

**Scarborough Junction Grade  
Separation Project:  
Errata to the Final Environmental  
Project Report**

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## **Overview**

This Errata documents changes to the Scarborough Junction Grade Separation (Project) Final Environmental Project Report (EPR) based on comments received during the 30-day public review period following the publication of the Notice of Completion on December 21, 2020. Specific additions, deletions and revisions are identified in yellow in the document that follows.

This Errata was prepared to incorporate revisions to the EPR and associated environmental technical reports based on comments provided by the City of Toronto, Ministry of the Environment, Conservation and Parks and the Ministry of Heritage, Sport, Tourism and Culture Industries during the 30-day public review period following the publication of the Notice of Completion which began on December 21, 2020 and ended on January 20, 2021.

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**Executive Summary**

**Table ES.1: Potential Effects, Mitigation Measures and Monitoring**

Environmental Component	Potential Effects	Project Phase - Construction	Project Phase - Operation	Project Components	Mitigation Measure(s)	Monitoring Activities
<b>Cultural Environment</b>						
Built Heritage Resources and Cultural Heritage Landscapes	Indirect impacts to the built heritage resources of a property of known or potential Cultural Heritage Interest or Value (CHVI) due to installation of new/modified infrastructure.	-	-	Scarborough GO Station Building	<ul style="list-style-type: none"> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&amp;E) Process</i> (2014), the MHSTCI guidance on <i>Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment</i> (2019) (Cultural Heritage Report), and the forthcoming <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&amp;E) Process</i> (2020). In the event that the <i>Metrolinx I&amp;E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013).</li> <li><del>Follow the process and recommendations outlined in this Environmental Project Reports (EPR) under Transit Project Assessment Process (TPAP) for Proponents and their Consultants.</del></li> <li>Follow the recommendations outlined in the heritage reporting completed including Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (2020) (Cultural Heritage Report), or the Heritage Impact Assessment (HIA).</li> <li>For known and potential properties of Cultural Heritage Value or Interest (CHVI) that will experience indirect or direct impacts and where no previous assessment has been completed or a Statement of Cultural Heritage Value (SCHV) has not been approved by Metrolinx, undertake a Cultural Heritage Evaluation Report (CHER) as per the forthcoming <i>Metrolinx I&amp;E Process</i> (2020). In the event that the <i>Metrolinx I&amp;E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013).</li> <li>Given the importance and location of some Cultural Heritage Resources, consultation with Municipal heritage staff and other jurisdictions will be</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources (CHRs)/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or Environmental Study Reports (ESRs) and Addenda and the recommendations contained in the Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.</li> <li>Alternatively, where construction activities are anticipated within the 50 metre buffer zone of 87 Granger Avenue (CHR-1), 112 Granger Avenue (CHR-2), 70 Granger Avenue (CHR-3), and 1 Granger Avenue (CHR-4), pre-construction vibration assessment and condition survey, vibration monitoring program, and post-construction condition survey should be carried out by a qualified building condition specialist or geotechnical engineer with previous experience working with heritage structures.</li> </ul>
		-	-	St. Clair Avenue East Bridge		
		-	-	Midland Layover		
		•	-	Danforth Road/Midland Avenue Intersection		
		•	-	Linear Facilities		
		-	-	Corvette Multi-use Crossing		
		-	-	Utilities		
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Environmental Component	Potential Effects	Project Phase - Construction	Project Phase - Operation	Project Components	Mitigation Measure(s)	Monitoring Activities
					<p>undertaken as appropriate to determine if proposed infrastructure will be subject to specific policies within heritage districts or conservation areas (including parks).</p> <ul style="list-style-type: none"> <li>Use preventative measures to avoid the 87 Granger Avenue (CHR-1), 112 Granger Avenue (CHR-2), 70 Granger Avenue (CHR-3), and 1 Granger Avenue (CHR-4) by establishing a buffer zone around the residence. This should use appropriate preventative measures such as mapping of the CHR on construction maps and temporary fencing.</li> </ul>	
<b>Built Heritage Resources and Cultural Heritage Landscapes</b>	<b>Management of Cultural Heritage Resources/Properties</b>	•	•	<b>All Project Components</b>	<ul style="list-style-type: none"> <li><del>Develop and implement a Strategic Conservation Plan that addresses built heritage resources and cultural heritage landscapes according to MHSTCI Information Bulletin No. 2: Preparing Strategic Conservation Plans for Provincial Heritage Properties (2017) and as outlined in the Project Agreement.</del></li> <li><del>For Provincial Heritage Property of Provincial Significance, approval of the MCP and SCP by MHSTCI is required.</del></li> </ul>	<ul style="list-style-type: none"> <li><del>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in the Scarborough Junction Grade Separation Project Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.</del></li> </ul>
<b>Noise and Vibration</b>						
Operational Noise (Trains)	<p>Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health.</p> <p>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.</p>	-	•	Linear Facilities and Midland Layover	<p>Mitigation per TPAP Study Report (Noise Barriers):</p> <ul style="list-style-type: none"> <li>Deploy the noise barriers defined in the <i>Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020</i> (RWDI).</li> <li>Maintain noise barriers so as to ensure their continued effectiveness in noise reduction.</li> <li>If deviating from the assessments made in the <i>Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020</i> (RWDI), comply with the noise impact and assessment criteria in the <i>Metrolinx Guide for Noise and Vibration Assessment</i> (2020).</li> </ul> <p>Mitigation at the Source:</p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below.</li> </ul> <p>Mitigation Criteria:</p> <ul style="list-style-type: none"> <li>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:</li> </ul>	<ul style="list-style-type: none"> <li>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, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s).</li> <li><del>Monitor air-borne and air-borne noise as part of an annual "Noise and Vibration Survey" at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:</del></li> </ul>

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					<ul style="list-style-type: none"> <li>- 10-year objective: 70/60 dBA</li> <li>- 20-year objective: 60/50 dBA</li> <li>- 25-year objective: 55/50 dBA</li> <li>• Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.</li> <li>• Meet the ground-borne (vibration induced) noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.</li> <li>• Meet any additional future criteria or guidance developed by regulatory agencies, as applicable.</li> </ul>	<ul style="list-style-type: none"> <li><del>Location subject to highest rail related noise and vibration</del></li> <li><del>Location representative of a significant number of receptors</del></li> <li><del>Location housing highly noise and/or vibration sensitive activity or equipment</del></li> <li><del>Locations approximately equally distributed along the length of the corridor</del></li> <li>• 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</li> <li>• 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</li> </ul>
<p><b>Construction and Maintenance-related Vibration</b></p>	<p>Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures.</p>	<ul style="list-style-type: none"> <li>•</li> </ul>	<p>-</p>	<p>All Project Components</p>	<ul style="list-style-type: none"> <li>• Adhere to the following vibration exposure limits: <ul style="list-style-type: none"> <li>- 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%.</li> <li>- 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 <del>by-law</del> <i>Vibration: Chapter 363 dated November 27, 2019</i> <del>By-Law No. 514-2008</del> for typical structures (not building with special needs).</li> </ul> </li> <li>• Adhere to the ground-born (vibration induced) noise exposure criteria in the US FTA Report No. 0123, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018).</li> <li>• Develop and implement a detailed Construction Vibration Management Plan for Metrolinx review and approval with minimum requirements outlined below. <ul style="list-style-type: none"> <li>- Complete a detailed construction related vibration assessment prior to the commencement of</li> </ul> </li> </ul>	<p>The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints:</p> <ul style="list-style-type: none"> <li>• The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints: <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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: <ul style="list-style-type: none"> <li>✓ Type 1: Monitoring continuously throughout the project (for receptors within the Zone Of Influence).</li> <li>✓ Type 2: Monitoring during most impactful phases of the project only (for receptors outside of the Zone Of Influence but</li> </ul> </li> </ul> </li> </ul>

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					<p>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), <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018).</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures.</li> <li>- Identify buildings, where vibration sensitive activities such a sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures.</li> <li>- 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.</li> <li>- Select construction/maintenance methods and equipment with the least vibration impacts.</li> <li>• In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available.</li> </ul>	<p>within 50 m of the boundary of the construction site).</p> <ul style="list-style-type: none"> <li>✓ 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).</li> <li>• Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction.</li> </ul>



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<b>Operational Vibration (Trains)</b>	<p>Vibration can cause annoyance, interfere with human activity and affect human health. It may also cause building damage.</p> <p>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.</p> <p>Vibration levels may also change with changes in rail vehicle specifications and operating conditions.</p>	-	•	Linear Facilities and Midland Layover	<p><u>Mitigation per TPAP Study Report:</u></p> <ul style="list-style-type: none"> <li>Deploy mitigation recommended in the <i>OnCorr Noise and Vibration Study Report</i> (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 <i>MOEE/GO Transit Draft Protocol for Noise and Vibration Assessment</i> (1994).</li> </ul> <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below.</li> </ul> <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none"> <li>Meet the ground-borne vibration criteria in the 1995 MOEE/GO Transit Noise and Vibration Protocol.</li> </ul>	<ul style="list-style-type: none"> <li>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).</li> <li>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.</li> <li>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.</li> <li>Conduct ground-borne and air-borne vibration monitoring in accordance with the Project Agreement, to check compliance and to inform decisions.</li> <li>Assess vibration performance regularly to check compliance and to inform decisions.</li> </ul>
<b>Traffic and Transportation</b>						
Road Network	Construction may result in the need for temporary road or lane closures changing access to nearby land uses.	-	-	Scarborough GO Station Building	<ul style="list-style-type: none"> <li>Traffic Control and Management Plan(s) will be developed prior to construction to maintain reasonable access through work zones, to the extent possible.</li> <li>Access to nearby land uses will be maintained for vehicular, pedestrian and cyclist traffic. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur.</li> <li>Temporary vehicular and pedestrian facilities will comply with accessibility and applicable City</li> </ul>	<ul style="list-style-type: none"> <li>Pedestrian, cyclist, and vehicular traffic impacts are to be monitored in accordance with a Traffic and Transit Management Plan and adjusted as necessary during the construction period. Cycling network impacts to be monitored in accordance with the Construction Traffic Control and Management Plan and adjusted as necessary during the construction period.</li> </ul>
		•	-	St. Clair Avenue East Bridge		
		-	-	Midland Layover		
		•	-	Danforth Road/Midland Avenue Intersection		
		-	-	Linear Facilities		
		-	-	Corvette Multi-use Crossing		

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		•	-	Utilities	<p>standards.</p> <ul style="list-style-type: none"> <li>• Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate wayfinding, regulatory, and warning signs.</li> <li>• 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 City of Toronto, and will be undertaken if required, to determine appropriate changes to traffic signal timings.</li> <li>• During construction at the Danforth Road/Midland Avenue intersection, three lanes of traffic are proposed to remain open through a staged detour, to maintain traffic flow along Danforth Road.</li> <li>• During construction of the St. Clair Avenue East bridge:               <ul style="list-style-type: none"> <li>– Use of the delineated shoulder lanes to shift traffic during construction works, which will retain the same amount of lane capacity underneath the structure. This will be coordinated with the City of Toronto.</li> <li>– To minimize the impacts to nearby traffic signals, it is recommended that any lane reductions only be implemented during off-peak hours where possible (i.e., between 9:00 am and 4:00 pm).</li> </ul> </li> <li>• Existing sidewalks and crossings will be maintained to the extent possible.</li> <li>• Construction schedules will be shared with the public in advance of any construction works to reduce traffic during peak hours.</li> <li>• No consecutive pedestrian crossings will be closed, unless otherwise authorized by the Road Authority. Simultaneous closures of sidewalks and pedestrian crossings should be avoided.</li> </ul>	
		-	-	Laydown Areas		

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Cycling, Pedestrian and Trail Network	Temporary effects on cyclists/ pedestrians such as temporary partial or full sidewalk closures.	•	-	Scarborough GO Station Building	<ul style="list-style-type: none"> <li>Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate way finding, regulatory, and warning signs.</li> <li>Special directional signage will be considered to help pedestrians and cyclists avoid any potential construction activities.</li> <li>Existing sidewalks and crossings will be maintained to the extent possible.</li> <li>No consecutive pedestrian crossings will be closed, unless otherwise authorized by the Road Authority. Simultaneous closures of sidewalks and pedestrian crossings should be avoided.</li> <li>Design elements were incorporated into the exit of the ramp structure on the west side of the rail corridor at the Corvette multi-use crossing (bridge option) to prevent cyclists from having direct access to Magnolia Avenue.</li> </ul>	<ul style="list-style-type: none"> <li>Cycling network effects to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period.</li> </ul>
		•	-	St. Clair Avenue East Bridge		
		-	-	Midland Layover		
		•	-	Danforth Road/Midland Avenue Intersection		
		-	-	Linear Facilities		
		•	-	Corvette Multi-use Crossing		
		•	-	Utilities		
		-	-	Laydown Areas		

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## 3.8.1.2.1.3 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 credible 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 range of actual scenarios that may be implemented in the future to deliver the required service levels.

The predictable credible 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.

### 4.3.3.1 Construction

There are 12-10 trees located in the vicinity of the St. Clair Avenue East bridge that have the potential to be impacted during construction will be removed to allow for construction of the bridge expansion (Stantec 2020g2021a). Of those 12 trees, two will be removed but are dead and the remaining 10 are anticipated to be removed to allow for construction of the bridge expansion.

### 4.3.4.1 Construction

There are approximately 5550 trees within the vicinity of the Midland Layover that have the potential to be impacted during construction (Stantec 2020g2021a). It is expected that approximately 30-23 trees will require removal (one of which is dead) and 25-27 will be retained and protected. Trees anticipated to be removed include Apple species (*Malus sp.*), Manitoba Maple (*Acer negundo*), White Mulberry (*Morus alba*), and White Willow (*Salix alba*), Eastern Cottonwood (*Populus deltoides ssp. Deltoides*), and Black Willow (*Salix nigra*). Manitoba Maple, White Mulberry, and White Willow are invasive species.

### 4.3.5.1 Construction

There are approximately 22-11 trees located in the vicinity of the Danforth Road/Midland Avenue intersection that have the potential to be impacted during construction (Stantec 2021a). Approximately It is anticipated that 649 trees will be removed to allow for construction of the intersection. Tree species that will be removed include Black Walnut (*Juglans nigra*), Manitoba Maple (*Acer negundo*), Ash species (*Fraxinus sp.*), Norway

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Maple, (*Acer platanoides*) and Cherry species (*Prunus sp.*). Black Walnut is considered to be a high value species. Manitoba Maple and Norway Maple are is an invasive species.

## 4.3.6.1 Construction

It is estimated that 400 approximately 87 trees associated with the footprint of linear facilities will require removal. Other construction-related affects to trees can include removal or impacts to tree roots, compaction of soil and physical damage to trees through equipment strikes.

## 4.3.7.1 Construction

Pending confirmation of the preferred option for the multi-use crossing, approximately 45 to 6031 trees will require removal during construction.

## 4.3.8.1 Construction

Realignment of utilities has the potential to impact trees through tree removal, removal or impacts to tree roots, compaction of soil and physical damage to trees through equipment strikes. It estimated that approximately 13 trees will require removal during construction.

## 4.3.9.1 Construction

The Corvette Park laydown area will be located in proximity to the splash pad/playground area to avoid the impact to trees to the extent feasible. Approximately four trees may require removal to accommodate the laydown area, including Norway Maple (*Acer platanoides*) and Elm species (*Ulmus sp.*). Norway Maple is an invasive species. Anticipated tree removals have been included in Section 4.3.7.1.

## 4.6 Cultural Environment

### 4.6.1 Overview

Where a built heritage resource or cultural heritage landscape was identified within or across the Cultural Heritage Study Area, 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). Impacts to heritage resources may be direct, or indirect. Table 4.3 provides an overview of the identified built heritage resources and cultural heritage landscapes and a brief description of the anticipated Project impacts based on the preliminary design. The table also describes the mitigation

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measures and recommendations included in the Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (Appendix A2).

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**Table 4.3: Identified Built Heritage Resources and Cultural Heritage Landscapes**

CHR Reference Number	Type of Property	Location	Description of Known or Potential CHVI	Photograph	Type and Description of Potential/Anticipated Impact	Mitigation Measures
CHR-1	Residence	87 Granger Avenue	The property contains a two-storey L-shaped residence with a rear wing built in the Victorian style. The gable roof has one offset gable in the front façade of the south section of the structure. The exterior of the residence appears to have clapboard style siding. The roof has projecting eaves, plain fascia, plain soffit, and one side-to-side, single stack, red brick chimney that is offset from the left. The window surrounds are plain and flat with plain lug sills. All windows appear to be recent/replaced. The main entrance is off-centre and is located on the southern section of the front façade. The door trim is plain and is covered by an open porch with plain piers. The house appears on the 1918 historic topographic map of Toronto (ASI 2014). The residence has potential design value as a representative example of a late 19 <sup>th</sup> to early 20 <sup>th</sup> century Ontario vernacular structure.		<b>Indirect:</b> The property is situated adjacent to the Project Footprint. Construction activities associated within the railway corridor are proposed east of the residence within less than 10 metres of the identified BHR. The position of the structure within 10 metres of project activities has the potential for indirect impacts resulting from vibration damage during construction activities. In addition, there is also potential for indirect impacts resulting from construction activities associated with the potential storm sewer work along Granger Avenue. <b>Therefore, mitigation measures must be prepared to mitigate potential indirect impacts.</b>	<b>Preferred Option:</b> Avoid the CHR by establishing a buffer zone around the residence. This should use appropriate preventative measures such as mapping of the CHR on construction maps and temporary fencing. Staging and laydown areas should also be selected so that they are non-invasive and avoid the CHR. Where avoidance is not feasible, the alternative option should be applied. <b>Alternative Option:</b> Where construction activities are anticipated within the 50 metre buffer zone, pre-construction vibration assessment and condition survey, vibration monitoring program, and post-construction condition survey should be carried out by a qualified building condition specialist or geotechnical engineer with previous experience working with heritage structures. Vibration velocity, or PPV, should be limited to 8-22 millimetres per second.
CHR-2	Residence	112 Granger Avenue	The property contains a two and one half storey residence built in the Victorian style. The residence has a rectangular plan and includes a wing/addition on the east elevation. It includes a gable roof with projecting eaves, plain fascia, and plain soffit. The house appears to recently updated with vinyl siding, new windows, and new doors. Landscape elements on the property include old/established trees and circulation routes. The house was built during the first half of the twentieth century and appears on the 1949 topographic map of Toronto (ASI 2014). The residence has potential design value as a representative early 20 <sup>th</sup> century Ontario vernacular structure.		<b>Indirect:</b> The property is situated adjacent to the Project Footprint. Construction activities are proposed north and east of the residence, within less than 10 metres of the identified BHR. The position of the structure within 10 metres of the Project Footprint has the potential for indirect impacts resulting from vibration damage during construction activities. In addition, there is also potential for indirect impacts resulting from construction activities associated with the potential storm sewer work along Granger Avenue. <b>Therefore, mitigation measures must be prepared to mitigate potential indirect impacts.</b>	<b>Preferred Option:</b> Avoid the CHR by establishing a buffer zone around the residence. This should use appropriate preventative measures such as mapping of the CHR on construction maps and temporary fencing. Staging and laydown areas should also be selected so that they are non-invasive and avoid the CHR. Where avoidance is not feasible, the alternative option should be applied. <b>Alternative Option:</b> Where construction activities are anticipated within the 50 metre buffer zone, pre-construction vibration assessment and condition survey, vibration monitoring program, and post-construction condition survey should be carried out by a qualified building condition specialist or geotechnical engineer with previous experience working with heritage structures. Vibration velocity, or PPV, should be limited to 8-22 millimetres per second.

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CHR Reference Number	Type of Property	Location	Description of Known or Potential CHVI	Photograph	Type and Description of Potential/Anticipated Impact	Mitigation Measures
CHR-3	Residence	70 Granger Avenue	This property contains a two and one half storey residence with a steeply pitched hip and gable roof with a brick chimney and asphalt shingles. The residence is clad in red brick and contains modern windows. The residence has a projecting bay with a gable dormer and wood vergeboard. The residence has an enclosed front porch and the foundation is obscured (Stantec 2017b). The residence has potential design value as a representative late 19 <sup>th</sup> to early 20 <sup>th</sup> century Ontario vernacular structure.		<b>Indirect:</b> The property is situated adjacent to the Project Footprint. Construction activities associated with the railway corridor and grade separation are proposed east of the residence. This work is proposed more than 50 metres from the identified BHR. However, there is the potential for storm sewer work within Granger Avenue and Summer Drive to occur within 50 metres of the residence, which would have potential for indirect impacts resulting from vibration damage during construction activities. <b>Therefore, mitigation measures must be prepared to mitigate potential indirect impacts.</b>	<b>Preferred Option:</b> Avoid the CHR by establishing a buffer zone around the residence. This should use appropriate preventative measures such as mapping of the CHR on construction maps and temporary fencing. Staging and laydown areas should also be selected so that they are non-invasive and avoid the CHR. Where avoidance is not feasible, the alternative option should be applied. <b>Alternative Option:</b> Where construction activities are anticipated within the 50 metre buffer zone, pre-construction vibration assessment and condition survey, vibration monitoring program, and post-construction condition survey should be carried out by a qualified building condition specialist or geotechnical engineer with previous experience working with heritage structures. Vibration velocity, or PPV, should be limited to 8-22 millimetres per second.
CHR-4	Residence	1 Granger Avenue	This property contains a one and a half storey red brick residence is built in the Edwardian style. It includes a saltbox roof with an extension on the north elevation and covered porch on the south elevation. The residence has projecting eaves, plain fascia, and mouled soffit. The structure includes a bay on the front façade that is clad in green clapboard style siding. The window surrounds have curved, brick voussoirs, with plain lugsills. The majority of the windows appear to have been replaced. The exception to this is the window on the north side of the original structure, which appears to have sash two-over-two panes. The basement window also appears to have original panes. The front door appears to be recent, but the door surround includes a curved brick voussoir that matches the window surrounds on the rest of the structure. The foundation of the original section appears to be concrete. The residence appears on the 1949 historic topographic map of Toronto (ASI 2014). The residence has potential design value as a representative early 20 <sup>th</sup> century Ontario vernacular structure.		<b>Indirect:</b> The property is situated adjacent to the Project Footprint. Construction activities associated with the railway corridor and grade separation are proposed east of the residence. This work is proposed more than 50 metres from the identified BHR. However, the laydown area associated with the project is immediately adjacent to the residence, which would have potential for indirect impacts resulting from vibration damage during construction activities as equipment and personnel are moved around the site. <b>Therefore, mitigation measures must be prepared to mitigate potential indirect impacts.</b>	<b>Preferred Option:</b> Avoid the CHR by establishing a buffer zone around the residence. This should use appropriate preventative measures such as mapping of the CHR on construction maps and temporary fencing. Staging and laydown areas should also be selected so that they are non-invasive and avoid the CHR. Vibration velocity, or PPV, should be limited to 8-22 millimetres per second. Where avoidance is not feasible, the alternative option should be applied. <b>Alternative Option:</b> Where laydown areas are required within the 50 metre buffer zone, pre-construction vibration assessment and condition survey, vibration monitoring program, and post-construction condition survey should be carried out by a qualified building condition specialist or geotechnical engineer with previous experience working with heritage structures. Vibration velocity, or PPV, should be limited to 8-22 millimetres per second.



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CHR Reference Number	Type of Property	Location	Description of Known or Potential CHVI	Photograph	Type and Description of Potential/Anticipated Impact	Mitigation Measures
CHR-5	Residence	23 Laurel Avenue	This property contains a one and one half storey residence with a steeply pitched cross gable roof and asphalt shingles. The exterior is painted brick and stucco. The residence contains modern windows and an asymmetrical front façade. The residence has a partial width front porch with a modern entrance door. The foundation of the residence is obscured. The residence has potential design value as a representative late 19 <sup>th</sup> to early 20 <sup>th</sup> century Ontario vernacular structure.		<p><b>No Impacts Anticipated</b></p> <p>The property is situated adjacent to the Project Footprint. Construction activities are proposed east of the residence. Project components are proposed more than 50 metres from the identified BHR.</p> <p>Therefore, the property is not at risk of direct or indirect impacts and no mitigation measures or further cultural heritage evaluation are required.</p>	N/A

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## 4.7.7.4 Existing Utilities

### 4.7.7.4.1 Construction

**Table 4.9: Utility Conflicts – Corvette Multi-Use Crossing**

Utility Owner	Utility Type	Existing Location	Recommended Action or Resolution
Bell 360	Fiber Optic Cable, Communication Cable	Rail ROW	Relocate the Utility
City of Toronto	Sanitary, Storm, Water, Drainage Manhole, Sanitary Manhole, Watermain Manhole, Manhole, Light Standard	Rail ROW, Municipal ROW, Park Land	Relocate the utility; Protect in place
Enbridge	Gas	Municipal ROW	Protect in place
Metrolinx	Railway Signal	Rail ROW	Relocate the Utility
Toronto Hydro	Hydro, Hydro Light Standard, Utility Pole, Power Pole, Primary, Secondary	Rail ROW, Municipal ROW	Relocate the utility; Protect in place
TBD	Anchor, Cable Ped, Water Box, Storm	Rail ROW, Municipal ROW	Relocate the utility; Protect in place

## 4.9.4.2 Operations

The future noise impacts of the planned Midland Layover, which will be capable of housing up to five full-size electric trains (two locomotives and 12 cars), are expected to be significant with maximum 1-hour energy-equivalent average noise levels ( $L_{eq,1h}$ ) of 56 – 61 dBA during the day/evening and 60 – 63 dBA during the night. These levels exceed the 55 50/45 dBA limits set in MECP’s Publication NPC-300 (Environmental Noise Guideline: Stationary and Transportation Sources – Approval Planning).

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**Table 4.10: Potential Effects, Mitigation Measures and Monitoring**

Environmental Component	Potential Effects	Project Phase - Construction	Project Phase - Operation	Project Components	Mitigation Measure(s)	Monitoring Activities
<b>Cultural Environment</b>						
Built Heritage Resources and Cultural Heritage Landscapes	Indirect impacts to the built heritage resources of a property of known or potential Cultural Heritage Interest or Value (CHVI) due to installation of new/modified infrastructure.	-	-	Scarborough GO Station Building	<ul style="list-style-type: none"> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&amp;E) Process</i> (2014), the MHSTCI guidance on <i>Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment</i> (2019) (Cultural Heritage Report), and the forthcoming <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&amp;E) Process</i> (2020). In the event that the <i>Metrolinx I&amp;E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013).</li> <li><del>Follow the process and recommendations outlined in this Environmental Project Reports (EPR) under Transit Project Assessment Process (TPAP) for Proponents and their Consultants.</del></li> <li>Follow the recommendations outlined in the heritage reporting completed including Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (2020) (Cultural Heritage Report), or the Heritage Impact Assessment (HIA).</li> <li>For known and potential properties of Cultural Heritage Value or Interest (CHVI) that will experience indirect or direct impacts and where no previous assessment has been completed or a Statement of Cultural Heritage Value (SCHV) has not been approved by Metrolinx, undertake a Cultural Heritage Evaluation Report (CHER) as per the forthcoming <i>Metrolinx I&amp;E Process</i> (2020). In the event that the <i>Metrolinx I&amp;E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013).</li> <li>Given the importance and location of some Cultural Heritage Resources, consultation with Municipal heritage staff and other jurisdictions will be undertaken as appropriate to determine if proposed infrastructure will be subject to specific policies within heritage districts or conservation areas (including parks).</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources (CHRs)/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or Environmental Study Reports (ESRs) and Addenda and the recommendations contained in the Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.</li> <li>Alternatively, where construction activities are anticipated within the 50 metre buffer zone of 87 Granger Avenue (CHR-1), 112 Granger Avenue (CHR-2), 70 Granger Avenue (CHR-3), and 1 Granger Avenue (CHR-4), pre-construction vibration assessment and condition survey, vibration monitoring program, and post-construction condition survey should be carried out by a qualified building condition specialist or geotechnical engineer with previous experience working with heritage structures.</li> </ul>
		-	-	St. Clair Avenue East Bridge		
		-	-	Midland Layover		
		•	-	Danforth Road/Midland Avenue Intersection		
		•	-	Linear Facilities		
		-	-	Corvette Multi-use Crossing		
		-	-	Utilities		
		-	-	Laydown Areas		

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Environmental Component	Potential Effects	Project Phase - Construction	Project Phase - Operation	Project Components	Mitigation Measure(s)	Monitoring Activities
					<ul style="list-style-type: none"> <li>Use preventative measures to avoid the 87 Granger Avenue (CHR-1), 112 Granger Avenue (CHR-2), 70 Granger Avenue (CHR-3), and 1 Granger Avenue (CHR-4) by establishing a buffer zone around the residence. This should use appropriate preventative measures such as mapping of the CHR on construction maps and temporary fencing.</li> </ul>	
<del>Built Heritage Resources and Cultural Heritage Landscapes</del>	<del>Management of Cultural Heritage Resources/Properties</del>	<del>•</del>	<del>-</del>	<del>All Project Components</del>	<ul style="list-style-type: none"> <li><del>Develop and implement a Strategic Conservation Plan that addresses built heritage resources and cultural heritage landscapes according to MHSTCI Information Bulletin No. 2: Preparing Strategic Conservation Plans for Provincial Heritage Properties (2017) and as outlined in the Project Agreement.</del></li> <li><del>For Provincial Heritage Property of Provincial Significance, approval of the MCP and SCP by MHSTCI is required.</del></li> </ul>	<ul style="list-style-type: none"> <li><del>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in the Scarborough Junction Grade Separation Project Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.</del></li> </ul>
<b>Noise and Vibration</b>						
Operational Noise ( <i>Trains</i> )	<p>Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health.</p> <p>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.</p>	-	•	Linear Facilities and Midland Layover	<p><u>Mitigation per TPAP Study Report (Noise Barriers):</u></p> <ul style="list-style-type: none"> <li>Deploy the noise barriers defined in the <i>Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020</i> (RWDI).</li> <li>Maintain noise barriers so as to ensure their continued effectiveness in noise reduction.</li> <li>If deviating from the assessments made in the <i>Noise and Vibration Study Reports GO Rail Network Electrification Project, 2020</i> (RWDI), comply with the noise impact and assessment criteria in the <i>Metrolinx Guide for Noise and Vibration Assessment</i> (2020).</li> </ul> <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below.</li> </ul> <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none"> <li>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: <ul style="list-style-type: none"> <li>10-year objective: 70/60 dBA</li> <li>20-year objective: 60/50 dBA</li> <li>25-year objective: 55/50 dBA</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>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, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018). The primary purpose of these measurements is to ascertain the effectiveness of the implemented mitigation measure(s).</li> <li><del>Monitor air-borne and air-borne noise as part of an annual “Noise and Vibration Survey” at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:</del> <ul style="list-style-type: none"> <li><del>Location subject to highest rail related noise and vibration</del></li> </ul> </li> </ul>

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Environmental Component	Potential Effects	Project Phase - Construction	Project Phase - Operation	Project Components	Mitigation Measure(s)	Monitoring Activities
					<ul style="list-style-type: none"> <li>• Meet the airborne noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.</li> <li>• Meet the ground-borne (vibration induced) noise exposure criteria in the 1995 MOEE/GO Transit Draft Noise and Vibration Protocol.</li> <li>• Meet any additional future criteria or guidance developed by regulatory agencies, as applicable.</li> </ul>	<ul style="list-style-type: none"> <li>— Location representative of a significant number of receptors</li> <li>— Location housing highly noise and/or vibration sensitive activity or equipment</li> <li>— Locations approximately equally distributed along the length of the corridor</li> <li>• 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</li> <li>• 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</li> </ul>
<p><b>Construction and Maintenance-related Vibration</b></p>	<p>Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures.</p>	<ul style="list-style-type: none"> <li>•</li> </ul>	<p>-</p>	<p>All Project Components</p>	<ul style="list-style-type: none"> <li>• Adhere to the following vibration exposure limits: <ul style="list-style-type: none"> <li>- 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%.</li> <li>- 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 <i>Vibration: Chapter 363 dated November 27, 2019 By-Law No. 514-2008</i> for typical structures (not building with special needs).</li> </ul> </li> <li>• Adhere to the ground-born (vibration induced) noise exposure criteria in the US FTA Report No. 0123, <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018).</li> <li>• Develop and implement a detailed Construction Vibration Management Plan for Metrolinx review and approval with minimum requirements outlined below. <ul style="list-style-type: none"> <li>- 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</li> </ul> </li> </ul>	<p>The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints:</p> <ul style="list-style-type: none"> <li>• The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints: <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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: <ul style="list-style-type: none"> <li>✓ Type 1: Monitoring continuously throughout the project (for receptors within the Zone Of Influence).</li> <li>✓ 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).</li> </ul> </li> </ul> </li> </ul>

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					<p>using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), <i>Transit Noise and Vibration Impact Assessment Manual</i> (2018).</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures.</li> <li>- Identify buildings, where vibration sensitive activities such as sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures.</li> <li>- 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.</li> <li>- Select construction/maintenance methods and equipment with the least vibration impacts.</li> <li>• In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available.</li> </ul>	<ul style="list-style-type: none"> <li>✓ 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).</li> <li>• Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction.</li> </ul>

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<b>Operational Vibration (Trains)</b>	<p>Vibration can cause annoyance, interfere with human activity and affect human health. It may also cause building damage.</p> <p>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.</p> <p>Vibration levels may also change with changes in rail vehicle specifications and operating conditions.</p>	-	•	Linear Facilities and Midland Layover	<p><u>Mitigation per TPAP Study Report:</u></p> <ul style="list-style-type: none"> <li>Deploy mitigation recommended in the <i>OnCorr Noise and Vibration Study Report</i> (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 <i>MOEE/GO Transit Draft Protocol for Noise and Vibration Assessment</i> (1994).</li> </ul> <p><u>Mitigation at the Source:</u></p> <ul style="list-style-type: none"> <li>Deploy vehicle and track technology and related maintenance measures to maintain compliance with the noise and vibration exposure criteria defined below.</li> </ul> <p><u>Mitigation Criteria:</u></p> <ul style="list-style-type: none"> <li>Meet the ground-borne vibration criteria in the 1995 MOEE/GO Transit Noise and Vibration Protocol.</li> </ul>	<ul style="list-style-type: none"> <li>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).</li> <li>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.</li> <li>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.</li> <li>Conduct ground-borne and air-borne vibration monitoring in accordance with the Project Agreement, to check compliance and to inform decisions.</li> <li>Assess vibration performance regularly to check compliance and to inform decisions.</li> </ul>
<b>Traffic and Transportation</b>						
Road Network	Construction may result in the need for temporary road or lane closures changing access to nearby land uses.	-	-	Scarborough GO Station Building	<ul style="list-style-type: none"> <li>Traffic Control and Management Plan(s) will be developed prior to construction to maintain reasonable access through work zones, to the extent possible.</li> <li>Access to nearby land uses will be maintained for vehicular, pedestrian and cyclist traffic. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur.</li> <li>Temporary vehicular and pedestrian facilities will comply with accessibility and applicable City</li> </ul>	<ul style="list-style-type: none"> <li>Pedestrian, cyclist, and vehicular traffic impacts are to be monitored in accordance with a Traffic and Transit Management Plan and adjusted as necessary during the construction period. Cycling network impacts to be monitored in accordance with the Construction Traffic Control and Management Plan and adjusted as necessary during the construction period.</li> </ul>
		•	-	St. Clair Avenue East Bridge		
		-	-	Midland Layover		
		•	-	Danforth Road/Midland Avenue Intersection		
		-	-	Linear Facilities		
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		•	-	Utilities	standards.	
		-	-	Laydown Areas	<ul style="list-style-type: none"> <li>• Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate wayfinding, regulatory, and warning signs.</li> <li>• 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 City of Toronto, and will be undertaken if required, to determine appropriate changes to traffic signal timings.</li> <li>• During construction at the Danforth Road/Midland Avenue intersection, three lanes of traffic are proposed to remain open through a staged detour, to maintain traffic flow along Danforth Road.</li> <li>• During construction of the St. Clair Avenue East bridge:               <ul style="list-style-type: none"> <li>– Use of the delineated shoulder lanes to shift traffic during construction works, which will retain the same amount of lane capacity underneath the structure. This will be coordinated with the City of Toronto.</li> <li>– To minimize the impacts to nearby traffic signals, it is recommended that any lane reductions only be implemented during off-peak hours where possible (i.e., between 9:00 am and 4:00 pm).</li> </ul> </li> <li>• Existing sidewalks and crossings will be maintained to the extent possible.</li> <li>• Construction schedules will be shared with the public in advance of any construction works to reduce traffic during peak hours.</li> <li>• No consecutive pedestrian crossings will be closed, unless otherwise authorized by the Road Authority. Simultaneous closures of sidewalks and pedestrian crossings should be avoided.</li> </ul>	



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Cycling, Pedestrian and Trail Network	Temporary effects on cyclists/ pedestrians such as temporary partial or full sidewalk closures.	•	-	Scarborough GO Station Building	<ul style="list-style-type: none"> <li>Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate way finding, regulatory, and warning signs.</li> <li>Special directional signage will be considered to help pedestrians and cyclists avoid any potential construction activities.</li> <li>Existing sidewalks and crossings will be maintained to the extent possible.</li> <li>No consecutive pedestrian crossings will be closed, unless otherwise authorized by the Road Authority. Simultaneous closures of sidewalks and pedestrian crossings should be avoided.</li> <li>Design elements were incorporated into the exit of the ramp structure on the west side of the rail corridor at the Corvette multi-use crossing (bridge option) to prevent cyclists from having direct access to Magnolia Avenue.</li> </ul>	<ul style="list-style-type: none"> <li>Cycling network effects to be monitored in accordance with the Traffic Control and Management Plan and adjust as necessary during the construction period.</li> </ul>
		•	-	St. Clair Avenue East Bridge		
		-	-	Midland Layover		
		•	-	Danforth Road/Midland Avenue Intersection		
		-	-	Linear Facilities		
		•	-	Corvette Multi-use Crossing		
		•	-	Utilities		
		-	-	Laydown Areas		

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**Table 6.13: Summary of Comments Received and Response Provided During TPAP**

Stakeholder/ Commenter	Topic	Summary of Key Comment/Concern	Response and Influence on the Project
City of Toronto	Construction sequencing	Inquired about how the construction will impact lane closures on Midland or the east leg of the Danforth.	<p>Final construction sequencing will be determined as part of the detailed design however no further closures are expected on top of the current construction staging plans.</p> <p>Metrolinx has committed to no consecutive pedestrian crossings closures, unless otherwise authorized by the Road Authority. Metrolinx has committed to avoiding simultaneous closures of Corvette Park crossing, and Midland and Danforth pedestrian crossings (refer to Table 4.10).</p>

**Scarborough Junction Grade Separation Project:  
Errata to the Final Environmental Project Report**

January 25, 2021

**Table 7.1: Potential Permitting, Approvals, and Other Permissions**

Permit/Approval Name	Regulatory Authority	Legislation & Regulation	Linear Facilities	Midland Layover	Laydown Areas	St. Clair Avenue East Bridge	Danforth/Midland Intersection	Corvette Multi-use Crossing	Scarborough GO Station Building	Utilities	Description of Project Activities that may Require Permits or Approvals
Permit to Injure or Remove City-Owned Trees	City of Toronto	<i>Municipal Code Chapter 813, Article II</i> <i>Municipal Code Chapter 608, Article VII</i>	•	-	•	•	•	•	•	•	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.

**Scarborough Junction Grade Separation Project:  
Errata to the Final Environmental Project Report**

January 25, 2021

**EPR Appendices**

**Scarborough Junction Grade Separation Project:  
Errata to the Final Environmental Project Report**

January 25, 2021

**Appendix A2 Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment**

Appendix B Potential Effects, Mitigation and Monitoring – Cultural Heritage

Environmental Component	Potential Effect/Design Component or Activity	Mitigation Measure(s)	Monitoring
<p><b>Built Heritage Resources and Cultural Heritage Landscapes</b></p>	<p>Indirect or direct impacts to the heritage attribute(s) of a property of known or potential Cultural Heritage Value or Interest (CHVI) due to installation of new/modified infrastructure</p>	<ul style="list-style-type: none"> <li>All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&amp;E) Process</i> (2014), the MHSTCI guidance on <i>Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment</i> (2019) (Cultural Heritage Report), and the forthcoming <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&amp;E) Process</i> (2020). In the event that the <i>Metrolinx I&amp;E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013).</li> <li><del>Follow the process and recommendations outlined in the Environmental Project Reports (EPR) under Transit Project Assessment Process (TPAP) for Proponents and their Consultants.</del></li> <li>Follow the recommendations outlined in the heritage reporting completed including the Cultural Heritage Report and/or the Heritage Impact Assessment (HIA).</li> <li>For known and potential properties of Cultural Heritage Value or Interest (CHVI) that will experience indirect or direct impacts and where no previous assessment has been completed or a Statement of Cultural Heritage Value (SCHV) has not been approved by Metrolinx, undertake a Cultural Heritage Evaluation Report (CHER) as per the forthcoming <i>Metrolinx I&amp;E Process</i> (2020). In the event that the <i>Metrolinx I&amp;E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013).</li> <li>Given the importance and location of some Cultural Heritage Resources, consultation with Municipal heritage staff and other jurisdictions will be undertaken as appropriate to determine if proposed infrastructure will be subject to specific policies within heritage districts or conservation areas (including parks).</li> </ul>	<ul style="list-style-type: none"> <li>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources (CHRs)/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or Environmental Study Reports (ESRs) and Addenda and the recommendations contained in the Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.</li> </ul>
	<p><del>Management of Cultural Heritage Resources/Properties</del></p>	<ul style="list-style-type: none"> <li><del>Develop and implement a SCP that addresses built heritage resources and cultural heritage landscapes according to MHSTCI <i>Information Bulletin No. 2: Preparing Strategic Conservation Plans for Provincial Heritage Properties</i> (2017) and as outlined in the Project Agreement.</del></li> <li><del>For PHPPS, approval of the MCP and SCP by MHSTCI is required.</del></li> </ul>	<ul style="list-style-type: none"> <li><del>Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or GO Transit EPRs and/or ESRs and Addenda and the recommendations contained in the Scarborough Junction Grade Separation Project Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.</del></li> </ul>

# Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

## Appendix A4 Socio-Economic and Land Use Study

### 3.1.2 Mitigation and Monitoring

#### 3.1.2.1 Construction

Table 3.1 presents the proposed measures to mitigate effects on transportation and associated monitoring activities.

**Table 3.1: Summary of Proposed Construction Mitigation Measures and Monitoring for Transportation**

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
Traffic	Construction may result in the need for temporary road or lane closures changing access to nearby land uses	<ul style="list-style-type: none"> <li>• Traffic Control and Management Plan(s) will be developed prior to construction to maintain reasonable access through work zones, to the extent possible.</li> <li>• Access to nearby land uses will be maintained for vehicular, pedestrian and cyclist traffic. Potentially affected residents, tenants and business owners will be notified of initial construction schedules, as well as modifications to these schedules as they occur.</li> <li>• Temporary vehicular and pedestrian facilities will comply with accessibility and applicable City standards.</li> <li>• 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 City of Toronto, and will be undertaken if required, to determine appropriate changes to traffic signal timings.</li> <li>• During construction at the Danforth Road/Midland Avenue intersection, three lanes of traffic are proposed to remain open</li> </ul>	<ul style="list-style-type: none"> <li>• Pedestrian, cyclist, and vehicular traffic impacts are to be monitored in accordance with a Traffic Control and Transit Management Plan and adjusted as necessary during the construction period.</li> <li>• Cycling network impacts to be monitored in accordance with the Construction Traffic Control and Management Plan and adjust as necessary during the construction period.</li> </ul>

# Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
		<p>through a staged detour, to maintain traffic flow along Danforth Road.</p> <ul style="list-style-type: none"> <li>• Potential effects to pedestrian and cyclist activities during construction will be mitigated through the installation of appropriate wayfinding, regulatory, and warning signs.</li> <li>• Existing sidewalks and crossings will be maintained to the extent possible.</li> <li>• No consecutive pedestrian crossings will be closed, unless otherwise authorized by the Road Authority. <del>Simultaneous closures of sidewalks and pedestrian crossings should be avoided.</del></li> <li>• Construction schedules will be shared with the public in advance of any construction works to reduce traffic during peak hours.</li> </ul>	

**Scarborough Junction Grade Separation Project:  
Errata to the Final Environmental Project Report**

January 25, 2021

**Appendix A6-2A Noise and Vibration Study Lakeshore East Corridor, GO Rail  
Network Electrification Project – RWDI Confirmation Letter**





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**January 22, 2021**

Toros Topaloglu  
Metrolinx  
[Toros.Topaloglu@metrolinx.com](mailto:Toros.Topaloglu@metrolinx.com)

**Re: Assessment of operational noise/vibration and air quality impacts – Scarborough Junction**

Dear Toros,

RWDI was retained by Metrolinx to complete noise and vibration and air quality assessments of their proposed system-wide Go Rail Expansion Program. Due to the size and scope of the proposed changes at the Scarborough Junction, the construction and operational phases were assessed separately. Stantec was responsible for assessing impacts related to the construction of the Scarborough Junction improvements, and RWDI was responsible for assessing resultant operational impacts, i.e., from increased rail traffic. RWDI confirms that the operational noise and vibration and air quality impacts associated with the Scarborough Junction area were fully assessed, and the results and conclusions are contained in our noise/vibration and air quality reports for the Stouffville and Lakeshore East Corridors. The study area in question is shown in the attached figures.

Yours truly,

A handwritten signature in black ink, appearing to read 'Alain Carrière', with a horizontal line underneath.

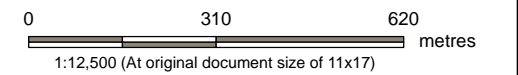
Alain Carrière  
Senior Project Manager / Associate

Cc James Hartley, Metrolinx  
Mirjana Osojnicky, Metrolinx  
Ben Coulson, RWDI

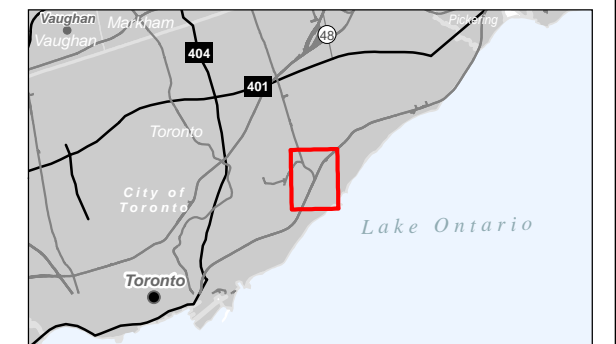


Legend

- ★ Scarborough Junction
- ▭ Project Footprint
- ▭ Project Study Area (383 m buffer of Project Footprint)
- Railway



- 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, 2018.
  3. Orthomagery © First Base Solutions, 2016. Imagery Date, 2017.



Project Location: Greater Toronto Area  
 165011004 REVA  
 Prepared by BCC on 2020-12-09

Client/Project: METROLINX  
 SCARBOROUGH JUNCTION GRADE SEPARATION  
 CONSTRUCTION NOISE AND VIBRATION ASSESSMENT REPORT

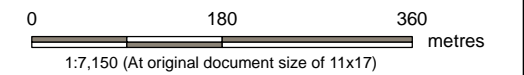
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Title: Project Study Area

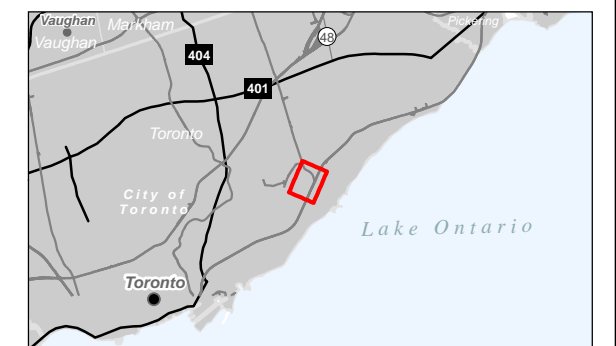
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Legend

- Retaining Wall
- Storm Sewer Realignment
- Sanitary Sewer Realignment
- Rail Bridge
- Railway
- Below Grade Track
- Below Grade Track
- Tunnel
- Reinstated Road Conditions
- New Sidewalk
- Reinstated Sidewalk
- Corvette Multi-use Crossing (Bridge or Tunnel)
- Midland Layover



- 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, 2018.
  3. Orthoimagery © First Base Solutions, 2016. Imagery Date, 2017.



Project Location: Greater Toronto Area  
 165011004 REVA  
 Prepared by BCC on 2020-12-16

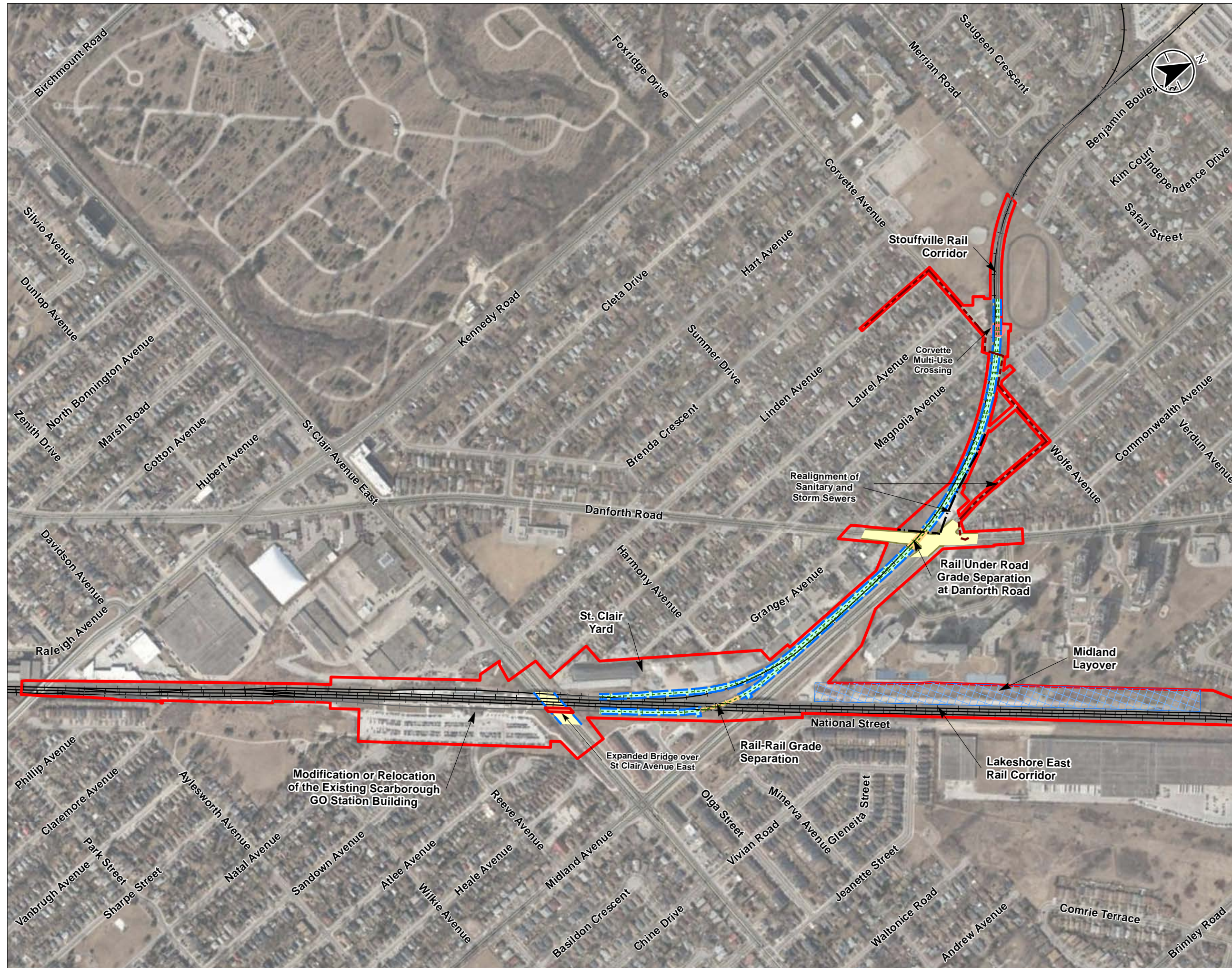
Client/Project:  
 METROLINX  
 SCARBOROUGH JUNCTION GRADE SEPARATION  
 ENVIRONMENTAL PROJECT REPORT

Figure No.

**2.1**

Title

**Key Project Components**



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# Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

## Appendix A6-2B Noise and Vibration Study Lakeshore East Corridor, GO Rail Network Electrification Project

### Executive Summary under Operational Noise Assessment

For electric traction power facilities, at the Durham switching station (SWS) and WMRF traction power substation (TPS) the predicted noise levels at nearby receptors were below the limits. Therefore, noise mitigation for electric traction power facilities was not required. For the Scarborough SWS the predicted sound levels were above the applicable sound level limits. At the detailed design stage, more accurate sound levels for the transformers will be assessed. If expected sound levels of the transformers exceed those assumed in this report, their impacts will be re-examined and, if necessary, mitigation measures such as low noise fans or barriers will be investigated.

### 3.5.6 Rail Traffic Movements

All rail traffic on the track infrastructure used by GO Transit is considered in the Pre-project and Post-project assessments. Rail traffic along the LSE Rail Corridor includes GO Transit, other passenger trains (VIA Rail) and freight activity. In the Pre-project scenario, a typical section of the corridor expects 96 GO trains, 35 VIA trains, and 2 CN freight switcher per day. In the Post-project scenario, a typical section of the corridor expects up to 259 GO trains, 35 VIA trains, 2 CN freight switchers, and no new service providers operating along the tracks, per day. Detailed rail traffic volumes are summarized in Appendix D, trains included in Tables the Pre-project scenario are listed in Table D2.1, and the Post-project in Table D2.2.

#### 3.5.7.5 Crossovers and Switches (applicable to all trains)

Additional details of the measurements and sensitivity analysis are included in Appendix F.

~~Switch heaters operate intermittently and have low sound levels with respect to rail activity. As sound is evaluated over a 16-hour and 8-hour time period, the intermittent and irregular operation results in insignificant impacts from these sources.~~

Switch heaters for all new switches were assessed under NPC-300 Section B7.4, to a  $LEQ$  (1-hr) limit of 55 dBA. The switch heaters were assessed as stationary sources assumed to operate continuously for any given hour. The predicted levels due to the switch heaters were less than 48 dBA, and therefore compliant with NPC-300 in all cases. No further assessment of switch heaters was completed.

## Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

### 3.5.8 Electric Traction Power Facility (applicable to electric trains only)

Three electric traction power facilities are required along the LSE Corridor as follows:

- Whitby Rail Maintenance Facility (WRMF) Traction Power Substation (TPS) and tap;
- Durham Station (SWS); and
- Scarborough SWS.

There are no other electric traction facilities proposed along the LSE corridor.

The locations of the electric traction power facilities are shown broadly in Figure 1, and in more detail in Appendix D Figures D.1.4, D.1.9 and D.1.12.

### 3.5.9 Layover Sites (applicable to all trains)

The distribution of train consist types at the layovers are as follows:

- Henry Layover site: 3 x E2L12
- Oshawa Layover site: 2 x D2L12
- WRMF Layover site: 7 x D2L12 and 5 x E2L12
- Midland Layover site: 5 x E2L12

There are no other layover sites along the LSE corridor.

## 4.3 Methodology and Key Inputs

Additionally, as part of the detailed design, verification measurements will be conducted at key receptors to validate the calculations and assumptions. Metrolinx will complete vibration measurements of the existing conditions at the detailed design stage in areas where vibration mitigation is recommended.

### Note under Table 7

Note. [1] Mitigation can include ballast mats, under sleeper pads, or resilient fixation

# Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

## 5.1 Applicable Criteria

For historical buildings, a criterion of 5 mm/s was used. This criterion is below the lowest of the building damage criteria of 8 mm/s provided in Table 10 and is in line with Category III structures (Non-engineered timber and masonry buildings) noted in Table 7-5 of the FTA Protocol, which is expected to be representative of the most susceptible buildings along the LSE corridor. Given its relatively modern construction, Category III structures as per FTA, are representative. The threshold for FTA Category III is comparable to the City of Toronto Zone of Influence for construction vibration impacts.

**Table 11, Operational Noise (Trains) under Monitoring**

- ~~Monitor air-borne and air-borne noise as part of an annual "Noise and Vibration Survey" at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:~~
  - ~~— Location subject to highest rail related noise and vibration~~
  - ~~— Location representative of a significant number of receptors~~
  - ~~— Location housing highly noise and/or vibration sensitive activity or equipment~~
  - ~~— Locations approximately equally distributed along the length of the corridor~~
- 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).

**Table 11, Construction and Maintenance-related Noise under Mitigation Measures**

- Prior to commencement of construction, ~~the Constructor will~~ develop and submit a detailed Construction Noise Management Plan ~~to Metrolinx for review and approval.~~
- 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*

## Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

*Assessment* (2020) at every directly exposed sensitive receptor and throughout the entire project.

- Determine the Zone of Influence (~~ZOI~~) 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 ~~ZOI~~ 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 ~~ZOI~~ Zone of Influence for construction related noise, then the following shall apply:
  - o Additional mitigation is proposed and subsequently modelled until the sensitive receptor does not fall within the ~~ZOI~~ Zone of Influence; or
  - o If mitigation strategies are ~~deemed by Metrolinx to be~~ 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, ~~the Constructor will~~ conduct modelling to evaluate the need for additional noise barriers ~~and submit results and recommendations~~ as part of the Construction Noise Management Plan.

### Table 11, Construction and Maintenance-related Noise under Monitoring

- The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and noise related complaints:
- ~~The Constructor will monitor~~ Monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. At these locations, ~~the Constructor will~~ 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,

## Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

geographic distribution and proximity of noise sensitive receptors. ~~The Constructor will submit Develop~~ weekly reports ~~to Metrolinx~~ 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 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 ~~in accordance with the Project Agreement~~ to respond to issues that develop during construction.

### Table 11, Operational Vibration (Trains) under Monitoring

- ~~Monitor air-borne and air-borne noise as part of an annual "Noise and Vibration Survey" at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:~~
  - ~~— Location subject to highest rail related noise and vibration~~
  - ~~— Location representative of a significant number of receptors~~
  - ~~— Location housing highly noise and/or vibration sensitive activity or equipment~~
  - ~~— Locations approximately equally distributed along the length of the corridor~~
- 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 ~~noise emissions~~ 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 ~~noise~~ vibration levels as part of maintenance to ensure continued compliance with manufacturer specifications.



## Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

### Table 11, Construction and Maintenance-related Vibration under Mitigation Measures

- 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 **ZOI 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 No. 514-2008** most current versions of the **Toronto Municipal Code Chapter 591, Noise (2020) and Chapter 363, Vibration (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 **ZOI. The ZOI-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 **ZOI-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.

## Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

- 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.

### Table 11, Construction and Maintenance-related Vibration under Monitoring

The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints:

- ~~The Constructor is to monitor~~ Monitor vibration continuously at structures where the Construction Vibration Management Plan indicates that structures are deemed to be within the ~~ZOI-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 ~~ZOI-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 ~~ZOI-Zone Of Influence~~).
  - ✓ Type 2: Monitoring during most impactful phases of the project only (for receptors outside of the ~~ZOI-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 ~~ZOI-Zone Of Influence~~ and beyond 50 m of the boundary of the construction site).

Establish a Communications Protocol and a Complaints Protocol ~~in accordance with the Project Agreement~~ to respond to issues that develop during construction.

### Table 11 Note

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

# Scarborough Junction Grade Separation Project: Errata to the Final Environmental Project Report

January 25, 2021

## Appendix C - Added Notes

The design drawings included here were used to guide the locations of equipment and infrastructure, such as modeled noise sources, new track alignment, and switches. Any 'hatched areas' or 'impact areas' are not pertinent to the noise and vibration impact study presented in this report.

**Scarborough Junction Grade Separation Project:  
Errata to the Final Environmental Project Report**

January 25, 2021

**Appendix A6-3A Noise and Vibration Study Stouffville Corridor, GO Rail Network  
Electrification Project – RWDI Confirmation Letter**



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Guelph, ON N1G 4P6  
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Fax: +1.519.823.1316  
E-mail: [solutions@rwdi.com](mailto:solutions@rwdi.com)

**January 22, 2021**

Toros Topaloglu  
Metrolinx  
[Toros.Topaloglu@metrolinx.com](mailto:Toros.Topaloglu@metrolinx.com)

**Re: Assessment of operational noise/vibration and air quality impacts – Scarborough Junction**

Dear Toros,

RWDI was retained by Metrolinx to complete noise and vibration and air quality assessments of their proposed system-wide Go Rail Expansion Program. Due to the size and scope of the proposed changes at the Scarborough Junction, the construction and operational phases were assessed separately. Stantec was responsible for assessing impacts related to the construction of the Scarborough Junction improvements, and RWDI was responsible for assessing resultant operational impacts, i.e., from increased rail traffic. RWDI confirms that the operational noise and vibration and air quality impacts associated with the Scarborough Junction area were fully assessed, and the results and conclusions are contained in our noise/vibration and air quality reports for the Stouffville and Lakeshore East Corridors. The study area in question is shown in the attached figures.

Yours truly,

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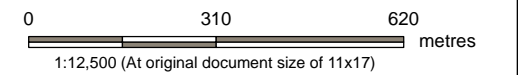
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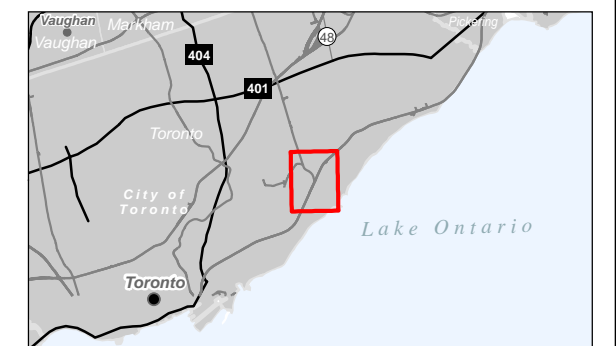


Legend

- ★ Scarborough Junction
- ▭ Project Footprint
- ▭ Project Study Area (383 m buffer of Project Footprint)
- Railway



- 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, 2018.
  3. Orthomagery © First Base Solutions, 2016. Imagery Date, 2017.



Project Location: Greater Toronto Area  
 165011004 REVA  
 Prepared by BCC on 2020-12-09

Client/Project: METROLINX  
 SCARBOROUGH JUNCTION GRADE SEPARATION  
 CONSTRUCTION NOISE AND VIBRATION ASSESSMENT REPORT

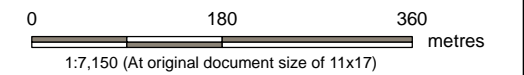
Figure No. 1.4

Title: Project Study Area

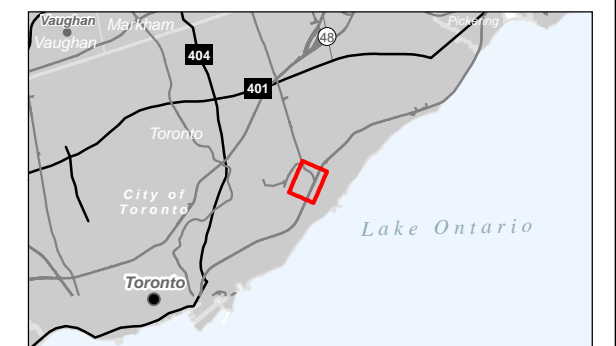
C:\GIS\arcgis\mxd\amsharc\report\_figures\20200905\_SJ\_AA\_Fig-1.4\_ProjectStudyArea.mxd Revised: 2020-12-09 By: bcowar

Legend

- Retaining Wall
- Storm Sewer Realignment
- Sanitary Sewer Realignment
- Rail Bridge
- Railway
- Below Grade Track
- Below Grade Track
- Tunnel
- Reinstated Road Conditions
- New Sidewalk
- Reinstated Sidewalk
- Corvette Multi-use Crossing (Bridge or Tunnel)
- Midland Layover



- 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, 2018.
  3. Orthoimagery © First Base Solutions, 2016. Imagery Date, 2017.



Project Location: Greater Toronto Area  
 165011004 REVA  
 Prepared by BCC on 2020-12-16

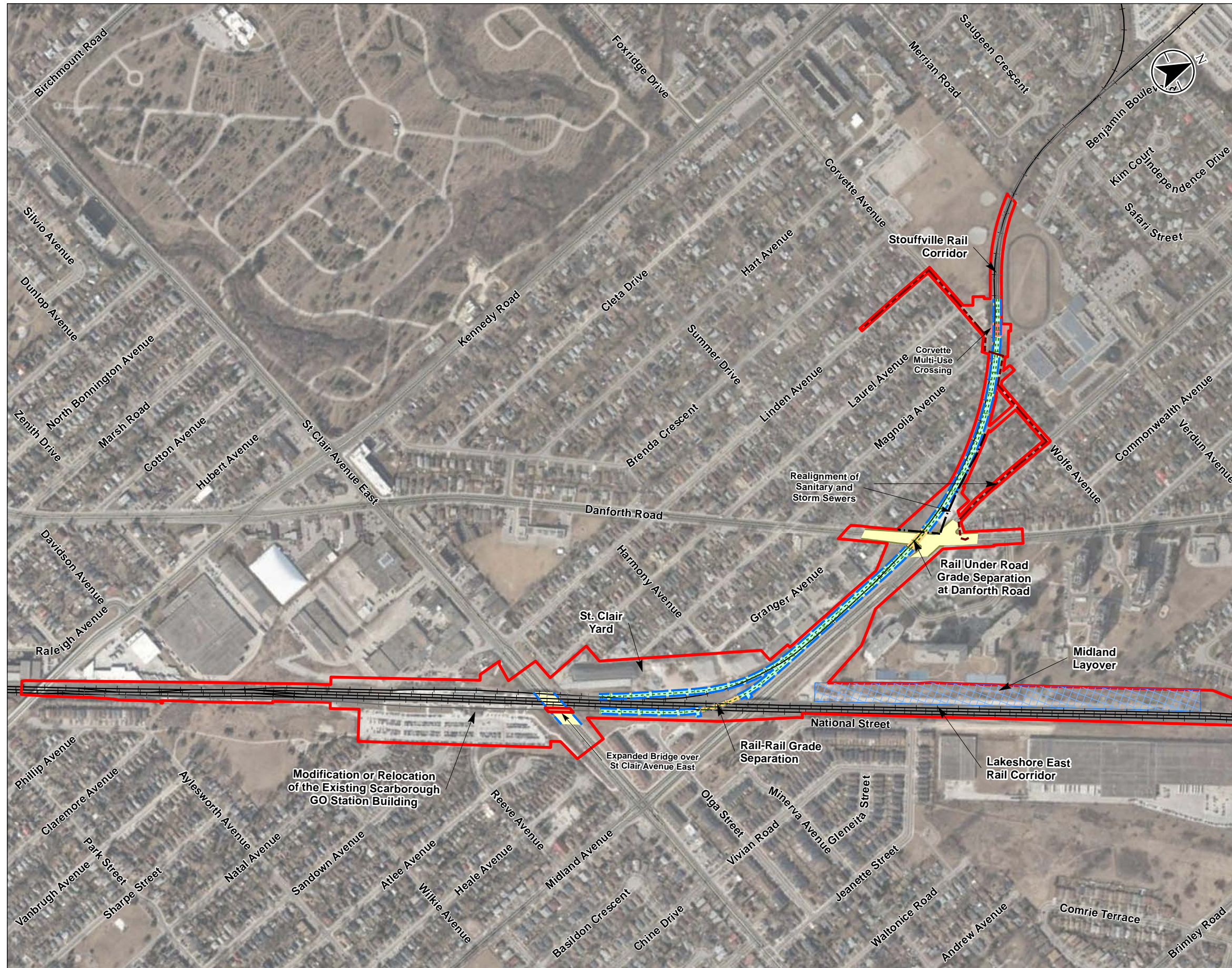
Client/Project:  
 METROLINX  
 SCARBOROUGH JUNCTION GRADE SEPARATION  
 ENVIRONMENTAL PROJECT REPORT

Figure No.

**2.1**

Title

**Key Project Components**



O:\GIS\_ortho\mxd\scarcorridor\_figures\EPR\_Scarbun165011004\_SJ\_EPR\_Fig2.1\_Env\_Project\_Components.mxd Revised: 2020-12-16 By: bcowar

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## Appendix A6-3B Noise and Vibration Study Stouffville Corridor, GO Rail Network Electrification Project

### 2.2 Proposed Changes

The Noise & Vibration impacts due changes in rail operations as a result of the Scarborough Junction Grade Separation Project are considered in this assessment. The Scarborough Rail-Rail Grade Separation Project is not included in the evaluation of operational noise or vibration. Noise and vibration associated with the construction of this project is evaluated by others and referenced in this report in Section 5.2.

As part of the electrification of the GO Rail Network electric traction power facilities (TPF) are required on the SV Corridor. In the 2017 EPR, three TPF locations were assessed:

- Lincolnville Paralleling Station (PS);
- Unionville Paralleling Station (PS); and
- Scarborough Traction Power Substation (TPS).

The Lincolnville Paralleling Station was ~~relocated~~ shifted slightly to the south to accommodate the Lincolnville Layover expansion. All other TPFs are unchanged from the 2017 EPR, and there are no other TPFs (either existing or current) located on this corridor. The locations of the traction power facilities are shown broadly in Figure 2, and in more detail in Appendix D Figures D.1.1, D.1.4 and D.1.7.

Current layover sites include the Lincolnville Layover. The Lincolnville Layover site will be moved to the south approximately 800 m. The Unionville Storage Yard Facility will be built approximately 500 m north of the Unionville GO Station to support the increase in rail traffic volumes. There are no other layover sites (either existing or current) located on the corridor. The locations of these layover sites are shown in broadly in Figure 2, and in more detail in Appendix D Figures D.1.4, and D.1.7.

### 3.2 Receptors

Added: The MOEE-GO Protocol defines sensitive land uses to include "Committed uses such as: existing development, approved site plans, approved condominium plans or draft approved plans of subdivision." This assessment included the assessment of committed noise-sensitive institutional and commercial uses where known. It further goes beyond the protocol and considers vacant residential lots not yet "committed".



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## 3.5.6 Rail Traffic Movements

All rail traffic on the track infrastructure used by GO Transit is considered in the Pre-project and Post-project assessments. Rail traffic along the SV Rail Corridor includes GO Transit, and freight activity. In the Pre-project scenario, a typical section of the corridor expects 16 GO trains, and 1 CN freight switcher per day. In the Post-project scenario, a typical section of the corridor expects up to 111 GO trains, 0 CN freight switchers, and no new service providers operating along the tracks, per day. Detailed rail traffic volumes are summarized in Appendix D, trains included in Tables the Pre-project scenario are listed in Table D.2.1, and the Post-project in Table D.2.2.

### 3.5.7.5 Crossovers and Switches (applicable to all trains)

Additional details of the measurements and sensitivity analysis are included in Appendix F.

~~Switch heaters operate intermittently and have low sound levels with respect to rail activity. As sound is evaluated over a 16-hour and 8-hour time period, the intermittent and irregular operation results in insignificant impacts from these sources.~~

Switch heaters for all new switches were assessed under NPC-300 Section B7.4, to a limit of 55 dBA. The resulting levels due to the switch heaters were less than 50 dBA, and therefore compliant with NPC-300 in all cases. No further discussion on the assessment of switch heaters was completed.

## 4 Operational Vibration Assessment

The MOEE/GO Protocol outlines desired objectives for vibration levels from GO Transit Projects. The requirement to investigate vibration mitigation focuses on the change between the existing vibration levels and the future vibration levels. A change in vibration levels may occur under the following circumstances: change in track alignment or addition of track (e.g., where train operations will be closer to residential receptors), and addition of special track work (such as switches).

Vibration effects are a function of the intensity of the vibrational energy reaching a receptor, not on how often vibration from trains passing can occur. Since vibration is evaluated on a pass-by basis (i.e., the effect of a single train passing by), results are associated with the characteristics of individual trains (especially the weight of the locomotive). Vibration effects are therefore not related to the increased rail traffic associated with the Ultimate Capacity service levels.

### 4.1 Applicable Vibration Criteria

The desirable objective of the MOEE/GO Protocol is that the RMS velocity of vibration produced by the future GO Transit operations at a receptor should not exceed:

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- 0.14 mm/s; or
- The existing vibration levels where existing operations already produce vibration that exceeds 0.14 mm/s.

Furthermore, the MOEE/GO Protocol stipulates that the requirement to evaluate mitigation is triggered when the RMS velocity exceeds the objective by 25% or more (i.e., the greater of 0.175 mm/s, or a 25% increase over existing levels).

## 4.2 Receptors

The proximity of all receptors within the SV Corridor to changes in track alignment or special trackwork was assessed. The following areas were identified as areas of investigation for operational vibration:

- 1.2 km of new track at Unionville GO Station;
- 1.2 km of new track at Mount Joy GO Station; and
- 16 new switches along the SV Corridor.

Receptors for vibration include the same sensitive land uses as described in Section 3.2.1. However, future development locations that did not have approval for residential uses were not included since they would need to be designed to achieve appropriate vibration levels with the future rail infrastructure in place. The point of evaluation is defined as 5 to 10 m from the building foundation in a direction parallel to the tracks.

## 4.3 Methodology and Key Input

From 4.1 moved to 4.3 Methodology and Key Inputs

Text under Figure 6:

Additionally, as part of the detailed design, verification measurements will be conducted at key receptors to validate the calculations and assumptions. Metrolinx will complete vibration measurements of the existing conditions at the detailed design stage in areas where vibration mitigation is recommended.

## 4.4 Results

From 4.2 moved to 4.4 Results

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## 5.1 Applicable Criteria

For historical buildings, a criterion of 5 mm/s was used. This criterion is below the lowest of the building damage criteria of 8 mm/s provided in Table 11 and is in line with Category III structures (Non-engineered timber and masonry buildings) noted in Table 7-5 of the FTA Protocol, which is expected to be representative of the most susceptible buildings along the SV corridor. **Given its relatively modern construction, Category III structures as per FTA, are representative. The threshold for FTA Category III is comparable to the City of Toronto Zone of Influence for construction vibration impacts.** Fragile, or buildings extremely susceptible to vibration damage (Category IV) are not expected along the corridor. If fragile buildings do occur along the corridor, they should be reviewed to ensure the criteria are appropriate for them. Chapter 7 of the California Department of Transportation “Transportation and Construction Vibration Guidance Manual”, a widely accepted document, notes that for “historic and some old buildings” a maximum PPV of 0.25 in/sec (6.35 mm/s) shall be used for continuous/frequent and intermittent sources, which is higher than the 5 mm/s criterion.

## 5.4 Recommendation for Construction Noise Mitigation

Although no receptors are identified within the Zones of Influence, recommendations for implementing a number of mitigation measures and monitoring are outlined in **Section 6 Table 12**, and should be implemented for the receptors located marginally outside of the Zones of Influence.

## 6.0 Recommendations for Noise and Vibration Mitigation

This section provides a discussion of general approaches that could be taken into consideration in the development of mitigation options to reduce noise and vibration impacts on the SV Corridor. Table 12 provides a summary of the key project components/activities, potential effects, mitigation measures, and proposed monitoring activities/**commitments to for** future work associated with the GO Rail Network Electrification Project.

### Table 12 Under Operational Noise (*Trains*), Monitoring Bullet 1

- ~~Monitor air-borne and air-borne noise as part of an annual “Noise and Vibration Survey” at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:~~
  - ~~Location subject to highest rail related noise and vibration~~
  - ~~Location representative of a significant number of receptors~~

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- ~~○ Location housing highly noise and/or vibration sensitive activity or equipment~~
- ~~○ Locations approximately equally distributed along the length of the corridor~~
- 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).

### Table 12, Under Construction and Maintenance-related Noise, Monitoring

The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and noise related complaints:

- ~~The Constructor will monitor~~ Monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. At these locations, ~~the Constructor~~ will 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. ~~The Constructor will submit~~ Develop weekly reports ~~to Metrolinx~~ 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 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 in accordance with the Project Agreement ~~to respond to issues that develop during construction.~~

### Table 12 Under Operational Vibration (*Trains*), under Monitoring first bullet

- ~~• Monitor air-borne and air-borne noise as part of an annual "Noise and Vibration Survey" at representative receptors across the corridor to confirm compliance with Operation Noise and Vibration requirements of the Ministry of Environment, Conservation and Parks, other provincial and federal requirements, and Metrolinx requirements. Representative receptors will be selected per the following criteria:~~
  - ~~○ Location subject to highest rail-related noise and vibration~~
  - ~~○ Location representative of a significant number of receptors~~

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- ~~○ Location housing highly noise and/or vibration sensitive activity or equipment~~
- ~~○ Locations approximately equally distributed along the length of the corridor~~
- 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).

### Table 12 Under Construction and Maintenance-related Vibration, under Mitigation Measures first bullet

- 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 ZOI 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~~ most current version of the Toronto ~~By-Law No. 514-2008~~ *Municipal Code Chapter 591, Noise* (2020) and *Chapter 363, Vibration* (2019) for typical structures (not building with special needs).

### Table 12 Under Construction and Maintenance-related Vibration, under Monitoring 3<sup>rd</sup> bullet

Establish a Communications Protocol and a Complaints Protocol ~~in accordance with the Project Agreement~~ to respond to issues that develop during construction.

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## Appendix A7 Transportation Impact Assessment

### 2.1 Scope

- develop, calibrate and validate a mesoscopic model for the study area existing conditions. The 2011 EMME model subarea traversal demand matrices were used as the initial demand matrices for AM and PM peak hours and were adjusted using the updated traffic counts in the study area. The main target of conducting the OD adjustment process was to update the macro model demand based on the latest traffic count volumes in the study area; using the traversal origin-destination demand matrices extracted from the regional Emme model and adjusted based on the observed traffic volumes and travel times in the study area;

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**Table 5.1: Comparison of Performance Indicators**

Performance Indicator	Baseline (2025)	Alternative 1	Alternative 2		Alternative 3
			Stage 1	Stage 2	
<b>Average Network Speed (km/h)</b>	<b>31.5</b>	<b>28.9</b>	<b>31.5</b>	<b>31.4</b>	<b>31.1</b>
Change in Network Speed <sup>13</sup>		- 8.3%	0.0%	-0.3%	- 1.3%
<b>Vehicle Hours of Travel (hrs)</b>	<b>814</b>	<b>1016</b>	<b>823</b>	<b>828</b>	<b>848</b>
Change in Total Travel Time <sup>34</sup>		+ 24.8%	+1.1%	+1.7%	+ 4.2%
Total Travel Time for Three-Month Period (hrs) <sup>45</sup>	53,724	58,168	54,483		54846
Change in Three Months Total Travel Time <sup>36</sup>		+8.3%	+1.4%		+2.1%
<b>Total Travelled Distance (km)</b>	<b>24,490</b>	<b>26,784</b>	<b>24,797</b>	<b>24,812</b>	<b>25,260</b>
Change in Total Distance Travelled <sup>37</sup>		+ 9.4%	+ 1.3%	+ 1.3%	+ 3.1%

<sup>3</sup> Change is calculated compared to Future Baseline conditions

<sup>4</sup> See Note 1

<sup>45</sup> This is not a direct modelling output. This value is provided to take into consideration the different construction periods for each alternative. A period of three-months was selected based on the longest alternative construction time (Alternative 2). The calculations are based on assuming 22 weekdays per month. For Alternatives 1 and 3 with construction times less than three months, the extra days were calculated based on the Baseline scenario value.

<sup>6</sup> See Note 1

<sup>7</sup> See Note 1

## 8.2.2 Multimodal Level of Service Analysis

[Note to Reader: This is a new section. Subsequent section and table references were updated accordingly.]

A multi-modal level of service (MMLOS) analysis was carried out to evaluate the baseline and post construction conditions for automobiles, transit, bicycles, and pedestrians at the intersection of Midland Avenue and Danforth Road. The findings of the MMLOS analysis will be determine the improvements at the intersection for all modes of transportation. The intention of MMLOS analysis is to recognize and assess the level of service of pedestrian, cyclist, transit and truck modes, based on the

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methods that have been introduced through the methodology adopted from the City of Ottawa Multi-Modal Level of Service (MMLOS) Guidelines (Ottawa, 2015).

The MMLOS analysis is summarised in Table 0-1. Results confirm that the proposed removal of right turn channels at this intersection will improve the experienced level of service for pedestrians in post construction layout. Detailed MMLOS analysis results are provided in Appendix B for reference.

**Table 0-1 Multimodal Level of Service Analysis**

Mode	Scenario	Pre Construction				Post Construction			
	Crossing Side	North	South	East	West	North	South	East	West
Pedestrian	Exposure to Traffic LOS	E	D	E	D	E	D	E	D
	Pedestrian Delay LOS	F	F	F	F	E	D	E	D
	PLOS	F	F	F	F	E	D	E	D
		F				E			
Bicycle	Through Movement	I	I	D	D	I	I	I	I
	Cyclist Left Turning	D	F	D	D	D	F	D	D
	BLOS	D	F	D	D	D	F	D	D
		F				F			
Transit	Average Signal Delay	E	E	E	C	D	D	E	C
	TLOS	E				E			
Truck	TkLOS	D	D	D	D	D	D	D	D
		D				D			
Auto <sup>5</sup>	ALOS	D				C			

<sup>5</sup> The results from HCM analysis used for intersection analysis. Details for movements, approach and intersection based for AM and PM peak hours can be found in this report.

## Appendix B Synchro Summary Reports

Multi-Modal Level of Service - Intersections Form was added to Appendix B.



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## Appendix A8 Tree Inventory

### Observation

A total of 358360 trees have been included in the inventory. The inventory included the following tree species:

No memorial trees were identified within the portion of the Project Footprint at Corvette Park.

#### 4.1 Trees Recommended for Preservation

There are 172187 trees identified in the inventory that will be retained within the Project Footprint. The trees with opportunity for preservation have been identified for protection or retention as identified below. These are identified in Table A in Appendix B under 'Action' for each tree.

- **Protect - Hoarding:** Trees are recommended to be preserved, and hoarding will be installed at the limits of construction or the TPZ, whichever is greater. A total of 172187 trees are within this preservation category.

#### 4.2 Trees Identified for Removal or Injury

A total of 186173 trees are recommended for removal for the Project. There are 4039 City trees (Category 5 trees) recommended for removal and will require City removal permits. Forty-four (43) private trees above 30 cm DBH are recommended for removal and will require a private tree removal permit. Twenty-two (21) park trees are also recommended for removal and will require a permit. Six (6) additional City trees are dead and will not require a permit for removal. Another 7464 private trees below the DBH of 30cm DBH are also recommended for removal, however a permit is not required for them as they do not qualify for the private tree by law 'Toronto Municipal Code Chapter 813, Trees, Article III'.

#### Tree impacts:

- Removals for Construction with Permit = 106103
- Removal for Construction without Permit = 7464
- Removal of Dead Trees = 6
- Total Removals = 186173

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## 4.3 Pruning

There are 214 trees that have been identified for pruning in Table A in Appendix B. Tree pruning has been recommended in order to facilitate construction of the storm sewer upgrades.

### 4.4.1 Permits

CITY PARK REMOVAL PERMITS = 2021

### 4.4.2 Compensation

The compensation numbers for all Metrolinx trees are based on the City of Toronto's City Street Tree Bylaw (Article II of Chapter 813), the Private Tree Bylaw (Article III of Chapter 813), and the Parks Bylaw (Article VII of Chapter 608), as applicable. according to the new Metrolinx guidelines 'Metrolinx Vegetation Guideline, 2020'. The compensation numbers for all other trees are based on 'Tree Bylaws — Compensation Planting Ratios — City of Toronto'.

The compensation requirements for the siteProject are as below. In case, If due to lack of space compensation plantings are not possible, cash in lieu will be provided to the City of Toronto for the remaining trees at \$583/tree.

1. Compensation for City Tree Removal at 3 to 1 replacement for 39 trees = 117
42. Compensation for Park Tree Removal at 3 to 1 replacement for 2021 trees = 6063
5. Compensation for Private Tree Removal at 1 to 1 replacement for 0 trees = 0
43. Compensation for Private Tree Removal at 3 to 1 replacement for 43 trees = 129

**Total Compensation Trees Required = 306309 Trees**

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## 6.0 Conclusion

Trees are a critical part of the community and all efforts should be made to protect them through the proposed work. A total of ~~358~~360 trees have been inventoried for this site. One hundred ~~seventy-two (172)~~eighty-seven (187) trees have been recommended to be retained and protected using a Tree Protection Fence. ~~Forty (40)~~Thirty-nine (39) street trees and ~~2221~~ park trees were recommended for removal and will require street and park tree removal permits. ~~Forty-four (44)~~three (43) private trees were recommended for removal, these will require private tree removal permits. ~~Seventy-Sixty-four (7464)~~ private trees below the DBH of 30 cm are also recommended for removal, however a permit is not required. Six dead (6) trees were recommended for removal that will not require a permit. There were ~~214~~ trees that have been identified for pruning, and as such a contract agreement with the City must be completed **prior to construction**. Tree Protection Fence shall be installed prior to the start of excavation or any construction works. The Project Arborist shall be contacted if there are concerns with trees during construction.

### Appendix A Scarborough Junction Tree Management Plan L-900 to L-907

Drawings were adjusted to indicate:

- avoidance of trees within Corvette Park
- addition of two trees
- addition of tree protection fencing

### Appendix B Scarborough Junction - Detailed Tree Inventory

The Inventory was adjusted based on the modifications to the drawings outlined above.