak Period is defined as 6:30 – 9:30 a.m.
3) Midday Period is defined as 9:30 a.m. – 3:30 p.m.
4) PM Peak Period is defined as 3:30 – 6:30 p.m.
5) Off-Peak Period is defined as past 6:30 p.m.

Source: Toronto Transit Commission 2019b. TTC busses. In Schedules and maps.

3.8.2.7.3 Cycling, Pedestrian and Trail Network

There is limited dedicated cycling infrastructure within the Traffic and Transportation Assessment Area. The West Highland Creek Trail begins within the Traffic and Transportation Assessment Area and there is a small unnamed multi-use trail located at Brimley Road and Progress Avenue (City of Toronto 2020b). The West Highland Creek Trail is a hard-packed multi-use trail that runs along Highland Creek from the Birkdale Community Centre on Ellesmere Road to Cedarbrook Park near Eastpark Boulevard. The multi-use trail on Brimley Road allows pedestrians and cyclists travelling over the 401 to access the sidewalk along the overpass. It runs along the east side of Brimley Road before crossing under Brimley Road at the Highway 401 overpass and connecting with the sidewalk on the west side of Brimley Road on the Highway 401 overpass (City of Toronto 2020c). The City of Toronto's Cycling Network Plan does not identify any additional cycling infrastructure planned within the Traffic and Transportation Assessment Area during the near-term implementation program to 2021 (City of Toronto, 2020c). The City of Toronto's 10-Year Cycling Network Plan shows two planned cycling infrastructure projects within the Study Area (City of Toronto 2016). This

includes designated cycling facilities along Progress Avenue east of Midland Avenue and along Midland Avenue through the Study Area.

3.9 Stormwater Management

Stormwater management refers to the elements of the environment (natural or human-made) that affect the flow of precipitation through the environment once it hits the ground.

3.9.1 Methodology

The stormwater management (SWM) design for the Project will consider the drainage and SWM objectives of all guidance documents from authorities having jurisdiction that are released prior to the approvals phase of the Project. These documents include the MECP Stormwater Management Planning and Design Manual (2003), the City of Toronto's Design Criteria for Sewers and Watermains (June 2019); the City of Toronto's Wet Weather Flow Management Guidelines (2006); City of Markham's Storm Water Management Guidelines (2016); City of Markham's Engineering Design Criteria (2016) and TRCA Stormwater Management Criteria (2012).

A detailed SWM Report will be developed to demonstrate that the proposed Project complies with drainage and SWM requirements with respect to stormwater conveyance, quantity, quality, and water balance prior to the construction phase of the Project. Analysis of the effects of the proposed works on existing and new stormwater infrastructure and drainage patterns will be quantified using the approved hydrology/ hydraulics model.

3.9.2 Description of Existing Conditions

3.9.2.1 Denison Street

The existing drainage area for the Denison Street grade separation falls within the southern reach of Beaver Creek (a tributary of the Rouge River). The contributing drainage area is generally bound by Clayton Drive to the west and Gorvette Road to the east, with a total area of 1.71 ha. There are no existing stormwater management control measures within the roadway, however, the existing road flow is conveyed to the existing SWM Pond at the intersection of the 14th Line and Birchmount Road.

The Stouffville Rail Corridor, in the vicinity of Denison Street, has a high point at the intersection with the road. Runoff from the north track is not connected to Denison Street, it is collected via two swales which flow northwards. Runoff from the track south of Denison Street is conveyed via two swales, located along the east and west sides of

the track. The east swale collects runoff from a 0.14 ha catchment, discharges into a catch basin at the southwest corner of the intersection of the track and Denison Street, and ultimately discharges into the eastern sewer system. The west swale collects runoff from a 0.14 ha catchment, flows northwards and crosses Denison Street via a 375 mm corrugated steel pipe (CSP) culvert and discharges into the north track swale.

3.9.2.2 Kennedy Road

The existing drainage area for Kennedy Road grade separation falls within West Highland Creek Subwatershed, which is under TRCA jurisdiction. At this location Kennedy Road is serviced by two separate storm sewer systems. The northern system starts immediately to the north of the Stouffville Rail Corridor and discharges into an existing system along Denison Street with total drainage area of 1.70 ha. The southern storm sewer system collects drainage from another catchment (1.81 ha) which starts about 100 m to the south of the tracks, and continues along Kennedy Road for 1.3 km, before discharging into Bendale Branch of Highland Creek, which runs towards the south. Kennedy Road south storm sewer system receives runoff from three adjacent external areas with a total drainage area of 0.39 ha. No stormwater management controls are present.

The Stouffville Rail Corridor in the vicinity of Kennedy Road slopes from north to south. Runoff from the north track (catchments with total 0.22 ha area) is collected via two ditches that flow southwards and cross Kennedy Road via two 600 mm CSP culverts.

An unevaluated wetland is present to the northeast of the Kennedy Road and Stouffville Rail Corridor crossing. Under existing conditions, runoff is not conveyed to the unevaluated wetland from the Kennedy Road ROW or vice versa.

3.9.2.3 Passmore Avenue

Passmore Avenue is serviced by a series of catch basins that tie into a trunk storm sewer with a diameter of 1650 mm under the Stouffville Rail Corridor. Storm sewer stubs from a number of properties to the north and south of Passmore Avenue in the vicinity of the Stouffville Rail Corridor appear to connect to the trunk storm sewer under Passmore Avenue. This sewer continues west on Passmore Avenue, then south on Kennedy Road and ultimately discharges through a headwall into the Bendale Branch of West Highland Creek in L'Amoreaux North Park.

The Stouffville Rail Corridor at Passmore Avenue slopes from north to south. Rail-side ditches north of Passmore Avenue flow into ditch inlet catch basins on the north side of Passmore Avenue. South of Passmore Avenue flows are conveyed south through subdrains in the rail ballast and rail-side ditches.

3.9.2.4 McNicoll Avenue

The area around the proposed McNicoll Avenue grade separation is serviced by two storm sewers. To the west of the Stouffville Rail Corridor, a series of catch basins drain McNicoll Avenue to a 375 mm storm sewer, which connects to a 1200 mm storm sewer trunk flowing from north to south down Milliken Boulevard. To the east of the Stouffville Rail Corridor, a series of catch basins drain McNicoll Avenue to a 375 mm storm sewer, which connects to a 1650 mm storm sewer trunk flowing from north to south down Silver Star Boulevard. The East and West Storm Sewer ultimately discharge to a tributary of East Highland Creek. All adjacent lands to the north of McNicoll Avenue are currently under development and it is anticipated that onsite controls were required for these areas, consistent with the City's requirements.

The Stouffville Rail Corridor at McNicoll Avenue slopes from north to south. Drainage from a catchment area extending approximately 400 m rail-side ditches north of McNicoll Avenue flows through a culvert under McNicoll Avenue and then continues south along the Stouffville Rail Corridor in rail-side ditches. Drainage from the rail corridor eventually discharges to a tributary of East Highland Creek through the same outlet as the Milliken Boulevard Storm Sewer.

3.9.2.5 Huntingwood Drive

The area around the proposed Huntingwood Drive grade separation is serviced by two storm sewers. A series of catch basins to the east of the Stouffville Rail Corridor drain to a 450 mm storm sewer located north of Huntingwood Drive that flows from west to east periodically stepping up in size along its 400-m run to East Highland Creek near the Midland Avenue and Huntingwood Drive intersection. To the west of the Stouffville Rail Corridor, a series of catch basins drain to a 375 mm storm sewer, which connects to a 600 mm storm sewer flowing from north to south down Belgreen Avenue.

The Stouffville Rail Corridor at Huntingwood Drive is nearly flat. Drainage from the northeast corner of Huntingwood Drive and the Stouffville Rail Corridor flows north along the rail corridor and crosses to the east side of the corridor via a culvert and discharges into a swale adjacent to the track at Sir William Osler High School. Drainage from this swale is picked up in an inlet structure that is connected to the Huntingwood Drive East Storm Sewer. Drainage from northeast of the Stouffville Rail Corridor and Huntingwood Drive intersections is picked up by the Huntingwood Drive East Storm Sewer through a series of swales and ditch inlets. Drainage from the southeast is conveyed east through a swale to a ditch inlet that connects to the Huntingwood Drive East Storm Sewer. Drainage from the southwest contributes to the Belgreen Avenue storm sewer through either a rear yard inlet adjacent to the rail corridor, approximately 80 m south of Huntingwood Drive or, for areas immediately adjacent to Huntingwood

Drive, through an inlet structure that connects to the extension of the Belgreen Avenue storm sewer under Huntingwood Drive (flowing west).

3.9.2.6 Havendale Road

Havendale Road in the area of the existing at-grade rail crossing is serviced by two separate minor systems; one to the east of the Stouffville Rail Corridor and one to the west. The rail corridor is a high point in the Havendale Road profile, so no flows cross the Stouffville Rail Corridor. The storm sewer on the west side of Havendale Road flows west to a 1600 mm trunk storm sewer under Kennedy Road and eventually into West Highland Creek near Cardwell Avenue. The storm sewer on the east side of the Stouffville Rail Corridor flows west to Scotland Road, then north to an easement running east to Midland Avenue. Flows then drain north through a 1050 mm diameter sewer and discharge to East Highland Creek near Emmeline Crescent.

The rail corridor in this area slopes from north to south at Havendale Road. A high point in the rail profile is located approximately 50 m north of Havendale Road. No rail side culverts cross underneath Havendale Road at the Stouffville Rail Corridor.

3.9.2.7 Progress Avenue

The existing drainage area for Progress Avenue grade separation falls within West Highland Creek Subwatershed, which is under TRCA jurisdiction. For the purposes of this EPR, the drainage area has been divided into three zones: west, middle, and east.

The west zone (0.67 ha catchment) extends between Kennedy Road and the high point to the west of William Kitchen Road. Minor flows from this zone are conveyed via the western storm sewer system, which discharges directly into the Bendale Branch of West Highland Creek at the downstream side of the Progress Avenue Bridge. This storm sewer also receives runoff from two external areas, the first area is in the vicinity of Glamorgan Avenue and the second area includes a portion of Kennedy Road, which extends between Ellesmere Road and Antrim Crescent. The middle zone (0.67 ha catchment) extends between the high point and Bendale Branch of West Highland Creek. Minor flow from this zone is captured and conveyed with the western storm sewer system. The east zone extends from west of Midland Avenue to West Highland Creek (0.65 ha catchment). Minor flow from this zone is conveyed via a storm sewer system, which discharges directly into West Highland Creek at the downstream side of Progress Avenue Bridge.

The Stouffville Rail Corridor at Progress Avenue slopes from south to north, with a high point located about 120 m south of the road crossing. Two rail-side ditches, one on the east side and one on the west side of the Stouffville Rail Corridor, convey runoff from

the 0.14 ha track drainage area. An existing 600 mm culvert conveys the runoff from the south to the north side of Progress Avenue.

Progress Avenue crosses West Highland Creek via an existing large concrete box culvert, which includes 3 openings, each with 3.1 m rise x 3.8 m span. Major flow from both east and west zone is captured via two double catch basins at the low point on the top of the Highland Creek culvert. The TRCA's regulatory model for Highland Creek (HEC-RAS) was obtained. The model shows that Progress Avenue, under existing conditions, will be flooded during the 50-year, 100-year and Regional Storm events. The road will be inundated to a maximum depth of 1.0 m during the Regional Storm event. The inundation along Progress Avenue extends for 300 m, between the Stouffville Rail Corridor and Midland Avenue.

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4.0 Effects Assessment Mitigation and Monitoring

4.1 Methodology

The effects assessment of the proposed Project has been developed based on the analysis and results of technical discipline-specific environmental studies documented in the reports listed in Section 1.5.1 (which are located in Appendices A1 through A8 to this EPR). Issues raised by the public, stakeholders and Indigenous Nations during consultation and engagement activities were also considered and incorporated as appropriate (refer to Section 6.0 for further information on consultation).

The temporal boundaries for the effects assessment are defined based on the timing and duration of Project activities. The purpose of a temporal boundary is to identify when an environmental effect may occur in relation to specific Project phases and activities. The temporal boundaries for the EPR include the Project phases of:

- Construction: Anticipated duration of six years (approximately 2022 to 2028, subject to change)
- Operation: Following construction, ongoing operations and maintenance to support future GO service

The potential for effects has been determined based on an understanding of the reference concept design and how construction and operation of the proposed Project will interact with existing environmental conditions. Potential environmental effects resulting from the construction and operation of the Project were identified, analyzed, and described based on potential changes to biophysical, social and economic and cultural environments. Table 4.1, below, outlines the evaluation factors and related criteria.

The effects assessment is based on conservative (worst case) assumptions regarding potential effects that could occur as a result of the Project. They are also based on existing environmental conditions, as outlined in Section 3.0, and information available at the time of the TPAP. The recommendations contained in this EPR will be reviewed by Metrolinx and updated as necessary during subsequent phases of the Project.

Where potential negative effects have been identified, mitigation measures have been recommended to limit or avoid the potential for those effects. The Project has been designed to prioritize the avoidance of negative environmental effects, and mitigation measures are provided where avoidance is not feasible. Monitoring activities were also

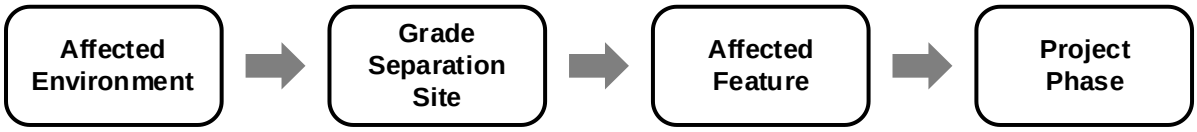
identified where warranted to evaluate effectiveness of proposed mitigation measures and provide feedback for adaptive management.

The presentation of potential effects has been organized in this EPR by the following subsections (shown in Figure 4.1):

- affected environment (e.g., Natural Environment, Geology and Groundwater, etc.)
- grade separation site (e.g., Denison Street, Kennedy Road, etc.)
- affected feature (e.g., Aquatic Environment, Terrestrial Environment, Wildlife, etc.)
- project phase (e.g., construction or operations)

Corresponding recommended mitigation measures and monitoring activities are provided at the end of the effects assessment, in Section 4.11.

Figure 4.1: Effects Assessment Organization



Section 5.0 of this EPR includes a specific discussion on climate change as it pertains to the Project.

Table 4.1: Criteria for Assessment of Effects for Environmental Components

Environment	Component of the Environment		Criteria
Biophysical Environment	Natural Environment	Aquatic Environment	• Changes to watercourses providing fish habitat • Changes to the sensitivity of fish and fish habitat, extent of fish habitat altered/displaced) • Decreased water quality in watercourses
		Terrestrial Environment	• Loss of existing vegetation communities
		Wildlife	• Loss of wildlife (birds, mammals, and herpetofauna) • Impediments to wildlife movement and breeding and increases in wildlife mortality
		Significant Wildlife Habitat	• Loss of significant wildlife habitat (type and quality)
		Species at Risk	• Loss of designated SAR • Loss of SAR habitat
		Significant Natural Features	• Loss of designated significant natural features
		Trees	• Loss of or impacts to trees
	Geology and Groundwater		• Reduced soil quality and soil loss • Potential to encounter contaminated material during construction activities • Reduced groundwater quantity/quality
	Air Quality and Greenhouse Gas		• Changes to air quality and increases in Greenhouse Gas (GHG) emissions effects during construction and operations of the Project
	Noise and Vibration		• Noise and vibration emissions during construction and operation at sensitive land uses • Potential increase in noise during construction at sensitive receptors
Social and Economic Environment	Land Use and Users		• Potential for land use compatibility conflicts • Potential for nuisance effects to neighbouring properties and residences
	Traffic and Transportation		• Changes to level of service at key intersections

Environment	Component of the Environment	Criteria
Cultural Environment	Archaeological Resources	• Potential for disturbance or destruction of archaeological resources
	Built Heritage Resources and Cultural Heritage Landscapes	• Direct and indirect effects to built heritage resources and/or cultural heritage landscapes from construction activities

4.2 Natural Environment

4.2.1 Overview

The Project has the potential to result in permanent and temporary effects during construction (i.e., loss of vegetation along the corridor ROW, effects on wildlife due to anticipated vegetation removal, accidental collisions). The potential for effects during operation will be limited, once permanent infrastructure is established. It is anticipated that effects can be limited or avoided through implementation of mitigation measures. Potential effects are described below, while corresponding mitigation measures and monitoring activities relating to the natural environment are described in Section 4.11.

Although not explicitly stated in each of the subsections, it is acknowledged that there is the potential for the establishment of invasive species and other incompatible species in areas disturbed during Project construction activities. Also, there is the potential for the spread of emerald ash borer, *Agrilus planipennis (Fairmaire)* associated with removal, handling and transport of ash trees.

4.2.2 Denison Street

4.2.2.1 Aquatic Environment

4.2.2.1.1 Construction

No direct loss of aquatic habitat will occur at the grade separation location since no aquatic habitat features are present within the Natural Environment Assessment Area.

4.2.2.1.2 Operation

As discussed in Section 3.1.2.1.1, there are no aquatic habitat features present within the Natural Environment Assessment Area, and therefore, no effects on the aquatic environment are anticipated during operations.

4.2.2.2 Terrestrial Environment

4.2.2.2.1 Construction

This is a highly disturbed area with poor habitat quality. Direct loss of vegetation will occur where the Project Footprint overlays natural areas and vegetation removal is required to facilitate construction, including temporary work areas, and new infrastructure.

Clearing of areas for construction activities may result in short-term disturbance, resulting in a temporary loss of habitat until restoration efforts are completed.

Permanent loss of vegetation will generally be restricted to areas along the existing rail and road ROWs where new infrastructure will be located. These areas are considered to be minimal, and will have a limited effect on natural features and habitat fragmentation beyond localized removal.

4.2.2.2.2 Operation

Loss of vegetation will be limited to clearing of work areas or pruning of existing vegetation. It is not anticipated that the terrestrial environment will be affected by the Project during operations, as operations will manage vegetation but generally avoid removals of existing or restored natural areas.

4.2.2.3 Wildlife

4.2.2.3.1 Construction

Potential effects on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills, and sensory disturbance of wildlife during construction. However, the urban landscape precludes an abundance of wildlife and/or wildlife habitat. Limited habitat for wildlife present in the area includes dry-fresh mixed meadow communities and landscape trees along urban street fronts and small culturally influenced vegetated parcels.

While no bird nests were confirmed at the Denison Street Natural Environment Assessment Area, nests of common urban adapted species could occur. However, common species are relatively abundant throughout the region and tolerant of urban conditions. Although the presence of common species can be expected, the general disturbance from construction (such as noise and human presence) will cause such species to avoid the area, with limited overall effect.

There is potential for construction to disturb or destroy nests of migratory birds, particularly during vegetation clearing. Other slow-moving and ground-dwelling wildlife could be encountered in work areas during construction, including reptiles (snakes and turtles) and amphibians.

Other temporary impacts to wildlife during construction may include increased noise and lighting in areas adjacent to the Project Footprint. Wildlife that have the potential to be present adjacent to active construction are species that are already acclimatized to the disturbed urban environment and impacts to these species from increased noise and lighting are expected to be low.

4.2.2.3.2 Operation

The grade separation will create a new barrier to wildlife crossing, resulting in potentially less risk of mortality. Therefore, it is not anticipated that wildlife will be affected by the Project during operations, as the new structure and property fencing will limit the ability of wildlife to enter the rail corridor or cross tracks. While the new barriers will also potentially affect wildlife movement, the effects on wildlife are anticipated to be limited.

4.2.2.4 Significant Wildlife Habitat

4.2.2.4.1 Construction

As discussed in Section 3.1.2.1.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during construction.

4.2.2.4.2 Operation

As discussed in Section 3.1.2.1.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during operations.

4.2.2.5 Species at Risk

4.2.2.5.1 Construction

Since no SAR species were recorded during field investigations in the Natural Environment Assessment Area (see Section 3.1.2.1.5), it is not anticipated that SAR will be affected by the Project during construction.

While the Project Footprint overlaps with suitable habitat for Eastern Meadowlark (meadow), standard mitigation measures are available to protect suitable habitat for Eastern Meadowlark during construction and, where vegetation removal may be required, to revegetate work areas post-disturbance to maintain habitat function.

No potential bat roosting trees were observed during tree habitat assessment survey. As the detailed design progresses, further studies may be required to confirm if Barn Swallows are nesting on existing structures. If required, surveys for breeding bird SAR should occur during June – early July.

4.2.2.5.2 Operation

As discussed in Section 3.1.2.1.5, there are no SAR species recorded in the Natural Environment Assessment Area, and therefore, it is not anticipated that SAR will be affected by the Project during operations.

4.2.2.6 Significant Natural Features

4.2.2.6.1 Construction

As discussed in Section 3.1.2.1.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during construction.

4.2.2.6.2 Operation

As discussed in Section 3.1.2.1.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during operations.

4.2.3 Kennedy Road

4.2.3.1 Aquatic Environment

4.2.3.1.1 Construction

No direct loss of aquatic habitat will occur at the grade separation location since no aquatic habitat features are present within the Natural Environment Assessment Area.

4.2.3.1.2 Operation

As discussed in Section 3.1.2.2.1, there are no aquatic habitat features present within the Natural Environment Assessment Area, and therefore, no effects on the aquatic environment are anticipated during operations.

4.2.3.2 Terrestrial Environment

4.2.3.2.1 Construction

This is a highly disturbed area with poor habitat quality. Direct loss of vegetation will occur where the Project Footprint overlays natural areas and vegetation removal is required to facilitate construction, including temporary work areas, and new infrastructure.

Clearing of areas for construction activities may result in short-term disturbance, resulting in a temporary loss of habitat until restoration efforts are completed.

Permanent loss of vegetation will generally be restricted to areas along the existing rail and road ROWs where new infrastructure will be located. These areas are considered to be minimal and will have a limited effect on natural features and habitat fragmentation beyond localized removal, refer to Appendix A1 for additional information on ELC units.

The Project Footprint abuts a wetland parcel, but the area is noted to be disturbed and of poor quality. A desktop wetland assessment considering both hydrological and ecological features was completed to determine the sensitivity of the wetland (Stantec 2020i). The proposed Project Footprint was determined to have a low magnitude of impact on the hydrological function of the wetland. The ecological evaluation determined the Project Footprint would have a low magnitude of impact on wetland sensitivity. Potential encroachment into the edge of the feature is small and is not anticipated to influence the function of the wetland area with the implementation of appropriate sediment control measures. No habitat fragmentation is anticipated.

4.2.3.2.2 Operation

Loss of vegetation will be limited to clearing of work areas or pruning of existing vegetation. It is not anticipated that the terrestrial environment will be affected by the Project during operations, as operations will manage vegetation but generally avoid removals of existing or restored natural areas.

4.2.3.3 Wildlife

4.2.3.3.1 Construction

Potential effects on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills, and sensory disturbance of wildlife during construction. However, the urban landscape precludes an abundance of wildlife and/or wildlife habitat. Limited habitat for wildlife present in the area includes meadow, deciduous forest and woodlands communities and landscape trees along urban street fronts and small culturally influenced vegetated parcels.

While no bird nests were confirmed at the Kennedy Road Natural Environment Assessment Area, nests of common urban adapted species could occur. However, common species are relatively abundant throughout the region and tolerant of urban conditions. Although the presence of common species can be expected, the general disturbance from construction (such as noise and human presence) will cause such species to avoid the area, with limited overall effect.

There is potential for construction to disturb or destroy nests of migratory birds, particularly during vegetation clearing and structural removal. Other slow-moving and ground-dwelling wildlife could be encountered in work areas during construction, including reptiles (snakes and turtles) and amphibians.

Other temporary impacts to wildlife during construction may include increased noise and lighting in areas adjacent to the Project Footprint. Wildlife that have the potential to be present adjacent to active construction are species that are already acclimatized to the disturbed urban environment and impacts to these species from increased noise and lighting are expected to be low.

4.2.3.3.2 Operation

The grade separation will create a new barrier to wildlife crossing, resulting in potentially less risk of mortality. Therefore, it is not anticipated that wildlife will be affected by the Project during operations, as the new structure and property fencing will limit the ability of wildlife to enter the rail corridor or cross tracks. While the new barriers will also potentially affect wildlife movement, the effects on wildlife are anticipated to be limited.

4.2.3.4 Significant Wildlife Habitat

4.2.3.4.1 Construction

As discussed in Section 3.1.2.2.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during construction.

4.2.3.4.2 Operation

As discussed in Section 3.1.2.2.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during operations.

4.2.3.5 Species at Risk

4.2.3.5.1 Construction

Since no SAR species were recorded in the Natural Environment Assessment Area (see Section 3.1.2.2.5), it is not anticipated that SAR will be affected by the Project during construction.

However, the Project Footprint overlaps with the following suitable habitat for:

- Barn Swallow foraging habitat – meadow
- Suitable habitat for Little Brown Myotis – deciduous forest and woodlands

As the detailed design progresses, further studies will be required to confirm if candidate bat maternity colony roosts are present, and to confirm if Barn Swallows are nesting within the Natural Environment Assessment Area. If required, surveys for breeding bird SAR should occur during June – early July, and bat use surveys of maternity roosts should occur during June.

In addition, potential bat habitat and a pooling wetland area were noted east of the rail corridor on both the north and south sides of Kennedy Road where construction may encroach into wooded areas. The moist forest area to the southeast of Kennedy Road was noted to contain standing water in the spring. This area of pooling and surrounding woodland feature is scheduled for further wetland review pending approval to access the property. These wooded areas were assessed from the road on April 28, 2020. There were two snags identified with cavities close to the road and there were two large diameter trees further away from the road in the feature. Otherwise, the trees did not

generally represent typical quality bat habitat since they were smaller in diameter, and consisted of young to mid-aged trees.

4.2.3.5.2 Operation

As discussed in Section 3.1.2.2.5, there are no SAR species recorded in the Natural Environment Assessment Area, and therefore, it is not anticipated that SAR will be affected by the Project during operations.

4.2.3.6 Significant Natural Features

4.2.3.6.1 Construction

As discussed in Section 3.1.2.2.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during construction.

4.2.3.6.2 Operation

As discussed in Section 3.1.2.2.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during operations.

4.2.4 Passmore Avenue

4.2.4.1 Aquatic Environment

4.2.4.1.1 Construction

No direct loss of aquatic habitat will occur at the grade separation location since no aquatic habitat features are present within the Natural Environment Assessment Area.

4.2.4.1.2 Operation

As discussed in Section 3.1.2.3.1, there are no aquatic habitat features present within the Natural Environment Assessment Area, and therefore, no effects on the aquatic environment are anticipated during operations.

4.2.4.2 Terrestrial Environment

4.2.4.2.1 Construction

This is a highly disturbed area with poor habitat quality. Direct loss of vegetation will occur where the Project Footprint overlays natural areas and vegetation removal is required to facilitate construction, including temporary work areas, and new infrastructure.

Clearing of areas for construction activities may result in short-term disturbance, resulting in a temporary loss of habitat until restoration efforts are completed.

Permanent loss of vegetation will generally be restricted to areas along the existing rail and road ROWs where new infrastructure will be located. These areas are considered to be minimal, and will have a limited effect on natural features and habitat fragmentation beyond localized removal.

4.2.4.2.2 Operation

Loss of vegetation will be limited to clearing of work areas or pruning of existing vegetation. It is not anticipated that the terrestrial environment will be affected by the Project during operations, as operations will manage vegetation but generally avoid removals of existing or restored natural areas.

4.2.4.3 Wildlife

4.2.4.3.1 Construction

Potential impacts on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills, and sensory disturbance of wildlife during construction. However, the urban landscape precludes an abundance of wildlife and/or wildlife habitat. Limited habitat for wildlife present in the area includes hedgerows and landscape trees along urban street fronts and small culturally influenced vegetated parcels.

There is potential for construction to disturb or destroy nests of migratory birds, particularly during vegetation clearing and structural removal. Other slow-moving and ground-dwelling wildlife could be encountered in work areas during construction, including reptiles (snakes and turtles) and amphibians.

Other temporary impacts to wildlife during construction may include increased noise and lighting in areas adjacent to the Project Footprint. Wildlife that have the potential to be present adjacent to active construction are species that are already acclimatized to the disturbed urban environment and impacts to these species from increased noise and lighting are expected to be low.

4.2.4.3.2 Operation

The grade separation will create a new barrier to wildlife crossing, resulting in potentially less risk of mortality. Therefore, it is not anticipated that wildlife will be affected by the Project during operations, as the new structure and property fencing will limit the ability of wildlife to enter the rail corridor or cross tracks. While the new barriers will also potentially affect wildlife movement, the effects on wildlife are anticipated to be limited.

4.2.4.4 Significant Wildlife Habitat

4.2.4.4.1 Construction

As discussed in Section 3.1.2.3.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during construction.

4.2.4.4.2 Operation

As discussed in Section 3.1.2.3.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during operations.

4.2.4.5 Species at Risk

4.2.4.5.1 Construction

Since no SAR species were recorded in the Natural Environment Assessment Area (see Section 3.1.2.3.5), it is not anticipated that SAR will be affected by the Project during construction within the Natural Environment Assessment Area. In addition, Barn Swallow were not recorded in the Natural Environment Assessment Area and no building structures are scheduled for removal on private lands.

4.2.4.5.2 Operation

As discussed in Section 3.1.2.3.5, there are no SAR species recorded in the Passmore Avenue Natural Environment Assessment Area, and therefore, it is not anticipated that SAR will be affected by the Project during operations.

4.2.4.6 Significant Natural Features

4.2.4.6.1 Construction

As discussed in Section 3.1.2.3.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during construction.

4.2.4.6.2 Operation

As discussed in Section 3.1.2.3.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during operations.

4.2.5 McNicoll Avenue

4.2.5.1 Aquatic Environment

4.2.5.1.1 Construction

No direct loss of aquatic habitat will occur at the grade separation location since no aquatic habitat features are present within the Natural Environment Assessment Area.

4.2.5.1.2 Operation

As discussed in Section 3.1.2.4.1, there are no aquatic habitat features present within the Natural Environment Assessment Area, and therefore, no effects on the aquatic environment are anticipated during operations.

4.2.5.2 Terrestrial Environment

4.2.5.2.1 Construction

This is a highly disturbed area with poor habitat quality. Direct loss of vegetation will occur where the Project Footprint overlays natural areas and vegetation removal is required to facilitate construction, including temporary work areas, and new infrastructure.

Clearing of areas for construction activities may result in short-term disturbance, resulting in a temporary loss of habitat until restoration efforts are completed.

Permanent loss of vegetation will generally be restricted to areas along the existing rail and road ROWs where new infrastructure will be located. These areas are considered to be minimal and will have a limited effect on natural features and habitat fragmentation beyond localized removal.

4.2.5.2.2 Operations

Loss of vegetation will be limited to clearing of work areas or pruning of existing vegetation. It is not anticipated that the terrestrial environment will be affected by the Project during operations, as operations will manage vegetation but generally avoid removals of existing or restored natural areas.

4.2.5.3 Wildlife

4.2.5.3.1 Construction

Potential impacts on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills, and sensory disturbance of wildlife during construction. However, the urban landscape precludes an abundance of wildlife and/or wildlife habitat. Limited habitat for wildlife present in the area includes landscape trees along urban street fronts and small culturally influenced vegetated parcels.

There is potential for construction to disturb or destroy nests of migratory birds, particularly during vegetation clearing. Other slow-moving and ground-dwelling wildlife could be encountered in work areas during construction, including reptiles (snakes and turtles) and amphibians.

Other temporary impacts to wildlife during construction may include increased noise and lighting in areas adjacent to the Project Footprint. Wildlife that have the potential to be present adjacent to active construction are species that are already acclimatized to the disturbed urban environment and impacts to these species from increased noise and lighting are expected to be low.

4.2.5.3.2 Operation

The grade separation will create a new barrier to wildlife crossing, resulting in potentially less risk of mortality. Therefore, it is not anticipated that wildlife will be affected by the Project during operations, as the new structure and property fencing will limit the ability of wildlife to enter the rail corridor or cross tracks. While the new barriers will also potentially affect wildlife movement, the effects on wildlife are anticipated to be limited.

4.2.5.4 Significant Wildlife Habitat

4.2.5.4.1 Construction

As discussed in Section 3.1.2.4.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during construction.

4.2.5.4.2 Operation

As discussed in Section 3.1.2.4.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during operations.

4.2.5.5 Species at Risk

4.2.5.5.1 Construction

Since no SAR species were recorded during field investigations in the Natural Environment Assessment Area (see Section 3.1.2.4.5), it is not anticipated that SAR will be affected by the Project during construction.

As the detailed design progresses, further studies will be required to confirm if candidate bat maternity colony roots are present, and to confirm if Barn Swallows are nesting on existing structures.

4.2.5.5.2 Operation

As discussed in Section 3.1.2.4.5, there are no SAR species recorded in the Natural Environment Assessment Area, and therefore, it is not anticipated that SAR will be affected by the Project during operations.

4.2.5.6 Significant Natural Features

4.2.5.6.1 Construction

As discussed in Section 3.1.2.4.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during construction.

4.2.5.6.2 Operation

As discussed in Section 3.1.2.4.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during operations.

4.2.6 Huntingwood Drive

4.2.6.1 Aquatic Environment

4.2.6.1.1 Construction

No direct loss of aquatic habitat will occur at the grade separation location since no aquatic habitat features are present within the Natural Environment Assessment Area.

4.2.6.1.2 Operation

As discussed in Section 3.1.2.5.1, there are no aquatic habitat features present within the Natural Environment Assessment Area, and therefore, no effects on the aquatic environment are anticipated during operations.

4.2.6.2 Terrestrial Environment

4.2.6.2.1 Construction

This is a highly disturbed area with poor habitat quality. Direct loss of vegetation will occur where the Project Footprint overlays natural areas and vegetation removal is required to facilitate construction, including temporary work areas, and new infrastructure.

Clearing of areas for construction activities may result in short-term disturbance, resulting in a temporary loss of habitat until restoration efforts are completed.

Permanent loss of vegetation will generally be restricted to areas along the existing rail and road ROWs where new infrastructure will be located. These areas are considered to be minimal and will have a limited effect on natural features and habitat fragmentation beyond localized removal.

4.2.6.2.2 Operation

Loss of vegetation will be limited to clearing of work areas or pruning of existing vegetation. It is not anticipated that the terrestrial environment will be affected by the

Project during operations, as operations will manage vegetation but generally avoid removals of existing or restored natural areas.

4.2.6.3 Wildlife

4.2.6.3.1 Construction

Potential effects on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills, and sensory disturbance of wildlife during construction. However, the urban landscape precludes an abundance of wildlife and/or wildlife habitat. Limited habitat for wildlife present in the area includes hedgerows and landscape trees along urban street fronts and small culturally influenced vegetated parcels.

While no bird nests were confirmed at the Huntingwood Drive Natural Environment Assessment Area, nests of common urban adapted species could occur. However, common species are relatively abundant throughout the region and tolerant of urban conditions. Although the presence of common species can be expected, the general disturbance from construction (such as noise and human presence) will cause such species to avoid the area, with limited overall effect.

There is potential for construction to disturb or destroy nests of migratory birds, particularly during vegetation clearing. Other slow-moving and ground-dwelling wildlife could be encountered in work areas during construction, including reptiles (snakes and turtles) and amphibians.

Other temporary impacts to wildlife during construction may include increased noise and lighting in areas adjacent to the Project Footprint. Wildlife that have the potential to be present adjacent to active construction are species that are already acclimatized to the disturbed urban environment and impacts to these species from increased noise and lighting are expected to be low.

4.2.6.3.2 Operation

The grade separation will create a new barrier to wildlife crossing, resulting in potentially less risk of mortality. Therefore, it is not anticipated that wildlife will be affected by the Project during operations, as the new structure and property fencing will limit the ability of wildlife to enter the rail corridor or cross tracks. While the new barriers will also potentially affect wildlife movement, the effects on wildlife are anticipated to be limited.

4.2.6.4 Significant Wildlife Habitat

4.2.6.4.1 Construction

As discussed in Section 3.1.2.5.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no impacts on significant wildlife habitat during construction.

4.2.6.4.2 Operations

As discussed in Section 3.1.2.5.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during operations.

4.2.6.5 Species at Risk

4.2.6.5.1 Construction

Since no SAR species were recorded in the Natural Environment Assessment Area (see Section 3.1.2.5.5), it is not anticipated that SAR will be affected by the Project during construction.

No suitable habitat for SAR species were identified in the Natural Environment Assessment Area. In addition, no potential bat roost trees were observed in the Natural Environment Assessment Area during the bat roost assessment. Therefore, it is not anticipated that SAR will be affected by the Project during construction.

4.2.6.5.2 Operation

Given that no SAR species nor suitable habitat for SAR species were recorded in the Natural Environment Assessment Area, it is not anticipated that SAR will be affected by the Project during operations.

4.2.6.6 Significant Natural Features

4.2.6.6.1 Construction

As discussed in Section 3.1.2.5.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during construction.

4.2.6.6.2 Operations

As discussed in Section 3.1.2.5.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during operations.

4.2.7 Havendale Road

4.2.7.1 Aquatic Environment

4.2.7.1.1 Construction

No direct loss of aquatic habitat will occur at the grade separation location since no aquatic habitat features are present within the Natural Environment Assessment Area.

4.2.7.1.2 Operation

As discussed in Section 3.1.2.6.1, there are no aquatic habitat features present within the Natural Environment Assessment Area, and therefore, no effects on the aquatic environment are anticipated during operations.

4.2.7.2 Terrestrial Environment

4.2.7.2.1 Construction

This is a highly developed and urbanized area. Havendale Park in the northwest corner of the Natural Environment Assessment Area may experience some disturbance, but given the poor habitat quality present, no degradation of natural terrestrial habitat is anticipated.

Direct loss of vegetation will occur where the Project Footprint overlays natural areas and vegetation removal is required to facilitate construction, including temporary work areas, and new infrastructure.

Clearing of areas for construction activities may result in short-term disturbance, resulting in a temporary loss of habitat until restoration efforts are completed.

Permanent loss of vegetation will generally be restricted to areas along the existing rail and road ROWs where new infrastructure will be located. These areas are considered to be minimal and will have a limited effect on natural features and habitat fragmentation beyond localized removal.

4.2.7.2.2 Operation

Loss of vegetation will be limited to clearing of work areas or pruning of existing vegetation. It is not anticipated that the terrestrial environment will be affected by the Project during operations, as operations will manage vegetation but generally avoid removals of existing or restored natural areas.

4.2.7.3 Wildlife

4.2.7.3.1 Construction

Potential effects on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills, and sensory disturbance of wildlife during construction. However, the urban landscape precludes an abundance of wildlife and/or wildlife habitat. Limited habitat for wildlife present in the area includes landscape trees along residential properties and within Havendale Park.

While no bird nests were confirmed at the Havendale Road Natural Environment Assessment Area, nests of common urban adapted species could occur. However, common species are relatively abundant throughout the region and tolerant of urban conditions. Although the presence of common species can be expected, the general disturbance from construction (such as noise and human presence) will cause such species to avoid the area, with limited overall effect.

There is potential for construction to disturb or destroy nests of migratory birds, particularly during vegetation clearing. Other slow-moving and ground-dwelling wildlife could be encountered in work areas during construction, including reptiles (snakes and turtles) and amphibians.

Other temporary impacts to wildlife during construction may include increased noise and lighting in areas adjacent to the Project Footprint. Wildlife that have the potential to be present adjacent to active construction are species that are already acclimatized to the disturbed urban environment and impacts to these species from increased noise and lighting are expected to be low.

4.2.7.3.2 Operation

New fencing along the rail corridor at Havendale Road will create a new barrier to wildlife crossing the rail corridor, resulting in potentially less risk of mortality. While the new fence may potentially affect wildlife movement, the effects on wildlife are anticipated to be limited. Therefore, it is not anticipated that wildlife will be affected by the Project during operations.

4.2.7.4 Significant Wildlife Habitat

4.2.7.4.1 Construction

As discussed in Section 3.1.2.6.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during construction.

4.2.7.4.2 Operation

As discussed in Section 3.1.2.6.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during operations.

4.2.7.5 Species at Risk

4.2.7.5.1 Construction

Since no SAR species were recorded during field investigations in the Natural Environment Assessment Area (see Section 3.1.2.6.5), it is not anticipated that SAR will be affected by the Project during construction.

No suitable habitat for SAR species were identified in the Natural Environment Assessment Area. In addition, no potential bat roost trees were observed in the Natural Environment Assessment Area during the bat roost assessment. Therefore, it is not anticipated that SAR will be affected by the Project during construction. Additional surveys for bats may be required if buildings are proposed for removal during detailed design, since buildings have the potential to provide bat habitat.

4.2.7.5.2 Operation

As discussed in Section 3.1.2.6.5, there are no SAR species recorded in the Natural Environment Assessment Area, and therefore, it is not anticipated that SAR will be affected by the Project during operations.

4.2.7.6 Significant Natural Features

4.2.7.6.1 Construction

As discussed in Section 3.1.2.6.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during construction.

4.2.7.6.2 Operation

As discussed in Section 3.1.2.6.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during operations.

4.2.8 Progress Avenue

4.2.8.1 Aquatic Environment

4.2.8.1.1 Construction

The proposed grade separation will result in improvements to the Progress Avenue crossing of West Highland Creek. Based on existing conditions, this reach of the West Highland Creek provides fish habitat. The current three-cell box culvert crossing will be replaced with a free span structure to allow for better flow and general improvement to the existing aquatic conditions. In-stream channel works to restore the creek bed will be conducted in conjunction with culvert removal and free span structure installment. This includes re-naturalization of the concrete-lined channel. Construction activities (in-water works for removal of existing structure and additional access bridge) could potentially affect fish and fish habitat. Increased soil erosion and sedimentation to nearby wetlands and waterbodies from construction activities could introduce sediment and increase turbidity of the water column, which can impair vision and subsequent feeding by fish that are sight-hunters. Suspended sediments can also abrade gill membranes leading to physical stress, and impact prey organism's behavioral changes (i.e., avoidance, etc.). Heavier sediments can deposit on bottom substrates that may be used for spawning, incubation of juvenile fish, or food production, thereby impacting those habitat functions. The extent of potential impacts will be determined during detailed design.

4.2.8.1.2 Operation

The replacement of the three-cell box culvert crossing with a free span structure will provide improved fish passage/movement, once in place. In addition, a new access bridge will be constructed over Highland Creek to provide access to nearby properties, which could have long-term effects on fish and fish habitat (e.g., road salt for deicing).

4.2.8.2 Terrestrial Environment

4.2.8.2.1 Construction

This is a highly disturbed area with poor habitat quality. Direct loss of vegetation will occur where the Project Footprint overlays natural areas and vegetation removal is required to facilitate construction, including temporary work areas, and new infrastructure.

The Project Footprint overlaps with 0.072 ha of woodland to accommodate an access road to connect William Kitchen Road to the railroad tracks. This area is comprised of young, invasive Manitoba Maple, which appears to provide limited habitat for wildlife. The 0.053 ha portion of the hedgerow community proposed for removal is dominated by young Manitoba Maple and willow species. Removal of trees and shrubs along this section of West Highland Creek is not anticipated to result in erosion issues since the banks are lined with concrete along this reach.

The Project Footprint overlaps with 0.028 ha of wetland, but the area is noted to be disturbed and of poor quality. This wetland was not previously evaluated or recorded. Potential encroachment into the edge of the feature is small and is not anticipated to influence the function of the wetland area with the implementation of appropriate sediment control mitigation.

Permanent removal areas also include significant trees identified by the City of Toronto at 11-31 Progress Avenue. These areas are considered to be minimal and will have a limited effect on natural features and habitat fragmentation beyond localized removal.

Clearing of areas for construction activities may result in short-term disturbance, resulting in a temporary loss of habitat until restoration efforts are completed.

4.2.8.2.2 Operation

Loss of vegetation will be limited to clearing of work areas or pruning of existing vegetation. It is not anticipated that the terrestrial environment will be affected by the Project during operations, as operations will manage vegetation but generally avoid removals of existing or restored natural areas.

4.2.8.3 Wildlife

4.2.8.3.1 Construction

Potential effects on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills, and sensory disturbance of wildlife during construction. However, the urban landscape precludes an abundance of wildlife and/or wildlife habitat. Limited habitat for wildlife present in the area includes hedgerows and landscape trees along urban street fronts and small culturally influenced vegetated parcels.

There is potential for construction to impede wildlife movement through this area and there is a higher likelihood that wildlife will be encountered. There is also potential for construction to disturb or destroy nests of migratory birds, particularly during vegetation clearing and structural removal. In addition, slow-moving and ground-dwelling wildlife could be encountered in work areas during construction, including reptiles (snakes and turtles) and amphibians.

Other temporary impacts to wildlife during construction may include increased noise and lighting in areas adjacent to the Project Footprint. Wildlife that have the potential to be present adjacent to active construction are species that are already acclimatized to the disturbed urban environment and impacts to these species from increased noise and lighting are expected to be low.

4.2.8.3.2 Operation

The Natural Environment Assessment Area is highly industrial; therefore, limited wildlife movement effects are anticipated. The grade separation will create a new barrier to wildlife crossing, resulting in potentially less risk of mortality. The new grade separation structure will also open up the limited naturalized area along the concrete West Highland Creek channel, maintaining or improving movement through this corridor.

4.2.8.4 Significant Wildlife Habitat

4.2.8.4.1 Construction

As discussed in Section 3.1.2.7.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during construction.

4.2.8.4.2 Operation

As discussed in Section 3.1.2.7.4, there is no candidate significant wildlife habitat at this location, and therefore, there will be no effects on significant wildlife habitat during operations.

4.2.8.5 Species at Risk

4.2.8.5.1 Construction

Barn Swallow was recorded in the Natural Environment Assessment Area. There were no Barn Swallow nests observed in the accessible Project Footprint during field investigations (including under the Progress Avenue bridge); however, Barn Swallow activity near a storage facility adjacent to the Project Footprint likely indicates active nests on the buildings. There are no building structures scheduled for removal on private lands; therefore, no impacts are anticipated to this Barn Swallow nest location.

The railroad tracks cross the West Highland Creek in the Natural Environment Assessment Area approximately 80 m north of where they intersect with Progress Avenue. Confirmatory surveys for Barn Swallow nests at this bridge crossing will be required during the active nesting period (June – early July) if construction activities have the potential to disturb these structures, as determined during detailed design.

Based on the assessment of potential bat maternity habitat trees on May 3, 2019, no bat maternity roosts were observed in the Natural Environment Assessment Area. If older structures in poor condition are proposed for demolition, additional bat surveys should be conducted as these have potential to provide bat habitat.

4.2.8.5.2 Operation

SAR species identified as having the potential to reside in the Natural Environment Assessment Area include birds and bats species. Potential effects associated with the Project are related to construction activities. Once construction is complete, no effects on SAR species are anticipated during operations.

4.2.8.6 Significant Natural Features

4.2.8.6.1 Construction

As discussed in Section 3.1.2.7.6, no significant natural features (provincially or locally significant wetlands, Areas of Natural and Scientific Interest and Environmentally Sensitive Areas) were identified within the Natural Environment Assessment Area and

no direct or indirect effects on significant natural features are anticipated during construction.

4.2.8.6.2 Operation

As discussed in Section 3.1.2.7.6, no significant natural features were identified within the Natural Environment Assessment Area and no direct or indirect effects on significant natural features are anticipated during operations.

4.3 Tree Inventory

4.3.1 Overview

The Project has the potential to impact trees within the Project Footprint during construction either through removal, injury or pruning. Potential effects are described below, while corresponding mitigation measures and monitoring activities are described in Section 4.11. The number of trees to be removed or protected in place are considered approximate and may change as design progresses.

4.3.2 Denison Street

4.3.2.1 Construction

There are four trees identified in the inventory that will be retained within the Project Footprint. Potential effects to retained trees are soil compaction, mechanical damage and root damage.

There are 54 City trees recommended for removal and one additional dead tree is also recommended for removal on site. Trees to be removed include species such as: Norway Maple, White Spruce, Red Pine, Serviceberry, Common Hawthorn, Austrian Pine, Colorado Spruce, Ash species, Crimson King Norway Maple, and Russian Olive.

4.3.2.2 Operation

It is not anticipated that remaining trees will be affected during operations, as there will be no additional footprint changes associated with the Project and the potential for impacts to existing trees will be limited to regular pruning or maintenance required as needed to maintain rail operations.

4.3.3 Kennedy Road

4.3.3.1 Construction

There are 44 trees identified in the inventory that will be retained within the Project Footprint. Potential effects to retained trees are soil compaction, mechanical damage and root damage.

There are 76 trees recommended for removal and four additional dead trees are also recommended for removal within the Project Footprint. Trees to be removed include species such as: Black Walnut, Ash species, Red Oak, Scots Pine, Red Maple, Elm Species, Trembling Aspen, Honey Locust, Hackberry, Manitoba Maple, Bur Oak, White Spruce, White Willow, and Poplar species.

4.3.3.2 Operation

It is not anticipated that remaining trees will be affected during operations, as there will be no additional footprint changes associated with the Project and the potential for impacts to existing trees will be limited to regular pruning or maintenance required as needed to maintain rail operations.

4.3.4 Passmore Avenue

4.3.4.1 Construction

There is one tree identified in the inventory that will be retained within the Project Footprint. Potential effects to retained trees are soil compaction, mechanical damage and root damage.

There are 34 trees recommended for removal and five additional dead trees are also recommended for removal within the Project Footprint Trees to be removed include species such as: Norway Maple, Apple sp., Paper Birch, Red Pine, Kentucky Coffee-Tree, Honey-Locust, Red Oak, Yellow Birch, Dogwood Sp., Bur Oak, Red Maple, Sugar Maple, Silky Dogwood, Russian Olive, and White Willow.

Kentucky coffee-tree is designated ‘Threatened’ in Canada under the *Species at Risk Act* (SARA). However, since these trees were planted as street trees and are not natural existing, a permit under the SARA is not required to remove them.

4.3.4.2 Operation

It is not anticipated that remaining trees will be affected during operations, as there will be no additional footprint changes associated with the Project and the potential for

impacts to existing trees will be limited to regular pruning or maintenance required as needed to maintain rail operations.

4.3.5 McNicoll Avenue

4.3.5.1 Construction

There are 29 trees identified in the inventory that will be retained within the Project Footprint. Potential effects to retained trees are soil compaction, mechanical damage and root damage.

There are 84 trees recommended for removal and six additional trees identified for pruning within the Project Footprint. Trees to be removed include species such as: Elm sp., Red Oak, White Oak, Sugar Maple, Freeman Maple, Black Locust, Ash sp., Basswood, Kentucky Coffee-Tree, Russian Olive, Manitoba Maple, Norway Maple, Red Maple, Apple sp., Common Pear, Ginkgo, Hackberry, Honey-Locust, European Buckthorn, and Sycamore.

Kentucky coffee-tree is designated ‘Threatened’ in Canada under the *Species at Risk Act* (SARA). However, since these trees were planted as street trees and are not natural existing, a permit under the SARA is not required to remove them.

4.3.5.2 Operation

It is not anticipated that remaining trees will be affected during operations, as there will be no additional footprint changes associated with the Project and the potential for impacts to existing trees will be limited to regular pruning or maintenance required as needed to maintain rail operations.

4.3.6 Huntingwood Drive

4.3.6.1 Construction

There are 43 trees identified in the inventory that will be retained within the Project Footprint. Potential effects to retained trees are soil compaction, mechanical damage and root damage.

There are 65 trees recommended for removal and three additional trees identified for pruning within the Project Footprint. Trees to be removed include species such as: Sycamore Maple, Black Locust, Manitoba Maple, Norway Maple, Red Maple, Elm sp., Silver Maple Black Walnut, Trembling Aspen, Poplar sp., Red Pine, Honey-Locust, Freeman Maple, Pin Cherry, White Willow, White Pine, Eastern White Cedar, and White Spruce.

4.3.6.2 Operation

It is not anticipated that remaining trees will be affected during operations, as there will be no additional footprint changes associated with the Project and the potential for impacts to existing trees will be limited to regular pruning or maintenance required as needed to maintain rail operations.

4.3.7 Havendale Road

4.3.7.1 Construction

There are 11 trees recommended for removal within the Project Footprint. Trees to be removed include species such as: Honey-Locust, Bur Oak, Silver Maple, Norway Maple, White Spruce, Cherry Sp., Maple Sp., and White Pine.

4.3.7.2 Operation

It is not anticipated that remaining trees will be affected during operations, as there will be no additional footprint changes associated with the Project and the potential for impacts to existing trees will be limited to regular pruning or maintenance required as needed to maintain rail operations.

4.3.8 Progress Avenue

4.3.8.1 Construction

There are 20 trees identified in the inventory that will be retained within the Project Footprint. Potential effects to retained trees are soil compaction, mechanical damage and root damage.

There are 37 trees recommended for removal within the Project Footprint. Trees to be removed include species such as: Paper Birch, Red Pine, Norway Maple, Red Maple, Common Pear, Willow sp., Elm sp., Hackberry, Colorado Spruce, Manitoba Maple, Russian Olive, and Hawthorn sp.

4.3.8.2 Operation

It is not anticipated that remaining trees will be affected during operations, as there will be no additional footprint changes associated with the Project and the potential for impacts to existing trees will be limited to regular pruning or maintenance required as needed to maintain rail operations.

4.4 Geology and Groundwater

4.4.1 Overview

The Project is not expected to result in any changes to landforms and physiography or to soils and bedrock geology.

The Project has the potential to result in temporary effects during construction and operations (i.e., effects on water wells due to potential dewatering, accidental spills). It is anticipated that effects can be limited or avoided through implementation of mitigation measures. Potential effects are described below, while corresponding mitigation measures and monitoring activities relating to Geology and Groundwater are described in Section 4.11.

4.4.2 Denison Street

4.4.2.1 Landforms and Physiography

4.4.2.1.1 Construction

Only localized changes in elevation to the Project Footprint will be required, so no effects on landforms and physiography are anticipated on a larger geographic scale.

4.4.2.1.2 Operation

No effects on landforms and physiography are anticipated as a result of Project operations.

4.4.2.2 Soils and Bedrock Geology

4.4.2.2.1 Construction

Spills and releases associated with machinery and equipment operation during construction activities may affect soil quality through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

4.4.2.2.2 Operation

No effects to soils and bedrock are anticipated during operations.

4.4.2.3 Groundwater Resources

4.4.2.3.1 Construction

Groundwater control during excavation of the road cut will be required during construction, with a dewatering zone of influence estimated to be less than 20 m from the edge of the dewatering area.

Spills and releases associated with machinery and equipment operation during construction activities may affect groundwater through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

Construction dewatering has the potential to negatively affect water well quality and quantity. However, the one potable water well identified approximately 50 m outside of the Denison Street Project Footprint is not within the anticipated dewatering zone of influence. Therefore, no effects on water wells are anticipated as a result of construction dewatering.

4.4.2.3.2 Operation

Given the shallow water table depth encountered in the geotechnical investigation, permanent drainage will be required along the length of the road cut to lower the groundwater level below the base of the road under rail structure. The drainage system will assist in preventing the groundwater from adversely affecting the long-term stability of the pavement structure and underlying new municipal services and/or utilities.

4.4.3 Kennedy Road

4.4.3.1 Landforms and Physiography

4.4.3.1.1 Construction

Only localized changes in elevation to the Project Footprint will be required, so no effects on landforms and physiography are anticipated on a larger geographic scale.

4.4.3.1.2 Operation

No effects on landforms and physiography are anticipated as a result of Project operations.

4.4.3.2 Soils and Bedrock Geology

4.4.3.2.1 Construction

Spills and releases associated with machinery and equipment operation during construction activities may affect soil quality through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

4.4.3.2.2 Operation

No effects to soils and bedrock are anticipated during operations.

4.4.3.3 Groundwater Resources

4.4.3.3.1 Construction

Groundwater control during excavation of the road cut will be required during construction, with a dewatering zone of influence estimated to be less than 20 m from the edge of the dewatering area.

Spills and releases associated with machinery and equipment operation during construction activities may affect groundwater through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

Construction dewatering has the potential to negatively affect water well quality and quantity. However, the one potable water well identified approximately 50 m outside of the Kennedy Road Project Footprint is not within the anticipated dewatering zone of influence. Therefore, no effects on water wells are anticipated as a result of construction dewatering.

4.4.3.3.2 Operation

Given the road cut will penetrate below the static groundwater level, permanent drainage will be required along the length of the road cut to lower the groundwater level below the base of the road under rail structure. The drainage system will assist in preventing the groundwater from adversely affecting the long-term stability of the pavement structure and underlying new municipal services and/or utilities.

4.4.4 Passmore Avenue

4.4.4.1 Landforms and Physiography

4.4.4.1.1 Construction

Only localized changes in elevation to the Project Footprint will be required, so no effects on landforms and physiography are anticipated on a larger geographic scale.

4.4.4.1.2 Operation

No effects on landforms and physiography are anticipated as a result of Project operations.

4.4.4.2 Soils and Bedrock Geology

4.4.4.2.1 Construction

Spills and releases associated with machinery and equipment operation during construction activities may affect soil quality through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

4.4.4.2.2 Operation

No effects to soils and bedrock are anticipated during operations.

4.4.4.3 Groundwater Resources

4.4.4.3.1 Construction

Groundwater control during excavation of the road cut will be required during construction, with a dewatering zone of influence estimated to be less than 25 m from the edge of the dewatering area.

Spills and releases associated with machinery and equipment operation during construction activities may affect groundwater through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

Construction dewatering has the potential to negatively affect water well quality and quantity. However, the one commercial water well identified approximately 250 m outside of the Passmore Avenue Project Footprint is not within the anticipated

dewatering zone of influence. Therefore, no effects on water wells are anticipated as a result of construction dewatering.

4.4.4.3.2 Operation

Given the road cut will penetrate below the static groundwater level, permanent drainage will be required along the length of the road cut to lower the groundwater level below the base of the road under rail structure. The drainage system will assist in preventing the groundwater from adversely affecting the long-term stability of the pavement structure and underlying municipal services and/or utilities.

4.4.5 McNicoll Avenue

4.4.5.1 Landforms and Physiography

4.4.5.1.1 Construction

Only localized changes in elevation to the Project Footprint will be required, so no effects on landforms and physiography are anticipated on a larger geographic scale. Operation.

4.4.5.1.2 Operation

No effects on landforms and physiography are anticipated as a result of Project operations.

4.4.5.2 Soils and Bedrock Geology

4.4.5.2.1 Construction

Spills and releases associated with machinery and equipment operation during construction activities may affect soil quality through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

4.4.5.2.2 Operation

No effects to soils and bedrock are anticipated during operations.

4.4.5.3 Groundwater Resources

4.4.5.3.1 Construction

Groundwater control during excavation of the road cut will be required during construction, with a dewatering zone of influence estimated to be less than 20 m from the edge of the dewatering area.

Spills and releases associated with machinery and equipment operation during construction activities may affect groundwater through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

Construction dewatering has the potential to negatively affect water well quality and quantity. However, the two potable water wells identified approximately 50 m outside of the McNicoll Avenue Project Footprint are not within the anticipated dewatering zone of influence. Therefore, no effects on water wells are anticipated as a result of construction dewatering.

4.4.5.3.2 Operation

Given the road cut will penetrate below the static groundwater level, permanent drainage will be required along the length of the road cut to lower the groundwater level below the base of the road under rail structure. The drainage system will assist in preventing the groundwater from adversely affecting the long-term stability of the pavement structure and underlying municipal services and/or utilities.

4.4.6 Huntingwood Drive

4.4.6.1 Landforms and Physiography

4.4.6.1.1 Construction

Only localized changes in elevation to the Project Footprint will be required, so no effects on landforms and physiography are anticipated on a larger geographic scale.

4.4.6.1.2 Operation

No effects on landforms and physiography are anticipated as a result of Project operations.

4.4.6.2 Soils and Bedrock Geology

4.4.6.2.1 Construction

Spills and releases associated with machinery and equipment operation during construction activities may affect soil quality through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

4.4.6.2.2 Operation

No effects to soils and bedrock are anticipated during operations.

4.4.6.3 Groundwater Resources

4.4.6.3.1 Construction

Groundwater control during excavation of the road cut will be required during construction, with a dewatering zone of influence estimated to be less than 20 m from the edge of the dewatering area.

Spills and releases associated with machinery and equipment operation during construction activities may affect groundwater through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

Construction dewatering has the potential to negatively affect water well quality and quantity. However, no potable water wells were identified within 250 m of the Huntingwood Drive Project Footprint. Therefore, no effects on water wells are anticipated in association with Project construction activities.

4.4.6.3.2 Operation

Given the road cut will penetrate below the static groundwater level, permanent drainage will be required along the length of the road cut to lower the groundwater level below the base of the road under rail structure. The drainage system will assist in preventing the groundwater from adversely affecting the long-term stability of the pavement structure and underlying municipal services and/or utilities.

4.4.7 Havendale Road

4.4.7.1 Landforms and Physiography

4.4.7.1.1 Construction

Only localized changes in elevation to the Project Footprint will be required, so no effects on landforms and physiography are anticipated on a larger geographic scale.

4.4.7.1.2 Operation

No effects on landforms and physiography are anticipated as a result of Project operations.

4.4.7.2 Soils and Bedrock Geology

4.4.7.2.1 Construction

Spills and releases associated with machinery and equipment operation during construction activities may affect soil quality through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

4.4.7.2.2 Operation

No effects to soils and bedrock are anticipated during operations.

4.4.7.3 Groundwater Resources

4.4.7.3.1 Construction

Groundwater control during pier foundations for the bridge option will be required during construction, with a dewatering zone of influence estimated to be less than 5 m from the edge of the dewatering area. Should the tunnel option be selected, additional investigations will be required to determine the extent of the dewatering area.

Spills and releases associated with machinery and equipment operation during construction activities may affect groundwater through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

Construction dewatering has the potential to negatively affect water well quality and quantity. Several water wells identified are all at least approximately 250 m away from the Havendale Road Project Footprint, and are not within the anticipated dewatering zone of dewatering for the bridge option and are likely to be outside of the dewatering zone of influence for the tunnel as well assuming that similar groundwater conditions are observed for the tunnel. Therefore, no effects on water wells are anticipated in association with Project construction activities.

4.4.7.3.2 Operation

The maximum excavation depths for the multi-use crossing bridge pier foundations are expected to be less than 4 m below the existing ground surface (177 masl). These excavations are unlikely to intercept the water table and no effects are anticipated. Further investigations would be required to determine potential effects to groundwater should the tunnel be selected as the preferred option.

4.4.8 Progress Avenue

4.4.8.1 Landforms and Physiography

4.4.8.1.1 Construction

The new road over rail structure will result in additional fill in or near the valley system. With the implementation of mitigation measures, no effects on landforms and physiography are anticipated.

4.4.8.1.2 Operation

No effects on landforms and physiography are anticipated as a result of Project operations.

4.4.8.2 Soils and Bedrock Geology

4.4.8.2.1 Construction

Spills and releases associated with machinery and equipment operation during construction activities may affect soil quality through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

4.4.8.2.2 Operation

No effects to soils and bedrock are anticipated during operations.

4.4.8.3 Groundwater Resources

4.4.8.3.1 Construction

Excavation that extend below the static groundwater table will be required for installation of portions of the new sanitary and storm sewers, with a dewatering zone of influence interpreted to be approximately 200 m from the edge of the dewatering area. The wetland is within the dewatering zone of influence and may be impacted by dewatering activities.

Spills and releases associated with machinery and equipment operation during construction activities may affect groundwater through contamination. There is potential for this interaction to occur throughout the Project Footprint, however, accidental releases are localized in nature.

Construction dewatering has the potential to negatively affect water well quality and quantity. However, no potable water wells were identified within 250 m of the Progress Avenue Project Footprint. Therefore, no effects on water wells are anticipated in association with Project construction activities.

4.4.8.3.2 Operation

No effects are anticipated during Project operations as the road over rail grade separation will have no or negligible interaction with groundwater.

4.5 Cultural Environment

4.5.1 Overview

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was completed to provide an inventory of existing heritage conditions and a preliminary assessment of Project potential impacts as discussed in Section 3.4.1. Stage 1 AAs were undertaken for all 7 study areas as discussed in Section 3.4.2. There were 136 potential heritage resources identified in the Cultural Heritage Assessment Areas. These properties were identified as potential resources as they were more than 40 years of age. The number of potential heritage resources includes: 11 in the Passmore Avenue Cultural Heritage Assessment Area; 92 in the Huntingwood Drive Cultural Heritage Assessment Area; 20 in the Havendale Road Cultural Heritage Assessment Area; and 13 in the Progress Avenue Cultural Heritage Assessment Area. Following review, none of these potential heritage resources were determined to be cultural heritage resources based on the evaluation criteria (Stantec 2021p).

Based on the results of property inspections, parts of the Archaeological Assessment Area are considered to possess archaeological potential and require a Stage 2 AA (Stantec 2020m). It is anticipated that effects can be avoided/limited through implementation of well-established and site-specific mitigation measures.

Potential effects are described below, while corresponding mitigation measures and monitoring activities relating to the cultural environment are described in Section 4.11.

Although not explicitly stated in each of the subsections, it is acknowledged that there is the potential for disturbance of unassessed or documented archaeological resources during construction activities.

4.5.2 Denison Street

4.5.2.1 Built Heritage Resources and Cultural Heritage Landscapes

4.5.2.1.1 Construction

No known or potential built heritage resources or cultural heritage landscapes were identified within the Denison Street Cultural Heritage Assessment Area. Therefore, potential direct or indirect effects on CHRs are not anticipated.

4.5.2.1.2 Operations

Given that no CHRs were identified at this location, no direct or indirect effects on CHRs are anticipated as a result of operations.

4.5.2.2 Archaeological Resources

4.5.2.2.1 Construction

As identified in the Stage 1 AA, several areas within the Denison Street Project Footprint will require additional Archaeological Assessment. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 6.

There is the potential for the disturbance of archaeological resources (pre contact, contact and post contact period) in areas not previously cleared of provincial archaeological potential and in areas identified to have archaeological potential or contain archaeological resources. A Stage 2 AA will be undertaken prior to construction to confirm the presence of archaeological resources and to recommend appropriate mitigation if resources are identified.

4.5.2.2.2 Operation

Operations will not require additional excavation and no effects on archaeology are anticipated during the ongoing operations at this location.

4.5.3 Kennedy Road

4.5.3.1 Built Heritage Resources and Cultural Heritage Landscapes

4.5.3.1.1 Construction

No known or potential built heritage resources or cultural heritage landscapes were identified within the Kennedy Road Cultural Heritage Assessment Area. Therefore, potential direct or indirect effects on CHRs are not anticipated.

4.5.3.1.2 Operations

Given that no CHRs were identified at this location, no direct or indirect effects on CHRs are anticipated as a result of operations.

4.5.3.2 Archaeological Resources

4.5.3.2.1 Construction

As identified in the Stage 1 AA, several areas within the Kennedy Road Project Footprint will require additional Archaeological Assessment. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 6.

There is the potential for the disturbance of archaeological resources (pre contact, contact and post contact period) in areas not previously cleared of provincial archaeological potential and in areas identified to have archaeological potential or contain archaeological resources. A Stage 2 AA will be undertaken prior to construction to confirm the presence of archaeological resources and to recommend appropriate mitigation if resources are identified.

4.5.3.2.2 Operation

Operations will not require additional excavation and no effects on archaeology are anticipated during the ongoing operations at this location.

4.5.4 Passmore Avenue

4.5.4.1 Built Heritage Resources and Cultural Heritage Landscapes

4.5.4.1.1 Construction

No known or potential built heritage resources or cultural heritage landscapes were identified within the Passmore Avenue Cultural Heritage Assessment Area. Therefore, potential direct or indirect effects on CHRs are not anticipated.

4.5.4.1.2 Operation

Given that no CHRs were identified at this location, no direct or indirect effects on CHRs are anticipated as a result of operations.

4.5.4.2 Archaeological Resources

4.5.4.2.1 Construction

As per the Stage 1 AA, the Archaeology Assessment Area was documented to have been subject to previous extensive and intensive ground disturbance. These lands are considered to possess low to no archaeological potential and no further Archaeological Assessment is recommended as depicted in Appendix A3, Figure 13. Thus, in accordance with Section 2.2 and Section 7.8.4 of the MHSTCI 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), no further archaeological work is required. No archaeological direct or indirect effects are anticipated during construction of the Passmore Avenue grade separation.

4.5.4.2.2 Operation

Operations will not require additional excavation and no effects on archaeology are anticipated during the ongoing operations at this location.

4.5.5 McNicoll Avenue

4.5.5.1 Built Heritage Resources and Cultural Heritage Landscapes

4.5.5.1.1 Construction

No known or potential built heritage resources or cultural heritage landscapes were identified within the McNicoll Avenue Cultural Heritage Assessment Area. Therefore, potential direct or indirect effects on CHRs are not anticipated.

4.5.5.1.2 Operations

Given that no CHRs were identified at this location, no direct or indirect effects on CHRs are anticipated as a result of operations.

4.5.5.2 Archaeological Resources

4.5.5.2.1 Construction

As identified in the Stage 1 AA (refer to Appendix A3), several areas within the McNicoll Avenue Project Footprint will require additional Archaeological Assessment.

The Stage 1 AA also indicated that part of the McNicoll Avenue Archaeology Assessment Area possesses potential for an ancestral Huron-Wendat ossuary associated with the Alexandra Site (AkGt-53) (Appendix 3). Recommendations for Stage 2 and Stage 3 AA requirements are depicted in Appendix A3, Figure 6. No lands within the Project Footprint, however, were determined to be captured within this ossuary potential model. As construction activities and Project infrastructure are not anticipated to extend beyond the Project Footprint, no potential effects to the ossuary are anticipated.

There is the potential for the disturbance of archaeological resources (pre contact, contact and post contact period) in areas not previously cleared of provincial archaeological potential and in areas identified to have archaeological potential or contain archaeological resources. A Stage 2 AA will be undertaken prior to construction to confirm the presence of archaeological resources and to recommend appropriate mitigation if resources are identified.

4.5.5.2.2 Operation

Operations will not require additional excavation and no effects on archaeology are anticipated during the ongoing operations at this location.

4.5.6 Huntingwood Drive

4.5.6.1 Built Heritage Resources and Cultural Heritage Landscapes

4.5.6.1.1 Construction

No known or potential built heritage resources or cultural heritage landscapes were identified within the Huntingwood Drive Cultural Heritage Assessment Area. Therefore, potential direct or indirect effects on CHRs are not anticipated.

4.5.6.1.2 Operation

Given that no CHRs were identified at this location, no direct or indirect effects on CHRs are anticipated as a result of operations.

4.5.6.2 Archaeological Resources

4.5.6.2.1 Construction

As identified in the Stage 1 AA an area within the Huntingwood Project Footprint will require additional Archaeological Assessment. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 12.

There is the potential for the disturbance of archaeological resources (pre contact, contact and post contact period) in areas not previously cleared of provincial archaeological potential and in areas identified to have archaeological potential or contain archaeological resources. A Stage 2 AA will be undertaken prior to construction to confirm the presence of archaeological resources and to recommend appropriate mitigation if resources are identified.

4.5.6.2.2 Operation

Operations will not require additional excavation and no effects on archaeology are anticipated during the ongoing operations at this location.

4.5.7 Havendale Road

4.5.7.1 Built Heritage Resources and Cultural Heritage Landscapes

4.5.7.1.1 Construction

No known or potential built heritage resources or cultural heritage landscapes were identified within the Havendale Road Cultural Heritage Assessment Area. Therefore, potential direct or indirect effects on CHRs are not anticipated.

4.5.7.1.2 Operation

Given that no CHRs were identified at this location, no direct or indirect effects on CHRs are anticipated as a result of operations.

4.5.7.2 Archaeological Resources

4.5.7.2.1 Construction

As per the Stage 1 AA (see Appendix A3, Figure 11), the Project Footprint was documented to have been subject to previous extensive and intensive ground disturbance. These lands are considered to possess low to no archaeological potential and do not require further Archaeological Assessment. The potential for archaeological resources was identified within the larger Archaeology Assessment Area, however construction activities and Project infrastructure are not anticipated to extend beyond the Project Footprint. Thus, in accordance with Section 2.2 and Section 7.8.4 of the MHSTCI 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), no further archaeological work is required. No archaeological direct or indirect effects are anticipated during construction of the Havendale Road multi-use crossing.

4.5.7.2.2 Operation

Operations will not require additional excavation and no effects on archaeology are anticipated during the ongoing operations at this location.

4.5.8 Progress Avenue

4.5.8.1 Built Heritage Resources and Cultural Heritage Landscapes

4.5.8.1.1 Construction

No known or potential built heritage resources or cultural heritage landscapes were identified within the Progress Avenue Cultural Heritage Assessment Area. Therefore, potential direct or indirect effects on CHRs are not anticipated.

4.5.8.1.2 Operation

Given that no CHRs were identified at this location, no direct or indirect effects on CHRs are anticipated as a result of operations.

4.5.8.2 Archaeological Resources

4.5.8.2.1 Construction

As identified in the Stage 1 AA several areas within the Progress Avenue Project Footprint will require additional Archaeological Assessment. Recommendations for Stage 2 AA requirements are depicted in Appendix A3, Figure 14.

There is the potential for the disturbance of archaeological resources (pre contact, contact and post contact period) in areas not previously cleared of provincial archaeological potential and in areas identified to have archaeological potential or contain archaeological resources. A Stage 2 AA will be undertaken prior to construction to confirm the presence of archaeological resources and to recommend appropriate mitigation if resources are identified.

4.5.8.2.2 Operation

Operations will not require additional excavation and no effects on archaeology are anticipated during the ongoing operations at this location.

4.6 Socio-Economic and Land Use

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), changes to transportation and traffic, changes to property access, and visual and aesthetic effects. It is anticipated that potential effects can be avoided/limited through thoughtful Project design, coupled with effective implementation of mitigation measures.

As future GO ridership is anticipated to more than double by 2031 (Metrolinx 2018a), grade separations along the existing Stouffville Rail Corridor are required in order to meet transit demand and avoid train conflict. Project conditions are consistent with the provincial and municipal land use policies, which promote efficient and resilient land use plans through an increase in density and mix of uses that are supportive of future uses of higher-order transit. Overall, the Project will create more functional operation of transit in support of the GO Expansion Program and future urban development in the region. Potential effects are described below, while corresponding mitigation measures and monitoring activities relating to Socio-Economic and Land Use are described in Section 4.11.

Although not explicitly stated in each of the subsections, it is acknowledged that there is the potential for light trespass, glare and light pollution effects during construction activities.

4.6.2 Denison Street

4.6.2.1 Planning Policy Context

4.6.2.1.1 Construction

Temporary easements and detour routes required during construction will impact properties within the Project Footprint. Impacts will be mitigated through detailed design to the extent feasible and there are no proposed changes to the existing land use as a result of the proposed improvements.

4.6.2.1.2 Operation

The Project conforms with provincial and municipal land use policies, which prioritize developments in major transit corridors through an increase in mix of uses that are supportive of future use of transit. The Project is compatible with York Region's and City of Markham's Official Plan land use designations overlapped by the Assessment Area and the road grade separation is consistent with the Official Plans (York Region 2010, City of Markham 2014) as it supports pedestrian movement and reduces traffic conflicts. There are no known changes in land use designations as a result of the Project. Permanent easements and utility easements are required on the north and south sides of Denison Street along the Project Footprint to facilitate the road under rail grade separation. The easements are situated within vegetated areas adjacent to the roadway and are not anticipated to impact property use or function once the Project is complete.

4.6.2.2 Neighbourhood Characteristics

4.6.2.2.1 Construction

Temporary property impacts will occur along Denison Street between Clayton Drive and Gorvette Road as well as along Clayton Drive between Denison Street and Kennedy Road during construction and potentially affect City of Markham ROW, residential properties and commercial properties along the rail corridor (Figure 4.2). One permanent easement will be required east of Clayton Drive on the north side of Denison Street to accommodate proposed retaining walls.

Vehicular entry to businesses at 1490 Denison Street and 1525 Denison Street will be altered by the Project, with removal of one entrance to each business (Table 4.2).

Table 4.2: Denison Street Affected Entrances

Business Address	Existing Entrances	Ultimate Entrances	Entrance Permanently Removed	Notes
1490 Denison Street	2	1	Yes	The south leg entrance will be permanently closed, existing entrance at Denison Street and Clayton Drive intersection will be maintained
1525 Denison Street	2	1	Yes	The entrance on Denison Street will be permanently closed, existing entrance on Gorvette Road will be maintained

The existing bus stop located on the north side of Denison Street east of Clayton Drive will be located further from Clayton Drive to avoid conflict with the grade separation. Property access for business, residential and school properties located near project construction such as Milliken Mills High School will be maintained during construction. The Project is not expected to limit access for residents within the Assessment Area.

Nuisance effects such as noise, dust and loss of privacy may be experienced by residents located near the construction work zone. Potential safety concerns regarding property access, traffic accidents and detours during construction will be short term and will be addressed through mitigation measures.

Metrolinx will continue to work with potentially affected local industries to support their operations during construction and to maintain business continuity to the extent feasible.

Metrolinx is currently installing noise barriers along the rail corridor and it is anticipated that these barriers will be in place by the time of construction. To accommodate the rail detour, a portion of the noise barriers will require temporary removal resulting in potential temporary increase in noise levels.

Retaining walls will be constructed along a portion of both sides of Denison Street to support the new depressed roadway and limit grading impacts on adjacent properties.

4.6.2.2.2 Operation

Operation of the existing at-grade rail crossing interrupts the vehicular, pedestrian and active modes of transportation; the Project will result in a positive effect on neighbourhood characteristics by reducing this type of interruption. However, given the difference in grade from existing to proposed conditions, pedestrians and cyclists may experience some inconvenience and increased travel time due to the slope associated with the road under rail grade separation. The change of access characteristics to some commercial properties along Denison Street may have implications for businesses located at those properties.

The existing bus stop located on the north side of Denison Street at the intersection with Clayton Drive will be relocated to align with the new ROW. The change in location of the bus stop will be minimal and no effects on transit users are anticipated.

The presence of retaining walls will provide a partial sound barrier from vehicular traffic resulting in less noise for residents and businesses adjacent to Denison Street. Due to the depressed depth of the road under rail grade separation, the potential for nuisance effects such as noise, dust and vibration effects may be reduced during operations for residents and businesses adjacent to Denison Street near the Project Footprint.

4.6.2.3 Visual Impacts and Aesthetic Effects

4.6.2.3.1 Construction

The construction of the road under rail grade separation may result in temporary visual impacts and aesthetic effects due to the construction of infrastructure, lighting, vegetation removal, temporary storage sites for equipment, staging/laydown areas, stockpiling of materials and other construction activities.

4.6.2.3.2 Operations

The newly built road under rail grade separation will result in a more prominent rail crossing that will be experienced by road users due to the depressed roadway as illustrated in Figure 2.2. The depressed roadway between Clayton Drive and Gorvette Road/Milliken Meadows Drive results in little or no change in visual character for adjacent properties at ground level. During operations, public facing retaining walls may permanently affect visual character and cause obstruction of views and reduced enjoyment.

4.6.2.4 Utilities

4.6.2.4.1 Construction

Project construction will result in impacts to utilities through physical works and construction activities within the Study Area. Temporary utility impacts will result from relocation, upgrading or replacements to watermains, pipelines, gas, hydro, street lighting, sewers and communication cables along Denison Street. Where possible, these utilities will be protected in place, however, if required, relocation and/or realignment of the utilities will occur in consultation with the applicable utility owners. With the implementation of utility relocation plans, effects on utility services will be limited. Utility conflicts along Denison Street are listed in Table 4.3.

Properties located within the Assessment Area may experience temporary service interruptions during utility realignment / relocation. In addition, utility works requiring realignment may result in the need for temporary road or lane closures changing access to nearby land uses, and could temporarily affect pedestrian, cyclist and vehicle movement along Denison Street.

Table 4.3: Utility Conflicts – Denison Street

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell, Bell 360, CN, Rogers, Alectra	Communication Cable, Buried Electric, Fiber Optic Cable, Hand Well, Terminal Box	Rail ROW, Municipal ROW	Relocate the Utility
Enbridge, Metrolinx	Gas, Hand Well	Rail ROW, Municipal ROW	Relocate the Utility
City of Markham	Catch Basin, Drainage Manhole, Fire Hydrant, Light Standard, Manhole, Sanitary, Storm, Traffic Light, Water	Rail ROW, Municipal ROW	Relocate the Utility, Protect in place

4.6.2.4.2 Operation

Pumps and underground storage tanks have been conceptually designed for the stormwater system. There will be increased maintenance activities required for the stormwater system, compared to the existing system, but the design will otherwise maintain existing capacity and function.

There are no anticipated effects on utilities associated with the proposed Project during operations. Once realignments are complete, service will be reinstated.

320000

4855000

Milliken Meadows Drive

Greensboro Drive

Macon Place

Amarillo Avenue

Micro Court

Metrolinx

City of Markham

Private Property

Denison Street

Metrolinx

Private Property

Private Property

Gorvette Road

Private Property

Private Property

Private Property

Clayton Drive

320000

N

Legend

Property Line

Property Requirements

Permanent Easement

Land Acquisition

Temporary Land Use

Utility Easement

0 40 80 metres

1:2,500 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
4.2

Title
Anticipated Property Impacts at Denison Street

Notes
1. Coordinate System: NAD 1983 CSRS MTM 10
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery Date, 2018.

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4.6.3 Kennedy Road

4.6.3.1 Planning Policy Context

4.6.3.1.1 Construction

Temporary easements and detour routes required during construction will impact properties within the Project Footprint. Impacts will be mitigated through detailed design to the extent feasible and there are no proposed changes to the existing land use as a result of the proposed improvements.

4.6.3.1.2 Operation

The Project conforms with provincial and municipal land use policies, which prioritize developments in major transit corridors through an increase in mix of uses that are supportive of future use of transit. The Project is compatible with York Region's and City of Markham's Official Plan land use designations overlapped by the Assessment Area and the road grade separation is consistent with the Official Plans (York Region 2010, City of Markham 2014) as it supports pedestrian movement and reduces traffic conflicts. There are no known changes in land use designations as a result of the Project. Permanent easements and utility easements are required on the north and south sides of Kennedy Road along the Project Footprint to facilitate the road under rail grade separation.

4.6.3.2 Neighbourhood Characteristics

4.6.3.2.1 Construction

Permanent property acquisitions and temporary easements may be required to facilitate the construction of the proposed road under rail grade separation (Figure 4.3).

The Hollywood Square commercial plaza (7380-7510 Kennedy Road) to the east of the railway alignment will no longer have access to Kennedy Road due to the depressed roadway and retaining walls and will continue to be accessible from two existing Gorvette Road entrances. Access out of Pacific Mall (4300 Steeles Avenue East) from the northern-most Kennedy Road entrance will be closed during construction and will remain accessible from the remaining two Kennedy Road entrances further south and the existing entrance on Steeles Avenue East. The bus stop, signage, landscape and parking along Kennedy Road at the Pacific Mall will be impacted by temporary easements and the proposed detour during construction. Retaining walls will be constructed along a portion of both sides of Kennedy Road to support the new depressed roadway and limit grading impacts on adjacent properties.

Metrolinx will continue to work with potentially affected local industries to support their operations during construction and to maintain business continuity to the extent feasible.

Table 4.4: Kennedy Road Affected Entrances

Business Address	Existing Entrances	Ultimate Entrances	Entrance Permanently Removed	Notes
7380-7510 Kennedy Road	3	2	Y	The entrance on Kennedy Road will be permanently closed, existing entrances on Gorvette Road will be maintained
4300 Steeles Avenue East	4	3	N	The northern-most Kennedy Road entrance will be temporarily closed, existing entrances on Kennedy Road and Steeles Avenue East will be maintained

4.6.3.2.2 Operation

Permanent easements are required to facilitate the operation of the proposed road under rail grade separation (Figure 4.3). Access to some commercial properties along Kennedy Road will be permanently altered due to the grade separation, as discussed in Section 4.6.3.2.1.

One entrance from Kennedy Road to an existing business (7380-7510 Kennedy Road) will be permanently removed. Two other existing entrances to this business from Gorvette Road will be maintained. There is the potential for negative effects on the business if patrons are unfamiliar with the existing entrances from Gorvette Road and choose to go elsewhere for their business.

The presence of the retaining walls will provide a partial sound barrier from vehicular traffic resulting in less noise for residents and businesses. Due to the depressed depth of the road under rail grade separation, noise, dust and vibration effects may be reduced during operations for residents and businesses.

4.6.3.3 Visual Impacts and Aesthetic Effect

4.6.3.3.1 Construction

The construction of the road under rail grade separation may result in temporary visual impacts and aesthetic effects due to the construction of infrastructure, lighting, vegetation removal, temporary storage sites for equipment, staging/laydown areas, stockpiling of material and other construction related activities.

4.6.3.3.2 Operations

The road under rail grade separation will result in a more prominent rail crossing that will be experienced by road users due to the depressed roadway as illustrated in Figure 2.4. The depressed roadway between Clayton Drive and Gorvette Road results in little or no change in visual character at ground level for adjacent properties. During operations, public facing retaining walls may permanently affect visual character and cause obstruction of views and reduced enjoyment. The sidewalks will be elevated from the roadway with guardrails on one side and retaining walls on the other side, which will change the visual character of the crossing.

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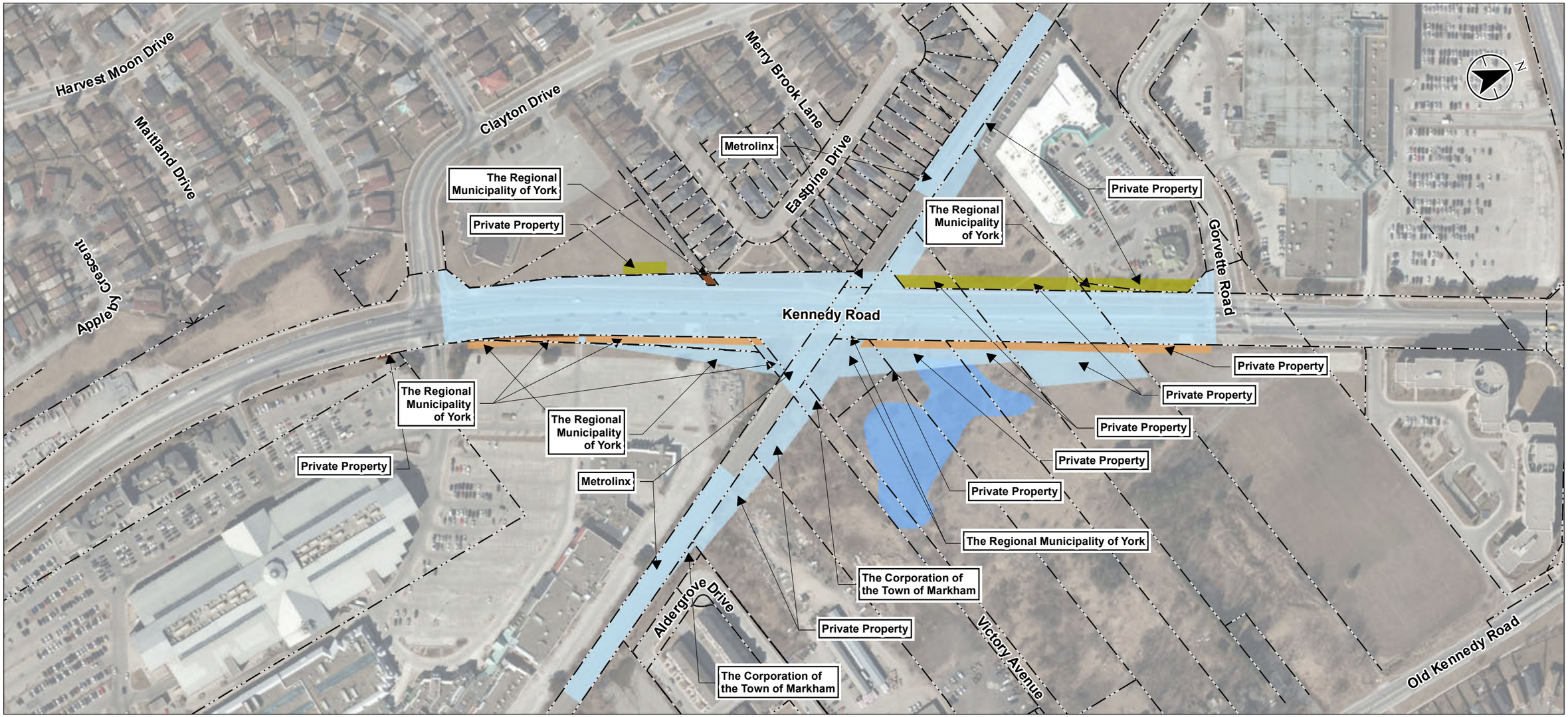

Legend

- Property Lines
- Wetland

Property Requirements

- Land Acquisition
- Temporary Land Use
- Permanent Easement
- Utility Easement

0 50 100 metres

1:2,750 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
4.3

Title
Anticipated Property Impacts at Kennedy Road

Notes
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2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery Date, 2018.

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4.6.3.4 Utilities

4.6.3.4.1 Construction

Project construction will result in impacts to utilities through physical works and construction activities within the Socio-Economic and Land Use Assessment Area. Temporary utility impacts will result from relocation, upgrading or replacements to watermains, pipelines, gas, hydro, street lighting, sewers and communication cables along Kennedy Road. Where possible, these utilities will be protected in place, however, if required, relocation and/or realignment of the utilities will occur in consultation with the applicable utility owners. With the implementation of utility relocation plans, effects on utility services will be limited. Utility conflicts along Kennedy Road are listed in Table 4.5.

Properties located within the Socio-Economic and Land Use Assessment Area may experience temporary service interruptions during utility realignment/relocation. In addition, utility works requiring realignment may result in the need for temporary road or lane closures changing access to nearby land uses, and could temporarily affect pedestrian, cyclist and vehicle movement along Kennedy Road.

Table 4.5: Utility Conflicts – Kennedy Road

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell, Bell 360, Metrolinx, Alectra, Rogers, Telus	Communication Cable, Buried Electric, Fiber Optic Cable, Hand Well, Railway Signal, Terminal Box, Utility Pole	Rail ROW, Municipal ROW	Relocate the Utility
Enbridge	Gas	Municipal ROW	Relocate the Utility
City of Toronto	Water	Municipal ROW	Relocate the Utility
York Region	Sanitary, Storm, Traffic Light, Water, Catch Basin, Communications Manhole, Drainage Manhole, Hand Well, Manhole, Sanitary Manhole, Traffic Signal, Utility Pole, Water Manhole	Rail ROW, Municipal ROW	Relocate the Utility, Protect in place
City of Markham	Light Standard, Manhole	Municipal ROW	Relocate the Utility

4.6.3.4.2 Operation

There are no anticipated effects on utilities associated with the proposed Project during operations. Once realignments are complete, service will be reinstated.

4.6.4 Passmore Avenue

4.6.4.1 Planning Policy Context

4.6.4.1.1 Construction

The construction of the Passmore Avenue road under rail grade separation may result in non-conformance with some municipal planning policies and zoning due to property acquisitions and temporary easements required for construction. The Project detailed design will address these concerns within the existing planning framework and provide conformity with the overall planning direction to minimize potential effects to planning and policies during the operations phase.

The Project improve transit connectivity into a Provincially Significant Employment Zone which will allow for more frequent train trips by employees, customers and the public through the Milliken GO Station.

4.6.4.1.2 Operation

The Project conforms with provincial and municipal land use policies which prioritize developments in major transit corridors through an increase in mix of uses that are supportive of future use of transit. The Project is compatible with City of Toronto Official Plan land use designations overlapped by the Socio-Economic and Land Use Assessment Area, as well as Site and Area Specific Policies. The road under rail grade separation is generally consistent with the City of Toronto's Official Plan (2015) to support pedestrian movement and reduce traffic conflicts. There are no known changes in land use designations other than the property acquisitions that may be required for the Project.

4.6.4.2 Neighbourhood Characteristics

4.6.4.2.1 Construction

Temporary easement areas and permanent property acquisitions may be required along Passmore Avenue to facilitate the road under rail grade separation (Figure 4.4). Business and employment properties fronting the proposed alignment may experience changes to property access, visibility and parking during project construction. Property acquisition areas and temporary easement areas to facilitate Project construction of the

road under rail grade separation are anticipated for up to 24 properties along Passmore Avenue.

Metrolinx will continue to work with potentially affected local industries to support their operations during construction and to maintain business continuity to the extent feasible.

During construction, two new permanent access roads will be constructed perpendicular to Passmore Avenue to maintain access to existing buildings: one access road will run north-south and connect to the north side of Passmore Avenue; the second access road will run north-south and connect to Milliken Boulevard on the south side of Passmore Avenue. As a result, property access is expected to be maintained along these access areas during construction. One bus stop will be permanently relocated to align with the new ROW.

Construction activities may also result in increased noise and dust nuisance effects which will be short term in duration. Retaining walls will be built along both sides of Passmore Avenue from approximately Milliken Boulevard to Silver Star Boulevard to limit grading impacts on adjacent properties and support the road under rail structure.

4.6.4.2.2 Operation

With the construction of access roads paralleling Passmore Avenue, the Project is not expected to limit property access during operations for residents and property users within the Socio-Economic and Land Use Assessment Area. In the vicinity of the grade separation, traffic noise along Passmore Avenue will be reduced over current levels given the depressed depth of the road.

Project design will result in changes to property access for properties east and west of the rail corridor. During operations, new public roads north and south of Passmore Avenue will provide continued access a total of seven properties on Passmore Avenue, and to maintain frontage on a public street for these properties. The existing number of entrances will be maintained for these properties where feasible. The reconfiguration and/or removal of entrances may affect the traffic flow through properties. The change in access and traffic flow may have potential negative effects to businesses if patrons cannot easily locate the business or have difficulty in accessing the business.
Table 4.6 below provides a summary of the number and location of entrances that will be permanently closed and the proposed entrances to maintain access to the properties.

Table 4.6: Passmore Avenue Business Entrance Impacts and Mitigation

Business Address	Existing Entrances to Passmore Avenue	Ultimate Entrances	Proposed Entrances to Business Locations
30 Passmore Avenue	1	1	Existing entrance from Passmore Avenue will be permanently closed and new public road will provide one relocated entrance
33 Passmore Avenue	2	2	Existing entrances on Passmore Avenue will be permanently closed. Existing entrance on Milliken Boulevard will be maintained. New public road will provide additional entrance
41 Passmore Avenue	2	2	Existing entrances on Passmore Avenue will be permanently closed and a new public road will provide two relocated entrances
49 Passmore Avenue	1	1	Existing entrance from Passmore Avenue will be permanently closed and new public road will provide one relocated entrance
50 Passmore Avenue	1	1	Existing entrance from Passmore Avenue will be permanently closed and new public road will provide one relocated entrance
65 Passmore Avenue	2	1	Existing entrances on Passmore Avenue will be permanently closed. One new entrance will be provided from future extension of Silver Star Boulevard
70 Passmore Avenue	1	1	Existing entrance will be permanently closed, and new entrance will be provided on Silver Star Boulevard

4.6.4.3 Visual Impacts and Aesthetic Effects

4.6.4.3.1 Construction

The construction of the road under rail grade separation may result in temporary visual impacts and aesthetic effects due to the construction of infrastructure, lighting, vegetation removal, temporary storage sites for equipment, staging/laydown areas, stockpiling of material and other construction-related activities. Employment properties are the primary land use along Passmore Avenue; therefore, the visual character of the area is not expected to significantly change.

4.6.4.3.2 Operation

The road under rail grade separation will result in a more prominent rail crossing that will be experienced by road users due to the depressed roadway as illustrated in Figure 2.6. The depressed roadway between Kennedy Road and Midland Avenue results in little or no change in visual character at ground level for adjacent properties. During operations, public facing retaining walls may permanently affect visual character and cause obstruction of views and reduced enjoyment. The sidewalks will be elevated from the roadway with guardrails on one side and retaining walls on the other side, which will change the visual character of the crossing.

4.6.4.4 Utilities

4.6.4.4.1 Construction

Project construction will result in impacts to utilities through physical works and construction activities within the Socio-Economic and Land Use Assessment Area. Temporary utility impacts will result from relocation, upgrading or replacements to watermains, pipelines, gas, hydro, street lighting, sewers and communication cables along Passmore Avenue. Where possible, these utilities will be protected in place, however, if required, relocation and/or realignment of the utilities will occur in consultation with the applicable utility owners. With the implementation of utility relocation plans, effects on utility services will be limited. Utility conflicts along Passmore Avenue are listed in Table 4.7.

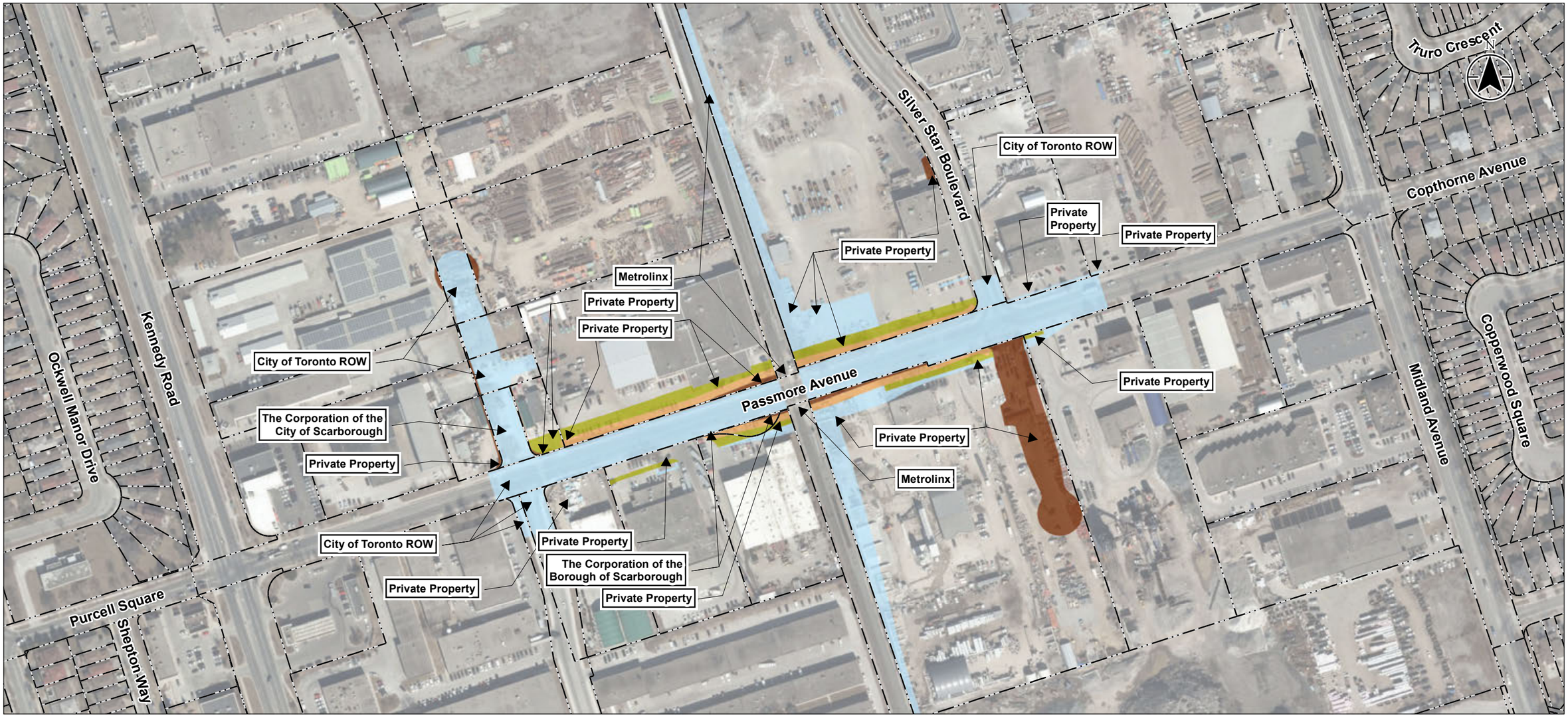
Properties located within the Socio-Economic and Land Use Assessment Area may experience temporary service interruptions during utility realignment/relocation. In addition, utility works requiring realignment may result in the need for temporary road or lane closures changing access to nearby land uses, and could temporarily affect pedestrian, cyclist and vehicle movement along Passmore Avenue.

Table 4.7: Utility Conflicts – Passmore Avenue

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell, Bell 360, Rogers	Communication Cable, Fiber Optic Cable	Rail ROW, Municipal ROW	Relocate the Utility
Enbridge	Gas, Gas Valve	Municipal ROW	Relocate the Utility
Toronto Hydro	Hydro, Anchor, Hand Well, Light Standard, Utility Pole	Rail ROW, Municipal ROW, Private Property	Relocate the Utility
City of Toronto	Sanitary, Storm, Traffic Light, Water, Catch Basin, Drainage Manhole, Fire Hydrant, Manhole, Sanitary Manhole, Traffic Signal Light, Valve Chamber, Water Valve	Rail ROW, Municipal ROW	Relocate the Utility, Protect in place
CN	Railway Signal Light, Utility Shed	Rail ROW, Municipal ROW	Relocate the Utility

4.6.4.4.2 Operation

No negative effects to utilities are anticipated during the operations phase of the Project because utilities will be reinstated to maintain existing function.



Legend

- Property Line

Property Requirements

- Permanent Easement
- Land Acquisition
- Temporary Land Use
- Utility Easement

0 50 100 metres

1:2,750 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
4.4

Title
Anticipated Property Impacts at Passmore Avenue

Notes
1. Coordinate System: NAD 1983 CSRS MTM 10
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3. Orthoimagery © First Base Solutions, 2019. Imagery Date, 2018.

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4.6.5 McNicoll Avenue

4.6.5.1 Planning Policy Context

4.6.5.1.1 Construction

Temporary easements and detour routes required during construction will impact properties within the Project Footprint. Impacts will be mitigated through detailed design to the extent feasible and there are no proposed changes to the existing land use as a result of the proposed improvements.

The Project improves transit connectivity into a Provincially Significant Employment Zone which will allow for more frequent train trips by employees, customers, and the public through the Milliken GO Station.

4.6.5.1.2 Operation

The Project conforms with provincial and municipal land use policies, which prioritize developments in major transit corridors through an increase in mix of uses that are supportive of future use of transit. The Project is compatible with City of Toronto Official Plan land use designations overlapped by the Socio-Economic and Land Use Assessment Area, as well as Site and Area Specific Policies. The road under rail grade separation is generally consistent with the City of Toronto's Official Plan (2015) to support pedestrian movement and reduce traffic conflicts. There are no known changes in land use designations other than the property acquisitions that may be required for the Project.

4.6.5.2 Neighbourhood Characteristics

4.6.5.2.1 Construction

Temporary easements during construction are required along the south side of McNicoll Avenue to implement the proposed road and pedestrian detours (Figure 4.5). Temporary easements will also be required along the east side of the rail corridor within the Project Footprint to accommodate a diversion of the tracks during construction of the Project. One entrance on the south side of McNicoll Avenue between the rail corridor and Silver Star Boulevard will be permanently closed due to the depressed roadway and retaining walls. Site signage, landscaping, access, and parking will be impacted along McNicoll Avenue. Access and landscaping will be impacted along Silver Star Boulevard. It is proposed that the access driveways will be modified but still functional as a result of the detour routes to accommodate the work zones during construction.

Metrolinx will continue to work with potentially affected local industries to support their operations during construction and to maintain business continuity to the extent feasible.

Employees and patrons of nearby businesses may experience nuisance effects such as construction noise, vibration and loss of privacy due to the increased number of workers and temporary access accommodations. Fugitive dust within the context of socio-economic and land use may also be a nuisance effect but is expected to be low and short term in duration as it is limited to construction activities.

4.6.5.2.2 Operation

Retaining walls will be constructed along a portion of both sides of McNicoll Avenue to support the new depressed roadway and limit grading impacts on adjacent properties. The presence of retaining walls will also provide a partial sound barrier from vehicular traffic resulting in less noise for businesses adjacent to McNicoll Avenue. Given the depressed depth of the road under rail grade separation structure, the potential for nuisance effects such as noise, dust and vibration effects may be reduced during operations for businesses adjacent to McNicoll Avenue.

Once the Project is constructed, properties fronting McNicoll Avenue between Milliken Boulevard and Silver Star Boulevard will no longer be directly accessible via McNicoll Avenue. Aside from one property, no other properties have existing vehicle access to McNicoll Avenue, so this effect will be limited to a decrease in direct pedestrian accessibility. Because these properties will be accessible via either Milliken Boulevard or Silver Star Boulevard, they will maintain frontage on a public street. No permanent property acquisition is required during operations.

Legend

Property Line

Property Requirements

Permanent Easement

Temporary Land Use

Utility Easement

0 50 100 metres

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Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

165011004 REVA

Figure No.
4.5

Title
Anticipated Property Impacts at McNicoll Avenue

Notes
1. Coordinate System: NAD 1983 CSRS MTM 10
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4.6.5.3 Visual Impacts and Aesthetic Effects

4.6.5.3.1 Construction

The construction of the road under rail grade separation may result in temporary visual impacts and aesthetic effects due to the construction of infrastructure, lighting, vegetation removal, temporary storage sites for equipment, staging/laydown areas, stockpiling of material and other construction-related activities. The Project's visual impacts are expected to be minor due to the commercial and institutional characteristics of the area.

4.6.5.3.2 Operations

Once construction is complete, the newly built road under rail grade separation will result in a more prominent rail crossing that will be experienced by road users due to the depressed roadway as illustrated in Figure 2.8. The depressed roadway between Milliken Boulevard and Silver Star Boulevard results in little or no change in visual character for adjacent properties at ground level.

4.6.5.4 Utilities

4.6.5.4.1 Construction

Utility realignments will be required where conflicts occur with existing utilities along McNicoll Avenue. Utility impacts are expected to be short term in duration with minimal impacts to surrounding residents and local business as no residential properties front the Project alignment. If required, realignment work may result in the need for temporary road or lane closures changing access to nearby land uses, and could temporarily affect pedestrian, cyclist and vehicle movements along McNicoll Avenue. Utility conflicts along McNicoll Avenue are listed in Table 4.8.

Table 4.8: Utility Conflicts – McNicoll Avenue

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell, Bell 360, Cogeco, Metrolinx, Rogers	Communication Cable, Fiber Optic Cable, Terminal Box	Rail ROW, Municipal ROW	Relocate the Utility
Enbridge	Gas, Gas Valve	Municipal ROW	Relocate the Utility
Toronto Hydro	Hydro, Hand Well, Terminal Box, Transmission Box, Utility Box	Municipal ROW,	Relocate the Utility

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
City of Toronto	Sanitary, Storm, Water, Anchor, Catch Basin, Fire Hydrant, Light Standard, Storm Manhole, Sanitary Manhole, Water Manhole, Traffic Signal Light, Utility Standard, Traffic Control Box, Water Valve	Municipal ROW	Relocate the Utility, Protect in place
Metrolinx	Railway Signal Light. Metal Utility Shed	Rail ROW	Remove the Utility, Relocate the Utility

4.6.5.4.2 Operation

Pumps and underground storage tanks have been conceptually designed for the stormwater system. There will be increased maintenance activities required for the stormwater system, compared to the existing system but the design will otherwise maintain existing capacity and function.

No negative effects to utilities are anticipated during the operations phase of the Project because utilities will be reinstated to maintain existing function.

4.6.6 Huntingwood Drive

4.6.6.1 Planning Policy Context

4.6.6.1.1 Construction

Temporary easements and detour routes required during construction will impact properties within the Project Footprint. Impacts will be mitigated through detailed design to the extent feasible and there are no proposed changes to the existing land use as a result of the proposed improvements.

4.6.6.1.2 Operation

The Project conforms to the provincial and municipal land use policies which prioritize developments in major transit corridors through an increase in a mix of land uses that are supportive of future transit use. Project construction and operations will adhere, to all applicable planning and regulation standards and requirements, where feasible, in accordance with the City of Toronto and AODA standards. Generally, the road under rail grade separation is consistent with the City of Toronto's Official Plan (2015) objectives to support pedestrian movement and reduce traffic conflicts.

4.6.6.2 Neighbourhood Characteristics

4.6.6.2.1 Construction

Temporary property impacts will occur along Huntingwood Drive between Kittery Boulevard and Greenberry Place during construction and potentially affect City of Toronto rights of way, Sir William Osler High School and residential properties along the rail corridor (Figure 4.6). The temporary property impact at Sir William Osler High School will remove a portion of the school's track. Up to seven permanent easements will occur in properties east of Belgreen Avenue on the north and south sides of Huntingwood Drive to accommodate proposed retaining walls.

Property access for residential and school properties located near project construction such as Sir William Osler High School will be maintained during construction. The Project is not expected to limit access for residents within the Socio-Economic and Land Use Assessment Area.

Occupants of residences located near project construction, as well as staff and students at Sir William Osler High School may experience nuisance effects such as construction noise, vibration and loss of privacy due to the increased number of workers and temporary access accommodations. Fugitive dust within the context of socio-economic and land use may also be a nuisance effect but is expected to be low and short term in duration as it is limited to construction activities. Noise barriers are in place along the rail corridor at Huntingwood Drive. To accommodate the rail detour, a portion of the noise barriers will require temporary removal resulting in potential temporary increase in noise levels.

Retaining walls will be constructed along a portion of both sides of Huntingwood Drive to limit grading impacts on adjacent properties and support the road under rail structure.

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Lynwood Heights Junior Public School
Buena Vista Avenue
Bellefontaine Street
Toronto District School Board
Sir William Osler High School
Southlawn Drive
Private Property
The Corporation of the City of Scarborough
The Corporation of the City of Scarborough
The Corporation of the City of Scarborough
Kennedy Road
Belgreen Avenue
Huntingwood Drive
Midland Avenue
Kittery Boulevard
Private Property
Tamora Court
Private Property
Private Property
Private Property
Private Property
Private Property
Emmeline Crescent
Private Property
Private Property
Private Property
Private Property
Private Property
Private Property
Kilchurn Castle
Linwood Avenue
Scotland Road

N

Legend

Property Line

Property Requirements

Permanent Easement

Temporary Land Use

0 50 100 metres

1:2,750 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
4.6

Title
Anticipated Property Impacts at Huntingwood Drive

Notes
1. Coordinate System: NAD 1983 CSRS MTM 10
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4.6.6.2.2 Operation

Retaining walls will be constructed along a portion of both sides of Huntingwood Drive to support the new depressed roadway and limit grading impacts on adjacent properties. The presence of retaining walls will also provide a partial sound barrier from vehicular traffic resulting in less noise for residents backing onto Huntingwood Drive. Given the depressed depth of the road under rail grade separation, the potential for nuisance effects such as noise, dust and vibration effects may be reduced during operations for residents backing onto Huntingwood Drive.

4.6.6.3 Visual Impacts and Aesthetic Effects

4.6.6.3.1 Construction

The construction of the road under rail grade separation may result in temporary visual impacts and aesthetic effects due to the construction of infrastructure, vegetation removal, temporary storage sites for equipment, staging/laydown areas, stockpiling of material and other construction-related activities. An area of vegetation located in the southeast quadrant of the Project Footprint will be removed during construction resulting in increased temporary visual exposure to the Project's construction.

4.6.6.3.2 Operation

The newly built road under rail grade separation will result in an elevated and more prominent rail crossing that will be experienced by road users as illustrated in Figure 2.10. The depressed road under rail grade separation may be less visible to residents at ground level (depending on their existing views) and occupants of Sir William Osler High School, located along Huntingwood Drive. The widened pedestrian and cycle lanes along Huntingwood Drive may also improve the visual aesthetics of the crossing as seen in Figure 2.10.

4.6.6.4 Utilities

4.6.6.4.1 Construction

Project construction will result in impacts to utilities through physical works and construction activities within the Socio-Economic and Land Use Assessment Area.

Watermains, and stormwater and sanitary sewers along Huntingwood Drive may be in conflict with the proposed grade separation, depending on detailed design. Where possible, these utilities will be protected in place however realignment will be required in some cases. The proposed stormwater management design includes holding tanks and pumps within the tanks which are anticipated to capture and control drainage.

Other utilities that may require relocation due to the Project include communication cables, fibre optic cables, gas, and hydro. These third-party utilities will be relocated as necessary following detailed project design.

Project construction will have potential short-term impacts on utilities to residents, businesses, institutions and surrounding communities through temporary service interruptions. In addition, realignment work may result in the need for temporary road or lane closures changing access to nearby land uses, and could temporarily affect pedestrian, cyclist and vehicle movement. Utility conflicts along Huntingwood Drive are listed in Table 4.9.

Table 4.9: Utility Conflicts – Huntingwood Drive

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell, Bell 360, Cogeco, Metrolinx, Rogers	Communication Cable, Fiber Optic Cable, Grade Level Box, Terminal Box	Rail ROW, Municipal ROW	Relocate the Utility
Enbridge	Gas, Curb Stop Valve, Gas Valve	Municipal ROW	Relocate the Utility
Toronto Hydro	Hydro, Hydro Transformer, Hand Well, Utility Pole	Municipal ROW	Relocate the Utility
City of Toronto	Sanitary, Storm, Water, Anchor, Borehole, Catch Basin, Drainage Manhole, Fire Hydrant, Light Standard, Sanitary Manhole, Traffic Signal Light, Water Valve	Rail ROW, Municipal ROW	Relocate the Utility, Protect in place
Metrolinx	Railway Signal Light	Rail ROW	Relocate the Utility

4.6.6.4.2 Operation

Pumps and underground storage tanks have been conceptually designed for the stormwater system. There will be increased maintenance activities required for the stormwater system, compared to the existing system.

No negative effects to utilities are anticipated during the operations phase of the Project because utilities will be reinstated to maintain existing function.

4.6.7 Havendale Road

4.6.7.1 Planning Policy Context

4.6.7.1.1 Construction

The construction of the Havendale Road multi-use crossing may result in non-conformance with some provincial and municipal planning policies and zoning due to potential property acquisitions and temporary easements during construction and operations. The Project detailed design will address these concerns within the existing planning framework and provide conformity with the overall planning direction to minimize potential effects to planning and policies during the operations phase.

4.6.7.1.2 Operation

The multi-use crossing, as a component of the overall Project, conforms with the provincial and municipal land use policies which prioritize developments in major transit corridors through an increase in mix of uses that are supportive of future use of transit. Project construction and operations will adhere to applicable planning and regulation standards and requirements, where feasible, in accordance with the City of Toronto and AODA standards.

4.6.7.2 Neighbourhood Characteristics

4.6.7.2.1 Construction

Temporary property impacts will occur along Havendale Road between Belgreen Avenue and Stainforth Drive during construction and potentially affect City of Toronto rights of way and residential properties. Three property acquisitions may be required east of Belgreen Avenue on the north side of Havendale Road to accommodate the multi-use crossing structure and ramps and the cul-de-sac (Figure 4.7).

Havendale Road will be permanently closed to traffic in advance for construction of the multi-use crossing (bridge or tunnel) and cul-de-sacs. Property access for residential properties and parklands located near the project construction area such as Havendale Park will be maintained during construction, however they may be temporary access restrictions to residential properties that will be impacted by the construction of the cul-de-sacs. Access to these properties will be maintained to the extent possible during construction.

Occupants of residences located near project construction may experience nuisance effects such as construction noise, vibration and loss of privacy due to the increased number of workers and access concerns. Fugitive dust within the context of socio-economic and land use may also be a nuisance effect but is expected to be low and short term in duration as it is limited to construction activities.

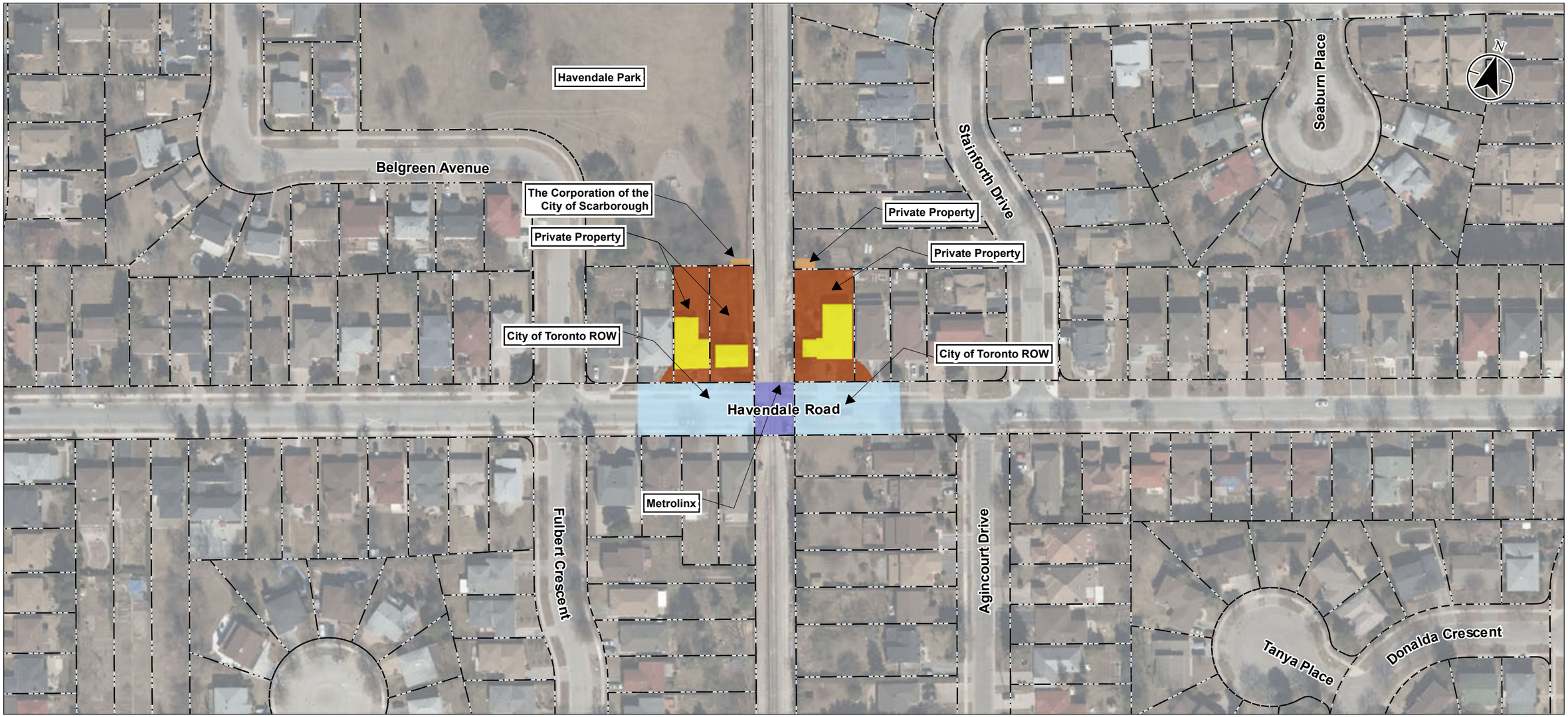
4.6.7.2.2 Operation

Once operational, the new multi-use crossing at Havendale Road will replace the existing at-grade crossing, improving the mobility of pedestrians and cyclists by permitting crossing with no delays due to train movements and providing a crossing from one public ROW to another, with longer travel time at the multi-use crossing.

A Crime Prevention Through Environmental Design (CPTED) assessment was completed for both the bridge and tunnel multi-use crossing options at Havendale Road. The CPTED assessment found that the bridge option had a medium risk of entrapment areas (Stantec 2020n). There was also a risk of concealment in areas underneath the ramp structure and a lack of sightlines when traversing the ramps and bridge due to corners. The CPTED assessment found that the tunnel option had a high risk of entrapment and isolation. Opportunities for concealment were identified within the tunnel corridor. There is no visibility of the tunnel from the street, and limited sightlines of the lower ramp landings from the beginning of the ramps. Other safety concerns include the potential for materials to be thrown off of the ramp of the Havendale multi-use crossing (bridge option). Metrolinx will follow CPTED design principals to address these concerns during detailed design.

The closure of Havendale Road at either side of the rail corridor to vehicular traffic will result in less nuisance effects such as noise and dust from traffic on adjacent properties.

Given the proposed road closure at Havendale Road, residents will experience an increase in travel times while accessing parks and schools within the Socio-Economic and Land Use Assessment Area, such as Agincourt Junior Public School. As a result of the ramp structure associated with the new crossing, pedestrians and cyclists may experience more inconvenience and longer travel times while crossing Havendale Road.



Legend

- Property Line

Property Requirements

- Permanent Easement
- Land Acquisition
- Building to be Demolished
- Metrolinx ROW
- Temporary Land Use

0 25 50 metres

1:1,500 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
4.7

Title
Anticipated Property Impacts at Havendale Road

Notes
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4.6.7.3 Visual Impacts and Aesthetic Effects

4.6.7.3.1 Construction

Construction activities associated with the Havendale Road multi-use crossing and cul-de-sacs may result in temporary visual impacts and aesthetic effects due to the construction of infrastructure including temporary noise barriers, lighting, vegetation removal, temporary storage sites for equipment, staging/laydown areas, stockpiling of material and other construction related activities. Residential properties fronting the Project Footprint are more likely to experience changes in visual character. Areas of vegetation on both sides of the existing road-rail crossing will be removed during construction resulting in increased temporary visual exposure to the Project's construction.

4.6.7.3.2 Operation

The proposed multi-use crossing options (bridge or tunnel) would result in different visual impacts to adjacent properties. The bridge option and associated ramps will be more visible to adjacent properties along Havendale Road (depending on their existing and anticipated line of sight), with adjacent properties experiencing the greatest visual effect. Bridge structure lighting will be visible at night from nearby properties. The visual effects associated with the tunnel option would be limited to near ground level. Barriers and property fencing will be approximately 1.8 metres high and visible from nearby properties. The tunnel and ramps will result in a more prominent crossing for pedestrians and cyclists at ground level in comparison to existing conditions. Given the vertical dimensions of the surrounding single-family residential properties, the anticipated visual character effects resulting from the new Havendale Road multi-use crossing will likely be limited to properties fronting the Project Footprint. New vegetation introduced on both sides of the multi-use crossing structure and ramps along Havendale Road may also improve the visual aesthetics of the crossing as illustrated in Figure 2.12.

4.6.7.4 Utilities

4.6.7.4.1 Construction

Construction activities will result in impacts to utilities through physical works within the Socio-Economic and Land Use Assessment Area. A utility pole, hydro, a light standard, telecommunications, a fire hydrant and a watermain valve along Havendale Road may be in conflict with the proposed multi-use crossing, depending on detailed design. Where possible, these utilities will be protected in place however relocation and/or realignment will be required in some cases which will occur in consultation with the

City of Toronto and other applicable utility owners. With the implementation of utility relocation plans, effects on utility services will be limited. Utility conflicts along Havendale Road are listed in Table 4.10.

Table 4.10: Utility Conflicts – Havendale Road

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell, Bell 360, Metrolinx, Rogers	Communication Cable, Fiber Optic Cable, Terminal Box	Rail ROW, Municipal ROW	Relocate the Utility
Enbridge	Gas, Curb Stop Valve, Gas Valve	Rail ROW, Municipal ROW	Protect in place
Toronto Hydro	Hydro, Hydro Meter, Hand Well, Utility Pole	Rail ROW, Municipal ROW	Relocate the Utility, Protect in place
City of Toronto	Sanitary, Storm, Water, Anchor, Catch Basin, Fire Hydrant, Light Standard, Sanitary Manhole, Water Valve	Municipal ROW	Relocate the Utility

4.6.7.4.2 Operation

No negative effects to other utilities are anticipated during the operations phase of the Project because utilities will be reinstated to maintain existing function. A stormwater catch-basin has been conceptually designed for the tunnel option of the Havendale Road multi-use crossing. A drainage system has been conceptually designed for the bridge option of the multi-use crossing. There will be increased maintenance activities required for catch-basin, compared to the existing system, but the design will otherwise maintain existing capacity and function.

4.6.8 Progress Avenue

4.6.8.1 Planning Policy Context

4.6.8.1.1 Construction

Temporary easements and detour routes required during construction will impact properties within the Project Footprint. Impacts will be mitigated through detailed design to the extent feasible and there are no proposed changes to the existing land use as a result of the proposed improvements.

4.6.8.1.2 Operation

The Project conforms to the provincial and municipal land use policies which prioritize developments in major transit corridors through an increase in a mix of land uses that are supportive of future transit use. Project construction and operations will adhere, to all applicable planning and regulation standards and requirements, where feasible, in accordance with the City of Toronto and AODA standards. Generally, the road over rail grade separation is consistent with the City of Toronto's Official Plan (2015) objectives to support pedestrian movement and reduce traffic conflicts.

4.6.8.2 Neighbourhood Characteristics

4.6.8.2.1 Construction

Temporary property impacts are anticipated in order to construct the road over rail grade separation. Temporary easements will be required on three private properties and within the City of Toronto Rights of Way. Permanent easements will be required on seven private properties along the Project Footprint to facilitate access to infrastructure and utilities once the Project is complete. Property impacts along Progress Road are illustrated in Figure 4.8.

Businesses fronting Progress Avenue will experience changes to property access, visibility, and parking during construction and temporary and potential permanent property acquisitions may remove parking spaces for up to eight property owners during construction. Seven property entrances will be permanently closed along Progress Avenue and William Kitchen Road to accommodate the road over rail grade separation, however, access to these businesses will be maintained during construction using temporary and permanent public roads. Access to William Kitchen Road from Progress Avenue will be closed during construction. Employees and patrons of nearby businesses may experience nuisance effects such as construction noise, vibration and loss of privacy due to the increased number of workers and temporary access accommodations. Fugitive dust within the context of socio-economic and land use may also be a nuisance effect but is expected to be low and short term in duration as it is limited to construction activities.

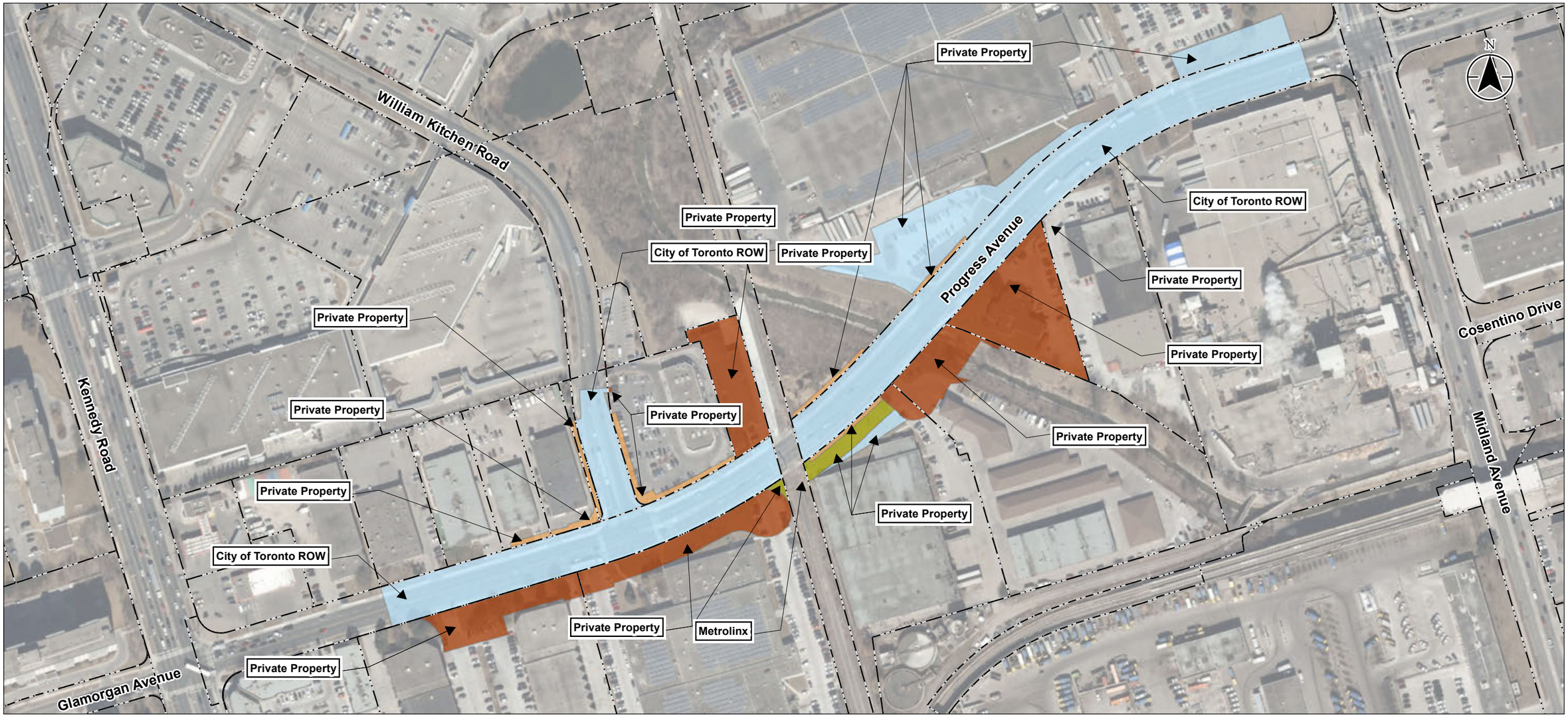
Metrolinx will continue to work with potentially affected local industries to support their operations during construction and to maintain business continuity to the extent feasible.

4.6.8.2.2 Operation

A permanent public access to 60 Progress Avenue is not feasible based on the reference concept design. This property may be acquired. Similarly, 77 Progress Avenue may be acquired to facilitate the permanent public access road to 55 and 65 Progress Avenue.The Project includes two new public roads to the south of the existing Progress Avenue. These new public roads will maintain frontage and access to buildings and properties, although modified from existing conditions. Access to 21, 31, 34, 45, 55, 65, , 80, and 85 Progress Avenue will be provided via new public roads as the grade separation will result in permanent alteration of the current entrance points of these properties to Progress Avenue. The number of entrances to properties fronting Progress Avenue will be maintained, with three exceptions. There are currently two entrances to 45 Progress Avenue, which will be reduced to one entrance from a new public road. The Progress Avenue entrance to 34 Progress Avenue and 1 William Kitchen Road will be removed; existing entrances on William Kitchen Road will be maintained, however closure of the Progress Avenue entrance will reduce the overall number of entrances to these properties from two to one. The reconfiguration and/or removal of entrances may affect the traffic flow through properties. The change in access and traffic flow may have potential negative effects to businesses if patrons cannot easily locate the business or have difficulty in accessing the business. The creation of these new public roads, including cul-de-sacs to City of Toronto standards at each terminus, will impact properties and may result in the required removal of parking spaces.

To maintain existing business operations at 80 and 111 Progress Avenue, a new private one-way access road will allow shunt trucks to move from 80 to 111 Progress Avenue. A negligible effect to operations of this business is anticipated.

A sidewalk along the east side of William Kitchen Road and stairs and/or a ramp from Progress Avenue to 45 Progress Avenue may be provided to allow continued pedestrian access to businesses. With these facilities, pedestrians will continue to be able to access businesses in this area and a negligible effect is anticipated in terms of additional travel time and distance.



Legend

- Property Line

Property Requirements

- Permanent Easement
- Land Acquisition
- Temporary Land Use
- Utility Easement

0 40 80 metres

1:2,500 (At original document size of 11x17)

Stantec

Project Location
Greater Toronto Area
Ontario

Prepared by BCC on 2020-12-16

Client/Project
165011004 REVA
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
4.8

Title
Anticipated Property Impacts at Progress Avenue

Notes
1. Coordinate System: NAD 1983 CSRS MTM 10
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery Date, 2018.

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4.6.8.3 Visual Impacts and Aesthetic Effects

4.6.8.3.1 Construction

The construction of the road over rail grade separation may result in temporary visual impacts and aesthetic effects due to the construction of infrastructure, lighting, vegetation removal, temporary storage sites for equipment, staging/laydown areas, stockpiling of material and other construction related activities. Employment/ industrial properties are the primary land use along Progress Avenue therefore, the visual character of the area is not expected to significantly change. Vegetation fronting the existing road-rail crossing and areas of vegetation located in the northeast portion of the Project Footprint to accommodate new access roads will be removed during construction resulting in increased temporary visibility of the Project's construction activities from the warehouses and industrial buildings located near the crossing.

4.6.8.3.2 Operation

The road over rail grade separation will result in a raised and more prominent roadway that will be experienced by road users and surrounding land uses as illustrated in Figure 2.15. The road over rail grade separation will require several retaining walls to support the grade separation structure. Retaining walls will be in place along most of the extent of the road over rail structure to limit grading impacts on adjacent properties. Additional retaining walls will be constructed along William Kitchen Road. Line of sight from north to south for properties fronting the grade separation will be impacted by the retaining walls. For properties on the north side of Progress Avenue this impact will extend from approximately William Kitchen Road east to 80 Progress Avenue. For properties on the south side of Progress Avenue this impact will extend from approximately 31 to 85 Progress Avenue. The elevated road over rail grade separation will be more visible to employees and patrons of nearby businesses and offices located along Progress Avenue when compared to existing conditions and will impact natural light through shading on properties in close proximity to the structure.

4.6.8.4 Utilities

4.6.8.4.1 Construction

Construction activities will result in impacts to utilities through physical works within the Assessment Area. Watermains, sanitary sewers, storm sewers along Progress Avenue may be in conflict with the construction of the proposed grade separation, depending on detailed design. Other potential utility conflicts include pipelines and gas, hydro and street lighting, and communication cables.

Project construction will have potential short-term effects on utilities to residents, businesses, institutions and neighbouring communities as a result of temporary service interruptions. As well, realignment and/or relocation work may result in the need for temporary road or lane closures affecting access to nearby properties, and could temporarily affect pedestrian, cyclist and vehicular travel.

Relocation and/or realignment of the utilities will occur in consultation with the City of Toronto and other applicable utility owners. With the implementation of utility relocation plans, effects on utility services will be limited. Utility conflicts along Progress Avenue are listed in Table 4.11.

Table 4.11: Utility Conflicts – Progress Avenue

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell, Bell 360, Metrolinx, Cogeco, Rogers, Telus	Communication Cable, Fiber Optic Cable, Signals Cable, Electric, Access Panel, Grade Level Box	Rail ROW, Municipal ROW	Relocate the Utility
Enbridge	Gas, Curb Stop Valve, Gas Valve	Municipal ROW	Relocate the Utility
Toronto Hydro	Hydro, Anchor, Hydro Light Standard, Hydro Transformer, Hydro Vault, Hand Well, Utility Pole	Rail ROW, Municipal ROW, Private property	Relocate the Utility
City of Toronto	Sanitary, Storm, Water, Anchor, Catch Basin, Drainage Manhole, Fire Hydrant, Manhole, Water Manhole, Sanitary Manhole, Traffic Control Box, Traffic Light, Valve Chamber, Water Valve	Rail ROW, Municipal ROW, Private property	Relocate the Utility
Metrolinx	Railway Shed, Railway Signal Light	Rail ROW	Relocate the Utility

4.6.8.4.2 Operation

No long-term adverse effects to utilities are anticipated during operation as utilities will be restored to maintain existing function.

4.7 Air Quality

4.7.1 Overview

The Project has the potential, at times, to result in temporary air quality impacts during construction as a result of increased fugitive dust emissions, construction equipment tailpipe emissions, vehicle emissions and associated dust, and train locomotive emissions. The future daily total number of diesel locomotive trips will be smaller than the corresponding number in 2015 due to the deployment of the electric trains, therefore local air quality assessments are not warranted. This assessment was conducted on a regional level.

Based on the results of the dispersion modelling assessment, potential air quality exceedances were identified if the maximum construction emissions scenario assumed for the modelling were to occur and coincide with worst-case meteorology. Scheduling construction activities to avoid the maximum emissions scenario occurring will aid in reducing the potential for adverse effects. As predicted by the model, on occasion, the impacts with the application of standard mitigation measures only may exceed the regulatory requirements, and when this occurs, the highest concentrations are located close to the construction activities, i.e., within a 30 m distance, and additional mitigation may be required at these locations (see Appendix A5 for details).

It is anticipated that potential effects can be avoided/limited through thoughtful construction scheduling, coupled with implementation of additional mitigation measures to limit the occurrence or duration of these short-term exceedances.

Potential effects are described below, while corresponding mitigation measures and monitoring activities relating to Air Quality are described in Section 4.11.

4.7.2 Denison Street

4.7.2.1 Construction

Heavy equipment use related to grade preparation, material handling and construction vehicle movement will result in dust generation, requiring implementation of monitoring and mitigation measures to limit the potential impacts from construction on sensitive receptors. The closest sensitive receptors identified include residential houses within 10 to 20 m northeast of the Project Footprint. Appropriate construction management should result in minimal and short-term effects to air quality.

4.7.2.2 Operation

A system-wide air quality study was undertaken to assess the operational impacts of GO Expansion along major segments of the Lakeshore West, Kitchener and Richmond Hill Rail Corridors as diesel train service will continue to play a major role along these corridors (refer to Appendix A5). The Stouffville Rail Corridor will be fully electrified as a part of the GO Expansion Program, resulting in overall benefits to air quality from electrified service and no negative impacts to air quality are anticipated during the operations phase of the project. The structural components assessed in this report will not have associated emissions during operations.

4.7.3 Kennedy Road

4.7.3.1 Construction

Heavy equipment use related to grade preparation, material handling and construction vehicle movement will result in dust generation, requiring implementation of monitoring and mitigation measures to limit the potential impacts from construction on sensitive receptors. The closest sensitive receptors identified include residential houses within 10 to 20 m northeast of the Project Footprint. Appropriate construction management should result in minimal and short-term effects to air quality.

4.7.3.2 Operation

A system-wide air quality study was undertaken to assess the operational impacts of GO Expansion along major segments of the Lakeshore West, Kitchener and Richmond Hill Rail Corridors as diesel train service will continue to play a major role along these corridors (refer to Appendix A5). The Stouffville Rail Corridor will be fully electrified as a part of the GO Expansion Program, resulting in overall benefits to air quality from electrified service and no negative impacts to air quality are anticipated during the operations phase of the project. The structural components assessed in this report will not have associated emissions during operations.

4.7.4 Passmore Avenue

4.7.4.1 Construction

Heavy equipment use related to grade preparation, material handling and construction vehicle movement will result in dust generation, requiring implementation of monitoring and mitigation measures to limit the potential impacts from construction on sensitive receptors. Sensitive receptors identified at this location, e.g., places of worship,

residential houses, daycare, are at least 150 m from the Project Footprint. Appropriate construction management should result in minimal and short-term effects to air quality.

4.7.4.2 Operation

A system-wide air quality study was undertaken to assess the operational impacts of GO Expansion along major segments of the Lakeshore West, Kitchener and Richmond Hill Rail Corridors as diesel train service will continue to play a major role along these corridors (refer to Appendix A5). The Stouffville Rail Corridor will be fully electrified as a part of the GO Expansion Program, resulting in overall benefits to air quality from electrified service and no negative impacts to air quality are anticipated during the operations phase of the project. The structural components assessed in this report will not have associated emissions during operations.

4.7.5 McNicoll Avenue

4.7.5.1 Construction

Heavy equipment use related to grade preparation, material handling and construction vehicle movement will result in dust generation, requiring implementation of monitoring and mitigation measures to limit the potential impacts from construction on sensitive receptors. Sensitive receptors identified at this Project location include a senior's long-term care and residence located in close proximity north of the west end of the Project Footprint. The two long term care/residence buildings are set back approximately 10 m from McNicoll Avenue. Appropriate construction management should result in minimal and short-term effects to air quality.

4.7.5.2 Operation

A system-wide air quality study was undertaken to assess the operational impacts of GO Expansion along major segments of the Lakeshore West, Kitchener and Richmond Hill Rail Corridors as diesel train service will continue to play a major role along these corridors (refer to Appendix A5). The Stouffville Rail Corridor will be fully electrified as a part of the GO Expansion Program, resulting in overall benefits to air quality from electrified service and no negative impacts to air quality are anticipated during the operations phase of the project. The structural components assessed in this report will not have associated emissions during operations.

4.7.6 Huntingwood Drive

4.7.6.1 Construction

Heavy equipment use related to grade preparation, material handling and construction vehicle movement will result in dust generation, requiring implementation of monitoring and mitigation measures to limit the potential impacts from construction on sensitive receptors. Sensitive receptors identified at this location include residential houses and schools. Most residential houses are located further than 20 m from the Project Footprint. However, houses located near the intersection of Huntingwood Drive and Belgreen Avenue are within 5 to 10 m north of the road detour. Appropriate construction management should result in minimal and short-term effects to air quality.

4.7.6.2 Operation

A system-wide air quality study was undertaken to assess the operational impacts of GO Expansion along major segments of the Lakeshore West, Kitchener and Richmond Hill Rail Corridors as diesel train service will continue to play a major role along these corridors (refer to Appendix A5). The Stouffville Rail Corridor will be fully electrified as a part of the GO Expansion Program, resulting in overall benefits to air quality from electrified service and no negative impacts to air quality are anticipated during the operations phase of the project. The structural components assessed in this report will not have associated emissions during operations.

4.7.7 Havendale Road

4.7.7.1 Construction

Heavy equipment use related to grade preparation, material handling and construction vehicle movement will result in dust generation, requiring implementation of monitoring and mitigation measures to limit the potential impacts from construction on sensitive receptors. Sensitive receptors identified at this Project location include residential houses which are setback approximately 10 m from the Project Footprint. Appropriate construction management should result in minimal and short-term effects to air quality.

4.7.7.2 Operation

A system-wide air quality study was undertaken to assess the operational impacts of GO Expansion along major segments of the Lakeshore West, Kitchener and Richmond Hill Rail Corridors as diesel train service will continue to play a major role along these corridors (refer to Appendix A5). The Stouffville Rail Corridor will be fully electrified as a part of the GO Expansion Program, resulting in overall benefits to air quality from

electrified service and no negative impacts to air quality are anticipated during the operations phase of the project. The structural components assessed in this report will not have associated emissions during operations.

4.7.8 Progress Avenue

4.7.8.1 Construction

Heavy equipment use related to grade preparation, material handling and construction vehicle movement will result in dust generation, requiring implementation of monitoring and mitigation measures to limit the potential impacts from construction on sensitive receptors. The closest sensitive receptors identified at this location include places of worship and a school (Enquiring Minds Montessori) located approximately 15 m setback from the Project Footprint. Appropriate construction management should result in minimal and short-term effects to air quality.

4.7.8.2 Operation

A system-wide air quality study to assess the operational impacts of GO Expansion along major segments of the Lakeshore West, Kitchener and Richmond Hill Rail Corridors as diesel train service will continue to play a major role along these corridors (refer to Appendix A5). The Stouffville Rail Corridor will be fully electrified as a part of the GO Expansion Program, resulting in overall benefits to air quality from electrified service and no negative impacts to air quality are anticipated during the operations phase of the project. The structural components assessed in this report will not have associated emissions during operations.

4.8 Noise and Vibration

4.8.1 Overview

The Project has the potential to result in noise and vibration effects during construction from detours (e.g., operation of the road and rail corridor detours during construction) and Project construction activities (e.g., heavy equipment operation, piling driving, etc.). The potential for effects during operation will be limited, once permanent infrastructure is established. It is anticipated that effects can be limited or avoided through implementation of mitigation measures as described in the Noise and Vibration Assessments (Appendix A6). Potential effects are described below, while corresponding mitigation measures and monitoring activities relating to noise and vibration are described in Section 4.11.

4.8.2 Denison Street

4.8.2.1 Construction

Construction of the road under rail grade separation at Denison Street will require detours of both the road and rail corridor. The use of heavy equipment associated with grade preparation including earth moving, excavation, and backfilling and infrastructure installation activities will be required for the detours. Construction activities may also involve pile driving to construct the grade separation foundation. A construction noise/vibration ZOI was established to identify where the greatest potential for noise and vibration impacts can be anticipated. Noise associated with construction and vegetation removal will be ongoing and occur on evenings and weekends throughout the construction phase.

An increase in sound levels at some receptors by 1-2 dB is anticipated due to the rail detour at Denison Street; however, a decrease in sound levels of 1-4 dB is also predicted as the proposed rail detour is shifted away from some other receptors at Denison Street. The analysis of the detour noise assessment indicated that predicted effects for all receptors were within applicable limits.

The analysis of construction noise indicated that the proposed construction equipment could be operated in compliance with the sound level limits stipulated by applicable guidelines.

The Stouffville Rail Corridor is expected to be shifted away from the subdivision east of the rail corridor at Denison Street, and therefore, a detour vibration assessment was not conducted.

Some receptors identified for the Project are within the established vibration ZOIs for the construction equipment and may experience vibration effects during construction. The potential for vibration effects from construction equipment can be controlled by increasing the setback distance and/or limiting the use of equipment within the ZOI.

4.8.2.2 Operation

Noise and vibration impacts are driven by the increased train traffic volumes along the Stouffville Rail Corridor and not the structural components assessed in this report. Future revenue rail service (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 will be diesel powered. The residential area to the northwest of the grade separation is shielded from the rail corridor by existing noise walls and therefore, the impact will be mitigated to a daytime noise level ($L_{eq,16h}$) of 49 dBA and a nighttime noise level ($L_{eq,8h}$) of 47 dBA.

The vibration impacts of the new track to be installed in the rail corridor were assessed. Vibration mitigation was investigated for the areas where the RMS vibration velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels) as per the 1995 Draft MOEE/GO Transit Noise and Vibration Protocol. Vibration mitigation was also investigated and recommended for the new switches to be installed. Where vibration mitigation is considered, it only addresses new trackwork and switches as it impractical to remove and replace existing trackwork to mitigate on the operating rail lines.

Additional information regarding operational noise and vibration for the Stouffville Rail Corridor can be found in the Noise and Vibration Study Stouffville Corridor located in Appendix A6.

4.8.3 Kennedy Road

4.8.3.1 Construction

Construction of the road under rail grade separation at Kennedy Road will require detours of both the road and rail corridor. The use of heavy equipment associated with grade preparation including earth moving, excavation, and backfilling and infrastructure installation activities will be required for the detours. Construction activities may also involve pile driving to construct the grade separation foundation. A construction noise/vibration ZOI was established to identify where the greatest potential for noise and vibration impacts can be anticipated. Noise associated with construction and vegetation removal will be ongoing and occur on evenings and weekends throughout the construction phase.

An increase in sound levels at some receptors by 1-2 dB is anticipated due to the rail detour at Kennedy Road; however a decrease in sound levels of 1-4 dB is also predicted as the proposed rail detour is shifted away from some other receptors at Kennedy Road. The analysis of the detour noise assessment indicated that predicted effects for all receptors were within applicable limits.

The analysis of construction noise indicated that the proposed construction equipment could be operated in compliance with the sound level limits stipulated by applicable guidelines.

The rail detour at the Kennedy Road will shift the ZOI from the centreline of the rail corridor to the nearest point of reception from 43 m to 40 m. The limited reduction in the setback distance between the rail corridor and the point of reception is not expected to result in a substantial change in vibration levels from existing conditions.

Some receptors identified for the Project are within the established vibration ZOIs for the construction equipment and may experience vibration effects during construction. The potential for vibration effects from construction equipment can be controlled by increasing the setback distance and/or limiting the use of equipment within the ZOI.

4.8.3.2 Operation

Noise and vibration impacts are driven by the increased train traffic volumes along the Stouffville Rail Corridor and not the structural components assessed in this report. Future revenue rail service (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 will be diesel powered. The residential area to the southwest of the grade separation are shielded from the rail corridor by existing noise walls and therefore, a daytime noise level ($L_{eq,16h}$) of 49 dBA and a nighttime noise level ($L_{eq,8h}$) of 48 dBA is expected this location.

The vibration impacts of the new track to be installed in the rail corridor were assessed. Vibration mitigation was investigated for the areas where the RMS vibration velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels) as per the 1995 Draft MOEE/GO Transit Noise and Vibration Protocol. Vibration mitigation was also investigated and recommended for the new switches to be installed. Where vibration mitigation is considered, it only addresses new trackwork and switches as it impractical to remove and replace existing trackwork to mitigate on the operating rail lines.

Additional information regarding operational noise and vibration for the Stouffville Rail Corridor can be found in the Noise and Vibration Study Stouffville Corridor located in Appendix A6.

4.8.4 Passmore Avenue

4.8.4.1 Construction

Construction of the road under rail grade separation at Passmore Avenue will require detours of both the road and rail corridor. The use of heavy equipment associated with grade preparation including earth moving, excavation, and backfilling and infrastructure installation activities will be required for the detours. Construction activities may also involve pile driving to construct the grade separation foundation. A construction noise/vibration ZOI was established to identify where the greatest potential for noise and vibration impacts can be anticipated. Noise associated with construction and vegetation removal will be ongoing and occur on evenings and weekends throughout the construction phase.

An increase in sound levels at some receptors by 1-2 dB is anticipated due to the rail detour at Passmore Avenue; however a decrease in sound levels of 1 dB is also predicted as the proposed rail detour is shifted away from some other receptors at Passmore Avenue. The analysis of the detour noise assessment indicated that predicted effects for all receptors were within applicable limits.

The analysis of construction noise indicated that the proposed construction equipment could be operated in compliance with the sound level limits stipulated by applicable guidelines.

No sensitive receptors are identified within 75 m of the Stouffville Rail Corridor at the Passmore Avenue grade separation site, and therefore, a detour vibration assessment was not conducted.

Some receptors identified for the Project are within the established vibration ZOIs for the construction equipment and may experience vibration effects during construction. The potential for vibration effects from construction equipment can be controlled by increasing the setback distance and/or limiting the use of equipment within the ZOI.

4.8.4.2 Operation

Noise and vibration impacts are driven by the increased train traffic volumes along the Stouffville Rail Corridor and not the structural components assessed in this report.Future revenue rail service (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 will be diesel powered. There are a number of industrial land uses within the Passmore Avenue area and the Project sound level at the closest receptor assessed (east of the corridor) is predicted to be 48 dBA during daytime ($L_{eq,16h}$) and 44 dBA during nighttime ($L_{eq,8h}$).

The vibration impacts of the new track to be installed in the rail corridor were assessed. Vibration mitigation was investigated for the areas where the RMS vibration velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels) as per the 1995 Draft MOEE/GO Transit Noise and Vibration Protocol. Vibration mitigation was also investigated and recommended for the new switches to be installed. Where vibration mitigation is considered, it only addresses new trackwork and switches as it impractical to remove and replace existing trackwork to mitigate on the operating rail lines.

Additional information regarding operational noise and vibration for the Stouffville Rail Corridor can be found in the Noise and Vibration Study Stouffville Corridor located in Appendix A6.

4.8.5 McNicoll Avenue

4.8.5.1 Construction

Construction of the road under rail grade separation at Passmore Avenue will require detours of both the road and rail corridor. The use of heavy equipment associated with grade preparation including earth moving, excavation, and backfilling and infrastructure installation activities will be required for the detours. Construction activities may also involve pile driving to construct the grade separation foundation. A construction noise/vibration ZOI was established to identify where the greatest potential for noise and vibration impacts can be anticipated. Noise associated with construction and vegetation removal will be ongoing and occur on evenings and weekends throughout the construction phase.

An increase in sound levels at some receptors by 1-2 dB is anticipated due to the rail detour at McNicoll Avenue; however a decrease in sound levels of 1 dB is also predicted as the proposed rail detour is shifted away from some other receptors at McNicoll Avenue. The analysis of the detour noise assessment indicated that predicted effects for all receptors were within applicable limits.

The analysis of construction noise indicated that the proposed construction equipment could be operated in compliance with the sound level limits stipulated by applicable guidelines.

No sensitive receptors are identified within 75 m of the Stouffville Rail Corridor at the McNicoll Avenue grade separation site, and therefore, a detour vibration assessment was not conducted.

Some receptors identified for the Project are within the established vibration ZOIs for the construction equipment and may experience vibration effects during construction. The potential for vibration effects from construction equipment can be controlled by increasing the setback distance and/or limiting the use of equipment within the ZOI.

4.8.5.2 Operation

Noise and vibration impacts are driven by the increased train traffic volumes along the Stouffville Rail Corridor and not the structural components assessed in this report. Future revenue rail service (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 will be diesel powered. The McNicoll Avenue area is comprised of commercial plazas and industries. The Project sound levels predicted at the closest receptor assessed (east of the corridor) in the area are 47 dBA for daytime ($L_{eq,16h}$) and 44 dBA for nighttime ($L_{eq,8h}$).

The vibration impacts of the new track to be installed in the rail corridor were assessed. Vibration mitigation was investigated for the areas where the RMS vibration velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels) as per the 1995 Draft MOEE/GO Transit Noise and Vibration Protocol. Vibration mitigation was also investigated and recommended for the new switches to be installed. Where vibration mitigation is considered, it only addresses new trackwork and switches as it impractical to remove and replace existing trackwork to mitigate on the operating rail lines.

Additional information regarding operational noise and vibration for the Stouffville Rail Corridor can be found in the Noise and Vibration Study Stouffville Corridor located in Appendix A6.

4.8.6 Huntingwood Drive

4.8.6.1 Construction

Construction of the road under rail grade separation at Hutingwood Drive will require detours of both the road and rail corridor. The use of heavy equipment associated with grade preparation including earth moving, excavation, and backfilling and infrastructure installation activities will be required for the detours. Construction activities may also involve pile driving to construct the grade separation foundation. A construction noise/vibration ZOI was established to identify where the greatest potential for noise and vibration impacts can be anticipated. Noise associated with construction and vegetation removal will be ongoing and occur on evenings and weekends throughout the construction phase.

An increase in sound levels at some receptors by 1-12 dB is anticipated due to the rail detour at Huntingwood Drive; however a decrease in sound levels of 1-3 dB is also predicted as the proposed rail detour is shifted away from some other receptors at Huntingwood Drive. The increase in sound levels at some receptors due to the rail detour is caused by the temporary removal of the existing rail corridor noise barriers adjacent to the Project Footprint at the Huntingwood Drive grade separation site.

The analysis of construction noise indicated that the proposed construction equipment could be operated in compliance with the sound level limits stipulated by applicable guidelines.

The rail detour at the Huntingwood Drive will reduce the setback distance from the centreline of the rail corridor to the nearest point of reception from 27 m to 23 m. The limited reduction in the setback distance between the rail corridor and the point of

reception is not expected to result in a substantial change in vibration levels from existing conditions.

Some receptors identified for the Project are within the established vibration ZOIs for the construction equipment and may experience vibration effects during construction. The potential for vibration effects from construction equipment can be controlled by increasing the setback distance and/or limiting the use of equipment within the ZOI. The results of the detour vibration assessment indicate that no mitigation measures are required, and hence not recommended for the Project.

4.8.6.2 Operation

Noise and vibration impacts are driven by the increased train traffic volumes along the Stouffville Rail Corridor and not the structural components assessed in this report. Future revenue rail service (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 will be diesel powered. Existing noise walls shield land uses on either side of the rail corridor and therefore, noise impact at these land uses are not expected to exceed 60 dBA during daytime ($L_{eq,16h}$) and 56 dBA during nighttime ($L_{eq,8h}$).

The vibration impacts of the new track to be installed in the rail corridor were assessed. Vibration mitigation was investigated for the areas where the RMS vibration velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels) as per the 1995 Draft MOEE/GO Transit Noise and Vibration Protocol. Vibration mitigation was also investigated and recommended for the new switches to be installed. Where vibration mitigation is considered, it only addresses new trackwork and switches as it impractical to remove and replace existing trackwork to mitigate on the operating rail lines.

Additional information regarding operational noise and vibration for the Stouffville Rail Corridor can be found in the Noise and Vibration Study Stouffville Corridor located in Appendix A6.

4.8.7 Havendale Road

4.8.7.1 Construction

No road or rail detours are required at Havendale Road. Construction of the multi-use crossing will require the use of heavy equipment associated with grade preparation including earth moving, excavation, and backfilling and infrastructure installation. Construction activities may also involve pile driving. A construction noise/vibration ZOI was established to identify where the greatest potential for noise and vibration impacts

can be anticipated. Noise associated with construction and vegetation removal will be ongoing and occur on evenings and weekends throughout the construction phase.

The analysis of construction noise indicated that the proposed construction equipment could be operated in compliance with the sound level limits stipulated by applicable guidelines.

Some receptors identified for the Project are within the established vibration ZOIs for the construction equipment and may experience vibration effects during construction. The potential for vibration effects from construction equipment can be controlled by increasing the setback distance and/or limiting the use of equipment within the ZOI.

4.8.7.2 Operation

Noise and vibration impacts are driven by the increased train traffic volumes along the Stouffville Rail Corridor and not the structural components assessed in this report. Future revenue rail service (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 will be diesel powered. Existing noise walls shield land uses on either side of the rail corridor and therefore, noise impact at these land uses are not expected to exceed 60 dBA during daytime ($L_{eq,16h}$) and 56 dBA during nighttime ($L_{eq,8h}$).

The vibration impacts of the new track to be installed in the rail corridor were assessed. Vibration mitigation was investigated for the areas where the RMS vibration velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels) as per the 1995 Draft MOEE/GO Transit Noise and Vibration Protocol. Vibration mitigation was also investigated and recommended for the new switches to be installed. Where vibration mitigation is considered, it only addresses new trackwork and switches as it impractical to remove and replace existing trackwork to mitigate on the operating rail lines.

Additional information regarding operational noise and vibration for the Stouffville Rail Corridor can be found in the Noise and Vibration Study Stouffville Corridor located in Appendix A6.

4.8.8 Progress Avenue

4.8.8.1 Construction

Construction of the road over rail grade separation at Progress Avenue will require a road detour. The use of heavy equipment associated with grade preparation including earth moving, excavation, and backfilling and infrastructure installation activities will be required for the detours. Construction activities may also involve pile driving to construct

the grade separation foundation. A construction noise/vibration ZOI was established to identify where the greatest potential for noise and vibration impacts can be anticipated.

The analysis of construction noise indicated that the proposed construction equipment could be operated in compliance with the sound level limits stipulated by applicable guidelines. Noise associated with construction and vegetation removal will be ongoing and occur on evenings and weekends throughout the construction phase.

Some receptors identified for the Project are within the established vibration ZOIs for the construction equipment and may experience vibration effects during construction. The potential for vibration effects from construction equipment can be controlled by increasing the setback distance and/or limiting the use of equipment within the ZOI.

4.8.8.2 Operation

Noise and vibration impacts are driven by the increased train traffic volumes along the Stouffville Rail Corridor and not the structural components assessed in this report. Future revenue rail service (including the added 10% during peak service periods) will consist of 351 trips per day, of which only 14 will be diesel powered. There are a number of business and industrial land uses in the Progress Avenue area and no sensitive receptors are identified in the vicinity. The closest sensitive receptor assessed along the corridor is south of Ellesmere Road and is shielded by a noise barrier. The maximum Project sound levels predicted at this location are 57 dBA for daytime ($L_{eq,16h}$) and 54 dBA for nighttime ($L_{eq,8h}$).

The vibration impacts of the new track to be installed in the rail corridor were assessed. Vibration mitigation was investigated for the areas where the RMS vibration velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels) as per the 1995 Draft MOEE/GO Transit Noise and Vibration Protocol. Vibration mitigation was also investigated and recommended for the new switches to be installed. Where vibration mitigation is considered, it only addresses new trackwork and switches as it impractical to remove and replace existing trackwork to mitigate on the operating rail lines.

Additional information regarding operational noise and vibration for the Stouffville Rail Corridor can be found in the Noise and Vibration Study Stouffville Corridor located in Appendix A6.

4.9 Traffic and Transportation

4.9.1 Overview

Project construction activities may result in changes to traffic and transportation through access changes resulting in increased travel time, detours and lane restrictions. It is assumed that the proposed construction work at the seven grade separation locations will proceed sequentially in two separate phases, grouped as follows:

- Construction Phase 1: In this phase, construction will be conducted at four locations at the same time: Kennedy Road, Passmore Avenue, Huntingwood Drive, and Progress Avenue.
- Construction Phase 2: In this phase, construction of remaining three locations at Denison Street, McNicoll Avenue, and Havendale Road will be completed. During Construction Phase 2, the grade separations at the four locations in Construction Phase 1 will be operational, providing extra capacity for the east-west crossings.

This conceptual scenario is anticipated to be a conservative representation of the general staging approach and level of impact anticipated for the project. Although this may be adjusted during detailed design, it is considered to effectively define a conservative case for impacts.

4.9.2 Denison Street

4.9.2.1 Road Network

4.9.2.1.1 Construction

Denison Street will be diverted to the south between Clayton Drive and Gorvette Road/ Milliken-Meadows Drive, maintaining a minimum of two lanes of traffic (one lane in each direction). There will be limited and localized delays through the construction zone as a result of the reduction of lanes from a four-lane roadway to a two-lane roadway. Some limited delays may be experienced due to lane reductions and disruption through construction zones, especially during high volume periods. The tracks will be temporarily shifted to the east to accommodate construction of the rail bridge. Vehicle travel times are expected to be temporarily affected following such detours.

Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic accidents.

4.9.2.1.2 Operation

A positive effect on the road network is anticipated as a result of the new road under rail grade separation at Denison Street, which is expected to improve traffic operations by making the operations free-flow instead of having trains pass periodically and stop traffic.

The grade separation along Denison Street will result in the closure of one entrance to an existing building at 1490 Denison Street. The building has an existing alternate access at Denison Street and Clayton Drive and a new entrance is not proposed. The grade separation will also result in a closure to an existing entrance to 1525 Denison Street but the property has an existing access on Gorvette Road so a new entrance is not proposed. These access closures will result in changes to traffic patterns and vehicle access at these properties and may result in inconvenience to property owners and business patrons.

4.9.2.2 Transit Network

4.9.2.2.1 Construction

YRT Route 2 (Milliken) travels along Denison Street. By maintaining two lanes of traffic, limited bus delays may be experienced through the construction zone. The bus stops at Denison Street and Clayton Drive and Denison Street and Milliken Meadows Drive/ Gorvette Road will be maintained during construction and can be accessed using the pedestrian sidewalk on the south side of Denison Street and crossing to the north side for westbound travel.

4.9.2.2.2 Operation

The existing bus stop located on the north side of Denison Street east of Clayton Drive will be relocated slightly to account for the new sidewalk in order to meet accessibility standards. No changes to travel distance are observed and the construction will only improve the pedestrian and transit environment.

The eastbound bus at Denison Street and Gorvette Road will be maintained.

4.9.2.3 Cycling, Pedestrian and Trail Network

4.9.2.3.1 Construction

A temporary at-grade sidewalk will be constructed along the south side of the road detour to provide continued access for pedestrians, replacing the existing sidewalk along the south side of Denison Street and multi-use path running north along Denison

Street between the rail corridor and Milliken Meadows Drive. The multi-use path will be removed during construction. There is an existing pedestrian access connecting to the south entrance of 1490 Denison Street that will be unavailable during construction. Instead, pedestrians traveling westbound will be required to use the south sidewalk on Denison Street, cross at Clayton Drive and enter through the north entrance of the property. This detour will require approximately 200 m (or 3 minutes) in additional travel for pedestrians who typically access the site via Denison Street north sidewalk. Pedestrian access to 1525 Denison Street will not be impacted by construction as the sidewalk and entrance on the east of the property will be maintained.

4.9.2.3.2 Operation

New elevated sidewalks along both sides of Denison Street will improve pedestrian and cyclist movement. On the north side of Denison Street, the sidewalk will continue west of the rail corridor. This will provide an improvement over existing conditions where the multi-use path terminates at the rail corridor and does not provide continued connectivity to the west of the rail corridor. Upgraded sidewalks with protective barrier fencing interfacing with vehicles along Denison Street will enhance pedestrian and cyclist mobility. The pedestrian connection to the south entrance of 1490 Denison Street will be reinstated post construction but will have a slight grade change. This connection can be accessed from the new sidewalk on the north side of Denison Street. Therefore, preconstruction pedestrian access points to 1490 and 1525 Denison Street will be made available post-construction and no negative impacts are anticipated in relation to pedestrian travel time.

A maximum grade of -5% is designed at this site, ensuring accessibility requirements are met. Given the difference in grade from existing to proposed conditions, pedestrians and cyclists may experience some inconvenience and increased travel time due to the slope associated with the grade separation. The grade separation will also result in shaded areas beneath the rail bridge, which may impact visibility for those crossing under the bridge.

4.9.3 Kennedy Road

4.9.3.1 Road Network

4.9.3.1.1 Construction

Temporary impacts to road users will occur during construction of the road under rail grade separation at Kennedy Road. Construction activities such as site preparation, temporary laydown areas, and roadworks will result in partial road and lane closures.

Some limited and localized delays will be experienced due to lane reductions and disruption through construction zones, especially during high volume periods.

During construction of the road under rail grade separation, Kennedy Road will be detoured to the east of the existing alignment to maintain connectivity. The detour will maintain four traffic lanes (i.e., two in each direction) that will be extended from north of Clayton Drive to south of Gorvette Road. To accommodate construction of the rail bridge, tracks will be temporarily shifted northward. Vehicle travel times are expected to be temporarily affected as a result of such detours.

Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic accidents.

4.9.3.1.2 Operation

Project operations are expected to have a positive effect on transportation with improvements to traffic flow along Kennedy Road following the road under rail grade separation. The grade separation at Kennedy Road will result in the closure of one entrance to an existing building (7380-7510 Kennedy Road). The building has two other existing alternate accesses and no new entrances are proposed. These access closures will result in changes to traffic patterns and vehicle access at these properties and may result in inconvenience to property owners and business patrons.

4.9.3.2 Transit Network

4.9.3.2.1 Construction

As a result of the road detour, road segments and intersections along Kennedy Road may experience increased traffic congestion and travel times during construction. Bus routes along Kennedy Road may also experience increased transit delays given road detours. Two transit stops that are served by YRT's Route 8 will be relocated temporarily during construction. The southbound bus stop located on the nearside (north) of the intersection of Kennedy Road and Clayton Drive will be temporarily relocated to the far side (south) of the intersection. Impacts to pedestrian travel time are anticipated to be minimal, requiring pedestrians to cross to the far side (maximum less than one minute added).

Northbound stop located at Kennedy Road south of the at-grade rail crossing will be relocated temporarily to the far side (north) of the intersection at Clayton Road. This change improves pedestrian access to transit by locating the stop closer to an

intersection. Under existing conditions, pedestrians must cross at Clayton Drive to access this stop because there are no alternative pedestrian signals to travel from the west side of Kennedy Road to the east side. The relocation of the northbound bus stop is, therefore, expected to reduce pedestrian travel time by approximately 2.5 minutes. The existing northbound bus stop at Gorvette Road will be maintained.

4.9.3.2.2 Operation

The southbound bus stop at Clayton Drive will be reinstated to its previous position on the nearside (north) of Clayton Drive and Kennedy Road. The northbound stop will be relocated from 160 m north of Clayton Road to the nearside (south) of the Clayton Road intersection. Locating transit stops at intersections instead of mid-block improves pedestrian access by providing safer crossing opportunities. This will also reduce travel time for pedestrians who previously walked 160 m from Clayton Drive to the bus stop to travel northbound. The existing northbound bus stop at Gorvette Road will be maintained.

Due to roadway widening, the existing bus stop located on the east side of Kennedy Road north of Clayton Drive will be located closer to Clayton Drive to avoid conflict with the road under rail grade separation.

4.9.3.3 Cycling, Pedestrian and Trail Network

4.9.3.3.1 Construction

An at-grade sidewalk, aligning with York Region’s standards, will be constructed on the east side of the detour. It will be separated from northbound traffic lanes by temporary concrete barriers. The greatest impacts on pedestrians and cyclists will be the closure of two pedestrian walkways from Eastpine Drive to Kennedy Road. Pedestrians wishing to travel from the residential neighbourhoods on the west side to the commercial properties off Gorvette Road must use the intersection at Clayton Drive to cross to the east side of Kennedy Road, travel north on Kennedy Road using the temporary sidewalk on the east side of the street, and cross to the west side on Gorvette Road. This represents a maximum anticipated deviation of approximately 600 m (or 8.5 minutes) compared to existing conditions, but may be slightly shorter depending on the origin of the trip.

4.9.3.3.2 Operation

Elevated sidewalks and new raised cycle tracks with protective barrier fencing along Kennedy Road will be provided on both sides of Kennedy Road and designed to York Region and AODA standards, which will match existing conditions in terms of pedestrian and cycling connections.

Post construction, pedestrian access from Eastpine Drive to Kennedy Road will be maintained through one walkway. Through this connection, pedestrians and cyclists can travel from the neighbourhoods west of Kennedy Road to the north-south sidewalk and raised cycle track on Kennedy Road. The second pedestrian walkway from Eastpine Drive to Kennedy Road will be removed, but this change will have minimal impacts to pedestrian travel time. The grade separation will also result in shaded areas beneath the rail bridge, which may impact visibility for those crossing under the bridge.

4.9.4 Passmore Avenue

4.9.4.1 Road Network

4.9.4.1.1 Construction

Temporary impacts to road users will occur during construction of the road under rail grade separation at Passmore Avenue. Construction activities such as site preparation, temporary laydown areas, and roadworks will result in partial sidewalk and road lane closures that may impact pedestrian, cyclist and vehicular travel times, turning movements and access to neighbouring properties.

During construction of the road under rail grade separation, a minimum of one lane of traffic will be maintained in each direction along a detour to be constructed directly south of the existing Passmore Avenue. The detour road will be extended from Milliken Boulevard in the west to the east of Silver Star Boulevard in the east. There will be limited and localized delays due to lane reductions and disruption through construction zones, especially during high volume periods. Construction may also increase travel times and traffic congestion times at nearby signalization intersections along Kennedy Road, Milliken Boulevard and Midland Road. Access from Passmore Avenue to Silver Star Boulevard will be closed during construction resulting in potential increased travel times as vehicles will be required to detour to alternative routes.

The tracks will be temporarily shifted to the east to accommodate construction of the rail bridge. Vehicle travel times are expected to be temporarily affected following such detours.

Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic accidents.

4.9.4.1.2 Operation

During operations, traffic flow along Passmore Avenue will be improved through reduced congestion and travel times as train conflicts will be eliminated. Access to properties to the south of Passmore Avenue and west of the rail corridor will be maintained. The final design of the access roads is still being investigated through ongoing consultation with stakeholders and the City of Toronto.

4.9.4.2 Transit Network

4.9.4.2.1 Construction

As a result of the road detour, road segments and intersections along Passmore Avenue may experience increased traffic congestion and travel times during construction. There are two TTC transit routes that will be impacted by the proposed changes during construction. Route 43 operates north-south along Kennedy Road but uses Passmore Avenue to access Milliken GO Station at the end of the route. Closure of Silver Star Boulevard will not impact the route alignment as buses will be able to travel west on Passmore Avenue. However, the bus stop at the Silver Star Boulevard intersection will be relocated east approximately 150 m to a mid-block location during construction. This will increase walking distances by approximately 150 m (or two minutes) for pedestrians on the north side compared to today. Pedestrians traveling from the south side of Passmore Avenue will be required to cross at Midland Avenue instead of Silver Star Boulevard to access this stop, adding approximately 300 m (or 4 minutes) to the travel distance, or less depending on the trip origin.

The proposed vehicular access closure from Passmore Avenue to Silver Star Boulevard north approach will impact TTC Route 57 northbound that turns from Midland Avenue to Passmore Avenue, turns right at the intersection at Silver Star Boulevard, and continues to Steeles Avenue East. The potential alternative re-routings include:

a) Alternative 1: rerouting through Passmore Avenue (through detour road), Kennedy Road, and Steeles Avenue East, or

b) Alternative 2: rerouting through Midland Avenue, Steeles Avenue East, Turff Avenue, Thelma Avenue, and Old Kennedy Road.

TTC Route 57 temporary rerouting alternatives are under review and will be discussed with TTC and confirmed at later stages.

4.9.4.2.2 Operation

The bus stop opposite 65 Passmore Avenue (TTC Bus Stop 11253) will be relocated permanently slightly east of Milliken Boulevard. The relocated bus stop is safer for active transportation users who can now cross at Milliken Boulevard to get to the bus stop instead of at the GO tracks or mid-block like today. The bus stop on Passmore Avenue at Silver Star Boulevard (TTC Bus Stop 11252) will be restored to the nearside (east) of Silver Star Boulevard and pedestrian travel times will return to existing conditions.

Bus routes operating on Silver Star Boulevard will be able to operate the same as preconstruction, but the extension of Silver Star Boulevard and future development may result in changes to transit route alignments in the future.

4.9.4.3 Cycling, Pedestrian and Trail Network

4.9.4.3.1 Construction

An at-grade sidewalk, aligning with the City of Toronto's standards, will be constructed along the south side of the detour road that will be separated from the eastbound traffic lane by temporary concrete barriers. Temporary sidewalks north of the construction zone will also be provided to connect pedestrians to local properties. This will impact pedestrian travel time when walking to transit routes on Passmore Avenue, as described above.

During construction, the east branch pedestrian crossing at the intersection of Passmore Avenue and Milliken Boulevard may be temporarily closed for use. Pedestrians would have to travel to the west branch of the pedestrian crossing at this intersection to cross resulting in additional pedestrian travel time.

4.9.4.3.2 Operation

Elevated sidewalks and new intermediate-level cycle tracks with protective barrier fencing along Passmore Avenue will be provided on both sides of Passmore Avenue and designed to City of Toronto and AODA standards, which will match existing conditions in terms of pedestrian and cycling connections. Post construction entrance closures along Passmore Avenue will not impact pedestrian and cycling access to these properties as all pedestrian connections will be restored post construction.

The future extensions of Silver Star Boulevard and Redlea Avenue will provide new north-south active transportation connections off Passmore Avenue. A new sidewalk on the west side of Silver Star Boulevard will be built to provide access to 85 Passmore Avenue.

The signalized intersections at Passmore Avenue and Redlea Avenue as well as Passmore Avenue and Silver Star Boulevard will be converted into full four-legged signalized intersections and support multi-modal traffic, including pedestrian crossings on all four branches.

Given the difference in grade from existing to proposed conditions, pedestrians and cyclists may experience some inconvenience and increased travel time due to the slope associated with the grade separation. The grade separation will also result in shaded areas beneath the rail bridge which may impact visibility for those crossing under the bridge.

4.9.5 McNicoll Avenue

4.9.5.1 Road Network

4.9.5.1.1 Construction

Temporary impacts to road users will occur during construction of the road under rail grade separation at McNicoll Avenue. Construction activities such as site preparation, temporary laydown areas, and roadworks will result in partial sidewalk and lane closures that may impact pedestrian, cyclist and vehicular travel times, turning movements and access to neighbouring properties.

During construction of the road under rail grade separation, McNicoll Avenue will be diverted to the south between Milliken Boulevard and Silver Star Boulevard, maintaining two lanes of traffic in each direction. There will be limited and localized delays due to lane reductions and disruption through construction zones, especially during high volume periods. Signalized intersections at Kennedy Road, Midland Avenue, and Milliken Boulevard may be impacted by these localized delays.

The tracks will be temporarily shifted to the east to accommodate construction of the rail bridge. Vehicle travel times are expected to be temporarily affected following such detours.

Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic accidents.

4.9.5.1.2 Operation

During operations, traffic flow along McNicoll Avenue will be improved through reduced congestion and travel times as train conflicts will be eliminated. The grade separation at McNicoll Avenue will result in the closure of one entrance to an existing building (2155 McNicoll Avenue). The building has an existing alternate access on Silver Star Boulevard which will be maintained, and a new entrance from McNicoll Avenue is not feasible due to the grade difference. Pedestrian connections to the future China City Development Inc. (located at the corner of McNicoll Avenue and Silver Star Boulevard) will be maintained through reinstating the existing sidewalk connection at McNicoll Avenue and Silver Star Boulevard. A stair connection will also be added to the west of the intersection along McNicoll Avenue.

4.9.5.2 Transit Network

4.9.5.2.1 Construction

As a result of the road detour, road segments and intersections along McNicoll Avenue may experience increased traffic congestion and travel times during construction. The existing bus stop (ID 15006) is served by TTC Route 42 and will remain operational during the construction period. No impacts to transit are anticipated as the bus route and stops will continue to operate the same as today. Westbound bus stop 14332 and eastbound stop 14332 at the McNicoll bus loop are currently inactive due to construction along McNicoll Avenue between Milliken Boulevard and the rail corridor, are presumed to become active again once construction is completed.

4.9.5.2.2 Operation

The existing eastbound bus stop on Route 42 (ID 15006) will remain operational during and post construction. No impacts to transit are anticipated as the bus route and stops will continue to operate the same as today.

4.9.5.3 Cycling, Pedestrian and Trail Network

4.9.5.3.1 Construction

Existing access to the hydro corridor multi-use path will be maintained during construction through a temporary multi-use path, built to City of Toronto standards along south side of the detour road between Milliken Boulevard and Silver Star Boulevard. The multi-use path will be separated from the diverted roadway using temporary concrete barriers.

4.9.5.3.2 Operation

Elevated sidewalks with protective barrier fencing interfacing with vehicles along McNicoll Avenue will facilitate increased pedestrian and cyclist mobility and safety. A bi-directional cycle track for cyclists will be installed on the south side of McNicoll Avenue. Properties on the north side of the street (TTC McNicoll Garage and the future China City Development Inc.) will have pedestrian access restored, allowing pedestrians to access south entrances on these properties. Given the difference in grade from existing to proposed conditions, pedestrians and cyclists may experience some inconvenience and increased travel time due to the slope associated with the grade separation. The grade separation will also result in shaded areas beneath the rail bridge which may impact visibility for those crossing under the bridge.

4.9.6 Huntingwood Drive

4.9.6.1 Road Network

4.9.6.1.1 Construction

Temporary impacts to road users will occur during construction of the road under rail grade separation at Huntingwood Drive. Construction activities such as site preparation, temporary laydown areas, and roadworks will result in partial road and lane closures that may affect traffic and travel times.

A road detour to the north of Huntingwood Drive will be required during construction; however, a minimum one lane of traffic is to be maintained in each direction between Belgreen Avenue to the west and Kittery Boulevard to the east. Only right in and right out movements to/from Kittery Boulevard will be allowed during the construction period. There will be limited and localized delays due to lane reductions and disruption through construction zones, especially during high volume periods.

To accommodate construction of the rail bridge, tracks will be temporarily shifted eastward. Vehicle travel times are expected to be temporarily affected following such detours.

Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic accidents.

4.9.6.1.2 Operation

During operations, traffic flow along Huntingwood Drive will be improved through reduced congestion and travel times as train conflicts will be eliminated.

4.9.6.2 Transit Network

4.9.6.2.1 Construction

As a result of the road detour, road segments and intersections along Huntingwood Drive may experience increased traffic congestion and travel times during construction.

During construction, no transit rerouting is expected. The bus stop (ID: 6454) located northeast of intersection at Kittery Boulevard will be maintained. The bus stop (ID: 6425) located southeast of the intersection at Belgreen Avenue will be temporarily relocated to southwest of the intersection. This is to reduce possible conflicts at southeast corner (where existing platform is) between cyclists entering separated cycle track and transit users entering and exiting buses. Both stops are served by TTC route 169 A/B and operate with 30-minute peak period frequencies. The bus stop (ID: 6453) located southwest of the intersection at Kitten Boulevard will be temporarily relocated to southeast corner of the intersection outside the construction site. The relocation of both transit stops will result in a shift of under 50 m or less than 1 minute of walking which may be considered negligible. Provided that the only pedestrian connection will be maintained on the northside of the intersection, pedestrians boarding or alighting from the bus stop at the southeast of Huntingwood Drive and Kittery Boulevard will need to cross at Midland Avenue which is approximately 220 m away adding an additional 3 minutes to travel times.

4.9.6.2.2 Operation

Limited transit impacts are anticipated following construction. The eastbound bus stop located on the south-east corner of Belgreen Avenue and Huntingwood Drive will be permanently relocated to southwest corner and the bus stop across Kittery Boulevard will be permanently closed.

4.9.6.3 Cycling, Pedestrian and Trail Network

4.9.6.3.1 Construction

A multi-use pathway will be provided on the north side of Huntingwood Drive in accordance with City of Toronto standards to provide safe passage for pedestrians and cyclists. Pedestrians and cyclists coming from west of Belgreen Avenue who are traveling on the south side of the street can cross to the north side at Belgreen Avenue

to continue along this road segment. Pedestrians and cyclists coming from east of Kittery Boulevard on the south side of the street will need to cross at Midland Avenue, which is approximately 220 m away from the intersection, adding an additional 3 minutes in travel time. However, if traveling in the westbound direction, pedestrians and cyclists can cross to the north side prior to approaching Kittery Boulevard.

During portions of construction, the east pedestrian crosswalk at Belgreen Avenue and Huntingwood Drive may be temporarily closed for use.

4.9.6.3.2 Operation

Elevated sidewalks with protective barrier fencing interfacing with vehicles along both sides of Huntingwood Drive will facilitate increased pedestrian and cyclist mobility and the existing signed route along Huntingwood Drive will be replaced with sidewalk-level cycle tracks. The reinstatement of the sidewalk on the south side of the road will improve conditions for active transport users. Given the difference in grade from existing to proposed conditions, pedestrians and cyclists may experience some inconvenience and increased travel time due to the 5% slope associated with the grade separation. The grade separation will also result in shaded areas beneath the rail bridge which may impact visibility for those crossing under the bridge.

4.9.7 Havendale Road

4.9.7.1 Road Network

4.9.7.1.1 Construction

Project construction activities and the permanent closure of Havendale Road to traffic for construction of the Havendale Road multi-use crossing and cul-de-sacs will result in reroutes, changes in access and increased travel times for vehicles looking to cross the Project footprint. No access across the rail corridor at Havendale Road will be possible during construction, as the road will be closed to all traffic to accommodate the construction zone. Access to residential properties not affected by construction will be maintained during construction.

Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic accidents.

4.9.7.1.2 Operation

Road closure will result in localized effects on traffic flow by removing Havendale Road as a through-street and reducing traffic on side streets. Vehicles will be required to reroute to the next nearest crossing of the rail corridor, either Huntingwood Drive to the north or Sheppard Avenue East to the south. The majority of external traffic is anticipated to stay on arterial roads, since there is limited north-south movement potential on side streets between Huntingwood Drive and Sheppard Avenue East.

Due to the road closure at Havendale Road residents may experience an increase in travel times while accessing parks and schools within the community via vehicle.

4.9.7.2 Transit Network

4.9.7.2.1 Construction

No transit routes or bus stops are located within the Project Footprint or along Havendale Road so construction of the Project is not expected to impact the transit network.

4.9.7.2.2 Operation

As no transit routes or bus stops are located within the Project Footprint or along Havendale Road, Project operations are not expected to impact the transit network.

4.9.7.3 Cycling, Pedestrian and Trail Network

4.9.7.3.1 Construction

All driveways that will not be removed/acquired fronting onto Havendale Road will maintain access to the roadway. The sidewalk on the south side of Havendale Road will be maintained during construction to allow crossing of pedestrians.

4.9.7.3.2 Operation

Once the Project is complete, the new Havendale multi-use crossing will improve pedestrian and cyclist traffic flow across the rail corridor with increased access and reduced conflict with the Stouffville Rail Corridor, however as a result of the ramp structure associated with the new crossing, pedestrians and cyclists may experience more inconvenience and longer travel times when compared to a direct, at-grade crossing. The new Havendale multi-use crossing will increase mobility by permitting crossing with no delays due to train movements (which would otherwise occur up to once every 7.7 minutes).

Infrastructure associated with the Havendale multi-use crossing will adhere to applicable City of Toronto standards and comply with the *Accessibility for Ontarians with Disabilities Act.* The ramps associated with the Havendale multi-use crossing will be designed to accommodate various turning radii (e.g., to accommodate turning of wheelchairs, cargo bikes, stretchers, etc.). There is the potential that cyclists could exit the ramp structure directly onto Havendale Road by riding over the curb requiring controls to provide safe operation.

4.9.8 Progress Avenue

4.9.8.1 Road Network

4.9.8.1.1 Construction

Temporary impacts to road users will occur during construction of the road over rail grade separation at Progress Avenue. Construction activities such as site preparation, temporary laydown areas, and roadworks will result in partial road and lane closures that may affect traffic and travel times.

During construction of the road over rail grade separation, Progress Avenue will be detoured to the south of its existing alignment to maintain connectivity. At a minimum, one lane of traffic will be maintained in each direction from west of William Kitchen Road to the east of West Highland Creek. The road detour will include a new at-grade crossing of the rail corridor and a new temporary bridge over West Highland Creek. Direct access off Progress Avenue to businesses north of the detour will not be possible due to the construction of the grade separation. Subject to further design, public roads will provide continued access to all affected businesses during construction.

Access to William Kitchen Road from Progress Avenue will be closed during construction and will result in increased travel times due to the need to find alternate routes through Kennedy Road to access William Kitchen Road.

Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic accidents.

4.9.8.1.2 Operation

Project operations are expected to have a positive effect on transportation with improvements to traffic flow along Progress Avenue as train conflicts will be eliminated. the two proposed public access roads to the south of Progress Avenue will serve 11, 21, 31, 45, 55, 65 and 85 Progress Avenue. These public access roads will end in

cul-de-sacs to permit turning movements for vehicles, emergency medical services and firetrucks. A new entrance will be provided to service the 80 Progress Avenue. A private access road is planned to allow vehicular movements from 80 Progress Avenue to 111 Progress Avenue. The implementation of the grade separation will improve speed, frequency and convenience to the rail corridor and local motorists.

4.9.8.2 Transit Network

4.9.8.2.1 Construction

As a result of the road detour, road segments and intersections along Progress Avenue may experience increased traffic congestion and travel times during construction.

During the construction, no transit rerouting is expected. The bus stop located northwest at the intersection of Progress Avenue and William Kitchen Road (Stop ID: 4531) will be moved temporarily westward along Progress Avenue, within approximately 150 m or an additional 2 minutes in travel time. The bus stops at 77 and 80 Progress Avenue (Stop ID: 4535) will be moved eastward along Progress Avenue. These stops are served by TTC Route 43 which operates with service frequencies of 10 minutes or better all day. While the bus stop relocations will result in increased walking time for pedestrians, the increase is expected to be limited given the close proximity of the relocated bus stops to the existing locations.

4.9.8.2.2 Operation

The current transit stops will be placed back resuming existing service accessibility with current walking distances.

4.9.8.3 Cycling, Pedestrian and Trail Network

4.9.8.3.1 Construction

A temporary sidewalk will be constructed along the south side of the detour road in accordance with City of Toronto standards. Temporary concrete barriers will separate the sidewalk from the eastbound traffic lane. Additionally, pedestrian access will be maintained at 34 Progress Avenue and 1 William Kitchen Road. Lastly, crossing opportunities along Progress Avenue will be available at Kennedy Road to the west and the pedestrian crossing at 2220 Midland Avenue to the east.

4.9.8.3.2 Operation

Sidewalks will be reinstated on both sides of Progress Avenue once construction of the Project is complete. Given the difference in grade from existing to proposed conditions, pedestrians and cyclists may experience some inconvenience and increased travel time due to the slope associated with the grade separation.

A sidewalk along the east side of William Kitchen Road is proposed to provide continued pedestrian access to businesses to the northeast of this intersection. Barrier-free access to businesses along the public access road is provided through sidewalk connections to the southwest of the intersection of William Kitchen Road and Progress Avenue.

4.10 Stormwater Management

4.10.1 Overview

Stormwater management aims to maintain the natural hydrologic cycle, avoid an increased risk of flooding, prevent undesirable stream erosion, and protect water quality. Project construction activities may result in changes to the flow of stormwater from the increase in impervious areas. Potential effects are described below, while corresponding mitigation measures and monitoring activities relating to stormwater management are described in Section 4.11.

4.10.2 Denison Street

4.10.2.1 Construction

In order to meet the drainage and SWM requirements, some modifications to the existing stormwater management system at Denison Street are required. The proposed road under rail grade separation will require pumping the catchment draining to the underpass to the downstream (west) end of the existing Denison Street storm sewer. Detention tanks will be provided to control the 100-year post development peak-flow from the underpass to the 2-year existing conditions peak-flow. Stormwater management strategies will be confirmed through detailed design.

4.10.2.2 Operation

With the implementation of stormwater management strategies, no effects on the flow of stormwater are anticipated during operations.

4.10.3 Kennedy Road

4.10.3.1 Construction

In order to meet the drainage and SWM requirements, some modifications to the existing stormwater management system at Kennedy Road are required. The proposed road under rail grade separation will require pumping the catchment draining to the underpass to the downstream (south) end of the existing Kennedy Road storm sewer. Detention tanks will be provided to control the 100-year post development peak-flow from the underpass to the 2-year existing conditions peak-flow. Stormwater management strategies will be confirmed through detailed design.

4.10.3.2 Operation

With the implementation of stormwater management strategies, no effects on the flow of stormwater are anticipated during operations.

4.10.4 Passmore Avenue

4.10.4.1 Construction

In order to meet the drainage and SWM requirements, some modifications to the existing stormwater management system at Passmore Avenue are required. The proposed road under rail grade separation will require re-routing the existing trunk storm sewer under Passmore Avenue to the north and pumping the underpass itself to the downstream (west) end of the trunk storm sewer. Detention tanks will be provided to control the 100-year post development peak-flow from the underpass to the 2-year existing conditions peak-flow. Stormwater management strategies will be confirmed through detailed design.

4.10.4.2 Operation

With the implementation of stormwater management strategies, no effects on the flow of stormwater are anticipated during operations.

4.10.5 McNicoll Avenue

4.10.5.1 Construction

In order to meet the drainage and SWM requirements, some modifications to the existing stormwater management system at McNicoll Avenue are required. The proposed road under rail grade separation will require detaining and controlling the release of stormwater from the catchment draining to the underpass to the existing

Silver Star Boulevard storm sewer. Detention tanks and an orifice tube control will be provided to gravity control the 100-year post-development peak-flow from the underpass to the 2-year existing conditions peak-flow. Rail corridor drainage from north of McNicoll Avenue will be diverted to the existing Milliken Boulevard storm sewer and controlled using an orifice tube and pipe storage so as not to increase the peak-flow to the Milliken Boulevard storm sewer. Stormwater management strategies will be confirmed through detailed design.

4.10.5.2 Operation

With the implementation of stormwater management strategies, no effects on the flow of stormwater are anticipated during operations.

4.10.6 Huntingwood Drive

4.10.6.1 Construction

In order to meet the drainage and SWM requirements, some modifications to the existing stormwater management system at Huntingwood Drive are required. The proposed road under rail grade separation will require pumping the catchment draining to the underpass to the downstream end of the existing Huntingwood storm sewer. Detention tanks will be provided to control the 100-year post development peak-flow from the underpass to the 2-year existing conditions peak-flow. Stormwater management strategies will be confirmed through detailed design.

4.10.6.2 Operation

With the implementation of stormwater management strategies, no effects on the flow of stormwater are anticipated during operations.

4.10.7 Havendale Road

4.10.7.1 Construction

The proposed works at Havendale Road are limited to permanently closing the road at the Stouffville Rail Corridor and adding a multi-use crossing. Since the Stouffville Rail Corridor is a high point and a drainage divide for both major any minor systems along Havendale Road, creating a roadway dead end will not alter the drainage pattern in this location. Therefore, no effects on the flow of stormwater are anticipated during construction.

4.10.7.2 Operation

With the implementation of stormwater management strategies, no effects on the flow of stormwater are anticipated during operations.

4.10.8 Progress Avenue

4.10.8.1 Construction

In order to meet the drainage and SWM requirements, some modifications to the existing stormwater management system at Progress Avenue are required. The proposed road under rail grade separation will require the replacement of the existing Progress Avenue crossing of West Highland Creek and the construction of a second crossing downstream of the existing structure for a new access road. The Progress Avenue crossing will not be submerged during events up to and including the Regulatory Flood. The proposed works will not increase water surface elevations for any event upstream or downstream of the proposed West Highland Creek bridge structures. Stormwater management strategies will be confirmed through detailed design.

4.10.8.2 Operation

A fluvial geomorphic assessment was completed for West Highland Creek bridge crossings (Stantec 2020l). While some minor increases in overbank velocities are expected during post-development conditions, no significant impacts to erosion are anticipated from the additional velocity as the velocities do not exceed the critical velocity (the velocity required to entrain and transport sediment). As a result, the post-development rate of erosion within the vegetated overbank areas 100 m upstream and downstream of the existing Progress Avenue crossing of West Highland Creek is not anticipated to increase beyond the existing conditions rate.

With the implementation of stormwater management strategies, no effects on the flow of stormwater are anticipated during operations.

4.11 Summary of Potential Effects, Mitigation Measures and Monitoring Requirements

Table 4.12 summarizes the effects, mitigation measures and proposed monitoring for the various components of the environment described in the previous sections of the EPR. A potential effect is denoted by a “●”. If no potential effects are anticipated, a “-“ is indicated.

Metrolinx is responsible for confirming that the recommendations are met but may direct a third party to undertake future activities (i.e., contractor, technical consultant). The intent of this table is to provide a summary of those commitments and responsibility of third parties where Metrolinx determines applicability. These are recommendations that will be confirmed as Project planning advances.

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Table 4.12: Potential Effects, Mitigation Measures and Monitoring

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Natural Environment						
Aquatic Environment	Removal or impacts to wetland, aquatic and riparian vegetation; erosion and sedimentation to wetlands/waterbodies from construction; risk of contamination to wetlands/waterbodies as a result of spills.	-	-	Denison Street	• Consult with TRCA to assess requirement for restoration of natural areas at Progress Avenue and Kennedy Road. • Construction activities will maintain the buffers established during the design phase to minimize potential negative impacts to wetlands and waterbodies. • Shorelines or banks disturbed by construction activities will be immediately stabilized by any activity associated with the project to prevent erosion and/or sedimentation, through re-vegetation with native species suitable for the site in adherence with the Metrolinx Vegetation Guideline (2020). • An Erosion and Sediment Control Plan, in accordance with the *Erosion and Sediment Control Guide for Urban Construction* (TRCA 2019), will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the wetland or waterbody. • A Spill Prevention and Response Plan will be developed before work commences and implemented during construction to ensure procedures and policies are in place during construction to minimize impacts to wetlands or waterbodies. • In wetland areas where vernal pooling occurs, prior to dewatering isolated work areas, wildlife will be captured and relocated to suitable habitat outside of the work area. • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the MNRF.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures.
		•	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		•	-	Progress Avenue		
Aquatic Environment	Potential for direct, in-water impacts to fish and fish habitat.	-	-	Denison Street	• All requirements of the *Fisheries Act* and the *Endangered Species Act*, 2007 (ESA) will be met. • In the event that in-water and/or near water construction works are required, the restricted construction activity timing windows (July 1st to March 31st) and appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including the Conservation Authority, MECP, Ministry of Natural Resources and Forestry (MNRF) and Fisheries and Oceans Canada (DFO). In-water works will be planned to respect timing windows (July 1st to March 31st) to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed. • Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a Licence to Collect Fish for Scientific Purposes from the MNRF.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
		-	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		•	-	Progress Avenue		
Terrestrial Environment		•	-	Denison Street	• If final limits of the Project Footprint are altered and fall outside of the assessed study area, an additional Arborist Report, or an addendum to the existing	• On-site inspection will be undertaken to confirm the

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
	Tree/vegetation removal, injury and protection.	•	-	Kennedy Road	Arborist Report, will be prepared which meets regulatory requirements and is completed by an I.S.A. Certified Arborist. The report will also be completed with regard to the Metrolinx Vegetation Guideline (2020), the *Ontario Forestry Act R.S.O. 1990*, the *Endangered Species Act*, TRCA Compensation Guidelines and other regulations, municipal by-laws and best management practices as applicable. • If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with the Metrolinx Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties. • Pruning of branches will be conducted through the implementation of proper arboricultural techniques. • Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries in accordance with local by-law requirements. • Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx Vegetation Guideline (2020), will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections. • Compensation for tree/vegetation removals will be undertaken in accordance with provisions outlined in the Metrolinx Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties. • Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and Species at Risk (SAR), and features, e.g., Designated Natural Areas and Significant Wildlife Habitat. Refer to Natural Environment commitment tables for additional details. • A permit is required prior to the commencement of work for the Injury or removal of trees regulated by municipal Tree Protection By-Laws. • Retain existing vegetation within the Assessment Area to the extent practicable. Removals will be kept to a minimum to limit direct effects to vegetation communities and vascular flora, as well as indirect effects (e.g., soil compaction and changes to topography and drainage). • Large diameter tree removal should be avoided to the extent possible. • A permit is also required for the alteration of grade and placement of fill or refuse within an area regulated by Chapter 658, Ravine and Natural Feature Protection, of the Toronto Municipal Code [applicable to Progress Avenue only]. • As part of the Arborist Report, all trees within or adjacent to the Study Area that will be removed or injured as part of the Project will be inventoried, including Butternut and any other SAR vegetation. SAR vegetation will be subject to permitting and approval requirements under Applicable Law, prior to the commencement of construction. • Each Butternut that may potentially be removed or impacted must be assessed by a qualified Butternut Health Assessor, in accordance with MNRF *Butternut*	implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. • The success of vegetation compensation activities will be monitored in accordance with the Metrolinx Vegetation Guideline (2020). The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning. • Monitoring requirements will be undertaken in accordance with conditions of permits and approvals. • Monitoring and management of trees/vegetation within the rail corridor right-of-way will be undertaken in accordance with the Integrated Vegetation Management (IVM)Program within the Metrolinx *Vegetation Guideline* (2020). Low maintenance plantings are encouraged for all future plantings within Metrolinx corridors.
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
					Assessment Guidelines (2014). The Assessor will prepare a Health Assessment Report for submission to MECP to determine the next course of action.	
Terrestrial Environment	Potential for the spread of emerald ash borer, *Agrilus planipennis* (Fairmaire) associated with removal, handling and transport of ash trees.	●	-	Denison Street	• Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive 'D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the emerald ash borer, *Agrilus planipennis* (Fairmaire)'. To comply with this Directive, all ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. • Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Terrestrial Environment	Direct loss of landscape trees (i.e., urban forest cover).	●	-	Denison Street	• Project compensation will follow the requirements of the Metrolinx Vegetation Guideline (2020). • Avoid large diameter tree removal to the extent possible. • Establish tree protection to extent possible.	• Monitor tree protection buffer fencing for integrity. • Repair as required.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Terrestrial Environment	Footprint Impacts. Potential for the establishment of invasive species and other incompatible species	●	●	Denison Street	• An IVM Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the IVM Program. The Guideline's selection criteria will be used to assess the vegetation present as compatible or incompatible, and manage it, if necessary, in a way which meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness. • A Clean Equipment Protocol will be developed and implemented for the Project in accordance with the Peterborough Stewardship Council and Ontario Invasive Plant Council (May 2016) Clean Equipment Protocol for Industry. The Clean	• The presence, density, and location of compatible and incompatible species will be monitored as per the frequency and methodology established in the Bi-Annual Monitoring Program within the Metrolinx Vegetation Guideline (2020). The Bi-
		●	●	Kennedy Road		
		●	●	Passmore Avenue		
		●	●	McNicoll Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	●	Huntingwood Drive	Equipment Protocol will require that machinery arrive on site in a clean condition, and the access and movement of vehicles and equipment will be managed to control the introduction and spread of invasive species. Vehicles and equipment entering and leaving a site will be inspected for cleanliness and absence of invasive species.	Annual Monitoring Program is made up of pre-treatment and post-treatment monitoring events that will be carried out via field, aerial, and high-rail vehicle or train surveys conducted by qualified specialists.
		●	●	Havendale Road		
		●	●	Progress Avenue		
Wildlife	Disturbance, displacement or mortality of wildlife	●	-	Denison Street	• Prior to construction, investigation of the Project Footprint for wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate. • If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and/or its habitat. For example, construction activities will cease or be reduced, and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife. • Wildlife exclusion fencing will be installed around the construction area to protect wildlife and mitigate the ingress of wildlife onto the site as recommended by a qualified biologist. • Construction sites will be regularly maintained; litter and debris will be removed as soon as possible to deter the presence of wildlife on-site. • Construction activities and facility design will minimize off-site noise, vibration and light disturbance to nearby wildlife, to the extent possible. • Visual inspections will be completed of and around equipment and vehicles left overnight to avoid effects to wildlife.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. • Regular inspections under and around equipment and vehicles left overnight will be conducted.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Significant Wildlife Habitat	Disturbance or destruction of Migratory Butterfly Stopover Areas used by Monarch Butterflies (low probability, no milkweed observed).	●	-	Denison Street	• Opportunities to plant milkweed or forage vegetation outside of and within the rail ROW will be undertaken, where possible, and in accordance with the Metrolinx Vegetation Guideline (2020). • If vegetation clearing will proceed when Monarch larvae may be present (April 1 to September 30), milkweed plants should be inspected for Monarch larvae prior to their removal. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified biologist. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis). Entire milkweed plants should be transplanted. • Provide mitigation measures for additional migratory butterfly species as required.	• Regular monitoring will be undertaken during construction to prevent unauthorized effects to the Migratory Butterfly Stopover Areas.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Migratory Breeding Birds and Nests	Disturbance or destruction of migratory birds and/or nests.	•	-	Denison Street	• All works must comply with the *Migratory Birds Convention Act* (MBCA), including timing windows for the general nesting period (April 1 to August 31 in Ontario). • If activities are proposed to occur during the general nesting period, a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by a qualified biologist with experience conducting nest searches will be required no more than 48 hours prior to vegetation removal. If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection. • Any nest found will be protected with a buffer zone determined by a setback distance appropriate to the species, the level of the disturbance and the landscape context, until the young have permanently left the vicinity of the nest. • If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.	• Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		
Species at Risk	Habitat loss, disturbance and/or mortality to Barn Swallow (detailed design will determine if construction activities have the potential to disturb potential nesting structures).	•	-	Denison Street	• Field surveys will be undertaken prior to construction to confirm the number of nests present at the known locations and whether the nests remain active. • Where loss or disturbance cannot be avoided (e.g., due to work on bridges), all requirements under the ESA will be met, including any registration, compensation, replacement structures and/or permitting requirements. • If construction activities are scheduled during the nesting season for Barn Swallow (April 1 to August 31), a nest search will be undertaken by a qualified biologist to confirm that no Barn Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize effects. • Additional monitoring measures will be developed with the MECP, if required.
		•	-	Kennedy Road		
		-	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		•	-	Progress Avenue		
Species at Risk - Bats	Habitat loss, disturbance and/or mortality to SAR Bats.	-	-	Denison Street	• Disturbance to bat roosting habitat will be avoided during the bat roosting period of April 1 to September 30 in accordance with MECP requirements.	• On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the MECP, if required.
		•	-	Kennedy Road		
		-	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		-	-	Huntingwood Drive		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	-	Havendale Road		
		●	-	Progress Avenue		
Significant Natural Features	No potential effects during construction and operations as there are no Significant Natural Areas within the Natural Environment Assessment Area.	-	-	Denison Street	• As no effects are anticipated, no mitigation measures are required.	• No monitoring activities are required.
		-	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		-	-	Progress Avenue		
Geology and Groundwater						
Landforms and Physiography	No effects to landforms or physiographic environmental components are anticipated as a result of construction activities.	-	-	All locations	• As no effects are anticipated, no mitigation measures are required.	• No monitoring activities are required.
Bedrock Geology	No effects to bedrock geology are anticipated as a result of construction activities.	-	-	All locations	• As no effects are anticipated, no mitigation measures are required.	• No monitoring activities are required.
Soils	Construction operations could expose contaminated materials and/or result in the spreading of contaminated materials	●	-	All locations	• Develop a Soil and Excavated Materials Management Plan (SEMMP) for the handling, management and disposal of all excavated material (i.e., soil, rock and waste) that is generated or encountered during the Works. The plan will be overseen by a Qualified Person (QP) pursuant to *Ontario Regulation 153/04* under the *Environmental Protection Act* and will comply with *Ontario Regulation 406/19* (On-Site and Excess Soil Management – to be enacted into law on January 1, 2021), the Ministry of the Environment, Conservation and Parks (MECP), formerly the Ministry of the Environment and Climate Change (MOECC)'s *Management of Excess Soils: A Guide for Best Management Practices*, (MECP, April 2019, as amended) and all Applicable Law. The plan will	• A Soil and Excavated Material Monthly Monitoring Report will be submitted by the Constructor for Metrolinx review on a monthly basis that includes monitoring and performance data related to the management of excavated materials.

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
					describe how to address the management of the excavated materials, imported materials, contaminated materials, and impacted railway ties, including handling, transportation, testing, documentation and reuse and disposal of excavated materials generated as part of the works and in accordance with applicable regulatory requirements and the project contract documents/agreement as applicable. • Non-soil materials, including railway bedding, railway ties, or ballast materials encountered during the earthworks will also require waste classification as documented by testing where applicable to determine management and disposal requirements as per *Ontario Regulation 347* (as amended) and All Applicable Law. • The SEMMP will be reviewed and approved by Metrolinx prior to construction.	• Upon completion of the work, the Constructor will submit a Soil and Excavated Material Management Implementation Report to Metrolinx.
Groundwater Resources	Construction operations could expose groundwater and associated contamination	•	-	All locations	• Develop a Groundwater Management and Dewatering Plan (GMDP) to guide the handling, management, and disposal of groundwater encountered during the Works. The GMDP will be overseen by a QP and will comply with Ontario Regulations 406/19 (On-Site and Excess Soil Management – to be enacted into law on January 1, 2021), 64/16 and 387/04, as amended under the Ontario *Water Resources Act.* • The GMDP will describe the handling, transfer, testing, monitoring, disposal of groundwater generated as part of the Works and in accordance with applicable regulatory requirements and the project contract documents/agreement as applicable. The GMDP will outline general groundwater monitoring considerations during the Works and provide guidance for groundwater monitoring following the Works where considered applicable. • The GMDP will describe the anticipated groundwater quantity and dewatering Zone of Influence that will be encountered during the Works, and if approvals are needed for the water taking, such as a Permit to Take Water (PTTW) from the MECP, or an Environmental Activity Sector Registry (EASR). • The GMDP will describe the storage, transfer, and disposal and or treatment of the groundwater collected during the Works, and approvals for the water disposal, and or treatment if applicable based on the quantity and quality. • The GMDP will be reviewed and approved by Metrolinx prior to construction.	• A Groundwater Management Monthly Dashboard Report will be developed by the Constructor for Metrolinx review to document performance monitoring data/results and any corrective actions implemented. • Upon completion of the work, the Constructor will submit a Groundwater Management and Dewatering Implementation Report to Metrolinx.
Cultural Environment						
Archaeological Resources	Potential for the disturbance of unassessed or documented archaeological resources	•	-	Denison Street	• Additional Stage 1 AA for Denison Street; Stage 2 AA for Denison Street, McNicoll Avenue, Kennedy Street, Havendale Road, Huntingwood Drive, and Progress Avenue; and Stage 3 and 4, where recommend by previous stages will be undertaken by a licensed archaeologist early in and prior to the completion of detail design and submitted to MHSCTI for review. Metrolinx and/or Project Co will confirm that any AA reports submitted to MHSTCI for review have been entered into the Ontario Public Register of Archaeological Reports prior to commencing any ground disturbing activities. • Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management	• Performance of the work will occur within land previously subject to an Archaeological Assessment. • Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		•	-	Havendale Road	Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports and/or subsequent changes to Applicable Law. • All work shall be performed in accordance with Applicable Law, including but not limited to the *Ontario Heritage Act*, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture and Sport (MTCS) Standards and Guidelines for Consultant Archaeologists (2011), and the MHSTCI document, Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario (2011). • In the event that archaeological resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MHSTCI. A professionally licensed archaeologist will be consulted to complete the assessment. If resources are confirmed to possess cultural heritage value/interest then they will be reported to the MHSTCI, and further Archaeological Assessment (AA) of the resources may be required. If it is determined that there is a potential for Indigenous artifacts, Metrolinx should be contacted, and Applicable Law will be followed. • If final limits of the Project Footprint are altered and fall outside of the assessed Archaeological Assessment Area, additional AA will be conducted by a professionally licensed archaeologist prior to disturbance and, prior to construction activities. This will include completing all required AAs resulting from the Stage 1 AA (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance. • For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional AA will be conducted by a professionally licensed archaeologist prior to disturbance. • If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MHSTCI will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act.* If the human remains are determined to be of Indigenous origin, Metrolinx should be contacted, and all applicable law must be adhered to. • All AA findings will be shared with Indigenous Nations, as per Metrolinx's *Guide to Engaging with Indigenous Communities* (2020).	• Further AA may identify the need for monitoring during construction.
		•	-	Progress Avenue		
Built Heritage Resources and Cultural Heritage Landscapes	For any additional potentially affected Cultural Heritage Resources/properties	•	-	Denison Street	• If the project study limits change or there is a change in impact that is not captured or documented in previously completed Metrolinx and/or GO Transit EPRs and/or ESRs post EA/TPAP, and which causes any additional heritage properties to be impacted by the proposed design/infrastructure, all applicable	• Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/
		•	-	Kennedy Road		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
	not previously identified within a previous Metrolinx/GO Transit EA/TPAP/Other Study	•	-	Passmore Avenue	legislation will be followed to carry out additional impact assessment work and heritage studies to identify any known or potential built heritage resources and cultural heritage landscapes, and to identify potential impacts and appropriate mitigation measures.	properties as per the recommendations contained in any/all of the following documents: Cultural Heritage Reports - Existing Conditions and Preliminary Impact Assessment, Cultural Heritage Evaluation Reports (CHERs), Heritage Impact Assessments (HIAs) and Strategic Conservation Plans (SCPs).
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		
Socio-Economic and Land Use						
Neighbourhood Characteristics	Property acquisition – permanent and temporary	•	-	Denison Street	• Specific property requirements will be determined during detailed design. Where access to property is required, ongoing consultation with affected landowners will help identify appropriate site-specific mitigation measures. • Select staging/laydown areas in accordance with Metrolinx procedures. Staging/laydown areas should be located in areas that minimize adverse effects to sensitive receivers.	• Follow Metrolinx guidance with respect to monitoring requirements at construction staging/laydown areas.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		
Neighbourhood Characteristics	Nuisance effects from construction activities	•	-	Denison Street	• Mitigation measures related to potential air quality and noise and vibration nuisance effects are outlined in the relevant sections of this table. . • An Erosion and Sediment Control Plan will be developed in accordance with the Greater Golden Horseshoe Area Conservation Authorities' *Erosion and Sediment Control Guideline for Urban Construction* (December, 2006), as amended from time to time, that addresses sediment release to adjacent properties and roadways. • Develop a Communications Protocol in accordance with the established guidelines, which will indicate how and when surrounding property owners and tenants will be informed of anticipated upcoming construction works, including work at night, if any. Develop a Complaints Protocol in accordance with the contract documents.	• When applicable, monitoring related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration commitment tables. • Erosion and sediment control monitoring to be conducted as per contract documents. • Number and resolution of complaints received.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	-	Progress Avenue		
Neighbourhood Characteristics	Land use and access disruption	●	-	Denison Street	• Provide well connected, clearly delineated, and appropriately signed walkways and cycling route options, with clearly marked detours where required. • Provide temporary lighting and wayfinding signs and cues for navigation around the construction site. • Develop a plan to reduce the effects of light pollution in accordance with the contract documents. • Access to businesses during working hours will be maintained, where feasible. Where regular access cannot be maintained, alternative access and signage will be provided. • Metrolinx to communicate all changes associated with land use access to impacted properties throughout the duration of the construction phase. • Communicate changes to traffic and land use access associated with the Huntingwood Drive grade separation with the staff at Sir William Osler High School. • Metrolinx to consult with local businesses associated with the Passmore Avenue and Progress Avenue grade separation regarding the construction of new public roads required to maintain access to affected locations.	• Temporary access paths, walkways, cycling routes and fencing should be monitored. • Number and resolution of complaints received.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Neighbourhood Characteristics	Safety concerns associated with the Havendale Road multi-use crossing resulting from a single point of egress on the ramps, concealed corners due to multiple ramp turns, lack of clear sightlines from street level and on the ramps, and the potential for materials to be thrown from the bridge and ramps)	-	-	Denison Street	• The design of the preferred option for the multi-use crossing will be further refined during detailed design, taking into consideration the potential effects identified in this EPR for the bridge or tunnel option, as applicable. • Additional lighting to provide increased visibility and eliminate dark/concealed areas for both the bridge and tunnel options. • Noise barriers placed along the rail corridor adjacent to the Havendale Road multi-use crossing may be transparent to provide increased visibility across the rail corridor for the bridge option.	• None anticipated at this time
		-	-	Kennedy Road		
		-	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	●	Havendale Road		
		-	-	Progress Avenue		
Neighbourhood Characteristics	Visual effects from construction areas/activities	●	-	Denison Street		• Construction activities will be monitored by a qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans and within specified areas.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		●	-	McNicoll Avenue	• A screened enclosure for the development site will be provided, with particular attention to the waste disposal and material storage areas. • Consideration will be given to providing temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows, and where necessary. • Construction schedule delays will be avoided to the extent possible in order to minimize the duration of construction and corresponding visual impacts. • Metrolinx will consider maintenance of vegetation to the extent possible during construction and replanting of vegetation to maintain natural buffers where appropriate and feasible.	
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Visual Impacts and Aesthetic Effects	Light trespass, glare and light pollution effects	●	-	All locations	Construction: • The Constructor will perform the Works in such a way that any adverse effects of construction lighting are controlled or mitigated in such a way as to avoid unnecessary and obtrusive light with respect to adjoining residents, communities and/or businesses. Construction and Operations: • Comply with all local applicable municipal by-laws and Ministry of Transportation (MTO) practices for lighting in areas near or adjacent to highways and roadways regarding outdoor lighting for both permanent operations and temporary construction activities, and incorporate industry best practices provided in *ANSI/IES RP-8-18 – Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting*, as described in the contract documents.	• Measure illuminance levels using an illuminance meter in accordance with ANSI/IES RP-8-18 Chapter 4. • Number and resolution of complaints received.
			●	Havendale Road		
Visual Impacts and Aesthetic Effects	Visual effects during operation	-	●	Denison Street	• Retaining walls, tunnel walls, and abutments that are public facing or accessible to the walking-public will have plain surface finishes acceptable by the local road authority and will require anti-graffiti coating treatment (if artwork will be installed by the municipality, anti-graffiti coating shall be applied after artwork installation). On all other wall treatment cases, a patterned concrete finish acceptable by the local road authority and anti-graffiti coating will be applied. • Havendale Road: – If a bridge is constructed at Havendale Road, Metrolinx will consider options to increase the visibility/transparency of the Havendale multi-use crossing structure and guardrails the use of tempered laminated glass panels or low profile barriers. – Consideration of fencing to address privacy concerns adjacent to the Havendale multi-use crossing.	• None anticipated at this time.
		-	●	Kennedy Road		
		-	●	Passmore Avenue		
		-	●	McNicoll Avenue		
		-	●	Huntingwood Drive		
		-	●	Havendale Road		
		-	●	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Visual Impacts and Aesthetic Effects	Loss of privacy	•	-	Denison Street	• The surrounding community will be notified of initial construction plans, as well as any future modifications as they occur. • The ability to see from the Havendale Road multi-use crossing into private property is anticipated to be limited given the location of the bridge and ramps. • Metrolinx will consider maintenance of vegetation to the extent possible and replanting of vegetation to maintain natural buffers where appropriate and feasible. • Consideration of fencing to address privacy concerns adjacent to the Havendale multi-use crossing.	• None anticipated at this time.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	•	Havendale Road		
		•	-	Progress Avenue		
Utilities	Utility serviceability effects due to design requirements and construction	•	-	Denison Street	• Develop and implement a detailed Utility Infrastructure Relocation Plan that identifies all utilities anticipated to be impacted by the construction works, all relevant utility agencies and authorities, and outlines the approach to the utility relocation process. The Utility Infrastructure Relocation Plan will be developed in accordance with the contract documents. • Additional surveys shall be performed prior to construction to field locate and verify the existing utilities within the project area and document their condition. • Perform all work identified in the Utility Infrastructure Relocation Plan to protect, support, safeguard, remove, and relocate all Utility Infrastructure. • Obtain permits and consents from and with all Utility Companies with respect to the design, construction, installation, servicing, operation, repair, preservation, relocation, and or commissioning of Utility Infrastructure. • Ensure minimizing impact to the Train Service Plans and to continuity of service and disruption to property owners and customers of the Utility Companies to the satisfaction of the Utility Companies and Metrolinx.	• Maintain regular communication and coordination through issuance of regular progress reports and updates to applicable utility agencies. • Record all installation tolerances and how they are to be monitored. • Perform inspection and testing to ensure successful utility relocation and safe and efficient installation. • In the event of potential impacts to critical utilities, instrumentation and monitoring shall be carried out to protect the critical utilities and structures and reduce risks of damage due to construction activities.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Utilities	Future Utility Maintainability	-	●	Denison Street	• Where new utility crossings are proposed, application for a new utility crossing agreement will be required. Where modifications to an existing utility crossing takes place, updates to an existing utility crossing will be needed. • Post-construction inspections of the new utility infrastructure shall be undertaken for applicable works upon completion of the construction works to document condition. • Obtain as-built plans of the relocated infrastructure from utility agencies per as-built preparation standards *CSA S250-11 – Mapping of Underground Utility Infrastructure* (2011), as amended from time to time.	• Develop and implement tracking system for as-built deliverables.
		-	●	Kennedy Road		
		-	●	Passmore Avenue		
		-	●	McNicoll Avenue		
		-	●	Huntingwood Drive		
		-	●	Havendale Road		
		-	●	Progress Avenue		
Air Quality						
Air Quality	Construction related air pollution may pose risks to human health and wellbeing	●	-	All Project Components	• Prior to commencement of construction, develop and implement a detailed Construction Air Quality Management Plan (AQMP). The AQMP will: – Demonstrate compliance with the specific air quality criteria and limits in the Metrolinx *Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment* (2019). – Define the Project's air quality impact zone and identify all sensitive receptors within this area. – Assess the baseline air quality by continuous measurement of local ambient concentrations of $PM_{2.5}$ and PM_{10} over a minimum period of one week, where large local sources of pollution, such as highways, directly affect the zone of influence of the Project. – Estimate and document the predictable worst-case air quality impacts of the Project on sensitive receptors within the air quality impact zone, develop appropriate mitigation measures, demonstrate their effectiveness, and commit to their timely implementation. – Monitor continuously any contaminant, in addition to $PM_{2.5}$ and PM_{10}, which is predicted to exceed its relevant air quality exposure criterion during any phase of the Project and at any receptor. – Include explicit commitment to the implementation of all applicable best practices identified in the Environment Canada document, *Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities* (2005). • Develop a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction. • Refer to the Construction Phase Air Quality Impact Assessment Report (Appendix A5) for further detailed mitigation measures.	• Develop and implement Weekly Air Quality Monitoring Plans that document how air quality monitoring has been conducted and compliance assessed to effectively prevent unacceptable rates of air emissions in accordance with the following guidelines: – The construction related air contaminants of primary concern are in the form of particulate matter, with the principal construction related fractions of $PM_{2.5}$ and PM_{10} - particulate matter of less than 2.5 and 10 micron in diameter, respectively. Other contaminants of concern include crystalline silica and oxides of nitrogen. The list of contaminants will be expanded with any and all air pollutants that may be produced as a result of the work.

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
						– The criteria for $PM_{2.5}$, PM_{10} and crystalline silica are provided in Metrolinx's *Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment* (2019). The applicable criteria for all other air contaminants of concern are to be found in the various schedules of *Ontario Regulation 419/05*. – Siting of the monitors should generally follow the guidelines provided in the Ministry of the Environment, Conservation and Parks (MECP) *Operations Manual for Air Quality Monitoring in Ontario* (2018). • Refer to the Construction Phase Air Quality Impact Assessment Report (Appendix A5) for detailed monitoring activities.
Air Quality	Exhaust emissions of diesel powered trains contribute to local and regional air pollution	-	•	All Project Components	<u>Mitigation Measures</u>: • A detailed Operations Air Quality Management Plan will be developed and implemented to limit the generation and dispersion of airborne particulate matter, NO_X and other air contaminants associated with the project operations. • New traction engines or propulsion systems and new auxiliary engines and power units will meet higher emission standards (i.e., Tier 4 diesels rather than lower tier diesels). • Engines and their emission control equipment will be maintained to manufacturers' specifications. • Rebuilt diesel engines will meet Tier 4 emission standards at the time of major engine rebuilds. • Unnecessary train / engine / propulsion system idling will be minimized through technical and operational measures. • Unnecessary non-revenue equipment runs will be minimized through design and planning.	• On-site inspections will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. • Annually, test train propulsion and auxiliary power units, which produces exhaust emissions and ensure that they remain in compliance with applicable Transport Canada heavy-duty diesel engine exhaust emission standards for CO, PM, NOx and HC. Engine testing will include: – Testing at no load – Testing at 50% load

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
					Mitigation Criteria: • Diesel engines used for traction and auxiliary power in locomotives and DMUs are subject to corresponding US EPA and Transport Canada heavy-duty diesel engine exhaust emission standards for CO, PM, NOx and HC	– Testing at 100% load • Test rebuilt traction and auxiliary power diesel engines, before being placed into service, to the exhaust emission standards they are rebuilt to meet. • Develop an Air Sampling and Monitoring Plan and submit an annual report summarizing all sampling and monitoring results accumulated over the preceding year.
Noise and Vibration						
Construction and Maintenance-related Noise	Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health. The severity of the noise effects resulting from construction projects varies, depending on: • Scale, location and complexity of the project. • Construction methods, processes and equipment deployed. • Total duration of construction near sensitive noise receptors. • Construction activity periods (days, hours, time period). Number and proximity of noise-sensitive sites	•	-	All Project Components	• Prior to commencement of construction, develop and submit a detailed Construction Noise Management Plan. • The Construction Noise Management Plan shall: – Document and commit to all measures to be taken for meeting the noise exposure limits documented in the Metrolinx *Guide for Noise and Vibration Assessment* (2020) at every directly exposed sensitive receptor and throughout the entire project. – Determine the Zone of Influence for construction related noise based on the noise exposure limits outlined in the Metrolinx *Guide for Noise and Vibration Assessment* (2020) and taking into consideration the construction site, staging and laydown sites and hauling routes, each stage of the construction (including demolition), the overall construction schedule along with the schedule of each major component and associated major construction processes and equipment usage. – Identify all sensitive receptors that fall within the Zone of Influence for construction related noise. Mitigation measures will be proposed for these sensitive receptors, and the effects of the proposed mitigation measures will then be evaluated using noise modelling. If results of the modelling indicate that any sensitive receptors still remain within the Zone of Influence for construction related noise, then the following shall apply: ✓ Additional mitigation is proposed and subsequently modelled until the sensitive receptor does not fall within the Zone of Influence; or ✓ If mitigation strategies are not viable, receptor based mitigation will be proposed. • The Construction Noise Management Plan will include the temporary/permanent noise barriers indicated in the applicable noise and vibration construction impact assessment report (2020). Where additional work sites are identified which were not assessed as part of the applicable noise and vibration construction impact assessment report (2020), or where construction activities at any given site differ	• The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and noise related complaints: – Monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. At these locations, monitor noise continuously at each geographically distinct, active construction site with one monitor located strategically to capture the highest exposure level based on planned construction activities and the number, geographic distribution and proximity of noise sensitive receptors. Develop weekly reports describing the monitoring conducted and summarizing the data collected for the reporting period. The reports will include but not be limited to the number and duration

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
	to construction area(s).				from those considered in this report, conduct modelling to evaluate the need for additional noise barriers as part of the Construction Noise Management Plan.	of any incident during which any of the noise exposure limits documented in the Metrolinx *Guide for Noise and Vibration Assessment* (2020) were exceeded, the probable cause of each exceedance, the incident-specific measure(s) implemented, the resulting mitigated noise levels and the complaints investigation procedure. – Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction.
Operational Noise (*Trains)*	Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health. If operations are projected to cause a 5-dB increase or greater in the average energy equivalent noise (referred to as "Leq") relative to the existing noise level or the MECP objective of 55 dBA for daytime and 50 dBA for night-time, whichever is higher, then mitigation is required.	-	•	Linear Facilities	<u>Mitigation per TPAP Study Report (Noise Barriers):</u> • Deploy the noise barriers defined in the *Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020* (RWDI). • Maintain noise barriers so as to ensure their continued effectiveness in noise reduction. • If deviating from the assessments made in the *Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020* (RWDI), comply with the noise impact and assessment criteria in the Metrolinx *Guide for Noise and Vibration Assessment* (2020). <u>Mitigation at the Source:</u> • Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below. <u>Mitigation Criteria:</u> • Meet the following long-term day-time/ night-time maximum noise exposure objectives at all noise sensitive receptors across the system, where background noise levels allow their realization: – 10-year objective: 70/60 dBA – 20-year objective: 60/50 dBA – 25-year objective: 55/50 dBA	• Measure and document the Leq (16-hour) and Leq (8-hour) noise levels, under predictable worst-case conditions, at locations where new noise mitigation barriers have been provided per the 2020 noise and vibration studies and per the Metrolinx Enhanced Mitigation Program. Outdoor measurements will be carried out in accordance with MECP requirements and US FTA Report No. 0123, *Transit Noise and Vibration Impact Assessment Manual* (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s). • Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to noise emissions as part of

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
					• Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol. • Meet the ground-borne (vibration induced) noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol. • Meet any additional future criteria or guidance developed by regulatory agencies, as applicable.	maintenance to ensure continued compliance with manufacturer specifications. • Assess the condition and performance of the rail tracks and switches with respect to noise as part of maintenance to ensure continued compliance with manufacturer specifications.
Construction and Maintenance-related Vibration	Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures.	•	-	All Project Components	• Adhere to the following vibration exposure limits: – Vibration, as a human irritant, is assessed in terms of its average level. Vibration velocity should not exceed 0.14 mm/s or current conditions (whichever is higher) by more than 25%. – As a threat to buildings, vibration is assessed in terms of its peak value. The Zone Of Influence for vibration shall be the area where structures are expected to experience vibration peak particle velocities that exceed 5 mm/s. Vibration velocity should be limited to 8-22 mm/s, depending on vibration frequency. These limits are prescribed by the *City of Toronto* by-law *Vibration: Chapter 363 dated November 27, 2019* for typical structures (not building with special needs). • Adhere to the ground-borne (vibration induced) noise exposure criteria in the US FTA Report No. 0123, *Transit Noise and Vibration Impact Assessment Manual* (2018). • Develop and implement a detailed Construction Vibration Management Plan for Metrolinx review and approval with minimum requirements outlined below: – Complete a detailed construction related vibration assessment prior to the commencement of construction that includes assessment of the vibration Zone Of Influence. The Zone Of Influence for vibration shall be established by using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), *Transit Noise and Vibration Impact Assessment Manual* (2018). – Complete pre-construction condition surveys for properties within the vibration Zone Of Influence of the planned work to establish their condition and establish a baseline prior to any work beginning. – Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures. – Identify buildings, where vibration sensitive activities such as sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures. – Establish a 15-metre setback distance between the construction vibration source and nearby buildings, where possible, to minimize impacts. If this is not possible, then monitor the vibration levels associated with the activity.	• The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints: – Monitor vibration continuously at structures where the Construction Vibration Management Plan indicates that structures are deemed to be within the Zone Of Influence for construction related vibration or at additional structures as requested by Metrolinx. – The type of Vibration Monitoring Program that is established is based on the vibration Zone Of Influence, the project location, duration, presence of night-time activity, and receptor proximity. The monitoring types include: ✓ Type 1: Monitoring continuously throughout the project (for receptors within the Zone Of Influence). ✓ Type 2: Monitoring during most impactful phases of the project only (for receptors

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
					– Select construction/maintenance methods and equipment with the least vibration impacts. – In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available.	outside of the Zone Of Influence but within 50 m of the boundary of the construction site). ✓ Type 3: Monitoring in response to complaints only (for receptors outside of the Zone Of Influence and beyond 50 m of the boundary of the construction site). • Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction.
Operational Vibration (*Trains)*	Vibration can cause annoyance, interfere with human activity and affect human health. It may also cause building damage. A change in vibration levels may occur where there are changes in track alignment, addition of new track, and changes to or addition of special track work. Vibration levels may also change with changes in rail vehicle specifications and operating conditions.	-	•	Linear Facilities	<u>Mitigation per TPAP Study Report</u>: • Deploy mitigation recommended in the *OnCorr Noise and Vibration Study Report* (RWDI). Review and update the vibration assessment during the design of new infrastructure at representative receptor locations to ensure compliance with the vibration exposure criteria in the MOEE/GO Transit *Draft Protocol for Noise and Vibration Assessment* (1994). <u>Mitigation at the Source</u>: • Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below. <u>Mitigation Criteria</u>: • Meet the ground-borne vibration criteria in the 1995 MOEE/GO Transit Noise and Vibration Protocol.	• Measure and document the vibration impacts, under predictable worst-case conditions, of each distinct type of GO Transit train consistently operating in the corridor of interest at locations where the 2020 noise and vibration studies recommends mitigation of vibration impacts. Measurements will be carried out at or near representative vibration sensitive receptors in accordance with MECP requirements and US FTA Report No. 0123, *Transit Noise and Vibration Impact Assessment Manual* (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s). • Assess the condition and performance of locomotives, coaches, DMUs and EMUs with respect to vibration levels as part of maintenance to ensure continued compliance with manufacturer specifications.

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
						• Assess the condition and performance of the rail tracks and switches with respect to vibration levels as part of maintenance to ensure continued compliance with manufacturer specifications.
Traffic and Transportation						
Road Network	Construction may result in the need for temporary road or lane closures changing access to nearby land uses.	•	-	Denison Street	• Traffic Control and Management Plan(s) will be developed prior to construction to maintain reasonable access through work zones, to the extent possible. • Access to nearby land uses will be maintained to the extent possible. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur. • Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate wayfinding, regulatory, and warning signs. • Traffic signal timing optimization may be assessed/implemented to increase capacity of affected intersections and to aid in the movement of traffic. Traffic signal timing adjustments would require coordination between Metrolinx and the relevant municipality, and will be undertaken if required, to determine appropriate changes to traffic signal timings. • Existing sidewalks and crossings will be maintained to the extent possible. • Construction schedules will be shared with the public in advance of any construction works to reduce traffic during peak hours.	• Traffic impacts to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period. • Cycling network impacts to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period.
		•	-	Kennedy Road		
		•	-	Passmore Avenue		
		•	-	McNicoll Avenue		
		•	-	Huntingwood Drive		
		•	-	Havendale Road		
		•	-	Progress Avenue		
Road Network	Removal of rail crossings / road closure may require modifications to traffic signal timing at adjacent intersections.	-	•	Denison Street	• Traffic signal timing optimization may be assessed/implemented to increase capacity of affected intersections and to aid in the movement of traffic. Traffic signal timing adjustments would require coordination between Metrolinx and the relevant municipality, and will be undertaken if required, to determine appropriate changes to traffic signal timings.	• Traffic impacts to be monitored in accordance with municipal requirements
		-	•	Kennedy Road		
		-	•	Passmore Avenue		
		-	•	McNicoll Avenue		
		-	•	Huntingwood Drive		
		-	•	Havendale Road		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
		-	●	Progress Avenue		
Traffic Network	Construction may result in access restrictions to local bus routes, temporary changes in bus stop shelters/locations and temporary disruptions to the existing rail corridor.	●	-	Denison Street	• Ensure that the public is notified in advance of any potential service disruptions. • Consult with local transit agencies to establish a suitable mitigation strategy to be implemented.	• Traffic impacts to be monitored in accordance with the Traffic Control and Management Plan and adjusted as necessary during the construction period.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		-	-	McNicoll Avenue		
		-	-	Huntingwood Drive		
		-	-	Havendale Road		
		●	-	Progress Avenue		
Cycling, Pedestrian and Trail Network	Temporary effects on cyclists / pedestrians such as temporary partial or full sidewalk closures.	●	-	Denison Street	• Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate way finding, regulatory, and warning signs. • Special directional signage will be considered to help pedestrians and cyclists avoid any potential construction activities. • Existing sidewalks and crossings will be maintained to the extent possible. • Construction schedules will be shared with the public in advance of any construction works to reduce traffic during peak hours.	• Cycling network effects to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period.
		●	-	Kennedy Road		
		●	-	Passmore Avenue		
		●	-	McNicoll Avenue		
		●	-	Huntingwood Drive		
		●	-	Havendale Road		
		●	-	Progress Avenue		
Cycling, Pedestrian and Trail Network	Effects on the flow of cyclists / pedestrians during operations	-	●	Havendale Road	• Once the new Havendale multi-use crossing is operational, properly marked and well-connected walkways and cycling routes will be provided, as well as appropriate signage for the terminated road and road detours where required. • Design elements were incorporated into the exit of the ramp structure on both sides of the rail corridor at the Havendale multi-use crossing, providing cyclists with indirect access to Havendale Road and preventing the potential for cyclists to inadvertently exit directly onto Havendale Road.	• No monitoring required.
Stormwater Management						

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
Potential Impacts and Proposed Mitigation Measures for Stormwater and Site Drainage	The proposed construction activities pose a potential impact due to sediment transport into adjacent natural areas including watercourses, wetlands and municipal drainage infrastructure. The proposed works may result in increases to impervious areas, with potential effects to water quantity and quality. In addition to the increases in impervious coverage, there may be alterations to the local drainage system, both overland (major drainage system) and storm sewers (minor drainage system).	•	•	Denison Street	• Prepare and implement a Drainage and Stormwater Report, an Erosion and Sediment Control Plan, detailed drainage design and erosion and sediment control drawings in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual (2003), Toronto and Region Conservation Authority's (TRCA) Erosion and Sediment Control Guideline for Urban Construction (2019), as amended from time to time, and the guidelines and regulatory requirements of the Conservation Authority having jurisdiction. • The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial and federal requirements, as amended, as well as the requirements of Conservation Authorities having jurisdiction. • A detailed assessment of proposed ditches along the rail corridor is required to ensure adequate drainage conveyance in accordance with municipal requirements and American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (2019). • Infiltration requirements for municipalities will be determined as per the design guidelines and standards. • Kennedy Road: To offset the potential impacts to wetlands, the grades and drainage system on the periphery of the grade separation may need to be designed to result in minor local drainage diversions to the wetland features. An annual water budget for existing, future (without mitigation) and future (with mitigation) would have to be conducted. Input from a terrestrial biologist is required to review the annual water budget variations for existing and future conditions. • Progress Avenue: Any proposed bridge expansions and culvert replacements will be sized to maintain or improve local flood levels and supported by hydrologic/hydraulic calculations and/or models. Creek bed and banks design will include geomorphological input for scour and erosion prevention, and creation of appropriate fish habitat. • Progress Avenue: A hydraulic assessment of each crossing and any proposed bridge expansions (replacements) is required to determine proposed flood levels and associated creek bed and bank treatments to prevent scour and erosion and facilitate fish passage. Where applicable, the regulatory model(s) will be obtained from the local Conservation Authority to assess the hydraulic impacts along regulated watercourses. • Develop and implement a Spill Prevention and Response Plan in accordance with the Project Agreement.	• Turbidity levels within discharges from sites to be monitored visually. Turbidity levels will be monitored upstream and downstream of sites at watercourse crossings or adjacent to watercourses. Turbidity levels within discharges from sites and within receiving storm sewers will also be monitored visually to determine potential impacts from construction. • Grab samples for existing watercourses and/or wetlands, when runoff from the site discharges to a watercourse and/or wetland will be conducted for pre-construction, during construction, and post construction conditions until the site is considered stabilized. Grab samples for watercourses and wetlands will be taken for non-precipitation event and for precipitation events to obtain a reasonable understanding of the turbidity levels. Post-construction monitoring of wetland areas may be required depending on input from Conservation Authorities. • Monitoring will be conducted for potential oil spills and containment of spills to be conducted as per provincial requirements. • Functionality of stormwater quantity controls including peak flows and water levels for storm events within the design range. Monitoring would require local rainfall data.
		•	•	Kennedy Road		
		•	•	Passmore Avenue		
		•	•	McNicoll Avenue		
		•	•	Huntingwood Drive		
		•	•	Havendale Road		
		•	•	Progress Avenue		

Environmental Component	Potential Effects	Project Phase Construction	Project Phase Operation	Location	Mitigation Measure(s)	Monitoring Activities
						• Infiltration targets, measured by flow monitoring on infiltrative Low Impact Development Best Management Practices. • Stormwater quality measures will be assessed to provide a minimum 80% Total Suspended Solids removal as per the MECP *Stormwater Management Planning and Design Manual* (2003).

5.0 Climate Change Considerations

This section outlines how climate change considerations were taken into account in the environmental assessment and design of the proposed infrastructure associated with the Project. Specifically, this section describes how the TPAP incorporates the MECP guidance for considering climate change in environmental assessments, with a focus on climate change mitigation and adaptation.

The Intergovernmental Panel on Climate Change (IPPC) defines climate change as:

> *"…a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use." (Intergovernmental Panel on Climate Change 2014)*

The term "climate change" can apply to any major variation in temperature, wind patterns or precipitation that occurs over time. Changes in the composition of the atmosphere are resulting in processes that alter global temperature, precipitation, and are affecting local weather patterns. These processes are leading to increased occurrence of extreme weather events such as floods, droughts, ice storms and heat waves across the GGH (Metrolinx 2017c).

To mitigate climate change and its effects on the natural and built environments, government agencies at all levels have developed strategies and guidelines to reduce greenhouse gas (GHG) emissions into the atmosphere. Government agencies are also implementing measures that promote resiliency to a changing climate. Consistent with these strategies and guidelines, the planning and design of this Project will consider both climate change *mitigation* (i.e., minimizing effects of a project on climate change) and *adaptation* (i.e., resilience of a project to future climatic conditions).

Section 5.1 outlines the policy context which guides how climate change has been considered in the planning of this Project. Sections 5.2 (mitigation) and 5.3 (adaptation) describe how these considerations are being implemented in Project planning and design. Given the relatively small effects of the transit project on climate change, and Metrolinx's extensive existing guidance on how to build and operate the infrastructure considering future extreme weather events, reference to existing climate change

strategies and policies was judged to be sufficient in considering climate change in the TPAP.

5.1 Policy Context

5.1.1 Government of Ontario

The Government of Ontario has committed to reducing GHG emissions to 30% below the 2005 levels by 2030 (i.e., 143 megatonnes of carbon dioxide equivalent (CO_2e) by 2030) (Government of Ontario 2018).

The *Infrastructure for Jobs and Prosperity Act*, *2015* (Province of Ontario 2015) indicates that infrastructure should be planned to mitigate effects on climate change and be designed to consider climate change adaptation. Specifically, Section 3.11 of this Act states that:

> *"Infrastructure planning and investment should minimize the impact of infrastructure on the environment and respect and help maintain ecological and biological diversity, and infrastructure should be designed to be resilient to the effects of climate change."*

The 2020 Provincial Policy Statement (PPS) (Ministry of Municipal Affairs and Housing 2020) issued under the *Planning Act* advises on the need to consider reducing GHG emissions and reducing the potential risk of climate change-related events like droughts or intense precipitation. It encourages green infrastructure and strengthened stormwater management requirements; energy conservation and efficiency; reduced GHG emissions; climate change adaptation (e.g., tree cover for shade and for carbon sequestration); and consideration of the increased risk associated with natural hazards (e.g., flooding due to severe weather).

Applicability to the Transit Project

Improving the public transit network can reduce traffic congestion and reduce the need for new road infrastructure, as well as reduce carbon emissions and air quality concerns associated with automobile use, contributing to reductions in GHG emission and helping to achieve provincial targets. Metrolinx is working in alignment with the intent of the *Infrastructure for Jobs and Prosperity Act*, *2015* in the planning and design of the Project.

Since infrastructure proposed by the Project have life spans that have the potential to face significant climatic changes based on conservative climate projections , there is a need to consider both the operational impacts to climate change, as well as how the

Project will be affected by future climate change-related events such as droughts or intense precipitation. This includes consideration of most of the aspects highlighted in the PPS, including green infrastructure; stormwater management; energy conservation and efficiency; GHG emissions; vegetation/carbon sequestration; and resiliency to natural hazards such as flooding. Specific measures related to these aspects are further discussed in Sections 5.2 and 5.3.

5.1.2 Ministry of the Environment, Conservation and Parks

The MECP has prepared a guide titled *Considering Climate Change in the Environmental Assessment Process* (MECP 2017), to describe how environmental assessment processes shall incorporate consideration of climate change impacts, including:

- The effects of a project on climate change;
- The effects of climate change on a project; and
- Various means of identifying and minimizing negative effects during project design.

Considering climate change in accordance with the guide is meant to result in a project that is more resilient to future changes in climate and helps maintain the ecological integrity of the local environment in the face of a changing climate.

The guide states that proponents should take into account climate change mitigation and adaptation during both the assessment of alternatives to the undertaking and alternative methods of implementing the undertaking. Specific to transit projects assessed under the TPAP, the guide advises that the consideration of climate change should be scaled to the significance of the project's potential environmental effects, and that evaluation can be qualitative and/or quantitative.

Applicability to the Transit Project

The TPAP starts with a selected transit project. *O. Reg. 231/08* does not require proponents to look at the rationale and planning alternatives or alternative solutions to public transit or the rationale and planning alternatives or alternative solutions to the particular transit project (MOECC 2014). The climate change assessment contained in this EPR focuses on the various design and mitigation measures that will support climate change mitigation and adaptation during operations of the Project.

Since the Project will be operational for the foreseeable future, it will likely be affected by future climate change-related events such as droughts or intense precipitation. As a result, designs, construction and operations should consider the potential for these future events. The Project will continue to take climate change considerations into

account as the design progresses beyond the TPAP, advancing from its current conceptual level of design in future Project phases.

Table 5.1 outlines how climate change was considered in this Project. Each of the areas considered is described in greater detail in Sections 5.2 and 5.3.

Table 5.1: Consideration of Climate Change in the Pre-TPAP and TPAP Phases

Consideration	Project Phase	Areas considered	Type of Evaluation
Effects of the Project on climate change (mitigation)	Pre-TPAP, detailed design, construction, operations	• Planning for transit	• Qualitative
		• GHG emissions	• Quantitative
		• Vegetation removal and compensation	• Qualitative
		• Energy consumption and emissions	• Qualitative
		• Environmental Management System	• Qualitative
Effects of climate change on the Project (adaptation)	Detailed design, construction, operations	• Air temperature (building materials, solar infiltration, shade, urban heat island effect)	• Qualitative
		• Precipitation (stormwater management, • low impact development, erosion and sediment control)	• Qualitative
		• Drought (water reuse/reduction, vegetation)	• Qualitative

Further, Table 5.2 outlines how the primary expectations for proponents when considering climate change according to the MECP's guide (as indicated by "should" statements in the guide) have been addressed in the EPR.

Table 5.2: Consideration of Climate Change in the EPR

Recommendation	Section(s)
The ministry expects proponents to take into account: • The project's expected production of greenhouse gas emissions and effects on carbon sinks (climate change mitigation) • Resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation	• Section 5.2.2 (greenhouse gas emissions) • Section 5.2.3 (effects on carbon sinks) • Section 5.3 (climate change adaptation)
The proponent should also include a discrete statement in their study report detailing how climate change was considered in the environmental assessment	• Section 5.1.2, Table 5.1
Proponents of natural resource related projects should consult Appendix B for treatment of carbon stocks as sinks versus sources	The transit project is not natural resource related, so this is not applicable
Proponents should include evaluation criteria, such as greenhouse gas emissions and effects on carbon sinks, in the assessment of alternatives and alternative methods	The TPAP does not include an assessment of alternatives or alternative methods, so this is not applicable
In concluding an environmental assessment study, the proponent should also include a statement in their study report about how climate change was considered in the environmental assessment and how the preferred alternative (project) is expected to perform with climate change considered	Section 5.0
Proponents should include evaluation criteria such as extreme weather events in their screening of alternatives, and alternative methods	The TPAP does not include an assessment of alternatives or alternative methods, so this is not applicable
Proponents should also include in their study report, a statement about how climate change was considered in the environmental assessment, specifically in relation to the preferred alternative (project)	The TPAP does not include an assessment of alternatives or alternative methods, so this is not applicable
All climate parameters with potential to interact with a project should be defined and considered at a screening level to fully understand which interactions pose higher risk	Section 5.3, Table 5.3
Proponents should also document any uncertainty related to either downscaling climate change projections to specific sites, or expected effects to the environment or project, within the environmental assessment	Metrolinx is moving towards using downscaling projections as described in its *Planning for Resiliency* report (Metrolinx, 2017) to inform decisions regarding planning, construction and operations of infrastructure. This considers adaptation to climate change across all infrastructure assets,

Recommendation	Section(s)
	including existing and future stations
Considering climate change in the terms of reference for an environmental assessment should commit the proponent to considering climate change effects in related project studies prepared in support of the environmental assessment report	The TPAP does not include a terms of reference, so this is not applicable
Considering climate change in an environmental assessment should result in the proponent refining and documenting measures for dealing with climate change effects as the undertaking moves toward implementation stage. Examples could include adapted design or maintenance schedules, additional studies, and revised operating procedures	Section 5.3
Considering climate change in streamlined environmental assessment processes and studies could result in the inclusion of a commitment on how the proponent will implement climate change adaptation and mitigation measures during the detailed design phase of any given project	Section 5.2 and Section 5.3
Proponents should consider whether making reference to existing climate change strategies or policies alone is sufficient as a consideration of climate change, or whether a more detailed consideration of climate change should be carried out when conducting project-specific environmental assessment studies. Documentation of the results of this consideration should be included as part of project reporting	Section 5.0

5.1.3 Metrolinx

Metrolinx's Regional Transportation Plan (RTP) 2041 (Metrolinx 2018b) outlines the long-term projects, plans, and activities Metrolinx will deliver to support reduction of Ontario's overall GHG emissions by promoting a shift from single occupant vehicles to more energy-efficient options such as public transit, walking, cycling, carpooling, and teleworking.

Climate Change Considerations
February 16, 2021

Metrolinx is committed to ensuring that the existing transit network and proposed infrastructure will have a low-carbon footprint[2] and contribute to a clean and healthy environment for future generations (Metrolinx 2016). Metrolinx has outlined key climate change goals in its Sustainability Strategy (2015 – 2020) (Metrolinx 2016). The Sustainability Strategy addresses climate change through five goals, which are:

- Goal 1: Become Climate Resilient – Accelerate and intensify our efforts to implement a climate adaptation and resilience program to manage and mitigate climate change risks.
- Goal 2: Reduce Energy Use and Emissions – Adopt processes, programs and technologies that allow us to effectively track, monitor and reduce our energy consumption, and carbon and air emissions.
- Goal 3: Integrate Sustainability in our Supply Chain – Minimize the impact associated with the use, extraction, processing, transport, maintenance, and disposal of materials and integrate sustainability criteria into our vendor management decisions. This goal extends to consideration of embodied carbon (i.e., the carbon dioxide emitted during the manufacture, transport and construction of materials, together with end of life emissions).
- Goal 4: Minimize Impacts on Ecosystems – Consider the impact of infrastructure and services on ecosystems and ecosystem services and make best efforts to manage, preserve and protect. This includes the consideration of infrastructure projects within the broader context of ecosystems and ecological values, including watershed/stormwater management considerations.
- Goal 5: Enhance Community Responsibility – Leverage our significant investment in the region to create a lasting legacy for our communities and work closely with communities to create economic and social value.

For GO stations, terminals, and facilities, including this Project, Metrolinx generally requires that contractors adhere to the *GO Design Requirements Manual* (DRM) (Metrolinx 2020) and other applicable Metrolinx design standards, including the Metrolinx Sustainable Design Standard. The DRM outlines the Guiding Principles and technical details for designing and building GO station infrastructure (Off Corridor

[2] A carbon footprint is the total greenhouse gas emissions attributed to a body (e.g., person, facility, or event) expressed as carbon dioxide equivalent (CO2e). CO2e is a standard unit for measuring carbon footprints, as a way to express the impact of each different greenhouse gas in terms of the amount of CO2 that would create the same amount of warming.

[OffCorr] infrastructure). The DRM covers a number of areas directly and indirectly related to climate change adaptation and mitigation, including stormwater management, energy consumption and emissions, and vegetation. Effort will be made to apply DRM requirements to the infrastructure components to the maximum extent possible. The Metrolinx Sustainable Design Standard outlines specific design requirements and reporting direction for designing and building projects with capital costs over $100 million or otherwise required by Metrolinx. The Sustainable Design Standard covers a number of areas related to climate vulnerability and risk assessments and stormwater management. Effort will be made to apply Sustainable Design Standard requirements to infrastructure components to the maximum extent possible.

Applicability to the Transit Project

Of the goals identified above, Goals 1, 2 and 4 align most directly with climate change adaptation and mitigation as described in the MECP's guide. Goal 1 is focused on adaptation and has been considered in various aspects of new facilities design. Goal 2 relates to minimizing emissions during operations (mitigation), while Goal 4 focuses on minimizing impacts to ecosystems both during construction and operations (adaptation and mitigation). The following sections outline how project planning and design have been undertaken with regard to climate change mitigation and adaptation.

Goals 3 and 5 more broadly speak to how the construction and operations of the Project can minimize environmental impacts as well as maximize social value. These goals are discussed throughout this section.

5.2 Considering the Effects of the Transit Project on Climate Change (Climate Change Mitigation)

As indicated in Table 5.1, the effects of the Project on climate change (mitigation) have been evaluated both quantitatively (for GHG emissions) and qualitatively (for transit planning, vegetation compensation/revegetation, energy consumption/emissions and environmental management systems).

5.2.1 Planning for Transit

Public transportation is a beneficial service that can reduce traffic congestion, the need for new road infrastructure, and carbon emissions and air quality concerns associated with automobile use.

Improvements to transit will decrease average transit trip times in the GGH, even with an increasing population, leading to more people using public transportation and fewer vehicle-kilometres travelled in congested conditions. This reduction in congestion, when

combined with expected improvements in automobile fuel efficiency, will result in a decrease in per capita GHG emissions from automobile trips (Metrolinx 2018).

The Project has been identified for implementation through a comprehensive, iterative planning process for new infrastructure in the GGH. Business case analysis for the GO Expansion Program has indicated that benefits (travel time savings for new customers, auto usage decrease, increased service) outweigh impacts (delays to upstream passengers, auto usage increase). Further information about the business cases is provided in Section 1.3.1.1. It is anticipated that the introduction of these new tracks and facilities will assist in implementing the planned service increases and thus increasing the use of public transportation, thereby decreasing congestion and improving per capita GHG emissions.

5.2.2 Greenhouse Gas Emissions

The successful Project consortium will be required to establish a baseline of GHG emissions for the Project once operational and monitor energy use of all forms for future opportunities for reduction (this should be done using a three-year baseline in order to establish a normalization of energy data). An accurate picture of energy savings can be developed in accordance with the new Metrolinx GHG Corporate Reporting process and standards.

Greenhouse gas emissions were not included in the construction air quality investigation as a detailed Construction AQMP will be prepared by the Contractor, that will include specific air quality objectives as outlined in the Metrolinx Environmental Guide of Air Quality and Greenhouse Gas Emissions Assessment (Metrolinx 2019a).

5.2.3 Vegetation Compensation and Revegetation

As noted in Sections 5.2 and 5.3, the construction of the new infrastructure will require the removal of trees and vegetation, which will result in a temporary loss of an existing carbon sink within the local environment.

Metrolinx is establishing a Vegetation Removal and Compensation Protocol for GO Expansion projects. The Metrolinx Vegetation Guidelines (Metrolinx 2020) will be applied to the Project. Vegetation or trees that are removed will be compensated for in accordance with the provisions of this protocol, as follows:

- **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 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 regulated areas 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:** Options for the end use of trees removed from Metrolinx property (e.g., reuse/recycling options) will be developed.

Compensation of disturbed areas will take place as soon as possible. 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.

Additionally, the Metrolinx DRM requires that plant materials suitable to the growing environment at project sites be selected for vegetation/revegetation, and that species (native or non-native) must be hardy, drought and salt-tolerant, and resistant to the stresses of compacted soils and weather exposure.

5.2.4 Energy Consumption and Emissions

To lower the energy consumption and carbon footprint of the proposed infrastructure, the successful Project consortium will be required to explore (sequentially) the following groups of methods for applicability and feasibility: energy efficiency, energy conservation and recovery, and energy harvesting. Examples include:

- **Energy efficiency** – use premium efficiency motors or other equipment; applying passive means of reducing energy where it does not conflict with other operational design requirements, including the use of building materials with high-insulation/energy efficiency value where possible.

- **Energy conservation and recovery** – employ regenerative braking systems to capture energy from braking vehicles (already proposed for the GO Rail Network Electrification (2017)); and

- **Energy harvesting** – consider incorporating solar thermal systems, passive solar systems and/or ground source heat pump systems to replace or augment fuel-based systems.

These and other considerations will be developed into an Energy and Emissions Management Plan that will include targets and programs to promote continuous reduction of energy and emissions (both GHG and criteria air contaminant).

5.2.5 Environmental Management System

Metrolinx has developed an Environmental Management System (Env.MS), which outlines an organization-wide framework for pursuing environmental compliance and continuous environmental improvements. The Env.MS, which follows the ISO 14001 standard[3], is currently expanding from its operational focus to encompass additional environmental responsibility and stewardship considerations.

The overall objectives of the Metrolinx Sustainability Strategy are reflected in the Env.MS with respect to climate change mitigation, energy use reduction, and air emissions (i.e., GHG) management. Both the construction and operation of the Project will be subject to Metrolinx's Env.MS.

The Env.MS includes:

- Environmental standards for managing chemicals, solid waste, regulated waste, bulk storage and fuel handling, water use and disposal, energy use, air emissions, ozone-depleting substances, designated substances and hazardous materials, snow and ice, and wildlife and vegetation;
- Compliance audits and corrective action planning;
- Environmental reporting metrics;
- Monitoring of environmental impacts; and
- Monitoring of energy use and air emissions.

[3] ISO 14001 is an international standard that outlines specific requirements for an effective environmental management system. The standard provides a framework suitable for use by an organization, and covers topics such as: Context of the organization, Leadership, Planning, Support, Operation, Performance evaluation, and Improvement.

Through the use of standards, audits, and reporting, the Env.MS will promote ongoing compliance with regulatory and corporate environmental requirements throughout construction and operations of the Project. Additionally, monitoring of impacts will support ecosystem resilience, consistent with overall Metrolinx sustainability objectives.

Additionally, a Sustainability Plan for the Project will be developed by the successful Project consortium and will be aligned with the Env.MS. Once developed, this Sustainability Plan will be incorporated into the Env.MS to help ensure that the Project maintains environmental compliance and continuous environmental improvement.

5.3 Considering Potential Effects of Climate Change on the Transit Project (Climate Change Adaptation)

It is recognized that climate change is already underway and can be anticipated to affect the construction and operations of the Project. There is general agreement that the Great Lakes Basin will see increases in temperature, precipitation, drought, wind gust events, and freezing rain by the end of this century; however, the level of confidence and quality of supporting evidence for these projections vary considerably (Metrolinx 2017c). Table 5.3 shows changing climate parameters and predictions for climate change.

Table 5.3: Metrolinx Climate Parameters List: Probability And Scores

Climate Parameter	Threshold	Annual Probability		Prob. Of Occurrence for Period (2015-2050)	PIEVC Scoring		
		Historical	2050s		Annual: Historical	Annual: 2050s	Study Period (35 year)
Extreme Temperatures	40°C	~0.01 per year	1-7 days per year	~100%	1	7	7
	32°C	6.5 days per year	27.5 days per year	1	7	7	7
	-30°C	0.05 days per year	<0.01 days per year	<70%	2	0-1	5-6
	-23°C	1.1 days per year	0.1 days per year	1	7	3	7
Temperature Ranges	60°C in one year	0.1 days per year	<0.01 events per year	<90%	3	0-1	6
Reduced Visibility (e.g., fog, blowing snow)	400 m	49 hours per year, 15.1 days per year	strong trend ↓, stable recent period	1	7	6-7	7
	200 m	33 hours per year, 11.9 days per year	strong trend ↓, stable recent period	1	7	6-7	7
Frost Penetration	1.2 m or below	0.17 per year	Trend↓ but some conflicting factors	>90%	4	3	6-7
High Winds (Gusts)	90 km/h	2 per year	>2.5 per year	1	7	7	7
	120 km/h	0.05 days per year	Likely ↑	85% or higher	2	2	6-7
Tornadoes	EF1+	1-in-6,000	Unknown	~0.6%	0	0	0-1
Overland Flood/ Heavy Rainfall	≥25 mm in 2 hour	~ 0.8 events per year	Very likely ↑	1	6	6	7
	≥60 mm in 2 hours	≤ 0.03 events or less per year	Very likely ↑	~70%	1-2	2	6

Climate Parameter	Threshold	Annual Probability		Prob. Of Occurrence for Period (2015-2050)	PIEVC Scoring		
		Historical	2050s		Annual: Historical	Annual: 2050s	Study Period (35 year)
Freezing Rain	≥ 10 mm	~ 0.2 days per year	~ 0.3 days per year	~100%	4	4-5	7
	≥ 25 mm	0.06 days per year	>0.09 days per year	>95%	2	3	7
Snow	Blowing snow	7.8 days per year	Trends not significant to scoring	1	7	7	7
	≥ 20 cm in one day	0.1 days per year	Conflicting trends, likely remaining similar	>95%	3	3	6-7
Hail	"Gold ball" / 45 mm or larger	0.07 per year	Unknown	>90%	2-3	unknown	6
Horizontal Rain	Gusting 50km/h + >25 mm rain	1.8 days per year	Slight trend ↑	1	7	7	7
Lightning	Direct strikes	~ 0.3% per year	Likely ↑	>99%	1	unknown	3

To focus the consideration of effects of climate change on the Project, only those themes where there is high or medium agreement on data are addressed in the sections below, for both the construction and operations phases of the Project.

5.3.1 Air Temperature

Recognizing increasing summer temperatures, the DRM considers reducing effects of extreme heat on all Metrolinx assets. It should be noted that DRM requirements may not be applicable for all of the different infrastructure components. The DRM indicates that new GO infrastructure designs will:

- Consider building material selection to limit absorption of solar radiation.
- Automate building systems to reduce solar infiltration (i.e., automatic window blinds) or provide manual alternatives.
- Maximize shade along pedestrian routes and in parking areas.
- Mitigate the urban heat island effect through plantings, selection of building materials and proactive shade management.

5.3.2 Precipitation

Precipitation, whether it is rainfall, snowfall, or other forms of frozen/liquid water, is the key climate and weather-related variable of concern in stormwater management (SWM). As a result of climate change, storm events are predicted to become more intense in the GGH, which can result in larger volumes of precipitation at one time.

The SWM design for the Project will consider the drainage and SWM objectives of the MECP Stormwater Management Planning and Design Manual (2003), MTO Drainage Management Manual (2008), TRCA Stormwater Management Criteria (2012), the City of Toronto's Design Criteria for Sewers and Watermains (2019d), the City of Toronto's Wet Weather Flow Management Guidelines (2006)Low Impact Development Guidelines for Storm Water Management Design (2010), and the American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering (2017). This will be supplemented by current guidance such as the runoff volume control targets for Ontario recommended to MECP (Aquafor Beech Ltd. and Earthfx Inc., 2016) from local municipalities and Conservation Authorities.

Stormceptors[4] and stormwater management features must be sized appropriately to manage predicted future scenario flows and sediment loading (i.e., winter and spring).

5.3.3 Intensity-Duration-Frequency Curves

A detailed SWM Plan will be developed prior to the construction phase of the Project so that runoff from rainfall is controlled based on predicted future scenarios, to promote climate resilience. These scenarios will be identified by using the most up-to-date precipitation intensity-duration-frequency (IDF) curves available.

IDF curves are graphical representations of the amount of water that falls within a given period of time in catchment areas and are used by decision makers to plan and design infrastructure to withstand severe weather impacts (Office of the Auditor General of Canada 2016). Current SWM practices include the use of IDF data and design storm distributions (e.g., Chicago Storm, Hurricane Hazel), as well as 2-year through to 100-year[5] storm events.

Designing the SWM systems for the Project based on up-to-date IDF curves will lead to:

- Reduced ongoing operation and maintenance requirements; and,
- Minimized impacts on surrounding ecosystems, since SWM systems will be designed to ensure that runoff from rainfall is controlled mostly on-site.

5.3.4 Low-Impact Development

The SWM designs for the Project will consider implementation of Low Impact Development (LID) measures. LID is a SWM strategy that seeks to mitigate the impacts of increased runoff and stormwater pollution by managing runoff as close to its source as possible (i.e., in the vicinity of the proposed infrastructure). Compared to conventional design, LID measures allow for increased infiltration of stormwater through built infrastructure, which would be beneficial for managing stormwater should storms increase in intensity. LID design strategies include measures that can effectively remove nutrients, pathogens and metals from runoff, and reduce the volume and intensity of stormwater flows (Sustainable Technologies Evaluation Program (STEP), 2019).

[4] A stormceptor is an oil grit separator/hydrodynamic separator, designed to protect waterways from hazardous material spills and stormwater pollution.
[5] Storm even frequency is used to simplify the definition of a rainfall event that statistically has a chance of occurring once within the given time period (e.g., a 100-year storm has a 1 in 100 (1%) probability of occurring in any given year.

The design of the LID measures will consider the guidance provided in the *Low Impact Development Stormwater Management Planning And Design Guide* (Sustainable Technologies Evaluation Program (STEP) 2019). Over the long-term operation of the Project, SWM facilities including LID measures will be monitored to ensure that these features are maintained appropriately and repaired where and when required.

5.3.4.1 Erosion and Sediment Control Measures

An increase in storm intensity, which is projected as a result of climate change (see Table 5.3), can make erosion and sedimentation more likely, especially during construction. Erosion and Sediment Control (ESC) measures a, including the development of an ESC Plan, will be implemented during the construction phase of the Project to ensure stormwater runoff is controlled and sediment is prevented from entering sewers and watercourses. 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, 2019) and OPSS 805 (Erosion and Sediment Control Measures). Installation and monitoring of appropriate ESC measures will help mitigate potential effects of climate change on the Project.

5.3.5 Drought

As summarized in Table 5.3, the Great Lakes Basin is projected to see increases in frequency and extent of drought. Facilities design will include consideration of water conservation measures to reduce effects of drought on the Project, such as:

- Metering indoor and outdoor water use to better track and manage the impacts of extended droughts on operations and landscape plantings.
- Using collected rainwater for plant irrigation.
- Using water conserving systems to reduce consumption.
- Planting drought resistant vegetation.

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6.0 Consultation Process

6.1 Consultation Overview

In accordance with Section 8 of *O. Reg. 231/08*, this section summarizes the consultation activities carried out with Project stakeholders (public [including property and business owners], agencies, municipalities, elected officials, and interested groups) and Indigenous Nations during the course of the Project, including a summary of feedback and comments received and how they were considered.

6.1.1 Approach to Consultation

The objectives for the consultation program were openness, transparency, access to information, early and ongoing opportunities for input, responsiveness, accountability, and accessible and accurate documentation. These objectives support the purpose of the TPAP, which is to support the design and delivery of a transit solution in a manner that addresses the objectives of provincial and regional transit policy, while limiting negative environmental effects.

In consideration of the number of initiatives Metrolinx is currently pursuing through the GO Expansion Program (refer to Section 1.3.1.1.1), a corridor-wide approach to consultation was undertaken, whereby Metrolinx consulted on currently proposed GO Expansion Projects through a single consultation process to provide a comprehensive overview of these Metrolinx projects across the network. In addition to this Project, Metrolinx has consulted on the following TPAPs as part of the coordinated consultation efforts:

- Electrification TPAP Addendum
- Scarborough Junction Grade Separation
- New Track and Facilities
- Network Wide Structures Project

Focused consultation activities have been tailored to meet the individual needs of the different groups being consulted. Different consultation activities provided the types of information requested by the different groups. For example, direct meetings with government review agencies allowed for a detailed review of specific design components that would require government permits prior to construction; while public meetings allowed for a broad overview of the Project and an opportunity for other

stakeholders and Indigenous Nations to ask specific questions of the Project team based on their particular interests.

Feedback was sought throughout the Pre-Planning and TPAP stages of the study. Consultation activities including meeting with review agencies and elected officials on an as-needed basis in advance of, and throughout the duration of the TPAP study, as well as early consultation prior to the formal initiation of the TPAP, and final consultation as part of the regulated process following the Notice of Commencement.

A contact list (Appendix B) was developed and updated throughout the Pre-Planning and TPAP stages of the study to identify interested parties. The following parties were included in the contact list:

- Government agencies and municipal departments
- Elected officials
- Members of the public, special interest groups, property owners, utilities and the business community
- Indigenous Nations, as identified by the MECP and MTO refer to Section 6.1.3.4

The Pre-Planning stage of the study commenced with the identification by Metrolinx of the need for the Project and development of a Feasibility Study. Consultation activities undertaken as part of Pre-Planning activities included the following key steps:

- Project introduction letters were sent to the parties on the contact list to describe the Project
- Meetings with municipalities, government agencies and elected officials were conducted to introduce and describe the Project, and advance planning/conceptual design discussions
- Technical Advisory Committee meetings with the City of Toronto, City of Markham and York Region to discuss details of the Project in depth
- Letters were emailed to Indigenous Nations to introduce the Project and determine community interest and potential effects on Aboriginal or Treaty Rights
- A series of public meetings were held between February 18 and 29, 2020 to show existing conditions, introduce the Project and describe potential effects and mitigation measures

- Public meeting information was provided on the Project website
- A dedicated Project website and email address were created, www.metrolinxengage.com and GOExpansionTPAP@metrolinx.com or the appropriate Metrolinx Regional Representative emails (YorkRegion@metrolinx.com and TorontoEast@metrolinx.com) to encourage feedback, for receipt of comments and questions, and to post available Project documentation

The TPAP stage of the study commenced with the issuance of a Notice of Commencement. Consultation activities undertaken thereafter, as part of the TPAP, included the following key steps:

- Notice of Commencement distributed to the contact list and published to local media and on the Project website.
- Notice of Public Meetings distributed to the contact list and published to local media and on the Project website
- Online engagement for stakeholderswas undertaken, including encouraging digital feedback , by providing a dedicated email address for receipt of comments and questions, and providing a link on www.metrolinxengage.com through which comments and questions could be submitted
- Follow up consultation with interested parties who provided comments on the environmental technical environmental studies and other Project components, as needed
- Final EPR made available in electronic format for public review
- Notice of Completion distributed to the contact list and published to local media and on the Project website
- Final 30-day review of this EPR by interested parties

Metrolinx has the ultimate responsibility for the safe and effective implementation of the Project and will manage consultation approaches consistent with applicable regulations and standards, making reasonable effort to resolve issues, and track outstanding issues and commitments through subsequent Project phases.

6.1.2 Record of Consultation

Comments and questions arising from consultation activities were tracked and managed on an ongoing basis and incorporated into the development of the EPR as appropriate. All documents produced for consultation activities, including a comment tracking table and registry, were maintained as part of a Record of Consultation (RoC) (Appendix B). The Record of Consultation includes the following:

- Consultation Log that documents consultation activities and includes information on relevant correspondence, notices, presentation materials and communication items for the Project
- Comment Tracking Table used to track comments received and responses provided
- Copies of correspondence letters between Metrolinx and interested parties (contact details redacted as required for privacy)
- Copies of notices and presentation materials, website content
- Commitments registry that tracks commitments made during the TPAP, including those that have been addressed in the EPR, and those that will require additional activity after the issuance of the Notice of Completion (refer to Table 7.2)

6.1.3 Identification of Interested Parties

Potentially interested parties were initially identified through review of the MECP Government Review Team (GRT) list, by reaching out to a local and regional municipal bodies and agencies with jurisdiction in the Study Area, obtaining a list of Indigenous Nations contacts from the MECP and MTO, developing a distribution map for Canada Post mailings within Markham and Toronto, obtaining a list of property owners within 30 m of the Study Area, and identifying any elected officials who may have an interest in the Project. The contact list for the Project has evolved throughout the EA process, based on the level of interest expressed by individuals or additional guidance received by regulatory bodies throughout the study. A mailing distribution map was prepared and is included in Appendix B.

6.1.3.1 Agencies and Public Bodies

Representatives from the following public bodies were included in the stakeholder mailing list.

Federal Government

- Transport Canada
- Canadian Transportation Agency
- Environment and Climate Change Canada
- Health Canada
- Crown-Indigenous Relations and Northern Affairs Canada

Provincial Government

- Ministry of the Environment, Conservation and Parks
- Ministry of Indigenous Affairs
- Ministry of Energy, Northern Development and Mines
- Ministry of Municipal Affairs and Housing
- Ministry of Natural Resources and Forestry
- Ministry of Heritage, Sport, Tourism, and Culture Industries
- Ministry of Transportation
- Ministry of Community Safety and Correctional Services
- Ministry of Economic Development, Job Creation and Trade
- Ontario Heritage Trust
- Infrastructure Ontario
- Ontario Growth Secretariat

Municipal Government, Conservation Authorities and Related Municipal Bodies

- City of Toronto
- City of Markham
- York Region
- Toronto and Region Conservation Authority
- Toronto Catholic District School Board
- Toronto District School Board
- Conseil Scolaire Viamonde
- Conseil Scolaire de District Catholique Centre-Sud
- York Catholic District School Board
- York Region District School Board
- Toronto Transit Commission
- Toronto Public Health Unit
- Municipal police, fire and emergency services

6.1.3.2 Elected Officials

The following elected officials were contacted as part of the Project and included in the stakeholder list:

Members of Parliament

- Scarborough Centre – Hon. Salma Zahid
- Scarborough-Agincourt – Hon. Jean Yip
- Markham-Thornhill – Hon. Mary Ng
- Markham-Unionville – Hon. Bob Saroya

Members of Provincial Parliament

- Scarborough Centre – Christina Maria Mitas
- Scarborough-Agincourt – Aris Babikian
- Markham-Thornhill – Logan Kanapathi
- Markham-Unionville – Billy Pang

Regional and Municipal Officials

- City of Toronto – John Tory (Mayor), Gary Crawford (Councillor), Jim Karygiannis (former Councillor to September 24, 2020), Michael Thompson (Deputy Mayor)
- City of Markham – Frank Scarpitti (Mayor), Don Hamilton (Deputy Mayor), Isa Lee (Ward 8 Councillor), Jack Heath (Regional Councillor), Joe Li (Regional Councillor), Jim Jones (Regional Councillor)

6.1.3.3 Other Stakeholders

Stakeholders who may have an interest in the Project and were not identified through GRT review and consultation with agencies were contacted through email, where email addresses were available, and direct mail where address information was available. The stakeholders contacted include:

Interest Groups and Community-Based Organizations

- Architectural Conservancy of Ontario
- Toronto Lands Corporation
- Centennial Community and Recreation Association
- Coronation Community Association of West Hill
- East Toronto Neighbourhood Association
- Guildwood Village Community Association
- Midland Park Community Association
- Move the GTHA

- Scarborough Historical Society
- Scarborough Business Association
- Transport Action Ontario
- Transit Alliance
- Scarborough Cycles
- South Unionville Resident Forum
- Pocket Community Association
- Unionville Business Improvement Area
- Scarborough Business Association
- Markham Action Group for Improved Community
- Midland Park Community Association
- 14th and Markham Community Association
- Unionville Ratepayers Association
- Raymerville Ratepayers Association
- Markham Village City Ratepayers Association
- South-East Year-Round Alternative Centre
- South Unionville Community Association
- South Markham Residents Association
- Unionville Historical Society
- Greensborough Community Ratepayers Association
- Agincourt Village Community Association
- Markham Village Business Improvement Area

- Downtown Markham Ratepayers Association

Individuals and Landowners

- Property and business owners, as well as ratepayer groups, community organizations, and local interest groups within 100 m of the Project.
- Additional residents and businesses in the surrounding communities of Toronto and Markham.

Businesses

- Local Businesses

Utilities

- Enbridge Gas Inc.
- Hydro One Networks Inc.
- CN Rail
- VIA Rail
- CP Rail
- Ontario Power Generation
- Bell Canada
- Rogers Communication
- Alectra
- MTS - Allstream

6.1.3.4 Identification of Indigenous Nations

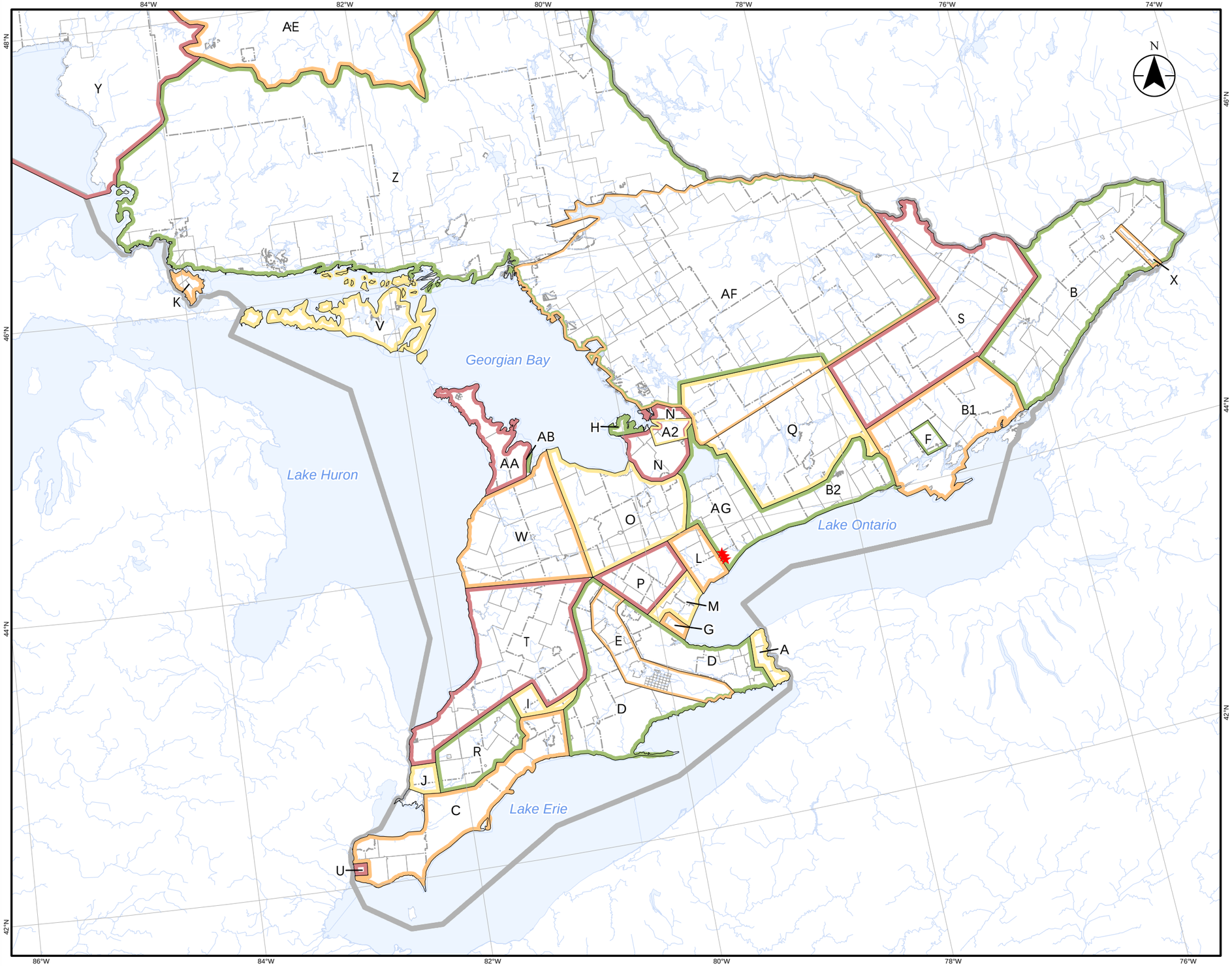
As required under *O. Reg. 231/08*, Metrolinx sent a letter to the Director, Environmental Assessment and Approvals Branch at the MECP (September 13, 2019), requesting a list of bodies that may assist in identifying Indigenous Nations which may have an interest in this TPAP study. The MTO was also consulted for a list potentially-interested Indigenous Nations (April 4, 2019), and is typical for Metrolinx projects.

Indigenous Nations are considered to be separate stakeholders and are provided the same public consultation as the general public, in addition to community-specific engagement opportunities. The consultation process for Indigenous Nations included confirming Indigenous interest in the Project and determining how each interested Indigenous Nation would like to be engaged.

Metrolinx contacted the following Indigenous Nations:

- Williams Treaties First Nations
  - Alderville First Nation
  - Beausoleil First Nation
  - Chippewas of Georgina Island First Nation
  - Chippewas of Rama First Nation
  - Curve Lake First Nation
  - Hiawatha First Nation
  - Mississaugas of Scugog Island First Nation
- Mississaugas of the Credit First Nation
- Huron-Wendat Nation
- Kawartha Nishnawbe First Nation
- Métis Nation of Ontario
- Six Nations of the Grand River
- Haudenosaunee Confederacy Chiefs Council

The locations of the grade-separation sites and above-listed communities are shown in Figure 6.1.



Stantec

Legend

- Site Location
- Municipal Boundary - Upper Tier
- Municipal Boundary - Lower or Single Tier
- Watercourse
- Waterbody

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
B Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
A2 John Collins' Purchase, 1785 (Chippewa)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract:from the Crown to the Mohawk, 1793
F Tyendinaga:from the Crown to the Mohawk, 1793
G Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
I Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No.16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Z Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AF Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG Williams Treaty, October 31st, 1923 (Chippewa)

0 75 150 km

1:3,000,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2016.
3. Treaty boundaries adapted from Morris 1943 (1964 reprint).

Project Location
Province of Ontario

165011004 REVA
Prepared by BCC on 2020-12-17

Client/Project
METROLINX
STOUFFVILLE RAIL CORRIDOR GRADE SEPARATIONS PROJECT

Figure No.
6.1

Title
Project Area in Relation to Surrounding Indigenous Nations

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6.1.4 Influence of Consultation on the TPAP/EPR

Consultation activities undertaken throughout the study were documented and incorporated into the EPR. Key comments received include input on:

- The design approach to Project components, which influenced conceptual design changes and consideration of refinements to the Project, such as options for Progress Avenue and Havendale Road, and sanitary and storm sewer alignments.
- Potential effects to the environmental components, which resulted in:
  - Incorporation of additional details of proposed mitigation to address known potential effects, providing improved clarity and understanding for stakeholders.
  - Review of the effects assessment and associated updates to proposed mitigation measures, as required.
- Project components subject to the need for ongoing discussions as part of design efforts, which resulted in commitments to undertake additional engagement with York Region, the City of Markham and the City of Toronto following the TPAP

Comments and questions received by the Project team were considered and addressed in the report or through direct follow-up by the Project Team.

An overview of the comments received and resulting changes to the Project is presented in Section 6.2.6.

6.2 Pre-Planning Consultation

In advance of issuing the Notice of Commencement for the TPAP, Metrolinx consulted with members of parties identified in the contact list (see Section 6.1.3). The objective of consultation activities during the Pre-Planning phase of the Project was to introduce potentially interested parties to the Project, inform the conceptual design strategy for assessment purposes, receive early information on potential concerns, and determine the level of interest in future consultation activities moving forward.

6.2.1 Public Consultation

6.2.1.1 Project Website

A Project website (www.metrolinxengage.com) was developed to provide an overview of the TPAP and Project information and to keep the public informed of consultation opportunities, provide a summary of the public meetings, and to offer an opportunity to the public to provide comments. The website was updated with the following Project information and notices throughout the Pre-Planning phase of the Assessment:

- Summary of the Project
- Project Contact Information
- Notice of Public Meetings
- Project documentation including maps & program updates, discussion guide & information sheets, studies, proposed infrastructure, roll plans
- Public Meetings Story Boards
- Opportunities to provide comments/feedback or ask questions about the project though the website

6.2.1.2 Public Meetings

6.2.1.2.1 Public Meeting #1

A Notice of Public Meeting was prepared to invite parties on the contact list to attend the meeting, to learn about the Project and provide their questions and/or comments to members of the Project Team. The Notice of Public Meeting was published in the following newspapers:

- Toronto Star
  - Publication dates: February 1 and 8, 2020
- Le Métropolitain
  - Publication dates: January 30 and February 6, 2020
- L'Express
  - Publication dates: January 31 and February 7, 2020

The Notice was also delivered via Canada Post bulk mailout distribution to residents throughout Toronto and Markham, and posted to the Project website. Radio announcements were run on 680 News and 97.3 FM, from January 27 through to February 8, 2020.

The purpose of the Public Meetings was to introduce the Project and Project Team, with the intention of providing information early in the process. Table 6.1 summarizes the key details of the Public Meetings. Project-specific material were made available upon request at each Public Meeting, but the Markham Village Community Centre and Metropolitan Centre sites were the primary focus for this Project.

At the meeting, attendees were encouraged to register at the door to be placed on the contact list, and to fill out comment forms (electronically through email to TorontoEast@metrolinx.com and YorkRegion@metrolinx.com, or on paper) following the session. It was requested that comments be returned by March 13, 2020.

The Public Meeting used poster board displays to provide a visual tool for stakeholders to learn about the Project. The display boards presented as part of the Public Meeting included: background information related to the rail corridor and GO Expansion Program commitments; the existing conditions at the Project locations; the TPAP; and, next steps in the Project. The display boards were also posted on the Project website on February 14, 2020 to allow those unable to attend the Public Meeting to review the materials online.

The public meeting allowed Metrolinx to gather feedback on the Project and respond to questions and concerns. All comments and questions raised during the Public Meeting were addressed by the Project Team. A copy of the poster board displays, and comment forms collected at the Public Meeting can be found in the RoC, in Appendix B.

Table 6.1: Summary of Key Public Meeting Details

Category	Details
Date and Time	Tuesday, February 18, 2020 6:30 p.m. – 8:30 p.m.
Location	Markham Village Community Centre 6041 Highway 7 Markham, ON L3P 3A7
Number of Attendees	80
Feedback Forms Received	16
Project Information Presented and Made Available	Overview Environmental assessment studies information boards Proposed local infrastructure Participant Journey Map GO Expansion Update – Discussion Guide Info sheets
Topics Discussed	Anticipated timelines for planned service increases and construction Road congestion due to construction Lack of parking at GO stations Implementing whistle cessation Lack of safety measures at existing crossings Potential property impacts
Date and Time	Wednesday, February 26, 2020 6:30 p.m. – 8:30 p.m.
Location	Metropolitan Centre 3840 Finch Avenue East Toronto, ON M1T 3T4
Number of Attendees	25
Feedback Forms Received	6
Project Information Presented and Made Available	Overview Environmental assessment studies information boards Proposed local infrastructure Participant Journey Map GO Expansion Update – Discussion Guide Info sheets

Category	Details
Topics Discussed	Proposed infrastructure Anticipated construction timelines and potential impacts Safety at level crossings Noise mitigation Service Improvements

6.2.1.2.2 Public Meeting #2

Due to the COVID-19 pandemic and related concerns regarding social distancing and indoor gathering restrictions, the second public meeting was held virtually. Notification of the public meeting was emailed to individuals and groups on the Project contact list between August 18, 2020 and Aguust 24, 2020. Metrolinx also posted information regarding the event on their social media platforms.

The purpose of the public meeting was to provide additional details regarding the Project, including results of the environment studies undertaken in support of the Project. Table 6.2 summarizes the key details of the public meeting.

Public meeting materials were made available on Metrolinx Engage on August 18, 2020.

Visitors to the public meeting materials on the Metrolinx Engage website were encouraged to complete comment forms (electronically through email to TorontoEast@metrolinx.com). It was requested that comments be returned by September 1, 2020.

Poster board displays were used to provide a visual tool for stakeholders to learn about the Project. The display boards presented as part of the public meeting included: an overview of the environmental studies and a summary of results from the natural environment, archaeology, cultural heritage, socio-economic and land use, transportation and traffic, construction air quality and construction noise and vibration. In addition to the display boards, the draft environmental technical studies were provided.

The public meeting allowed Metrolinx to gather feedback on the Project and the other GO Expansion initiatives and respond to questions and concerns. All comments and questions submitted during the public comment period of August 18 to September 1, 2020 were addressed by the Project Team. A copy of the poster board displays, and comment forms collected at the public meeting can be found in the RoC, in Appendix B.

Table 6.2: Summary of Key Public Meeting #2 Details

Category	Details
Date	Tuesday, August 18 to Tuesday, September 1, 2020
Location	www.metrolinxengage.com
Number of Page Views	Over 1,000
Feedback Forms Received	4
Project Information Presented and Made Available	Environmental Studies Overview webpage Display Boards: • Natural Environment – Study Results • Archaeology – Study Results • Cultural Environment - Study Results • Socio-Economic and Land Use - Study Results • Construction Air Quality – Study Results • Construction Noise and Vibration – Study Results Technical Studies: • Natural Environment Technical Report • Construction Phase Air Quality Impact Assessment Report • Construction Noise and Vibration Assessment Report

6.2.2 Agency and Municipal Consultation

Agency consultation in the Pre-Planning phase of the Project focused on the two key items: introducing the Project to government reviewers and municipal contacts; and seeking input from municipal departments on the Project and the TPAP.

Initial consultation with Agencies included introducing the Project through an introduction letter and a request for information regarding any required regulatory processes that the Project would be required to follow. Metrolinx also sent the MECP and MTO a letter requesting direction on Indigenous consultation for the Project. Metrolinx offered Agency representatives a chance to meet to discuss the Project, with a focus on identification of concerns or requirements that needed to be met.

Agency consultation included information requests, telephone conservations, email correspondence, and meetings with agency representatives. The MHSTCI, and the OHT were also contacted to collect information that was used to develop the Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment. Metrolinx will continue to consult with representatives from these agencies and others as the Project

progresses through the TPAP. A summary of agency consultation activities is provided below.

- City of Toronto: ongoing engagement through the Technical Advisory Committee (TAC) and working group meetings, conceptual design and other Project material review, and iterative comment responses related to Project design to address design standards and coordinate infrastructure requirements. Additional information on how the City of Toronto was engaged as a key design partner is presented in Section 6.2.2.1.

- City of Markham: ongoing engagement through the TAC and working group meetings, conceptual design and other project material review, and iterative comment responses related to Project design to address design standards and coordinate infrastructure requirements. Additional information on how the City of Markham was engaged as a key design partner is presented in Section 6.2.2.1.

- York Region: ongoing engagement through the TAC and working group meetings, conceptual design and other project material review, and iterative comment responses related to Project design to address design standards and coordinate infrastructure requirements. Additional information on how York Region was engaged as a key design partner is presented in Section 6.2.2.1.

- TRCA: general overview of the Project, Kennedy Road and Progress Avenue specific meetings

- MECP: introduction to the Project

- MNRF: request for review of background information related to the Project

- MHSTCI: request for review of background information related to the Project

- MTO: requested feedback on potentially interested Indigenous Nations

- OHT: request for review of background information related to the Project

- GRT: submission of draft EPR and environmental technical studies for review and comment

Table 6.3 provides a high-level summary of meetings with Agencies held during the Pre-Planning phase of the Project. This table demonstrates the context of the meetings.

Table 6.3: Summary of Meetings with Agencies Held During the Pre-Planning Phase

Date	Agency	Meeting Summary
July 15, 2019	Toronto District School Board (TDSB)	Metrolinx provided an overview and description of the proposed pedestrian crossing alignment at Corvette Avenue. Mx provided an overview of the proposed option and project area for Huntingwood Drive Road Underpass. This included the anticipated temporary TDSB property requirements.
July 25, 2019	Toronto and Region Conservation Authority (TRCA)	The first TAC meeting was held. Mx provided an overview of the Project and TRCA provided initial input into preliminary design concepts.
October 11, 2019	TDSB and City of Toronto	The meeting was regarding Corvette Avenue Pedestrian Crossing & Huntingwood Drive Road Underpass Meeting. Metrolinx provided an overview and description of the proposed pedestrian crossing alignment at Corvette Avenue. Metrolinx provided an overview of the proposed option and project area for Huntingwood Drive Road Underpass. This included the anticipated temporary TDSB property requirements.
November 4, 2019	TRCA	This meeting was held to discuss general Metrolinx Project updates.
January 20, 2020	TRCA	This meeting was held to discuss the overall design approach to the Progress Avenue grade separation, options analysis for east and west of the rail corridor, intersection with TRCA regulated areas and provide the results of the Kennedy Road wetland risk evaluation.

6.2.2.1 Municipal Engagement

During the pre-planning phase of the Project, Metrolinx engaged with the City of Toronto, City of Markham and York Region at both the staff and leadership levels to help inform the conceptual design assessed in this EPR, and confirm commitments for incorporating additional design detail as planning progresses beyond the TPAP phase. Metrolinx acknowledges the integral relationship required with the City of Toronto, City of Markham and York Region to support the development of the conceptual desk and in the identification of applicable policies, standards and future City and Region initiatives relevant to key structural Project components.

The pre-planning engagement with the Cities and Region focused on Project design elements and implementation and has included cost sharing negotiations, discussions on design standards, discussion related to impacts on the Cities and Region infrastructure, mitigation requirements related to City and Regional standards, policies, plans, and discussion regarding new City or Regional assets requiring ongoing management and maintenance.

The Project Description outlined in Section 2.0 represents a conceptual design that considers input from the municipalities. The City of Toronto, City of Markham and York Region have also provided comments on draft environmental technical studies which have been considered in finalizing the EPR and environmental technical studies. This EPR specifically summarizes municipal input related to the assessment of the Project as described in this report and acknowledges that further design input has been provided by municipalities, to be addressed through subsequent design phases.

Table 6.4 provides a high-level summary of meetings held with municipalities during the Pre-Planning phase of the Project. This table demonstrates the context of the meetings.

Table 6.4: Summary of Meetings with Municipalities Held During the Pre-Planning Phase

Date	Agency	Meeting Summary
April 2, 2019	York Region	Metrolinx provided an update on the GO Expansion Project, construction timelines
May 13, 2019	City of Markham	The first TAC meeting was held. Metrolinx provided an overview of the Project and the City of Markham provided initial input into preliminary design concepts.
May 14, 2019	York Region	The first TAC meeting was held. Metrolinx provided an overview of the Project and York Region provided initial input into preliminary design concepts.

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Date	Agency	Meeting Summary
July 15, 2019	City of Toronto	The first TAC meeting was held. Metrolinx provided an overview of the Project and TRCA provided initial input into preliminary design concepts.
September 13, 2019	City of Toronto	The second TAC meeting was held to review the project footprint and review the list of items Metrolinx is requesting from the City of Toronto.
September 26, 2019	City of Toronto	The Traffic Impact Assessment (TIA) working meeting was held to present the TIA workplan and obtain City of Toronto feedback on the approach and study areas.
October 1, 2019	City of Markham & Region of York	The second TAC meeting was held to review the project infrastructure, utilities, TIA, design and data requests from the City of Markham and York Region.
October 3, 2019	City of Toronto	Metrolinx provided an overview of the Project and potential options for Havendale. The meeting allowed for discussion on the options.
October 15, 2019	City of Toronto	The McNicoll Avenue meeting allowed the City of Toronto to provide feedback on the base case. Metrolinx provided updates on the existing conditions and an overview of the potential options for McNicoll.
October 17, 2019	City of Toronto	The third TAC meeting was held to provide discussion on design of cross-sections, future extensions of Milliken Boulevard and Silver Star Boulevard, retaining walls, City of Toronto design requests. Metrolinx provided a public consultation overview.
October 24, 2019	City of Toronto	City of Toronto presented information on Urban Integration of Impact Zones, McNicoll Avenue, and Access Roads and Connectivity.
October 31, 2019	City of Toronto	The Utilities meeting allowed for discussion on potential impacts throughout the Project.
October 31, 2019	York Region	The meeting was held to discuss the preliminary preferred alternatives for the GO Crossings at Clayton Drive and Austin Drive.
November 8, 2019	City of Markham & Region of York	The third TAC meeting was held to provide updates on the sanitary design, Kennedy Road cross section, base case table, third party requests, and public consultation.
November 21, 2019	City of Toronto	The Progress Avenue meeting was held to provide the City of Toronto with an overview of options for Progress Avenue.
December 3, 2019	City of Markham & Region of York	The Working Group meeting was held for Metrolinx to provide information regarding the third-party requests memo procedure, property impacts and business closures, and utilities impacts.

Consultation Process
February 16, 2021

Date	Agency	Meeting Summary
December 5, 2019	City of Toronto	This meeting was held to provide an update on McNicoll Avenue and Havendale Road options and design.
December 11, 2019	City of Toronto	This meeting was held to review the three iterations of cross-sections and provide opportunity for comments.
January 21, 2020	City of Toronto	This meeting was held to provide Metrolinx's rationale for their preferred design option for Progress Avenue.
February 7, 2020	City of Toronto	The utilities meeting was held to discuss potential impacts to utilities throughout the Project.
March 5, 2020	City of Toronto & D. Crupi	The business owners meeting was held to receive input from the business owners regarding potential impacts to their properties.
March 18, 2020	City of Toronto & TRCA	This meeting was held to discuss the overview of the preferred design, interaction with TRCA regulated areas, stormwater management report, and concern from property owners.
March 20, 2020	City of Toronto	The Passmore Ave meeting was held to provide an overview of the impacts to property along Passmore Avenue.
March 26, 2020	City of Toronto & D. Crupi & All-Weld & K-Line	The business owners meeting was held to receive input from the business owners regarding potential impacts to their properties.
April 23, 2020	City of Toronto	The fourth TAC meeting was held to provide discussion on design of McNicoll preferred design, updated cross-sections, utilities, updates regarding the work groups, Progress updates and Passmore updates. Metrolinx provided a public consultation overview.
May 7, 2020	City of Toronto	This meeting was held to discuss the cross-section at the approaches and the dimensions of the road elements for the access roads.
May 11, 2020	City of Toronto	The meeting was held to discuss the cross-sections at other locations within the project footprint.
May 26, 2020	City of Markham and York Region	The meeting was held to discuss the Design and Stormwater Management.
August 20, 2020	City of Markham	The meeting was held to discuss the Design and Stormwater Management.
September 3, 2020	City of Toronto	This meeting was to discuss the approach from Output Specifications, Base Case Tables and Reference Concept Drawings.

6.2.3 Elected Officials Consultation

Elected officials at the federal and provincial level in whose jurisdiction the Project falls within were included on the Project contact list. Municipal and Regional Councillors for the Wards in which the Project falls and the wards adjacent to it were also included on the contact list. The full contact list is available in Appendix B.

Table 6.5 provides a high-level summary of meetings held with elected officials during the Pre-Planning phase of the Project. This table demonstrates the context of the meetings.

Table 6.5: Summary of Meetings with Elected Officials Held During the Pre-Planning Phase

Date	Agency	Attendees	Meeting Summary
February 12, 2020	City of Toronto, Councillor	Councillor Jim Karygiannis; Nikolaos Mantas; Joanne Fusillo Ademaj	Metrolinx provided background information about the project and provide Councillor Karygiannis with opportunity to ask questions and provide suggestions about the Project.
September 3, 2020	City of Toronto, Councillor	Councillor Jim Karygiannis; Nikolaos Mantas; Joanne Fusillo Ademaj; Frank Panacci	Metrolinx provided updates on the project including consultation with local businesses at the Passmore location and design updates for the Havendale location. Metrolinx provided Councillor Karygiannis with opportunity to ask questions and provide suggestions about the Project.

Public Meeting briefings were provided to elected officials including Members of Parliament (MPP) and City of Toronto Councillors on the following dates:

- August 8, 2020 with MPP Logan Kanapthi and Councillor Isa Lee
- August 11, 2020 with MPP Aris Babikian, MPP Raymond Sung Joon Cho, MPP Christina Maria Mitas and Councillor Michael Thompson

6.2.4 Consultation with Indigenous Nations

In 2018, Metrolinx made a commitment to building positive and meaningful relationships with Indigenous Peoples, communities and customers, in alignment with its strategic objectives. The Indigenous Relations Office (IRO), established in 2019, has a mandate to build and grow relationships with Indigenous Nations, organizations, businesses and

customer-residents. In 2020, the IRO became the sole point of contact for Indigenous Nations and supports the Environmental Programs & Assessment department to coordinate engagement and communication related to all Metrolinx projects.

During the Pre-Planning phase of the Project, Metrolinx engaged with potentially affected Indigenous Nations to understand their level of interest in the Project and determine the community's consultation needs and/or requirements.

O. Reg. 231/08 stipulates that at a minimum, Proponents must make reasonable and good faith efforts to engage with Indigenous Nations by:

- Giving each Indigenous Nation on the contact list a copy of the Notice of Commencement
- Ensuring Indigenous Nations are provided with an opportunity to participate in the consultation process
- Following up with telephone calls to ensure that Indigenous Nations are aware of the Project
- Provide Indigenous Nations with notification of consultation events such as Public Meetings
- Provide relevant Project documentation and other material when requested
- Discussing potential negative impacts on the Project on any constitutionally protected Indigenous and/or Treaty rights that may be identified and measures to mitigate these negative impacts
- Ensuring consultation is flexible enough to meet the specific and unique needs of the Indigenous Nations

Thirteen Indigenous Nations were contacted separately regarding the Project, and provided with a Project Introduction letter on February 6, 2020. The letter provided a notice of Public Meeting #1 and the opportunity to tailor the engagement approach to meet their requests. During Pre-Planning activities, the focus of Metrolinx engagement was on establishing with these communities, introducing the Project, identifying and confirming their potential interest in the Project, ascertaining an understanding of their potentially affected Indigenous and Treaty rights, and obtaining information about community-specific consultation preferences. Correspondence with Indigenous Nations can be found in Appendix B.

6.2.5 Other Stakeholder Consultation

A Notice of Public Meeting was sent to Project stakeholders on January 31, 2020 in multiple formats (i.e., email notices, bulk mailout, newspaper notices, etc.) to invite community clubs, associations and environmental groups with a potential interest in the Project and other interested persons to attended the February 2020 Public Meetings (See Section 6.2.1.2, above for more information) to learn about the Project and provide their questions and/or comments to members of the Project Team. Comments were solicited via the Project website or paper comment sheets provided at the meeting to allow for ongoing opportunities to review the Project information and provide feedback to the Project Team.

The Business Owners along Progress Avenue were provided a Business Owner Information Sheet to provide information regarding their business, including traffic and spatial constraints. A blank copy of the Business Owner Information Sheet can be found in the RoC in Appendix B.

Table 6.6 provides a high-level summary of meetings held with business owners during the Pre-Planning phase of the Project. This table demonstrates the context of the meetings.

Table 6.6: Summary of Meetings with Business Owners Held During the Pre-Planning Phase

Date	Business Owner	Meeting Summary
May 25, 2020	May Flower Landscaping and Design Ltd.	The business owner and Metrolinx worked through the Business Owner Information Sheet.
March 5, 2020	D. Crupi & Sons Ltd.	The business owner provided inputs on their operational requirements, the proposed grade separation and design.
March 26, 2020	K-Line Insulators Limited All-Weld D. Crupi & Sons Ltd.	The business owners' provided input and concerns regarding their properties in relation to the proposed Project components.
May 14, 2020	24 Progress Avenue	The business owner expressed concerns about increased water on driveway and drainage, increased traffic and access to their driveway during construction.
May 14, 2020	Atlantic Packaging	The business owner expressed concerns about parking spaces and noted a desire to expand their parking. They also are concerned about their 'shunt truck' access to their properties.

Date	Business Owner	Meeting Summary
May 19, 2020	Downing Street Property Management	The business owner asked about property acquisition and compensation for the proposed access road.
May 19, 2020	Array Marketing	The business owner asked about property acquisition, including relocation mitigation and compensation for relocation. They also noted that currently snow removal is a challenge and that they have limited employee parking.
May 19, 2020	In-Store Marketing	The business owner identified constraints based on the existing Metrolinx Stouffville Double Tracking Construction Project using his property. They also noted concerns with parking and that some parking spots have been eliminated due to the existing Metrolinx project with no room to replace on site.
May 19, 2020	Grief	The business owner noted that Atlantic Packaging requires access through the back of the site through the existing at-grade access. They have limited parking in the winter due to snow clearing and the existing fence line makes it challenging for transport trucks to back into loading docks. They also questioned they ability for truck trailers to turn right from the proposed access option to the site and had concerns about the median on Progress Avenue.
May 22, 2020	Chairman's Brands	The business owner had concerns about the option showing the road over the existing building. They asked property acquisition questions and next steps for timing.
May 22, 2020	First Gulf	The business owner noted concerns with the de-coupling of William Kitchen Road from Progress Avenue for the loop road option as they would be no longer able to travel east on Progress Avenue from William Kitchen Road. They also noted that Option #1 impacts their parking spots. They mentioned concerns of the Tim Horton's losing its existing right-in and right-out access from Progress Avenue and that in the future they will be intensifying the site.

6.2.6 Summary of Comments and Responses

Table 6.7 provides a high-level summary of comments received related to development of the EPR during the Pre-Planning phase of the Project. This table demonstrates the types of comments raised during consultation of the Project and how Metrolinx has addressed them. A complete record of all comments and questions raised and their corresponding responses can be found in the RoC in Appendix B.

Table 6.7: Summary of Comments Received and Responses Provided during Pre-Planning Activities

Stakeholder/ Commenter	Topic	Comment/Concern	Response/influence on the Project and/or Draft EPR
City of Markham/ TRCA	Impacts to Wetland	Concern on the viability of the wetland near Kennedy Road.	Roadside assessments have been completed for the wetland. Metrolinx to adhere to all applicable regulations for working near a wetland. Vegetation compensation, if required, will be in accordance with the Metrolinx Vegetation Guideline (2020).
Public/ City of Toronto/ City of Markham/ York Region	Terrestrial Environment – Tree Removal	Concerns raised regarding tree removal on both private and public property	Preparation of an Arborist Report to document trees within the Project Study Area. This will be completed during the next phase of the Project. Metrolinx to adhere to all applicable bylaws and regulations for tree removal outside of Metrolinx properties. Compensation, if required, will be in accordance with the Metrolinx Vegetation Guideline (2020).
City of Toronto/ City of Markham/ York Region	Visual Impacts	Concerns raised regarding the visual impacts of the proposed Project infrastructure, including crossings and bridges.	Metrolinx, in consultation with the City of Toronto, City of Markham and York Region, will determine the appropriate finish(es) for the retaining walls based on municipal planning and urban design policies and objectives, surrounding land uses, adjacent built form, and pedestrian, cycle and automobile traffic levels.
Public/ City of Toronto/ City of Markham/ York Region	Property Acquisition	Concerns over temporary and permanent property acquisitions	Review of conceptual design to minimize the impacts to public and private property. Specific property requirements will be confirmed during detailed design. Where access to property is required, ongoing consultation with affected landowners will help identify appropriate site-specific mitigation measures.
Public	Property Value	Concerns regarding the impact to property value as a result of the Project	Review of conceptual design to minimize the impacts to public and private property.

Stakeholder/ Commenter	Topic	Comment/Concern	Response/influence on the Project and/or Draft EPR
Public	Safety concerns, electrification	Safety concerns associated with electrification infrastructure, proposed tunnels and bridges	Electrification Protection Barriers will be installed where required and are designed for safety. Additional design details such as appropriate barriers to protect the rail corridor, lighting, guardrails and screening to prevent objects from being thrown over the ramps will be confirmed during the detailed design phase.
Public	Noise and Vibration	Concerns over potential off-site impacts due to noise and vibration	Metrolinx is undertaking both construction and operations noise and vibration assessments to determine the potential effects on adjacent receptors. Detailed design will include mitigation measures as required.
City of Toronto/ City of Markham/ York Region	Utilities	Concerns regarding the conceptual design proposed for the realignment of the sanitary and stormwater systems	Review of conceptual design to address concerns to align with City of Toronto, City of Markham and York Region design standards.
MHSTCI	Cultural Heritage Regulatory Requirements	MHSTCI noted concerns with Regulatory Requirement text in the report.	Metrolinx removed reference to text and updated the wording for clarity and accuracy.
Curve Lake First Nation	Archaeological Assessment	Requested the changes to the Archaeological Assessment Report, including the incorporation of the Williams Treaties Territory oral history, and updates to text.	Comments will be addressed in the Stage 2 Archaeological Assessment.
Huron-Wendat Nation	Archaeological Assessment	Suggested wording be revised to include infectious disease and provided more specifics for settlement history.	Comments were addressed in the Stage1 Archaeological Assessment.

6.3 TPAP Consultation

6.3.1 Notice of Commencement

Metrolinx issued the Notice of Commencement on September 8, 2020 to inform parties on the contact list of the initiation of the TPAP. The notice was issued in different media, as summarized in Table 6.8, including bulk mailout, newspaper publication, and electronic media. The Notice of Commencement included information about the Project and TPAP as well as how to provide comments. A copy of the Notice of Commencement is provided in Appendix B.

Table 6.8: Publication Details for Notice of Commencement

Media	Date of Publication	Audience
Newspapers:		General public
Toronto Star	September 8, 2020 September 12, 2020	
Burlington Post	September 10, 2020 September 17, 2020	
Oshawa / Whitby This Week	September 10, 2020 September 17, 2020	
Oshawa Express	September 9, 2020 September 16, 2020	
Markham Economist and Sun	September 10, 2020 September 17, 2020	
Le Metropolitain	September 10, 2020 September 17, 2020	
Toronto L'Express	September 11, 2020 September 18, 2020	
Email	September 8, 2020	Elected officials, government agencies, Indigenous Nations, project mailing list, those who signed in at the public meeting.
Bulk mailout	August 14, 2020	Property owners within 100 m of the rail corridor
www.metrolinxengage.com	September 8, 2020	General public, interested parties.

6.3.2 Public Consultation

Project documents and details were made available on the Project website throughout the TPAP for public review and comment. Documents available include Project notices, public meeting story boards and comment sheets, and draft environmental technical studies. The public and interested parties were able to submit comments through the dedicated Project email address, via Facebook posts and twitter tweets, and via telephone throughout the TPAP. Project specific comments are summarized in the table below.

Table 6.9: Summary of Public Consultation Comments Received and Responses During the TPAP

Topic	Comment/Concern	Response/Influence on the Project and/or EPR
Traffic on Havendale Road	Inquired about measures being taken to make motorists away of the fact Havendale Road ends at the tracks.	Signage notifying traffic of the closure will be considered to reduce the possibility of increased traffic from cars driving along Havendale Road and then doubling back due to the closure.
Grade Differential at Driveway	Requested confirmation if there will be a grade differential on their driveway.	Metrolinx confirmed the elevated roadway will cross the rail corridor and will meet its current grade level, no changes to the driveway will occur.
Status of Progress Avenue overpass	Confirmation on the status on the decision of the overpass on Progress Avenue.	Metrolinx confirmed a road over rail was selected for Progress Avenue as the preferred option. Metrolinx has met with affected property and business owners to gain a better understanding of existing and future planned operations, and will continue to work with business owners as the design progresses.

6.3.2.1 Public Meeting #3

Due to the ongoing COVID-19 pandemic and related concerns regarding social distancing and indoor gathering restrictions, the third public meeting was also held virtually. Notification of the public meeting was emailed to individuals and groups on the Project contact list on November 27, 2020 and provided via bulk mailout to properties

within 100 metres on either side of rail corridors where GO Expansion infrastructure is proposed. Metrolinx also posted information regarding the event on their social media platforms.

The purpose of the public meeting was to provide additional details regarding key details of the EPR, including:

- Potential impacts and mitigation measures for Project specific components as outlined in display panels
- Potential impacts, mitigation and monitoring for the Project as reported in the environmental technical studies
- Draft environmental technical studies completed in support of the Project
- Specific updated information for the Progress Avenue, construction sequencing and transportation/traffic impacts and mitigations

The public meeting also offered an opportunity for the public, Indigenous Nations, government agencies and municipal departments, and other stakeholders to provide comments or concerns that could be incorporated and/or addressed into the Final EPR as appropriate.

Public meeting materials were made available on Metrolinx Engage on November 27, 2020. Table 6.10 summarizes the key details of the public meeting.

Visitors to the public meeting materials on the Metrolinx Engage website were encouraged to complete comment forms (electronically through email to TorontoEast@metrolinx.com). It was requested that comments be returned by December 11, 2020.

Poster board displays were used to provide a visual tool for stakeholders to learn about the Project. The display boards presented as part of the public meeting included: an update on the Progress Avenue road over rail, potential effects and proposed mitigation measures and construction sequencing.

The public meeting allowed Metrolinx to gather feedback on the Project and the other GO Expansion initiatives and respond to questions and concerns. All comments and questions submitted were addressed by the Project Team. A copy of the poster board displays, and comment forms collected at the public meeting can be found in the RoC, in Appendix B.

Table 6.10: Summary of Key Public Meeting #3 Details

Category	Details
Date	Friday, November 27 to Friday, December 11, 2020
Location	www.metrolinxengage.com
Number of Page Views	Over 1,000
Feedback Forms Received	16
Project Information Presented and Made Available	Environmental Studies Overview webpage Display Boards: • Summary of Impacts and Mitigation • Progress Avenue Road Over Rail • Construction Sequencing • Transportation/Traffic Impacts and Mitigation Environmental Technical Studies: • Natural Environment Technical Report • Construction Phase Air Quality Impact Assessment Report • Construction Noise and Vibration Assessment Report • 2020 Gap Analysis for the 2017 Environment Technical Report • Memorandum Summarizing Archaeological Assessment Reports Completed • Stage 1 Archaeological Assessment Technical Report • Socio-Economic and Land Use Study Technical Report

6.3.3 Agency and Municipal Consultation

Government agencies were provided the Notice of Commencement and Notice of Public Engagement and were invited to provide comments and questions during the TPAP comment period. Key review agencies which had identified an interest in the Project (this included MECP, City of Markham, City of Toronto, York Region, TRCA and MHSTCI) were provided an opportunity to review and comment on the Draft EPR and supporting documents. During that time five responses were received. A high-level summary of key comments and Metrolinx responses are below.

Table 6.11: Key Comments from Agencies

Stakeholder/Commenter	Topic	Comment/Concern	Response/Influence on the Project and/or Draft EPR
City of Toronto	Tree impacts	Utility conflicts for trees within the City's RoW and private properties impacted by the proposed grade separations and this specific scope of work.	Metrolionx has undertaken a tree inventory for each site and considered lands within the rail corridor and within 6 m of the Project limit of disturbance.
City of Toronto	Drainage	Request for confirmation that the retaining wall is not blocking drainage.	Metrolinx confirmed that sidewalks and access roads are graded away from retaining walls, and all drainage inside of the RoW is directed toward the road RoW through grading.
MHSTCI	Summary of Existing Conditions	Requested the summary of existing conditions to align with the revised Cultural Heritage Report.	Metrolinx updated the EPR with a summary of existing conditions.
MHSTCI	Cultural Heritage	Requested clarification about proposed mitigation measure. Recommended identifying the properties that may require CHERs. Recommended revising monitoring activities to provide property-specific recommendations.	Table 4.12 was revised to include property-specific mitigation/monitoring
MHSTCI	Commitments	Recommended including a commitment that identifies which properties will require a CHER during detailed design.	No properties require a CHER

Table 6.12 provides a high-level summary of meetings with Agencies held during the TPAP phase of the Project. This table demonstrates the context of the meetings.

Table 6.12: Summary of Meetings with Municipalities Held During the TPAP Phase

Date	Agency	Meeting Summary
October 1, 2020	City of Toronto	This meeting was held to provide an overview of the TIA report and to give the City of Toronto the opportunity to ask questions about the report.
October 29, 2020	City of Toronto and TRCA	The fifth TAC meeting was held to provide updates on the Stormwater Management Report and Project Design updates.
November 6, 2020	City of Markham	This meeting was held to discuss Third Party requests and sidewalk widening.
November 26, 2020	City of Toronto	This meeting was held to further discuss the cross-sections at McNicoll Avenue and Passmore Avenue and to confirm the proposed extensions at Milliken Boulevard and Silver Star Boulevard.

6.3.4 Elected Officials Consultation

Elected officials were provided with the Notice of Commencement, Notice of Public Engagement, and invited to provide comments and questions throughout the TPAP. During that time no responses were received.

6.3.5 Consultation with Indigenous Nations

The Indigenous Nations identified as having a potential interest in the Project were sent letters during the TPAP Notice of Commencement on September 8, 2020 and Notice of Public Meeting by email. During that time no responses were received. Indigenous Nations contacted during the TPAP are listed in Appendix B.

6.3.6 Other Stakeholder Consultation

Metrolinx held a meeting with Atlantic Packaging on October 1, 2020 to review design options, Atlantic Packaging confirmed their design preference. The comments received from from K-Line, who asked to receive information regarding the Project, and as such, were provided the information.

Table 6.13 provides a high-level summary of meetings held with business owners during the TPAP phase of the Project. This table demonstrates the context of the meetings.

Table 6.13: Summary of Meetings with Business Owners Held During the TPAP Phase

Date	Business Owner	Meeting Summary
October 1, 2020	Atlantic Packaging representatives R. J. Burnside & Associates Limited	The purpose of the meeting was to review of the options put forward by Metrolinx and Atlantic Packaging to allow for continued movements of shunt trucks between 80 and 111 Progress Avenue. Based on previous discussions, Atlantic Packaging had concerns about the relocated access for 80 Progress Avenue as it would restrict their use of a shunt truck to move back and forth between 80 and 111 Progress Avenue. The shunt truck movement is part of the Atlantic Packaging site operations and was communicated to Metrolinx and the City of Toronto during a meeting held in May 2020.

6.3.7 Notice of Completion

The Notice of Completion of the EPR was issued on January 5, 2021, addressing the *O. Reg. 231/08* requirement of issue the Notice within 120 days following the Notice of Commencement. The Notice of Completion of the EPR was published in the same media outlets and electronic media sources as the Notice of Commencement. The Notice was also emailed to interested parties on the contact list, including anyone who requested to be added to the list throughout the Project study, and anyone who signed in with address information at Public Meeting #1. Publication details for the Notice of Completion are outlined in Table 6.14. A draft Notice of Completion is included in Appendix B.

Table 6.14: Publication Details for Notice of Completion

Media	Date of Publication	Audience
Newspapers:		General Public
Toronto Star	January 5, 2021 January 9, 2021	
Le Metropolitain	January 14, 2021 January 21, 2021	
Toronto L'Express	January 8, 2021 January 15, 2021	

Media	Date of Publication	Audience
Email	January 5, 2021	Elected officials, government agencies, Indigenous Nations, project mailing list, those who signed in at the public meeting.
Bulk Mailout	December 18, 2020	Property owners within 100 m of the Project Footprint
www.metrolinxengage.com	January 5, 2021	General public, interested parties.

If an interested party has concerns about the Project, they may submit objections to the MECP Environmental Assessment and Permissions Division for the Minister to consider. Objections must be provided in writing and can only be submitted during the 30-day review period for the EPR, commencing at the issuance of the Notice of Completion. A copy should also be provided to the Director of the Environmental Assessment Branch of the MECP and Metrolinx as the proponent. Information required for the objection must include:

- Contact information (name, mailing address, organization or affiliation, phone number and email address)
- Proponent (Metrolinx) contact information (name, address, phone number and representative/agency phone number)
- Brief description of the proponent's (Metrolinx) proposed undertaking, including location
- Basis for why further study is required, including relevance to Aboriginal or treaty rights and matters of provincial importance that were not considered in the EPR
- Summary of how the objector has been involved in the consultation process (e.g., meetings, phone calls, emails, etc.)

The Ministry will forward a copy of the objections to the Metrolinx for consideration. It is noted that Metrolinx will have less than a week to comment on the objections. During this time, Metrolinx can identify where in the EPR the appropriate information can be found or provide the missing information.

Following the 30-day review period, the Minister has 35-days to provide comment and decide whether the Project has a negative effect on matters of provincial importance or Aboriginal or treaty rights. At this point the Minister can approve the Project as planned, allow it to proceed subject to conditions, require the proponent to take further steps

including further study or consultation, or choose to terminate the TPAP if they feel the EPR does not address these effects.

6.3.8 Summary of Key Comments and Responses

Table 6.15 provides a high-level summary of key comments received during the TPAP phase of the Project. This table is intended to provide interested reviewers with a snapshot of the types of comments raised and guidance provided during the TPAP and how they were addressed by Metrolinx. A complete record of all comments and corresponding responses can be found in the RoC in Appendix B.

Table 6.15: Summary of Comments Received and Response Provided During TPAP

Stakeholder/ Commenter	Topic	Summary of Key Comment/Concern	Response and Influence on the Project
Public	Traffic on Havendale Road	Inquired about measures being taken to make motorists aware of the fact Havendale Road ends at the tracks as they have concerns for increased traffic on side routes.	Signage notifying traffic of the closure will be considered to reduce the possibility of increased traffic from cars driving along Havendale Road and then doubling back due to the closure.
Public	Grade Differential at Driveway	Requested confirmation if there will be a grade differential on their driveway.	Metrolinx confirmed the elevated roadway will cross the rail corridor and will meet its current grade level, no changes to the driveway will occur.
Public	Status of Progress Avenue overpass	Confirmation on the status on the decision of the overpass on Progress Avenue.	Metrolinx confirmed a road over rail was selected for Progress Avenue as the preferred option. Metrolinx has met with affected property and business owners to gain a better understanding of existing and future planned operations, and will continue to work with business owners as the design progresses.
City of Toronto	Tree impacts	Utility conflicts for trees within the City's RoW and private properties impacted by the proposed grade separations and this specific scope of work.	Metrolinx has undertaken a tree inventory for each site and considered lands within the rail corridor and within 6 m of the Project limit of disturbance.

Stakeholder/ Commenter	Topic	Summary of Key Comment/Concern	Response and Influence on the Project
City of Toronto	Drainage	Request for confirmation that the retaining wall is not blocking drainage.	Metrolinx confirmed that sidewalks and access roads are graded away from retaining walls, and all drainage inside of the RoW is directed toward the road RoW through grading.
City of Toronto, City of Markham	Design refinements	Requests for minor design refinements to RoWs, retaining wall finishes, etc.	Metrolinx will continue to work with the municipalities to address concerns regarding the design of infrastructure and consultation will be ongoing though detailed design (Table 7.2).
City of Toronto	Access to existing business along Passmore Avenue	Maintenance of effective access and business operations for properties surrounding the proposed grade separation at Passmore Avenue	Metrolinx is still working with the City of Toronto and affected businesses to find a design solution that will fit the needs of the City, businesses and GO Expansion. The Passmore Avenue grade separation will be studied in a separate EPR Addendum following the Statement of Completion for the Stouffville Rail Corridor Grade Separations TPAP.
MHSTCI	Summary of Existing Conditions	Requested the summary of existing conditions to align with the revised Cultural Heritage Report.	Metrolinx updated the EPR with a summary of existing conditions.
MHSTCI	Cultural Heritage	Requested clarification about proposed mitigation measures. Recommended identifying the properties that may require CHERs. Recommended revising monitoring activities to provide property-specific recommendations.	Table 4.12 was revised to include property-specific mitigation/monitoring
MHSTCI	Commitments	Recommended including a commitment that identifies which properties will require a CHER during detailed design.	No properties require a CHER
K-Line	Project Information	Requested to receive information regarding the project.	Metrolinx provided the requested information.

6.4 Future Consultation Requirements

Metrolinx has committed to ensuring that consultation with Project stakeholders (government agencies, municipalities, elected officials, members of the public) and Indigenous Nations will continue beyond the TPAP for the Project.

Following the completion of the TPAP study, further studies or consultation may be required, resulting in a refinement of the results presented in this EPR. If refinements lead to changes to the Project that are inconsistent with EPR, these will be documented in an addendum to the EPR. Significant changes to the EPR will be accompanied by a notification of the change to the Project stakeholders (government agencies, municipalities, elected officials, members of the public) and Indigenous Nations, as required in the regulation.

6.4.1 Public Consultation

Metrolinx is committed to continuing to consult and communicate with stakeholders and other interested parties beyond the TPAP. Specifically, Metrolinx will:

- Design and implement a response strategy to address/resolve potential construction-related concerns
- Maintain the Project website throughout the detailed design and construction phases where the public can access updated information on the Project
- Continue discussions/consultation as required

6.4.2 Agency and Municipal Consultation

In addition to carrying out the TPAP, there are a number of additional federal, provincial, municipal and other permit and approval processes that Metrolinx will follow as applicable (further details are outlined in Section 7.0 of this EPR). As a part of obtaining permits and approvals, Metrolinx will consult with relevant agencies, and follow associated public notification or consultation practices as applicable.

6.4.3 Consultation with Elected Officials

As a part of Metrolinx ongoing efforts to keep the community informed throughout the design and construction of the proposed works, Metrolinx welcomes inquiries and comments from elected officials wishing to keep their electorate informed. As the Project advances, updates will be posted to the Project website.

6.4.4 Indigenous Nations Consultation Commitments

As a part of Metrolinx ongoing efforts to keep the community informed throughout the design and construction of the proposed works, Metrolinx welcomes inquiries and comments from Indigenous Nations wishing to keep their community members informed. As the Project advances, updates will be posted to the Project website.

6.4.5 Other Stakeholders

As a part of Metrolinx ongoing efforts to keep the community informed throughout the design and construction of the proposed works, Metrolinx welcomes inquiries and comments from stakeholders wishing to keep their community members informed. As the Project advances, updates will be posted to the Project website.

6.4.6 Passmore Avenue

Currently, Metrolinx has identified the potential need for an EPR Addendum to address the Passmore Avenue grade separation. Additional consultation will be required with property owners near the Passmore Avenue grade separation location and the City of Toronto, to confirm a preferred mitigation plan to maintain effective access and business operations. While we expect to move forward with the grade separation, Metrolinx is still working with the City of Toronto and affected businesses to find a design solution that will fit the needs of the City, businesses and GO Expansion. The Passmore Avenue grade separation will be studied in a separate EPR Addendum following the Statement of Completion for the Stouffville Rail Corridor Grade Separations TPAP.

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7.0 Permits and Approvals, and Commitments and Future Work

All applicable permits, licenses, approvals and monitoring requirements under environmental laws will be reviewed, confirmed and obtained by Metrolinx prior to the construction of the Project. An outline of key legislation and regulations that are anticipated to apply to the proposed Project are outlined below. These will be confirmed prior to commencing construction. A detailed list of potentially applicable permits and approvals requirements that will be confirmed during detailed design is provided in Section 7.3.

7.1 *Impact Assessment Act* (IAA)

The Physical Activities Regulations under the *Impact Assessment Act (*IAA*)* identify the physical activities (i.e., types of projects) that constitute "designated projects" that may require a Federal Impact Assessment. A review of the Regulations was carried out by Metrolinx with respect to the Project. Based on this review, this Project does not constitute a designated project under the IAA.

The IAA also outlines requirements for determination of the likelihood of significant environmental effects for a physical activity that is carried out on federal lands, or outside of Canada, in relation to a physical work and that is not a designated project (Section 82 of IAA*)*. All of the proposed work for the Project will be carried out on lands currently owned or that will be purchased by Metrolinx. As such, the requirements under the IAA do not apply.

7.2 Permits and Approvals

In accordance with *O. Reg. 231/08*, a Notice to Proceed will be issued by the MECP if there are no outstanding issues on matter of provincial importance that relates to the natural environment or has CHVI, or a constitutionally protected Aboriginal or treaty right. In addition to carrying out the TPAP in accordance with *O. Reg 231/08*, there are also a number of other provincial, municipal, and other approvals/permits required for this Project prior to implementation. Accordingly, the following section summarizes the anticipated permits and approvals based on the preferred design and input received from the public, stakeholders, and Indigenous Nations to date.

All required permits and approvals shall be obtained and the Project completed in accordance with applicable law. The required permits and approvals shall be obtained prior to the associated work commencing.

In addition to the commitments to future work outlined in Section 7.3, permits and approvals obtained for the proposed works, as outlined in the following sections, may identify the need for additional mitigation. Any additional mitigation measures required in connection with a permit or approval shall be implemented.

7.2.1 Federal

At the time of publication no federal permits and approvals have been confirmed as required for the Project. As the Project proceeds the federal permit and approval requirements shall continue to be assessed and addressed.

Fish habitat was identified in West Highland Creek, in proximity to the Progress Avenue road over rail grade separation. Fisheries and Ocean Canada (DFO) will be engaged to complete a review the Project to identify the potential risks to the conservation and protection of fish and fish habitat, and will work with the proponent to provide advice and guidance on how to comply with the *Fisheries Act*. If the Project can avoid impacts to fish and fish habitat, project approval is not required. If impacts cannot be avoided, proponents must apply for a *Fisheries Act* Authorization.

7.2.2 Provincial

At the time of publication the following provincial permits and approvals have been identified as required for the Project:

- Ministry of the Environment, Conservation and Parks, Permit to Take Water
- Ministry of the Environment, Conservation and Parks, Environmental Compliance Approval (Industrial Sewage)
- Ministry of the Environment, Conservation and Parks, *Endangered Species Act* (ESA) 2007
- Ministry of the Environment, Conservation and Parks, Management of Excess Soil
- Ministry of Heritage, Sport, Tourism and Culture Industries

Table 7.1 provides a broader list of other potentially applicable approvals, that should be confirmed as design advances. As the Project proceeds the provincial permit and approval requirements shall continue to be assessed and addressed.

7.2.3 Municipal

A range of municipal permits and approvals may be required for the project, particularly as pertaining to municipally owned lands and infrastructure. All required permits and approvals shall be obtained. However, Metrolinx as a Crown Agency of the Province of Ontario is exempt from certain municipal processes and requirements. In these instances, Metrolinx will engage with the municipalities to incorporate municipal requirements as a best practice, where practical, and may obtain associated permits and approvals.

Water, sanitary, and storm servicing will be reviewed during detailed design. The City of Toronto, City of Markham and York Region will be consulted during detailed design to address impacts to municipal water, sanitary, and storm sewer systems.

Communication and engagement with the City of Toronto, City of Markham and York Region shall continue as design and construction planning progress to address municipal interests.

7.2.4 Conservation Authorities

Metrolinx as a Crown Agency of the Province of Ontario is not subject to the *Conservation Authorities Act*. However, Metrolinx will engage with the Conservation Authority to incorporate their requirements as a best practice, where practical, and may obtain associated permits and approvals or engage in a Voluntary Project Review where applicable.

Communication and engagement with the Toronto and Region Conservation Authority (TRCA) will continue as design and construction planning progress to address matters related to their mandate.

7.2.5 Utilities

Coordination with both the City of Toronto, City of Markham, and York Region and the relevant private utilities will be undertaken as design and construction planning progress. Potential utility conflicts shall be reviewed in consultation with each utility company as part of detailed design. Implementation and construction obligations shall be undertaken pursuant to the crossing agreements with each of the utility companies as required. Any associated permits and approvals will be obtained prior to construction.

7.3 Summary of Permits and Approvals

A preliminary list of the potentially applicable permitting and approval requirements for the Project are identified in Table 7.1. Additional requirements may be identified or confirmed during detailed design, or as ongoing consultation progresses.

Table 7.1: Preliminary List of Potential Permits and Approvals Required

Permit/Approval Name	Regulatory Authority	Legislation & Regulation	Site							Description of Activities Covered
			Denison Street	Kennedy Road	Passmore Avenue	McNicoll Avenue	Huntingwood Drive	Havendale Road	Progress Avenue	
Provincial										
Notice to Proceed	MECP	*Environmental Assessment Act* *O. Reg 231/08* (Transit Projects & Metrolinx Undertakings)	•	•	•	•	•	•	•	Must be obtained before the project can proceed to implementation. The Project meets the definition of a transit project under *O. Reg 231/08* and is subject to the Transit Project Approval Process.
Environmental Activity Sector Registry (EASR)	MECP	*O. Reg 63/16: Registrations Under Part II.2 of the Act – Water Taking*	•	•	•	•	•	•	•	Required if temporary water takings are estimated to be greater than 50,000 L/day, but less than 400,000 L/day.
Permit to Take Water (PTTW)	MECP	*Water Resources Act* (*O. Reg 128/03*) Section 34	•	•	•	•	•	•	•	Required if temporary water takings are estimated to be greater than 400,000 L/day; the need for dewatering during construction activities will be confirmed during detailed design.
Environmental Compliance Approval (ECA) – Industrial Sewage	MECP	*Environmental Protection Act* *Ontario Water Resources Act* Section 53	•	•	•	•	•	•	•	Changes to existing sewers, stormwater management facilities and stormwater pumping stations may either require an amendment to an existing ECA(s) or a new ECA.
Drinking Water Works Permit	MECP	*Safe Drinking Water Act, 2002,* O. Reg. 170/03	•	•	•	•	•	•	•	Required to alter a drinking water system.
Excess waste removal	MECP	*Environmental Protection Act O. Reg. 347/04*	•	•	•	•	•	-	-	Excess soils from excavation activities in the future requiring offsite disposal at a licensed waste facility should be tested in accordance with Reg.347 for waste classification
On-Site and Excess Soil Management	MECP	*Environmental Protection Act* O. Reg. 406	•	•	•	•	•	TBD	-	Required for the handling, management and disposal of excavated material.
ESA Permit	MNRF	*Endangered Species Act* *Section 17* *O. Reg 242/08*	•	•	TBD	TBD	-	TBD	TBD	Consultation with the MECP is recommended to address suitable habitat for SAR protected by the ESA 2007. Additional surveys may be required. This will be confirmed prior to construction.
Archaeological Assessment MHSTCI Review Letters	MHSTCI	*Ontario Heritage Act*	•	•	•	•	•	•	•	The MHSTCI has completed a review of the Stage 1 AA and the reports have been entered into the Ontario Public Register of Archaeological Reports. .Stage 2 Archaeological Assessment reports (and Stage 3 and 4, if recommend by the Stage 2AA) will be submitted to MHSCTI for review. Upon confirmation that the report has met fieldwork and licensing requirements MHSTCI will

Permit/Approval Name	Regulatory Authority	Legislation & Regulation	Site							Description of Activities Covered
			Denison Street	Kennedy Road	Passmore Avenue	McNicoll Avenue	Huntingwood Drive	Havendale Road	Progress Avenue	
										issue a letter confirming their entry into the Ontario Public Register of Archaeological Reports
Cultural Heritage Report MHSTCI Letter	MHSTCI	*Ontario Heritage Act*	•	•	•	•	•	•	•	MHSTCI will issue a letter confirming that the report fulfills the cultural heritage requirements under TPAP and MHSTCI standards and guidelines.
Notice of Project	Ministry of Labour	*Occupational Health and Safety Act Regulation for Construction Projects - O. Reg. 213/91 Section 6(1)*	•	•	•	•	•	•	•	The constructor must provide a Notice of Project to the Ministry of Labour prior to starting projects that meet the standards set out in the Regulation.
Notification	-	*Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33*	•	•	•	•	•	•	•	Requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Government and Consumer Services. Should human remains be encountered during construction activities, all work on site must cease and notification will be required.
Other Agencies										
Development, Interference with Wetlands and Alterations to Shorelines and Watercourses permit	TRCA	*Conservation Authorities Act R.S.O.* 1990, C. 27, *O. Reg. 166/06 Crown Agency Act R.S.O. 1990, C. 48, s.1*	-	•	-	-	-	-	•	TRCA will be given the opportunity to review the Project design, SWM Plan and natural environment technical reports as part of the Voluntary Project Review process. The Project Footprints for Progress Avenue and Kennedy Road are within TRCA's Regulated Area.

Permit/Approval Name	Regulatory Authority	Legislation & Regulation	Site							Description of Activities Covered
			Denison Street	Kennedy Road	Passmore Avenue	McNicoll Avenue	Huntingwood Drive	Havendale Road	Progress Avenue	
Municipal										A range of municipal permits and approvals may be required for the project, particularly as pertaining to municipally owned lands and infrastructure. All required permits and approvals shall be obtained. However, Metrolinx as a Crown Agency of the Province of Ontario is exempt from certain municipal processes and requirements. In these instances, Metrolinx will engage with the municipalities to incorporate municipal requirements as a best practice, where practical, and may obtain associated permits and approvals. Water, sanitary, and storm servicing will be reviewed during detailed design. The municipality will be consulted during detailed design to address impacts to municipal water, sanitary, and storm sewer systems. Communication and engagement with the municipality shall continue as design and construction planning progress to address municipal interests.
Permit to Injure or Remove Private Property Trees	City of Toronto	*Municipal Code Chapter 813, Article III*	-	-	●	●	●	●	●	Removal of trees on private property. Permits are not required for trees on Metrolinx-owned lands.
Tree Permit	City of Markham	*By-law 2008-96, Tree Preservation By-law*	●	●	-	-	-	-	-	Removal of trees on private property. Permits are not required for trees on Metrolinx-owned lands.
Permit to Injure or Remove City-Owned Trees	City of Toronto	*Municipal Code Chapter 813, Article II* *Municipal Code Chapter 608, Article VII*	-	-	●	●	●	●	●	A permit is required for the injury or removal of trees regulated by the City of Toronto's Tree Protection By-law and Parks By-law
Demolition Permit	City of Toronto	-	-	-	-	-	-	●	●	Required for demolition of buildings.
Designated Structures Permit	City of Toronto	-	-	-	●	●	●	TBD	●	May be required for retaining walls.
Permanent Street or Thoroughfare Closure Approval	City of Toronto	-	-	-	-	-	-	●	-	May be required for Havendale Road.
Shoring and Excavation Permit	City of Toronto	-	-	-	TBD	TBD	TBD	TBD	TBD	May be required for shoring and excavation work.
Street Occupancy Permit	City of Toronto	-	-	-	●	●	●	●	●	Closure of one or more lanes of traffic for construction (required prior to commencement of construction).
Road Occupancy Permit	City of Markham	*By-law 2018-109*	●	-	-	-	-	-	-	Required for any activities that might block a public road.
Corridor Control Permit for Road Occupancy	York Region	-	-	●	-	-	-	-	-	Construction work on Regional roads. New utility installations and the repair or maintenance of existing utilities in the Regional ROW.
Construction Permit	City of Toronto	-	-	-	●	●	●	●	●	Construction work within the municipal ROW.
Cut Permit	City of Toronto	-	-	-	●	●	●	●	●	Installation of services within the City of Toronto streets

Permit/Approval Name	Regulatory Authority	Legislation & Regulation	Site							Description of Activities Covered
			Denison Street	Kennedy Road	Passmore Avenue	McNicoll Avenue	Huntingwood Drive	Havendale Road	Progress Avenue	
Municipal Consent to Move or Install Utilities	York Region	-	-	●	-	-	-	-	-	Required to install or move utilities and is also needed whenever a road needs to be excavated.
Municipal Consent	City of Markham	-	●	●	-	-	-	-	-	Required for utility work within the City of Markham ROW.
Discharge Permits & Agreements for Private Water	City of Toronto	*Toronto Municipal Code Chapter 681, Sewers*	-	-	●	●	●	●	●	Required when private water is discharged into the City of Toronto's sewer system, including groundwater, surface water, construction dewatering, rainwater (mixed with construction material), and stormwater (mixed with construction material).
Sewer Use Permit	York Region	*Discharge of Sewage, Storm Water and Land Drainage Bylaw, By-law No. 2011-56*	-	●	-	-	-	-	-	Required to discharge water removed from a construction site into the sanitary or storm sewer.
Request and Approval of Special Discharge into Storm Sewers	City of Markham	*By-law 2014-71*	●	●	-	-	-	-	-	Required to permit the discharge of water from a dewatering activity, to a storm sewer or land drainage works.
Street Work Permit	City of Toronto	*Toronto Municipal Code Chapter 743, Streets and Sidewalks, Use Of*	-	-	●	●	●	●	●	Impacts to City owned roads.
Changes to Toronto Transit Commission (TTC) Routes	City of Toronto / TTC	-	-	-	●	-	-	-	●	All detailed staging plans involving changes to the roads on which TTC buses operate must be approved by TTC prior to implementation. All proposed changes to bus stops, temporary or permanent, must also be approved by TTC in advance of implementation. TTC requires 4 months advance notice for changes to routes.
Changes to York Region Transit (York Region Transit (YRT)/Viva) Routes	YRT/Viva	-	●	●	-	-	-	-	-	Further consultation will be undertaken with YRT to confirm requirements.
Ravine and Natural Feature Permit	City of Toronto	*Ravine and Natural Feature Protection By-law (Municipal Code Chapter 658)*	-	-	-	-	-	-	●	In Ravine and Natural Feature Permits area, a permit is required to injure or destroy trees; change the natural land topography, by excavation or adding soil or other materials on slopes; dump or place any type of debris including garden waste, leaves and branches; and construct new or replacement structures or retaining walls.
Third Party Utilities										
Utility Crossing Agreements	Various Existing Utility Owners	-	●	●	●	●	●	●	●	Project construction activities associated with relocating or realigning existing third-party utilities.

Permit/Approval Name	Regulatory Authority	Legislation & Regulation	Site							Description of Activities Covered
			Denison Street	Kennedy Road	Passmore Avenue	McNicoll Avenue	Huntingwood Drive	Havendale Road	Progress Avenue	
Schedule Implications										
Terrestrial	ECCC	*Migratory Birds Convention Act*	●	●	-	TBD	-	TBD	TBD	If vegetation removal or other development activity must occur during the migratory nesting period of April 1 – August 31, a certified avian biologist must complete a nesting survey no more than 48 hours prior to vegetation removal to document the presence or absence of active nesting habitats. (see Section 4.10 – mitigation measures, for more details).
Provincial Guidelines & Plans										
Standards and Guidelines for Conservation of Provincial Heritage Properties	MHSTCI	-	●	●	●	●	●	●	●	Guidelines set out in this document apply to all Metrolinx properties.

Notes:
" – " = Not applicable
" ● " = Applicable

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7.4 Timing Windows and Preventive Measures

It is recognized that there are overlapping timing windows related to restrictions on certain construction activities, and Metrolinx will consult further with the applicable regulatory agencies to determine a suitable approach for construction scheduling. In accordance with the *Migratory Birds Convention Act*, if vegetation removal or other development activity must occur during the migratory nesting period of April 1 to - August 31, a certified avian biologist must complete a nesting survey within 24 hours of commencement of work to document the presence or absence of active nesting habitats.

7.5 Commitments and Future Work

The EPR commitments are developed to satisfy the requirements of *O. Reg. 231/08*. The purpose of the commitments is to facilitate the implementation of the proposed improvements to the Stouffville Grade Separations Project in accordance with the mitigation measures and monitoring activities described in the EPR and in a manner that does not result in negative effect on matters of provincial interest related to the natural environment, cultural heritage, or constitutionally protected Indigenous of treaty rights.

Metrolinx is committed to implementing the mitigation and monitoring activities outlined in Table 4.12. Commitments for future work to be undertaken during subsequent phases of the Project are outlined in Table 7.2.

Table 7.2: Summary of Commitments

Discipline	Commitments
Detailed Design	
General	• Implement mitigation measures and monitoring requirements as outlined in Table 4.12. • Develop/undertake design and management plans in accordance with the specific mitigation measures identified through the effects assessment and listed in Table 4.12. • The Study Area is within the City of Toronto, City of Markham and York Region. Metrolinx will continue to communicate and engage with the municipalities throughout detailed design and prior to construction to confirm that any municipal input is addressed prior to commencement of construction activities. This will include continued discussion to refine and confirm the design requirements for the Project to align with City/Region standards, ongoing engagement related to implementation schedules and mitigation of impacts to City/Region resources, and negotiation related to

Discipline	Commitments
	cost sharing agreements for the construction, operation and maintenance of new infrastructure. • A range of municipal permits and approvals may be required for the project, particularly as pertaining to municipally owned lands and infrastructure. All required permits and approvals shall be obtained. However, Metrolinx as a Crown Agency of the Province of Ontario is exempt from certain municipal processes and requirements. In these instances, Metrolinx will engage with the municipalities to incorporate municipal requirements as a best practice, where practical, and may obtain associated permits and approvals. • Water, sanitary, and storm servicing will be reviewed during detailed design. The municipality will be consulted during detailed design to address impacts to municipal water, sanitary, and storm sewer systems. • Communication and engagement with the municipality shall continue as design and construction planning progress to address municipal interests. • Final detailed monitoring plans will be developed as part of detailed design activities.
Natural Environment	• Metrolinx will engage the TRCA through the Voluntary Permit Review process with respect to works within TRCA regulated areas at Kennedy Road and Progress Avenue and to address the risk of flooding and erosion. Metrolinx will continue to engage TRCA throughout the detailed design to address concerns. Once TRCA concerns are satisfied, a Voluntary Project Review Letter is provided by TRCA staff.
Geology and Groundwater	• Geotechnical and hydrogeology studies will be undertaken in accordance with applicable permitting and approval requirements. The resulting reports will be shared with the City of Toronto, City of Markham and York Region. • Appropriate dewatering strategies will be determined and confirmed in coordination with the relevant municipality. • Permits and approvals related to dewatering, if required, will be determined during detailed design. • For Progress Avenue, a slope stability study will be conducted, as required, for all elements in proximity to the slope in accordance with the TRCA's Geotechnical Engineering and Design Submission Requirements (2007). Based on the outcome of the study, necessary design modifications will be made as required.
Cultural Environment	• No demolition, construction, grading or other soil disturbances will occur within the Project Footprint prior to the MHSTCI (Archaeological Program Unit) confirming in writing that all archaeological licensing and technical review requirements have been satisfied. • Additional Stage 1 AA for Denison Street; Stage 2 AA for Denison Street, McNicoll Avenue, Kennedy Street, Havendale Road, Huntingwood Drive, and Progress Avenue; and Stage 3 and 4, where recommend by previous stages will be undertaken by a licensed archaeologist early in and prior to the completion of detail design and submitted to MHSCTI for review. Metrolinx and/or Project Co will confirm that any AA reports submitted to MHSTCI for review have been entered into the Ontario Public Register of

Discipline	Commitments
	Archaeological Reports prior to commencing any ground disturbing activities. • Where a known or potential built heritage resource or cultural heritage landscape may be directly and adversely impacted, and where it has not yet been evaluated for CHVI, completion of a CHER is required to fully understand its CHVI and level of significance. The CHER would be completed within the TPAP. If a built heritage resource or cultural heritage landscape is found to be of CHVI, then a Heritage Impact Assessment (HIA) will be undertaken by a qualified person. The HIA will be completed in consultation with MHSTCI and the proponent as early as possible during detail design, following the TPAP.
Traffic and Transportation	• Municipal paramedic services will be given an opportunity to review emergency response plans and access/egress points to construction sites. • Detailed staging plans involving changes to the roads on which TTC/YRT buses operate will be submitted for approval by TTC/YRT prior to implementation. • Changes to bus stops, temporary or permanent will be submitted for approval by TTC/YRT in advance of implementation. • In accordance with TTC requirements, four months advance notice for changes to routes will be provided.
Construction	
General	• Implement mitigation measures and monitoring activities related to construction as outlined in Table 4.12. • Develop/undertake design and management plans in accordance with the specific mitigation measures identified through the effects assessment and listed in Table 4.12. • An Environmental Mitigation and Monitoring Plan (EMMP) will be developed prior to construction to outline the responsibilities for carrying out monitoring activities (see Section 7.5.2).
Natural Environment	• An Erosion and Sediment Control Plan, in accordance with the Greater Golden Horseshoe's *Erosion and Sediment Control Guideline for Urban Construction* (December, 2006), as amended from time to time, will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the waterbody. • A Spill Prevention and Response Plan will be developed before work commences.
Geology and Groundwater	• If required, permit/approval requirements related to dewatering will be followed.
Socio-Economic and Land Use	• Surrounding property owners and tenants will be informed of anticipated upcoming construction works.
Air Quality	• Adherence to the site-specific mitigation and monitoring recommendations identified in the Construction Phase Air Quality Impact Assessment Report (Appendix A5).

Discipline	Commitments
	• If the types and quantities of construction equipment evaluated in the Construction Phase Air Quality Impact Assessment Report (Appendix A5) differ substantially from the types and quantities anticipated to be used by the Contractor, the Contractor will be responsible for ensuring equipment meets the emission limits referenced in the report. • Greenhouse gas emissions were not included in the construction air quality investigation as a detailed Construction AQMP will address greenhouse gas emissions.
Noise and Vibration	• If the types and quantities of construction equipment evaluated in the Construction Noise and Vibration Assessment Report (Appendix A6) differ substantially from the types and quantities anticipated to be used by the Contractor, the Contractor will be responsible for ensuring equipment meets the sound level limits referenced in the report.
Traffic and Transportation	• Municipal Paramedic Services will be notified of in advance of change of access/egress to existing residences, commercial properties, infrastructure, parks, etc. • Construction lane and turning widths will accommodate emergency vehicles. • Prior to construction, Metrolinx will discuss the validity of traffic data used to complete the TIA with the City of Toronto, in comparison with actual traffic volumes at the time of construction. • For road detours, at a minimum one lane of traffic will be maintained in each direction. A temporary sidewalk will also be constructed along at least one side of the detour. These facilities will be comply with relevant municipal standards and AODA requirements.
Operations	
General	• Implement mitigation measures and monitoring activities related to operations as outlined in Table 4.12. • Develop/undertake design and management plans in accordance with the specific mitigation measures identified through the effects assessment and listed in Table 4.12.
Noise and Vibration	• Stationary noise sources will meet the MECP allowable levels for stationary sources (NPC-300 criteria). If necessary, appropriate noise mitigation will be applied (design of adequate acoustical housing, noise isolation mounts, etc.).

7.5.1 Summary of Mitigation and Monitoring Requirements

Upon completion of the TPAP, Metrolinx will finalize Detailed Design of the proposed improvements to the Project, while seeking the necessary permits and approvals. Consultation will continue through detailed design and construction where required for obtaining permits, informing interested parties of construction updates, and coordinating with municipalities and Indigenous Nations (if required).

The key objectives of monitoring activities are as follows:

1. Confirm accuracy of predictions in EPR
2. Facilitate compliance with regulatory standards, approval requirements, etc.
3. Track the status and resolution of EA commitments and requirements
4. Augment EA information if needed
5. Evaluate the effectiveness of mitigation measures
6. Identify where effects/conditions do not meet regulatory requirements so that contingency measures can be taken

In advance of commencing construction activities, mitigation measures will be implemented as outlined in Section 4.0, and monitoring activities will continue throughout construction activities, and upon completion of construction where required. Monitoring commitments made in Section 4.0 are summarized in Table 4.12. Final, detailed monitoring plans will be developed as part of detailed design activities.

7.5.2 Environmental Mitigation and Monitoring Plan

The Environmental Mitigation and Management Plan (EMMP) will outline environmental protection measures for natural environment and socio-economic features located on or adjacent to the Project site. The EMMP will include both general and site-specific environmental protection measures based on Project-specific requirements, past project experience, current industry best management practices, and consistency with federal and provincial construction mitigation practices. The EMMP will:

- Outline environmental protection measures related to Project activities
- Provide instructions for carrying out construction activities to minimize environmental effects
- Serve as reference information for the environmental inspection staff to support decision making and provide links to more detailed information

The EMMP will be based on the fieldwork conducted in support of the EPR to provide Project-related environmental mitigation measures and follow-up commitments to be addressed during the detailed engineering design, construction and post-construction reclamation phases.

The EMMP will be developed with the goal of ensuring that construction is completed in compliance with environmental approvals, commitments and obligations. A core component of the EMMP will be engaging an Environmental Monitor, which will provide the following services in implementing the EMMP:

- Conduct a routine monitoring program to confirm that environmental protection measures are conducted as planned
- Identify and provide direction to remediate any unexpected environmental occurrences (i.e., failure of environmental protection measures, damage to protection measures resulting from unexpected storms)
- Provide expert guidance to Project staff during construction to ensure that the environment is protected according to environmental approvals, commitments and obligations
- Confirm that any commitments or requirements developed in accordance with regulatory authorities are carried out as planned, and recommend additional protection measures, if required
- Document environmental protection measures, deficiencies and methods to address environmental deficiencies carried out by Project staff
- Where required, act as a liaison between Metrolinx and regulatory agencies when issues arise during construction
- Conduct additional field programs as required (i.e., fish rescue programs)
- Identify appropriate timing windows (e.g., in-water works, breeding bird season) and clear sites for construction where required

The EMMP will outline how environmental monitoring staff will address deficiencies with the Contract Administrator and construction contractor so that these issues can be resolved in a timely manner to avoid negative effects to the environment.

The EMMP will also outline procedures for construction monitoring staff to provide direction to the construction contractor for location of environmental protection measures that require site specific considerations, or “field fit”. They will also identify areas that may require additional environmental protection measures not identified on the construction drawings. Any additional environmental mitigation measures will be discussed with Metrolinx staff prior to directing the contractor to install them.

8.0 References

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Appendix A
Environmental Technical Studies

Provided under separate cover

Appendix A1

Natural Environmental Technical Report

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Appendix A1-1
Denison Street Natural Environment Technical Report

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Appendix A1-2
Kennedy Road Natural Environment Technical Report

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Appendix A1-3
Passmore Avenue Natural Environment Technical Report

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Appendix A1-4
McNicoll Avenue Natural Environment Technical Report

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Appendix A1-5
Huntingwood Drive Natural Environment Technical Report

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Appendix A1-6
Havendale Road Natural Environment Technical Report

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Appendix A1-7
Progress Avenue Natural Environment Technical Report

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Appendix A2

Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment

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Appendix A3

Stage 1 Archaeological Assessment Report

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Appendix A3-1
MHSCTI Acceptance Letter

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Appendix A3-2
Stage 1 Archaeological Assessment Report

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Appendix A3-3

Memorandum Summarizing Archaeological Assessment Reports Completed within Footprint of McNicoll Avenue Grade Separation and Considerations Regarding Forthcoming Stage 2 Archaeological Assessment at Kennedy Road and Denison Street Grade Separations

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Appendix A4
Socio-Economic and Land Use Studies

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Appendix A4-1
Denison Street Socio-Economic and Land Use Study

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Appendix A4-2
Kennedy Road Socio-Economic and Land Use Study

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Appendix A4-3
Passmore Avenue Socio-Economic and Land Use Study

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Appendix A4-4
McNicoll Avenue Socio-Economic and Land Use Study

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Appendix A4-5
Huntingwood Drive Socio-Economic and Land Use Study

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Appendix A4-6
Havendale Road Socio-Economic and Land Use Study

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Appendix A4-7
Progress Avenue Socio-Economic and Land Use Study

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Appendix A5
Air Quality Evaluations

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Appendix A5-1

Stouffville Rail Corridor Grade Separations Project: Construction Phase Air Quality Impact Assessment Report

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Appendix A5-2

Regional Air Quality Study, GO Rail Network Electrification Project

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Appendix A6
Noise and Vibration Assessments

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Appendix A6-1

Stouffville Rail Corridor Grade Separations Project: Construction Noise and Vibration Assessment Report

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Appendix A6-2

Noise and Vibration Study Stouffville Corridor, GO Rail Network Electrification Project

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Appendix A7
Transportation Impact Assessment

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Appendix A8
Tree Inventories

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Appendix A8-1

Stouffville Rail Corridor Grade Separations Project: Markham, Ontario, Tree Inventory Report

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Appendix A8-2

Stouffville Rail Corridor Grade Separations Project: Toronto, Ontario, Tree Inventory Report

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Appendix B
Record of Consultation

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Appendix B1
Correspondence Tracking Table

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Appendix B2
Public Consultation Records

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Appendix B3

Federal and Provincial Government Agency Consultation Records

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Appendix B4
Municipal Consultation Records

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Appendix B5
Third Party Consultation Records

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Appendix B6
Meeting Minutes

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Appendix B7
Indigenous Nations Consultation Records

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Appendix B8
Public Information Centre Boards and Handouts

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