

# Appendix B2

**Ontario Line Project**

**Lower Don Bridge and Don Yard Early  
Works – Air Quality Early Works Report**

Metrolinx

# Air Quality Early Works Report

Ontario Line Lower Don Bridge and Don Yard Early Works

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# Executive Summary

## ES.1 Ontario Line Lower Don Bridge and Don Yard 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.”

Lower Don Bridge and Don Yard 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. 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.

AECOM Canada Limited (AECOM) was retained by Metrolinx and Infrastructure Ontario to complete the Ontario Line Lower Don Bridge and Don Yard Early Works Report for the Project. This Final Air Quality Early Works Report (this Report) supports the Ontario Line Final Lower Don Bridge and Don Yard Early Works Report prepared for the Project

to document the air quality impact assessment of Lower Don Bridge and Don Yard early works (**Figure ES-1**).

The Lower Don Bridge and Don Yard early works will include:

- construction of a new bridge north of the existing Lakeshore East rail corridor<sup>1</sup> bridge over the Lower Don River that will carry the Ontario Line tracks;
- shift of the nearby Union Station and Lakeshore East rail corridor GO tracks, including tracks on the existing rail bridge to accommodate Ontario Line infrastructure within the Union Station Rail Corridor<sup>2</sup> and Don Yard;
- modifications to the existing Lakeshore East rail corridor bridge to accommodate Lakeshore East GO track shifts to accommodate Ontario line infrastructure; and
- utility and signal infrastructure relocation or protection.

The Lower Don Bridge and Don Yard early works components and construction activities are further described in **Section 1.3**.

Active transportation access across the Lower Don River will be facilitated via a bridge that will provide a multi-use connection across the river. This bridge is not within the scope of these early works, and will be assessed as part of the Ontario Line Environmental Impact Assessment Report. 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.

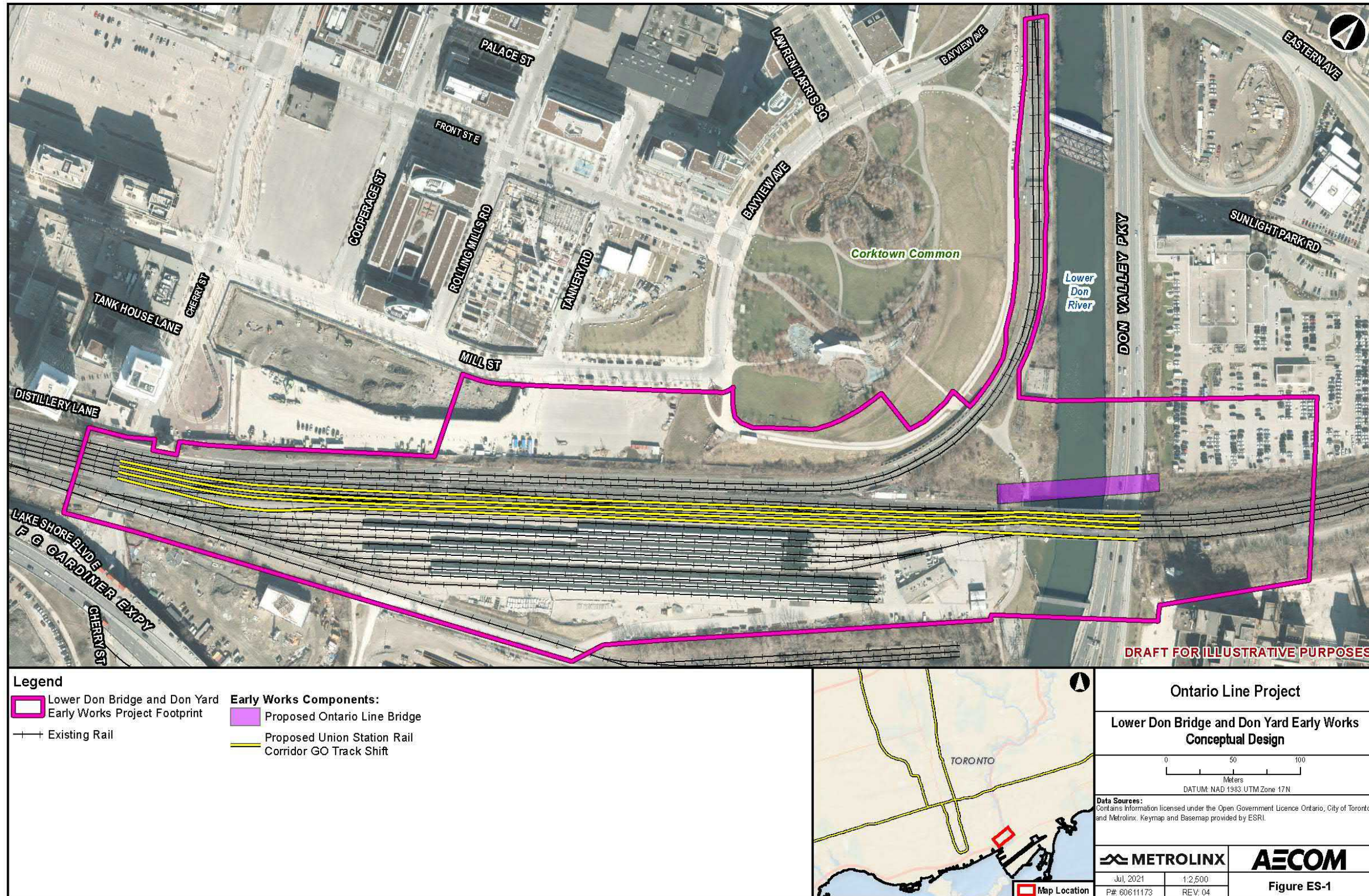
This Report supports the Ontario Line Lower Don Bridge and Don Yard Early Works Report prepared in accordance with Ontario Regulation 341/20: Ontario Line Project.

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

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1. Lakeshore East rail corridor extends from the Lower Don River in the City of Toronto to the City of Oshawa.  
2. Union Station Rail Corridor extends from approximately west of Bathurst Street to the Lower Don River in the City of Toronto.

Figure ES-1: Lower Don Bridge and Don Yard Early Works Conceptual Design



## **ES.2 Methodology**

This Report documents the assessment of the Lower Don Bridge and Don Yard 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 0**.

### Local Environmental Conditions

Background information and documentation relevant to local ambient air quality conditions within the Lower Don Bridge and Don Yard Study Area is contained within the Ontario Line Final Environmental Conditions Report (AECOM, 2020)<sup>3</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:

- Lower Don Bridge and Don Yard early works components as described in **Section 1.3.1**;
- The Lower Don Bridge and Don Yard Early Works Project Footprint and Lower Don Bridge and Don Yard Study Area as described in **Section 1.3.2**;
- Lower Don Bridge and Don Yard early works construction activities as described in **Section 1.3.3**; and
- Local environmental conditions within the Lower Don Bridge and Don Yard Study Area as described in **Section 3**.

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3. 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, 2012) relevant to the Lower Don Bridge and Don Yard 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.

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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard early works.

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

**Section 5** notes that no air quality related permits or approvals are anticipated for the Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Early Works**

| Environmental Component                | Potential Impacts   | Mitigation Measure(s)  | Monitoring Activities  |
|--|---|--|--|
| <p><b>Construction Air Quality</b></p> | <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 an anti-idling policy to limit idling to 5 minutes or fewer, depending on weather conditions.</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 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, minimize contaminants released.</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 meteorological monitoring in conjunction with 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.”

Lower Don Bridge and Don Yard 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. 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. Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Early Works Report for the Project. This Air Quality Early Works Report (this Report) supports the Ontario Line Final Lower Don Bridge and Don Yard Early Works Report and has been prepared for the Project to document the air quality impact assessment of Lower Don Bridge and Don Yard 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:

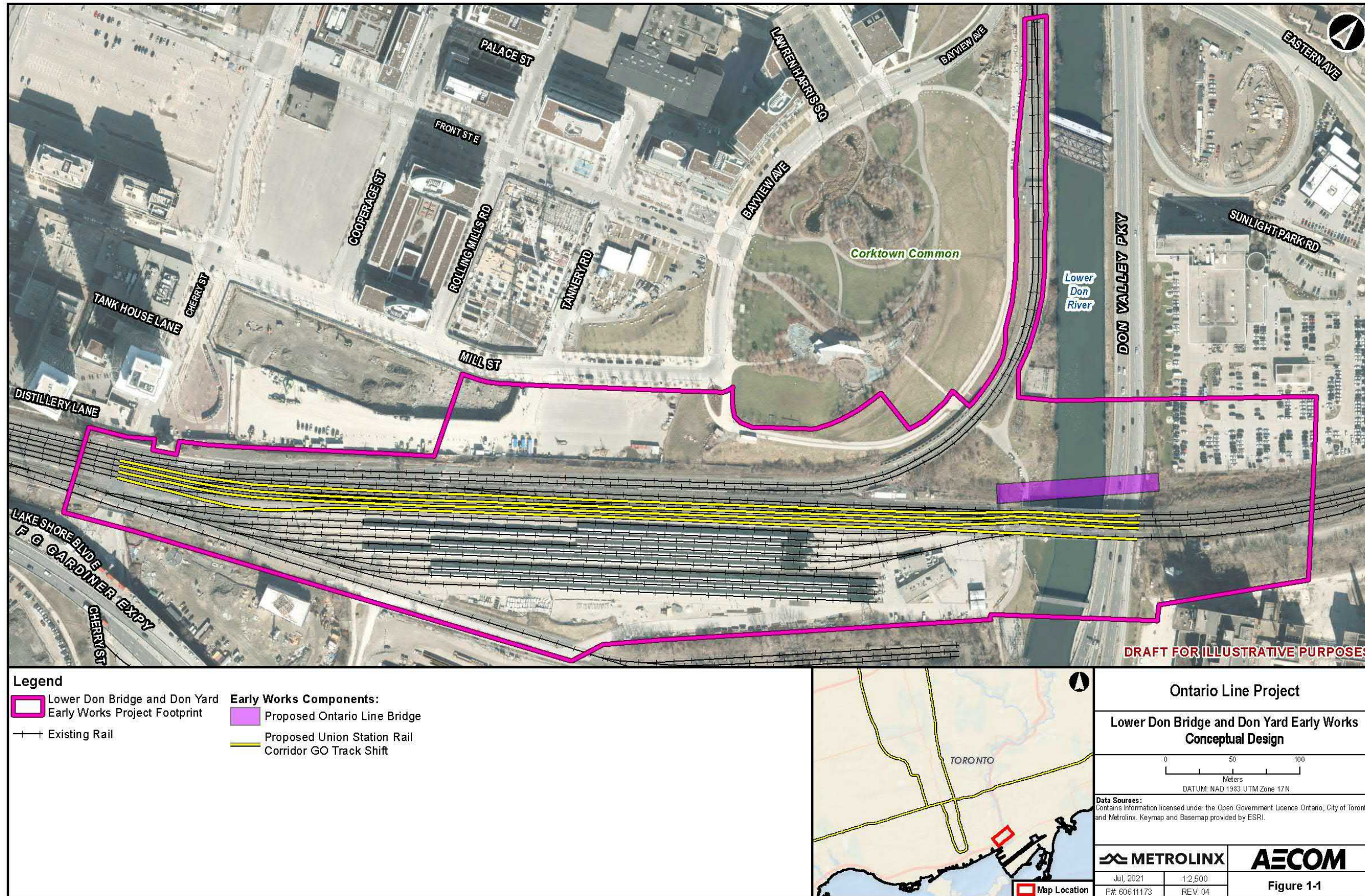
- Describe the local environmental conditions related to ambient air quality;
- Assess the potential impacts of early works construction activities on air quality; and
- Identify mitigation measures and monitoring activities for any negative impacts to air quality as a result of the early works construction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

| <b>Reg. Section</b> | <b>Requirement</b>   | <b>Report Section</b> |
|---------------------|--|-----------------------|
| 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: Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard early works will include:

- construction of a new bridge north of the existing Lakeshore East rail corridor<sup>4</sup> bridge over the Lower Don River that will carry the Ontario Line tracks;
- shift of the nearby Union Station and Lakeshore East rail corridor GO tracks, including tracks on the existing rail bridge, to accommodate Ontario Line infrastructure within the Union Station Rail Corridor<sup>5</sup> and Don Yard;
- modifications to the existing Lakeshore East rail corridor bridge to accommodate Lakeshore East GO track shifts to accommodate Ontario line infrastructure; and
- utility and signal infrastructure relocation or protection.

Rail corridor and third-party utility relocations and protection will be completed to facilitate the work described above as well as the future Ontario Line tunnel facilities.

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4. Lakeshore East rail corridor extends from the Lower Don River in the City of Toronto to the City of Oshawa.

5. Union Station Rail Corridor extends from approximately west of Bathurst Street to the Lower Don River in the City of Toronto.



Utilities to be relocated include, but are not limited to, Bell 360 and existing Canadian National/GO signal underground fibre optic cables.

Lower Don Bridge and Don Yard early works components are shown in **Figure 1-1**.

Active transportation access across the Lower Don River will be facilitated via a bridge that will provide a multi-use connection across the river. This bridge is not within the scope of these early works, and will be assessed as part of the Ontario Line Environmental Impact Assessment Report.

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

The Lower Don Bridge and Don Yard 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. 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 Lower Don Bridge and Don Yard Early Works Project Footprint extends from approximately 150 metres east of the Don Valley Parkway in the east to approximately 400 metres west of the Lower Don River in the west, and from south of Eastern Avenue along the Richmond Hill rail corridor to approximately 100 metres south of the Lakeshore East rail corridor.

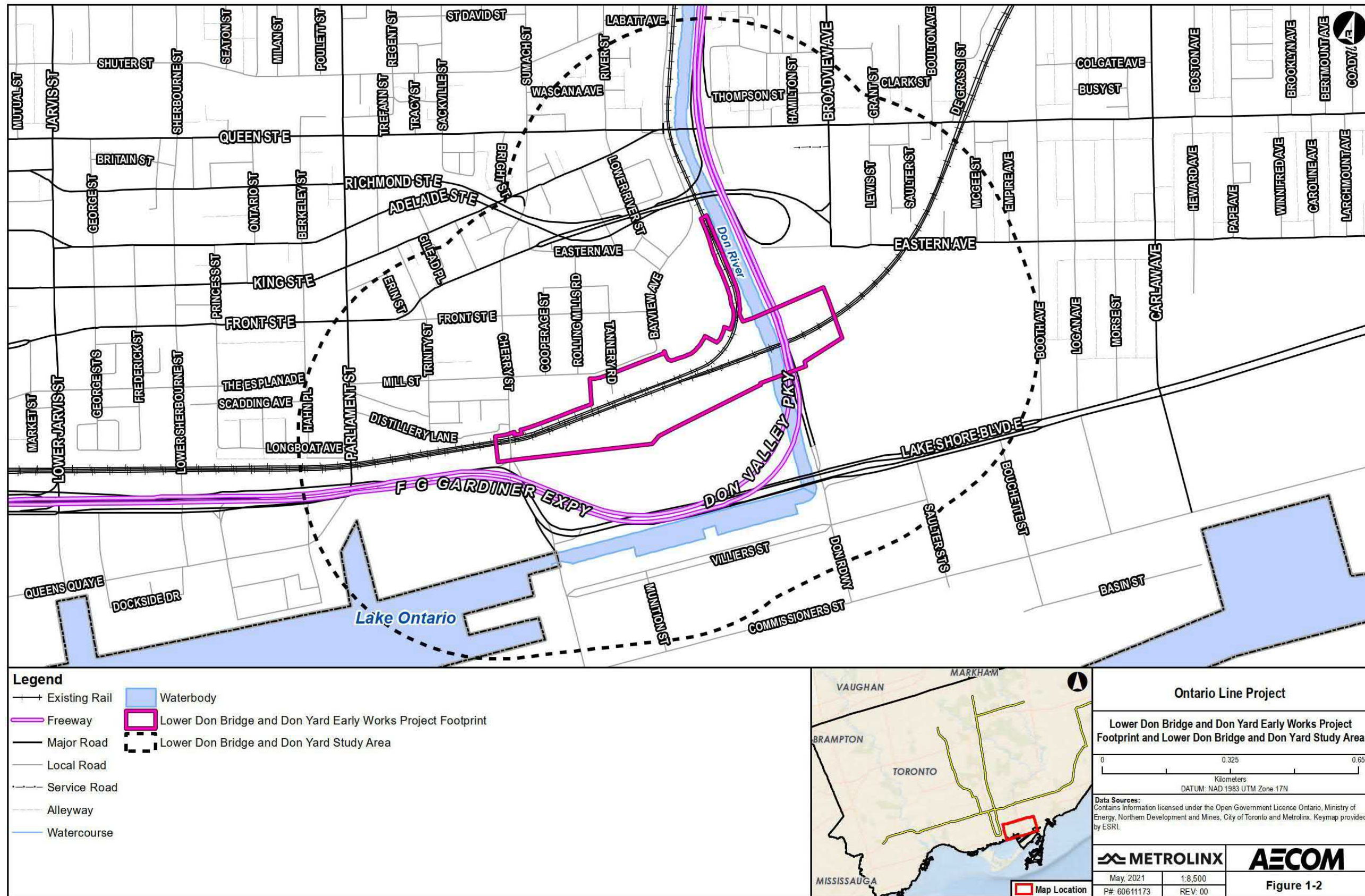
For the purpose of this Report, the Lower Don Bridge and Don Yard Study Area, also shown in **Figure 1-2**, includes the Lower Don Bridge and Don Yard Early Works Project Footprint and a 500 metre buffer. The distance of the 500 metre buffer was based on guidance provided in the Ministry of Transportation's 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Early Works Report.

### **1.3.3 Construction Activities**

**Table 1-2** provides a description of the anticipated construction activities for the Lower Don Bridge and Don Yard 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.

Figure 1-2: Lower Don Bridge and Don Yard Early Works Project Footprint and Lower Don Bridge and Don Yard Study Area



**Table 1-2: Anticipated Construction Activities for the Ontario Line Lower Don Bridge and Don Yard Early Works**

| Anticipated Construction Activity                          | Description   | Associated Equipment  |
|--|---|---|
| <p><b>Site Preparation</b></p>                             | <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>■ Erection of temporary and permanent fences.</li> <li>■ Installation of environmental management features (e.g., erosion and sediment controls).</li> <li>■ Dewatering works.</li> </ul>  | <ul style="list-style-type: none"> <li>■ Site compaction equipment and grading equipment.</li> <li>■ Vegetation removal equipment.</li> <li>■ Excavation equipment.<br/>Haulage/dump trucks.</li> </ul>   |
| <p><b>Site Servicing/<br/>Removals/<br/>Demolition</b></p> | <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 removal of Metrolinx owned buildings in Don Yard.</li> <li>■ Removal and reinstatement of railway track.</li> </ul>  | <ul style="list-style-type: none"> <li>■ Excavation equipment including backhoe, dump trucks, spoil removal equipment, jackhammers.</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> |
| <p><b>Excavating and Grading</b></p>                       | <ul style="list-style-type: none"> <li>■ Excavation and grading activities may involve earth-moving activities and stockpiling, as applicable. Excavated material will be accommodated on-site on the degree practicable; however, where necessary, surplus material will be disposed of off-site at an approved facility.</li> <li>■ Any off-site disposal shall be done in compliance with applicable regulations, including as it relates to contaminated material that may be encountered.</li> <li>■ Any groundwater encountered will be managed and disposed of in accordance with applicable regulations.</li> </ul> | <ul style="list-style-type: none"> <li>■ Site compaction equipment and general grading equipment, dump trucks, soil removal equipment.</li> <li>■ Groundwater pumping equipment.</li> <li>■ Excavation equipment including backhoe, dump trucks, soil removal equipment, jack hammers.</li> </ul>                 |

| Anticipated Construction Activity                                      | Description   | Associated Equipment   |
|--|---|--|
| <p><b>Construction, Rehabilitation and/or Alteration of Bridge</b></p> | <ul style="list-style-type: none"> <li>■ All structures will be constructed using standard civil construction techniques.</li> <li>■ In-water works/works below high-water mark may be required.</li> <li>■ Includes grounding and bonding.</li> <li>■ Pile installation, foundations, abutments, retaining walls, bridge girders, decking, backfilling, concrete demolition.</li> <li>■ Driving / Installing Rock Bolts.</li> <li>■ Compaction / Backfilling / Grading.</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> <li>■ Mobile cranes and hoists.</li> <li>■ Flatbed trucks, cranes.</li> <li>■ Augured piles or rammed aggregate piers.</li> <li>■ Drill rigs.</li> <li>■ Bulldozer and excavator.</li> <li>■ Jackhammer.</li> <li>■ Front End Loaders.</li> <li>■ Triaxles Dump Trucks.</li> <li>■ Concrete Trucks.</li> <li>■ Rock Bolt Equipment.</li> <li>■ Hydrovac Equipment.</li> </ul> |
| <p><b>Construction of Ancillary Facilities</b></p>                     | <ul style="list-style-type: none"> <li>■ Ancillary facilities may include electrical transformer/supply equipment.</li> </ul>   | <ul style="list-style-type: none"> <li>■ Flatbed trucks, cranes, concrete trucks.</li> <li>■ Backhoe, pavement excavation equipment.</li> <li>■ Mobile cranes and hoists.</li> <li>■ Concrete trucks, pumps and vibrators, skid steer.</li> <li>■ Office trailers, generators, temporary hygienic facilities.</li> </ul>   |
| <p><b>Temporary Track Diversion/ Permanent Track Shifts</b></p>        | <ul style="list-style-type: none"> <li>■ Grading.</li> <li>■ Temporary drainage.</li> <li>■ Relocation/installation of tracks, as required.</li> <li>■ Temporary relocation of signals, as required.</li> <li>■ Clear delineation and protection between active rail service and construction work zones.</li> <li>■ Provision of GO signal overhead bridge support/protection and temporary GO ballast track protection.</li> </ul>  | <ul style="list-style-type: none"> <li>■ Site compaction equipment and general grading equipment, dump trucks, spoil removal equipment.</li> <li>■ Thermal welding.</li> <li>■ Tie placement (cranes, lifting equipment).</li> <li>■ Ballast placement equipment.</li> <li>■ Temporary concrete barriers.</li> <li>■ Surfacing Equipment, Stabilizers, Tampers</li> </ul>  |
| <p><b>Temporary Road / Trail / Multi-Use Path Closures</b></p>         | <ul style="list-style-type: none"> <li>■ Temporary road/trail/multi-use path closures, as required.</li> </ul>  | <ul style="list-style-type: none"> <li>■ Temporary traffic control devices such as signs, signals, barriers, traffic barrels, plate tampers.</li> </ul>  |

| <b>Anticipated Construction Activity</b> | <b>Description</b>   | <b>Associated Equipment</b>  |
|--|--|--|
| <p><b>Management of Stormwater</b></p>   | <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.</li> </ul> |

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## 2. Methodology

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This Report documents the assessment of Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Study Area is contained within the Ontario Line Final Environmental Conditions Report (AECOM, 2020)<sup>6</sup>, which includes:

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

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6. 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 Lower Don Bridge and Don Yard Study Area were reviewed, where available; and
- Review of existing meteorological data representative of the Lower Don Bridge and Don Yard Study Area.

### **2.1.2 Assessment of Contaminants**

The primary air emission sources within the Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard 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 this 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**.

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

| Criteria Air Contaminant       | Source of Standard                     | Averaging Period | Air Quality Threshold Value (µg/m <sup>3</sup> ) |
|--------------------------------|--|------------------|--|
| NO <sub>2</sub>                | Ambient Air Quality Criteria           | One hour         | 400  |
| NO <sub>2</sub>                | Ambient Air Quality Criteria           | 24 hours         | 200  |
| NO <sub>2</sub> <sup>(1)</sup> | Canadian Ambient Air Quality Standards | One hour (2020)  | 113  |
| NO <sub>2</sub> <sup>(1)</sup> | Canadian Ambient Air Quality Standards | Annual (2020)    | 32   |
| NO <sub>2</sub> <sup>(1)</sup> | Canadian Ambient Air Quality Standards | One hour (2025)  | 78   |
| NO <sub>2</sub> <sup>(1)</sup> | Canadian Ambient Air Quality Standards | Annual (2025)    | 22   |
| CO                             | Ambient Air Quality Criteria           | One hour         | 36,200   |
| CO                             | Ambient Air Quality Criteria           | Eight hours      | 15,700   |
| SO <sub>2</sub> <sup>(2)</sup> | Ambient Air Quality Criteria           | 10-minute        | 178  |
| SO <sub>2</sub> <sup>(2)</sup> | Ambient Air Quality Criteria           | One hour         | 106  |

| Criteria Air Contaminant               | Source of Standard                     | Averaging Period | Air Quality Threshold Value ( $\mu\text{g}/\text{m}^3$ ) |
|--|--|------------------|--|
| <b>SO<sub>2</sub></b> <sup>(2)</sup>   | Ambient Air Quality Criteria           | Annual           | 11   |
| <b>SO<sub>2</sub></b> <sup>(3)</sup>   | Canadian Ambient Air Quality Standards | One hour (2020)  | 183  |
| <b>SO<sub>2</sub></b> <sup>(3)</sup>   | Canadian Ambient Air Quality Standards | Annual (2020)    | 13   |
| <b>SO<sub>2</sub></b> <sup>(3)</sup>   | Canadian Ambient Air Quality Standards | One hour (2025)  | 170  |
| <b>SO<sub>2</sub></b> <sup>(3)</sup>   | Canadian Ambient Air Quality Standards | Annual (2025)    | 10   |
| <b>PM<sub>10</sub></b> <sup>(4)</sup>  | Ambient Air Quality Criteria           | 24 hours         | 50   |
| <b>PM<sub>2.5</sub></b> <sup>(5)</sup> | Canadian Ambient Air Quality Standards | 24 hours (2020)  | 27   |
| <b>PM<sub>2.5</sub></b> <sup>(5)</sup> | 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  |
| <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°C 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.

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.

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>7</sup>. It was assumed that the existing ambient air quality would be representative of the current conditions present in the Lower Don Bridge and Don Yard Study Area. The following National Air Pollution Surveillance air quality monitoring stations were selected as representative of the ambient air quality of the Lower Don Bridge and Don Yard 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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7. 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Study Area are provided in **Table 2-2**. **Figure 2-1** presents the locations of the four air quality monitoring stations relative to the Lower Don Bridge and Don Yard Study Area. Air quality measurement data from these stations are provided in **Appendix A**.

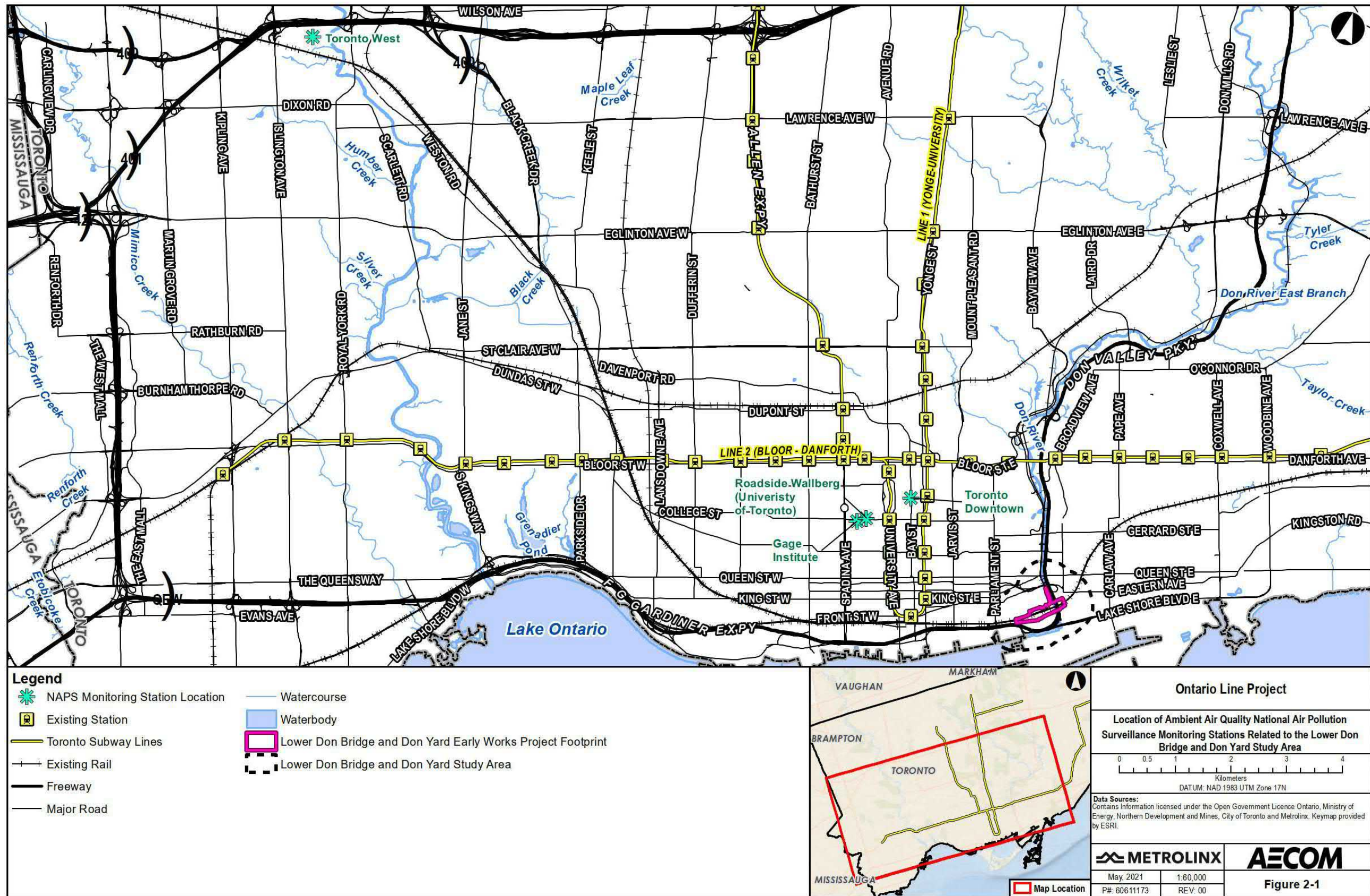
**Table 2-2: Ambient Air Quality National Air Pollution Surveillance Monitoring Stations Information Related to the Lower Don Bridge and Don Yard Study Area**

| 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 Lower Don Bridge and Don Yard Study Area



### 2.1.5 Identification of Representative Receptors

Land use within the Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Study Area were selected based on proximity to emission sources (i.e., the Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Study Area are shown in **Figure 3-2**.

## 2.2 Impact Assessment

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

- Lower Don Bridge and Don Yard early works components as described in **Section 1.3.1**;
- The Lower Don Bridge and Don Yard Early Works Project Footprint and Lower Don Bridge and Don Yard Study Area as described in **Section 1.3.2**;
- Lower Don Bridge and Don Yard early works construction activities as described in **Section 1.3.3**; and
- Local environmental conditions within the Lower Don Bridge and Don Yard 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 Survey 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 ( $\mu\text{g}/\text{m}^3$ ) | Statistical Measure               | Standard Threshold ( $\mu\text{g}/\text{m}^3$ ) | Standard Source                        | % of Standard Threshold |
|--------------------------------------|------------------------|------------------|------------------|---|-----------------------------------|---|--|-------------------------|
| <b>NO<sub>2</sub></b>                | 60433                  | One hour         | 2013-2017        | 49.50   | 90 <sup>th</sup> Percentile       | 400   | Ambient Air Quality Criteria           | 12%                     |
| <b>NO<sub>2</sub></b>                | 60433                  | One hour         | 2013-2017        | 49.50   | 90 <sup>th</sup> Percentile       | 113   | Canadian Ambient Air Quality Standards | 44%                     |
| <b>NO<sub>2</sub></b>                | 60433                  | 24 hours         | 2013-2017        | 41.75   | 90 <sup>th</sup> Percentile       | 200   | Ambient Air Quality Criteria           | 21%                     |
| <b>NO<sub>2</sub></b>                | 60433                  | Annual           | 2013-2017        | 26.68   | Mean                              | 32  | Canadian Ambient Air Quality Standards | 83%                     |
| <b>CO</b>                            | 60430                  | One hour         | 2013-2017        | 446   | 90 <sup>th</sup> Percentile       | 36,200  | Ambient Air Quality Criteria           | 1%                      |
| <b>CO</b>                            | 60430                  | 8 hours          | 2013-2017        | 419   | 90 <sup>th</sup> Percentile       | 15,700  | Ambient Air Quality Criteria           | 3%                      |
| <b>SO<sub>2</sub><sup>(2)</sup></b>  | 60430                  | 10-min.          | 2013-2017        | 9.11  | 90 <sup>th</sup> Percentile       | 178   | Ambient Air Quality Criteria           | 5%                      |
| <b>SO<sub>2</sub></b>                | 60430                  | One hour         | 2013-2017        | 5.51  | 90 <sup>th</sup> Percentile       | 106   | Ambient Air Quality Criteria           | 6%                      |
| <b>SO<sub>2</sub></b>                | 60430                  | Annual           | 2013-2017        | 1.84  | Mean                              | 11  | Ambient Air Quality Criteria           | 17%                     |
| <b>PM<sub>10</sub><sup>(3)</sup></b> | 60433                  | 24 hours         | 2013-2017        | 25.78   | 90 <sup>th</sup> Percentile       | 50  | Ambient Air Quality Criteria           | 51%                     |
| <b>PM<sub>2.5</sub></b>              | 60433                  | 24 hours         | 2013-2017        | 13.89   | 90 <sup>th</sup> Percentile       | 27  | Canadian Ambient Air Quality Standards | 51%                     |
| <b>PM<sub>2.5</sub></b>              | 60433                  | Annual           | 2013-2017        | 7.94  | Mean                              | 8.8   | Canadian Ambient Air Quality Standards | 90%                     |
| <b>Acetaldehyde<sup>(4)</sup></b>    | 60439                  | 30-min.          | 2014-2017        | 5.00  | 90 <sup>th</sup> Percentile       | 500   | Ambient Air Quality Criteria           | 1%                      |
| <b>Acetaldehyde</b>                  | 60439                  | 24 hours         | 2014-2017        | 1.69  | 90 <sup>th</sup> Percentile       | 500   | Ambient Air Quality Criteria           | 0%                      |
| <b>Acrolein<sup>(5)</sup></b>        | 60439                  | One hour         | 2014-2017        | 0.17  | 90 <sup>th</sup> Percentile       | 4.5   | Ambient Air Quality Criteria           | 4%                      |
| <b>Acrolein</b>                      | 60439                  | 24 hours         | 2014-2017        | 0.07  | 90 <sup>th</sup> Percentile       | 0.4   | Ambient Air Quality Criteria           | 17%                     |
| <b>Benzene</b>                       | 60435                  | 24 hours         | 2011-2014        | 0.92  | 90 <sup>th</sup> Percentile       | 2.3   | Ambient Air Quality Criteria           | 40%                     |
| <b>Benzene</b>                       | <b>60435</b>           | <b>Annual</b>    | <b>2011-2014</b> | <b>0.61</b>   | <b>Mean</b>                       | <b>0.45</b>                                     | <b>Ambient Air Quality Criteria</b>    | <b>134%</b>             |
| <b>Benzo(a)-pyrene</b>               | <b>60427<br/>60439</b> | <b>24 hours</b>  | <b>2011-2015</b> | <b>1.21E-04</b>   | <b>90<sup>th</sup> Percentile</b> | <b>0.00005</b>                                  | <b>Ambient Air Quality Criteria</b>    | <b>242%</b>             |
| <b>Benzo(a)-pyrene</b>               | <b>60427<br/>60439</b> | <b>Annual</b>    | <b>2011-2015</b> | <b>6.72E-05</b>   | <b>Mean</b>                       | <b>0.00001</b>                                  | <b>Ambient Air Quality Criteria</b>    | <b>672%</b>             |
| <b>1,3-Butadiene</b>                 | 60435                  | 24 hours         | 2011-2014        | 0.10  | 90 <sup>th</sup> Percentile       | 10  | Ambient Air Quality Criteria           | 1%                      |

**Metrolinx**

Ontario Line Lower Don Bridge and Don Yard Early Works – Air Quality Early Works Report

| Criteria Air Contaminant | Station Identification | Averaging Period | Years     | Average of Background Data ( $\mu\text{g}/\text{m}^3$ ) | Statistical Measure         | Standard Threshold ( $\mu\text{g}/\text{m}^3$ ) | Standard Source              | % of Standard Threshold |
|--------------------------|------------------------|------------------|-----------|---|-----------------------------|---|------------------------------|-------------------------|
| 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%                      |

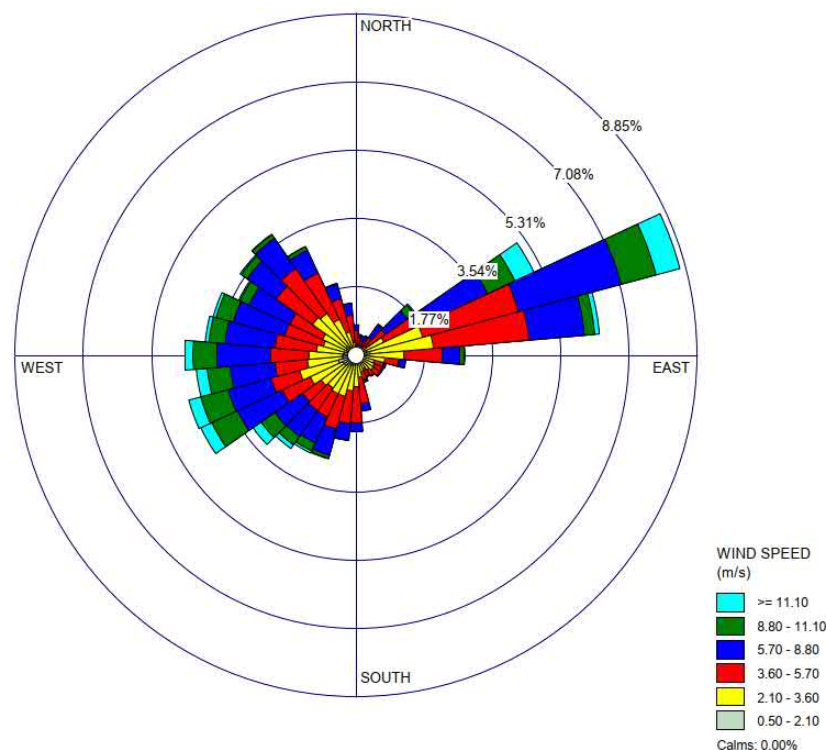
- Notes:
- (1) Exceedances of the Ambient Air Quality Criteria and Canadian Ambient Air Quality Standards are shown in red.
  - (2) Concentrations of sulphur dioxide (SO<sub>2</sub>) are measured on an hourly basis, background concentrations for the 10-minute averaging period have been converted using the Ministry of the Environment, Conservation and Parks’ conversion factor where  $C_{10\text{min}} = C_{60\text{min}} \times (60\text{min}/10\text{min})^{0.28}$ .
  - (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  $\mu\text{g}/\text{m}^3$  PM<sub>10</sub> per 0.54  $\mu\text{g}/\text{m}^3$  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  $C_{0.5\text{hr}} = C_{24\text{hr}} \times (24\text{hr}/0.5\text{hr})^{0.28}$ .
  - (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  $C_{1\text{hr}} = C_{24\text{hr}} \times (1\text{hr}/24\text{hr})^{0.28}$ .

## 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 Lower Don Bridge and Don Yard 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. Additionally, high impact conditions may also form by high speed surface air movement due to an increase in fugitive dust emissions from unpaved surfaces, stockpiles, and material handling. Local surface station meteorological data was used to anticipate areas of high probability impact.

The closest representative meteorological station for the Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard Study Area**



### 3.3 Traffic Assessment

Major traffic sources within the Lower Don Bridge and Don Yard Study Area include the following:

- Gardiner Expressway,
- Don Valley Parkway,
- Lake Shore Boulevard East,
- Bayview Avenue,
- Cherry Street,
- Parliament Street,
- Front Street,
- Adelaide Street East,
- Richmond Street East, and
- Queen Street East.

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

**Table 3-2: Representative Traffic Data Within the Lower Don Bridge and Don Yard Study Area**

| Road Segment                             | 2019 Annual Average Daily Traffic: Cars | 2019 Annual Average Daily Traffic: Trucks | 2019 Annual Average Daily Traffic: Bus |
|--|---|---|--|
| Gardiner Expressway                      | 107,512                                 | 6,862                                     | --                                     |
| Don Valley Parkway                       | 88,935                                  | 5,677                                     | --                                     |
| Lake Shore Boulevard East                | 20,733                                  | 1,040                                     | 32                                     |
| Bayview Avenue, west of Cherry Street    | 2,308                                   | 180                                       | --                                     |
| Bayview Avenue, east of Cherry Street    | 2,448                                   | 240                                       | --                                     |
| Eastern Avenue, west of Broadview Avenue | 11,120                                  | 200                                       | 168                                    |
| Eastern Avenue, east of Broadview Avenue | 12,690                                  | 1,712                                     | 28                                     |
| Cherry Street, north of Mill Street      | 3,404                                   | 376                                       | 56                                     |
| Cherry Street, south of Mill Street      | 4,820                                   | 508                                       | --                                     |

| Road Segment                                    | 2019 Annual Average Daily Traffic: Cars | 2019 Annual Average Daily Traffic: Trucks | 2019 Annual Average Daily Traffic: Bus |
|---|---|---|--|
| Parliament Street, south of Front Street        | 12,884                                  | 1,180                                     | --                                     |
| Front Street, east of Parliament Street         | 5680                                    | 544                                       | --                                     |
| Adelaide Street East, east of Parliament Street | 17,352                                  | 928                                       | --                                     |
| Richmond Street East, east of Parliament Street | 17,352                                  | 928                                       | --                                     |
| Queen Street East, east of Parliament Street    | 10,568                                  | 172                                       | --                                     |

### 3.4 Representative Receptors

There is a diverse range of land uses within the Lower Don Bridge and Don Yard Study Area. Residential apartment complexes, green space, and industrial space are located west of the Lower Don River. Commercial and industrial land uses are located to the east of the Lower Don River and south of Eastern Avenue. Residential and commercial land uses are located east of the Lower Don River and north of Eastern Avenue.

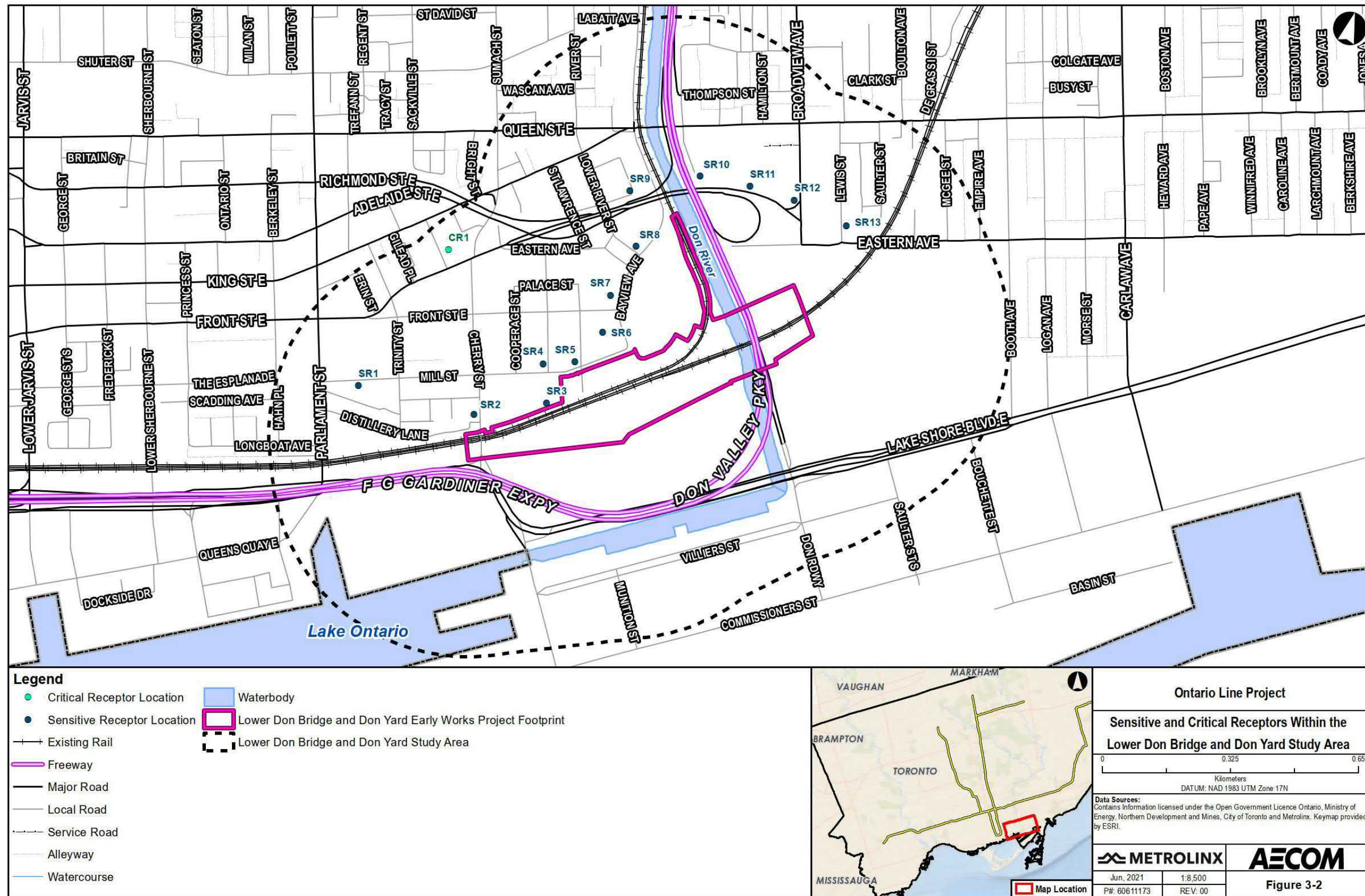
There are future residential developments (i.e., planned or under construction) within the Lower Don Bridge and Don Yard Study Area.

A list of sensitive and critical receptors within the Lower Don Bridge and Don Yard Study Area is provided in **Table 3-3** and shown in **Figure 3-2**. The future residential buildings at 125/131 Mill Street, 495 Front Street, and 77-79 East Don Roadway were identified as representative receptors –SR3, SR6, and SR10 respectively. Sensitive and critical receptors are defined in **Section 2.1.5**.

**Table 3-3: Sensitive and Critical Receptors Within the Lower Don Bridge and Don Yard Study Area**

| <b>Receptor Identification</b> | <b>Receptor Type</b> | <b>Address</b>         | <b>Description</b>   | <b>UTM Easting (m)</b> | <b>UTM Northing (m)</b> |
|--------------------------------|----------------------|------------------------|--|------------------------|-------------------------|
| <b>CR1</b>                     | Critical             | 19 Sackville Street    | Inglenook Community School   | 632297.56              | 4834743.37              |
| <b>SR1</b>                     | Sensitive            | 33 Mill Street         | Apartment/condo building, window/ balcony second floor                             | 632180.68              | 4834343.51              |
| <b>SR2</b>                     | Sensitive            | 390 Cherry Street      | Apartment/condo building, window/ balcony second floor                             | 632483.00              | 4834359.00              |
| <b>SR3</b>                     | Sensitive            | 125/131 Mill Street    | Apartment/condo building, under development (future), window/ balcony second floor | 632655.87              | 4834442.25              |
| <b>SR4</b>                     | Sensitive            | 170 Mill Street        | Apartment/condo building, window/ balcony second floor                             | 632613.87              | 4834533.94              |
| <b>SR5</b>                     | Sensitive            | 180-190 Mill Street    | Apartment/condo building, window/balcony second floor                              | 632688.83              | 4834561.72              |
| <b>SR6</b>                     | Sensitive            | 495 Front Street East  | Apartment/condo building under development (future), window/balcony second floor   | 632734.60              | 4834654.71              |
| <b>SR7</b>                     | Sensitive            | 500 Front Street East  | Apartment/condo building, window/ balcony second floor                             | 632726.75              | 4834750.79              |
| <b>SR8</b>                     | Sensitive            | 170 Bayview Avenue     | Apartment/condo building, window/ balcony second floor                             | 632752.50              | 4834889.78              |
| <b>SR9</b>                     | Sensitive            | 20 Trolley Crescent    | Apartment/condo building, window/ balcony second floor                             | 632695.58              | 4835019.00              |
| <b>SR10</b>                    | Sensitive            | 77-79 East Don Roadway | Apartment/condo building under development (future), window/balcony second floor   | 632856.98              | 4835107.70              |
| <b>SR11</b>                    | Sensitive            | 130 Eastern Avenue     | Apartment/condo building, window/ balcony second floor                             | 632984.98              | 4835118.88              |
| <b>SR12</b>                    | Sensitive            | 68 Broadview Avenue    | Apartment/condo building, window/ balcony second floor                             | 633102.00              | 4835118.57              |
| <b>SR13</b>                    | Sensitive            | 9 Lewis Street         | Semi-detached housing, window first floor  | 633248.92              | 4835094.11              |

Figure 3-2: Sensitive and Critical Receptors Within the Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard early works.

Potential impacts to air quality as a result of disturbances associated with the Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard 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 Lower Don Bridge and Don Yard early works construction activities would therefore potentially be directed towards the receptors along southern Cherry Street, Mill Street, Bayview Avenue, Distillery Lane, the Distillery District, and Lake Shore Boulevard East. The closest receptors downwind of the predominant wind direction are within 50 metres northwest of the Lower Don Bridge and Don Yard Early Works Project Footprint; therefore, they are most likely to be impacted by particulates and other construction related emissions due to their location adjacent to construction activities. The single critical receptor, Inglenook Community School, is located approximately 400 to 450 metres northwest of the Project footprint, outside of the predominant wind direction, as such it is unlikely to have significant impacts from project activities.

There are no exceedances in the existing ambient level of particulates ( $PM_{10}$  and  $PM_{2.5}$ ) within the Lower Don Bridge and Don Yard Study Area when comparing to the 90<sup>th</sup> percentile of National Air Pollution Survey 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 Lower Don Bridge and Don Yard early works construction. Construction activities which may contribute to local particulate and dust settling within the Lower Don Bridge and Don Yard Study Area include earth works activities, concrete cutting, etc.



Existing ambient level 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 are the only contaminants which currently exceed the Ambient Air Quality Criteria. The contributions of benzene and benzo(a)pyrene from the Lower Don Bridge and Don Yard 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 diesel construction equipment exhaust or traffic congestion resulting from construction activities (e.g., as a result of lane closures) 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 Lower Don Bridge and Don Yard early works.

**Table 4-1: Potential Air Quality Impacts, Mitigation Measures and Monitoring Activities for the Lower Don Bridge and Don Yard Early Works**

| Environmental Component                | Potential Impacts   | Mitigation Measure(s)   | Monitoring Activities  |
|--|---|---|--|
| <p><b>Construction Air Quality</b></p> | <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 an anti-idling policy to limit idling to 5 minutes or fewer, depending on weather conditions.</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, minimize contaminant release.</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 meteorological monitoring in conjunction with 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 Lower Don Bridge and Don Yard 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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# Appendix A

## Background Air Quality Data

## Metrolinx – Ontario Line Early Works

Air Quality Early Works Memorandum Report - Attachment 2

| 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    | ND    | 4.45  | 17.94 |
|                                       | 60438           |       | ND                     | ND    | ND    | ND    | ND    | ND    | 31.00 | ND                     | ND    | ND    | ND    | ND    | ND    | ND    | 28.75 |
|                                       | 60440           |       | ND                     | ND    | ND    | ND    | ND    | ND    | 22.00 | ND                     | ND    | ND    | ND    | ND    | ND    | ND    | 20.35 |
| 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  |       |
|                                       | 60430           |       | 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  |       |
| Sulphur dioxide                       | 60434           | ppb   | 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  |       |
|                                       | 60430           |       | 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 |       |
| Fine particulate (PM <sub>2.5</sub> ) | 60421           | µg/m3 | 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    | ND    | 15.80 |
|                                       | 60440           |       | ND                     | ND    | ND    | ND    | ND    | ND    | 15.00 | ND                     | ND    | ND    | ND    | ND    | ND    | ND    | 13.63 |
|                                       | 60450           |       | ND                     | ND    | ND    | ND    | ND    | ND    | 13.00 | ND                     | 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    | 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 - Attachment 2

| 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    | ND    | 4.36  | 8.19  |
|                                       | 60438           |       | ND                      | ND    | ND    | ND    | ND    | ND    | 26.86 | ND             | ND    | ND    | ND    | ND    | ND    | ND    | 17.91 |
|                                       | 60440           |       | ND                      | ND    | ND    | ND    | ND    | ND    | 18.28 | ND             | 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    | 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    | ND    | 9.22  |
|                                       | 60440           |       | ND                      | ND    | ND    | ND    | ND    | ND    | 12.54 | ND             | ND    | ND    | ND    | ND    | ND    | ND    | 7.36  |
|                                       | 60450           |       | ND                      | ND    | ND    | ND    | ND    | ND    | 11.62 | ND             | 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    | 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 - Attachment 2

| Contaminant                           | Units | NAPS Station ID | CCME 98th percentile of 1-hour Daily Max |       |       |       |       |                 |       | CCME 1-hour<br>(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   | 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                 |
|                                       |       | 60440           | ND                                       | ND    | ND    | ND    | ND    | ND              | 0.68  | Not Enough Data                 |
|                                       |       | 60429           | ND                                       | 28.00 | ND    | ND    | ND    | ND              | ND    | Not Enough Data                 |
| Sulphur dioxide                       | ppb   | 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                 |
|                                       |       | 60440           | ND                                       | ND    | ND    | ND    | ND    | ND              | 6.00  | Not Enough Data                 |
| Fine particulate (PM <sub>2.5</sub> ) | µg/m3 | 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 – Existing Conditions

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

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

**Air Quality Qualitative Assessment**  
Ontario Line – Existing Conditions

| <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 – Existing Conditions

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

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| <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         |

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

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**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          |



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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              | -                           |

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Table D3-11: TTC Service Summary - Route 504A Dundas West Stn - Distillery 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 D3-12: 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 D3-13: 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 D3-14: 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              | -                           |

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              | -                           |

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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

| 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 Eglinton 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 Page

| 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 Dov

| 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              | -                           |





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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           |