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Appendix A2

Ontario Line Project

Corktown Station Early Works – Air Quality Early Works Report

Metrolinx

Air Quality Early Works Report

Ontario Line Corktown Station Early Works

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Project #: 60611173

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AECOM: 2015-04-13

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Executive Summary

ES.1 Ontario Line Corktown Station 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."

Corktown Station early works are considered to be of strategic importance in enabling the timely implementation of the Project. The Corktown Station early works site has been identified as the launch site for the tunnel excavation equipment to complete tunnels and underground station spaces for the downtown and Don Yard segments and construction of the Corktown Station. The First Parliament site is located within the Corktown Station early works site and is a known archaeological site which requires additional archaeological studies ahead of any ground disturbance activities. The Corktown Station early works site will provide essential logistics support required for the Project's tunneling. To prepare this site, demolition of existing buildings and structures followed by completion of necessary archaeological studies is required. Completion of this preparatory work on an expedited basis is essential to allow for the timely delivery of the overall Project.

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

The Corktown Station early works include demolition of existing buildings, removal of other structures and asphalt where required, decommissioning of utilities, and soil removal and/or remediation where required. These activities will enable the completion of environmental due diligence investigations, including archaeological assessments.

The Corktown Station early works components and construction are further described in **Section 1.3**.

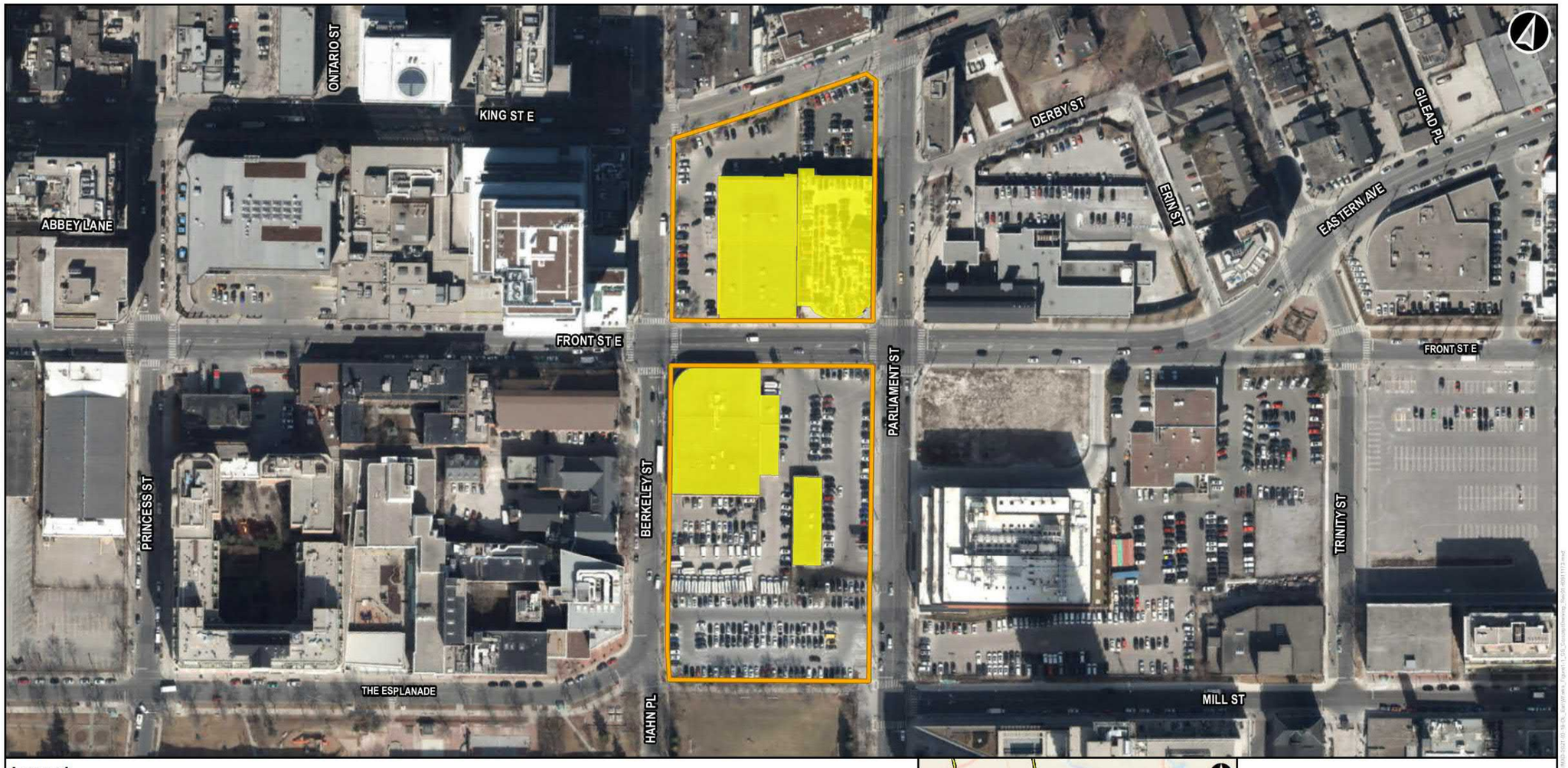
The purpose of this Report is to:

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

This Report supports the Ontario Line Corktown Station Early Works Report prepared in accordance with Ontario Regulation 341/20: Ontario Line Project.

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

Figure ES-1: Corktown Station Early Works Project Footprint and Components



ES.2 Methodology

This Report documents the assessment of the Corktown Station 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 2**.

Local Environmental Conditions

Background information and documentation relevant to local ambient air quality conditions within the Corktown Station Study Area is contained within the Ontario Line Final Environmental Conditions Report (AECOM, 2020)[1], which includes:

- Background air quality concentrations from representative air quality monitoring data;
- Recorded meteorological conditions;
- Existing road traffic emissions from car, 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:

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

ES.3 Local Environmental Conditions

There are existing exceedances of benzene and benzo(a)pyrene according to the Ambient Air Quality Criteria (Ministry of Environment, 2020) relevant to the Corktown Station Study Area. Benzene has elevated annual contributions that exceed the

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

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.

The nearest receptors include a condominium as well as an apartment building located to the northeast, at King Street East and Parliament Street, approximately 20 metres from the Project Footprint. Other nearby receptors are located to the southwest, approximately 100 to 300 metres from the Project Footprint, along The Esplanade and Lower Sherbourne Street. Additional nearby receptors include those along parts of Adelaide Street East, King Street East, Eastern Avenue, and Mill Street. These receptors are located approximately 250-350 metres from the Corktown Station Early Works Project Footprint.

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 Corktown Station 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 Corktown Station early works.

ES.5 Permits and Approvals

Section 5 notes that no air quality related permits or approvals are anticipated for the Corktown Station 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 Corktown Station Early Works

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Construction Air Quality	▪ Potential air quality impacts could include effects from diesel combustion and particulate emissions. Odour and visible dust may also cause public annoyance. ▪ 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. ▪ 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. ▪ Disruption of contaminated soils may release contaminants.	▪ 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, including benzene and benzo(a)pyrene emissions from exhaust. An Air Quality Management Plan 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 Air Quality Management Plan: – All equipment complies with Canadian engine emissions standards. – All equipment visually inspected prior to use and properly maintained. – Implement a no idling policy on site (unless necessary for equipment operation). – Use of electricity from the grid over diesel generators wherever possible. – Retrofitting of combustion engines with specific exhaust emission control measures such as particulate traps. – 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). ▪ Applicable mitigation measures from Environment Canada's Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005) and the Ministry of 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: – Complete earthwork grading within 10 days of ceased active construction. – Temporary seeding or mulching of bare soil and storage piles. – Compression or clodding of soil surfaces and storage piles to reduce erosion. – Confine storage pile activity to downwind side of piles. – Reduction of activities during high wind conditions. – Full or partial enclosure of demolition activities. – Wind screens or barriers where possible or necessary. – 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). – Landscaping materials ordered close to time of use to reduce on-site storage. – Application of soil stabilizers or dust control polymers where feasible. – Daily removal of accumulated mud, dirt and debris deposits on-site, and regular truck washing – Paved and unpaved roadway cleaning, watering or application of a non-chloride dust suppressant. – Minimize drop height of materials on-site. – Covering surface area of hauled bulk material. – Methods and equipment for cleanup of accidental spill of dusty materials. – Limit travel speeds on-site to a maximum of 16-24 kilometres per hour. ▪ If disruption of contaminated soils is anticipated at any time, ensure that contaminants are not released. ▪ Develop a communications protocol which includes timely resolution of complaints.	▪ The following monitoring activities should be considered in the development of the Air Quality Management Plan: – Baseline conditions should be established prior to construction for longer than one week to capture representative concentrations under varying meteorological conditions. – On-site meteorological monitoring in conjunction with real-time particulate monitoring representative of receptor impacts. – Place monitors both upwind and downwind of construction activities, where possible. – Application of threshold "Action Level" triggers for implementation of specific and increasing intensity mitigation activities linked to specific construction activities. – Reporting detailed results of ongoing monitoring and mitigation activities. – Monitoring at locations where there are persistent complaints, as required. ▪ In addition, relevant construction monitoring activities from the following recommended guidelines will be implemented during construction: – Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005); and, – Operations Manual for Air Quality Monitoring in Ontario (Ministry of the Environment, Conservation and Parks, 2018).

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1. Introduction

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.

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> "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."

Corktown Station early works are considered to be of strategic importance in enabling the timely implementation of the Project. The Corktown Station early works site has been identified as the launch site for the tunnel excavation equipment to complete tunnels and underground station spaces for the downtown and Don Yard segments and construction of the Corktown Station. The First Parliament site is located within the Corktown Station early works site and is a known archaeological site which requires additional archaeological studies ahead of any ground disturbance activities. The Corktown Station early works site will provide essential logistics support required for the Project's tunneling. To prepare this site, demolition of existing buildings and structures followed by completion of necessary archaeological studies is required. Completion of

this preparatory work on an expedited basis is essential to allow for the timely delivery of the overall Project.

Corktown Station 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 Corktown Station Early Works Report for the Project. This Air Quality Early Works Report (this Report) supports the Ontario Line Final Corktown Station Early Works Report and has been prepared for the Project to document the air quality impact assessment of Corktown Station early works (**Figure 1-1**). The early works components and construction activities are described in **Section 1.3**.

The purpose of this Report is to:

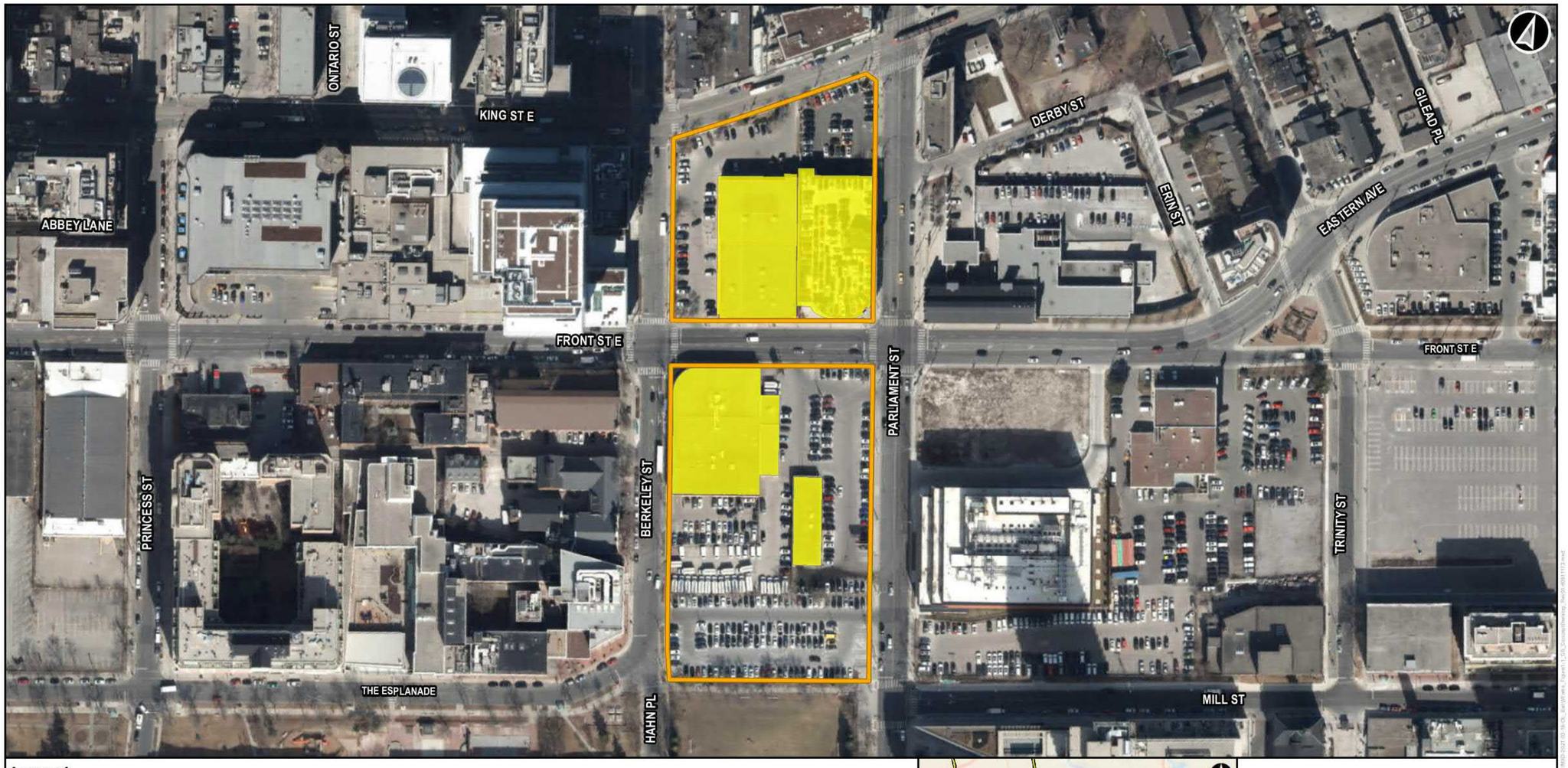
- Describe the local environmental conditions related to ambient air quality;
- Assess the potential impacts of early works construction activities on air quality; and
- Identify mitigation measures and monitoring activities for any negative impacts to air quality as a result of the early works construction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

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

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

Reg. Section	Requirement	Report Section
Section 8(2)2	The rationale for proceeding with the early works.	**Section 1.1**
Section 8(2)4	A description of the local environmental conditions at the site of the early works.	**Section 3**
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.	**Section 4**
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.	**Section 4**
Section 8(2)8	A description of the means Metrolinx proposes to use to monitor or verify the effectiveness of mitigation measures proposed.	**Section 4**
Section 8(2)9	A description of any municipal, provincial, federal or other approvals or permits that may be required for the early works.	**Section 5**

Figure 1-1: Corktown Station Early Works Project Footprint and Components



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/ roadway), 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 Corktown Station early works include demolition of existing buildings, removal of other structures and asphalt where required, decommissioning of utilities, and soil removal and/or remediation where required. These activities will enable the completion of environmental due diligence investigations, including archaeological assessments. These activities will occur on properties within the Corktown Station Early Works Project Footprint, as shown in **Figure 1-1**.

1.3.2 Early Works Project Footprint and Study Area

The Corktown Station Early Works Project Footprint, shown in **Figure 1-1**, is defined as the area of direct disturbance associated with the early works activities. The site is bound by King Street East to the north, Parliament Street to the East, Berkeley Street to the West and Parliament Square Park to the south.

For the purpose of this Report, the Corktown Station Study Area, also shown in **Figure 1-2**, includes the Corktown Station 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.

The Corktown Station 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 Corktown Station Early Works Report.

1.3.3 Construction Activities

Table 1-2 provides a description of the anticipated construction activities for the Corktown Station early works. These typical activities serve as the basis for the assessment of construction-related potential environmental effects. These activities may be expanded, further refined, or found to be unnecessary as early works planning progresses.

Figure 1-2: Corktown Station Early Works Project Footprint and Corktown Station Study Area

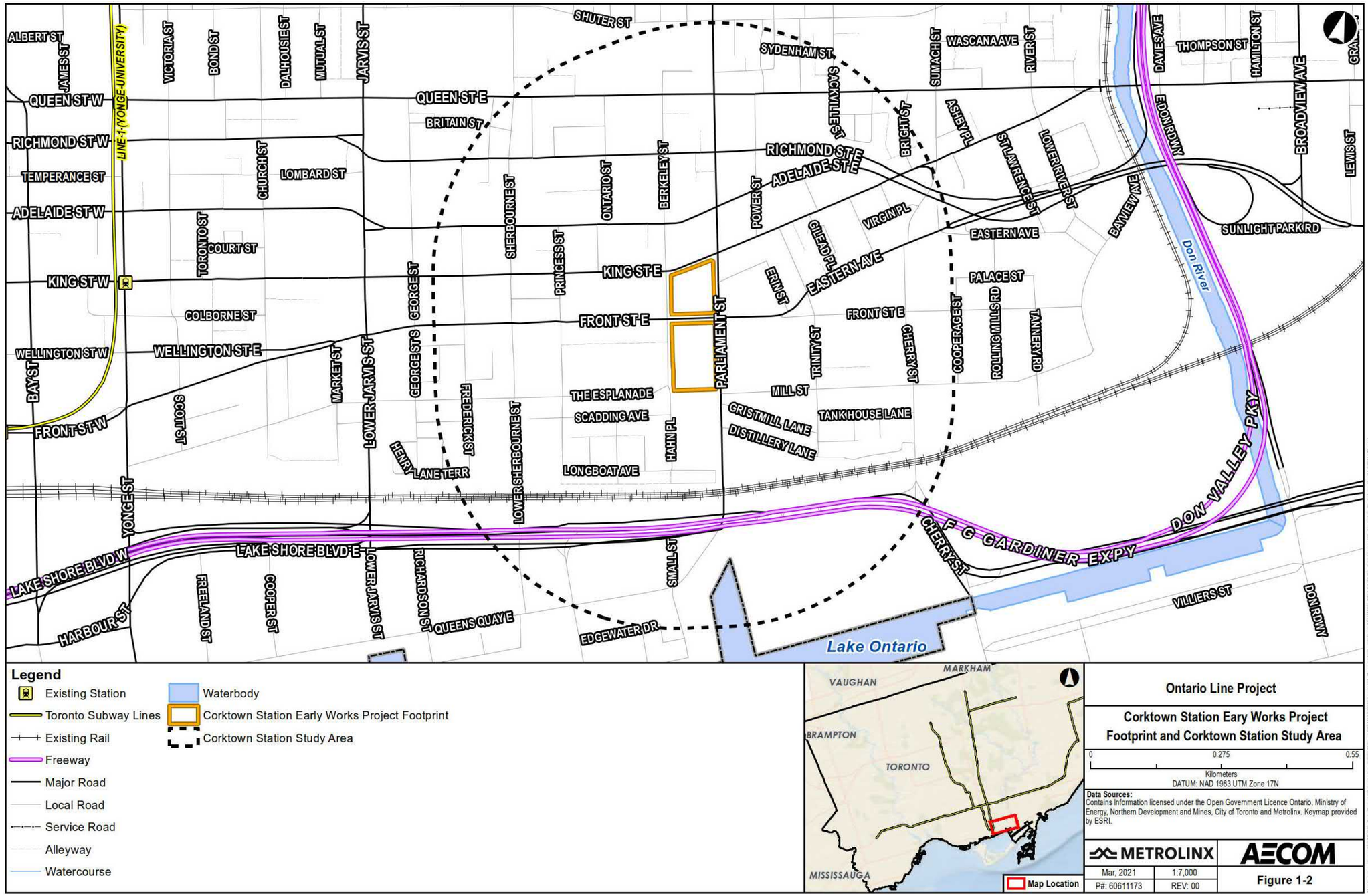


Table 1-2: Anticipated Construction Activities for the Ontario Line Corktown Station Early Works

Anticipated Construction Activity	Description	Associated Equipment
Site Preparation	▪ Mobilization of equipment and temporary facilities to the site. ▪ Clearing and grubbing of vegetation, tree removal and protection. ▪ Erection of temporary fences. ▪ Installation of environmental management features (e.g., erosion and sediment controls). ▪ Dewatering works. ▪ Demobilization. ▪ Temporary signs. ▪ Locates and surveys. ▪ Notices. ▪ Site specific documents (safety, approvals, permit etc.).	▪ Site compaction equipment and grading equipment. ▪ Vegetation removal equipment. ▪ Excavation equipment. ▪ Haulage/dump trucks. ▪ Dewatering equipment (pumps etc.). ▪ Hand tools. ▪ Surveying equipment. ▪ Flatbed truck. ▪ Forklift.
Site Servicing / Removals / Demolition	▪ Decommissioning, 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. ▪ Removal of paved driveways, parking areas, and sub-surface foundations and footings. ▪ Demolition and removal of buildings. ▪ Removal/remediation of contaminated soil.	▪ Excavation/demolition equipment including backhoe, dump trucks, spoils removal equipment, jackhammers. ▪ Hand tools. ▪ Mobile crane. ▪ Flatbed trucks. ▪ Boom truck.
Excavating and Grading	▪ Excavation and grading activities may involve earth-moving activities and stockpiling, as applicable. Excavated material will be accommodated on-site on the degree practicable; however, where necessary, surplus material will be disposed of off-site to an approved facility. ▪ Any off-site disposal shall be done in compliance with applicable regulations, including as it relates to contaminated material that may be encountered. ▪ Any groundwater encountered will be managed and disposed of in accordance with applicable regulations.	▪ Site compaction equipment and general grading equipment, dump trucks, soil removal equipment. ▪ Groundwater pumping equipment. ▪ Excavation equipment including backhoe, dump trucks, soil removal equipment, and jack hammers.

Anticipated Construction Activity	Description	Associated Equipment
Temporary Road Closures	▪ All road closures will follow standard traffic control management guidelines.	▪ Temporary traffic control devices such as signs, signals, barriers, traffic barrels, plate tampers.
Management of Stormwater	▪ All precipitation falling within the site will be managed as stormwater within a designed system of collection, conveyance, retention and discharge features, 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.	▪ Site compaction equipment and general grading equipment. ▪ Groundwater pumping.

2. Methodology

This Report documents the assessment of Corktown Station 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 separate cover.

2.1 Local Environmental Conditions

Local environmental conditions within the Corktown Station 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 Corktown Station Study Area. Higher volume of traffic results 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 Corktown Station 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 Corktown Station Study Area is contained within the Ontario Line Final Environmental Conditions Report (AECOM, 2020)[2], which includes:

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

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

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

2.1.2 Assessment of Contaminants

The primary air emission sources within the Corktown Station 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 Corktown Station 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/hr 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_X and fine particulate matter ($PM_{2.5}$). 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_2 (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_2 (assessed over 1-hour, 24-hour, and annual averaging period);
4. Particulate matter (<10 microns), PM_{10} (assessed over 24-hour and annual averaging periods);
5. Particulate matter (<2.5 microns), $PM_{2.5}$ (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. Suspended silica can range from 0.1 to 100 µm in diameter, can remain suspended in the air for long periods of time, and often is not visible with the naked eye. When inhaled, the small particles penetrate deep into the lungs and can cause scarring. For this reason, suspended silica is considered to be a health hazard. Silica dust is emitted from site preparation, demolition activities, excavation and grading while coarse fraction of particulates (PM_{10}) are emitted from site preparation, demolition activities, excavation and grading, as well as vehicular tire wear, brake wear, and road dust fugitives. Fine fraction ($PM_{2.5}$) is primarily 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, Conservations 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^3)
NO_2	Ambient Air Quality Criteria	One hour	400
NO_2	Ambient Air Quality Criteria	24 hours	200
NO_2 (1)	Canadian Ambient Air Quality Standards	One hour (2020)	113
NO_2 (1)	Canadian Ambient Air Quality Standards	Annual (2020)	32
NO_2 (1)	Canadian Ambient Air Quality Standards	One hour (2025)	78
NO_2 (1)	Canadian Ambient Air Quality Standards	Annual (2025)	22

Criteria Air Contaminant	Source of Standard	Averaging Period	Air Quality Threshold Value (µg/m^3)
CO	Ambient Air Quality Criteria	One hour	36,200
CO	Ambient Air Quality Criteria	Eight hours	15,700
SO_2 (2)	Ambient Air Quality Criteria	10-minute	178
SO_2 (2)	Ambient Air Quality Criteria	One hour	106
SO_2 (2)	Ambient Air Quality Criteria	Annual	11
SO_2 (3)	Canadian Ambient Air Quality Standards	One hour (2020)	183
SO_2 (3)	Canadian Ambient Air Quality Standards	Annual (2020)	13
SO_2 (3)	Canadian Ambient Air Quality Standards	One hour (2025)	170
SO_2 (3)	Canadian Ambient Air Quality Standards	Annual (2025)	10
PM_{10} (4)	Ambient Air Quality Criteria	24 hours	50
$PM_{2.5}$ (5)	Canadian Ambient Air Quality Standards	24 hours (2020)	27
$PM_{2.5}$ (5)	Canadian Ambient Air Quality Standards	Annual	8.8
Acetaldehyde	Ambient Air Quality Criteria	30-minute	500
Acetaldehyde	Ambient Air Quality Criteria	24 hours	500
Acrolein	Ambient Air Quality Criteria	One hour	4.5
Acrolein	Ambient Air Quality Criteria	24 hours	0.4
Benzene	Ambient Air Quality Criteria	24 hours	2.3
Benzene	Ambient Air Quality Criteria	Annual	0.45
Benzo(a)pyrene	Ambient Air Quality Criteria	24 hours	0.00005
Benzo(a)pyrene	Ambient Air Quality Criteria	Annual	0.00001
1,3-Butadiene	Ambient Air Quality Criteria	24 hours	10
1,3-Butadiene	Ambient Air Quality Criteria	Annual	2
Formaldehyde	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 98th percentile of the daily maximum one-hour average concentrations.

(2) The Ambient Air Quality Standards for SO_2 are reported in parts per billion and converted using the factor 2.66 µg/m^3 of SO_2 per 1 ppb of SO_2 (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 99th percentile of the daily maximum one-hour average concentrations.

(4) The value of 50 µg/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 ($PM_{2.5}$) is based on the 98th 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 $PM_{2.5}$, NO_2 and SO_2, 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 environmental effects are not expected where concentrations 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 in this report matched datasets previously used for the Ontario Line Final Environmental Conditions Report[3]. It was assumed that the existing ambient air quality would be representative of the current conditions present in the Corktown Station Study Area. The following National Air Pollution Surveillance air quality monitoring stations were selected as representative of the ambient air quality of the Corktown Station 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).

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

These stations are located nearest to the Corktown Station 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 Corktown Station Study Area are provided in **Table 2-2**. **Figure 2-1** presents the locations of the four air quality monitoring stations relative to the Corktown Station 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 Corktown Station Study Area

Station Information	Toronto West	Toronto Downtown	Gage Institute	Roadside Wallberg (University of Toronto)
National Air Pollution Surveillance Number	60430	60433	60427	60439
Address	125 Resources Road, Toronto	Bay and Wellesley Street, Toronto	223 College Street, Toronto	200 College Street, Toronto
Year of Data Available	2011 - 2017	2011 - 2017	2011 - 2014	2014 - 2017
Latitude	43.7094	43.66417	43.6582	43.6590
Longitude	-79.5435	-79.38722	-79.3972	-79.3954
Station Type	Urban	Urban	Urban	Urban
Pollutants Measured	CO, SO_2	NO_2, $PM_{2.5}$	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 90th percentile of hourly measurements from the representative air quality monitoring stations (the average value was calculated from the available years). The 90th 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 Corktown Station Study Area

2.1.5 Identification of Representative Receptors

Land use within the Corktown Station 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 Corktown Station Study Area were selected based on proximity to emission sources (i.e., the Corktown Station 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 Corktown Station Study Area are shown in **Figure 3-2** in **Section 3.4**.

2.2 Impact Assessment

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

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

3. Local Environmental Conditions

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 90th percentile of hourly measurements from the representative air quality monitoring stations (the average value was calculated from the available years). The 90th 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 90th percentile for the data set was to calculate the individual year's 90th percentile data, provided in a 1-year format from the National Air Pollution Surveillance Monitoring online data portal, then to determine the average of a selection of the most recent and complete five years' 90th percentile data.

As shown in **Table 3-1**, there are several air quality threshold exceedances within the monitored existing ambient air quality data. Benzene has elevated annual contributions which exceed the threshold guideline from the Ambient Air Quality Criteria. Benzo(a)pyrene, the representative polycyclic aromatic hydrocarbon, shows elevated levels of concentration for both annual and daily provincial air quality thresholds. This is due mainly to high presence of regional air quality contributions, high traffic volumes within the Greater Toronto Area, and industrial contributions from Toronto, the Greater Toronto Area, and Hamilton.

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

Criteria Air Contaminant	Station Identification	Averaging Period	Years	Average of Background Data (µg/m^3)	Statistical Measure	Standard Threshold (µg/m^3)	Standard Source	% of Standard Threshold
NO_2	60433	One hour	2013-2017	49.50	90th Percentile	400	Ambient Air Quality Criteria	12%
NO_2	60433	One hour	2013-2017	49.50	90th Percentile	113	Canadian Ambient Air Quality Standards	44%
NO_2	60433	24 hours	2013-2017	41.75	90th Percentile	200	Ambient Air Quality Criteria	21%
NO_2	60433	Annual	2013-2017	26.68	Mean	32	Canadian Ambient Air Quality Standards	83%
CO	60430	One hour	2013-2017	446	90th Percentile	36,200	Ambient Air Quality Criteria	1%
CO	60430	8 hours	2013-2017	419	90th Percentile	15,700	Ambient Air Quality Criteria	3%
SO_2 (2)	60430	10-min.	2013-2017	9.11	90th Percentile	178	Ambient Air Quality Criteria	5%
SO_2	60430	One hour	2013-2017	5.51	90th Percentile	106	Ambient Air Quality Criteria	5%
SO_2	60430	Annual	2013-2017	1.84	Mean	10	Ambient Air Quality Criteria	17%
PM_{10} (3)	60433	24 hours	2013-2017	25.78	90th Percentile	50	Ambient Air Quality Criteria	51%
$PM_{2.5}$	60433	24 hours	2013-2017	13.89	90th Percentile	27	Canadian Ambient Air Quality Standards	51%
$PM_{2.5}$	60433	Annual	2013-2017	7.94	Mean	8.8	Canadian Ambient Air Quality Standards	90%
Acetaldehyde (4)	60439	30-min.	2014-2017	5.00	90th Percentile	500	Ambient Air Quality Criteria	1%
Acetaldehyde	60439	24 hours	2014-2017	1.69	90th Percentile	500	Ambient Air Quality Criteria	0%
Acrolein (5)	60439	One hour	2014-2017	0.17	90th Percentile	4.5	Ambient Air Quality Criteria	4%
Acrolein	60439	24 hours	2014-2017	0.07	90th Percentile	0.4	Ambient Air Quality Criteria	17%
Benzene	60427	24 hours	2011-2014	0.92	90th Percentile	2.3	Ambient Air Quality Criteria	40%
Benzene	**60427**	**Annual**	**2011-2014**	**0.61**	**90th Percentile**	**0.45**	**Ambient Air Quality Criteria**	**134%**
Benzo(a)-pyrene	**60427 60439**	**24 hours**	**2011-2015**	**1.21E-04**	**90th Percentile**	**0.00005**	**Ambient Air Quality Criteria**	**242%**
Benzo(a)-pyrene	**60427 60439**	**Annual**	**2011-2015**	**6.72E-05**	**90th Percentile**	**0.00001**	**Ambient Air Quality Criteria**	**672%**
1,3-Butadiene	60427	24 hours	2011-2014	0.10	90th Percentile	10	Ambient Air Quality Criteria	1%
1,3-Butadiene	60427	Annual	2011-2014	0.06	90th Percentile	2	Ambient Air Quality Criteria	3%
Formaldehyde	60439	24 hours	2014-2017	3.16	90th 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_2) are measured on an hourly basis, background concentrations for the 30-minute averaging period have been converted using the Ministry of the Environment, Conservation and Parks' conversion factor where $C_{0.5hr} = C_{1hr} \times (1hr/0.5hr)^{0.28}$.

(3) PM_{10} was not included in National Air Pollution Surveillance air quality monitoring station measurements, and therefore was estimated using PM2.5 measurements, assuming a ratio of 1 µg/m3 PM10 per 0.54 µg/m3 of PM2.5 as per Lall et al. publication in Atmospheric Environment, Estimation of historical annual $PM_{2.5}$ 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 $C_{0.5hr} = C_{24hr} \times (24hr/0.5hr)^{0.28}$.

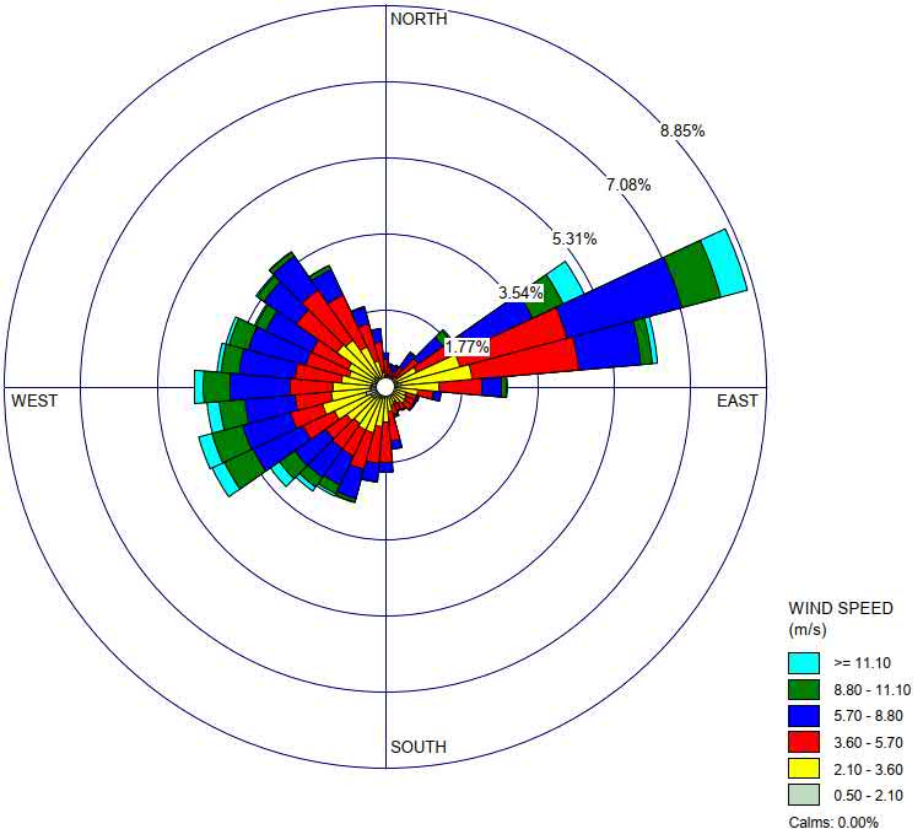
(5) Concentrations of acrolein are measured on a 24 hour basis, background concentrations for the hourly averaging period have been converted using the Ministry of the Environment, Conservation and Parks' conversion factor where $C_{1hr} = C_{24hr} \times (1hr/24hr)^{0.28}$.

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 Corktown Station 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 Corktown Station 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 Corktown Station Study Area. The wind rose for the five-year meteorological period (2015-2019) 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 Corktown Station Study Area



3.3 Traffic Assessment

Major traffic sources within the Corktown Station Study Area include the following major roadways:

- Sherbourne Street;
- Parliament Street;
- Cherry Street;
- Queen Street East;
- Richmond Street East;
- Adelaide Street East;
- King Street East;
- Front Street East;
- Eastern Avenue;
- Berkeley Street;
- The Esplanade;
- Lakeshore Blvd; and
- Gardiner Expressway.

There is also transient and local traffic on Mill Street, providing northern access points to the Distillery District. **Table 3-2** shows the summary of annual average daily traffic data for cars, trucks, and buses (where available) along the major roads within the Corktown Station Study Area. Raw turning movement counts of traffic representative of the Corktown Station Study Area are included in **Appendix B**.

The purpose of providing representative annual averaged daily traffic data is to demonstrate the relative contribution from each major roadway within the Corktown Station Study Area. The data presented in **Table 3-2** indicates that the Gardiner Expressway has the greatest traffic levels and is likely to have the greatest impact on local air quality.

Table 3-2: Representative Traffic Data Within the Corktown Station Study Area

Road Segment	2019 Annual Averaged Daily Traffic: Cars	2019 Annual Averaged Daily Traffic: Trucks	2019 Annual Averaged Daily Traffic: Bus
Sherbourne Street	7,748	470	56
Parliament Street	9,950	794	140
Cherry Street North of Mill Street	3,404	376	56
Cherry Street South of Mill Street	4,820	508	--
Queen Street East	10,568	172	--

Road Segment	2019 Annual Averaged Daily Traffic: Cars	2019 Annual Averaged Daily Traffic: Trucks	2019 Annual Averaged Daily Traffic: Bus
Richmond Street East	16,962	966	--
Adelaide Street East	16,962	966	--
King Street East	15,640	702	--
Front Street East	14,318	438	84
Eastern Avenue	10,768	168	28
Berkeley Street	1,328	48	84
The Esplanade	1,732	104	140
Mill Street	2,452	160	56
Lakeshore Blvd E	20,157	884	72
Gardiner Expressway	51,846	3,111	--

3.4 Representative Receptors

There is a diverse range of land uses within the Corktown Station Study Area. This includes residential apartments and complexes, commercial buildings, schools, day-care centres, and mixed-use land uses.

Several critical and sensitive receptors were identified within the Corktown Station Study Area. Sensitive and critical receptors are defined in **Section 2.1.5**.

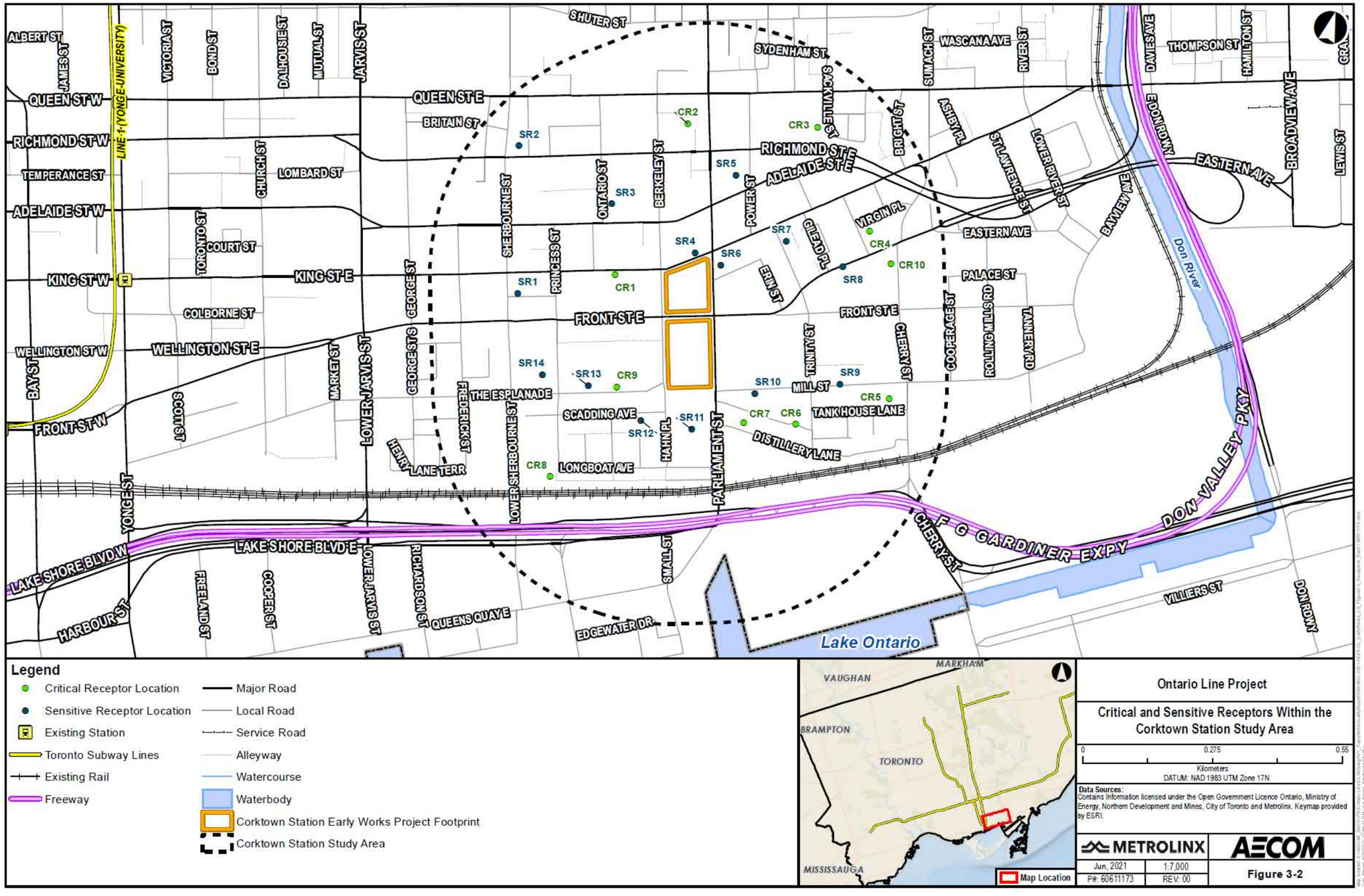
There are future condominium complex developments (i.e., planned or under active construction) within the Corktown Station Study Area (e.g. the condominium complex buildings under construction at Adelaide Street East at Power Street, Eastern Avenue at Sackville Street and Front Street at Princess Street). These future developments were identified and included as representative sensitive receptors within the Corktown Station Early Works Study Area. Additionally, there is a new long-term care home being proposed at 55 Eastern Avenue, which was included as a critical receptor.

Representative receptors are listed in **Table 3-3** and shown in **Figure 3-2**.

Table 3-3: Critical and Sensitive Receptors Within the Corktown Station Study Area

Receptor Identification	Receptor Type	Address	Description	UTM Easting (m)	UTM Northing (m)
CR1	Critical	341 King Street East, Toronto	George Brown College	631798.00	4834498.00
CR2	Critical	162 Parliament Street, Toronto	Liberty Prep, Montessori School	631863.00	4834848.00
CR3	Critical	80 Sackville Street, Toronto	St. Paul Catholic School	632128.00	4834922.00
CR4	Critical	19 Sackville Street, Toronto	Inglenook Community High School	632297.00	4834743.00
CR5	Critical	50 Tank House Lane, Toronto	George Brown Theatre School	632441.00	4834417.00
CR6	Critical	50 Gristmill Lane, Toronto	Voice Integrative School	632268.00	4834306.00
CR7	Critical	8 Distillery Lane, Toronto	Distillery District Early Learning Centre (Daycare	632161.00	4834277.00
CR8	Critical	2 Princess Street, Toronto	St. Lawrence Co-Op Day Care Inc	631802.00	4834049.00
CR9	Critical	246 The Esplanade, Toronto	Market Lane Junior and Senior Public School	631882.00	4834271.00
CR10	Critical	55 Eastern Ave, Toronto	Cherry Place Long-term Care Home	632360.00	4834691.00
SR1	Sensitive	39 Sherbourne Street, Toronto	Apartment / condo building	631623.00	4834399.00
SR2	Sensitive	320 Richmond Street East, Toronto	Apartment / condo building	631534.00	4834699.00
SR3	Sensitive	75 Ontario Street, Toronto	Apartment / condo building	631758.00	4834640.00
SR4	Sensitive	318 King Street East, Toronto	Apartment / condo building	631957.00	4834591.00
SR5	Sensitive	46-48 Power Street, Toronto	Apartment / condo building	631992.00	4834774.00
SR6	Sensitive	393 King Street East, Toronto	Apartment / condo building	632017.00	4834583.00
SR7	Sensitive	115 Trinity Street Toronto	Residential Townhouse	632135.00	4834671.00
SR8	Sensitive	28 Eastern Avenue, Toronto	Apartment / condo building	632265.00	4834655.00
SR9	Sensitive	70 Mill Street, Toronto	Apartment / condo building	632332.00	4834415.00
SR10	Sensitive	33 Mill Street, Toronto	Apartment / condo building	632179.00	4834345.00
SR11	Sensitive	33 Hahn Place, Toronto	Apartment / condo building	632055.00	4834243.00
SR12	Sensitive	125 Scadding Avenue, Toronto	Apartment / condo building	631946.00	4834226.00
SR13	Sensitive	222 The Esplanade, Toronto	Apartment / condo building	631811.00	4834247.00
SR14	Sensitive	177 Front Street East, Toronto	Apartment / condo building	631729.00	4834240.00

Figure 3-2: Critical and Sensitive Receptors Within the Corktown Station Study Area



4. Potential Impacts, Mitigation Measures and Monitoring Activities

In accordance with Sections 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 Corktown Station early works.

Potential impacts to air quality as a result of disturbances associated with the Corktown Station 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 Corktown Station 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 Corktown Station early works construction activities would therefore potentially be directed towards the receptors along The Esplanade and Lower Sherbourne Street. These receptors are approximately 100 to 300 metres west or southwest of the Corktown Station Early Works Project Footprint.

Secondary predominant winds blow from the west, northwest and southwest which would have an impact on receptors located along parts of Adelaide Street East, King Street East, Eastern Avenue, and Mill Street. Receptors that are closest in proximity to the Corktown Station Early Works Project Footprint include a condominium as well as an apartment building located to the northeast, at King Street East and Parliament Street, approximately 20 metres from the Project Footprint.

The remaining receptors are located approximately 250-350 metres from Corktown Station Early Works Project Footprint and the relative impact of particulate from the secondary predominant winds is expected to be diluted in comparison to the receptors closer to the construction activities.

There are no exceedances in the existing ambient level of particulates (PM_{10} and $PM_{2.5}$) within the Corktown Station Study Area when comparing to the 90^{th} percentile of National Air Pollution Surveillance monitoring station data. However, given that the annual averaging period for ambient levels 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 Corktown Station early works

construction. Construction activities which may contribute to local particulate and dust settling within the Corktown Station Study Area include demolition and earth-moving activities such as excavation and grading, stockpiling, etc.

Existing ambient level of nitrogen dioxide are currently 12% and 21% of the Ambient Air Quality Criteria limits for the 1-hour and 24-hour averaging periods, while the annual average is currently at 83%. When comparing nitrogen dioxide to the Canadian Ambient Air Quality Standards, the current concentration is 44% of the threshold limit. Benzene and benzo(a)pyrene are the only contaminates which currently exceed their recommended limits. The contributions of benzene and benzo(a)pyrene from the Corktown Station 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 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 Corktown Station early works.

Table 4-1: Potential Air Quality Impacts, Mitigation Measures and Monitoring Activities for the Corktown Station Early Works

Environmental Component	Potential Impacts	Mitigation Measure(s)	Monitoring Activities
Construction Air Quality	▪ Potential air quality impacts could include effects from diesel combustion and particulate emissions. Odour and visible dust may also cause public annoyance. ▪ 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. ▪ 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. ▪ Disruption of contaminated soils may release contaminants.	▪ 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. An Air Quality Management Plan 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 Air Quality Management Plan: – All equipment complies with Canadian engine emissions standards. – All equipment visually inspected prior to use and properly maintained. – Implement a no idling policy on site (unless necessary for equipment operation). – Use of electricity from the grid over diesel generators wherever possible. – Retrofitting of combustion engines with specific exhaust emission control measures such as particulate traps. – 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). ▪ 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 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: – Complete earthwork grading within 10 days of ceased active construction. – Temporary seeding or mulching of bare soil and storage piles. – Compression or clodding of soil surfaces and storage piles to reduce erosion. – Confine storage pile activity to downwind side of piles. – Reduction of activities during high wind conditions. – Full or partial enclosure of demolition activities. – Wind screens or barriers where possible or necessary. – 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). – Landscaping materials ordered close to time of use to reduce on-site storage. – Application of soil stabilizers or dust control polymers where feasible. – Daily removal of accumulated mud, dirt and debris deposits on-site, and regular truck washing – Paved and unpaved roadway cleaning, watering or application of a non-chloride dust suppressant. – Minimize drop height of materials on-site. – Covering surface area of hauled bulk material. – Methods and equipment for cleanup of accidental spill of dusty materials. – Limit travel speeds on-site to a maximum of 16-24 kilometres per hour. ▪ If disruption of contaminated soils is anticipated at any time, ensure that contaminants are not released. ▪ Develop a communications protocol which includes timely resolution of complaints.	▪ The following monitoring activities should be considered in the development of the Air Quality Management Plan: – Baseline conditions should be established prior to construction for longer than one week to capture representative concentrations under varying meteorological conditions. – On-site meteorological monitoring in conjunction with real-time particulate monitoring representative of receptor impacts. – Place monitors both upwind and downwind of construction activities, where possible. – Application of threshold "Action Level" triggers for implementation of specific and increasing intensity mitigation activities linked to specific construction activities. – Reporting detailed results of ongoing monitoring and mitigation activities. – Monitoring at locations where there are persistent complaints, as required. ▪ In addition, relevant construction monitoring activities from the following recommended guidelines will be implemented during construction: – Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005); and, – Operations Manual for Air Quality Monitoring in Ontario (Ministry of the Environment, Conservation and Parks, 2018).

5. Permits and Approvals

No air quality related permits or approvals are anticipated for the Corktown Station 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.

6. References

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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	4.45	17.94
	60438		ND	ND	ND	ND	ND	ND	31.00	ND	ND	ND	ND	ND	ND	28.75
	60440		ND	ND	ND	ND	ND	ND	22.00	ND	ND	ND	ND	ND	ND	20.35
	60429		ND	20.10	ND	ND	ND	ND	ND	ND	17.30	ND	ND	ND	ND	ND
Carbon monoxide	60430	ppm	0.30	0.40	0.36	0.37	0.36	0.36	0.35	0.31	0.36	0.35	0.36	0.35	0.34	0.34
	60438		ND	ND	ND	ND	ND	ND	0.54	ND	ND	ND	ND	ND	ND	0.49
	60440		ND	ND	ND	ND	ND	ND	0.33	ND	ND	ND	ND	ND	ND	0.31
Sulphur dioxide	60430	ppb	3.00	2.00	1.00	1.00	2.00	1.00	1.00	2.75	1.75	1.38	1.50	1.87	1.25	1.00
	60434		2.00	2.00	2.00	3.00	3.00	2.00	ND	2.50	1.63	1.63	2.50	2.50	1.79	ND
	60450		ND	ND	ND	ND	ND	32.00	ND	ND	ND	ND	ND	ND	31.41	ND
	60438		ND	ND	ND	ND	ND	ND	1.00	ND	ND	ND	ND	ND	ND	0.75
	60440		ND	ND	ND	ND	ND	ND	0.00	ND	ND	ND	ND	ND	ND	0.38
Fine particulate ($PM_{2.5}$)	60410	µg/m3	14.00	14.00	16.00	17.00	17.00	13.00	14.00	13.20	13.19	15.50	16.64	17.00	12.88	13.25
	60421		17.00	16.00	16.00	17.00	18.00	14.00	ND	16.60	14.88	15.50	16.63	18.00	14.25	ND
	60428		13.00	13.00	17.00	18.00	18.00	14.00	ND	12.25	12.14	16.09	16.88	17.24	13.13	ND
	60430		15.00	15.00	18.00	17.00	17.00	13.00	14.00	13.75	13.63	16.63	16.25	17.00	12.84	13.59
	60433		14.00	14.00	16.00	17.00	17.00	13.00	14.00	12.75	13.38	15.66	16.00	16.08	12.99	13.88
	60434		13.00	13.00	16.00	16.00	17.00	14.00	14.00	12.63	12.38	15.00	15.63	16.63	13.75	13.24
	60435		15.00	15.00	18.00	19.00	19.00	15.00	16.00	13.75	13.86	17.38	17.95	18.36	14.25	15.00
	60438		ND	ND	ND	ND	ND	ND	17.00	ND	ND	ND	ND	ND	ND	15.80
	60440		ND	ND	ND	ND	ND	ND	15.00	ND	ND	ND	ND	ND	ND	13.63
	60450		ND	ND	ND	ND	ND	ND	13.00	ND	ND	ND	ND	ND	ND	12.94
	60429		ND	12.70	ND	ND	ND	ND	ND	ND	9.20	ND	ND	ND	ND	ND

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

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	4.36	8.19
	60438		ND	ND	ND	ND	ND	ND	26.86	ND	ND	ND	ND	ND	ND	17.91
	60440		ND	ND	ND	ND	ND	ND	18.28	ND	ND	ND	ND	ND	ND	10.49
	60429		ND	14.67	ND	ND	ND	ND	ND	ND	14.67	ND	ND	ND	ND	ND
Carbon monoxide	60430	ppm	0.30	0.34	0.33	0.33	0.33	0.32	0.34	0.20	0.26	0.25	0.26	0.25	0.25	0.25
	60438		ND	ND	ND	ND	ND	ND	0.45	ND	ND	ND	ND	ND	ND	0.33
	60440		ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND	ND	ND	ND	0.22
Sulphur dioxide	60430	ppb	2.53	1.65	1.25	1.46	1.86	1.21	1.00	1.54	0.58	0.48	0.74	1.02	0.64	0.46
	60434		2.25	1.44	1.71	2.28	2.39	1.78	ND	1.29	0.58	0.70	1.28	1.06	1.04	ND
	60450		ND	ND	ND	ND	ND	29.82	ND	ND	ND	ND	ND	ND	29.82	ND
	60438		ND	ND	ND	ND	ND	ND	0.63	ND	ND	ND	ND	ND	ND	0.22
	60440		ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	0.13
Fine particulate ($PM_{2.5}$)	60410	µg/m3	12.01	12.23	15.75	15.56	15.43	12.25	12.38	6.16	6.25	8.16	8.92	8.45	7.03	7.41
	60421		15.54	14.46	14.90	15.40	16.95	12.92	ND	7.72	7.26	8.29	9.22	9.36	7.35	ND
	60428		12.11	11.83	15.08	15.76	16.17	11.86	ND	5.97	5.69	8.50	8.91	8.42	6.83	ND
	60430		12.60	13.13	15.71	14.57	16.18	12.02	12.03	6.92	7.05	8.76	9.06	8.52	6.99	7.41
	60433		11.99	13.02	15.56	14.83	15.20	11.67	12.88	6.24	6.41	8.25	8.67	8.38	6.98	7.38
	60434		11.64	11.86	15.00	14.58	16.02	12.79	12.58	6.03	5.98	7.87	8.65	8.51	7.22	6.85
	60435		12.65	13.23	16.99	16.07	17.56	13.27	13.97	6.73	6.65	9.36	9.81	9.44	8.06	8.17
	60438		ND	ND	ND	ND	ND	ND	14.53	ND	ND	ND	ND	ND	ND	9.22
	60440		ND	ND	ND	ND	ND	ND	12.54	ND	ND	ND	ND	ND	ND	7.36
	60450		ND	ND	ND	ND	ND	ND	11.62	ND	ND	ND	ND	ND	ND	6.98
	60429		ND	7.92	ND	ND	ND	ND	ND	ND	7.92	ND	ND	ND	ND	ND

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

Metrolinx – Ontario Line Early Works
Air Quality Early Works Memorandum Report - Attachment 2

Contaminant	Units	NAPS Station ID	CCME 98th percentile of 1-hour Daily Max							CCME 1-hour (3-year average)
			2011	2012	2013	2014	2015	2016	2017	
Acrolein	µg/m3	60439	-	-	-	-	-	-	-	-
Acetaldehyde	µg/m3	60439	-	-	-	-	-	-	-	-
Formaldehyde	µg/m3	60439	-	-	-	-	-	-	-	-
Benzene	µg/m3	60427	-	-	-	-	-	-	-	-
		60435	-	-	-	-	-	-	-	-
1,3-Butadiene	µg/m3	60427	-	-	-	-	-	-	-	-
		60435	-	-	-	-	-	-	-	-
Benzo(a)pyrene	ng/m3	60427	-	-	-	-	-	-	-	-
		60435	-	-	-	-	-	-	-	-
		60439	-	-	-	-	-	-	-	-
		60430	-	-	-	-	-	-	-	-
Nitrogen Dioxide	ppb	60410	50.72	45.76	47.72	57.00	54.72	52.74	44.72	54.82
		60421	51.00	49.00	48.72	53.72	49.72	47.70	ND	51.48
		60428	51.72	47.76	44.48	53.00	49.72	47.00	ND	51.48
		60430	56.00	51.70	56.72	59.76	55.76	52.70	50.00	57.49
		60433	48.74	44.74	47.16	50.78	48.00	47.00	43.00	49.17
		60434	46.00	38.56	42.48	48.72	47.74	42.00	36.00	47.49
		60435	59.74	61.00	62.72	66.74	64.76	56.00	50.00	64.74
		60450	ND	ND	ND	ND	ND	6.00	41.78	Not Enough Data
		60438	ND	ND	ND	ND	ND	ND	50.56	Not Enough Data
		60440	ND	ND	ND	ND	ND	ND	44.44	Not Enough Data
		60429	ND	28.00	ND	ND	ND	ND	ND	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
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 ($PM_{2.5}$)	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

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Appendix B

Qualitative Assessment Summary Tables

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 Boultbee 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

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

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

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

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

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

Bus Route	Bus Route Description	Speed Limit [km/hr]	Vehicle Type	AADT
Route 72	Along Pape Avenue, Riverdale Ave, Carlaw Ave past Gerrard, Carlaw Ave past Dundas.	40	Bus	72
Route 65	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
Route 121AD	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
Route 75	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
Express Route 141	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
Route 72BC	Lakeshore at Cherry to Lakeshore at Parliament, to Queens Quay E at Lower Jarvis St.	60	Bus	72
Route 83	Jones Ave at Harcourt to Jones Ave at Boultbee Ave.	40	Bus	24
Route 506	Gerrard St at Logan to Gerrard St at Marjory Ave.	40	Bus	32
Express Route 143	Eastern Ave. at Booth Ave to Eastern Ave. at Bayview Ave.	50	Bus	28
Route97B	Shuter St at Yonge St to Richmond St at Yonge St.	40	Bus	32
Route 142	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 D3-2: TTC Service Summary - Route 83 Jones

Time Period	Vehicle Typ	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 D3-3: 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 D3-4: TTC Service Summary - Route 501 Queen

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

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 D3-6: TTC Service Summary - Route 65 Parliament

Time Period	Vehicle Typ	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 D3-7: 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 D3-8: TTC Service Summary - Route 75 Sherbourne

Time Period	Vehicle Typ	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 D3-9: 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 D3-10: TTC Service Summary - Route 141 Downtown

Time Period	Vehicle Typ	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 - Disteillery Loop

		2019	
Time Period	Vehicle Type	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 Broadvie

		2019	
Time Period	Vehicle Typ	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

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

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

		2019	
Time Period	Vehicle Typ	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

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

Table D3-16: 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 Eglington East

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

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

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

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

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

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

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

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

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

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

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	-

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

		Aug-22-2019 (Thursday)															
		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			SUM NORTH	SUM EAST	SUM SOUTH	SUM WEST
Time Period	Vehicle Typ	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	ID: OLS23	ID: OLS24	ID: --	ID: OLS25
7:45	CAR	18	0	1	5	4	3	23	55	1	14	0	36	44	20	81	75
	TRK	2	0	0	1	1	2	5	0	1	0	0	2	9	2	10	1
	BUS	3	0	1	0	0	0	4	0	0	0	0	0	7	0	7	1
8:00	CAR	18	0	3	20	1	3	27	2	1	15	0	37	48	36	83	40
	TRK	3	0	3	4	2	1	5	0	1	0	0	5	9	5	15	7
	BUS	2	0	2	0	0	0	4	0	0	0	0	0	6	0	6	2
8:15	CAR	17	0	5	8	4	3	40	6	2	12	2	36	62	22	97	31
	TRK	4	0	1	0	1	0	0	0	1	0	0	5	4	1	10	1
	BUS	2	0	1	0	0	0	4	0	0	0	0	0	6	0	6	1
8:30	CAR	8	0	8	19	9	10	37	5	3	16	1	57	56	38	111	48
	TRK	4	0	2	0	1	2	5	0	1	0	0	1	11	1	11	2
	BUS	2	0	1	0	0	0	3	0	0	0	0	1	5	0	6	1
8:45	CAR	24	0	7	12	7	8	50	5	1	18	2	55	84	31	136	42
	TRK	3	0	2	1	0	0	7	0	0	0	0	2	10	1	12	3
	BUS	3	0	1	0	0	0	4	0	0	1	0	0	7	1	7	2
9:00	CAR	24	0	7	20	8	5	43	7	1	18	1	65	73	39	140	52
	TRK	5	0	2	0	1	1	5	0	1	1	0	9	11	2	20	3
	BUS	4	0	2	0	0	0	6	0	0	0	0	0	10	0	10	2
9:15	CAR	20	0	6	8	9	7	56	5	3	13	3	47	86	24	132	32
	TRK	4	0	0	2	3	2	0	0	1	2	1	3	7	5	10	4
	BUS	3	0	1	0	0	0	4	0	0	1	0	0	7	1	7	2
9:30	CAR	29	0	9	12	5	9	46	4	3	12	2	42	86	27	122	37
	TRK	6	0	1	1	0	1	9	0	0	9	1	9	17	10	24	11
	BUS	3	0	0	0	0	0	3	0	0	0	0	0	6	0	6	0
10:15	CAR	16	0	1	12	2	7	42	3	1	6	1	21	66	19	81	22
	TRK	7	0	1	1	0	2	11	0	0	2	0	4	20	3	22	4
	BUS	4	0	1	0	1	0	3	0	0	0	0	0	7	0	8	1
10:30	CAR	18	0	6	17	8	4	38	2	2	3	0	22	60	22	86	28
	TRK	3	1	1	3	0	3	5	0	0	0	1	2	12	4	10	4
	BUS	1	0	0	0	0	0	4	0	0	0	0	0	5	0	5	0
10:45	CAR	12	0	3	10	5	6	32	10	1	9	2	11	52	20	60	32
	TRK	6	0	2	0	0	0	9	0	0	0	0	3	15	0	18	2
	BUS	3	0	1	0	0	0	3	0	0	0	0	2	6	0	8	1
11:00	CAR	10	0	4	12	6	9	39	9	2	7	0	21	58	21	76	32
	TRK	3	0	0	3	1	0	4	0	0	0	1	4	8	3	12	3
	BUS	1	0	0	1	0	0	4	0	0	0	0	0	5	1	5	1
11:15	CAR	25	0	5	8	11	3	41	4	1	3	0	28	69	12	105	20
	TRK	8	0	0	1	2	0	7	0	0	0	0	3	15	1	20	1
	BUS	3	0	2	0	0	0	3	0	0	0	0	0	6	0	6	2
11:30	CAR	18	0	4	12	10	12	61	4	3	10	3	36	94	25	125	30
	TRK	5	0	0	0	2	2	11	1	1	1	0	8	18	2	26	2
	BUS	1	0	1	0	0	0	2	0	0	0	0	0	3	0	3	1
11:45	CAR	16	0	1	14	5	6	67	5	3	7	1	31	90	24	119	27
	TRK	5	0	1	3	1	1	9	0	1	2	0	3	15	6	18	6
	BUS	2	0	1	0	0	0	4	0	0	0	0	0	6	0	6	1
12:00	CAR	10	1	11	11	10	11	75	6	1	10	1	35	97	23	130	38
	TRK	4	0	1	1	3	1	5	2	0	1	1	11	11	2	23	5
	BUS	2	0	1	0	0	0	1	0	0	0	0	0	3	0	3	1
13:15	CAR	21	0	3	9	8	4	48	2	7	9	1	16	74	25	93	23
	TRK	5	0	0	1	1	0	7	0	1	0	0	6	12	2	19	1
	BUS	4	0	1	0	0	0	5	0	0	0	0	0	9	0	9	1
13:30	CAR	13	1	4	15	12	13	43	8	2	8	1	23	70	26	91	35
	TRK	4	0	1	3	3	1	5	0	0	1	0	6	10	4	18	5
	BUS	2	0	0	0	0	0	1	0	0	0	0	0	3	0	3	0
13:45	CAR	11	1	5	14	12	11	35	8	7	6	3	21	60	28	79	33
	TRK	6	0	0	0	1	2	8	0	0	2	0	7	16	2	22	2
	BUS	2	0	1	0	0	0	4	0	0	0	0	0	6	0	6	1
14:00	CAR	17	0	7	12	4	6	56	9	2	7	4	19	83	21	96	35
	TRK	5	0	2	5	1	0	18	1	0	1	0	4	23	6	28	9
	BUS	2	0	1	0	1	0	2	0	0	0	0	0	4	0	5	1
14:15	CAR	23	1	5	10	15	9	38	5	4	15	3	27	73	30	103	35
	TRK	3	0	0	1	1	0	13	0	0	1	0	7	16	2	24	2
	BUS	0	0	0	0	0	1	3	0	0	0	0	1	4	0	4	0
14:30	CAR	16	0	3	16	9	7	58	2	1	5	1	38	82	22	121	26
	TRK	3	0	1	3	1	1	7	1	0	0	0	8	11	3	19	5
	BUS	2	0	1	0	0	0	4	0	0	0	0	0	6	0	6	1
14:45	CAR	24	0	5	19	10	8	77	4	3	8	2	38	111	30	149	36
	TRK	2	0	1	1	1	0	12	0	1	0	1	10	15	2	25	2
	BUS	2	0	1	0	0	2	2	0	0	0	0	0	6	0	4	1
15:00	CAR	23	0	2	20	6	9	97	6	5	5	1	24	130	30	150	33
	TRK	6	1	0	1	4	2	14	0	0	0	0	6	22	2	30	1
	BUS	3	0	1	0	0	0	2	0	0	0	0	0	5	0	5	1
16:15	CAR	26	2	6	31	6	12	94	10	5	5	2	31	134	43	157	52
	TRK	4	1	0	0	0	0	12	0	1	0	0	4	16	2	20	0
	BUS	2	0	0	0	0	0	4	0	0	1	0	0	6	1	6	1
16:30	CAR	17	0	10	35	11	10	101	8	6	7	0	28	128	48	157	60
	TRK	4	0	0	3	0	0	12	0	0	1	0	6	16	4	22	4
	BUS	2	0	0	0	0	0	4	0	0	0	0	0	6	0	6	0
16:45	CAR	25	0	6	31	10	14	82	11	5	5	0	28	121	41	145	53
	TRK	1	0	0	1	0	3	11	0	1	1	0	5	15	3	17	2
	BUS	3	0	3	0	0	0	3	0	0	0	0	0	6	0	6	3
17:00	CAR	25	2	7	35	12	10	90	6	4	6	1	38	126	47	165	54
	TRK	2	0	0	2	0	0	4	0	1	1	0	5	6	4	11	3
	BUS	2	0	1	0	0	0	1	0	0	0	0	0	3	0	3	1
17:15	CAR	29	2	5	32	9	18	78	5	1	11	2	41	127	46	157	53
	TRK	2	0	1	1	1	0	13	0	1	1	0	3	15	3	19	3
	BUS	5	0	1	0	0	0	3	0	0	0	0	0	8	0	8	1
17:30	CAR	25	0	3	27	19	8	93	3	0	14	1	40	127	41	177	47
	TRK	2	0	0	2	1	1	11	0	0	0	1	2	15	2	16	2
	BUS	1	0	0	0	0	0	2	0	0	0	0	0	3	0	3	0
17:45	CAR	30	1	5	30	6	9	103	12	3	17	0	37	142	51	176	64
	TRK	2	1	1	1	1	3	8	0	0	1	0	4	13	3	15	3
	BUS	2	0	0	0	0	0	2	0	0	0	0	0	4	0	4	0
18:00	CAR	44	1	7	37	17	7	87	6	1	9	3	45	141	48	193	59
	TRK	1	0	1	0	0	1	3	1	1	0	0	4	5	1	8	2
	BUS	2	0	0	0	0	0	4	0	0	0	0	0	6	0	6	0
AM PEAK (8:45-9:45)	CAR	97	0	29	52	29	29	195	21	8	61	8	209	329	121	530	163
	TRK	18	0	5	4	4	4	21	0	2	12	2	23	45	18	66	21
PM PEAK (17:00-18:00)	CAR	109	5	20	124	46	45	364	26	8	48	4	156	522	185	675	218
	TRK	8	1	2	6	3	4	36	0	2	3	1	14	49	12	61	11
AHV	CAR	51.5	1.25	12.25	44	18.75	18.5	139.75	11.75	4	27.25	3	91.25	212.75	76.5	301.25	95.25
(Average Hourly Vol.)	TRK	6.5	0.25	1.75	2.5	1.75	2	14.25	0	1	3.75	0.75	9.25	23.5	7.5	31.75	8
AADT	CAR	824	20	196	704	300	296	2236	188	64	436	48	1460	3404	1224	4820	1524
(An. Avg. Daily Traffic)	TRK	104	4	28	40	28	32	228	0	16	60	12	148	376	120	508	128

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

		Aug-22-2019 (Thursday)															
		NORTHBOUND			EASTBOUND			SOUTHBOUND			WESTBOUND			SUM NORTH	SUM EAST	SUM SOUTH	SUM WEST
Time Period	Vehicle Typ	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	ID: OLS39	ID: --	ID: OLS40	ID: --
7:45	CAR	25	5	12	7	0	2	14	4	1	14	1	2	42	27	41	37
	TRK	5	2	1	0	0	0	2	1	1	1	3	2	10	4	9	3
	BUS	0	0	0	3	0	3	2	0	0	2	0	0	5	5	2	5
8:00	CAR	33	10	18	2	3	2	29	5	1	7	5	9	69	20	74	32
	TRK	1	0	0	1	0	0	3	0	0	2	1	0	5	3	4	3
	BUS	0	0	0	1	0	2	3	0	0	1	0	0	5	2	3	2
8:15	CAR	41	12	14	8	1	4	33	18	1	22	4	5	82	43	80	62
	TRK	6	0	0	0	2	0	5	0	0	0	0	0	11	0	13	0
	BUS	0	0	0	1	0	3	3	0	0	1	0	0	6	2	3	2
8:30	CAR	35	10	12	10	2	2	29	12	1	17	0	9	66	38	75	51
	TRK	4	0	0	0	0	0	4	0	0	1	0	1	8	1	9	1
	BUS	0	0	0	2	0	2	1	0	0	0	0	0	3	2	1	2
8:45	CAR	32	16	11	7	2	7	27	11	1	20	2	5	68	44	66	49
	TRK	3	0	0	3	0	0	2	0	0	1	0	1	5	4	6	4
	BUS	0	0	0	0	0	2	2	0	0	2	0	0	4	2	2	2
9:00	CAR	46	11	15	17	2	3	24	16	3	19	5	5	78	50	77	67
	TRK	4	0	0	2	1	0	5	0	0	1	0	1	9	3	11	3
	BUS	1	0	0	1	0	3	2	0	0	1	0	0	6	2	3	2
9:15	CAR	43	19	11	17	3	4	27	13	2	13	2	7	76	51	80	54
	TRK	7	0	0	1	0	0	6	0	3	0	0	1	13	4	14	1
	BUS	0	0	0	2	0	1	1	0	0	1	0	0	2	3	1	3
9:30	CAR	48	18	7	20	4	5	25	10	2	26	6	8	84	66	85	63
	TRK	5	0	0	0	0	1	4	0	1	0	0	0	10	1	9	0
	BUS	1	0	0	1	0	4	4	0	0	1	0	0	9	2	5	2
10:15	CAR	38	9	7	17	3	11	19	10	1	15	4	6	72	42	66	49
	TRK	3	1	0	1	1	0	3	0	0	1	0	1	6	3	8	2
	BUS	1	0	0	0	0	2	3	0	0	1	0	0	6	1	4	1
10:30	CAR	33	3	11	13	1	4	28	15	1	12	5	8	70	29	70	51
	TRK	5	0	1	1	3	0	11	0	1	1	1	1	17	3	20	3
	BUS	0	0	0	1	0	3	2	0	0	0	0	0	5	1	2	1
10:45	CAR	34	6	7	17	1	5	24	5	0	14	5	8	68	37	67	43
	TRK	5	0	0	1	0	1	3	1	0	2	0	2	9	3	10	4
	BUS	0	0	0	1	0	2	2	0	0	1	0	0	4	2	2	2
11:00	CAR	39	4	12	10	4	4	21	10	0	14	2	5	66	28	69	46
	TRK	5	1	1	2	2	1	4	0	1	1	0	1	10	5	12	4
	BUS	0	0	0	1	0	3	3	0	0	0	0	0	6	1	3	1
11:15	CAR	35	8	7	13	5	7	45	14	2	11	0	11	87	34	96	45
	TRK	3	0	1	1	0	0	7	0	1	2	0	0	10	4	10	4
	BUS	0	0	0	1	0	1	1	0	0	1	0	0	2	2	1	2
11:30	CAR	50	6	4	11	5	5	42	12	9	13	5	7	102	39	104	40
	TRK	5	0	0	1	1	0	5	0	1	0	0	1	10	2	12	1
	BUS	0	0	0	0	0	3	3	0	0	1	0	0	6	1	3	1
11:45	CAR	53	2	14	18	4	3	32	11	0	12	1	9	89	32	98	55
	TRK	10	5	1	2	2	0	7	0	1	4	1	1	18	12	20	7
	BUS	0	0	0	1	0	1	1	0	0	1	0	0	2	2	1	2
12:00	CAR	60	8	12	18	3	6	44	9	3	18	2	10	112	47	117	57
	TRK	6	0	1	1	0	2	3	0	0	2	0	1	11	3	10	4
	BUS	0	0	0	1	0	1	2	0	0	0	0	0	3	1	2	1
13:15	CAR	29	4	5	15	5	10	43	7	1	10	2	6	84	30	83	37
	TRK	4	2	0	2	1	0	10	1	0	0	0	0	14	4	15	3
	BUS	0	1	0	0	0	1	1	0	0	1	0	0	2	2	1	1
13:30	CAR	23	4	2	13	1	9	35	8	2	13	2	6	69	32	65	36
	TRK	5	0	1	0	0	0	3	3	0	2	0	0	8	2	8	6
	BUS	0	0	0	1	0	1	0	0	0	1	0	0	1	2	0	2
13:45	CAR	29	11	5	14	2	10	42	6	3	0	2	4	83	28	77	25
	TRK	3	1	1	0	2	0	5	1	0	0	1	0	9	1	10	2
	BUS	0	0	0	1	0	2	4	0	0	1	0	0	6	2	4	2
14:00	CAR	37	9	5	14	3	6	40	7	9	8	2	7	85	40	87	34
	TRK	2	1	1	0	1	0	8	0	0	1	0	0	10	2	11	2
	BUS	0	0	0	1	0	1	0	0	0	0	0	0	1	1	0	1
14:15	CAR	37	5	6	15	5	10	37	5	7	7	1	10	85	34	89	33
	TRK	6	1	0	2	0	1	11	0	0	1	1	1	19	4	18	3
	BUS	0	0	0	0	0	1	2	0	0	1	0	0	3	1	2	1
14:30	CAR	40	5	5	13	4	5	51	12	4	4	0	5	96	26	100	34
	TRK	5	0	0	2	1	0	12	3	0	0	0	0	17	2	18	5
	BUS	0	0	0	2	1	3	1	0	0	1	0	0	4	3	2	3
14:45	CAR	46	10	12	15	13	12	44	6	7	11	6	12	108	43	115	44
	TRK	4	0	0	1	1	0	7	1	0	1	0	0	11	2	12	3
	BUS	0	0	0	0	0	1	0	0	0	1	0	1	1	1	1	1
15:00	CAR	46	9	17	11	8	9	50	14	2	14	4	3	109	36	107	56
	TRK	8	1	0	1	0	2	8	1	0	1	0	0	18	3	16	3
	BUS	0	0	0	0	0	0	2	0	0	1	0	0	2	1	2	1
16:15	CAR	54	6	11	18	12	8	49	13	3	15	3	7	114	42	122	57
	TRK	1	1	0	2	1	1	4	1	0	5	0	1	6	8	7	8
	BUS	0	0	0	0	0	1	4	1	1	0	0	0	5	1	4	1
16:30	CAR	68	7	13	21	13	4	59	18	5	17	2	6	133	50	146	69
	TRK	2	0	0	2	1	1	1	0	0	0	0	0	4	2	4	2
	BUS	0	0	0	2	0	1	2	0	0	0	0	0	3	2	2	2
16:45	CAR	56	11	11	26	7	4	54	8	7	22	4	13	118	66	130	67
	TRK	2	0	0	1	2	0	1	0	0	0	0	0	3	1	5	1
	BUS	1	0	0	1	0	2	0	0	0	1	0	0	3	2	1	2
17:00	CAR	50	10	9	24	8	6	42	18	0	30	3	12	101	64	112	81
	TRK	2	0	2	2	0	0	2	2	0	1	1	1	5	3	5	7
	BUS	1	0	0	0	0	2	1	0	0	3	0	0	4	3	2	3
17:15	CAR	47	7	15	20	9	7	45	13	5	24	1	12	100	56	113	72
	TRK	2	0	1	1	0	0	1	0	0	1	1	2	4	2	5	3
	BUS	1	0	0	0	0	0	1	0	0	0	0	0	2	0	2	0
17:30	CAR	50	10	10	30	11	2	25	4	5	16	4	14	81	61	100	60
	TRK	2	0	0	0	0	0	2	0	0	1	0	1	4	1	5	1
	BUS	0	0	0	0	0	2	1	0	0	1	0	0	3	1	1	1
17:45	CAR	50	14	11	23	13	9	25	3	5	37	5	11	89	79	99	74
	TRK	3	0	0	1	0	1	0	0	0	3	0	0	4	4	3	4
	BUS	0	0	1	1	0	0	1	0	0	0	0	0	1	1	1	2
18:00	CAR	60	7	7	23	10	8	34	0	3	33	7	12	109	66	116	63
	TRK	4	1	0	2	0	1	1	0	0	0	0	1	6	3	6	2
	BUS	0	0	0	1	0	1	2	0	0	0	0	0	3	1	2	1
AM PEAK (8:45-9:45)	CAR	169	64	44	61	11	19	103	50	8	78	15	25	306	211	308	233
	TRK	19	0	0	6	1	1	17	0	4	2	0	3	37	12	40	8
PM PEAK (16:15-17:15)	CAR	228	34	44	89	40	22	204	57	15	84	12	38	466	222	510	274
	TRK	7	1	2	7	4	2	8	3	0	6	1	2	18	14	21	18
AHV	CAR	99.25	24.5	22	37.5	12.75	10.25	76.75	26.75	5.75	40.5	6.75	15.75	193	108.25	204.5	126.75
(Average Hourly Vol.)	TRK	6.5	0.25	0.5	3.25	1.25	0.75	6.25	0.75	1	2	0.25	1.25	13.75	6.5	15.25	6.5
AADT	CAR	1588	392	352	600	204	164	1228	428	92	648	108	252	3088	1732	3272	2028
(An. Avg. Daily Traffic)	TRK	104	4	8	52	20	12	100	12	16	32	4	20	220	104	244	104

Table D3-41: Gardiner Expressway Traffic Data

Road Segment	AADT	% Medium Truck	% Heavy Truck	Speed (km/h)
DVP SB_Offramp to Eastern WB	16463	2	4	30
DVP NB_Onramp From Eastern WB	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 between Cherry St and DVP ramp	55539	2	4	90
FGG EB, Midblock between Cherry St and DVP ramp	56582	2	4	90
FGG WB, Midblock between Parliament and Cherry St	51781	2	4	90
FGG EB, Midblock between Parliament and Cherry St	55111	2	4	90
FGG WB, Midblock between Small street and Lower Shebourne	53355	2	4	90
FGG EB, Midblock between Small street and Lower Shebourne	47138	2	4	90
Ramp FGG WB to Sherbourne St	2995	2	4	50
Ramp Lake Shore Blvd EB to FGG EB east of Javis St	7236	2	4	50
FGG WB, Midblock between Freeland and Jarvis	41616	2	4	90
FGG EB, Midblock between Freeland and Jarvis	47002	2	4	90
Ramp FGG WB to Lake Shore WB	8874	2	4	50
Ramp FGG WB to Yonge St NB	3787	2	4	50
FGG WB, Midblock between Yonge and Freeland	42322	2	4	90
FGG EB, Midblock between Yonge and Freeland	42997	2	4	90
Ramp Jarvis St SB to FGG WB	17908	2	4	50
Ramp Bay St NB to FGG EB	4499	2	4	50
Midblock Eastern Ave. to Don Roadway	30504	2	4	90
Midblock Don Roadway to Eastern Ave.	30234	2	4	90
FGG WB, Midblock Lower Sherbourne to Jarvis	50124	2	4	90
FGG EB, Midblock Jarvis to Lower Sherbourne	43215	2	4	90
FGG WB, Midblock Yonge to Bay	43231	2	4	90
FGG EB, Midblock Bay to Yonge	39407	2	4	90