

# Appendix A2

**Ontario Line Project**

**Lakeshore East Joint Corridor Early  
Works – Air Quality Early Works Report**

Metrolinx

# Air Quality Early Works Report

## Ontario Line Lakeshore East Joint Corridor Early Works

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**Project #:** 60611173

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# Executive Summary

## ES.1 Ontario Line Lakeshore East Joint Corridor Early Works

The Ontario Line Project (the Project) is being assessed in accordance with Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act. Ontario Regulation 341/20: Ontario Line Project outlines a Project-specific environmental assessment process that includes an Environmental Conditions Report, Environmental Impact Assessment Report, and an opportunity for Early Works Report(s) for assessment of works that are ready to proceed in advance of the Environmental Impact Assessment Report. The Environmental Conditions Report documents the local environmental conditions of the Ontario Line Study Area and provides a preliminary description of the potential environmental impacts from the Project. Information outlined in the Environmental Conditions Report is used to inform the Early Works Report(s) and Environmental Impact Assessment Report, which study environmental impacts in further detail and confirm and refine preliminary mitigation measures identified in the Environmental Conditions Report.

Ontario Line early works are components of the Project that are proposed to proceed before the completion of the Ontario Line environmental impact assessment process. An overview of the Project is provided in **Section 1.2**. Early works are defined in Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act as follows:

“any components of the Ontario Line Project that Metrolinx proposes to proceed with before the completion of the Ontario Line assessment process, such as station construction, rail corridor expansion, utility relocation or bridge replacement or expansion.”

The Lakeshore East Joint Corridor early works are considered to be of strategic importance in enabling the timely implementation of the Project. These early works are being advanced where the Project interfaces with GO Expansion and the East Harbor Station (East Harbour Station is situated immediately to the west of the Lakeshore East Joint Corridor early works). Advancing early works and supporting environmental and technical studies in this area provides planning and design efficiencies for the Project, GO Expansion and the East Harbour Station, and facilitates the timely implementation of these projects.

These early works will set the groundwork for other major construction for the Project, reducing risk of construction delays to the main contracts by completing the joint corridor work in advance of the main contracts.

AECOM Canada Limited (AECOM) was retained by Metrolinx and Infrastructure Ontario to complete the Ontario Line Lakeshore East Joint Corridor Early Works Report for the Project. This Final Air Quality Early Works Report (this Report) supports the Ontario Line Final Lakeshore East Joint Corridor Early Works Report prepared for the Project to document the air quality impact assessment of Lakeshore East Joint Corridor early works (**Figure ES-1**).

The Lakeshore East Joint Corridor early works are planned along the Lakeshore East rail corridor between approximately Eastern Avenue and Pape Avenue and will include:

- Reconfiguration of existing GO tracks to support future Ontario Line infrastructure;
- Replacement of the existing rail bridges at Queen Street East, Dundas Street East and Logan Avenue;
- Construction of new bridges at Dundas Street East and Logan Avenue to support future Ontario Line tracks;
- Construction of the foundations for GO Overhead Catenary System (OCS) poles supporting infrastructure to accommodate future fourth GO track;
- Construction of retaining walls; and
- Construction of noise barriers, including east of Pape Avenue.

The Lakeshore East Joint Corridor early works components and construction activities are further described in **Section 1.3**.

The purpose of this Report is to:

- Describe the local environmental conditions related to ambient air quality;
- Assess the potential impacts of early works construction activities on air quality; and
- Identify mitigation measures and monitoring activities for any negative impacts to air quality as a result of the early works construction activities.

This Report supports the Ontario Line Lakeshore East Joint Corridor Early Works Report prepared in accordance with Ontario Regulation 341/20: Ontario Line Project.

Refer to **Section 1** of this Report for more information related to the Project and a detailed early works description.



Figure ES-1: Lakeshore East Joint Corridor Early Works Conceptual Design





**Legend**

- Lakeshore East Joint Corridor Early Works Project Footprint
- Existing Track

**Early Works Components:**

- Proposed GO Bridge Replacement
- Proposed Ontario Line Bridge
- GO Track
- Proposed Noise Barrier
- Proposed Retaining Wall
- Proposed Retaining Wall and Noise Barrier

**Future Work (Not Part of Early Works):**

- Proposed Ontario Line Gerrard Station
- Proposed Future Gerrard Portal (Below Ground)
- Proposed Future Gerrard Portal (Above Ground)
- Proposed Ontario Line Track
- Proposed Ontario Line Underground Track
- GO Track 4

**Map Location**

**Ontario Line Project**

**Lakeshore East Joint Corridor Early Works Conceptual Design**

0 50 100  
Meters  
DATUM: NAD 1983 UTM Zone 17N

**Data Sources:**  
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**Figure ES-1**

\* Conceptual design and noise barrier extents are subject to change



## **ES.2 Methodology**

This Report documents the assessment of the Lakeshore East Joint Corridor early works construction impacts. Impacts associated with Project operations will be addressed as part of the Environmental Impact Assessment Report, under a separate cover. Detailed methodology is provided in **Section 1.3.3**.

### Local Environmental Conditions

Background information and documentation relevant to local ambient air quality conditions within the Lakeshore East Joint Corridor Study Area is contained within the Ontario Line Final Environmental Conditions Report (AECOM, 2020)<sup>1</sup>, which includes:

- Background air quality concentrations from representative air quality monitoring data;
- Recorded meteorological conditions;
- Existing road traffic emissions from cars, trucks, and buses;
- Contributions from identified industrial sources; and
- Location of identified sensitive and critical receptors.

### Impact Assessment

This early works impact assessment and development of mitigation measures and monitoring activities considered the following in accordance with Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act:

- Lakeshore East Joint Corridor early works components as described in **Section 1.3.1**;
- The Lakeshore East Joint Corridor Early Works Project Footprint and Lakeshore East Joint Corridor Study Area as described in **Section 1.3.2**;
- Lakeshore East Joint Corridor early works construction activities as described in **Section 1.3.3**; and
- Local environmental conditions within the Lakeshore East Joint Corridor Study Area as described in **Section 3**.

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1. The Ontario Line Final Environmental Conditions Report (AECOM, 2020) was published on November 30, 2020 in accordance with Ontario Regulation 341/20: Ontario Line Project.

### **ES.3 Local Environmental Conditions**

There are existing exceedances of benzene and benzo(a)pyrene according to the Ambient Air Quality Criteria (Ministry of the Environment, 2020) relevant to the Lakeshore East Joint Corridor Study Area. Benzene has elevated annual contributions that exceed the threshold guideline from the Ambient Air Quality Criteria.

Benzo(a)pyrene, the representative polycyclic aromatic hydrocarbon, shows elevated levels of concentration for both annual and daily provincial air quality thresholds. This is due mainly to high presence of regional air quality contributions, high traffic volumes within the Greater Toronto Area, and industrial contributions from Toronto, the Greater Toronto Area, and Hamilton.

The predominant wind direction, as taken from the Toronto City Centre meteorological station located on Toronto Island, is from the northeast towards the southwest.

Secondary predominant winds blow from the west, northwest and southwest. Due to the proximity of receptors to the project footprint, construction activities could be expected to impact receptors in all directions; however, the receptors located downwind of the predominant wind directions identified.

Local environmental conditions are further described in **Section 3**.

### **ES.4 Potential Impacts, Mitigation Measures and Monitoring Activities**

**Section 4** includes information related to potential impacts, mitigation measures, and monitoring activities for the Lakeshore East Joint Corridor early works. Potential impacts may result from early works construction activities, including emissions of dust, fine particulates, and to a lesser extent, combustion emissions and odourous compounds from diesel fuelled construction equipment and vehicles. Mitigation measures and monitoring activities are recommended to minimize potential impacts during construction.

Refer to **Table ES-1** for a complete list of potential impacts, mitigation measures, and monitoring activities for the Lakeshore East Joint Corridor early works.

### **ES.5 Permits and Approvals**

**Section 5** notes that no air quality related permits or approvals are anticipated for the Lakeshore East Joint Corridor early works at this time. Permits and approvals for construction activities are not required specifically for air quality prior to early works construction, with the exception of Environmental Compliance Approval(s) for equipment held by contractors, owners and operators of that equipment, which will be obtained in advance of construction, as necessary.



Table ES-1: Potential Impacts, Mitigation Measures and Monitoring Activities for the Lakeshore East Joint Corridor Early Works

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Construction Air Quality	<ul style="list-style-type: none"><li>■ Potential air quality impacts could include effects from diesel combustion and particulate emissions. Odour and visible dust may also cause public annoyance.</li><li>■ Exhaust emissions from construction vehicles may contribute to increased levels of nitrogen oxides, and volatiles such as benzene and benzo(a)pyrene, which given their existing background concentrations can contribute to existing levels of provincial criteria exceedance.</li><li>■ Certain construction activities are likely to emit particulates in higher quantities, which include site preparation and earth works activities, demolition activities, unpaved surfaces with heavy equipment travel, and uncovered soil storage piles.</li><li>■ Disruption of contaminated soils may release contaminants.</li></ul>	<ul style="list-style-type: none"><li>■ On-site construction vehicle activity shall be managed to control emissions of odourous contaminants and diesel exhaust, including benzene and benzo(a)pyrene emissions from exhaust. A plan to manage air quality will be developed to ensure consistent attention to mitigation of dust and particulates, including silica, from the construction site. The following mitigation measures should be considered in the plan to manage air quality:<ul style="list-style-type: none"><li>– All equipment complies with Canadian engine emissions standards.</li><li>– All equipment visually inspected prior to use and properly maintained.</li><li>– Implement a no idling policy on site (unless necessary for equipment operation).</li><li>– Use of electricity from the grid over diesel generators wherever possible.</li><li>– Retrofitting of combustion engines with specific exhaust emission control measures such as particulate traps.</li><li>– If applicable, follow guidelines on hot mix asphalt outlined in the Ontario Hot Mix Producers Association’s Environmental Practices Guide: Ontario Hot Mix Asphalt Plants, Fifth Edition (Ontario Hot Mix Producers Association, 2015).</li></ul></li><li>■ Applicable mitigation measures from Environment Canada’s Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005), the Ministry of the Environment, Conservation and Parks’ Technical Bulletin Management Approaches for Industrial Fugitive Dust Sources, shall be followed. The following mitigation measures should be considered in the Air Quality Management Plan:<ul style="list-style-type: none"><li>– Complete earthwork grading within 10 days of ceased active construction.</li><li>– Temporary seeding or mulching of bare soil and storage piles.</li><li>– Compression or clodding of soil surfaces and storage piles to reduce erosion.</li><li>– Confine storage pile activity to downwind side of piles.</li><li>– Reduction of activities during high wind conditions.</li><li>– Full or partial enclosure of demolition activities.</li><li>– Wind screens or barriers where possible or necessary.</li><li>– Off-site construction of certain structures or parts of structures to minimize air emission due to interference with the normal flow of traffic.</li><li>– Scheduling certain construction activities (i.e., site preparation and earth works activities, demolition activities, unpaved surfaces with heavy equipment travel, and uncovered soil storage piles) to periods of time when exposure to dust is expected to be limited (e.g., avoid scheduling activities during dry, windy weather conditions).</li><li>– Landscaping materials ordered close to time of use to reduce on-site storage.</li><li>– Application of non-chloride soil stabilizers or dust control polymers where feasible.</li><li>– Daily removal of accumulated mud, dirt and debris deposits on-site, and regular truck washing</li><li>– Paved and unpaved roadway cleaning, watering or application of a non-chloride dust suppressant.</li><li>– Minimize drop height of materials on-site.</li><li>– Covering surface area of hauled bulk material.</li><li>– Methods and equipment for clean-up of accidental spill of dusty materials.</li><li>– Limit travel speeds on-site to a maximum of 16 to 24 kilometres per hour.</li></ul></li><li>■ If disruption of contaminated soils is anticipated at any time, the Soil and Groundwater section of the Early Works Report includes remedial action plans, risk assessment and risk mitigation plans for encountering contamination and minimizing the release of contaminants.</li><li>■ Develop a communications protocol which includes timely resolution of complaints.</li></ul>	<ul style="list-style-type: none"><li>■ The following monitoring activities should be considered in the development of a plan to manage air quality:<ul style="list-style-type: none"><li>– Baseline conditions should be established prior to construction for longer than one week to capture representative concentrations under varying meteorological conditions.</li><li>– On-site monitoring that includes real-time particulate monitoring representative of receptor impacts.</li><li>– Place monitors both upwind and downwind of construction activities, where possible.</li><li>– Application of threshold “Action Level” triggers for implementation of specific and increasing intensity mitigation activities linked to specific construction activities.</li><li>– Reporting detailing results of ongoing monitoring and mitigation activities.</li><li>– Monitoring at locations where there are persistent complaints, as required.</li></ul></li><li>■ In addition, relevant construction monitoring activities from the following recommended guidelines will be implemented during construction:<ul style="list-style-type: none"><li>– Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005); and</li><li>– Operations Manual for Air Quality Monitoring in Ontario (Ministry of the Environment, Conservation and Parks, 2018).</li></ul></li></ul>

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# 1. Introduction

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## 1.1 Purpose of the Ontario Line Early Works

The Ontario Line Project (the Project) is being assessed in accordance with Ontario Regulation 341/20: Ontario Line Project under the Environmental Assessment Act. Ontario Regulation 341/20: Ontario Line Project outlines a Project-specific environmental assessment process that includes an Environmental Conditions Report, Environmental Impact Assessment Report, and an opportunity for Early Works Report(s) for assessment of works that are ready to proceed in advance of the Environmental Impact Assessment Report. The Environmental Conditions Report documents the local environmental conditions of the Ontario Line Study Area and provides a preliminary description of the potential environmental impacts from the Project. Information outlined in the Environmental Conditions Report is used to inform the Early Works Report(s) and Environmental Impact Assessment Report, which study environmental impacts in further detail and confirm and refine preliminary mitigation measures identified in the Environmental Conditions Report.

Ontario Line early works are components of the Project that are proposed to proceed before the completion of the Ontario Line environmental impact assessment process. An overview of the Project is provided in **Section 1.2**. Early works are defined in Ontario Regulation: 341/20: Ontario Line Project under the Environmental Assessment Act as follows:

“any components of the Ontario Line Project that Metrolinx proposes to proceed with before the completion of the Ontario Line assessment process, such as station construction, rail corridor expansion, utility relocation or bridge replacement or expansion.”

Lakeshore East Joint Corridor early works are considered to be of strategic importance in enabling the timely implementation of the Project. The early works are being advanced where the Project interfaces with GO Expansion and the East Harbor Station (East Harbour Station is situated immediately to the west of the Lakeshore East Joint Corridor early works). Advancing early works and supporting environmental and technical studies in this area provides planning and design efficiencies for the Project and GO Expansion and facilitates the timely implementation of both. Lakeshore East Joint Corridor early works are described in detail in **Section 1.3**.



### 1.1.1 Purpose of this Report

AECOM Canada Limited (AECOM) was retained by Metrolinx and Infrastructure Ontario to complete the Ontario Line Lakeshore East Joint Corridor Early Works Report for the Project. This Air Quality Early Works Report (this Report) supports the Ontario Line Final Lakeshore East Joint Corridor Early Works Report and has been prepared for the Project to document the air quality impact assessment of Lakeshore East Joint Corridor early works (**Figure 1-1**). The early works components and construction activities are described in **Section 1.3**.

The purpose of this Report is to:

- Describe the local environmental conditions related to ambient air quality;
- Assess the potential impacts of early works construction activities on air quality; and
- Identify mitigation measures and monitoring activities for any negative impacts to air quality as a result of the early works construction activities.

This Report has been prepared in accordance with Ontario Regulation 341/20: Ontario Line Project and contains the information outlined in **Table 1-1**.

**Table 1-1: Report Contents in Accordance with Ontario Regulation 341/20: Ontario Line Project**

Reg. Section	Requirement	Report Section
Section 8(2)2	The rationale for proceeding with the early works.	<b>Section 1.1</b>
Section 8(2)4	A description of the local environmental conditions at the site of the early works.	<b>Section 3</b>
Section 8(2)6	Metrolinx's assessment and evaluation of the impacts that the preferred method of carrying out the early works and other methods might have on the environment, and Metrolinx's criteria for assessment and evaluation of those impacts.	<b>Section 4</b>
Section 8(2)7	A description of any measures proposed by Metrolinx for mitigating any negative impacts that the preferred method of carrying out the early works might have on the environment.	<b>Section 4</b>
Section 8(2)8	A description of the means Metrolinx proposes to use to monitor or verify the effectiveness of mitigation measures proposed.	<b>Section 4</b>
Section 8(2)9	A description of any municipal, provincial, federal or other approvals or permits that may be required for the early works.	<b>Section 5</b>



Figure 1-1: Lakeshore East Joint Corridor Early Works Conceptual Design





Figure 1-1: Lakeshore East Joint Corridor Early Works Conceptual Design





## **1.2 Ontario Line Project Overview**

Metrolinx, an agency of the Province of Ontario, is proceeding with the planning and development of the Ontario Line, extending from Exhibition/Ontario Place to the Ontario Science Centre in the City of Toronto.

The Project is a new approximately 15.6-kilometre subway line with connections to Line 1 (Yonge-University) subway service at Osgoode and Queen Stations, Line 2 (Bloor-Danforth) subway service at Pape Station, and Line 5 (Eglinton Crosstown) light rail transit service at the future Science Centre Station. Fifteen stations are proposed, with additional connections to three GO Transit lines (Lakeshore East, Lakeshore West and Stouffville), and the Queen, King, Bathurst, Spadina, Harbourfront, and Gerrard/Carlton streetcar routes. The Project will reduce crowding on Line 1 and provide connections to new high-order rapid transit neighbourhoods. The Project will be constructed in a dedicated right-of-way with a combination of elevated (i.e., above existing rail corridor), tunnelled (i.e., underground), and at-grade (i.e., at grade with existing rail corridor) segments at various locations.

## **1.3 Early Works Description**

### **1.3.1 Project Description**

The Lakeshore East Joint Corridor early works are planned along the Lakeshore East rail corridor between approximately Eastern Avenue and Pape Avenue and will include:

- Reconfiguration of existing GO tracks to support future Ontario Line infrastructure,
- Replacement of the existing rail bridges at Queen Street East, Dundas Street East and Logan Avenue,
- Construction of two new bridges at Dundas Street East and Logan Avenue to support future Ontario Line tracks,
- Construction of the foundations for GO Overhead Catenary System (OCS) poles and supporting infrastructure to accommodate future fourth GO track;
- Construction of retaining walls; and
- Construction of noise barriers, including east of Pape Avenue.

The Lakeshore East Joint Corridor early works will support the future Ontario Line infrastructure located between Eastern Avenue and Pape Avenue (e.g., Leslieville and Gerrard stations, and Ontario Line tracks). These early works will also streamline

implementation of GO Expansion through the construction of supporting infrastructure for the future fourth track for the Lakeshore East GO corridor and the foundations for GO Overhead Catenary System (OCS) poles. The noise barriers constructed as part of these early works will mitigate noise impacts from both Ontario Line and GO operations.

Lakeshore East Joint Corridor early works components are shown in **Figure 1-1**.

### **1.3.2 Early Works Project Footprint and Study Area**

The Lakeshore East Joint Corridor Early Works Project Footprint, shown in **Figure 1-2**, is defined as the area of direct disturbance associated with the early works construction activities, including anticipated required construction staging and laydown areas and construction access. Construction is anticipated to occur primarily within the existing Metrolinx right-of-way (Metrolinx-owned rail corridor/properties). The extent of lands anticipated to be temporarily impacted by construction staging/laydown and access will continue to be refined and reduced to the extent feasible as project planning progresses.

The Lakeshore East Joint Corridor Early Works Project Footprint extends from approximately 325 metres east of the Lower Don River in the west, follows the Lakeshore East rail corridor northeast from Eastern Avenue in the south to Jones Avenue in the north.

For the purpose of this Report, the Lakeshore East Joint Corridor Study Area, also shown in **Figure 1-2**, includes the Lakeshore East Joint Corridor Early Works Project Footprint and a 500 metre buffer. The distance of the 500 metre buffer was based on guidance provided in the Ministry of Transportation's Environmental Guide for Assessing and Mitigating the Air Quality Impact and Greenhouse Gases of Provincial Transportation Projects (Ministry of Transportation, 2020) which states that, for major roads, a distance of 500 metres is expected to capture the maximum pollutant concentrations. Though the Lakeshore East Joint Corridor early works do not include construction of major roads, similar ground level sources of fugitive emission, for example on-site vehicle movement, which are expected to have a similar range of pollutant concentration impacts may be anticipated.

The Lakeshore East Joint Corridor Study Area assessed in this Report is specific to the air quality impact assessment. The study areas for other environmental disciplines are outlined in the Ontario Line Final Lakeshore East Joint Corridor Early Works Report.



Figure 1-2: Lakeshore East Joint Corridor Early Works Project Footprint and Lakeshore East Joint Corridor Study Area





### **1.3.3 Construction Activities**

**Table 1-2** provides a description of the anticipated construction activities for the Lakeshore East Joint Corridor early works. These typical activities serve as the basis for the assessment of construction-related potential environmental impacts. These activities may be expanded, further refined, or found to be unnecessary as the Project progresses through detailed design and construction.

**Table 1-2: Anticipated Construction Activities for the Ontario Line Lakeshore East Joint Corridor Early Works**

Anticipated Construction Activity	Description	Associated Equipment
<b>Site Preparation</b>	<ul style="list-style-type: none"> <li>■ Mobilization of equipment and temporary facilities to the site.</li> <li>■ Clearing and grubbing of vegetation, tree removal and protection.</li> <li>■ Protection of trees and sensitive environmental features.</li> <li>■ Erection of temporary and permanent fences.</li> <li>■ Installation of environmental management features (e.g., erosion and sediment controls).</li> <li>■ Dewatering works.</li> <li>■ Preparation of temporary laydown areas including access roads, fencing and lighting.</li> <li>■ Preparation of temporary access roads to construction sites including temporary shoring, access roads, fencing, signage, gate and lighting.</li> <li>■ Temporary closure of road curb lanes.</li> <li>■ Removal of roadway, sidewalks, buildings and retaining walls impacted by temporary or permanent conditions.</li> </ul>	<ul style="list-style-type: none"> <li>■ Site compaction equipment and grading equipment.</li> <li>■ Vegetation removal equipment.</li> <li>■ Excavation equipment.</li> <li>■ Haulage/dump trucks.</li> </ul>
<b>Site Servicing/ Removals/ Demolition</b>	<ul style="list-style-type: none"> <li>■ Relocation and/or extension of services and utilities on the site; which may include both underground and aerial services and utilities (e.g., sewers, water, electrical, communications, gas). This may also involve installation of utilities within the site. Includes utilities on the rail corridor and off the rail corridor.</li> <li>■ Demolition and/or alteration of existing buildings and/or structures such as retaining walls and existing bridges.</li> <li>■ Removal and reinstatement of railway track.</li> <li>■ Locates and daylighting of underground utilities.</li> </ul>	<ul style="list-style-type: none"> <li>■ Excavation equipment including backhoe, dump trucks, spoil removal equipment, jackhammers, vacuum truck and high rail equipment.</li> <li>■ Track stabilizer.</li> <li>■ Hand tools.</li> <li>■ Mobile crane.</li> <li>■ Flatbed trucks.</li> <li>■ Boom truck.</li> <li>■ Spreader for track work.</li> </ul>

Anticipated Construction Activity	Description	Associated Equipment
<b>Construction of Structures</b>	<ul style="list-style-type: none"> <li>■ All structures will be constructed using standard civil construction techniques.</li> <li>■ Includes noise walls, pre-cast and cast-in-place retaining walls including stormwater management, grounding, bonding and backfill using selected material.</li> </ul>	<ul style="list-style-type: none"> <li>■ Foundation placement equipment.</li> <li>■ Augured piles or rammed aggregate piers.</li> <li>■ Drill rigs.</li> <li>■ Mobile cranes and hoists.</li> <li>■ Concrete trucks, pumps and vibrators.</li> </ul>
<b>Construction of Bridges</b>	<ul style="list-style-type: none"> <li>■ Will be constructed using standard civil construction techniques.</li> <li>■ Dewatering is anticipated.</li> <li>■ Includes stormwater management grounding and bonding.</li> </ul>	<ul style="list-style-type: none"> <li>■ Augured piles or rammed aggregate piers.</li> <li>■ Drill rigs.</li> <li>■ Mobile cranes and hoists. Concrete trucks, pumps and vibrators.</li> <li>■ Flatbed trucks, crane, excavators, and light equipment.</li> <li>■ Back hoe.</li> <li>■ Jack hammers.</li> </ul>
<b>Temporary Road / Sidewalk Closures</b>	<ul style="list-style-type: none"> <li>■ All road / sidewalk closures will follow standard traffic control management guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>■ Temporary traffic control devices such as signs, signals, barriers, traffic barrels.</li> </ul>
<b>Site Grading and Earthworks</b>	<ul style="list-style-type: none"> <li>■ Removal of topsoil and excavation of unsuitable material and disposal off site</li> <li>■ Borrow additional material for fill</li> <li>■ Grading and compaction of track bed including subdrain</li> <li>■ Installation of subballast and pre-ballasting</li> </ul>	<ul style="list-style-type: none"> <li>■ Excavator.</li> <li>■ Dozer.</li> <li>■ Motor grader.</li> <li>■ Compactor.</li> <li>■ Water truck.</li> <li>■ Dump trucks.</li> </ul>
<b>Management of Stormwater</b>	<ul style="list-style-type: none"> <li>■ All precipitation falling within the site will be managed as stormwater within a designed system of collection, conveyance, retention and discharge features, as required. The system will be designed and operated in compliance with applicable standards and regulatory requirements. Surface flows within the site will be managed within the site to ensure discharge to off-site receivers (i.e., municipal storm sewers) is appropriate in terms of water quantity and quality.</li> </ul>	<ul style="list-style-type: none"> <li>■ Site compaction equipment and general grading equipment.</li> <li>■ Groundwater pumping equipment.</li> </ul>



Anticipated Construction Activity	Description	Associated Equipment
<b>Track construction</b>	<ul style="list-style-type: none"> <li>■ Staged realignment of existing tracks (rail on timber ties).</li> <li>■ Installation of 4 tracks in final position including ballast utilizing new rail and new concrete ties.</li> </ul>	<ul style="list-style-type: none"> <li>■ High rail excavators, Track laying machine, ballast regulator, stabilizer.</li> </ul>
<b>Signaling infrastructure alteration/ installation</b>	<ul style="list-style-type: none"> <li>■ Staged upgrade of track signals to reflect temporary staged realignment of tracks and installation of four tracks in a final position.</li> <li>■ Relocation of existing bridge and bungalow including temporary track crossings, bridge foundations, aspects, bungalow, power supply, conduits and cables. Removal from site of existing signal bridge and bungalow.</li> </ul>	<ul style="list-style-type: none"> <li>■ Backhoe.</li> <li>■ Vacuum truck.</li> <li>■ High rail crane.</li> <li>■ Drill rig.</li> <li>■ Concrete pump and concrete trucks.</li> </ul>
<b>Fiber Optic Cable (FOC) relocation</b>	<ul style="list-style-type: none"> <li>■ Staged relocation of multiple Fiber Optic Cable (FOC) to reflect temporary staged realignment of tracks and installation of four tracks in a final position, including multiple conduits, hand wells, split steel casings and splicing.</li> </ul>	<ul style="list-style-type: none"> <li>■ Backhoe.</li> <li>■ Vacuum truck.</li> </ul>

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## 2. Methodology

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This Report documents the assessment of Lakeshore East Joint Corridor early works construction impacts related to air quality. Impacts associated with Project operations will be addressed as part of the Environmental Impact Assessment Report, under a separate cover.

### 2.1 Local Environmental Conditions

Local environmental conditions within the Lakeshore East Joint Corridor Study Area were established through a review of relevant background information, a definition of appropriate air quality contaminants, and determining existing concentrations of the air quality contaminants from local monitoring stations. Existing air quality is also defined by volume of traffic within the Lakeshore East Joint Corridor Study Area. Higher volumes of traffic result in higher local air quality contaminant concentrations. The existing levels of air quality contaminant concentrations were compared to federal and provincial standards to determine which contaminants exceed standard thresholds within the Lakeshore East Joint Corridor Study Area. Detailed methodology related to local environmental conditions is provided in the sub-sections below.

#### 2.1.1 Background Information Review

Background information and documentation relevant to the Lakeshore East Joint Corridor Study Area is contained within the Ontario Line Final Environmental Conditions Report (AECOM, 2020)<sup>2</sup>, which includes:

- Identification of air quality representative receptors within the Lakeshore East Joint Corridor Study Area;
- Determination of representative background air quality monitoring stations within the National Air Pollution Surveillance network for the Lakeshore East Joint Corridor Study Area. Appropriate representation was based on proximity to the Lakeshore East Joint Corridor Study Area, availability of contaminant monitoring data, and proximity to similar nearby air quality sources as those existing within the Lakeshore East Joint Corridor Study Area;

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2. The Ontario Line Final Environmental Conditions Report (AECOM, 2020) was published on November 30, 2020 in accordance with Ontario Regulation 341/20: Ontario Line Project.

- Traffic peak levels and/or annual average daily traffic volumes along primary routes of travel within the Lakeshore East Joint Corridor Study Area were reviewed, where available; and
- Review of existing meteorological data representative of the Lakeshore East Joint Corridor Study Area.

### **2.1.2 Assessment of Contaminants**

The primary air emission sources within the Lakeshore East Joint Corridor Study Area are expected to be the vehicular emissions from the road network, in addition to the additional construction emissions from the identified activities for early works.

Emissions from diesel trains traversing the Lakeshore East Joint Corridor Study Area were not assessed due to the relatively low contribution of air contaminants. For example, the Air Quality Assessment Report prepared for the Union Station Rail Corridor East Enhancements Transit Project Assessment Process (AECOM, 2018) included a quantitative assessment of downtown Toronto air quality sources and project source impacts where it was shown that hourly road air contaminant contributions were exponentially higher than those of both GO Train emission contributions and VIA / Canadian National contributions (e.g., 23.9 g/hour of CO from roads, compared with 2.0 g/hour from GO rail and 0.05 g/hour from VIA / Canadian National Rail). Certain contaminants had a higher contribution from the Metrolinx GO network within the Union Station Rail Corridor East Enhancements study area, such as NO<sub>x</sub> and fine particulate matter (PM<sub>2.5</sub>). These emissions were not specifically quantified in the Lakeshore East Joint Corridor early works air quality assessment; however, it should be noted that diesel rail traffic can present as a minor source of air quality contamination for these two specific contaminants.

Based on recommendations within the Ministry of Transportation's Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects (Ministry of Transportation, 2020), this air quality early works assessment includes the following criteria air contaminants from vehicle emissions:

1. Nitrogen dioxide, NO<sub>2</sub> (assessed over 1-hour, 24-hour, and annual averaging periods);
2. Carbon monoxide, CO (assessed over 1-hour and 8-hour averaging periods);
3. Sulphur Dioxide, SO<sub>2</sub> (assessed over 1-hour, 24-hour, and annual averaging period);



4. Particulate matter (<10 microns), PM<sub>10</sub> (assessed over 24-hour and annual averaging periods);
5. Particulate matter (<2.5 microns), PM<sub>2.5</sub> (assessed over 24-hour and annual averaging periods);
6. Acetaldehyde (assessed over 30-minute and 24-hour averaging period);
7. Acrolein (assessed over 1-hour and 24-hour averaging periods);
8. Benzene (assessed over 24-hour and annual averaging periods);
9. Benzo(a)pyrene, B(a)P (assessed over 24-hour and annual averaging periods);
10. Formaldehyde (assessed over 24-hour averaging period); and
11. 1,3-butadiene (assessed over 24-hour and annual averaging periods).

Construction of early works is expected to contribute emissions of primarily suspended particulate matter, suspended silica (represented as suspended particulate), and diesel and gasoline combustion emissions from specific construction equipment. Coarse fraction of particulates (PM<sub>10</sub>) are emitted from vehicular tire wear, brake wear, and road dust fugitives, whereas the fine fraction (PM<sub>2.5</sub>) is mostly attributed to vehicle emission exhausts.

### **2.1.3 Relevant Air Quality Guidelines**

The applicable standards for the criteria air contaminants are regulated by the Ministry of the Environment, Conservation and Parks and Canadian Council of Ministers of the Environment as the Ambient Air Quality Criteria (Ministry of the Environment, Conservation and Parks, 2020) and Canadian Ambient Air Quality Standards (Canadian Council of Ministers of the Environment, 2012), respectively, as shown in **Table 2-1**.

The Canadian Council of Ministers of the Environment has developed Canada-wide standards for a variety of contaminants. These standards are developed jointly by various provincial jurisdictions based on a scientific and risk-based approach. Standards are presented to the Ministers along with a timetable for implementation and monitoring and public reporting programs. Ministers are responsible for implementing the standards within their own jurisdictions and promoting consistency across the country.

**Table 2-1: Summary of Applicable Guidelines and Standards**

<b>Criteria Air Contaminant</b>	<b>Source of Standard</b>	<b>Averaging Period</b>	<b>Air Quality Threshold Value (<math>\mu\text{g}/\text{m}^3</math>)</b>
<b>NO<sub>2</sub></b>	Ambient Air Quality Criteria	One hour	400
<b>NO<sub>2</sub></b>	Ambient Air Quality Criteria	24 hours	200
<b>NO<sub>2</sub><sup>(1)</sup></b>	Canadian Ambient Air Quality Standards	One hour (2020)	113
<b>NO<sub>2</sub><sup>(1)</sup></b>	Canadian Ambient Air Quality Standards	Annual (2020)	32
<b>NO<sub>2</sub><sup>(1)</sup></b>	Canadian Ambient Air Quality Standards	One hour (2025)	78
<b>NO<sub>2</sub><sup>(1)</sup></b>	Canadian Ambient Air Quality Standards	Annual (2025)	22
<b>CO</b>	Ambient Air Quality Criteria	One hour	36,200
<b>CO</b>	Ambient Air Quality Criteria	Eight hours	15,700
<b>SO<sub>2</sub><sup>(2)</sup></b>	Ambient Air Quality Criteria	10-minute	178
<b>SO<sub>2</sub><sup>(2)</sup></b>	Ambient Air Quality Criteria	One hour	106
<b>SO<sub>2</sub><sup>(2)</sup></b>	Ambient Air Quality Criteria	Annual	11
<b>SO<sub>2</sub><sup>(3)</sup></b>	Canadian Ambient Air Quality Standards	One hour (2020)	183
<b>SO<sub>2</sub><sup>(3)</sup></b>	Canadian Ambient Air Quality Standards	Annual (2020)	13
<b>SO<sub>2</sub><sup>(3)</sup></b>	Canadian Ambient Air Quality Standards	One hour (2025)	170
<b>SO<sub>2</sub><sup>(3)</sup></b>	Canadian Ambient Air Quality Standards	Annual (2025)	10
<b>PM<sub>10</sub><sup>(4)</sup></b>	Ambient Air Quality Criteria	24 hours	50
<b>PM<sub>2.5</sub><sup>(5)</sup></b>	Canadian Ambient Air Quality Standards	24 hours (2020)	27
<b>PM<sub>2.5</sub><sup>(5)</sup></b>	Canadian Ambient Air Quality Standards	Annual	8.8
<b>Acetaldehyde</b>	Ambient Air Quality Criteria	30-minute	500
<b>Acetaldehyde</b>	Ambient Air Quality Criteria	24 hours	500
<b>Acrolein</b>	Ambient Air Quality Criteria	One hour	4.5
<b>Acrolein</b>	Ambient Air Quality Criteria	24 hours	0.4
<b>Benzene</b>	Ambient Air Quality Criteria	24 hours	2.3
<b>Benzene</b>	Ambient Air Quality Criteria	Annual	0.45
<b>Benzo(a)pyrene</b>	Ambient Air Quality Criteria	24 hours	0.00005

Criteria Air Contaminant	Source of Standard	Averaging Period	Air Quality Threshold Value ( $\mu\text{g}/\text{m}^3$ )
<b>Benzo(a)pyrene</b>	Ambient Air Quality Criteria	Annual	0.00001
<b>1,3-Butadiene</b>	Ambient Air Quality Criteria	24 hours	10
<b>1,3-Butadiene</b>	Ambient Air Quality Criteria	Annual	2
<b>Formaldehyde</b>	Ambient Air Quality Criteria	24 hours	65

- Notes: (1) The Canadian Ambient Air Quality Standards air quality threshold for nitrogen dioxide is based on the three-year average of the annual 98<sup>th</sup> percentile of the daily maximum one-hour average concentrations.
- (2) The Ambient Air Quality Standards for SO<sub>2</sub> are reported in parts per billion and converted using the factor 2.66  $\mu\text{g}/\text{m}^3$  of SO<sub>2</sub> per 1 ppb of SO<sub>2</sub> (at 20.0 degrees Celsius and 1 atmosphere, rounded).
- (3) The Canadian Ambient Air Quality Standards Air Quality threshold for sulphur dioxide is based on the three-year average of the annual 99<sup>th</sup> percentile of the daily maximum one-hour average concentrations.
- (4) The value of 50  $\mu\text{g}/\text{m}^3$  (24 hr) is an interim Ambient Air Quality Criteria and is provided as a guide for decision making.
- (5) The Air Quality threshold for fine particulate (PM<sub>2.5</sub>) is based on the 98<sup>th</sup> percentile ambient measurement (24-hour), annually averaged over three years.

Recently, the Canadian Council of Ministers of the Environment has developed new standards for fine particulate matter PM<sub>2.5</sub>, NO<sub>2</sub> and SO<sub>2</sub>, under the Canadian Ambient Air Quality Standards. The Canadian Ambient Air Quality Standards are established as voluntary objectives under the Canadian Environmental Protection Act, 1999 and are typically used as a benchmark for appropriate air quality levels in Ontario.

The Ambient Air Quality Criteria values listed above are acceptable effects-based levels in ambient air. Limits are set based on the “limiting effect” and are the lowest concentrations at which an adverse effect may be experienced. Effects considered may include health, odour, vegetation, soiling, visibility, corrosion or others and limits have variable averaging times appropriate for the effect that they are intended to protect against. The Ambient Air Quality Criteria are used for assessing general air quality and the potential for causing an adverse effect. Adverse health and / or environmental effects are not expected where concentrations are below the air quality threshold presented in **Table 2-1**. If a contaminant has more than one Ambient Air Quality Criterion, all must be used for assessment purposes as each represents a different type of effect linked to a particular averaging period.

#### 2.1.4 Existing Ambient Air Quality

The existing ambient air quality levels were quantified using publicly available historical data from ambient air quality monitoring stations from the National Air Pollution Surveillance network within Toronto. Data utilized were the most recent and complete data available at the time of the preparation of this Report<sup>3</sup>. It was assumed that the existing ambient air quality would be representative of the current conditions present in the Lakeshore East Joint Corridor Study Area. The following National Air Pollution Surveillance air quality monitoring stations were selected as representative of the ambient air quality of the Lakeshore East Joint Corridor Study Area:

- Toronto West (National Air Pollution Surveillance Identification 60430);
- Toronto Downtown (National Air Pollution Surveillance Identification 60433);
- Gage Institute Station (National Air Pollution Surveillance Identification 60427); and
- Roadside Wallberg (University of Toronto) Station (National Air Pollution Surveillance Identification 60439).

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3. National Air Pollution Surveillance data used was from 2017. Traffic data used to estimate existing conditions was determined from traffic counts from 2017, 2018, and 2019. An annual growth rate of 1% was applied to 2017 and 2018 data to produce comparable 2019 annual average daily traffic.



These stations are located nearest to the Lakeshore East Joint Corridor Study Area and monitored (in combination) all relevant contaminants for the assessment, since a single station is unable to monitor all contaminants. Where multiple stations were found to monitor a common contaminant, the closest representative station was selected for the assessment. Details of the air quality monitoring stations closest to the Lakeshore East Joint Corridor Study Area are provided in **Table 2-2**. **Figure 2-1** presents the locations of the four air quality monitoring stations relative to the Lakeshore East Joint Corridor Study Area. Air quality measurement data from these stations are provided in **Appendix A**.

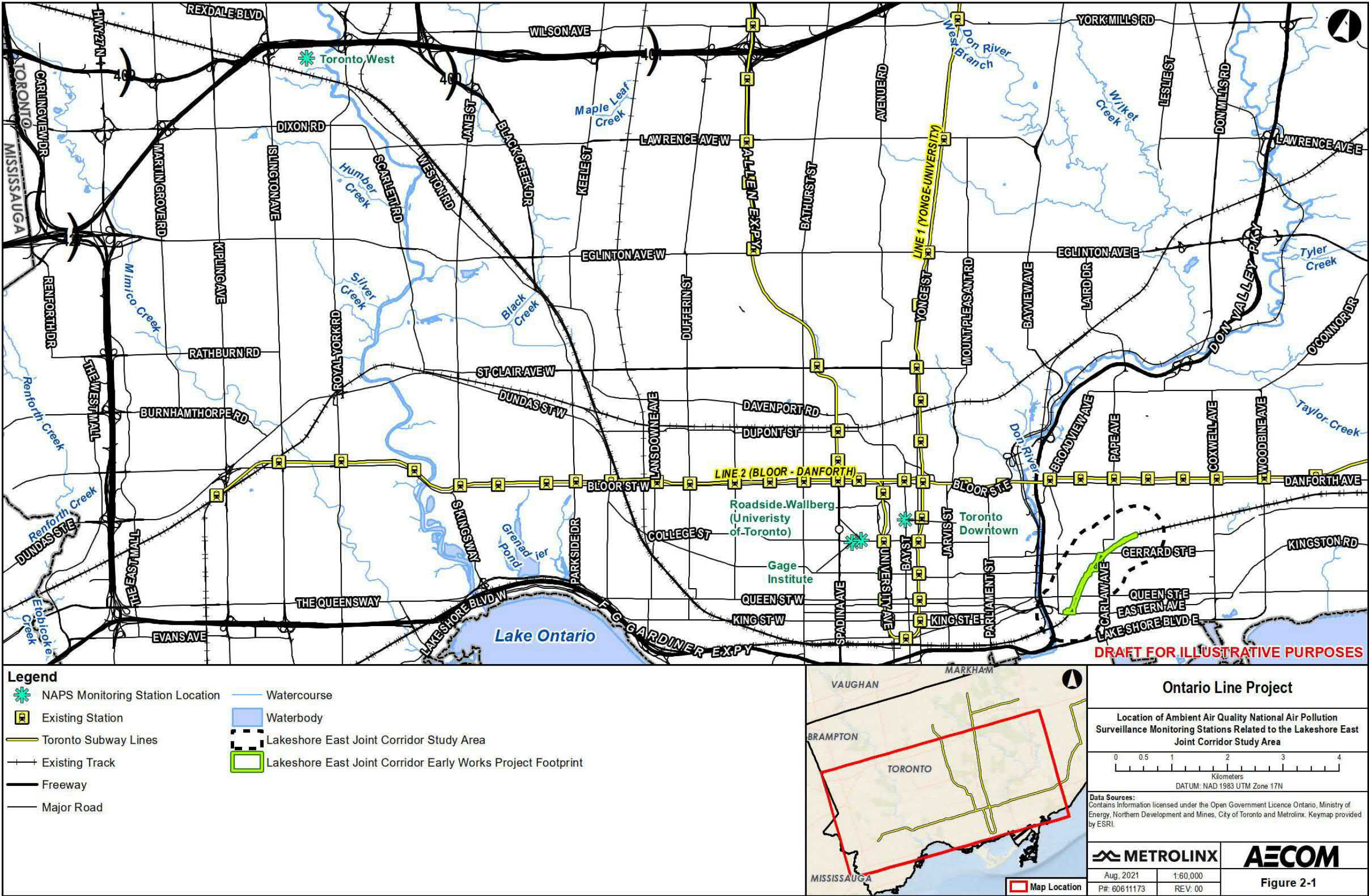
**Table 2-2: Ambient Air Quality National Air Pollution Surveillance Monitoring Stations Information Related to the Lakeshore East Joint Corridor Study Area**

Station Information	Toronto West	Toronto Downtown	Gage Institute	Roadside Wallberg (University of Toronto)
<b>NAPS No.</b>	60430	60433	60427	60439
<b>Address</b>	125 Resources Road, Toronto	Bay and Wellesley Street, Toronto	223 College Street, Toronto	200 College Street, Toronto
<b>Year of Data Available</b>	2011 - 2017	2011 - 2017	2011 - 2014	2014 - 2017
<b>Latitude</b>	43.7094	43.66417	43.6582	43.6590
<b>Longitude</b>	-79.5435	-79.38722	-79.3972	-79.3954
<b>Station Type</b>	Urban	Urban	Urban	Urban
<b>Pollutants Measured</b>	CO, SO <sub>2</sub>	NO <sub>2</sub> , PM <sub>2.5</sub>	1,3-Butadiene, Benzene, Benzo(a)pyrene - 2011 – 2014, 2016 - 2017	Formaldehyde, Acetaldehyde, Acrolein, Benzo(a)pyrene - 2015 only

One-hour, eight-hour, and 24-hour ambient concentrations for the contaminants were obtained from the 90<sup>th</sup> percentile of hourly measurements from the representative air quality monitoring stations (the average value was calculated from the available years). The 90<sup>th</sup> percentile of available background data was used following the methodology outlined in the Ministry of Transportation's Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects (Ministry of Transportation, 2020).

Annual ambient concentrations for the contaminants were obtained from the mean measurements from the representative air quality monitoring station (the average value was calculated from the available years).

Figure 2-1: Location of Ambient Air Quality National Air Pollution Surveillance Monitoring Stations Related to the Lakeshore East Joint Corridor Study Area





### 2.1.5 Identification of Representative Receptors

Land use within the Lakeshore East Joint Corridor Study Area was reviewed to identify existing and planned future developments that are considered sensitive or critical receptors. The Ministry of Transportation’s Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects defines a sensitive receptor as a “residential dwelling” and a critical receptor as a “retirement home, hospital, childcare centre, school, or similar institutional building” (Ministry of Transportation, 2020).

Representative receptors within the Lakeshore East Joint Corridor Study Area were selected based on proximity to emission sources (i.e., the Lakeshore East Joint Corridor Early Works Project Footprint) and distribution surrounding emission sources to account for variability in wind directions based on guidance from the Ministry of Transportation’s Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects (Ministry of Transportation, 2020). The representative receptors identified within the Lakeshore East Joint Corridor Study Area are shown in **Figure 3-2** in **Section 3.4**.

## 2.2 Impact Assessment

This early works impact assessment and development of mitigation measures and monitoring activities considered the following:

- Lakeshore East Joint Corridor early works components as described in **Section 1.3.1**;
- The Lakeshore East Joint Corridor Early Works Project Footprint and Lakeshore East Joint Corridor Study Area as described in **Section 1.3.2**;
- Lakeshore East Joint Corridor early works construction activities as described in **Section 1.3.3**; and
- Local environmental conditions within the Lakeshore East Joint Corridor Study Area as described in **Section 3**.

Mitigation measures and monitoring activities have been recommended to mitigate the identified potential negative impacts. The following federal and provincial guidelines for construction mitigation were utilized in the development of mitigation measures:

- Environment Canada’s Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005);

- Ministry of the Environment, Conservation and Parks' Management Approaches for Industrial Fugitive Dust Sources Technical Bulletin (Ministry of the Environment, Conservation and Parks, 2017);
- Ontario Hot Mix Producers Association's Environmental Practices Guide: Ontario Hot Mix Asphalt Plants, Fifth Edition (Ontario Hot Mix Producers Association, 2015); and
- Operations Manual for Air Quality Monitoring in Ontario (Ministry of the Environment, Conservation and Parks, 2018).

The results of the impact assessment are provided in **Section 4**.



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## 3. Local Environmental Conditions

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### 3.1 Existing Ambient Air Quality

Relevant ambient air quality data collected at the four National Air Pollution Surveillance air quality monitoring stations (Environment and Climate Change Canada, 2019) are summarized in **Appendix A**. Representative data for all criteria air contaminants were identified as follows for the averaging period combinations listed in **Table 3-1**:

- 1-hour, 8-hour, and 24-hour ambient concentrations for the contaminants were obtained from the 90<sup>th</sup> percentile of hourly measurements from the representative air quality monitoring stations (the average value was calculated from the available years). The 90<sup>th</sup> percentile of available background data was used following the methodology outlined in the Ministry of Transportation’s Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects (Ministry of Transportation, 2020).
- Annual ambient concentrations for the contaminants were obtained from the mean measurements from the representative air quality monitoring station (the average value was calculated from the available years).

The averaged background concentrations for each contaminant were compared to the applicable federal and provincial standards for all of the applicable time averaging periods and percentile concentrations. The approach to calculating the overall 90<sup>th</sup> percentile for the data set was to calculate the individual year’s 90<sup>th</sup> percentile data, provided in a 1-year format from the National Air Pollution Surveillance Monitoring online data portal, then to determine the average of a selection of the most recent and complete five years’ 90<sup>th</sup> percentile data.

As shown in **Table 3-1**, there are several air quality threshold exceedances within the monitored existing ambient air quality data. Benzene has elevated annual contributions which exceed the threshold guideline from the Ambient Air Quality Criteria.

Benzo(a)pyrene, the representative polycyclic aromatic hydrocarbon, shows elevated levels of concentration for both annual and daily provincial air quality thresholds. This is due mainly to high presence of regional air quality contributions, high traffic volumes within the Greater Toronto Area, and industrial contributions from Toronto, the Greater Toronto Area, and Hamilton.

Table 3-1: Comparison of Existing Ambient Air Quality Data to Standards

Criteria Air Contaminant	Station Identification	Averaging Period	Years	Average of Background Data (µg/m³)	Statistical Measure	Standard Threshold (µg/m³)	Standard Source	% of Standard Threshold
NO <sub>2</sub>	60433	One hour	2013-2017	49.50	90 <sup>th</sup> Percentile	400	Ambient Air Quality Criteria	12%
NO <sub>2</sub>	60433	One hour	2013-2017	49.50	90 <sup>th</sup> Percentile	113	Canadian Ambient Air Quality Standards	44%
NO <sub>2</sub>	60433	24 hours	2013-2017	41.75	90 <sup>th</sup> Percentile	200	Ambient Air Quality Criteria	21%
NO <sub>2</sub>	60433	Annual	2013-2017	26.68	Mean	32	Canadian Ambient Air Quality Standards	83%
CO	60430	One hour	2013-2017	446	90 <sup>th</sup> Percentile	36,200	Ambient Air Quality Criteria	1%
CO	60430	8 hours	2013-2017	419	90 <sup>th</sup> Percentile	15,700	Ambient Air Quality Criteria	3%
SO <sub>2</sub> <sup>(2)</sup>	60430	10-min.	2013-2017	9.11	90 <sup>th</sup> Percentile	178	Ambient Air Quality Criteria	5%
SO <sub>2</sub>	60430	One hour	2013-2017	5.51	90 <sup>th</sup> Percentile	106	Ambient Air Quality Criteria	5%
SO <sub>2</sub>	60430	Annual	2013-2017	1.84	Mean	11	Ambient Air Quality Criteria	17%
PM <sub>10</sub> <sup>(3)</sup>	60433	24 hours	2013-2017	25.78	90 <sup>th</sup> Percentile	50	Ambient Air Quality Criteria	51%
PM <sub>2.5</sub>	60433	24 hours	2013-2017	13.89	90 <sup>th</sup> Percentile	27	Canadian Ambient Air Quality Standards	51%
PM <sub>2.5</sub>	60433	Annual	2013-2017	7.94	Mean	8.8	Canadian Ambient Air Quality Standards	90%
Acetaldehyde <sup>(4)</sup>	60439	30-min.	2014-2017	5.00	90 <sup>th</sup> Percentile	500	Ambient Air Quality Criteria	1%
Acetaldehyde	60439	24 hours	2014-2017	1.69	90 <sup>th</sup> Percentile	500	Ambient Air Quality Criteria	0%
Acrolein <sup>(5)</sup>	60439	One hour	2014-2017	0.17	90 <sup>th</sup> Percentile	4.5	Ambient Air Quality Criteria	4%
Acrolein	60439	24 hours	2014-2017	0.07	90 <sup>th</sup> Percentile	0.4	Ambient Air Quality Criteria	17%
Benzene	60435	24 hours	2011-2014	0.92	90 <sup>th</sup> Percentile	2.3	Ambient Air Quality Criteria	40%
Benzene	60435	Annual	2011-2014	0.61	Mean	0.45	Ambient Air Quality Criteria	134%
Benzo(a)-pyrene	60427 60439	24 hours	2011-2015	1.21E-04	90 <sup>th</sup> Percentile	0.00005	Ambient Air Quality Criteria	242%
Benzo(a)-pyrene	60427 60439	Annual	2011-2015	6.72E-05	Mean	0.00001	Ambient Air Quality Criteria	672%
1,3-Butadiene	60435	24 hours	2011-2014	0.10	90 <sup>th</sup> Percentile	10	Ambient Air Quality Criteria	1%
1,3-Butadiene	60435	Annual	2011-2014	0.06	Mean	2	Ambient Air Quality Criteria	3%
Formaldehyde	60439	24 hours	2014-2017	3.16	90 <sup>th</sup> Percentile	65	Ambient Air Quality Criteria	5%

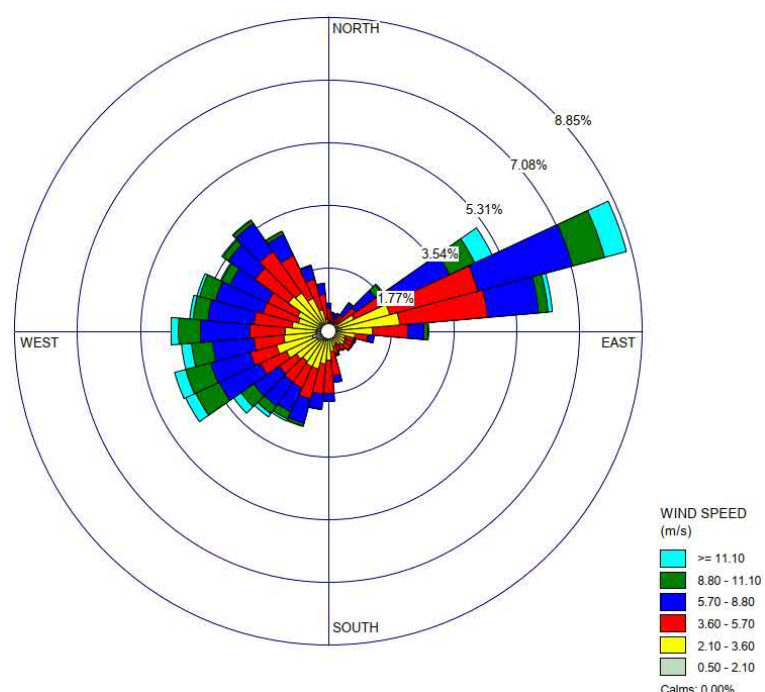
Notes: (1) Exceedances of the Ambient Air Quality Criteria and Canadian Ambient Air Quality Standards are shown in red.  
(2) Concentrations of sulphur dioxide (SO<sub>2</sub>) are measured on an hourly basis, background concentrations for the 10-minute averaging period have been converted using the Ministry of the Environment, Conservation and Parks' conversion factor where C<sub>10min.</sub> = C<sub>1hr</sub> x (60 min./10 min.)<sup>0.28</sup>.  
(3) PM<sub>10</sub> was not included in National Air Pollution Surveillance air quality monitoring station measurements, and therefore was estimated using PM<sub>2.5</sub> measurements, assuming a ratio of 1 µg/m³ PM<sub>10</sub> per 0.54 µg/m³ of PM<sub>2.5</sub> as per Lall et al. publication in Atmospheric Environment, Estimation of historical annual PM<sub>2.5</sub> exposures for health effects assessment (Lall et al., 2004).  
(4) Concentrations of acetaldehyde are measured on a 24 hour basis, background concentrations for the 30-minute averaging period have been converted using the Ministry of the Environment, Conservation and Parks' conversion factor where C<sub>0.5hr</sub> = C<sub>24hr</sub> x (24hr/0.5hr)<sup>0.28</sup>.  
(5) Concentrations of acrolein are measured on a 24 hour basis, background concentrations for the hourly averaging period have been converted using the Ministry of the Environment, Conservation and Parks' conversion factor where C<sub>1hr</sub> = C<sub>24hr</sub> x (1hr/24hr)<sup>0.28</sup>.

## 3.2 Meteorological Conditions

The local air quality is influenced by both ambient conditions and contributions from traffic and construction activities and is affected by the local and regional meteorological conditions. Predominant wind speeds and wind directions within the Lakeshore East Joint Corridor Study Area will determine the likely areas of most common impacts, and the potential areas of greatest impact. High impact conditions from construction and traffic emissions are created from low speed surface air movement towards a nearby receptor. High impact conditions may also form from high speed surface air movement which has a greater potential to disturb and disperse dust particles from unpaved surfaces, stockpiles, and material handling. Local surface station meteorological data was used to anticipate areas of high probability impact, downwind from predominant wind directions.

The closest representative meteorological station for the Lakeshore East Joint Corridor Study Area was identified as the Toronto City Centre station located on Toronto Island (Station Identification 71265). This station captures the meteorological effects from Lake Ontario which impact the air quality conditions of the Lakeshore East Joint Corridor Study Area. The wind rose for the five-year meteorological period (2015 to 2019) showing the wind direction and wind speed is presented in **Figure 3-1**. The wind rose shows that the predominant wind direction is from the northeast. Secondary predominant winds blow from the west, northwest and southwest.

**Figure 3-1: Wind Rose Representative of Meteorological Conditions in the Lakeshore East Joint Corridor Study Area**



### 3.3 Traffic Assessment

Major traffic sources within the Lakeshore East Joint Corridor Study Area include the following:

- Don Valley Parkway,
- Eastern Avenue,
- Broadview Avenue,
- Queen Street East,
- Dundas Street East,
- Gerrard Street East,
- Carlaw Avenue, and
- Pape Avenue.

**Table 3-2** shows the summary of annual average daily traffic for cars, trucks, and buses (where available) along the major roads within the Lakeshore East Joint Corridor Study Area. Raw turning movement counts of traffic representative of the Lakeshore East Joint Corridor Study Area are included in **Appendix B**. The purpose of providing representative annual average daily traffic data is to demonstrate the relative contribution from each major roadway within the Lakeshore East Joint Corridor Study Area. The data presented in **Table 3-2** indicates that the Don Valley Parkway is likely to have the greatest impact on the existing local air quality.

**Table 3-2: Representative Traffic Data Within the Lakeshore East Joint Corridor Study Area**

Road Segment	2019 Annual Average Daily Traffic: Cars	2019 Annual Average Daily Traffic: Trucks	2019 Annual Average Daily Traffic: Bus
Don Valley Parkway	88,935	5,677	--
Eastern Avenue, east of Broadview Avenue	12,025	1,536	28
Broadview Avenue	7,432	120	--
Queen Street East	12,025	1,536	--
Dundas Street East	16,948	144	--
Gerrard Street East	17,587	9,049	104
Carlaw Avenue	11,474	104	72
Pape Avenue	10,593	120	--



### 3.4 Representative Receptors

There is a diverse range of land uses within the Lakeshore East Joint Corridor Study Area. The majority of land use within the Lakeshore East Joint Corridor Study Area corresponds to single and multi-unit residential dwellings. Portions of green space are distributed throughout the Lakeshore East Joint Corridor Study Area, while a concentration of commercial facilities is located along Carlaw Avenue and near the Gerrard Street East and Carlaw Avenue intersection. Land use south of Eastern Avenue is dedicated to industrial use; there were no representative sensitive or critical receptors identified in this particular area.

In total, 17 critical receptors<sup>4</sup> were identified within the Lakeshore East Joint Corridor Study Area, including ten (10) educational institutions, six (6) day-care facilities and one (1) retirement home. A total of 25 sensitive receptors<sup>4</sup> were identified, which are all current or proposed residences located closest to the proposed Lakeshore East Joint Corridor Early Works Project Footprint. Among these, one sensitive receptor, 77-79 East Don Roadway (SR1) is under development in the planning/construction stage. The surrounding area also includes several community and recreational centres such as Jimmie Simpson Recreational Centre and Ralph Thornton Community Centre which are not considered sensitive or critical receptors. However, impacts are assessed at other receptors in close proximity which can be considered as indicative of the potential impacts at Jimmie Simpson Recreational Centre (represented by SR10) and Ralph Thornton Community Centre (represented by SR9). A list of sensitive and critical receptors within the Lakeshore East Joint Corridor Study Area is provided in **Table 3-3** and shown in **Figure 3-2**.

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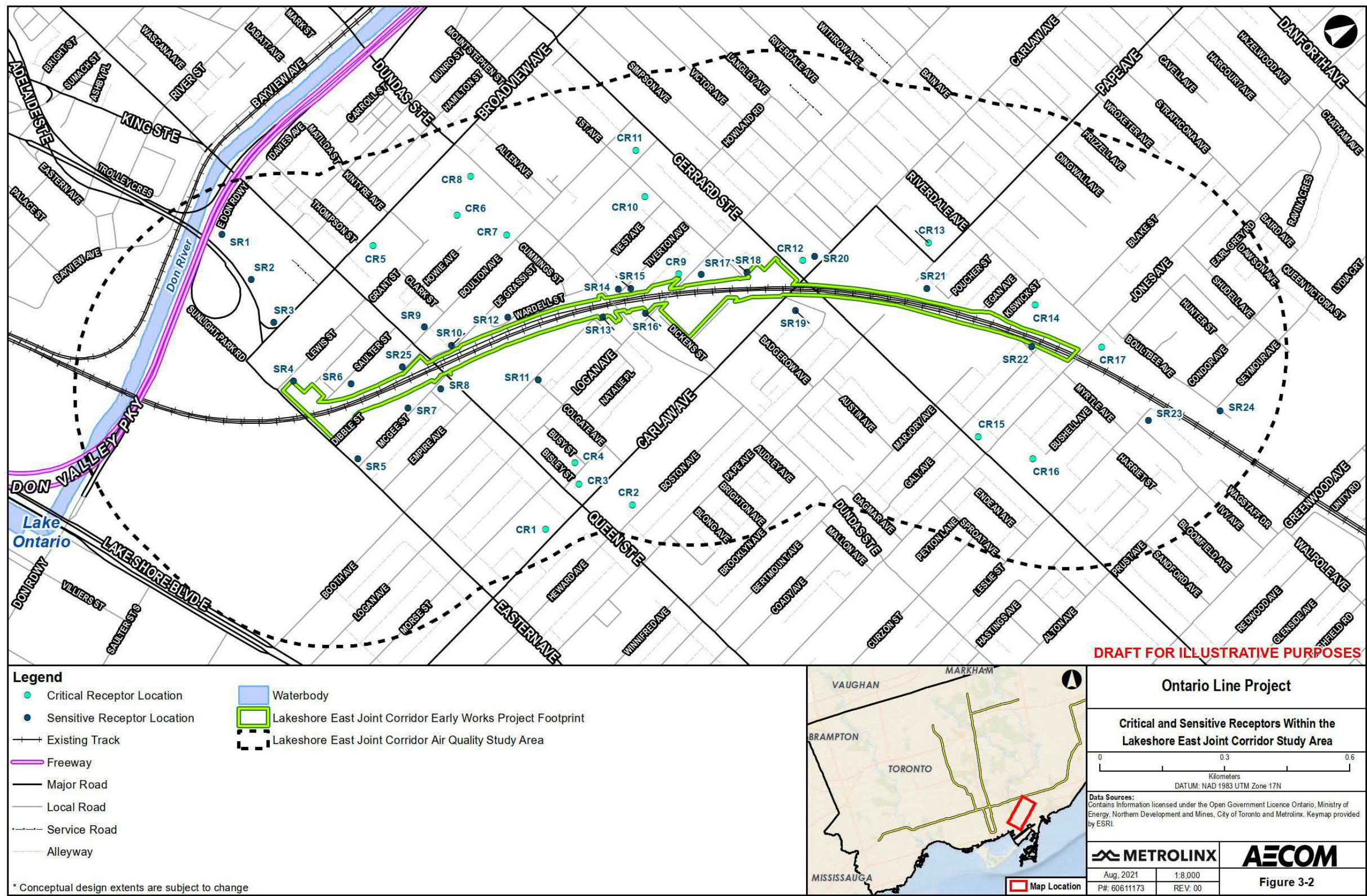
4. The Ministry of Transportation's Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects defines a sensitive receptor as a "residential dwelling" and a critical receptor as a "retirement home, hospital, childcare centre, school, or similar institutional building".

Table 3-3: Sensitive and Critical Receptors Within the Lakeshore East Joint Corridor Study Area

Receptor Identification	Receptor Type	Address	Description	UTM Easting (m)	UTM Northing (m)
CR1	Critical	180 Carlaw Avenue	Morse Street Junior Public School	633847.55	4835461.64
CR2	Critical	24 Boston Avenue	Liberty Prep School	633893.92	4835674.03
CR3	Critical	970 Queen St East	BrightPath Leslieville	633789.82	4835583.22
CR4	Critical	14 Verral Avenue	Mighty Kids Daycare	633739.99	4835598.45
CR5	Critical	131 Broadview Avenue	Boulton Avenue Childcare	633051.48	4835414.95
CR6	Critical	181 Broadview Avenue	Queen Alexandra Middle School	633081.59	4835628.44
CR7	Critical	935 Dundas Street East	Dundas Junior Public School	633178.86	4835711.52
CR8	Critical	885 Dundas Street East	SEED Alternative School	633013.75	4835701.25
CR9	Critical	444 Logan Avenue	Ray McCleary Towers Retirement Home	633455.94	4836031.70
CR10	Critical	135 First Avenue	Matthew John Daycare	633253.60	4836047.95
CR11	Critical	701 Gerrard Street East	Eastdale Collegiate Institute	633145.40	4836081.57
CR12	Critical	842 Gerrard St East	Mighty Kids Daycare	633567.19	4836310.42
CR13	Critical	220 Langley Avenue	Pape Avenue Junior Public School	633671.63	4836597.39
CR14	Critical	21 Boulton Avenue	Blake Street Junior Public School	633923.20	4836753.53
CR15	Critical	1055 Gerrard St. East	All About Kids Daycare	634138.77	4836483.97
CR16	Critical	1094 Gerrard St East	Riverdale Collegiate Institute	634247.50	4836575.92
CR17	Critical	343 Jones Avenue	École élémentaire catholique du Bon-Berger	634127.34	4836772.51
SR1	Sensitive	77-79 East Don Roadway	Apartment / condo building under development, window / balcony second floor	632856.98	4835107.7
SR2	Sensitive	130 Eastern Avenue	Apartment / condo building, window / balcony second floor	632984.98	4835118.88
SR3	Sensitive	68 Broadview Avenue	Apartment / condo building, window / balcony second floor	633102.00	4835118.57
SR4	Sensitive	9 Lewis Street	Semi-detached housing, window first floor	633248.92	4835094.11
SR5	Sensitive	2 McGee Street	Semi-detached housing, window first floor	633486.45	4835143.07
SR6	Sensitive	33 Saulter Street	Semi-detached housing, window first floor	633318.86	4835213.05
SR7	Sensitive	66 McGee Street	Semi-detached housing, window first floor	633435.48	4835306.25
SR8	Sensitive	89 McGee Street	Semi-detached housing, window first floor	633431.47	4835397.8
SR9	Sensitive	8 Boulton Avenue	Semi-detached housing, window first floor	633280.88	4835432.64
SR10	Sensitive	12 Degrassi Street	Semi-detached housing, window first floor	633350.98	4835469.16
SR11	Sensitive	229 Booth Avenue	Semi-detached housing, window first floor	633522.07	4835615.12
SR12	Sensitive	16 Wardell Street	Semi-detached housing, window first floor	633355.21	4835620.55
SR13	Sensitive	2 Paisley Avenue	Semi-detached housing, window first floor	633461.67	4835821.99
SR14	Sensitive	1056 Dundas Street East	Semi-detached housing, window first floor	633420.17	4835887.06
SR15	Sensitive	15 Tiverton Avenue	Semi-detached housing, window first floor	633432.29	4835914.12
SR16	Sensitive	400 Logan Avenue	Semi-detached housing, window first floor	633501.80	4835916.83
SR17	Sensitive	445 Logan Avenue	Semi-detached housing, window first floor	633483.17	4836079.46
SR18	Sensitive	238 First Avenue	Semi-detached housing, window first floor	633529.48	4836179.50
SR19	Sensitive	881 Gerrard Street East	Semi-detached housing, window first floor	633664.60	4836238.71
SR20	Sensitive	456 Carlaw Avenue	Semi-detached housing, window first floor	633571.67	4836340.73
SR21	Sensitive	369 Pape Avenue	Apartment / condo building, window / balcony second floor	633766.21	4836541.95
SR22	Sensitive	162 Galt Avenue	Semi-detached housing, window first floor	634008.64	4836699.24
SR23	Sensitive	2 Ivy Avenue	Detached housing, window first floor	634296.72	4836864.13
SR24	Sensitive	151 Boulton Avenue	Detached housing, window first floor	634255.98	4836848.64
SR25	Sensitive	791 Queen Street East	Apartment building, window / first floor	633341.86	4835341.44



Figure 3-2: Critical and Sensitive Receptors Within the Lakeshore East Joint Corridor Study Area





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## 4. Potential Impacts, Mitigation Measures and Monitoring Activities

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In accordance with Section 8(2)(6), 8(2)7 and 8(2)8 of Ontario Regulation 341/20: Ontario Line Project, this section describes the potential impacts, mitigation measures, and monitoring activities to verify the effectiveness of mitigation measures associated with the Lakeshore East Joint Corridor early works.

Potential impacts to air quality as a result of disturbances associated with the Lakeshore East Joint Corridor early works have been assessed and are presented in **Table 4-1**, in addition to mitigation measures and monitoring activities.

When considering the existing background air quality levels within the Lakeshore East Joint Corridor Study Area and local meteorological data, predicted areas of impact can be determined. The predominant wind direction, as taken from the Toronto City Centre meteorological station located on Toronto Island, is from the northeast towards the southwest. Impacts from early works construction activities would therefore be potentially directed towards the receptors along Eastern Avenue, Queen Street East, McGee Street, Empire Avenue, Booth Avenue, Logan Avenue, and Dundas Street East. Secondary predominant winds blow from the west, northwest and southwest. As a result, impacts from early works construction activities may also be potentially directed towards the receptors located along or near parts of Carlaw Avenue, Gerrard Street East, Langley Avenue, Logan Avenue, Paisley Avenue, Pape Avenue, Boulton Avenue, Jones Avenue, and Booth Avenue. Receptors outside the predominant wind direction may also be impacted, considering their close proximity to the project construction footprint.

There are no exceedances in the existing ambient level of particulates ( $PM_{10}$  and  $PM_{2.5}$ ) within the Lakeshore East Joint Corridor Study Area when comparing to the 90<sup>th</sup> percentile of National Air Pollution Surveillance monitoring station data. However, given that the annual averaging period ambient level of  $PM_{2.5}$  is 90% of its respective Canadian Ambient Air Quality Standards threshold, it would be prudent to minimize additional impact from all construction activities for the duration of Lakeshore East Joint Corridor early works construction. Construction activities which may contribute to local particulate and dust settling within the Lakeshore East Joint Corridor Study Area include demolition, crushing and earth works activities, concrete cutting, grading, stockpiling, etc.



The existing ambient levels of nitrogen dioxide are currently 12% and 21% of the Ambient Air Quality Criteria for the 1-hour and 24-hour averaging periods, while the annual average is currently at 83%. When comparing existing nitrogen dioxide concentrations to the Canadian Ambient Air Quality Standards, the current concentration is 44% of the threshold limit.

Benzene and benzo(a)pyrene both currently exceed their recommended limits, while most other contaminants are well below recommended standards. The contributions of benzene and benzo(a)pyrene from the Lakeshore East Joint Corridor early works are expected to be relatively minimal, being restricted to release from diesel construction equipment operation only. When compared to local traffic and diesel rail contributions, the relative impacts are negligible. However, considering the current existing exceedances of the two contaminants, any additional contributions from the diesel construction equipment exhaust may contribute to an increased impact on local air quality.

**Table 4-1** provides mitigation measures and monitoring activities to be implemented for potential impacts to air quality that may result from the Lakeshore East Joint Corridor early works.

Table 4-1: Potential Air Quality Impacts, Mitigation Measures and Monitoring Activities for the Lakeshore East Joint Corridor Early Works

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Construction Air Quality	<ul style="list-style-type: none"><li>■ Potential air quality impacts could include effects from diesel combustion and particulate emissions. Odour and visible dust may also cause public annoyance.</li><li>■ Exhaust emissions from construction vehicles may contribute to increased levels of nitrogen oxides, and volatiles such as benzene and benzo(a)pyrene, which given their existing background concentrations can contribute to existing levels of provincial criteria exceedance.</li><li>■ Certain construction activities are likely to emit particulates in higher quantities, which include site preparation and earth works activities, demolition activities, unpaved surfaces with heavy equipment travel, and uncovered soil storage piles.</li><li>■ Disruption of contaminated soils may release contaminants.</li></ul>	<ul style="list-style-type: none"><li>■ On-site construction vehicle activity shall be managed to control emissions of odourous contaminants and diesel exhaust, including benzene and benzo(a)pyrene emissions from exhaust. A plan to manage air quality will be developed to ensure consistent attention to mitigation of dust and particulates, including silica, from the construction site. The following mitigation measures should be considered in the plan to manage air quality:<ul style="list-style-type: none"><li>– All equipment complies with Canadian engine emissions standards.</li><li>– All equipment visually inspected prior to use and properly maintained.</li><li>– Implement a no idling policy on site (unless necessary for equipment operation).</li><li>– Use of electricity from the grid over diesel generators wherever possible.</li><li>– Retrofitting of combustion engines with specific exhaust emission control measures such as particulate traps.</li><li>– If applicable, follow guidelines on hot mix asphalt outlined in the Ontario Hot Mix Producers Association's Environmental Practices Guide: Ontario Hot Mix Asphalt Plants, Fifth Edition (Ontario Hot Mix Producers Association, 2015).</li></ul></li><li>■ Applicable mitigation measures from Environment Canada's Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005), the Ministry of the Environment, Conservation and Parks' Technical Bulletin Management Approaches for Industrial Fugitive Dust Sources, shall be followed. The following mitigation measures should be considered in the plan to manage air quality:<ul style="list-style-type: none"><li>– Complete earthwork grading within 10 days of ceased active construction.</li><li>– Temporary seeding or mulching of bare soil and storage piles.</li><li>– Compression or clodding of soil surfaces and storage piles to reduce erosion.</li><li>– Confine storage pile activity to downwind side of piles.</li><li>– Reduction of activities during high wind conditions.</li><li>– Full or partial enclosure of demolition activities.</li><li>– Wind screens or barriers where possible or necessary.</li><li>– Off-site construction of certain structures or parts of structures to minimize air emission due to interference with the normal flow of traffic.</li><li>– Scheduling certain construction activities (i.e., site preparation and earth works activities, demolition activities, unpaved surfaces with heavy equipment travel, and uncovered soil storage piles) to periods of time when exposure to dust is expected to be limited (e.g., avoid scheduling activities during dry, windy weather conditions).</li><li>– Landscaping materials ordered close to time of use to reduce on-site storage.</li><li>– Application of non-chloride soil stabilizers or dust control polymers where feasible.</li><li>– Daily removal of accumulated mud, dirt and debris deposits on-site, and regular truck washing</li><li>– Paved and unpaved roadway cleaning, watering or application of a non-chloride dust suppressant.</li><li>– Minimize drop height of materials on-site.</li><li>– Covering surface area of hauled bulk material.</li><li>– Methods and equipment for cleanup of accidental spill of dusty materials.</li><li>– Limit travel speeds on-site to a maximum of 16 to 24 kilometres per hour.</li></ul></li><li>■ If disruption of contaminated soils is anticipated at any time, the Soil and Groundwater section of the Early Works Report includes remedial action plans, risk assessment and risk mitigation plans for encountering contamination and minimizing the release of contaminants.</li><li>■ Develop a communications protocol which includes timely resolution of complaints.</li></ul>	<ul style="list-style-type: none"><li>■ The following monitoring activities should be considered in the development of the plan to manage air quality:<ul style="list-style-type: none"><li>– Baseline conditions should be established prior to construction for longer than one week to capture representative concentrations under varying meteorological conditions.</li><li>– On-site monitoring that includes real-time particulate monitoring representative of receptor impacts.</li><li>– Place monitors both upwind and downwind of construction activities, where possible.</li><li>– Application of threshold "Action Level" triggers for implementation of specific and increasing intensity mitigation activities linked to specific construction activities.</li><li>– Reporting detailing results of ongoing monitoring and mitigation activities.</li><li>– Monitoring at locations where there are persistent complaints, as required.</li></ul></li><li>■ In addition, relevant construction monitoring activities from the following recommended guidelines will be implemented during construction:<ul style="list-style-type: none"><li>– Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005); and</li><li>– Operations Manual for Air Quality Monitoring in Ontario (Ministry of the Environment, Conservation and Parks, 2018).</li></ul></li></ul>

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## **5. Permits and Approvals**

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No air quality related permits or approvals are anticipated for the Lakeshore East Joint Corridor early works at this time. Permits and approvals for construction activities are not required specifically for air quality prior to early works construction, with the exception of Environmental Compliance Approval(s) for equipment held by contractors, owners and operators of that equipment, which will be obtained in advance of construction, as necessary.

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## 6. References

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# Appendix A

## Background Air Quality Data

Metrolinx – Ontario Line Early Works  
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Contaminant	NAPS Station ID	Units	1-hour 90th percentile							8-hour 90th percentile						
			2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017
Acrolein	60439	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetaldehyde	60439	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde	60439	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	60427	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60435		-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Butadiene	60427	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60435		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	60427	ng/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60435		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60439		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60430		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen Dioxide	60410	ppb	30.00	27.00	26.00	27.00	28.00	25.00	23.00	26.95	24.75	23.45	24.63	25.71	23.04	21.00
	60421		30.00	27.40	25.00	26.00	26.00	25.00	ND	27.75	25.08	22.88	24.10	24.20	23.75	ND
	60428		25.00	25.00	20.00	24.00	23.00	23.00	ND	23.21	22.93	18.78	22.55	20.45	21.08	ND
	60430		34.00	31.00	30.00	31.00	31.00	31.00	28.00	31.01	27.88	27.25	28.88	28.56	27.50	25.74
	60433		27.00	25.00	24.00	25.00	25.00	25.00	24.00	25.26	22.88	22.58	23.25	22.63	22.25	22.45
	60434		21.00	20.00	19.00	19.00	19.00	19.00	17.00	19.25	18.25	17.50	17.25	17.51	16.95	15.50
	60435		33.00	32.00	32.00	32.00	33.00	30.00	30.00	30.75	29.81	29.39	28.92	29.63	27.00	27.38
	60450		ND	ND	ND	ND	ND	6.00	20.00	ND	ND	ND	ND	ND	4.45	17.94
	60438		ND	ND	ND	ND	ND	ND	31.00	ND	ND	ND	ND	ND	ND	28.75
	60440		ND	ND	ND	ND	ND	ND	22.00	ND	ND	ND	ND	ND	ND	20.35
	60429		ND	20.10	ND	ND	ND	ND	ND	ND	17.30	ND	ND	ND	ND	ND
Carbon monoxide	60430	ppm	0.30	0.40	0.36	0.37	0.36	0.36	0.35	0.31	0.36	0.35	0.36	0.35	0.34	0.34
	60438		ND	ND	ND	ND	ND	ND	0.54	ND	ND	ND	ND	ND	ND	0.49
	60440		ND	ND	ND	ND	ND	ND	0.33	ND	ND	ND	ND	ND	ND	0.31
Sulphur dioxide	60430	ppb	3.00	2.00	1.00	1.00	2.00	1.00	1.00	2.75	1.75	1.38	1.50	1.87	1.25	1.00
	60434		2.00	2.00	2.00	3.00	3.00	2.00	ND	2.50	1.63	1.63	2.50	2.50	1.79	ND
	60450		ND	ND	ND	ND	ND	32.00	ND	ND	ND	ND	ND	ND	31.41	ND
	60438		ND	ND	ND	ND	ND	ND	1.00	ND	ND	ND	ND	ND	ND	0.75
	60440		ND	ND	ND	ND	ND	ND	0.00	ND	ND	ND	ND	ND	ND	0.38
Fine particulate (PM <sub>2.5</sub> )	60410	µg/m3	14.00	14.00	16.00	17.00	17.00	13.00	14.00	13.20	13.19	15.50	16.64	17.00	12.88	13.25
	60421		17.00	16.00	16.00	17.00	18.00	14.00	ND	16.60	14.88	15.50	16.63	18.00	14.25	ND
	60428		13.00	13.00	17.00	18.00	18.00	14.00	ND	12.25	12.14	16.09	16.88	17.24	13.13	ND
	60430		15.00	15.00	18.00	17.00	17.00	13.00	14.00	13.75	13.63	16.63	16.25	17.00	12.84	13.59
	60433		14.00	14.00	16.00	17.00	17.00	13.00	14.00	12.75	13.38	15.66	16.00	16.08	12.99	13.88
	60434		13.00	13.00	16.00	16.00	17.00	14.00	14.00	12.63	12.38	15.00	15.63	16.63	13.75	13.24
	60435		15.00	15.00	18.00	19.00	19.00	15.00	16.00	13.75	13.86	17.38	17.95	18.36	14.25	15.00
	60438		ND	ND	ND	ND	ND	ND	17.00	ND	ND	ND	ND	ND	ND	15.80
	60440		ND	ND	ND	ND	ND	ND	15.00	ND	ND	ND	ND	ND	ND	13.63
	60450		ND	ND	ND	ND	ND	ND	13.00	ND	ND	ND	ND	ND	ND	12.94
	60429		ND	12.70	ND	ND	ND	ND	ND	ND	9.20	ND	ND	ND	ND	ND

Note: "ND" represents stations and years where there was not enough data to calculate a completed data set



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Contaminant	NAPS Station ID	Units	24-hour 90th percentile							Annual Average						
			2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017
Acrolein	60439	µg/m3	ND	ND	ND	0.07	0.07	0.07	0.04	ND	ND	ND	0.04	0.05	0.03	0.02
Acetaldehyde	60439	µg/m3	ND	ND	ND	1.53	1.99	1.65	0.84	ND	ND	ND	0.88	1.15	0.91	0.68
Formaldehyde	60439	µg/m3	ND	ND	ND	2.80	3.80	2.60	1.14	ND	ND	ND	1.68	2.25	1.42	0.91
Benzene	60427	µg/m3	0.90	0.98	0.92	0.80	ND	ND	ND	0.59	0.62	0.61	0.59	ND	ND	ND
	60435		0.71	0.87	0.86	0.77	0.66	0.76	0.72	0.57	0.51	0.51	0.48	0.52	0.45	0.47
1,3-Butadiene	60427	µg/m3	0.10	0.11	0.09	0.07	ND	ND	ND	0.06	0.06	0.05	0.04	ND	ND	ND
	60435		0.07	0.08	0.07	0.06	0.07	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03
Benzo(a)pyrene	60427	ng/m3	0.15	0.13	0.10	0.07	ND	ND	ND	0.09	0.08	0.06	0.04	ND	ND	ND
	60435		0.21	ND	ND	ND	ND	ND	ND	0.09	ND	ND	ND	ND	ND	ND
	60439		ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	0.07	ND	ND
	60430		ND	ND	ND	ND	ND	0.09	ND	ND	ND	ND	ND	ND	0.05	ND
Nitrogen Dioxide	60410	ppb	23.36	21.90	21.09	22.98	22.86	20.09	18.85	15.21	14.04	13.61	14.24	13.89	12.12	11.46
	60421		25.81	23.75	21.41	21.33	22.39	21.98	ND	15.40	13.44	12.90	13.43	12.94	11.97	ND
	60428		20.53	20.37	17.21	20.28	20.53	20.04	ND	11.26	10.38	9.03	10.60	9.91	9.70	ND
	60430		27.97	25.13	23.43	25.94	25.69	23.88	23.14	19.10	16.29	16.13	17.07	16.57	15.74	14.96
	60433		23.31	20.63	20.00	20.83	21.13	20.75	20.19	14.92	13.36	13.45	14.00	13.35	13.35	12.99
	60434		17.14	15.95	15.87	15.44	16.17	14.65	13.88	10.56	9.63	9.49	9.22	9.15	8.62	7.98
	60435		26.83	25.54	25.42	25.06	26.44	24.56	23.43	18.40	16.52	16.96	16.81	16.72	14.69	15.47
	60450		ND	ND	ND	ND	ND	4.36	16.64	ND	ND	ND	ND	ND	4.36	8.19
	60438		ND	ND	ND	ND	ND	ND	26.86	ND	ND	ND	ND	ND	ND	17.91
	60440		ND	ND	ND	ND	ND	ND	18.28	ND	ND	ND	ND	ND	ND	10.49
	60429		ND	14.67	ND	ND	ND	ND	ND	ND	14.67	ND	ND	ND	ND	ND
Carbon monoxide	60430	ppm	0.30	0.34	0.33	0.33	0.33	0.32	0.34	0.20	0.26	0.25	0.26	0.25	0.25	0.25
	60438		ND	ND	ND	ND	ND	ND	0.45	ND	ND	ND	ND	ND	ND	0.33
	60440		ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND	ND	ND	ND	0.22
Sulphur dioxide	60430	ppb	2.53	1.65	1.25	1.46	1.86	1.21	1.00	1.54	0.58	0.48	0.74	1.02	0.64	0.46
	60434		2.25	1.44	1.71	2.28	2.39	1.78	ND	1.29	0.58	0.70	1.28	1.06	1.04	ND
	60450		ND	ND	ND	ND	ND	29.82	ND	ND	ND	ND	ND	ND	29.82	ND
	60438		ND	ND	ND	ND	ND	ND	0.63	ND	ND	ND	ND	ND	ND	0.22
	60440		ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	0.13
Fine particulate (PM <sub>2.5</sub> )	60410	µg/m3	12.01	12.23	15.75	15.56	15.43	12.25	12.38	6.16	6.25	8.16	8.92	8.45	7.03	7.41
	60421		15.54	14.46	14.90	15.40	16.95	12.92	ND	7.72	7.26	8.29	9.22	9.36	7.35	ND
	60428		12.11	11.83	15.08	15.76	16.17	11.86	ND	5.97	5.69	8.50	8.91	8.42	6.83	ND
	60430		12.60	13.13	15.71	14.57	16.18	12.02	12.03	6.92	7.05	8.76	9.06	8.52	6.99	7.41
	60433		11.99	13.02	15.56	14.83	15.20	11.67	12.88	6.24	6.41	8.25	8.67	8.38	6.98	7.38
	60434		11.64	11.86	15.00	14.58	16.02	12.79	12.58	6.03	5.98	7.87	8.65	8.51	7.22	6.85
	60435		12.65	13.23	16.99	16.07	17.56	13.27	13.97	6.73	6.65	9.36	9.81	9.44	8.06	8.17
	60438		ND	ND	ND	ND	ND	ND	14.53	ND	ND	ND	ND	ND	ND	9.22
	60440		ND	ND	ND	ND	ND	ND	12.54	ND	ND	ND	ND	ND	ND	7.36
	60450		ND	ND	ND	ND	ND	ND	11.62	ND	ND	ND	ND	ND	ND	6.98
	60429		ND	7.92	ND	ND	ND	ND	ND	ND	7.92	ND	ND	ND	ND	ND

Note: "ND" represents stations and years where there was not enough data to calculate a completed data set

Metrolinx – Ontario Line Early Works

Air Quality Early Works Memorandum Report - Appendix A

Contaminant	Units	NAPS Station ID	CCME 98th percentile of 1-hour Daily Max							CCME 1-hour (3-year average)
			2011	2012	2013	2014	2015	2016	2017	
Acrolein	µg/m3	60439	-	-	-	-	-	-	-	-
Acetaldehyde	µg/m3	60439	-	-	-	-	-	-	-	-
Formaldehyde	µg/m3	60439	-	-	-	-	-	-	-	-
Benzene	µg/m3	60427	-	-	-	-	-	-	-	-
		60435	-	-	-	-	-	-	-	-
1,3-Butadiene	µg/m3	60427	-	-	-	-	-	-	-	-
		60435	-	-	-	-	-	-	-	-
Benzo(a)pyrene	ng/m3	60427	-	-	-	-	-	-	-	-
		60435	-	-	-	-	-	-	-	-
		60439	-	-	-	-	-	-	-	-
		60430	-	-	-	-	-	-	-	-
Nitrogen Dioxide	ppb	60410	50.72	45.76	47.72	57.00	54.72	52.74	44.72	54.82
		60421	51.00	49.00	48.72	53.72	49.72	47.70	ND	51.48
		60428	51.72	47.76	44.48	53.00	49.72	47.00	ND	51.48
		60430	56.00	51.70	56.72	59.76	55.76	52.70	50.00	57.49
		60433	48.74	44.74	47.16	50.78	48.00	47.00	43.00	49.17
		60434	46.00	38.56	42.48	48.72	47.74	42.00	36.00	47.49
		60435	59.74	61.00	62.72	66.74	64.76	56.00	50.00	64.74
		60450	ND	ND	ND	ND	ND	6.00	41.78	Not Enough Data
		60438	ND	ND	ND	ND	ND	ND	50.56	Not Enough Data
		60440	ND	ND	ND	ND	ND	ND	44.44	Not Enough Data
Carbon monoxide	ppm	60429	ND	28.00	ND	ND	ND	ND	ND	Not Enough Data
		60430	0.90	1.07	0.91	1.01	0.92	0.99	0.93	1.02
		60438	ND	ND	ND	ND	ND	ND	1.13	Not Enough Data
Sulphur dioxide	ppb	60440	ND	ND	ND	ND	ND	ND	0.68	Not Enough Data
		60430	12.00	10.36	10.72	9.00	12.00	8.00	7.00	11.57
		60434	17.82	13.00	21.00	15.00	14.53	17.48	ND	18.77
		60450	ND	ND	ND	ND	ND	32.00	ND	Not Enough Data
		60438	ND	ND	ND	ND	ND	ND	7.00	Not Enough Data
Fine particulate (PM <sub>2.5</sub> )	µg/m3	60440	ND	ND	ND	ND	ND	ND	6.00	Not Enough Data
		60410	30.72	31.70	42.48	42.00	42.44	29.74	29.72	42.31
		60421	37.00	32.00	40.00	42.96	39.72	31.00	ND	40.89
		60428	30.00	31.20	46.00	48.72	47.00	33.72	ND	47.24
		60430	35.74	35.00	44.86	43.72	39.76	29.70	36.72	42.78
		60433	32.72	31.70	42.76	37.72	38.72	28.70	32.00	39.73
		60434	30.00	28.78	40.60	41.44	38.74	32.00	32.72	40.26
		60435	38.00	34.76	46.34	49.48	47.60	35.00	35.84	47.81
		60438	ND	ND	ND	ND	ND	ND	44.56	Not Enough Data
		60440	ND	ND	ND	ND	ND	ND	35.72	Not Enough Data
		60450	ND	ND	ND	ND	ND	ND	33.34	Not Enough Data
		60429	ND	13.00	ND	ND	ND	ND	ND	Not Enough Data

Note: "ND" represents stations and years where there was not enough data to calculate a completed data set

# Appendix B

## Qualitative Assessment Summary Tables



**Air Quality Qualitative Assessment**  
Ontario Line – Early Works

**Table B-1: Road Traffic AADT Summary for Ontario Line South**

<b>Traffic Segment ID</b>	<b>Traffic Segment Description</b>	<b>Speed Limit [km/hr]</b>	<b>Vehicle Type</b>	<b>AADT</b>
<b>OLS1</b>	Pape Ave between Danforth Ave. and Harcourt Ave.	40	CAR	10003
			TRK	72
<b>OLS2</b>	Pape Ave between Harcourt Ave. and Strathcona Ave.	40	CAR	10003
			TRK	72
<b>OLS3</b>	Pape Ave between Strathcona Ave. and Riverdale Ave.	40	CAR	10092
			TRK	80
<b>OLS4</b>	Pape Ave between Riverdale Ave. and Riverdale Shopping Centre	40	CAR	10092
			TRK	80
<b>OLS5</b>	Pape Ave between Gerrard Shopping Centre Entrance- Gerrard St. E	40	CAR	3361
			TRK	0
<b>OLS6</b>	Jones Ave between Harcourt Ave and Boulton Ave.	40	CAR	8381
			TRK	760
<b>OLS7</b>	Gerrard St. E between Logan Ave and Marjorey Ave.	40	CAR	17587
			TRK	9049
<b>OLS8</b>	Carlaw Ave between Riverdale Ave and Gerrard St E.	40	CAR	14116
			TRK	144
<b>OLS9</b>	Carlaw Ave between Gerrard St. E and Dundas St E.	40	CAR	11474
			TRK	104
<b>OLS10</b>	Dundas St. E between De Grassi St and Logan Ave.	40	CAR	16948
			TRK	144
<b>OLS11</b>	Dundas St. E. between Logan Ave. and Carlaw Ave.	40	CAR	16948
			TRK	144
<b>OLS12</b>	Queen St. E. between Broadview Ave. and Booth Ave.	40	CAR	12025
			TRK	1536
<b>OLS13</b>	Broadview Ave. between Queen St. E and Eastern Ave.	50	CAR	7432
			TRK	120
<b>OLS14</b>	Eastern Ave. between Bayview Ave. and Broadview Ave	50	CAR	10768
			TRK	168
<b>OLS15</b>	Eastern Ave. between Broadview Ave. and Booth Ave.	50	CAR	12025

**Air Quality Qualitative Assessment**  
Ontario Line – Early Works

<b>Traffic Segment ID</b>	<b>Traffic Segment Description</b>	<b>Speed Limit [km/hr]</b>	<b>Vehicle Type</b>	<b>AADT</b>
			TRK	1536
<b>OLS16</b>	Lakeshore Blvd. between Sherbourne St. and Parliament St.	50	CAR	20157
			TRK	884
<b>OLS17</b>	Lakeshore Blvd. between Parliament St. and Cherry St.	50	CAR	20157
			TRK	884
<b>OLS18</b>	Lakeshore Blvd. between Cherry St. and Booth Ave.	50	CAR	20157
			TRK	884
<b>OLS19</b>	Booth Ave. between Lakeshore Blvd and Paisley Ave	50	CAR	12807
			TRK	128
<b>OLS20</b>	Gardiner Expy between Eastern Ave. and Jarvis St.	90	CAR	43139
			TRK	2725
<b>OLS21</b>	Bayview Ave./Mill St. between Eastern Ave and Lawren Harris Square	50	CAR	6356
			TRK	636
<b>OLS22</b>	Bayview Ave./Mill St. between Lawren Harris Square and Front St. E.	50	CAR	6356
			TRK	636
<b>OLS23</b>	Bayview Ave./Mill St. between Front St. E. and Bayview Ave./Mill St.	50	CAR	6356
			TRK	636
<b>OLS24</b>	Bayview Ave./Mill St. between Bayview Ave./Mill St. and Cherry	50	CAR	2496
			TRK	160
<b>OLS25</b>	Bayview Ave./Mill St. between Cherry and Parliament	30	CAR	2452
			TRK	160
<b>OLS26</b>	Front St. E. between Cherry St and Rolling Mills Rd	40	CAR	5680
			TRK	544
<b>OLS27</b>	Front St. E. between Rolling Mills Rd and Bayview Ave.	40	CAR	5680
			TRK	544
<b>OLS28</b>	Parliament St. between Shutter St and Queen St E.	50	CAR	9880
			TRK	380
<b>OLS29</b>		50	CAR	9596

**Air Quality Qualitative Assessment**  
Ontario Line – Early Works

<b>Traffic Segment ID</b>	<b>Traffic Segment Description</b>	<b>Speed Limit [km/hr]</b>	<b>Vehicle Type</b>	<b>AADT</b>
	Parliament St. between Queen St. E. and Richmond St. E.		TRK	604
<b>OLS30</b>	Parliament St. between Richmond St. E. and Adelaide St. E.	50	CAR	9596
			TRK	604
<b>OLS31</b>	Parliament St. between Adelaide St. E. and King St. E.	50	CAR	9172
			TRK	1000
<b>OLS32</b>	Parliament St. between King St. E. and Front St. E.	50	CAR	9172
			TRK	1000
<b>OLS33</b>	Parliament St. between Front St. E. and Lakeshore Blvd.	50	CAR	12884
			TRK	1180
<b>OLS34</b>	Sherbourne St. between Shutter St and Queen St. E.	40	CAR	8828
			TRK	140
<b>OLS35</b>	Sherbourne St. between Queen St. E. and Richmond St.	40	CAR	8080
			TRK	332
<b>OLS36</b>	Sherbourne St. between Richmond St and Adelaide St. E.	40	CAR	8080
			TRK	332
<b>OLS37</b>	Sherbourne St. between Adelaide St E. and King St. E.	40	CAR	8504
			TRK	624
<b>OLS38</b>	Sherbourne St. between King St E. and Front St. E.	40	CAR	8504
			TRK	624
<b>OLS39</b>	Sherbourne St. between Front St E. and The Esplanade	40	CAR	7112
			TRK	572
<b>OLS40</b>	Sherbourne St. between The Esplanade and Lakeshore Blvd.	40	CAR	6210
			TRK	340
<b>OLS41</b>	Jarvis St. between Shutter St and Queen St E.	40	CAR	7159
			TRK	144
<b>OLS42</b>	Jarvis St. between Queen St. E. and Richmond St. E.	40	CAR	14714
			TRK	388
<b>OLS43</b>	Jarvis St. between Richmond St. E. and Adelaide St. E.	40	CAR	17299
			TRK	636
<b>OLS44</b>	Jarvis St. between Adelaide St. E. and King St. E.	40	CAR	18033
			TRK	1164
<b>OLS45</b>	Jarvis St. between King St E. and Front St. E	40	CAR	17364
			TRK	1524
<b>OLS46</b>	Jarvis St. between Front St and The Esplanade	40	CAR	16708
			TRK	1392



**Air Quality Qualitative Assessment**  
Ontario Line – Early Works

<b>Traffic Segment ID</b>	<b>Traffic Segment Description</b>	<b>Speed Limit [km/hr]</b>	<b>Vehicle Type</b>	<b>AADT</b>
<b>OLS47</b>	Pape Ave between Harcourt Ave. and Strathcona Ave.	40	CAR	16992
			TRK	1360
<b>OLS48</b>	Front St. E. between Jarvis St and George St.	40	CAR	14512
			TRK	516
<b>OLS49</b>	Front St. E. between George St. and Sherbourne St.	40	CAR	9687
			TRK	140
<b>OLS50</b>	Front St. E. between Sherbourne St. and Princess St.	40	CAR	9687
			TRK	140
<b>OLS51</b>	Front St. E. between Princess St. and Berkely St.	40	CAR	16634
			TRK	588
<b>OLS52</b>	Front St. E. between Berkeley St. and Parliament St.	40	CAR	16634
			TRK	588
<b>OLS53</b>	Adelaide St. E. between Jarvis St. and George St.	40	CAR	16364
			TRK	736
<b>OLS54</b>	Adelaide St. E. between George St. and Sherbourne St.	40	CAR	16292
			TRK	952
<b>OLS55</b>	Adelaide St. E. between Sherbourne St. and Berkeley St.	40	CAR	16572
			TRK	1004
<b>OLS56</b>	Adelaide St. E. between Berkeley Street and Parliament St.	40	CAR	17352
			TRK	928
<b>OLS57</b>	Richmond St. E. between Jarvis St. and George St.	40	CAR	16289
			TRK	184
<b>OLS58</b>	Richmond St. E. between George St. and Sherbourne St.	40	CAR	16292
			TRK	952
<b>OLS59</b>	Richmond St. E. between Sherbourne St. and Berkeley St.	40	CAR	16572
			TRK	1004
<b>OLS60</b>	Richmond St. E. between Berkeley St. and Parliament St.	40	CAR	17352
			TRK	928
<b>OLS61</b>	Queen St. W. between St. Patricks St and University Ave.	40	CAR	15423
			TRK	608
<b>OLS62</b>	Queen St. W. between University Ave. and York St.	40	CAR	16289
			TRK	184
<b>OLS63</b>	Queen St. W. between York St. and Bay St.	40	CAR	17024
			TRK	624
<b>OLS64</b>	Queen St. W. between Bay St. and Yonge St.	40	CAR	17024
			TRK	624

**Air Quality Qualitative Assessment**  
Ontario Line – Early Works

<b>Traffic Segment ID</b>	<b>Traffic Segment Description</b>	<b>Speed Limit [km/hr]</b>	<b>Vehicle Type</b>	<b>AADT</b>
<b>OLS65</b>	Queen St. E. between Yonge St. and Victoria St.	40	CAR	15422
			TRK	372
<b>OLS66</b>	Queen St. E. between Victoria St. and Church St.	40	CAR	15281
			TRK	208
<b>OLS67</b>	Queen St. E. between Church St. and Jarvis St.	40	CAR	15281
			TRK	208
<b>OLS68</b>	Queen St. E. between Jarvis St. and Sherbourne St.	40	CAR	13901
			TRK	188
<b>OLS69</b>	Queen St. E. between Sherbourne St. and Parliament St.	40	CAR	10568
			TRK	172
<b>OLS70</b>	Shutter St. between Jarvis St. and Sherbourne St.	40	CAR	9785
			TRK	128
<b>OLS71</b>	Shutter St. between Sherbourne St. and Parliament St.	40	CAR	7918
			TRK	100
<b>OLS72</b>	Richmond St. W. between University Ave. and York St.	40	CAR	7998
			TRK	132
<b>OLS73</b>	Richmond St. W. between York St. and Bay St.	40	CAR	10262
			TRK	240
<b>OLS74</b>	Richmond St. W. between Bay St. and Yonge St.	40	CAR	10262
			TRK	242
<b>OLS75</b>	Richmond St. W. between Yonge St. and Victoria St.	40	CAR	10262
			TRK	240
<b>OLS76</b>	Richmond St. W. between Victoria St. and Church St.	40	CAR	10189
			TRK	172
<b>OLS77</b>	Richmond St. W. between Church St. and Jarvis St.	40	CAR	10189
			TRK	172
<b>OLS78</b>	Yonge St. between Shutter St. and Queen St.	40	CAR	9296
			TRK	468
<b>OLS79</b>	Yonge St. between Queen St. E. and Richmond St.	40	CAR	12864
			TRK	712
<b>OLS80</b>	University Ave. between Armoury St and Queen St. W.	40	CAR	35168
			TRK	2352
<b>OLS81</b>	University Ave. between Queen St. W. and Richmond St. W.	40	CAR	32704
			TRK	1844

**Air Quality Qualitative Assessment**  
 Ontario Line – Early Works

**Table B-2: Transit Bus AADT Summary for Ontario Line South**

<b>Bus Route</b>	<b>Bus Route Description</b>	<b>Speed Limit [km/hr]</b>	<b>Vehicle Type</b>	<b>AADT</b>
<b>Route 72</b>	Along Pape Avenue, Riverdale Ave, Carlaw Ave past Gerrard, Carlaw Ave past Dundas.	40	Bus	72
<b>Route 65</b>	Parliament at Shutter to Parliament at Front to Front at Princess to Princess at The Esplanade to The Esplanade at Berkeley to Berkeley at Front	40	Bus	28
<b>Route 121AD</b>	Mill St. at Cherry to Mill St. at Parliament to Parliament at Front St. to Front St at Berkeley, to Berkeley at The Esplanade, to the Esplanade at Jarvis St. Route 121D: Mill at Cherry St. to Cherry St at Lakeshore Blvd.	30	Bus	56
<b>Route 75</b>	Sherbourne St at Shutter St to Sherbourne St at Queens Quay East, to Queens Quay E at Lower Jarvis St., to Lower Jarvis St at The Esplanade, to Lower Sherbourne at the Esplanade.	40	Bus	56
<b>Express Route 141</b>	Shuter St at Jarvis St to Adelaide at Jarvis St., if travelling SB then Adelaide at George to George at King to King at University. If travelling NB, at Jarvis at King, continue North up Jarvis.	40	Bus	24
<b>Route 72BC</b>	Lakeshore at Cherry to Lakeshore at Parliament, to Queens Quay E at Lower Jarvis St.	60	Bus	72
<b>Route 83</b>	Jones Ave at Harcourt to Jones Ave at Boulton Ave.	40	Bus	24
<b>Route 506</b>	Gerrard St at Logan to Gerrard St at Marjory Ave.	40	Bus	32
<b>Express Route 143</b>	Eastern Ave. at Booth Ave to Eastern Ave. at Bayview Ave.	50	Bus	28
<b>Route 97B</b>	Shuter St at Yonge St to Richmond St at Yonge St.	40	Bus	32
<b>Route 142</b>	University Ave. at Armoury St. to University Ave. at Richmond St.	40	Bus	24

Table D3-1: TTC Service Summary - Route 72 Pape

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	9	5'59"
PM Peak		9	6'41"
AHV		4.5	-
AADT		72	-

Table D3-3: TTC Service Summary - Route 506 Carlton

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	8	5'10"
PM Peak		0	5'40"
AHV		2	-
AADT		32	-

Table D3-5: TTC Service Summary - Route 142 Downtown/Avenue Rd Express

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	3	30'00"
PM Peak		3	30'00"
AHV		1.5	-
AADT		24	-

Table D3-7: TTC Service Summary - Route 121AD Fort-York Esplanade

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	7	13'00"
PM Peak		7	18'00"
AHV		3.5	-
AADT		56	-

Table D3-9: TTC Service Summary - Route 97B Yonge

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	4	30'00"
PM Peak		4	30'00"
AHV		2	-
AADT		32	-

Table D3-2: TTC Service Summary - Route 83 Jones

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	3	12'40"
PM Peak		3	12'40"
AHV		1.5	-
AADT		24	-

Table D3-4: TTC Service Summary - Route 501 Queen

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	--	--
PM Peak		--	--
AHV		-	-
AADT		-	-

Table D3-6: TTC Service Summary - Route 65 Parliament

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	3	13'00"
PM Peak		4	11'00"
AHV		1.75	-
AADT		28	-

Table D3-8: TTC Service Summary - Route 75 Sherbourne

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	8	5'15"
PM Peak		6	8'00"
AHV		3.5	-
AADT		56	-

Table D3-10: TTC Service Summary - Route 141 Downtown

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	4	
PM Peak		2	
AHV		1.5	-
AADT		24	-



Ontario Line  
Air Quality Assessment - Early Works  
Metrolinx, June 2021

**Table D3-11: TTC Service Summary - Route 504A Dundas West Stn - Disteillery Loop**

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	--	5'15"
PM Peak		--	6'00"
AHV		-	-
AADT		-	-

**Table D3-13: TTC Service Summary - Route 508**

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	--	--
PM Peak		--	--
AHV		-	-
AADT		-	-

**Table D3-15: TTC Service Summary - Express Route 143 Downtown/Beach Express**

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	4	15'00"
PM Peak		3	25'00"
AHV		1.75	-
AADT		28	-

**Table D3-12: TTC Service Summary - Route 504B Broadview**

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	--	5'15"
PM Peak		--	6'00"
AHV		-	-
AADT		-	-

**Table D3-14: TTC Service Summary - Route 72B Pape Stn -**

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	9	5'59"
PM Peak		9	6'41"
AHV		4.5	-
AADT		72	-

Ontario Line

Air Quality Assessment - Early Works

Metrolinx, June 2021

Table D3-16: TTC Service Summary - Route 8 Broadview

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	1	30'00"
PM Peak		1	30'00"
AHV		0.5	-
AADT		8	-

Table D3-17: TTC Service Summary - Route 25 Don M

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	20	
PM Peak		24	
AHV		11	-
AADT		176	-

Table D3-18: TTC Service Summary - Route 34 Eglington East

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	31	3'08"
PM Peak		32	3'12"
AHV		15.75	-
AADT		252	-

Table D3-19: TTC Service Summary - Route 56 Leas

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	7	9'30"
PM Peak		7	9'00"
AHV		3.5	-
AADT		56	-

Table D3-20: TTC Service Summary - Route 62 Mortimer

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	3	15'00"
PM Peak		4	13'30"
AHV		1.75	-
AADT		28	-

Table D3-21: TTC Service Summary - Route 72 Pape

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	9	5'59"
PM Peak		9	6'41"
AHV		4.5	-
AADT		72	-

Table D3-22: TTC Service Summary - Route 87 Cosburn

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	11	5'00"
PM Peak		10	5'30"
AHV		5.25	-
AADT		84	-

Table D3-23: TTC Service Summary - Route 88 South

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	10	5'30"
PM Peak		9	6'00"
AHV		4.75	-
AADT		76	-

Table D3-24: TTC Service Summary - Route 100 Flemington Park

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	20	3'30"
PM Peak		12	6'00"
AHV		8	-
AADT		128	-

Table D3-25: TTC Service Summary - Route 144 Dow

Time Period	Vehicle Type	2019	
		No. of Vehicles	Service Interval (min'sec")
AM Peak	BUS	9	9 trips total
PM Peak		5	20'00"
AHV		3.5	-
AADT		56	-

Table D3-8: TMC Traffic Dat: CHERRY ST AT MILL ST

		Aug-22-2019 (Thursday)																											
		NORTHBOUND						EASTBOUND						SOUTHBOUND						WESTBOUND						SUM NORTH	SUM EAST	SUM SOUTH	SUM WEST
Time Period	Vehicle Type	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	ID: OLS23	ID: OLS24	ID: --	ID: OLS25									
7:45	CAR	18	0	1	5	4	3	23	55	1	14	0	36	44	20	81	75												
	TRK	2	0	0	1	1	2	5	0	1	0	0	2	9	2	10	1												
	BUS	3	0	1	0	0	0	4	0	0	0	0	0	7	0	7	1												
8:00	CAR	18	0	3	20	1	3	27	2	1	15	0	37	48	36	83	40												
	TRK	3	0	3	4	2	1	5	0	1	0	0	5	9	5	15	7												
	BUS	2	0	2	0	0	0	4	0	0	0	0	0	6	0	6	2												
8:15	CAR	17	0	5	8	4	3	40	6	2	12	2	36	62	22	97	31												
	TRK	4	0	1	0	1	0	0	0	1	0	0	5	4	1	10	1												
	BUS	2	0	1	0	0	0	4	0	0	0	0	0	6	0	6	1												
8:30	CAR	8	0	8	19	9	10	37	5	3	16	1	57	56	38	111	24												
	TRK	4	0	2	0	1	2	5	0	1	0	0	1	11	1	11	2												
	BUS	2	0	1	0	0	0	3	0	0	0	0	1	5	0	6	1												
8:45	CAR	24	0	7	12	7	8	50	5	1	18	2	55	84	31	136	42												
	TRK	3	0	2	1	0	0	7	0	0	0	0	2	10	1	12	3												
	BUS	3	0	1	0	0	0	4	0	0	1	0	0	7	1	7	2												
9:00	CAR	24	0	7	20	8	5	43	7	1	18	1	65	73	39	140	52												
	TRK	5	0	2	0	1	1	5	0	1	1	0	9	11	2	20	3												
	BUS	4	0	2	0	0	0	6	0	0	0	0	0	10	0	10	2												
9:15	CAR	9	0	6	8	9	7	56	5	3	13	3	47	86	24	132	32												
	TRK	4	0	0	2	3	2	0	0	1	2	1	3	7	5	10	4												
	BUS	3	0	1	0	0	0	4	0	0	1	0	0	7	1	7	2												
9:30	CAR	29	0	9	12	5	9	46	4	3	12	2	42	86	27	122	37												
	TRK	6	0	1	1	0	1	9	0	0	9	1	9	17	10	24	11												
	BUS	3	0	0	0	0	0	3	0	0	0	0	0	6	0	6	0												
10:15	CAR	16	0	1	12	2	7	42	3	1	6	1	21	66	19	81	22												
	TRK	7	0	1	1	0	2	11	0	0	2	0	4	20	3	22	4												
	BUS	4	0	1	0	1	0	3	0	0	0	0	0	7	0	8	1												
10:30	CAR	18	0	6	17	8	4	38	2	2	3	0	22	60	22	86	28												
	TRK	3	1	1	3	0	3	5	0	0	0	1	2	12	4	10	4												
	BUS	1	0	0	0	0	0	4	0	0	0	0	0	5	0	5	0												
10:45	CAR	12	0	3	10	5	6	32	10	1	9	2	11	52	20	60	32												
	TRK	6	0	2	0	0	0	9	0	0	0	0	3	15	0	18	2												
	BUS	3	0	1	0	0	0	3	0	0	0	0	2	6	0	8	1												
11:00	CAR	10	0	4	12	6	9	39	9	2	7	0	21	58	21	76	32												
	TRK	3	0	3	1	0	0	4	0	0	0	1	4	8	3	12	3												
	BUS	1	0	0	0	0	0	4	0	0	0	0	0	5	1	5	1												
11:15	CAR	25	0	5	8	11	3	41	4	1	3	0	28	69	12	105	20												
	TRK	8	0	0	1	2	0	7	0	0	0	0	3	15	1	20	1												
	BUS	3	0	2	0	0	0	3	0	0	0	0	0	6	0	6	0												
11:30	CAR	18	0	4	12	10	12	61	4	3	10	3	36	94	25	125	30												
	TRK	5	0	0	0	2	2	11	1	1	1	0	8	18	2	26	2												
	BUS	1	0	1	0	0	0	2	0	0	0	0	0	3	0	3	1												
11:45	CAR	16	0	1	14	5	6	67	5	3	7	1	31	90	24	119	27												
	TRK	5	0	1	3	1	1	9	0	1	2	0	3	15	6	18	6												
	BUS	2	0	1	0	0	0	4	0	0	0	0	0	6	0	6	1												
12:00	CAR	10	1	11	11	10	11	75	6	1	10	1	35	97	23	130	38												
	TRK	4	0	1	1	3	1	5	2	0	1	1	11	11	2	23	5												
	BUS	2	0	1	0	0	0	1	0	0	0	0	0	3	0	3	1												
13:15	CAR	21	0	3	9	8	4	48	2	7	9	1	16	74	25	93	23												
	TRK	5	0	0	1	1	0	7	0	1	0	0	6	12	2	19	1												
	BUS	4	0	1	0	0	0	5	0	0	0	0	0	9	0	9	1												
13:30	CAR	13	1	4	15	12	13	43	8	2	8	1	23	70	26	91	35												
	TRK	4	0	1	3	3	1	5	0	0	1	0	6	10	4	18	5												
	BUS	2	0	0	0	0	0	1	0	0	0	0	0	3	0	3	0												
13:45	CAR	11	1	5	14	12	11	35	8	7	6	3	21	60	28	79	33												
	TRK	6	0	0	0	1	2	8	0	0	2	0	7	16	2	22	2												
	BUS	2	0	1	0	0	0	4	0	0	0	0	0	6	0	6	1												
14:00	CAR	17	0	7	12	4	6	56	9	2	7	4	19	83	21	96	35												
	TRK	5	0	2	5	1	0	18	1	0	1	0	4	23	6	28	9												
	BUS	2	0	1	0	1	0	2	0	0	0	0	0	4	0	5	1												
14:15	CAR	23	1	5	10	15	9	38	5	4	15	3	27	73	30	103	35												
	TRK	3	0	0	1	1	0	13	0	0	1	0	7	16	2	24	2												
	BUS	0	0	0	0	0	1	3	0	0	0	0	1	4	0	4	0												
14:30	CAR	16	0	3	16	9	7	58	2	1	5	1	38	82	22	121	26												
	TRK	3	0	1	3	1	1	7	1	0	0	0	8	11	3	19	5												
	BUS	2	0	1	0	0	0	4	0	0	0	0	6	0	0	6	0												
14:45	CAR	24	0	5	19	10	8	77	4	3	8	2	38	111	30	149	36												
	TRK	2	0	1	1	1	0	12	0	1	0	1	10	15	2	25	2												
	BUS	2	0	1	0	0	2	2	0	0	0	0	0	6	0	4	1												
15:00	CAR	23	0	2	20	6	9	97	6	5	5	1	24	130	30	150	33												
	TRK	6	1	0	1	4	2	14	0	0	0	0	6	22	2	30	1												
	BUS	3	0	1	0	0	0	2	0	0	0	0	0	5	0	5	1												
16:15	CAR	26	2	6	31	6	12	94	10	5	5	2	31	134	43	157	52												
	TRK	4	1	0	0	0	0	12	0	1	0	0	4	16	2	20	0												
	BUS	2	0	0	0	0	0	4	0	0	1	0	0	6	1	6	1												
16:30	CAR	17	0	10	35	11	10	101	8	6	7	0	28	128	48	157	60												
	TRK	4	0	0	3	0	0	12	0	0	1	0	6	16	4	22	4												
	BUS	2	0	0	0	0	0	4	0	0	0	0	0	6	0	6	0												
16:45	CAR	25	0	6	31	10	14	82	11	5	5	0	28	121	41	145	53												
	TRK	1	0	0	1	0	3	11	0	1	1	0	5	15	3	17	2												
	BUS	3	0	3	0	0	0	3	0	0	0	0	0	6	0	6	3												
17:00	CAR	25	2	7	35	12	10	90	6	4	6	1	38	126	47	165	54												
	TRK	2	0	0	2	0	0	4	0	1	1	0	5	6	4	11	3												
	BUS	2	0	1	0	0	0	3	1	0	0	0	0	3	0	3	0												
17:15	CAR	29	2	5	32	9	18	78	5	1	11	2	41	127	46	157	53												
	TR																												

Table D3-18: TMC Traffic Dat: LOWER SHERBOURNE ST AT THE ESPLANADE (PX 1441)

		Aug-22-2019 (Thursday)																					
		NORTHBOUND						EASTBOUND				SOUTHBOUND				WESTBOUND				SUM NORTH	SUM EAST	SUM SOUTH	SUM WEST
Time Period	Vehicle Type	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	ID: OLS39	ID: --	ID: OLS40	ID: --			
7:45	CAR	25	5	12	7	0	2	14	4	1	14	1	2	42	27	41	37						
	TRK	5	2	1	0	0	0	2	1	1	1	3	2	10	4	9	3						
	BUS	0	0	0	3	0	3	2	0	0	2	0	0	5	5	2	5						
8:00	CAR	33	10	18	2	3	2	29	5	1	7	5	9	69	20	74	32						
	TRK	1	0	0	1	0	0	3	0	0	2	1	0	5	3	4	3						
	BUS	0	0	0	1	0	2	3	0	0	1	0	0	5	2	3	2						
8:15	CAR	41	12	14	8	1	4	33	18	1	22	4	5	82	43	80	62						
	TRK	6	0	0	0	2	0	5	0	0	0	0	0	11	0	13	0						
	BUS	0	0	0	1	0	3	3	0	0	1	0	0	6	2	3	2						
8:30	CAR	35	10	12	10	2	2	29	12	1	17	0	9	66	38	75	51						
	TRK	4	0	0	0	0	0	4	0	0	1	0	1	8	1	9	1						
	BUS	0	0	0	2	0	2	1	0	0	0	0	0	3	2	1	2						
8:45	CAR	32	16	11	7	2	7	27	11	1	20	2	5	68	44	66	49						
	TRK	3	0	0	3	0	0	2	0	0	1	0	1	5	4	6	4						
	BUS	0	0	0	0	0	2	2	0	0	2	0	0	4	2	2	2						
9:00	CAR	46	11	15	17	2	3	24	16	3	19	5	5	78	50	77	67						
	TRK	4	0	0	2	1	0	5	0	0	1	0	1	9	3	11	3						
	BUS	1	0	0	1	0	3	2	0	0	1	0	0	6	2	3	2						
9:15	CAR	43	19	11	17	3	4	27	13	2	13	2	7	76	51	80	54						
	TRK	7	0	0	1	0	0	6	0	3	0	0	1	13	4	14	1						
	BUS	0	0	0	2	0	1	1	0	0	1	0	0	2	3	1	3						
9:30	CAR	48	18	7	20	4	5	25	10	2	26	6	8	84	66	85	63						
	TRK	5	0	0	0	0	1	4	0	1	0	0	0	10	1	9	0						
	BUS	1	0	0	1	0	4	4	0	0	1	0	0	9	2	5	2						
10:15	CAR	38	9	7	17	3	11	19	10	1	15	4	6	72	42	66	49						
	TRK	3	1	0	1	1	0	3	0	0	1	0	1	6	3	8	2						
	BUS	1	0	0	0	0	2	3	0	0	1	0	0	6	1	4	1						
10:30	CAR	33	3	11	13	1	4	28	15	1	12	5	8	70	29	70	51						
	TRK	5	0	1	1	3	0	11	0	1	1	1	1	17	3	20	3						
	BUS	0	0	0	1	0	3	2	0	0	0	0	0	5	1	2	1						
10:45	CAR	34	6	7	17	1	5	24	5	0	14	5	8	68	37	67	43						
	TRK	5	0	0	1	0	1	3	1	0	2	0	2	9	3	10	4						
	BUS	0	0	0	1	0	2	2	0	0	1	0	0	4	2	2	2						
11:00	CAR	39	4	12	10	2	4	21	10	0	14	2	5	66	28	69	46						
	TRK	5	1	1	2	2	1	4	0	1	1	0	1	10	5	12	4						
	BUS	0	0	0	1	0	3	3	0	0	0	0	0	6	1	3	1						
11:15	CAR	35	8	7	13	5	7	45	14	2	11	0	11	87	34	96	45						
	TRK	3	0	1	1	0	0	7	0	1	2	0	0	10	4	10	4						
	BUS	0	0	0	1	0	1	1	0	0	1	0	0	2	2	1	2						
11:30	CAR	50	6	4	11	5	5	42	12	9	13	5	7	102	39	104	40						
	TRK	5	0	0	1	1	0	5	0	1	0	0	1	10	2	12	1						
	BUS	0	0	0	0	0	3	3	0	0	1	0	0	6	1	3	1						
11:45	CAR	53	2	14	18	4	3	32	11	0	12	1	9	89	32	98	55						
	TRK	10	5	1	2	2	0	7	0	1	4	1	1	18	12	20	7						
	BUS	0	0	0	1	0	1	1	0	0	1	0	0	2	2	1	2						
12:00	CAR	60	8	12	18	3	6	44	9	3	18	2	10	112	47	117	57						
	TRK	6	0	1	1	0	2	3	0	0	2	0	1	11	3	10	4						
	BUS	0	0	0	1	0	1	2	0	0	0	0	0	3	1	2	1						
13:15	CAR	29	4	5	15	5	10	43	7	1	10	2	6	84	30	83	37						
	TRK	4	2	0	2	1	0	10	1	0	0	0	0	14	4	15	3						
	BUS	0	1	0	0	0	1	1	0	0	1	0	0	2	2	1	1						
13:30	CAR	23	4	2	13	1	9	35	8	2	13	2	6	69	32	65	36						
	TRK	5	0	1	0	0	0	3	3	0	2	0	0	8	2	8	6						
	BUS	0	0	0	1	0	1	0	0	0	1	0	0	1	2	0	2						
13:45	CAR	29	11	5	14	2	10	42	6	3	0	2	4	83	28	77	25						
	TRK	3	1	1	0	2	0	5	1	0	0	1	0	9	1	10	2						
	BUS	0	0	0	1	0	2	4	0	0	1	0	0	6	2	4	2						
14:00	CAR	37	9	5	14	3	6	40	7	9	8	2	7	85	40	87	34						
	TRK	2	1	1	0	1	0	8	0	0	1	0	0	10	2	11	2						
	BUS	0	0	0	1	0	1	0	0	0	0	0	0	1	1	0	1						
14:15	CAR	37	5	6	15	5	10	37	5	7	7	1	10	85	34	89	33						
	TRK	6	1	0	2	0	1	11	0	0	1	1	1	19	4	18	3						
	BUS	0	0	0	0	0	1	2	0	0	1	0	0	3	1	2	1						
14:30	CAR	40	5	5	13	4	5	51	12	4	4	0	5	96	26	100	34						
	TRK	5	0	0	2	1	0	12	3	0	0	0	0	17	2	18	5						
	BUS	0	0	0	2	1	3	1	0	0	1	0	0	4	3	2	1						
14:45	CAR	46	10	12	15	13	12	44	6	7	11	6	12	108	43	115	44						
	TRK	4	0	0	1	1	0	7	1	0	1	0	0	11	2	12	3						
	BUS	0	0	0	0	0	1	0	0	0	1	0	1	1	1	1	1						
15:00	CAR	46	9	17	11	8	9	50	14	2	14	4	3	109	36	107	56						
	TRK	8	1	0	1	0	2	8	1	0	1	0	0	18	3	16	3						
	BUS	0	0	0	0	0	0	2	0	0	1	0	0	2	1	2	1						
16:15	CAR	54	6	11	18	12	8	49	13	3	15	3	7	114	42	122	57						
	TRK	1	1	0	2	1	1	4	1	0	5	0	1	6	8	7	8						
	BUS	0	0	0	0	0	1	4	1	1	1	0	0	5	1	4	1						
16:30	CAR	68	7	13	21	13	4	59	18	5	17	2	6	133	50	146	69						
	TRK	2	0	0	2	1	1	1	0	0	0	0	0	4	2	4	2						
	BUS	0	0	0	2	0	1	2	0	0	0	0	0	3	2	2	2						
16:45	CAR	56	11	11	26	7	4	54	8	7	22	4	13	118	66	130	67						
	TRK	2	0	0	1	1	2	0	1	0	0	0	0	3	1	5	1						
	BUS	1	0	0	1	0	0	2	0	0	1	0	0	3	2	1	2						
17:00	CAR	50	10	9	24	8	6	42	18	0	30	3	12	101	64	112	81						
	TRK	2	0	2	2	0	0	2	2	0	1	1	1	5	3	5	7						
	BUS	1	0	0	0	0	2	1	0	0	3	0	0	4	3	2	2						
17:15	CAR	47	7	15	20	9	7	45	13	5	24	1	12	100	56	113	72						
	TRK	2	1	1	1</																		



Table D3-41: Gardiner Expressway Traffic Data

Road Segment	AADT	% Medium Truck	% Heavy Truck	Speed (km/h)
DVP SB Offramp to	16463	2	4	30
DVP NB Onramp From	10351	2	4	30
DVP SB TO FGG WB	32614	2	4	60
FGG EB TO DVP NB	33319	2	4	60
FGG WB, Midblock	55539	2	4	90
FGG EB, Midblock	56582	2	4	90
FGG WB, Midblock	51781	2	4	90
FGG EB, Midblock	55111	2	4	90
FGG WB, Midblock	53355	2	4	90
FGG EB, Midblock	47138	2	4	90
Ramp FGG WB to	2995	2	4	50
Ramp Lake Shore Blvd EB	7236	2	4	50
FGG WB, Midblock	41616	2	4	90
FGG EB, Midblock	47002	2	4	90
Ramp FGG WB to Lake	8874	2	4	50
Ramp FGG WB to Yonge	3787	2	4	50
FGG WB, Midblock	42322	2	4	90
FGG EB, Midblock	42997	2	4	90
Ramp Jarvis St SB to	17908	2	4	50
Ramp Bay St NB to FGG	4499	2	4	50
Midblock Eastern Ave. to	30504	2	4	90
Midblock Don Roadway to	30234	2	4	90
FGG WB, Midblock Lower	50124	2	4	90
FGG EB, Midblock Jarvis	43215	2	4	90
FGG WB, Midblock Yonge	43231	2	4	90
FGG EB, Midblock Bay to	39407	2	4	90

Average TMC: Dufferin St. from Melbourne-King-Liberty

Time Period	Vehicle Type	2017-2018	2019
		NORTH-SOUTH	
AADT (An. Avg. Daily Traffic)	CAR	6226	6322
	TRK	164	166
	BUS	298	303

\*Average AADT: Gardiner Expressway, Midblock, between Cherry St. and DVP

Time Period	Vehicle Type	2017	2019
		WEST-EAST	
AADT (An. Avg. Daily Traffic)	CAR	105394	107512
	TRK	6727	6862
	BUS	---	---

\*Average AADT: Gardiner Expressway, Spadina Interchange-Kingsway Interchange

Time Period	Vehicle Type	2017	2019
		WEST-EAST	
AADT (An. Avg. Daily Traffic)	CAR	77680	78457
	TRK	4958	5008
	BUS	---	---

\*Average AADT: Don Valley Parkway, North of Gardiner Interchange

Time Period	Vehicle Type	2017	2019
		NORTH-SOUTH	
AADT (An. Avg. Daily Traffic)	CAR	87182	88935
	TRK	5565	5677
	BUS	---	---

\*Source: Metrolinx Union Station Rail Corridor (USRC) East Enhancements Transit Project Assessment Process (TPAP Air Quality Assessment, Table 15, 2017)