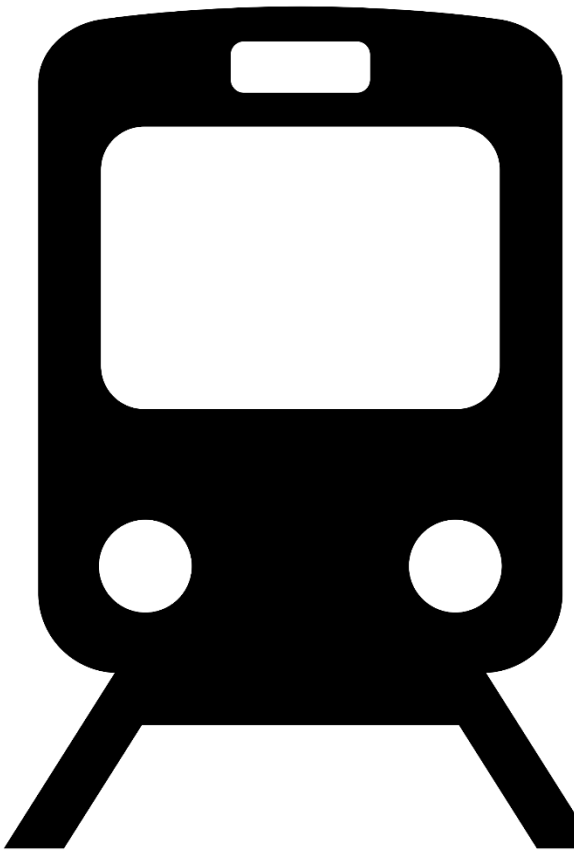
SCARBOROUGH SUBWAY EXTENSION

ENVIRONMENTAL PROJECT REPORT – 2020 ADDENDUM

JULY 2020



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Environmental Project Report Addendum

Scarborough Subway Extension Environmental Project Report – 2020 Addendum

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AECOM: 2015-04-13

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Executive Summary

Metrolinx has proposed an amendment to the Scarborough Subway Extension (SSE); hereafter referred to as 'the Project', resulting in an extension of the proposed alignment, two new stations, and a revised station location at Scarborough Centre. The Environmental Project Report (EPR) Addendum has been prepared following the Transit Project Assessment Process (TPAP), as prescribed in Ontario Regulation (O. Reg.) 231/08 (amended June 30, 2020), hereafter referred to as 'O.Reg. 231/08', under the Environmental Assessment Act. More information related to the study process is provided in **Section 3**.

ES1. Study Purpose

In April 2019, the Ontario Government announced funding for transportation improvements to four subway networks, which included an amendment to the SSE. On June 6, 2019 the Province of Ontario enacted Bill 107 which, in part, amended the Metrolinx Act, 2006 to identify Metrolinx as being solely responsible for the design, development or construction of a prescribed rapid transit project.

Amendments to the SSE included an extension of the alignment, two new stations, and a revised station location at Scarborough Centre. As a result of these changes, the SSE will extend further north into Scarborough and provide more transit connections. The Project will reduce travel times and improve access to jobs, schools and other destinations in more communities in Scarborough. This extended alignment will provide relief and new opportunities for Scarborough residents travelling to and from the downtown core. It will provide connections to GO Transit and the Eglinton Crosstown Light Rail Transit at the existing Kennedy Station, and connections to GO buses and Durham Region Transit and Scarborough Town Centre. The alignment extension further north also provides the potential for a connection to a future Sheppard Subway (Line 4) extension.

These changes to the Project were determined to be inconsistent with the 2017 EPR and were deemed to be significant, warranting an Addendum to the EPR. As described in Section 15 of O. Reg. 231/08, any change that is inconsistent with a previously approved EPR requires a reassessment of the impacts associated with the change, the identification of potentially new mitigation measures, and potentially new monitoring systems in an Addendum to the previously approved EPR. The purpose of this EPR Addendum is to document these requirements as prescribed in Section 15 of O. Reg. 231/08.

ES2. Update to the Project Description

The proposed design changes assessed in this EPR Addendum include:

- **Alignment**
  - Subway line extended from Scarborough Centre to Sheppard Avenue East; and
  - Alignment shifted east, to be located within the McCowan Road right-of-way, from approximately 1080 McCowan Road to just south of Highway 401 (eastbound exit ramp).
- **Stations and Ancillary Features**
  - New terminal station at Sheppard Avenue East and McCowan Road;
  - Revised location of the station at Scarborough Centre;
  - New station at Lawrence Avenue East and McCowan Road;
  - Ancillary features located at stations, including vent shafts and traction power substations (TPSS);
  - New bus loop north of the station at Lawrence Avenue East; and
  - Addition of pocket tracks east of Kennedy Station.
- **Emergency Exits1**
  - New emergency exit building (EEB) locations along the alignment extension (EEBs 7 and 8); and
  - Revised EEB 5 location.
- **Traction Power Substations**
  - Removed TPSS 2 in the Gatineau Hydro Corridor, given that a TPSS will be located at the station at Lawrence Avenue East.
- **Construction**
  - Tunnel boring machine (TBM) launch shaft at Eglinton Avenue East and Midland Avenue;
  - TBM launch shaft at the terminal station location at Sheppard Avenue East;
  - TBM extraction shaft at the station location at Lawrence Avenue East; and
  - Additional cut and cover construction, east of Kennedy Station to Midland Avenue, for tail tracks construction.

1. The 2017 EPR EEB 7 has been renamed to EEB 6 and is not considered a design change associated with this EPR Addendum.

A comparison between the various project components for the 2017 EPR and this EPR Addendum is provided in **Table 2-1**.

ES3. Environmental Conditions and Effects

Environmental disciplines were assessed by practitioners using industry standard techniques and Metrolinx-specific protocols, where necessary. Discipline-specific environmental investigations and/or review was undertaken to document the existing conditions for the following disciplines:

- Natural Environment, including Geology and Groundwater and Drainage and Hydrology;
- Air Quality;
- Socio-Economic Environment;
- Noise and Vibration;
- Cultural Environment, including Archaeology and Cultural Heritage; and
- Transportation.

Existing conditions information for each discipline is provided in **Section 4**.

Technical reports and/or memos are provided for Natural Environment, Air Quality, Noise and Vibration, Cultural Heritage and Transportation. These are included in **Appendix B1** to **Appendix B5**.

An assessment and evaluation of the potential effects that the Project may have on the environment was completed for each environmental discipline. Based on the findings of the technical studies and the potential effects evaluation, this Project is not anticipated to result in negative impacts on matters of provincial importance that relate to the natural environment, that have cultural heritage value or interest, or a constitutionally protected Aboriginal or treaty right. Mitigation measures have been proposed for the construction and operations phase for each environmental discipline.

The effects assessment, including potential effects, mitigation and monitoring during construction and operations, for each discipline is provided in **Section 5**.

ES4. Summary of Consultation Activities

In accordance with Section 8 of O. Reg. 231/08*,* consultation activities were carried out with members of the public, property owners, review agencies, Indigenous communities

and other stakeholders during the course of the EPR Addendum process, including a summary of feedback and comments received.

As part of the consultation process for the Project, one round of pop-up sessions and one round of public information sessions were held between February 25 and March 5, 2020 at various locations throughout Scarborough in order to encourage maximum participation from individuals across the Project Study Area. Online consultation via the Project webpage (www.metrolinx.com/scarboroughsubway) and Metrolinx Engage was also offered for those who could not attend in-person events. The purpose of the in-person and online consultation activities offered was to provide interested individuals with an opportunity to learn more about the three-stop SSE, ask questions to the Project Team and provide their feedback.

The official Notice of Public Information Sessions was issued to the public on February 20, 2020 through a variety of media (e.g., Project webpage, registered mail, email, newspaper and social media). In conjunction with the Notice, a postcard promoting the use of the Project webpage and attendance at public information sessions was mailed on February 24, 2020 via Canada Post to 32,201 residents within at least a 150 metre (m) radius of the proposed Scarborough Extension alignment – from Finch Avenue East in the north, Markham Road in the east, St. Clair Avenue East in the south, and Birchmount Road in the west.

The official Notice of EPR Addendum was issued to the public and stakeholders on July 10, 2020 through the Project webpage, advertisements in three major newspapers (Toronto Star, Le Metropolitain, Toronto L'Express) and six community newspapers (Scarborough Mirror, Caribbean Camera, Ming Pao, Sing Tao Daily, Senthamarai, Gujarat Abroad) in multiple languages, email and mail to those on the Project distribution list and to properties within 150 m of the proposed alignment, Indigenous communities, government review agencies and other key stakeholders. All stakeholder and public consultation is summarized in **Section 6** and all records of consultation are provided in **Appendix C**.

ES5. Future Work and Project Implementation

Commitments to future work have been developed to satisfy the requirements of O. Reg. 231/08. The purpose of the commitments is to facilitate the implementation of the Project in accordance with the mitigation measures and monitoring activities described within this EPR Addendum. In addition to the commitments to future work, permits and approvals to be obtained for the proposed works have been outlined and may identify the need for additional mitigation measures.

Where different, mitigation measures and future commitments prescribed in the 2017 EPR are in addition to the mitigation measures and future commitments described in this EPR Addendum, and such, should still be carried forward as applicable. However, mitigation measures and future commitments prescribed in the 2017 EPR specific to the EEB 5 location and TPSS 2 in the Gatineau Hydro Corridor are no longer applicable, as those project components are no longer consistent with this EPR Addendum.

A summary of all permits, approvals and future commitments is provided in **Section 7**.

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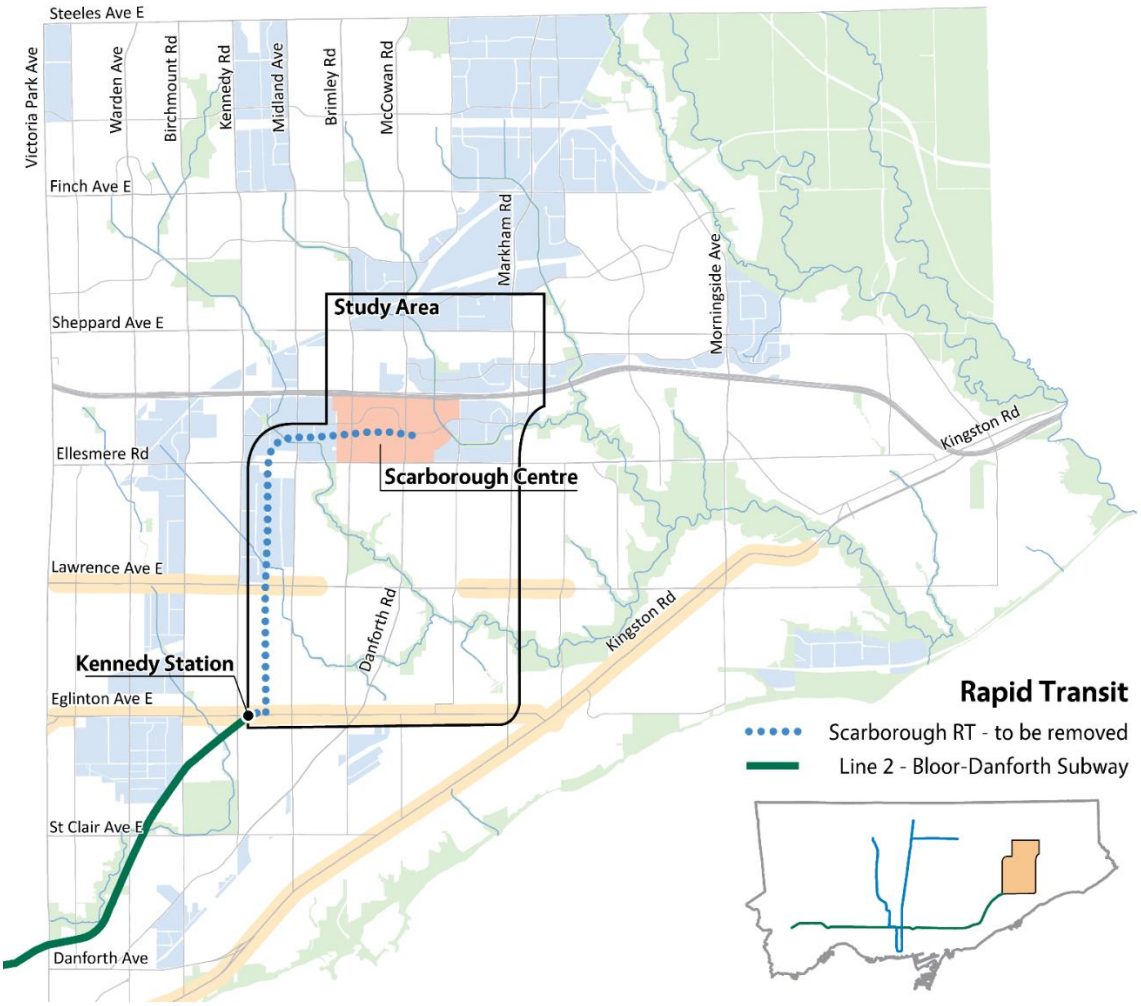
1. Introduction

The City of Toronto (the City) and Toronto Transit Commission (TTC) completed an Environmental Project Report (EPR) for the Scarborough Subway Extension (SSE; the Project) in August 2017 (**Figure 1-1**). The Project was granted Notice to Proceed, with no conditions, by the Minister of the Environment, Conservation and Parks in October 2017. The SSE EPR assessed a 6.2 kilometre (km) extension of the existing Bloor-Danforth Subway (Line 2) from Kennedy Station to Scarborough Centre, via Eglinton Avenue, Danforth Road and McCowan Road. Project elements assessed in the EPR included one subway station with a bus terminal at Scarborough Centre, ancillary features such as vent shafts and traction power substations (TPSS), and emergency exit buildings (EEB). The EPR also described anticipated construction methods and sequencing.

Figure 1-1: 2017 SSE Study Area Overview



Since the completion of the 2017 EPR, a number of changes have been proposed that are inconsistent with the 2017 EPR design. These changes are being assessed in accordance with the EPR Addendum process prescribed in Ontario Regulation (O. Reg.) 231/08 (amended June 30, 2020), hereafter referred to as 'O.Reg. 231/08' under the Environmental Assessment Act.

The SSE is now proposed as an approximately 8 km long line, extending from the east end of the existing Kennedy Station platform to a new terminal station at Sheppard Avenue East, via Eglinton Avenue East, Danforth Road and McCowan Road. Stations will be located along the alignment at Lawrence Avenue East and Scarborough Centre (**Figure 3-1**).

The Project has been assessed under the Transit Project Assessment Process (TPAP) addendum process, as prescribed in O. Reg. 231/08 under the Environmental Assessment Act. This EPR Addendum has been completed as part of the TPAP, under which project impacts have been assessed. The Study Area, and details related to the specific project changes are described in **Section 2** and **Section 3**, accordingly.

1.1 Study Purpose

In April 2019, the Ontario Government announced funding for transportation improvements to four subway networks, which included an amendment to the SSE. On June 6, 2019, the Province of Ontario enacted Bill 107 which, in part, amended the Metrolinx Act, 2006 to identify Metrolinx as being solely responsible for the design, development or construction of a prescribed rapid transit project.

Amendments to the SSE included an extension of the alignment, two new stations, and a revised station location at Scarborough Centre. As a result of these changes, the SSE will extend further north into Scarborough and provide more transit connections. The Project will reduce travel times and improve access to jobs, schools and other destinations in more communities in Scarborough. This extended alignment will provide relief and new opportunities for Scarborough residents travelling to and from the downtown core. It will provide connections to GO Transit and the Eglinton Crosstown Light Rail Transit (LRT) at the existing Kennedy Station, and connections to GO buses and Durham Region Transit (DRT) and Scarborough Town Centre. The alignment extension further north could also connect to a future Sheppard Subway (Line 4) extension.

These changes to the Project were determined to be inconsistent with the 2017 EPR and were deemed to be significant, warranting an Addendum to the EPR. As described in Section 15 of O. Reg. 231/08, any change that is inconsistent with a previously approved EPR requires a reassessment of the impacts associated with the change, the identification of potentially new mitigation measures, and potentially new monitoring

systems in an Addendum to the previously approved EPR. The purpose of this EPR Addendum is to document these requirements as prescribed in Section 15of O. Reg. 231/08. The EPR Addendum process as per O. Reg. 231/08 is described in **Section 3**.

1.2 Project Background

The existing Scarborough Rapid Transit (Line 3) opened for service in 1985, providing rapid transit service in a fully exclusive right-of-way (ROW) between Kennedy Station – the terminus of Line 2 – and McCowan Road, north of Ellesmere Road. The critical problem affecting the existing Line 3 is that the vehicles are over 30 years old and in need of replacement. However, the vehicle is obsolete and the newer model that is available is too large for the existing facility and would require physical changes to the infrastructure, for example, the reconstruction of existing structures where there are tight curves.

In 2006, the TTC evaluated options to upgrade or replace Line 3, completing the Scarborough Rapid Transit Strategic Plan. This plan was a comprehensive study of options for replacing the aging vehicles, upgrading the system's infrastructure as necessary, and potentially expanding the line. The conclusion of the study was to purchase larger, new generation Line 3 vehicles and make the necessary physical modifications at stations to accommodate the new, longer vehicles.

In 2007, one year after the Scarborough Rapid Transit Strategic Plan – the Transit City Light Rail Plan was introduced. This plan called for the implementation of seven light rail lines throughout the City of Toronto. It was recommended that the Line 3 rehabilitation adopt light-rail technology in order to take advantage of the economies-of-scale cost savings which would result from the acquisition of a large fleet of light-rail vehicles to operate on the proposed City-wide network.

An Environmental Assessment (EA) for the replacement of Line 3 with light rail technology, including a complete rehabilitation / reconstruction of the existing elevated structure, was completed in 2010. The recommended route extended the line beyond its current terminus – at McCowan Station – to Centennial College and then north to Sheppard Avenue in the vicinity of Markham Road. The EA also addressed a second, future extension north of Sheppard Avenue, to Malvern Town Centre.

At their meeting on October 8, 2013, City Council approved replacing Line 3 with a three-stop extension of Line 2 to Sheppard Avenue East. This decision was based on the following benefits:

- Higher speed;
- Most-reliable, highest-quality rapid transit service;

- Elimination of the transfer at Kennedy Station;
- Higher ridership; and
- Consideration of alignments other than the existing Line 3 routing, which would then not require shutting down Line 3 during the construction of a subway extension.

In 2016, as a result of changes in the planning context for Scarborough, the City reassessed the scope for the SSE and completed an initial business case to examine alternatives from a four-case perspective: strategic, economic, financial and deliverability. The preferred option as a result of the initial business case analysis was the express one-stop subway extension along the McCowan corridor.

1.2.1 Scarborough Subway Extension EPR 2017

The City of Toronto and TTC's 2017 SSE Project was proposed as an extension of the Line 2. It included a proposed 6.2 km extension of Line 2 from Kennedy Station to the station at Scarborough Centre (one-stop only), via Eglinton Avenue, Danforth Road and McCowan Road, and included the following key elements:

1. Alignment – the location and configuration for the running structure;
2. Scarborough Centre– the terminal subway station and bus terminal;
3. Ancillary Features – the supporting elements required for the operation of the subway, such as special trackwork, EEBs, and TPSSs which provide power for operation of the subway trains, as well as the various electrical systems in the subway;
4. Construction Methods – tunnelling versus cut-and-cover techniques; and
5. Construction Sequencing – the construction staging plan was under development at the time of publication of the EPR.

The Study Area for the 2017 SSE EPR was roughly bounded on the south by Eglinton Avenue East, Sheppard Avenue East on the north, on the west by the existing Line 3 and Brimley Road once north of Ellesmere Road, and on the east by Markham Road / Progress Avenue.

In August 2017, the SSE EPR was completed, and the Project was granted a Notice to Proceed, with no conditions, by the Minister of the Environment and Climate Change (now Minister of the Environment, Conservation and Parks) in October 2017.

Table 2-1 provides a summary of the key elements of the 2017 SSE Project.

2. Update to the Project Description

As part of the assessment in this EPR Addendum, a shift in the concept design was made to make the Project more consistent with the common objectives of Metrolinx. This required minor changes to the design and an extension of the Project resulting in three new stations. The proposed design changes assessed in this EPR Addendum include:

- **Alignment**
  - Subway line extended from Scarborough Centre to Sheppard Avenue East; and
  - Alignment shifted east, to be located within the McCowan Road ROW, from approximately 1080 McCowan Road to just south of Highway 401 (eastbound exit ramp).
- **Stations and Ancillary Features**
  - New terminal station at Sheppard Avenue East and McCowan Road with a Passenger Pick-Up and Drop-Off (PPUDO);
  - Revised location of the station at Scarborough Centre;
  - New station at Lawrence Avenue East and McCowan Road;
  - Ancillary features located at stations, including vent shafts and TPSS;
  - New bus loop north of the station at Lawrence Avenue East; and
  - Addition of pocket tracks east of Kennedy Station.
- **Emergency Exits**[2]
  - New EEB locations along the alignment extension (EEBs 7 and 8); and
  - Revised EEB 5 location.
- **Traction Power Substations**
  - Removed TPSS 2 in the Gatineau Hydro Corridor, given that a TPSS will be located at the station at Lawrence Avenue East.

2. The 2017 EPR EEB 7 has been renamed to EEB 6 and is not considered a design change associated with this EPR Addendum.

- **Construction**

  - Tunnel boring machine (TBM)[3] launch shaft at Eglinton Avenue East and Midland Avenue;
  - TBM launch shaft at the terminal station location at Sheppard Avenue East;
  - TBM extraction shaft at the station location at Lawrence Avenue East; and
  - Additional cut and cover construction, east of Kennedy Station to Midland Avenue, for tail tracks construction.

2.1 Significance of the Project

In accordance with O. Reg. 231/08, the significance of the Project changes were assessed and found to be Significant. The changes to the Project are considered Significant for the following reasons:

- The environmental effects of the subway extension alignment were not addressed in the 2017 EPR;
- The environmental effects of the two new stations at Sheppard Avenue East and Lawrence Avenue East were not addressed in the 2017 EPR; and
- The environmental effects of the relocation of the station at Scarborough Centre and design modifications to ancillary features including select EEBs and TPSS, as well as construction methods were not addressed in the 2017 EPR.

Table 2-1 compares the various project components for the 2017 EPR and this EPR Addendum.

3. A TBM is used to excavate a tunnel, remove the excavated material, and place the initial tunnel lining in a continuous, highly automated process. The launch shaft is considered the start or the entry of this tunneling process, and the extraction shaft is the end or the exit.

Table 2-1: Project Components for 2017 SSE EPR and SSE EPR 2020 Addendum

Project Component	2017 SSE EPR	SSE EPR 2020 Addendum	Rationale for Change
Alignment	▪ The preferred alignment was proposed to travel east along Eglinton Avenue East within the road ROW from the existing Kennedy Station to Danforth Road. Then travel north along Danforth Road / McCowan Road in the centre of the road ROW until Lawrence Avenue East. North of Lawrence Avenue East, the alignment ran west of the road ROW to north of Highland Creek and the Hydro Corridor, after which it returned to the centre of the McCowan Road ROW. Beginning a short distance south of Ellesmere Road, the alignment veered to the west, under several private residential properties, a gas station and a woodlot in order to allow the station to be located under the extension of Borough Drive. It then continued underneath Borough Drive / Progress Avenue to the end of the tail tracks immediately south of Highway 401.	▪ The SSE is now proposed as an approximately 8 km long line, extending from the existing Kennedy Station platform to a new terminal station at Sheppard Avenue East, via Eglinton Avenue East, Danforth Road and McCowan Road. Stations will be located along the alignment at Lawrence Avenue East and Scarborough Centre. ▪ The track configuration at the station at Sheppard will accommodate storage of six train sets and will terminate south of the CP railway corridor near Nugget Avenue and McCowan Road. Two train sets will be stored on the tail tracks, two at the platform and two on a separate storage track located parallel to the station platform.	▪ The three-stop extension supports Metrolinx's 2041 Regional Transportation Plan (RTP) by connecting people with more frequent and reliable transit. In accordance with the goals of the RTP, the SSE Preliminary Design Business Case (PDBC) (February 2020) identified strategic objectives that meet the RTP goals. ▪ The 2041 RTP adopts the following 3 goals: 1. Strong connections; 2. Complete travel experiences; and 3. Sustainable and healthy communities. ▪ By connecting more communities within Scarborough, the extension will provide more benefits, including: – Improving travel times for more residents in Scarborough; – Increasing access to more existing economic opportunities; and – Increasing transit options and providing more accessibility. ▪ These benefits meet the strategic objectives outlined in the PDBC and ensures close alignment to Metrolinx's goals, further supporting the need for the Project changes.
Stations and Ancillary Features	**Scarborough Centre** ▪ The station itself was proposed to require cut-and-cover construction and located on the west side of McCowan Road at Scarborough Town Centre. The length of the station platform was proposed to be 152 metre (m). ▪ A key component of the station at Scarborough Centre was the proposed bus terminal, which would provide a key transfer for the many local and regional routes that would serve this new station. It had to accommodate a future expanded bus network for TTC, GO Transit, private intercity carriers, and the introduction of service from Durham Rapid Transit (DRT). The terminal required 34 bus bays, nine of which would accommodate the	**Sheppard:** ▪ Located directly east of McCowan Road and north of Sheppard Avenue; ▪ Off-street centre platform terminal station, north of Sheppard Avenue East and east of McCowan Road; ▪ Accommodations for terminus station operating requirements; ▪ 16 to 19 bay TTC bus terminal proposed on northeast quadrant of the Sheppard Avenue East and McCowan Road intersection, above the tunnel / station location; ▪ Taxi and accessible PPUDO spaces;	▪ The three-stop extension supports Metrolinx's 2041 RTP by connecting people with more frequent and reliable transit. In accordance with the goals of the RTP, the SSE PDBC (February 2020) identified strategic objectives to which the goals can be met. ▪ The 2041 RTP adopts the following 3 goals: 1. Strong connections; 2. Complete travel experiences; and 3. Sustainable and healthy communities. ▪ Additional stations support a number of new opportunities and benefits for Scarborough residents

Project Component	2017 SSE EPR	SSE EPR 2020 Addendum	Rationale for Change
	longer articulated model of buses. The Triton Road corridor was selected as the preferred location for the large bus terminal because it would best meet Project objectives related to future development and potential improvements to the road network within Scarborough Centre.	▪ PPUDO proposed near EEB 8; and ▪ Main entrance building on northeast quadrant of the McCowan Road and Sheppard Avenue East intersection. **Scarborough Centre:** ▪ Station box proposed within the McCowan Road ROW, TTC bus terminal proposed directly east of McCowan Road and north of Bushby Drive; ▪ Side platforms, below McCowan Road under north-bound lanes; ▪ Accommodations for inline station requirements; ▪ 14 to 16 bay TTC bus terminal; ▪ 7-bay GO Transit and DRT bus terminal; ▪ Taxi and accessible PPUDO; and ▪ Main entrance on east side of McCowan Road. **Lawrence:** ▪ Located directly west of McCowan Road and north and south of Lawrence Avenue East; ▪ Side platforms, straddling Lawrence Avenue East; ▪ Accommodations for inline station requirements; ▪ Four-bay bus terminal on southwest quadrant of the Lawrence Avenue East and McCowan Road intersection; ▪ New bus loop north of the station at Lawrence Avenue East; and ▪ Entrances on northwest (westbound bus transfers / walk-ins) and southwest (eastbound bus transfers / walk-ins) quadrants.	and public transit users heading into and out of the downtown core, including: – Increased transit users by bringing stations closer to people; – Greater job opportunities as a result of access to employment; – Increased transit options providing more accessibility; – Improved safety for transit users providing relief from over-crowding; – Better service and reliability; and – Improved transit experience. ▪ These benefits meet the strategic objectives outlined in the PDBC and ensures close alignment to Metrolinx's goals, further supporting the need for the Project changes. ▪ Addition of pocket tracks enables trains to short turn at Kennedy Station to suit ridership demand and minimize fleet requirements, as well as lower operating costs.

Project Component	2017 SSE EPR	SSE EPR 2020 Addendum	Rationale for Change
Special Trackwork[4]	▪ Special trackwork was proposed at three locations: 1. Crossover connections roughly midway along the length of the SSE – in the vicinity of Lawrence Avenue East. 2. Crossover tracks in front of (i.e., just south of) the subway platform at the station at Scarborough Centre. 3. Tail tracks north of the station at Scarborough Centre.	▪ The Kennedy Transition Section extends roughly 550 m from the east side of the GO Transit Stouffville Rail Corridor to Commonwealth Avenue and will include special track work and pocket tracks to enable subway trains to short turn at Kennedy Station to suit ridership demand and minimize fleet requirements, as well as lower operating costs. ▪ Crossover tracks are included just south of the subway platform at McCowan Road and Sheppard Avenue East to enable northbound trains to terminate and turn back southbound. ▪ The track configuration at the station at Sheppard will accommodate storage of six train sets and will terminate south of the CP railway corridor. Two train sets will be stored on the tail tracks, two at the platform and two on a separate storage track located parallel to the station platform.	▪ This special trackwork will support the new stations. Addition of crossovers and tail tracks are necessary for trains to switch tracks and temporarily park off the main line. ▪ Refer to Alignment and Station and Ancillary Features Rationale for Change above.
Emergency Exits[5]	▪ Eight EEBs were proposed at the following locations: –EEB 1 – Eglinton Avenue East at Winter Avenue; –EEB 2 – Danforth Road at Eglinton Avenue East; –EEB 3 – Danforth Road at Savarin Street; –EEB 4 – Danforth Road at Barrymore Road; –EEB 5 – McCowan Road at Lawrence Avenue East; –EEB 6 – McCowan Road at Meldazy Drive; –EEB 7 – McCowan Road at Hurley Crescent; and –EEB 8 – Corporate Drive at Progress Avenue.	▪ Eight EEBs will be constructed along the alignment, at the following locations: –**EEB 1 -** No change; –**EEB 2** - No change; –**EEB 3 -** No change; –**EEB 4** - No change; –**EEB 5** - McCowan Road near Meldazy Drive; –**EEB 6** - No change (known as EEB 7 in 2017 EPR; –**EEB 7** - McCowan Road at northeast side of Highway 401, near off- ramp; and –**EEB 8** - East of McCowan Road at the end of the track (south of CP corridor).	▪ The maximum distance from EEB to EEB shall be 762 m. The additional alignment extension and new stations shift the required EEB locations (for EEB 5) and warrants new EEBs north of Hwy 401 (EEB 7 and EEB 8). ▪ Refer to Alignment and Station and Ancillary Features Rationale for Change above.

4. ‘Special trackwork’ refers to track, other than standard parallel running tracks that support the operation of the subway.
5. EEBs are the surface element of stairways that extend from the underground tunnel to provide an emergency exit for passengers and an emergency access for firefighting crews. Where feasible, they can also provide emergency ventilation and secondary power sources. Each EEB requires direct road access to the building by a fire pumper truck and one parking space for maintenance purposes. The at-grade footprint of each EEB is approximately 30 to 50 m^2.
   In accordance with National Fire Protection Agency 130, emergency egress from the tunnels is to be provided throughout the underground system so that the distance to an exit is never greater than 381 m. Therefore, the distance between EEBs cannot exceed 762 m.

Project Component	2017 SSE EPR	SSE EPR 2020 Addendum	Rationale for Change
Traction Power Substations[6]	▪ Three TPSSs were proposed at the following locations: –TPSS 1 – Danforth Road at Eglinton Avenue; –TPSS 2 – 1 and 3 Bellechasse Street; and –TPSS 3 – located at the station at Scarborough Centre. ▪ Following the completion of the 2017 EPR, TPSS 2 was proposed to be relocated into the Gatineau Hydro Corridor.	▪ TPSSs will be co-located at each of the new stations. TPSS 2 has been removed from the Gatineau Hydro Corridor, given that a TPSS will be located at the station at Lawrence Avenue East.	▪ As per the 2017 EPR, TPSSs s shall be located every 2 to 2.5 km. Given the opportunity to co-locate a TPSS at the station at Lawrence and given that substations are typically 2 to 2.5 km apart, a TPSS in the hydro corridor is no longer required. ▪ Refer to Alignment and Station and Ancillary Features Rationale for Change above.
Station and Tunnel Ventilation	▪ Ventilation shafts were proposed at the station at Scarborough Centre and a mid-tunnel ventilation structure in the vicinity of Lawrence Avenue East that would be combined with the construction required for an EEB at that location. ▪ Fan units were determined to be required at the east end of Kennedy Station in order to provide tunnel ventilation between Kennedy Station and the fire ventilation to be provided near Lawrence Avenue.	▪ Vent shafts will be co-located at each of the three new stations. ▪ EEB 5 no longer requires a vent shaft as there will be one located at the station at Lawrence.	▪ Refer to Alignment and Station and Ancillary Features Rationale for Change above.
Construction	▪ The recommended tunnelling method for the Project was to utilize a large single bore machine, 10.7 m diameter, which can accommodate both sets of tracks within a single tunnel. ▪ A TBM would be ‘launched’ just south of Highway 401 and west of McCowan. ▪ The TBM was proposed to proceed south, past the station location; the primary tunnel work site would be established immediately south of the station box and existing Line 3 guideway. ▪ The TBM was planned to be extracted via a shaft on the south side of Eglinton Avenue, in the vicinity of Town Haven Place. The staging plans for the cut-and-cover section immediately east of Kennedy Station were planned to incorporate final plans for the extraction shaft.	▪ The construction schedule assumes the use of two TBMs. One TBM will be launched immediately north of Sheppard Avenue East from the future station box area and proceed south along McCowan Road to an extraction shaft located on the Scarborough Rouge Hospital property within the station box of the proposed station at Lawrence Avenue East. A second TBM will be launched east of Kennedy Station on Eglinton Avenue East between Midland Road and Commonwealth Avenue. The TBM will continue east and north along Eglinton Avenue East, Danforth Road and McCowan Road, to the same extraction shaft. ▪ The tunnel work site is a temporary construction site where many key functions of the subway construction takes place, including point of entry for the tunnel liners and tracks, and the excavation of discharged tunnel soil. Trucks bring the tunnel liners to this site and take excavated soil away. This work site requires an area of	▪ A revised construction approach, including the advancement of two TBMs, is required to complete a longer extension within a shorter schedule. Refer to Alignment and Station and Ancillary Features Rationale for Change above.

6. Electrical power is required to power the trains (referred to as traction power) as well as to operate lights, equipment and safety systems associated with stations. The connections between the subway and Toronto Hydro’s power distribution grid occur in a facility that is referred to as an electrical substation. These substations contain transformers, switches and circuit panels to support the electrical requirements. To meet the traction power requirements for the SSE, substations are typically 2.0 to 2.5 km apart. Since subway stations require power for lights and equipment, electrical substations are usually located near subway stations.

Project Component	2017 SSE EPR	SSE EPR 2020 Addendum	Rationale for Change
	▪ For some portions of the subway line, excavation by a TBM was determined to be not practical or economical and it was deemed that cut-and-cover construction would be necessary. ▪ The proposed locations for cut-and-cover construction included: –Scarborough Centre – The large spans (station platform widths), relatively short lengths and complicated spatial arrangements; –EEBs and vent structures; and –The shallow section immediately east of Kennedy Station.	approximately 10,000 m^2 (1 hectare (ha)) and will be in operation for the majority of the duration of SSE construction. ▪ Open cut construction methods are expected to be used, with appropriate support of excavation, for the launch and extraction shafts, the three stations, all EEB locations and special track work areas (as shown in **Appendix A**).	

3. EPR Addendum Approach

3.1 EPR Addendum Study Area

As shown in **Figure 3-1**, the Study Area for this EPR Addendum includes:

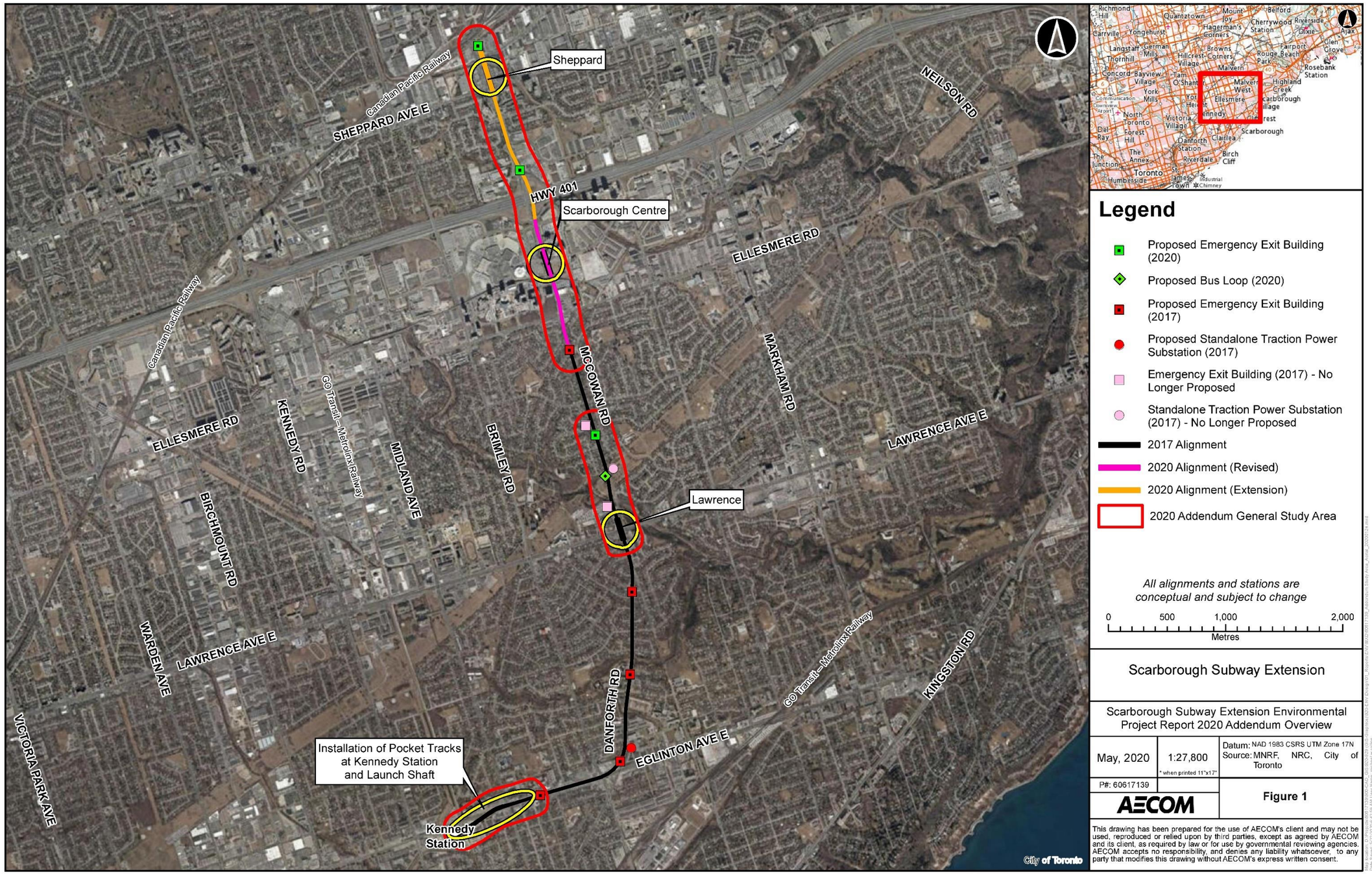
- Eglinton Avenue East, east of Kennedy Road and east of Midland Avenue (Kennedy Station);
- McCowan Road, south of Lawrence Avenue East and south of Brimorton Drive; and,
- McCowan Road, south of Ellesmere Road and north of the CP Railway north of Sheppard Avenue East.

In order to complete environmental and technical studies in support of this TPAP, the discipline-specific Study Areas extend to include an area of buffer to account for additional environmental features that may be potentially affected by the proposed Project. The discipline specific Study Areas, for environmental investigations and technical reports, are outlined In **Table 3-1**, and the rationales for these Study Areas are provided in the associated discipline reports (**Appendix B1** to **Appendix B5**).

Table 3-1: Study Areas by Discipline

Report Section	Discipline	Study Area
Appendix B1	**Natural Environment**	The Natural Environment Study Area is defined as extending 120 m from the limits of the proposed design changes as shown in **Figure 4-1**.
Appendix B2	**Air Quality**	The Air Quality Study Area is defined as extending 500 m from the limits of the proposed station locations to include all potential on-ground sources of air emissions from each station, as shown in **Figure 4-2**.
Appendix B3	**Noise and Vibration**	The Noise and Vibration Study Area is defined as extending 160 m from the alignment and 500 m from proposed above ground features (stations, EEBs, etc.) as shown is **Figure 4-4**.
Sections 4.3 and 5.3	**Socio-Economic and Land Use Characteristics**	The Socio-Economic and Land Use Characteristics Study Area is the same as the EPR Addendum Study Area shown in **Figure 3-1.**
Appendix B4	**Cultural Heritage**	The Cultural Heritage Study Area is defined as extending 30 m from the properties surrounding the proposed designed changes.
Appendix B5	**Transportation**	The Transportation Study Area is the same as the EPR Addendum Study Area shown in **Figure 3-1**

Figure 3-1: 2020 Study Area Overview



3.2 Study Process – EPR Addendum Process

This EPR Addendum is being conducted following the TPAP under Section 15 of O. Reg. 231/08.

The prescribed public and agency review steps, and timelines for finalizing the Addendum, are similar to those for the EPR. The proponent has greater discretion regarding the scope of public consultation. Metrolinx has developed and implemented a consultation program to engage stakeholders on the Addendum. This process is outlined in **Section 3.4**.

The following describes key steps in the EPR Addendum process under TPAP for the Scarborough Subway Extension:

- Prepare an assessment of the impacts the proposed change may have on the environment;
- Prepare and distribute an Addendum report;
- Prepare and distribute a Notice of Environmental Project Report Addendum;
- Conduct a final review by the public and stakeholders;
- Establish an issues resolution process to resolve any concerns raised during the final review (proponent led);
- Complete the issues resolution process and update the Addendum report to document the process;
- Publish the updated Addendum report on the Project website;
- Prepare and distribute a Notice of Updated Environmental Project Report Addendum; and
- Potential notification from the Minister of the Environment, Conservation and Parks (the Minister) imposing conditions on the Project, or potential advisement in writing that the Minister will not issue a notice.

3.2.1 Contents of the EPR Addendum Relative to Section 15 (1) of Ontario Regulation 231/08

Consistent with Section 15 (1) of O. Reg. 231/08, for all changes to the project that are inconsistent with the EPR, the Addendum to the EPR includes the following information provided in **Table 3-2**.

Table 3-2: Summary of EPR Addendum Requirements

EPR Addendum Requirement	Section of EPR Addendum
A description of the changes.	Section 2
Reasons for the changes.	Section 2
An assessment and evaluation of any impacts that the change may have on the environment.	Sections 5
A description of proposed mitigation measures for any negative impacts that the change to the project may have on the environment.	Section 5
A statement of whether the proponent (Metrolinx) is of the opinion that the change to the transit project is a significant change, and the reasons for the opinion.	Section 2

3.3 EPR Addendum Finalization Process

Subsequent to completion of this EPR Addendum and filing of the Notice of EPR Addendum, the EPR Addendum document is made available to the public, regulatory agencies, Members of Parliament, Members of Provincial Parliament, Indigenous Communities and other interested persons for review. In accordance with Section 15 of O. Reg. 231/08, reviewers are eligible to submit written comments on the Project to Metrolinx within the posted review period. Metrolinx will establish an issues resolution process to attempt to resolve any concerns raised by reviewers, in a way that does not cause unreasonable delay to the implementation of the Project.

Following the review period and within 65 days of the issuance of the Notice of EPR Addendum, Metrolinx will update the EPR Addendum with a description of the issues resolution process, what Metrolinx did to address any concerns raised by reviewers, and any impacts to the timeline for implementation of the Project as a result of how concerns have been addressed. After the EPR Addendum has been updated, Metrolinx will issue a Notice of Updated EPR Addendum and post the updated report to the Project website.

Once the Notice of Updated EPR Addendum is issued, within 35 days after receipt of the Notice of Updated EPR Addendum, the Minister may issue a notice to Metrolinx allowing the changes to the Scarborough Subway Extension Project in accordance with the updated EPR Addendum, subject to conditions set out in the Minister’s notice. The Minister may also choose to inform Metrolinx that no notice will be issued.

The Minister may issue a notice only if:

- the Minister is of the opinion that the way in which Metrolinx addressed a concern raised during the issues resolution process would cause unreasonable delay to the implementation of the Project, and the conditions in the Minister's notice modify the way in which the concern is addressed in the updated EPR Addendum without causing unreasonable delay to the implementation of the Project; or
- the Minister is of the opinion that the change may have an adverse impact on the existing aboriginal or treaty rights of the aboriginal peoples of Canada, and the conditions may prevent, mitigate or remedy the adverse impact.

The implementation of the transit project may proceed if no notice is received within the 35-day period, the Minister informs Metrolinx that no notice will be issued, or if the requirements of the Minister's notice have been satisfied.

3.4 Consultation Program Overview

In order to build awareness and support for the three-stop SSE, build strong relationships, develop an understanding of local issues in Scarborough and surrounding communities, Metrolinx engages with the public, Indigenous communities and organizations, property owners, regulatory agencies, elected officials and other interested parties, prior to issuing the Notice of EPR Addendum.

Consultation activities took place prior to, and are planned to take place following, the Notice of EPR Addendum.

A Communication and Consultation Plan was implemented for the Project (**Appendix C**) that includes:

- A dedicated Project website (www.metrolinx.com/en/greaterregion/projects/scarborough-subway-extension.aspx);
- A dedicated email (TorontoEast@metrolinx.com) and phone number;
- Elected Official Briefings;
- Notification via mail, email and newspaper advertisements;
- One round of pop-up sessions at four different locations;
- One round of public open houses at two different locations;
- Postcard mailouts;

- Tent card and pull-up banner development;
- Online engagement through Metrolinx Engage, the Project website and Metrolinx social media outlets; and
- Letters to Indigenous communities.

The consultation program followed by Metrolinx for this Project is further detailed in **Section 6** of this report and consultation materials will be included in **Appendix C**. The communication and consultation materials found in **Appendix C** include a Project mailing list, letters to Indigenous communities and Notices.

Consultation activities (e.g., public open houses and pop-up sessions) provide an opportunity for interested individuals to speak directly with members of the Project Team and gives Metrolinx the opportunity to collect feedback related to the proposed alignment for the SSE, environmental concerns and potential mitigation measures, and concerns related to property requirements.

During the first phase of engagement, pop-up sessions and public open houses took place between February 25 and March 5, 2020. Notification of these engagement events were provided through: the Project webpage (www.metrolinx.com/scarboroughsubway); postcards mailed to 32,201 addresses within at least a 150 m radius of the proposed alignment; local newspaper advertisements in multiple languages; news features on the Metrolinx Blog; social media; and mailings and emails to technical review agencies, identified stakeholder groups and Indigenous communities.

4. Existing Conditions

This section describes the existing natural, socio-economic and cultural environment present within the Study Area in the context of the Project. The purpose of characterizing the existing environmental conditions is to establish a baseline condition to use for the assessment of potential effects and proposed mitigation measures, described in **Section 7.1**.

The following disciplines are described in **Section 4** below:

- Natural Environment, including Geology and Groundwater and Drainage and Hydrology;
- Air Quality;
- Socio-Economic Environment;
- Noise and Vibration;
- Cultural Environment, including Cultural Heritage and Archaeology; and
- Transportation.

Technical reports and/or memos were completed for Natural Environment, Air Quality, Noise and Vibration, Cultural Heritage, and Transportation. These are included in **Appendix B1** to **Appendix B5**.

A preliminary gap analysis was conducted to identify where the 2017 EPR technical information was still valid and applicable, resulting in no further analysis and/or investigations. The gap analysis determined that Socio-Economic and Land Use Characteristics, Geology and Groundwater and Drainage and Hydrology did not warrant separate technical reports. All information related to these disciplines was based on desktop review and is provided in this EPR Addendum.

As noted in **Section 4.5.2**, a Stage 2 Archaeological Assessment is currently underway for the Project.

4.1 Natural Environment

A Natural Environment Report (**Appendix B1**) was completed to:

- Identify changes to applicable legislation since the approved 2017 EPR;
- Document existing natural environment conditions of the proposed design change locations;

- Identify potential effects on the natural environment, mitigation measures, monitoring and additional surveys / future commitments; and
- Identify anticipated legislative authorizations required for the proposed design changes.

This section summarizes the existing natural heritage features for the Natural Heritage Study Area based on a review of background information, agency consultation, updated regulations, newly added or up-listed Species at Risk (SAR), and new information collected during the 2018 and 2019 site reconnaissance investigations.

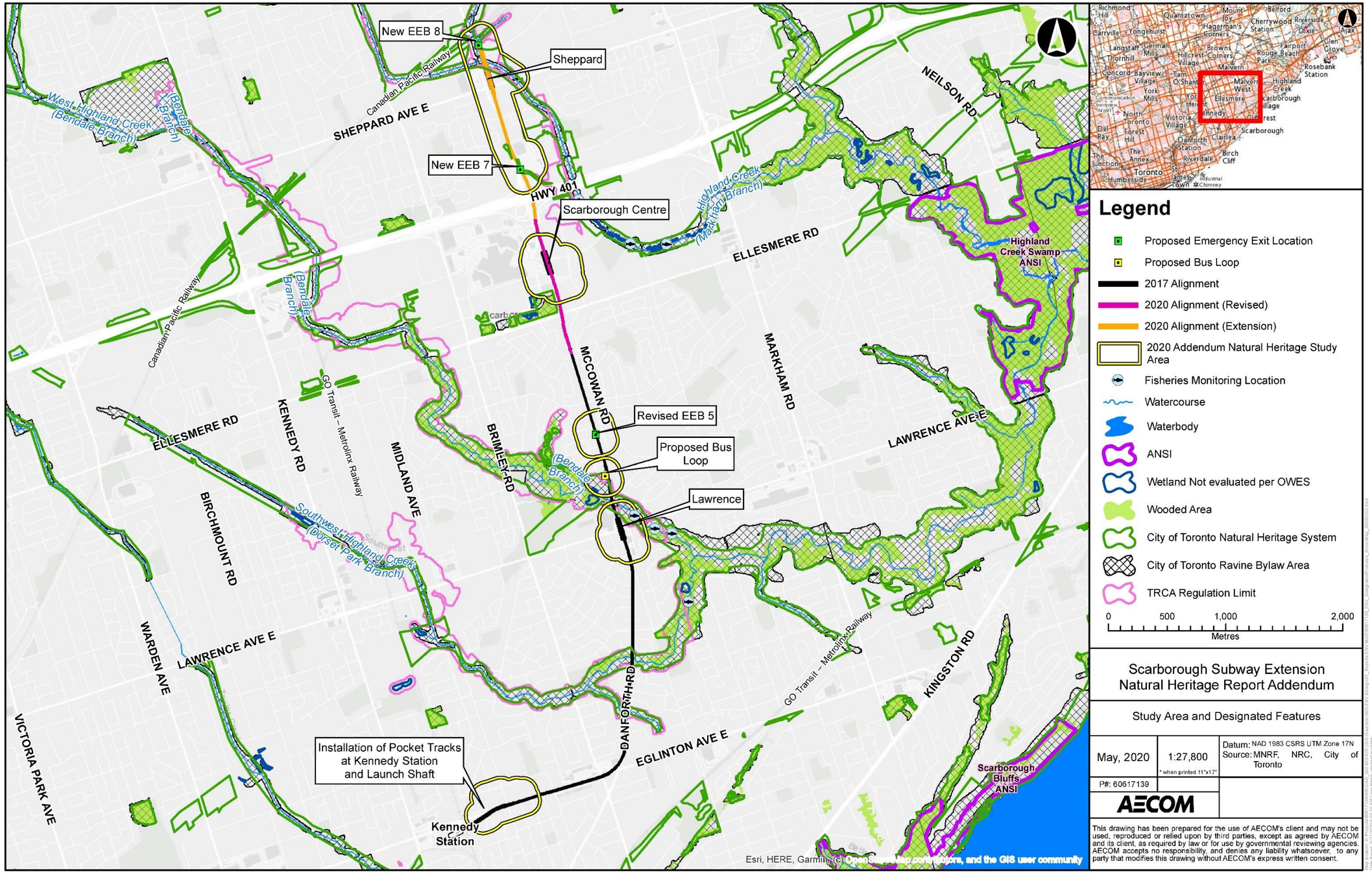
4.1.1 Methodology

For the purpose of this Report, the Natural Heritage Study Area extends 120 m around the proposed design changes as described in **Section 2** and shown in **Figure 4-1**. The 120 m buffer was used in accordance with the Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement – Second Edition (Ministry of Natural Resources and Forestry (MNRF), 2010) which recommends using this buffer to sufficiently evaluate the ecological function and potential effects of proposed development on lands adjacent to natural heritage features protected under the 2014 Provincial Policy Statement (PPS).

The Natural Heritage Study Area was used to confirm existing information and fill data gaps identified from the Natural Heritage Report (LGL, 2017) as well as to collect new information for the subway line extension from Highway 401 to the CP Railway that was not previously captured in the 2017 EPR.

Of note, the shift in alignment is limited to within the McCowan Road Right of Way. The surrounding land use within 120 m of the alignment shift from 1080 McCowan Road to Highway 401 mostly consists of residential and commercial areas. There is a woodlot located in the northeast corner of McCowan Road and Ellesmere Road. This woodlot has been assessed for impacts under the original EPR, where in Appendix B1 of the 2017 SSE Report it states "Along the tunneled segment, it is predicted that there will be no negative effects on natural heritage features since no development or site alteration (activities such as clearing, grubbing, grading, excavating, filling, construction, etc.) or dewatering (removal of water from excavations or trenches to stabilize soils or lower the groundwater table) will occur." Given that even with the shift, it will still be limited to sub-surface work, the original assessment of no negative effects in the 2017 ESR remains true and does not need to be re-assessed as part of the addendum process.

Figure 4-1: Natural Environment Study Area



Additional field studies were completed by AECOM Biologists on July 19, 2018 within the Gatineau Hydro Corridor and September 18 and 26, 2019 to confirm existing information from background reports and to address the data gaps for the proposed design changes. Site reconnaissance investigations consisted of the following:

- Ecological Land Classification (ELC) and Plant Inventory;
- Significant Wildlife Habitat (SWH) assessments;
- SAR and Species of Conservation Concern (SOCC) or their habitats; and
- Aquatic habitat assessment.

4.1.2 Description of Existing Conditions

4.1.2.1 Scarborough Subway Extension 2017 EPR Summary

The 2017 EPR Study Area was defined as 30 m of the preferred alignment and stations (LGL, 2017). The 2017 EPR Study Area, situated within the Highland Creek watershed, was described as highly urbanized with the majority of the remaining natural heritage features associated with valleylands and hydro corridors.

LGL conducted a background review and aquatic field investigations following the Ontario Ministry of Transportation (MTO) Environmental Guide to Fish and Fish Habitat (2009) on June 17, 2015 at the three watercourse crossings of the Highland Creek system along the preferred alignment for the Project: Tributary of Dorset Park Branch, Dorset Park Branch of West Highland Creek and the Bendale Branch of West Highland Creek. West Highland Creek was described as having a coldwater thermal regime (based on water temperature) and East Highland Creek was described as having a warmwater thermal regime (based on fish community assemblage). Through LGL's correspondence with MNRF in 2014, all tributaries of Highland Creek were identified as having a July 1 to March 31 in-water work timing window.

LGL conducted terrestrial field investigations, including ELC, botanical inventory and breeding bird surveys in support of the 2017 EPR on June 3 to 5, June 12 and June 17 to 18, July 21 and September 21, 2015. A total of five ELC vegetation community types were identified: Dry-Moist Old Field Meadow (CUM1-1), Mineral Cultural Woodland (CUW1), Mineral Cultural Thicket (CUT1), Fresh-Moist Lowland Deciduous Forest (FOD7) and Dry-Fresh Sugar Maple Deciduous Forest (FOD5) in addition to anthropogenic landscapes such as lawns, gardens and planted trees. Generally, vegetation communities exhibited varying degrees of disturbance, including a high proportion of non-native plant species and supported low-quality wildlife habitat for urban wildlife. Nevertheless, most of the bird and mammal species recorded are protected

under the Migratory Birds Convention Act, 1994 (MBCA) and / or Fish and Wildlife Conservation Act, 1997.

Two plant SAR were encountered along the Bendale Branch of Highland Creek during LGL's botanical investigation, beyond areas affected by the SSE – butternut (Juglans cinerea) and Kentucky coffee-tree (Gymnocladus dioicus), listed as Endangered and Threatened under the Endangered Species Act (ESA), respectively. Butternut was assumed naturally occurring while the Kentucky coffee-trees were likely planted.

Two bird SAR were confirmed present along the SSE alignment during field investigations – Barn Swallow, (Hirundo rustica) and Wood Thrush (Hylocichla mustelina). Two sightings of Barn Swallow, which is listed as Threatened under the ESA, were made during field investigations. The one sighting within the Natural Heritage Study Area, was a flock foraging in the hydro transmission corridor along the west side of McCowan Road north of Lawrence Avenue East on June 4, 2015. Wood Thrush is designated as Special Concern under the ESA. At the time the 2017 EPR was prepared, this species was listed as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but not under the Species at Risk Act (SARA). Wood Thrush was recorded singing on June 4, 2015 in the mature Dry-Fresh Sugar Maple Deciduous Forest (FOD5) located at the northwest corner of McCowan Road and Ellesmere Road (Frank Faubert Woods). Wood Thrush has since been up-listed to Threatened under Schedule 1 of SARA; however, critical habitat has not been identified and for the purpose of this Report, it is considered a SOCC and afforded protection under the MBCA and under the PPS as SWH.

4.1.2.2 Designated / Policy Areas

Designated natural areas include Provincially Significant Wetlands (PSWs), Locally Significant Wetlands (LSWs), Areas of Natural and Scientific Interest (ANSIs), environmentally significant areas and significant woodlands. Policy Areas include land use planning designations from provincial plans, upper and lower tier municipal official plans, and conservation authorities. While there are no designated areas identified, there are several policy areas including the City of Toronto Natural Heritage System (NHS), City of Toronto's Ravine and Natural Feature Protection (RNFP) area and / or the Toronto and Region Conservation Authority's (TRCA) regulation limits present within the Natural Heritage Study Area as described below (refer to the Natural Environment Report provided in **Appendix B1** for more detailed mapping):

- <u>Installation of Pocket Tracks at Kennedy Station and Launch Shaft</u>
  There are no designated or policy areas within the Natural Heritage Study Area of this proposed design change.

- Lawrence / Extraction Shaft
  The City of Toronto's NHS and RFNP policy areas and TRCA's Regulation Limit fall within the Natural Heritage Study Area of this proposed design change. It should be noted that the project features are anticipated to be located outside of the City's NHS and RFNP policy areas and TRCA's Regulation Limit. There is also an unevaluated wetland within 120 m of the Lawrence / Extraction Shaft (refer to **Figure 4-1**).
- Scarborough Centre
  The City of Toronto's NHS and RFNP policy areas fall within the Natural Heritage Study Area of this proposed design change.
- Sheppard / EEB 8 / PPUDO / Tail Tracks / Tunnel Boring Machine Launch Shaft
  The City of Toronto's NHS and RFNP policy areas and TRCA's Regulation Limit fall within the Natural Heritage Study Area of this proposed design change.
- Proposed Bus Loop
  The City of Toronto's NHS and RFNP policy areas and TRCA's Regulation Limit fall within the Natural Heritage Study Area of this proposed design change. However, there is an unevaluated wetland within 120 m of the Proposed Bus Loop (refer to **Figure 4-1**).
- Revised EEB 5 Location
  There are no designated or policy areas within the Natural Heritage Study Area of this proposed design change.
- Proposed EEB 7
  The City of Toronto's NHS and TRCA's Regulation Limit fall within the Natural Heritage Study Area of this proposed design change.
- Subway Line Extension from Highway 401 to just south of the CP rail north of Sheppard
  The City of Toronto's NHS and RFNP policy areas and TRCA's Regulation Limit fall within the Natural Heritage Study Area of this proposed design change.

4.1.2.3 Aquatic Habitat Assessment

Presence of watercourses were searched for within 120 m of the proposed project design through background information review. However, in order to comply with the fish and fish habitat protection provisions of the Fisheries Act, measures to protect fish and fish habitat include measures to maintain riparian vegetation such as an application

of a 30 m protective buffer around the watercourse from construction activities. If on-land construction activities are maintained outside of 30 m from the High-Water Mark (HWM), effects to fish habitat via harmful alternation, disruption or destruction (HADD) are generally not anticipated and therefore a Request for Review need not be submitted by the proponent to Fisheries and Oceans Canada (DFO). For this reason, a 30 m buffer around the proposed design changes was used to identify potentially affected watercourses as documented below. Where a watercourse was identified within 30 m of a proposed design change, a summary of aquatic existing conditions was provided in this section in order to aid in the discussion of potential effects on fish and fish habitat presented in **Section 5**.

The 2017 EPR noted that the Dorset Park Branch, Bendale Branch and Markham Branch all support warmwater fish communities. However, based on the updated information provided in **Table 4-1**, it is more accurate to identify these watercourses as supporting an undiversified assemblage of warm and coolwater fish species. The following provides a break down of watercourses present within each proposed design change:

- Installation of Pocket Tracks at Kennedy Station and Launch Shaft
  There are no watercourses identified within the Natural Heritage Study Area of this proposed design change.

- Lawrence / Extraction Shaft
  The Bendale Branch of West Highland Creek is present within the Natural Heritage Study Area but is located more than 30 m away from this proposed design change. Habitat conditions observed within the Bendale Branch of West Highland Creek (crossing under McCowan Road north of Lawrence Avenue) as described in the 2017 EPR, generally match conditions encountered during AECOM field investigations. However, it is important to note that a possible seasonal barrier, a concrete step dam, was identified approximately 200 m upstream of the McCowan Road Bridge. Overall field investigations confirmed that this reach of the Bendale Branch of West Highland Creek provides forage, rearing and refuge habitat to a variety of warm / coolwater forage fish. Habitat conditions within the assessed reach were generally non-limiting throughout with no important or exceptional habitat observed. No specialized habitat (including critically limited spawning habitat) was identified.

- Scarborough Centre
  There are no watercourses identified within the Natural Heritage Study Area of this proposed design change.

Table 4-1: Fish Community Assemblage for the Natural Heritage Study Area

Species Name (Scientific Name)	Thermal Regime[1]	Tolerance[1]	Bendale Branch of West Highland Creek (AU-0006[2], HL010WM[3] and Hauge Park Stations[3])	Dorset Park Branch of West Highland Creek (AU-0006[2] and HL009WM[3])	Tributary to Dorset Park Branch of West Highland Creek (AU-0009[2])	Markham Branch of Highland Creek (AU-0008[2], NCD5[3] and HL005WM[3])
Eastern Blacknose Dace (Rhinichthys atratulus)	Cool	Intermediate	X	X	X	X
Bluntnose Dace (Pimephales notatus)	Warm	Intermediate	-	-	X	-
Brook Stickleback (Culaea inconstans)	**Cool**	**Intermediate**	**X**	-	-	-
Common Carp (Cyprinus carpio)	Warm	Tolerant	-	-	-	X
Common Shiner (Luxilus cornutus)	Cool	Intermediate	-	-	X	-
Creek Chub (Semotilus atromaculatus)	Cool	Intermediate	X	X	X	X
Goldfish (Carassius auratus)	Warm	Tolerant	-	-	X	-
Fathead Minnow (Pimephales promelas)	Warm	Tolerant	X	X	X	X
Longnose Dace (Rhinichthys cataractae)	Cool	Intermediate	X	X	X	X
Northern Redbelly Dace (Chrosomus eos)	**Cool**	**Intermediate**	-	-	-	**X**
Pumpkinseed (Lepomis gibbosus)	**Warm**	**Intermediate**	-	-	-	**X**
Rainbow Trout (Oncorhynchus mykiss)	Cold	Intolerant	-		X	-
White Sucker (Catostomus commersonii)	Cool	Tolerant	X	X	X	X

Notes: Bolded records indicate new species since the 2017 EPR (records obtained include those from 2015 to 2019)

1. Species preferred thermal regime and tolerance information referenced in Ontario Freshwater Fisheries Database
2. LIO database, accessed in 2019
3. TRCA Fisheries Monitoring Data (last updated 2018)

- Sheppard / EEB 8 / PPUDO / Tail Tracks / Tunnel Boring Machine Launch Shaft
  The Markham Branch of Highland Creek (Crossing under McCowan Road north of Sheppard Avenue East) is located within 30 m of the Subway Line Extension from Highway 401 to just south of the CP rail north of Sheppard (including proposed station at Sheppard, EEB 8, Tail Tracks and TBM Launch Shaft), which was not previously identified in the 2017 EPR. Fish community records based on AECOM's background review are provided in **Table 4-1** for the Markham Branch. An aquatic habitat assessment for this watercourse (50 m upstream of the McCowan Road crossing and 200 m downstream of the confluence with the main branch) was completed by AECOM Biologists on September 26, 2019. The majority of the Markham Branch is concrete-lined and embedded deep within a steep valley on industrial property that ends in a perched condition (a 0.5 m barrier). Aquatic vegetation consisted of emergent grasses at the culvert inlet, but no in-stream vegetation was present through the concrete lined segment. A substantial barrier occurred approximately 60 m downstream of the McCowan Road crossing where the concrete channel liner changed in elevation by approximately 1 m. Considering the highly altered condition of the feature and the significant barriers present, the Markham Branch of Highland Creek likely only provides indirect fish habitat (e.g., to the more naturalized downstream reaches) throughout the assessed reach; however, this reach may provide general use habitat for tolerant warmwater forage fish. There were no other water features located within 30 m of the other proposed design changes.
- Proposed Bus Loop
  The Bendale Branch of West Highland Creek is present within the Natural Heritage Study Area but is located more than 30 m away from this proposed design change. Refer to the Lawrence / Extraction Shaft for general description of aquatic habitat conditions of the Bendale Branch of West Highland Creek.
- Revised EEB 5 Location
  There are no watercourses identified within the Natural Heritage Study Area of this proposed design change.
- Proposed EEB 7
  There are no watercourses identified within the Natural Heritage Study Area of this proposed design change.
- Subway Line Extension from Highway 401 to just south of the CP rail north of Sheppard

The Markham Branch of Highland Creek (Crossing under McCowan Road north of Sheppard Avenue East) is located within 30 m of the Subway Line Extension from Highway 401 to just south of the CP rail north of Sheppard. Refer to Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft for general description of aquatic habitat conditions for the Markham Branch of Highland Creek.

- Tunnel Alignment
  There were no changes to the fish community or habitat conditions, thermal regimes and timing windows from what was described in the 2017 EPR for the Tributary of Dorset Park Branch of West Highland Creek at both crossings under Danforth Road north of Eglinton and also north of Providence Street. The Dorset Park Branch is not located within 120 m of the proposed design changes.

4.1.2.4 Vegetation and Vegetation Communities

AECOM reviewed information from the 2017 EPR describing vegetation communities and confirmed whether the site conditions described therein were still current during AECOM's site reconnaissance investigations in 2018 and 2019. Figures showing classified and delineated vegetation communities are provided in the Natural Environment Report (**Appendix B1**).

Installation of Pocket Tracks at Kennedy Station and Launch Shaft

AECOM staff visited the site on September 26, 2019 and confirmed that there are no ELC communities in the area within the Natural Heritage Study Area for the proposed design changes in this location as reported in the 2017 EPR.

Lawrence / Extraction Shaft

AECOM staff visited the site on September 18, 2019 and confirmed that the majority of the ELC communities LGL identified in 2015 in support of the 2017 EPR were still current within the Natural Heritage Study Area at the proposed station at Lawrence / extraction shaft, as follows:

- Dry-Moist Old Field Meadow (CUM1-1e);
- Fresh-Moist Lowland Deciduous Forest (FOD7a);
- Cattail Mineral Shallow Marsh (MAS2-1); and
- Manicured grasses and planted shrubs and / or trees.

Deviations from the 2017 EPR included identification of a small Reed-canary Grass Mineral Meadow Marsh (MAM2-2) within the Fresh-Moist Lowland Deciduous Forest

(FOD7). None of the vegetation communities identified within 120 m of the proposed station at Lawrence / extraction shaft were provincially significant. No provincially or regionally rare plants were observed during the 2019 site reconnaissance.

Scarborough Centre

AECOM staff visited the site on September 18, 2019 and confirmed that the majority of the ELC communities LGL identified in 2015 in support of the 2017 EPR were still current within the Natural Heritage Study Area at the new station location at Scarborough Centre, as follows:

- Dry – Moist Old Field Meadow (CUM1-1c);
- Mineral Cultural Woodland (CUW1a);
- Dry – fresh Sugar Maple Deciduous Forest (FOD5a); and
- Manicured grasses and planted shrubs and / or trees.

Deviations from the 2017 EPR include minor adjustments to boundaries of vegetation communities to distinguish between Dry – Moist Old Field Meadow (CUM1-1) and manicured lawn based on the 2019 field investigations. None of the vegetation communities identified within 120 m of the proposed station at Scarborough Centre were provincially significant. Eastern red cedar (Juniperus virginiana), considered to be regionally rare in Ecoregion 7E, Toronto and / or Greater Toronto Area (GTA) based on the Distribution and Status of the Vascular Plants of the GTA (Varga, 2000), was identified in the Dry-Moist Old Field Meadow (CUM1-1c) community. Given that the regional status in Varga (2000) have not been updated in the last 18 years and that eastern red cedar is relatively common throughout Ontario, often abundant on roadsides or abandoned fields (MNRF, 2018), this species is no longer considered to be a regionally rare plant by AECOM.

Sheppard / EEB 8 / PPUDO / Tail Tracks / Tunnel Boring Machine Launch Shaft

Vegetation communities identified within the Natural Heritage Study Area for these proposed design changes are described below; none of these were identified as provincially significant.

- Mineral Cultural Meadow (CUM1)
- Mineral Cultural Woodland (CUW1)
- Cultural Hedgerow (CUH)

Three plant species considered to be provincially or regionally rare in Ecoregion 7E, Toronto and / or GTA based on the Distribution and Status of the Vascular Plants of the GTA (Varga, 2000) were identified, including: eastern red cedar, honey locust (Gleditsia

triacanthos) and common hackberry (Celtis occidentalis). Eastern red cedar was observed in the Mineral Cultural Meadow (CUM1) community. Given that the regional statuses in Varga (2000) have not been updated in the last 18 years and that eastern red cedar is relatively common throughout Ontario, often abundant on roadsides or abandoned fields (MNRF, 2018), this species is no longer considered to be a regionally rare plant by AECOM. Honey locust and common hackberry were planted ornamental specimens observed in manicured lands.

Proposed Bus Loop

On July 19, 2018, AECOM staff either confirmed or refined LGL's delineation of ELC communities and delineated additional ELC communities within 120 m of the proposed bus loop, which extended beyond the area of investigation completed by LGL (120 m on either side of McCowan Road within the Gatineau Hydro Corridor). The project footprint for the proposed bus loop overlaps with portions of the "Meadoway", which is restoration planting initiative led by TRCA, City of Toronto and the W. Garfield Weston Foundation (TRCA, 2018). These planted vegetation communities were not classified using ELC as they were not naturally occurring. Based on the restoration plans provided by TRCA on August 10, 2018, there were several provincially or regionally rare prairie plant species that were planted as part of this initiative.

The following additional ELC communities (i.e., not previously reported in the 2017 EPR) were identified within 120 m of the proposed bus loop:

- Cattail Mineral Shallow Marsh (MAS2-1); and
- Mineral Cultural Meadow (CUM1).

None of these vegetation communities were provincially significant. AECOM confirmed LGL's findings of a total of five butternuts and one planted Kentucky coffee-tree; however, identified one additional planted Kentucky coffee-tree located along the manicured portion of the Gatineau Hydro Corridor Trail.

In addition, a total of five plant species considered to be regionally rare in Ecoregion 7E, Toronto and / or GTA based on the Distribution and Status of the Vascular Plants of the GTA (Varga, 2000) were identified, including: eastern red cedar (Juniperus virginiana), cup-plant (Silphium perfoliatum var. perfoliatum), ninebark (Physocarpus opulifolius), pasture rose (Rosa Carolina) and white sweet-meadow (Spiraea alba). Apart from eastern red cedar, which is not considered to be regionally rare plant by AECOM, all of the regionally rare plants have been planted as part of the Meadoway Restoration Area.

Revised EEB 5 Location

AECOM staff visited EEB 5 on August 18, 2019 and confirmed that there are no ELC communities within the Natural Heritage Study Area as reported for EEB 6 in the 2017 EPR.

Proposed EEB 7

AECOM staff visited EEB 7 on August 18, 2019 and identified narrow strips of Mineral Cultural Meadow (CUM1) and manicured grasses with planted trees or shrubs within the Natural Heritage Study Area.

None of the vegetation communities identified, were provincially significant. Eastern red cedar, considered to be regionally rare in Ecoregion 7E, Toronto and / or GTA based on the Distribution and Status of the Vascular Plants of the GTA (Varga, 2000), was identified in the Mineral Cultural Meadow (CUM1) community but is no longer considered to be a regionally rare plant by AECOM.

Subway Line Extension from Highway 401 to just south of the CP rail north of Sheppard

The area within 120 m of the subway line extension from Highway 401 to just south of the CP rail north of Sheppard was highly urbanized and dominated by commercial and residential land uses with manicured lawns and planted, typically non-native trees and shrubs such as Norway maple (Acer platanoides), black locust (Robinia pseudoacacia), Austrian pine (Pinus nigra) and blue spruce (Picea pungens). Vegetation communities were limited to mostly narrow strips of Mineral Cultural Meadow (CUM1) within the CP Railway and MTO ROW as well as along Highland Creek.

4.1.2.5 Wildlife and Wildlife Habitat

LGL identified records of 37 species of wildlife (birds and mammals) during their field surveys in support of the 2017 EPR. Wildlife surveys (e.g., amphibian and breeding bird surveys) were not completed during the 2019 site reconnaissance investigations; however, bridges, culverts and the exterior of buildings potentially impacted by the proposed design changes were examined to confirm habitat for migratory birds or SOCC known to use anthropogenic structures for nesting. The majority of the wildlife incidentally observed by AECOM in 2018 and 2019 within the Natural Heritage Study Area consisted of common species that are tolerant of urban disturbances. However, several bird species protected under the MBCA were recorded, including American Robin (Turdus migratorius) and Black-capped Chickadee (Poecile atricapillus). In addition, SOCC were also recorded by either LGL or AECOM. Although SOCC do not receive legal protection under the ESA, their habitats are considered SWH and afforded protection under the PPS.

The following confirmed and candidate SWH were identified for each proposed design change based on the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, 2015).

Installation of Pocket Tracks at Kennedy Station and Launch Shaft

Given the lack of vegetation communities, the potential for wildlife and wildlife habitat within the Natural Heritage Study Area of this proposed design change is low and there were no confirmed or candidate SWH identified. Wildlife species that may be present include those that are common and tolerant to urban disturbances such as House Sparrow (Passer domesticus), Rock Pigeon (Columba livia) and European Starling (Sturnus vulgaris).

Lawrence / Extraction Shaft

Riparian habitats associated with the Bendale Branch of West Highland Creek represents one of the few natural heritage features that provide habitat for wildlife within the Natural Heritage Study Area. Although no SAR or SOCC were recorded within the Natural Heritage Study Area at the proposed station at Lawrence / extraction shaft, most species observed receive protection under the MBCA. No bird nests were observed underneath the McCowan Road bridge over the Bendale Branch of West Highland Creek or on the buildings at properties adjacent to the station box and bus terminal at the time of the 2019 site reconnaissance. There is limited habitat for herpetofauna.

The following candidate SWH within the Natural Heritage Study Area at the proposed station at Lawrence / extraction shaft were identified:

- **Seasonal Concentration Areas:**
  - Candidate Bat Maternity Colonies – the Fresh-Moist Lowland Deciduous Forest (FOD7) provides potentially suitable bat maternity roosting habitat and presence of snags were noted therein; targeted surveys (habitat mapping and acoustic monitoring) are required to confirm significance.
- **Specialized Wildlife Habitat:**
  - Candidate Amphibian Breeding Habitat (Woodland) – Marsh communities adjacent to woodland could provide suitable breeding habitat.
- **Habitat for Species of Conservation Concern:**
  - Candidate habitat for the following Special Concern or rare wildlife species:
    - Eastern Wood-pewee (Contopus virens);
    - Wood Thrush;
    - Monarch (Danaus plexippus); and
    - Snapping Turtle (Chelydra serpentina).

Scarborough Centre

LGL recorded a Wood Thrush, listed as Special Concern under the ESA and Threatened under Schedule 1 of SARA, singing within the Frank Faubert Woodlot during field investigations of June 4, 2015 (but not during the second visit on June 18, 2015). AECOM incidentally recorded Turkey Vulture (Cathartes aura), House Sparrow, Blue Jay (Cyanocitta cristata), Eastern Gray Squirrel (Sciurus carolinensis), Eastern Chipmunk (Tamias striatus) and Monarch, which is listed as Special Concern under the ESA and SARA, during the 2019 site reconnaissance. No bird nests were observed underneath the McCowan Road bridge over Progress Avenue or the TTC's Scarborough RT over McCowan or on the buildings adjacent to the station box at the time of the 2019 site reconnaissance. As reported in the 2017 EPR, there is limited habitat for herpetofauna.

In addition to confirmed significant habitat for Special Concern and rare wildlife species (Wood Thrush and Monarch), the following candidate SWH were identified within the Natural Heritage Study Area at for the new station location at Scarborough Centre:

- **Seasonal Concentration Areas:**
  - Candidate Bat Maternity Colonies – the Dry-Fresh Sugar Maple Deciduous Forest (FOD5) provides potentially suitable bat maternity roosting habitat and presence of snags were noted therein; targeted surveys (snag density and acoustic monitoring) are required to confirm significance.
- **Habitat for Species of Conservation Concern:**
  - Candidate habitat for the following Special Concern or rare wildlife species:
    - Eastern Wood-pewee.

Sheppard / EEB 8 / PPUDO / Tail Tracks / Tunnel Boring Machine Launch Shaft

Generally, there is low quality wildlife habitat present within the Natural Heritage Study Area at the proposed station at Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft. AECOM incidentally recorded European Starling, Rock Pigeon, Ring-billed Gull (Larus delawarensis), House Sparrow and Monarch during the 2019 site reconnaissance. Monarch is listed as Special Concern under the ESA; as such, cultural meadow within the CP Railway ROW and along Highland Creek provides confirmed significant habitat for Special Concern and rare wildlife species in accordance with Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, 2015). Candidate SWH was also identified for Eastern Wood-pewee within cultural woodland communities. No bird nests were observed in, under or on the bridges over or culverts that convey Highland Creek that were examined at the time of the 2019 site reconnaissance. House Sparrow nests were observed on the East Court Ford Lincoln

dealership at the proposed bus terminal location on the east side of McCowan Road, north of Sheppard Avenue; however, this species does not receive protection under the MBCA.

Proposed Bus Loop

Several common and urban wildlife species were recorded during the July 19, 2018 site reconnaissance visit, including the Monarch, which is listed as Special Concern under the ESA and SARA and therefore considered to be a SOCC. Several Monarchs were observed flying over and foraging in the planted meadows. Towers within the Gatineau Hydro Corridor were inspected for bird nests; however, none were found in 2018.

The following candidate SWH within 120 m of the proposed bus loop were identified:

- **Seasonal Concentration Areas:**
  - Candidate Bat Maternity Roosting Colony – the Fresh-Moist Lowland Deciduous Forest (FOD7) may support candidate Bat Maternity Roosting Colonies.
  - Candidate Migratory Butterfly Stopover Areas – the Gatineau Hydro Corridor, which is located within 5 km of Lake Ontario, contains a combination of forests and restored meadows and thickets that provide suitable foraging habitat for butterflies and is therefore considered candidate Migratory Butterfly Stopover Area.
- **Specialized Wildlife Habitat:**
  - Candidate Amphibian Breeding Habitat (Woodland) – the Cattail Mineral Shallow Marsh (MAS2-1) could provide suitable breeding habitat.
- **Habitat for Species of Conservation Concern:**
  - Candidate habitats for the following Special Concern or rare wildlife species that have medium or high probability of occurrence within 120 m of the proposed bus loop (refer to **Appendix E** of **Appendix B1** for assessment of habitat suitability):
    - Eastern Wood-pewee;
    - Monarch; and
    - Snapping Turtle.

Revised EEB 5 Location

No incidental wildlife observations were recorded by AECOM in 2019 specific to the area within the Natural Heritage Study Area at EEB 5 and given that there are no vegetation communities, the potential for wildlife and wildlife habitat is low. There were

no confirmed or candidate SWH identified. Wildlife species that may be present include those that are common and tolerant to urban disturbances such as House Sparrow, Rock Pigeon and European Starling.

Proposed EEB 7

The area within the Natural Heritage Study Area at EEB 7 represents low quality wildlife habitat. AECOM incidentally recorded Monarch in the vicinity of the potential footprint for EEB 7, which is listed as Special Concern under the ESA, during the 2019 site reconnaissance. Therefore, cultural meadow that occurs as narrow strips within the MTO ROW provides confirmed significant habitat for Special Concern and rare wildlife species in accordance with Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, 2015).

Subway Line Extension from Highway 401 to just south of the CP Railway north of Sheppard Avenue

The area within 120 m of the proposed alignment represents low quality wildlife habitat. AECOM incidentally recorded European Starling, Rock Pigeon, Ring-billed Gull, House Sparrow and Monarch during the 2019 site reconnaissance. Monarch, which is listed as Special Concern under the ESA and SARA; as such, cultural meadow habitat within the Natural Heritage Study Area provides confirmed significant habitat for Special Concern and rare wildlife species in accordance with Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, 2015). Candidate SWH was identified for Eastern Wood-pewee within cultural woodland. No bird nests were observed in, under or on the bridges or culverts that convey Highland Creek along the alignment at the time of the 2019 site reconnaissance.

4.1.2.6 Species at Risk

Exterior Building Surveys

Generally, the Project footprint associated with all the proposed design changes was not known during the 2019 field investigations; however, buildings and structures potentially affected by proposed works were assessed for SAR habitat potential from ground level and / or through review of aerial imagery using Google Earth.

No buildings or structures with SAR potential occur at the proposed bus loop or EEB 7, or adjacent properties.

The potential occurrence for the following SAR that use buildings and structures potentially affected by proposed works is summarized below:

Barn Swallow

Barn Swallows build their mud nests on any available ledges, vents or windowsills. Nests can also be built on vertical walls with rough surfaces (e.g., brick or wooden walls) under an overhang for overhead protection (MNRF, 2017b). Barn Swallows require access to suitable open habitat for foraging and mud for nest building (Heagy et al., 2014); as such, nesting individuals are typically found within 200 m of grasslands, wetlands, riparian habitats and waterbodies (Ministry of the Environment, Conservation and Parks (MECP), 2019). Moderate potential was identified for Barn Swallow for at least some of the buildings or structures at or adjacent to the following proposed design changes:

- Proposed station at Lawrence / extraction shaft;
- Proposed station at Sheppard / EEB 8 / PPUDO / tail tracks / TBM launch shaft; and
- Subway line extension from Highway 401 to just south of the CP rail north of Sheppard.

There is low potential for Barn Swallow to use buildings at the proposed pocket tracks at Kennedy Station, southern launch shaft, new station location at Scarborough Centre and revised EEB 5 location, and their adjacent properties, given distance to any watercourses or the hydro corridor.

Chimney Swift

Chimney Swifts will nest and roost in chimneys with the following characteristics: wide diameter (at least 2.5 standard bricks in width); brick, stucco or concrete; lack caps, spark protectors, and animal guards that would prevent the swift's entrance into the chimney; and lack flues or metal linings that would prevent the bird from clinging to the interior (Bird Studies Canada et al., 2009). Based on a preliminary assessment of the buildings within immediate vicinity of the proposed design changes, there is low potential for Chimney Swift. Chimneys of residential or commercial buildings within the immediate vicinity of the proposed design changes did not appear to be suitable (e.g., too narrow, presence of caps or metal flue, etc.) when viewed from the ground level during the site reconnaissance investigations or through review of aerial imagery.

Bat Species at Risk

Ontario's four Endangered bats, which were not addressed in the 2017 EPR, may access interior of buildings through small crevices or cracks and roost in attics and chimneys, as well as under siding, eaves, roof tiles or shingles and behind shutters (BCI, date unknown). These species also use areas consisting of coniferous, deciduous

or mixed trees that are at least 10 cm diameter-at-breast height (MNRF, 2017c). The buildings within immediate vicinity of the proposed design changes are relatively modern and well maintained; therefore, there is low potential for bat SAR roosting except for a building identified in the vicinity of the proposed station at Sheppard, EEB 8, PPUDO and TBM launch shaft. This building is a commercial building located on the northeast corner of McCowan Road and Nugget Avenue and a small hole that could potentially provide access was observed.

4.1.2.7 Species at Risk Habitat Assessment

Terrestrial SAR habitat assessments are provided in **Appendix D** of **Appendix B1**; changes in ESA or SARA status of species since the 2017 EPR are also noted therein. There are no records of aquatic SAR for watercourses within the Natural Heritage Study Area.

The SAR listed below have a high, medium or low probability (refer to **Section 3.1.4** of **Appendix B1** for definitions of rankings used) of occurring within the following locations in the Natural Heritage Study Area (refer to **Appendix D** of **Appendix B1** for detailed descriptions):

- **Installation of Pocket Tracks at Kennedy Station and Launch Shaft**
  - There is low potential for SAR occurrence at the pocket track and launch shaft locations and their adjacent properties.
- **Lawrence / Extraction Shaft**
  - Barn Swallow (medium probability) – buildings and structures at, and/or within the immediate vicinity of, the proposed design changes may provide suitable nesting habitat given proximity to a watercourse; however, this species wasn't observed within 120 m during breeding bird surveys conducted in 2015 (LGL, 2017) nor incidentally by AECOM during site reconnaissance in 2019.
  - Bat SAR (medium probability) – Deciduous forest communities within the Natural Heritage Study Area may provide suitable maternity roost habitat. Species were not observed during field investigations; however, targeted surveys were not performed.
- **Scarborough Centre**
  - Bat SAR (medium probability) – Deciduous forest and cultural woodland communities within the Natural Heritage Study Area may provide suitable maternity roost habitat. Species were not observed during field investigations; however, targeted surveys were not performed.

- **Sheppard / EEB 8 / PPUDO / Tail Tracks / Tunnel Boring Machine Launch Shaft**

- Barn Swallow (medium probability) – buildings and structures at, and/or within the immediate vicinity of, the proposed design changes may provide suitable nesting habitat given proximity to a watercourse. This species was not observed; however, breeding bird surveys were not performed.
- Bat SAR (medium probability) – a potential entry / exit point (i.e., hole) was noted on a building situated at, and/or within the immediate vicinity of, the proposed design changes. Cultural woodland communities in the vicinity may also provide suitable maternity roost habitat. Species were not observed during field investigations; however, targeted surveys were not performed.

- **Proposed Bus Loop**

- Bat SAR (medium probability) – deciduous forest and cultural woodland communities may provide suitable maternity roost habitat. Species were not observed during field investigations; however targeted surveys were not performed.
- Kentucky coffee-tree (high probability) – two planted Kentucky coffee-trees were noted outside of the Gatineau Hydro Corridor Segment within a manicured portion (e.g., mowed lawns) of the Gatineau Hydro Corridor Trail. According to the Recovery Strategy (MNRF, 2017d), this species is frequently planted as an ornamental tree, often from non-native stock and it is suspected that the two identified specimens are likely from a non-native stock given that they are outside of the species' native range. Regardless, all individual trees are protected under the ESA; however, recovery efforts and application of critical habitats do not apply to planted individuals in landscaped settings (e.g., mowed lawns) as these habitat types are not considered to be critical habitat for the recovery of the species.
- Butternut (high probability) – A total of five butternuts were identified along the Gatineau Hydro Corridor. Only pure butternuts or those butternuts planted to satisfy compensation requirements under the ESA or O. Reg. 242/08 receive both species and habitat protection under the ESA, while cultivated and hybrid butternuts do not. These butternut trees had relatively healthy crowns (95-100%), ranged in size from 8 cm to 10.5 cm diameter at breast height (DBH), and showed some evidence of Butternut Canker (Ophiognomonia clavigignenti-juglandacearum), a fungal disease threatening the species, in the form of a few sooty and open cankers. LGL (2017) suspected these butternuts to be naturally occurring. MNRF was consulted regarding whether these butternuts are naturally occurring or planted as part of compensation efforts and whether information pertaining

to the genetic purity of these trees was available. MNRF confirmed on July 18, 2018 that these butternuts were not planted as compensation; however, MNRF did not have further information on type of occurrence (e.g., naturally occurring or planted) or genetic purity. Therefore, for the purposes of this Report, AECOM assumes that these five butternuts are naturally occurring. These butternuts are located more than 50 m from the proposed bus loop.

- **Revised EEB 5 Location**

- There is low potential for SAR occurrence at, and within the immediate vicinity of, the proposed design changes.

- **Proposed EEB 7**

- There is low potential for SAR occurrence within or adjacent to the proposed design changes.

- **Subway Line Extension from Highway 401 to just south of the CP rail north of Sheppard**

- Barn Swallow (medium probability) – buildings and structures along the subway line extension may provide suitable nesting habitat given proximity to a watercourse. This species was not observed; however, breeding bird surveys were not performed.
- Bat SAR (medium probability) – Cultural woodlands and buildings observed along the subway line extension may provide suitable habitat. Species were not observed during field investigations; however, targeted surveys were not performed.

4.1.2.8 Geology and Groundwater

All details related to Physiography, Geology and Soil Conditions and Groundwater from the 2017 EPR were reviewed against the updated Project Description and Study Area for this EPR Addendum. It was determined that all of the technical information presented in the 2017 EPR is consistent and applicable with the changes presented in this EPR Addendum, with the exception of water wells.

The Study Area is within the physiographic region known as the South Slope, which consists of the southern slope of the Oak Ridges Moraine and the southern portion of the Peel Plain. The South Slope primarily consists of the southern portion of the Peel Plain and is described as a rolling glacial till plain with low drumlins and flutings oriented in a northwest-southeast direction. Quaternary deposits of the Toronto area generally consist of soils that were deposited by glaciers and associated glacial lakes and rivers during the Wisconsinan Glaciation period. Recent alluvium deposits are found in river and stream valleys and the associated floodplains. These physiography and geology

conditions observed in the 2017 EPR apply across the entire EPR Addendum Study Area and remain unchanged since the 2017 EPR.

In general, the regional groundwater flows south-southeast towards Lake Ontario. Locally, shallow groundwater flow is anticipated to be towards the various branches of Highland Creek, then south-southeast towards Lake Ontario. The groundwater conditions observed in the 2017 EPR apply across the entire EPR Addendum Study Area and remain unchanged since the 2017 EPR.

The MECP Water Well Information System database indicates that there are 218 wells reported on within 250 m of the Study Area. At the time of the 2017 EPR, the WWIS identified records for 454 wells within the same buffer.

4.1.2.9 Drainage and Hydrology

All details related to Drainage and Hydrology from the 2017 EPR were reviewed against the updated Project Description and Study Area for this EPR Addendum. It was determined that the existing conditions information documented in the 2017 EPR is consistent and applicable with the changes presented in this EPR Addendum.

The Study Area is located within the Highland Creek watershed, which covers approximately 102 km^2 of area, with over 75 km of watercourses. The majority of the watershed urbanized and represents the most developed watershed in the jurisdiction of the TRCA. Watercourses have been significantly altered as a result of past development that occurred before stormwater management (SWM) controls were required, which has resulted in high peak flows and poor water quality associated with urban watercourses. This also contributed to severe erosion that has required frequent stabilization efforts. As a result, a significant portion of the channel network has been either buried underground or lined with concrete or gabion baskets to reduce erosion and prevent flooding. The watershed also has a number of fish barriers (like dams and weirs) and a lack of riparian vegetation. These drainage and hydrology conditions observed in the 2017 EPR apply across the entire EPR Addendum Study Area and remain unchanged since the 2017 EPR.

4.2 Air Quality

4.2.1 Methodology

An air quality assessment was conducted to determine the potential for air quality impacts from the three new stations at Lawrence Avenue East, Scarborough Centre and Sheppard Avenue East located within the project Study Area, based on a comparison of Existing Conditions (2019), Future No-Build conditions (2041), and Future Build (2041).

The Air Quality Assessment Report is provided in **Appendix B2**. A more detailed Quantitative Air Quality Assessment Report is currently underway.

The existing ambient air quality conditions were based on publicly available historical data from ambient air quality monitoring stations within Ontario. Data utilized was the most recent data available at the time of the preparation of the Qualitative Air Quality Assessment (December 2019). It was assumed that the existing ambient air quality would be representative of the conditions present in the Future Build and No-Build scenario. The following the National Air Pollution Surveillance (NAPS) Air Quality monitoring stations were selected as representative of the ambient air quality of the project Study Area:

- Toronto East (NAPS ID 60410);
- Toronto West (NAPS ID 60430);
- Etobicoke South (NAPS ID 60435);
- Gage Institute Station (NAPS ID 60427); and
- Roadside Wallberg (University of Toronto (UofT)) Station (NAPS ID 60439).

The Study Area for this project is split into three separate areas surrounding each of the proposed stations for the SSE, marked by a 500 m extension surrounding all potential on-ground sources of air emissions from each station, as shown in **Figure 4-2**. Representative receptors were selected within these individual 500 m boundaries surrounding each station. Details regarding each station's sources of air quality contaminant emissions can be found in **Appendix B2**.

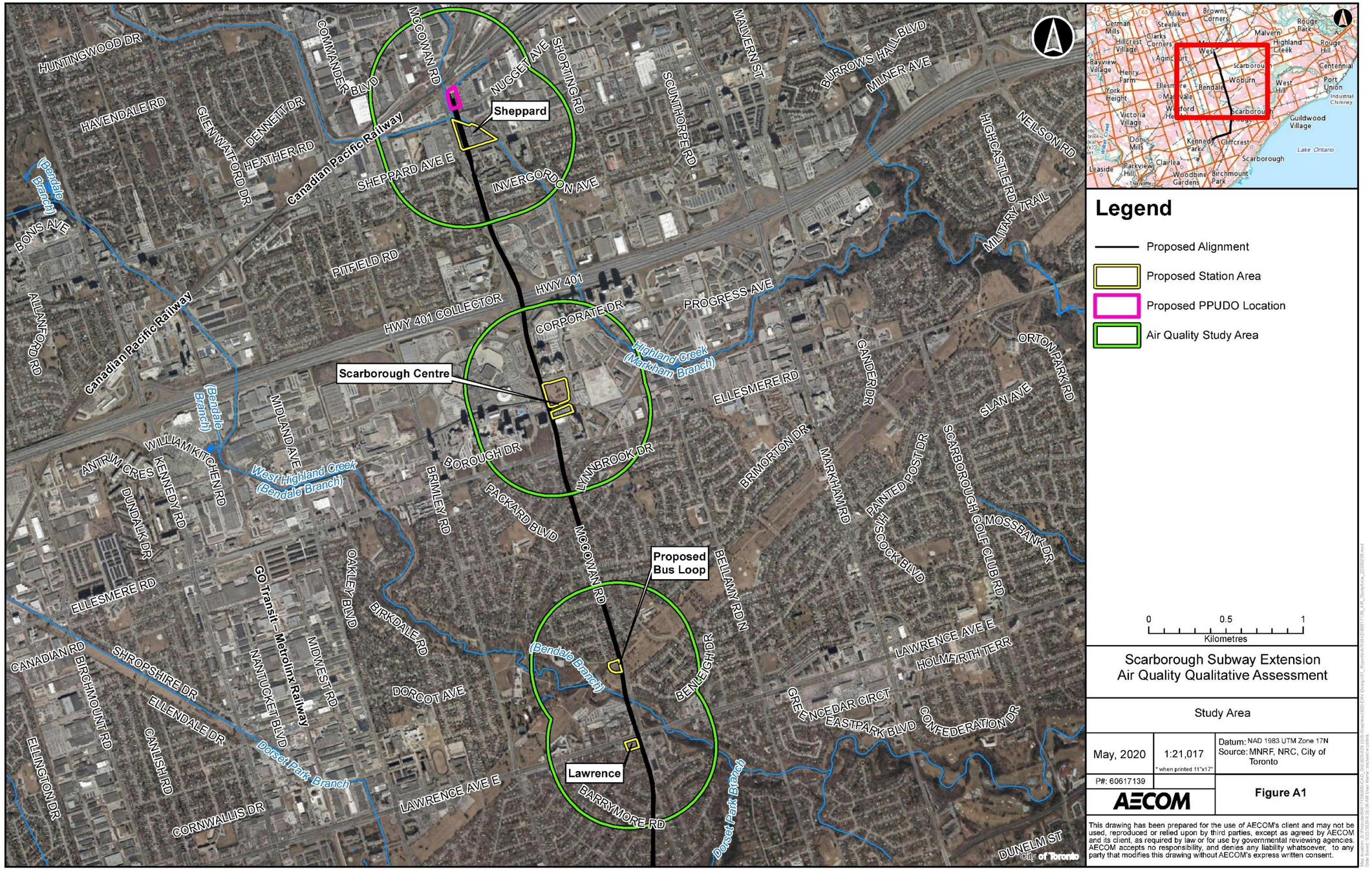
4.2.1.1 Key Contaminants

The primary air emission sources within each station's Study Area are the vehicular emissions from the road network, existing bus routes, proposed bus terminals, parking lots and PPUDO area. Based on recommendations within The MTO Guideline[7], the Air Quality Assessment included the following criteria air contaminants (CAC) from vehicle emissions:

1. Nitrogen dioxide, NO_2 (assessed over 1-hour, 24-hour, and annual averaging periods);

7. Ministry of Transportation, "Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects" (Environmental Policy Office, October 2019 – in Draft), The previous approved version of this document is dated June 2012. The October 2019 version was posted on the Environmental Registry of Ontario (EBR) for comment from October 21 to December 5 of 2019.

Figure 4-2: Air Quality Study Area



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 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).

Emissions of the coarse fraction of particulates (PM_{10}) are emitted mostly from tire wear, brake wear, and road dust fugitives, whereas the fine fraction ($PM_{2.5}$) is mostly attributed to vehicle emission exhausts.

In addition to the above, impacts of pollutants contributing to the regional GHG levels should be assessed within the full quantitative impact assessment. The pollutants associated with GHG levels for the quantitative impact assessment will include carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) and the impacts of these pollutants will be compared to the MECP projected transportation emissions for the Future Build year, in units of carbon equivalent, CO_2e, as shown in the Ontario's Climate Change Update 2014 document[8].

4.2.1.2 Relevant Air Quality Guidelines

The applicable standards for the CACs are regulated by the MECP and Canadian Council of Ministers of the Environment (CCME) as the Ambient Air Quality Criteria (AAQC) and Canadian Ambient Air Quality Standards (CAAQS) respectively, as illustrated in **Table 4-2**.

8. Ministry of the Environment and Climate Change "Ontario's Climate Change Update 2014" accessed December 20, 2019 https://dr6j45jk9xcmk.cloudfront.net/documents/3618/climate-change-report-2014.pdf

Table 4-2: Summary of Applicable Guidelines and Standards

Criteria Air Contaminant (CAC)	Source of Standard	Averaging Period (hr)	Air Quality Threshold Value (µg/m^3)
NO_2 [1]	AAQC	1	400
NO_2 [1]	AAQC	24	200
NO_2 [1]	CAAQS	1 (2020)	113
NO_2 [1]	CAAQS	Annual (2020)	32
NO_2 [1]	CAAQS	1 (2025)	78
NO_2 [1]	CAAQS	Annual (2025)	22
CO	AAQC	1	36,200
CO	AAQC	8	15,700
SO_2 [2]	AAQC	1	690
SO_2 [2]	AAQC	24	275
SO_2 [2]	AAQC	Annual	55
SO_2 [2]	CAAQS	1 (2020)	183
SO_2 [2]	CAAQS	Annual (2020)	13
SO_2 [2]	CAAQS	1 (2025)	170
SO_2 [2]	CAAQS	Annual (2025)	10
PM_{10} [3]	AAQC	24	50
$PM_{2.5}$ [4]	CAAQS	24 (2015)	28
$PM_{2.5}$ [4]	CAAQS	24 (2020)	27
$PM_{2.5}$ [4]	CAAQS	Annual	8.8
Acetaldehyde	AAQC	24	500
Acrolein	AAQC	1	4.5
Acrolein	AAQC	24	0.4
Benzene	AAQC	24	2.3
Benzene	AAQC	Annual	0.45
Benzo(a)pyrene	AAQC	24	0.00005
Benzo(a)pyrene	AAQC	Annual	0.00001
1,3-Butadiene	AAQC	24	10
1,3-Butadiene	AAQC	Annual	2
Formaldehyde	AAQC	24	65

Notes: (1) The CAAQS Air Quality threshold for nitrogen dioxide is based on the 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations.

(2) The CAAQS Air Quality threshold for sulphur dioxide is based on the 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentrations.

(3) The value of 50 µg/m^3 (24 hr) is an interim AAQC and is provided as a guide for decision making.

(4) 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.

AAQCs 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 be 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. AAQCs are used for assessing general air quality and the potential for causing an adverse effect. They are set at levels below which adverse health and/or environmental effects are not expected. If a contaminant has more than one AAQC, all must be used for assessment purposes as each represents a different type of effect linked to a particular averaging period.

The CCME 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 promote consistency across the country.

Recently, the CCME has developed new standards for fine particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2) and sulphur dioxide (SO_2), under the CAAQS. The CAAQS are established as voluntary objectives under the Canadian Environmental Protection Act, 1999.

4.2.2 Description of Existing Conditions

4.2.2.1 Scarborough Subway Extension 2017 EPR Summary

The 2017 EPR assessed the air quality impacts from adjustments to the Scarborough Center TTC Bus Terminal and surrounding vehicle emissions for the 2014 Existing Condition, 2031 Future No-Build Condition, and 2031 Future Build Condition. A total of 25 sensitive receptors were modelled to represent the worst-case impacts from the bus terminal, including multi-level high rise receptors.

The maximum modelled concentrations for the air contaminants were predicted by the dispersion model at the sensitive receptors. The most impacted receptor was located south east of McCowan Road and Ellesmere Road south of the proposed station at Scarborough Centre. Contaminant concentrations disperse significantly with downwind distance from roadway vehicle emission sources. At approximately 500 m from the roadway, it is generally expected that emission concentration contributions from roadway vehicles generally become indistinguishable from background levels.

Hourly traffic volume counts and peak hour turning movement counts were provided for all horizon years, with the most conservative values being used for the assessment.

McCowan Road, Progress Avenue and Ellesmere Road were modelled in the assessment. The AM Peak volumes for the Scarborough Centre terminal in conjunction with hourly bus schedule from the station at Sheppard were used to determine hourly bus volumes.

Emissions from vehicles and buses were estimated using the United States Environmental Protection Agency Motor Vehicle Emissions Simulator (MOVES) software and were combined with traffic and bus volumes to determine a total emission rate for the modelled roads and bus terminal volumes within the area. The dispersion model AERMOD was used to determine the air quality impact from the Existing Condition, Future No-Build and Future Build Conditions. Results were combined with background levels to determine the overall impacts.

The results showed that for all modelled conditions, the background concentrations alone were a major contributor to the worst-case combined concentration for all contaminants. For benzene (annual average) and PM_{10} (24-hour average) the background concentrations alone exceeded the ambient air contaminant guideline. The $PM_{2.5}$ (annual average) background concentration was approximately 91% of the guideline.

The Existing Condition combined impacts showed compliance with the guidelines for all contaminants with the exception of benzene and particulates (PM_{10}, $PM_{2.5}$, total suspended particulates (TSP)).

The Future No-Build Condition combined impacts were below the guidelines for all contaminants with the exception of benzene and particulates, similar to the Existing Conditions.

The Future Build Condition also showed compliance with all guidelines, with the exception of benzene and particulates. This scenario showed the proposed bus terminal contributing less than 1% of the maximum concentration for all pollutants. The existing roadway emissions had a dominant effect on the predicted emission impacts and the background concentrations contributed over 80% towards the combined emission impact.

Overall impacts of the bus terminal were shown to be minimal and the difference in the overall impacts between the Future Build and Future No-Build scenarios was shown to be approximately less than 1% for all contaminants.

4.2.2.2 Existing Conditions

Details of the air quality monitoring stations closest to the Study Area for each station are provided in **Table 4-3**.

Table 4-3: Air Quality NAPS Monitoring Stations' Information

Station Information	Toronto East	Toronto West	Etobicoke South	Gage Institute	Roadside Wallberg (University of Toronto)
NAPS Number	60410	60430	60435	60427	60439
Address	Lawrence and Kennedy	125 Resources Road, Toronto	461 Kipling Avenue	223 College Street, Toronto	200 College Street, Toronto
Year of Data Available	2011 - 2017	2011 - 2017	2011 - 2017	2011 - 2014	2014 - 2017
Latitude	43.74792	43.7094	43.6108	43.6582	43.6590
Longitude	-79.27406	-79.5435	-79.5219	-79.3972	-79.3954
Station Type	Urban	Urban	Urban	Urban	Urban
Pollutants Measured	NO_2, $PM_{2.5}$	O_3, CO, SO_2, Benzo(a)pyrene (2016 only)	1,3-butadiene, benzene	Benzo(a)pyrene	Formaldehyde, acetaldehyde, acrolein, benzo(a)pyrene (2015 only)

Ambient monitoring data were utilized for all CACs as follows for the averaging period combinations listed in **Table 4-4**:

- 1-hour, 8-hour, and 24-hour ambient concentrations for the contaminants were obtained from the 90th percentile of hourly measurements from the representative AQ 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 MTO Guideline (2019).
- Annual ambient concentrations for the contaminants were obtained from the mean measurements from the representative AQ monitoring station (the average value was calculated from the available years).

Table 4-4: 90th Percentile Background Ambient Air Quality Concentration

Criteria Air Contaminant (CAC)	Station ID	Avg. Period (hr)	Units	2011	2012	2013	2014	2015	2016	2017
NO_2	60410	1	ppb	30.00	27.00	26.00	27.00	28.00	25.00	23.00
NO_2	60410	24	ppb	23.36	21.90	21.09	22.98	22.86	20.09	18.85
NO_2	60410	Annual	ppb	15.21	14.04	13.61	14.24	13.89	12.12	11.46
CO	60430	1	ppm	0.30	0.40	0.36	0.37	0.36	0.36	0.35
CO	60430	8	ppm	0.31	0.36	0.35	0.36	0.35	0.34	0.34
SO_2	60430	1	ppb	3.00	2.00	1.00	1.00	2.00	1.00	1.00

Criteria Air Contaminant (CAC)	Station ID	Avg. Period (hr)	Units	2011	2012	2013	2014	2015	2016	2017
SO_2	60430	24	ppb	2.53	1.65	1.25	1.46	1.86	1.21	1.00
SO_2	60430	Annual	ppb	1.54	0.58	0.48	0.74	1.02	0.64	0.46
PM_{10}	60410	24	µg/m^3	22.24	22.65	29.17	28.81	28.56	22.69	22.92
$PM_{2.5}$	60410	24	µg/m^3	12.01	12.23	15.75	15.56	15.43	12.25	12.38
$PM_{2.5}$	60410	Annual	µg/m^3	6.16	6.25	8.16	8.92	8.45	7.03	7.41
Acetaldehyde	60439	24	µg/m^3	ND	ND	ND	1.53	1.20	1.65	0.84
Acrolein (3)	60439	1	µg/m^3	ND	ND	ND	0.07	0.07	0.07	0.04
Acrolein (3)	60439	24	µg/m^3	ND	ND	ND	0.07	0.07	0.07	0.04
Benzene	60435	24	µg/m^3	0.71	0.87	0.86	0.77	0.66	0.76	0.72
Benzene	60435	Annual	µg/m^3	0.57	0.51	0.51	0.48	0.52	0.45	0.47
Benzo(a) pyrene	60430 60427 60439	24	ng/m^3	0.15	0.13	0.10	0.07	0.12	0.09	ND
Benzo(a) pyrene	60430 60427 60439	Annual	ng/m^3	0.09	0.08	0.06	0.04	0.07	0.05	ND
1,3-Butadiene	60435	24	µg/m^3	0.07	0.08	0.07	0.06	0.07	0.05	0.05
1,3-Butadiene	60435	Annual	µg/m^3	0.05	0.05	0.04	0.04	0.04	0.03	0.03
Formaldehyde	60439	24	µg/m^3	ND	ND	ND	2.80	3.80	2.60	1.14

Notes: (1) PM_{10} was not included in NAPS Station measurements, and therefore was estimated using $PM_{2.5}$ measurements, assuming a ratio of 1 µg/m^3 PM_{10} per 0.54 µg/m^3 of $PM_{2.5}$ as per Lall et. al, "Estimation of historical annual $PM_{2.5}$ exposures for health effects assessment", Atmospheric Environment 38 (2004)

(2) Measurements for Benzo(a)pyrene from the Toronto West Station were only available for the year 2016, from the Roadside Wallberg (UofT) Station were only available for the year 2015, and from the Gage Institute Station were available for the years 2011 - 2014.

(3) Measurements are taken as a daily average, background concentrations for the hourly averaging period are assumed to be equal to the 24-hr average.

(4) Annual averages for volatile organic compounds (VOC) are calculated from the annual average of all available valid daily data measurements.

ND – No data

The background concentrations for each contaminant were also compared to the applicable Provincial and Federal standards for all applicable time averaging periods and percentile concentrations, as shown in **Table 4-5**.

Table 4-5: Comparison of Background Ambient Air Quality Data to Standards

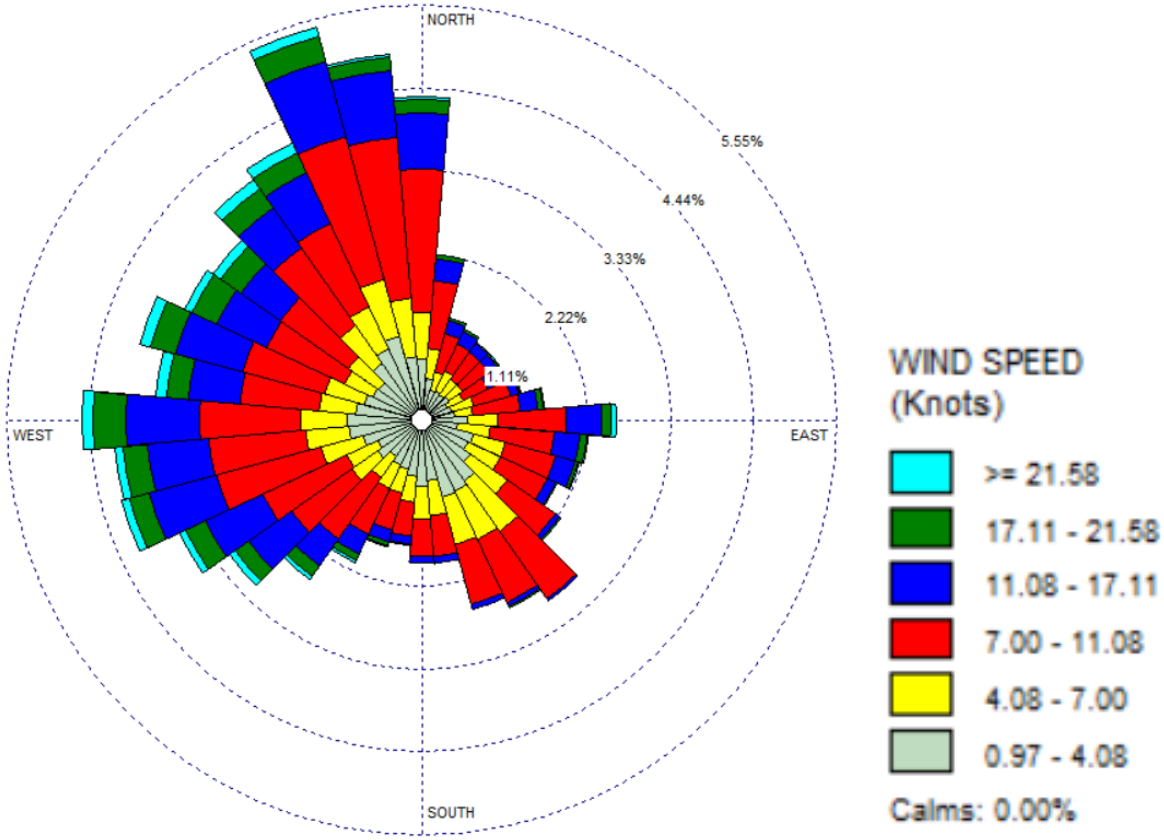
Criteria Air Contaminant	Station ID	Averaging Period	Years	Average of Background Data (µg/m^3)	Percentile	Standard Limit (µg/m^3)	Standard Source	% of Standard Limit
NO_2	60410	1 hour	2013-2017	48.55	90th	400	AAQC	12%
NO_2	60410	24 hours	2013-2017	39.84	90th	200	AAQC	20%
NO_2	**60410**	**Annual**	**2013-2017**	**24.58**	**90th**	**22**	**CAAQS**	**112%**
CO	60430	1 hour	2013-2017	0.0004	90th	36200	AAQC	0%
CO	60430	8 hours	2013-2017	0.0004	90th	15,700	AAQC	0%
SO_2	60430	1 hour	2013-2017	3.14	90th	100	AAQC	3%
SO_2	60430	1 hour	2013-2015	27.71	99th	183	CAAQS	15%
SO_2	60430	24 hours	2013-2017	3.55	90th	275	AAQC	1%
SO_2	60430	Annual	2013-2017	1.75	90th	10	CAAQS	18%
PM_{10}	60410	24 hours	2013-2017	26.43	90th	50	AAQC	53%
$PM_{2.5}$	60410	24 hours	2013-2015	14.27	90th	27	CAAQS	53%
$PM_{2.5}$	60410	Annual	2013-2017	7.99	90th	8.8	CAAQS	91%
Acetaldehyde	60439	24 hours	2014-2017	1.51	90th	500	AAQC	0%
Acrolein	60439	1 hour	2014-2017	0.06	90th	4.5	AAQC	1%
Acrolein	60439	1 hour	2014-2017	0.06	90th	0.4	AAQC	16%
Benzene	60435	24 hours	2013-2017	0.76	90th	2.3	AAQC	33%
Benzene	**60435**	**Annual**	**2013-2017**	**0.49**	**90th**	**0.45**	**AAQC**	**108%**
Benzo(a)-pyrene	**60430 60427 60439**	**24 hours**	**2012-2016**	**0.0001**	**90th**	**0.00005**	**AAQC**	**202%**
Benzo(a)-pyrene	**60430 60427 60439**	**Annual**	**2012-2016**	**0.00006**	**90th**	**0.00001**	**AAQC**	**586%**
1,3-Butadiene	60435	24 hours	2013-2017	0.06	90th	10	AAQC	1%
1,3-Butadiene	60435	Annual	2013-2017	0.04	90th	2	AAQC	2%
Formaldehyde	60439	24 hours	2014-2017	2.59	90th	65	AAQC	4%

Notes: 1. Exceedances to AAQC and CAAQS standards are shown in **red**.

4.2.2.3 Meteorological Conditions

The MECP pre-processed Central Urban Region (Toronto, Station #61587, located at Toronto Pearson International Airport) wind rose for the five-year meteorological period (1996-2000) showing the wind direction (blowing from) and wind speed is presented in **Figure 4-3**. The wind rose shows that the predominant wind direction is blowing from the northwest.

Figure 4-3: Wind Rose for Central Urban Region



4.3 Socio-Economic Environment

4.3.1 Scarborough Subway Extension 2017 EPR Summary

The existing conditions as of this EPR Addendum are generally consistent with those conditions documented in the 2017 EPR. The Study Area is located within the Scarborough Centre Secondary Plan, which provides principles and strategic policies for growth. The Secondary Plan supports mixed-use, high density residential, employment opportunities, and transit infrastructure.

4.3.2 Relevant Planning Policies

Provincial and local planning documents establish a policy framework for managing growth across Ontario, the Greater Golden Horseshoe (GGH) and the City of Toronto. Alongside other planning matters, these planning documents provide considerable direction for integrating transit expansion and land redevelopment. Policies that are directly relevant to this study are described below.

4.3.2.1 Provincial Policy Statement, 2014

The PPS was issued under Section 3 of the Planning Act and came into effect April 30, 2014. As a key part of Ontario's policy-led planning system, the PPS provides policy direction on matters of provincial interest related to land use planning and development, and provides for the appropriate management of resources, public health and safety, and the quality of the natural and built environment. It recognizes that complex interrelationships among environmental, economic and social factors in land use planning must be carefully managed to accommodate sustainable growth in order to meet the full range of current and future needs, while achieving efficient development patterns and avoiding significant or sensitive resources and areas.

Key policies of the PPS focus on efficient development patterns to optimize the use of land, resources and public investment in infrastructure and public service facilities. The development of the SSE will help support the financial well-being of the Province and City, promote strong and healthy communities for people of all ages, and promote a long lasting and competitive economy while sustaining a clean and healthy environment.

The SSE will better serve transit riders of Scarborough by delivering a fast, efficient and reliable subway system that will provide greater connectivity and accessibility across the Toronto city region and the Scarborough area. The Scarborough Centre is a high-density urban centre that will continue to develop as a multimodal central hub with options of quality connections to transit, cultural facilities, public institutions, and services for people across Scarborough and neighbouring districts.

4.3.2.2 Growth Plan for the Greater Golden Horseshoe, 2019

The Growth Plan for the GGH (2019), which replaces the GGH 2017 plan, and was established under the Places to Grow Act, 2005. It is a long-term plan which aims to manage growth, build complete communities, curb urban sprawl and protect the natural environment. The GGH Growth Plan identifies Downtown Toronto as an Urban Growth Centre (UGC) which should achieve, by 2031 or earlier, a minimum density target of 400 residents and jobs combined per hectare.

Key policies of the Growth Plan are related to the co-ordination of land use and transportation infrastructure, including the establishment of UGCs to function as mixed-use, high-density downtowns that are well connected to rapid and local transit. Scarborough Centre is one of five UGCs located within the City of Toronto. Its target density is 400 people and jobs per hectare. To enable this level of intensification and foster a large and vibrant mixed-use community, this area must be served by very high-quality rapid transit.

This Plan recognizes transit as a first priority for major transportation investments. It sets out a regional vision for transit and seeks to align transit with growth by directing

growth to Major Transit Station Areas and other strategic growth areas, including UGCs (Ministry of Municipal Affairs and Housing (MMAH), 2017).

Providing a convenient, high speed rapid transit connection to this UGC is a key tenet of the City's OP, which aims to ensure that Scarborough Centre has the same degree of mobility opportunities that exist in other Centres (such as North York and Yonge – Eglinton). The key transit planning priority for Scarborough Centre is to better connect the Centre to the rest of the Toronto city region in order to:

- Encourage high-quality employment and residential growth in the Centre; and
- Enhance the accessibility of Scarborough Centre; improving the speed, reliability and convenience of transit service linking Scarborough Centre and key destinations in the Toronto city region.

Better connecting Scarborough Centre to the rest of the City and surrounding areas is crucial to its success.

4.3.2.3 Regional Transportation Plan (2041)

The 2041 RTP (2041 RTP) guides the work to transform the transportation system in the Greater Toronto Hamilton Area (GTHA). It is a blueprint for creating an integrated multimodal regional transportation system that will serve the needs of residents, business and institutions.

The 2041 RTP builds on the success of The Big Move (2008), the first RTP for the GTHA, by putting traveller needs at the core of planning and operations. Centered on three goals of creating strong connections, complete travel experiences, and sustainable communities, the 2041 RTP outlines five strategies and a set of strategic objectives to achieve the 25-year vision for the region, including the following:

- Completing the delivery of current regional transit projects,
- Connecting more of the region with frequent rapid transit,
- Optimizing the transportation system,
- Integrating transportation and land use, and
- Preparing for an uncertain future.

4.3.2.4 City of Toronto Official Plan

The City of Toronto Official Plan (OP) establishes the vision and policies for future development, with the overarching goal of supporting a more livable city. In terms of

growth and development, the OP establishes an urban structure and land use designations that provide direction on where growth will be directed, and what type and scale of development is permitted. The OP also provides policy direction on the public realm, built form, cultural resources, housing, community services and facilities, parks and open spaces, and economic development.

At the time of the 2017 EPR, the SSE was not identified as a Higher Order Transit Corridor in the OP. The City of Toronto was in the process of completing an Official Plan Amendment (OPA) to bring the Project into compliance with the OP. On February 26, 2020, City Council approved amendments to the OP under OPA 456 to recognize the SSE alignment as a Higher Order Transit Corridor (OP Map 5).

Urban Structure & Growth Management

Toronto's urban structure is based on directing growth to designated areas, including Centres (places where jobs, housing and services will be concentrated in dynamic, mixed-use settings) and Avenues (corridors that are well served by transit, the existing road network, and which have a number of properties with redevelopment potential). The urban structure and the policies of the OP also aim to protect stable residential neighbourhoods and the Green Space System from all types of growth; and to protect Employment Districts from conversion to other uses.

At the core of the SSE Study Area, Scarborough Centre is a designated Centre under the OP; serving as a focal point for the communities in the eastern part of Toronto. Centres are key locations on the rapid transit system that draw people from across the City and beyond with their high level of connectivity and diversity of housing and employment. A high-quality public realm within each Centre is critical to its success in attracting businesses, workers, residents and shoppers. Secondary Plans are used to provide context-specific guidance on growth and development in Centres.

The Transportation Component of the Official Plan Review

Toronto's Transportation Planning Section has been undertaking a review of the transportation policies in the OP. Policies relating to transit planning have not yet been incorporated in the OP but are being used to guide and inform this Project.

An evaluation framework for comparing transit infrastructure projects has been developed through extensive public consultation on the review of transportation policies in the OP. The framework includes the following high-level criteria:

- Serving People
- Experience
- Choice

- Social Equity
- Strengthening Places
- Shaping the City
- Healthy Neighbourhoods
- Public Health & Environment
- Supporting Prosperity
- Supports Growth
- Affordability

The evaluation criteria developed for this study are consistent with this framework.

4.3.2.5 Scarborough Centre Secondary Plan

The Scarborough Centre Secondary Plan envisions Scarborough Centre as the urban focal point for eastern Toronto where employment, housing, institutional, cultural, recreational, commercial and community services, and transit will be concentrated in a dynamic mixed-use location. The Centre is a focal point, at the eastern end of Line 3, of numerous local and interregional surface transit lines. It is adjacent to Highway 401 and at the crossroads of several major arterial roadways. These features create greater opportunities for employment and residences within the Centre. Promoting transit supportive development in the vicinity of rapid transit is an OP strategy. Higher densities of both residential and employment land use in specific locations within the Centre will increase ridership levels to help sustain the transit services, support future transportation improvements and further the City's goal of accommodating balanced growth at strategic locations within Toronto.

<u>Supporting and Ongoing Policy Work in Scarborough Centre</u>

Since the adoption of the Scarborough Centre Secondary Plan, the City has initiated a number of subsequent studies to support implementation. These efforts have focused primarily on the Civic and Commercial Precincts, and more recently, the McCowan Precinct.

- The Civic Precinct Implementation Plan (2009) identified a number of needed improvements, including City-led developments (new library, parking facility, shower / gym facilities), intersection adjustments at Ellesmere Road, and a long list of public realm projects.
- Building on the Civic Precinct Plan, the Scarborough Centre Public Space and Streetscape Master Plan (2012) focused on how to make the Civic

and Commercial Precincts more pedestrian friendly, including the introduction of a permeable block pattern and street network, new public spaces, and a pedestrian-oriented built form (e.g., a consistent and active street wall with appropriately scaled podiums).

- The City has completed more detailed planning for the McCowan Precinct which includes the preparation of a Street Design & Transportation Network Study (2013), Community Services & Facilities Review (2013), Urban Design Guidelines (2014) including a conceptual master plan, and the implementing McCowan Precinct Plan (2014).
- The Scarborough Centre Public Art Master Plan (2017) was adopted with amendments by City Council in April 2018. The plan guides the development and/or acquisition of public art to enhance Scarborough Centre's image and foster creativity and innovation in shaping an authentic downtown.
- The Scarborough Centre on the Move Transportation Master Plan (2018) was adopted by City Council in May 2018 under OPA 408 and 409. This Transportation Master Plan will establish a transportation network supportive of all users as Scarborough Centre develops, focusing on building connections within the Centre and surrounding area with the rest of the City.
- The Scarborough Centre Focused Review (Our Scarborough Centre) is an ongoing review of the Council-approved Scarborough Centre Secondary Plan to update and further articulate the Secondary Plan and develop a revised vision and planning framework that will guide and support future growth and encourage city building. The Scarborough Centre Focused Review Public Realm Phase 1 Report was prepared in April 2019 as part of Phase 1 of the focused review. See **Section 4.3.7.2** for details regarding the review phases.

4.3.3 Utilities

4.3.3.1 Private Utilities

The following private utility providers have infrastructure within the Study Area:

- Aptum;
- Bell Canada;
- Rogers Communications Partnership; and

- Enbridge.

4.3.3.2 Public Utilities and Municipal Servicing

The following public infrastructure is located within the Study Area:

- Hydro One Networks Incorporated (HONI);
- Toronto Hydro; and
- Toronto Water.

4.3.4 Neighbourhood Characteristics

Since the 2017 EPR, the City of Toronto has moved from a 47-ward model to a 25-ward model as of December 2018. The Project is located within the following wards:

- Scarborough Southwest (Ward 20);
- Scarborough Centre (Ward 21);
- Scarborough North (Ward 23); and
- Scarborough Guildwood (Ward 24).

The Project is included in the following City of Toronto Neighbourhoods:

- Agincourt South-Malvern West;
- Bendale;
- Woburn;
- Eglinton East;
- Kennedy Park; and
- Ionview.

4.3.5 Existing Land Use

The 2017 EPR Study Area was divided into four sub-areas for reviewing existing land use: Southwest, Southeast, Centre, and North. As a result of this EPR Addendum, the SSE alignment is now located within only three of these sub-areas: Southwest, Centre, and North. As such, the Southeast sub-area from the 2017 EPR will not be discussed in this EPR Addendum. Each sub-area is summarized under the sub-headings below. The Study Area is shown in **Figure 3-1**.

Since the 2017 EPR, the OP has been updated (February 2019); however, the land use designations within the Study Area of this EPR Addendum are generally consistent with what was documented in the 2017 EPR.

Centre

This sub-area refers to Scarborough Centre, which is envisioned to become a vibrant urban area with anticipated population and employment growth. The area is primarily designated as Mixed Use Areas in the Official Plan, with some Neighbourhoods and Employment Areas designations south of Ellesmere Road and east of Bellamy Road, respectively. As the sub-area is predominantly designated as Mixed Use Areas, encourage higher densities and commercial uses are encouraged. More details specific to the Scarborough Centre, including Scarborough Centre Secondary Plan policies, are provided in **Section 4.3.2.3**.

North

This sub-area north of Highway 401 is varied in its existing land use, with low density and high density residential, mixed use, commercial, and employment (industrial) uses. This area is generally designated as Neighbourhoods and Employment Areas in the Official Plan. These designations are distributed throughout the sub-area, with Neighbourhoods situated between Brimley Road and Scunthorpe Road south of Sheppard Avenue North, and Employment Areas concentrated north of Sheppard Avenue North and immediately north of Highway 401. There are also some Apartment Neighbourhoods and Mixed-Use Areas designations at main intersections along the south side of Sheppard Avenue North.

Highway 401 is located within this sub-area, which connects the Study Area towards downtown Toronto and further to Windsor in the west, and towards Oshawa and the Ontario-Quebec border in the east. Within the Study Area is the Highway 401 interchange at McCowan Road. The OP encourages higher densities and commercial assets surrounding this interchange, with Mixed Use Areas and Employment Areas land use designations.

Southwest

This sub-area is mostly characterized by established low rise residential neighbourhoods; however, the neighbourhoods are anticipated to experience increased density with high rise residential projects are being constructed with some new applications under review.

The Project is located within the Eglinton Higher Order Transit Corridor in the OP, and land use along Eglinton Avenue was given transit supportive designations (i.e., Mixed

Use Areas and Employment Areas). This is consistent with the current conditions, with the Eglinton Crosstown (Line 5) currently under construction and planned to be in operation by 2022.

4.3.6 Community Services and Facilities

The Study Area is currently served by a wide range of community services and facilities. Existing fire, ambulance and police stations, hospitals, community and recreation centres, parks, childcare facilities, schools, libraries, and places of worship.

4.3.7 Future Planned Land Use and Development Plans

Similar to the 2017 EPR, there are currently a number of active development applications within the Study Area. The nature of the proposed development varies; however, the majority are proposing higher densities and mixed use. Refer to **Section 4.3.8** for more details regarding these proposed developments.

4.3.7.1 Scarborough Centre Future Development Conditions

The 2017 EPR identified future development potential surrounding Scarborough Centre Station at the following locations:

- McCowan Precinct – where future growth is planned, and development pressure is greatest;
- Through joint ventures with Oxford Properties (major landowner in the vicinity of the station) to develop around the station; and
- Opportunities to develop other underutilized lands within the Centre.

There is currently one active development application in Scarborough Centre (Ward 21) adjacent to the SSE, meaning that future development is underway and realizing the potential for Scarborough Centre. Refer to **Table 4-6** for details regarding this proposed development.

4.3.7.2 Scarborough Centre Planning Objectives

Scarborough Centre is subject to the City of Toronto's Scarborough Centre Secondary Plan, introduced in **Section 4.3.2.5**. The 2017 EPR notes that the key objective of the SSE is to transform Scarborough Centre into a vibrant urban node. This is consistent with the objective of the 2017 EPR regardless of the proposed design changes identified in this EPR Addendum. The station at Scarborough Centre will be enhance connectivity and is expected to trigger surrounding development, realizing existing

planning policy objectives. The new policies and strategies developed through the Scarborough Centre Focused Review will guide the future development in Scarborough Centre, building upon previous planning studies and strategies undertaken for the Centre (described in **Section 4.3.2.5**).

As mentioned in **Section 4.3.2.5**, the Project is also subject to Precinct Plans under the Scarborough Centre Focused Review. The City of Toronto is currently undergoing a focused Scarborough Centre Focused Review (Our Scarborough Centre) of the Council-approved 2005 Scarborough Centre Secondary Plan as an update to support the development of Scarborough Centre as an urban node. The intent of this study is to update and further articulate the Secondary Plan following its inception in 2005 by clarifying and updating the vision, planning framework, and policies, while also recognizing the investment in infrastructure associated with SSE. The study area of Our Scarborough Centre is bounded by Highway 401 in the north, Bellamy Road North in the east, Ellesmere Road in the south and west of Brimley Road in the west. The study area is divided into four precincts: Brimley Precinct, The Civic Precinct, Town Centre Commercial Precinct, and McCowan Precinct. The SSE alignment is located within the latter two precincts.

The review is being undertaken in four phases, which are listed below along with their schedules. Phase 1 is now complete, and the review is currently in Phase 2.

- Phase 1: Establish a Vision (October 2018 – April 2019)
- Phase 2: Generate and Test Ideas (November 2019 – August 2020)
- Phase 3: Synthesis and Recommendations Design, Analysis and Testing (September 2020 – March 2021)
- Phase 4: Implementation and Report (April 2021 – July 2021)

4.3.7.3 The Meadoway Project

TRCA has initiated the Meadoway Project, which will provide a complete active transportation system linking eastern Toronto to the downtown core by revitalizing and restoring an existing hydro corridor in north Toronto. Through previous projects, 10 km of multi-use trail has been constructed. The objective of the Meadoway Project is to construct the remaining 6 km, for a total of 16 km multi-use trail to be provided from the Don River to the Rouge National Urban Park. The Meadoway Project intersects with the SSE alignment just north of the station at Lawrence.

The 16 km stretch of urban greenspace and meadowlands will become one of Canada’s largest linear urban parks by re-naturalizing of the corridor with urban agriculture programming and other community amenities.

TRCA completed a Municipal Class EA and the public review period for the Environmental Study Report was completed in January 2020. The Meadoway Project is currently in the design and implementation phase.

4.3.8 Future Conditions

It is expected that the City of Toronto will continue to develop the area as designated within the City of Toronto OP and Scarborough Centre Secondary Plan. In a general sense, the area has development potential and is slated for expansion per the policies of the Scarborough Centre Secondary Plan. The new policies and strategies emerging through the Scarborough Centre Focused Review will guide future development in Scarborough Centre.

There are 12 active development applications involving 10 properties within the Study Area. The details of each application are provided in **Table 4-6** below.

4.3.9 Contamination

Phase One and Phase Two Environmental Site Assessments have been conducted at select locations.

A Limited Phase One Environmental Site Assessment will be completed to identify sites that may have potential for contamination along parts of the alignment that have not been investigated yet. Should the Limited Phase One determine potential contamination, a Phase Two Environmental Site Assessment will be recommended, where one has not already been completed.

Table 4-6: Active Development Applications[9]

Ward	Application Type	Reference Number	Address	Application Details	Status
Ward 20 – Scarborough Southwest	Site Plan Approval	13 204146 ESC 35 SA	2439 Eglinton Avenue East	Submitted June 15, 2013. Additional documentation submitted in September 2019. This is an application by Metrolinx for the implementation of the Eglinton Crosstown LRT eastern terminus at Kennedy Station. Total ground floor area of 675.73 m^2.	Under Review
Ward 20 – Scarborough Southwest	Rezoning	19 263883 ESC 20 OZ	2567 Eglinton Avenue East	Submitted December 20, 2019. The application proposes to amend the City of Toronto Zoning By-Law 569-2013 to facilitate the construction of an 11-storey mixed use building. The proposed development would have a total gross floor area of 8,343 m^2, consisting of 342 m^2 of retail/commercial space and 8,001 m^2 of residential uses (101 residential units). 119 vehicular and 82 bicycle parking spaces would be provided to service the proposed development.	Under Review
Ward 21 – Scarborough Centre	Site Plan Approval	18 260132 ESC 38 SA	300 Borough Drive	Submitted November 23, 2018. Additional documentation submitted in May 2019. This application is to construct a new stand-alone retail/entertainment building across from the former Sears building at the northeast quadrant of the Scarborough Town Centre. This is intended to replace the existing cinema building in advance of the construction of the SSE. Total non-residential ground floor area of 120,369.7 m^2.	Under Review

9. Current as of February 27, 2020.

Ward	Application Type	Reference Number	Address	Application Details	Status
Ward 23 – Scarborough North	Site Plan Approval	17 262781 ESC 42 SA	75 Milner Avenue	Submitted November 15, 2017. This application is to construct a one-storey front addition. The City is currently awaiting resubmission from applicant.	Under Review
Ward 23 – Scarborough North	Site Plan Approval	17 242668 ESC 41 SA	4700 Sheppard Avenue East	Submitted October 3, 2017. This application proposes the construction of an addition to an existing car dealership.	NOAC[10] issued November 15, 2017
Ward 23 – Scarborough North	Site Plan Approval	18 191518 ESC 41 SA	1871 McCowan Road	Submitted July 10, 2018. Additional documentation submitted in November 2019. This application is to alter an existing car dealership by constructing additions to the rear, north and south of the building. Total ground floor area of 2,532.20 m^2.	Under Review
Ward 24 – Scarborough -Guildwood	Site Plan Approval	10 242510 ESC 38 SA	1744 Ellesmere Road	Submitted August 19, 2010. Additional documentation submitted in August 2019. This application involves minor revisions to a proposed 13-storey building with 150 affordable housing units and ground floor commercial. Total ground floor area of 2,032.70 m^2.	Under Review
Ward 24 – Scarborough -Guildwood	OPA and Rezoning	19 202058 ESC 24 OZ	140 Grangeway Avenue	Submitted August 7, 2019. Additional documentation submitted in November 2019. This application proposes to develop vacant land by constructing three residential buildings with ground floor commercial uses and below grade parking: 31 storeys, 40 storeys, and 53 storeys. The application is on hold as per Metrolinx's request until transit infrastructure related to the SSE is determined.	Under Review

10. The City of Toronto has a two-stage approval process for Site Plans. The first stage is the issuance of the Notice of Approval Conditions (NOAC) and the second stage, once all pre-approval conditions have been met, the issuance of the Statement of Approval which signifies the final site plan approval. The NOAC recommends approval subject to a list of pre-approval and post-approval conditions. (City of Toronto, 2011).

Ward	Application Type	Reference Number	Address	Application Details	Status
Ward 24 – Scarborough -Guildwood	OPA	19 257336 ESC 24 OZ	670 Progress Avenue	Submitted December 4, 2019. This application proposes an OPA to establish a site-specific parkland dedication rate for the subject lands, which are within Scarborough Centre. The application is to be reviewed concurrently with the related Rezoning application for a mixed-use development (17 277456 ESC 38 OZ) and Draft Plan of Subdivision application (17 277479 ESC 38 SB).	Under Review
Ward 24 – Scarborough -Guildwood	Rezoning	17 277456 ESC 38 OZ	670 Progress Avenue	Submitted December 19, 2017. Additional documentation submitted in December 2019. Refer to 19 257336 ESC 24 OZ above.	Under Review
Ward 24 – Scarborough -Guildwood	Subdivision Approval	17 277479 ESC 38 SB	670 Progress Avenue	Submitted December 19, 2017. Refer to 19 257336 ESC 24 OZ above.	Under Review
Ward 24 – Scarborough -Guildwood	Site Plan Approval	19 256766 ESC 24 SA	5 Corporate Drive	Submitted December 3, 2019. The application proposes to develop two rental apartment buildings of 38-storeys and 44-storeys, connected by a 4-storey podium. The application proposes a total of 778 residential units between the two buildings. Two loading spaces, 538 vehicular and 684 bicycle parking spaces would be provided to service the proposed development. A landscape courtyard and promenade has been incorporated in the proposal to connect the proposed development to the existing buildings at 100, 200 and 300 Consilium Place.	Under Review

4.4 Noise and Vibration

Noise and vibration are required to be assessed for both construction and operational stages of this project. The guidelines and criteria applicable to this project are summarized in the below subsections. The Study Area is described as the Project Site plus a 500 m buffer to sufficiently assess the potential effects to surrounding nearby receptors, as shown in **Figure 4-4**. The noise and vibration assessment captured the entire project area to provide an assessment with consistent analysis approach throughout and based on more recent baseline noise levels and geotechnical information. In addition, the entire project area was assessed to determine vibration reduction requirements without limiting any options, whereas the 2017 EPR assumed a floating slab throughout.

4.4.1 Methodology

4.4.1.1 Construction Noise Assessment

Noise and vibration are required to be assessed for both construction and operational stages of this project. The guidelines and criteria applicable to this project are summarized in the below subsections. Note that the TTC/Ministry of the Environment (now MECP) noise protocols address operational train vibration and train pass-by sound level; whereas construction noise and vibration are not addressed and noise from stationary sources is addressed using other MECP noise guidelines as described below.

Guidelines and Bylaws

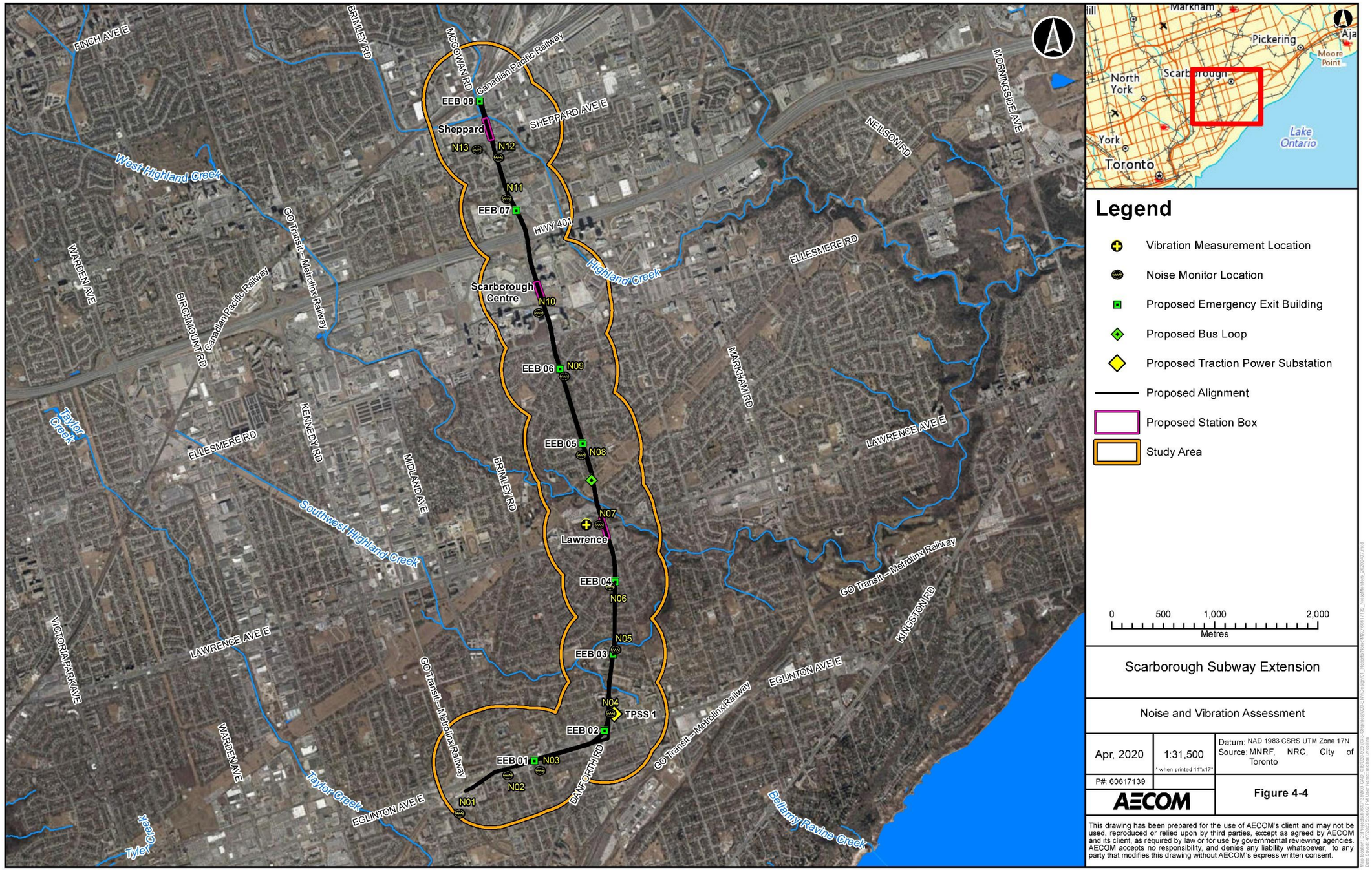
Ministry of the Environment, Conservation and Parks

For construction noise, the MECP sets out noise emission standards for various types of construction equipment in their publications NPC-115 (Ministry of the Environment, 1978) and NPC-118 (Ministry of the Environment, 1978). The sound emission standards outlined in NPC-115 and NPC-118, for typical construction equipment and vehicles. MECP does not set out receptor-based noise level limits.

Municipal

Construction noise in the City of Toronto is typically addressed using City of Toronto Noise Bylaw 878-2019 (City of Toronto, 2019). However, as the Project qualifies as “Government Work” as per Bylaw 878-2019 (exempt from Bylaw requirements), the Project is exempt from the City of Toronto’s Noise Bylaw.

Figure 4-4: Noise and Vibration Study Area



Methodology

Exact locations and construction areas of some of the project buildings are not yet finalized. Building locations for these locations were assumed. Key inputs and assumptions were used to prepare an acoustic model using the ISO 9613 prediction algorithm.

As the construction equipment cannot all operate in the same physical position, for the assessment of average noise levels (L_{EQ}), the equipment was modeled as operating over a work area. For the EEBs, they were assumed to operate over the entire site. For the larger construction sites for subway stations, construction equipment was modeled concentrated on a smaller section closest to the noise sensitive receivers.

As the timing of construction is currently not finalized, it was assumed that the equipment could operate anytime. Results were then compared to guideline limits and recommendations are made to reduce the noise impacts.

4.4.1.2 Construction Vibration Assessment

Guidelines and Bylaws

Ministry of the Environment, Conservation and Parks

The MECP regulates vibration from blasting operations using NPC-119 (Ministry of the Environment, 1978), and impulse vibration from stationary facilities such as forging shops using NPC-207 (Ministry of the Environment, 1983). As blasting is not proposed from the project, and NPC-207 is only applicable to long term operation of a stationary source of vibration, MECP does not have any guidelines applicable to construction vibration.

Municipal

The City of Toronto regulates construction vibration using Bylaw 514 (City of Toronto, 2008). Bylaw 514 sets out a screening area (Zone of Influence (ZOI)) where vibration levels are predicted to exceed 5 mm/s. Should this ZOI extend beyond the boundaries of the construction site, construction monitoring, preconstruction surveys, and public consultation are required. Furthermore, Bylaw 514 defines vibration limits (prohibited levels) for various frequencies that must not be exceeded. The City of Toronto prohibited vibration levels are presented in **Table 4-7** below.

Table 4-7: Toronto Prohibited Vibration Levels

Frequency of Vibration (Hz)	Vibration Peak Particle Velocity (mm/s)
Less than 4	8
4 to 10	15
More than 10	25

Other

Construction vibration can be a concern for felt vibration and annoyance. To review the potential for vibration to be felt, the typical threshold for vibration annoyance (0.14 mm/s root-mean-square velocity) was used as the basis of review.

Methodology for General Construction Equipment

The assessment of construction vibration was based on the City of Toronto's concept of ZOI, the zone where the vibration levels are predicted to be at, or above a screening threshold of 5 mm/s. Mapping the ZOI would aid in efficiently determining which locations would be above the applicable criteria.

The ZOI was calculated using the United States Federal Transit Administration (FTA) Guide's construction vibration propagation equations to calculate the distances where the screening threshold is met. These distances then define the ZOI.

General Construction Equipment operations within the construction areas are unrestricted, as such, the equipment with the maximum vibration levels was used as the basis of assessment. Note that the ZOI is based upon the worst-case of equipment operating at the edge of the construction areas.

Methodology for Tunnel Boring Machine

Due to the subsurface vibration generated from the TBM, it was assessed separately from the General Construction Equipment.

The assessment of construction vibration due to operation of a TBM was conducted in accordance with a method suggested by the United Kingdom Transport Research Laboratory (TRL) Report 429 (TRL, 2000). The upper bound of Peak Particle Velocity (PPV) is estimated as follows:

$$PPV = 180 \times r^{-1.3},$$

where PPV is the predicted upper bound results (mm/s) and r is the slope distance (m) from the vibration source to the measurement location ($10 \leq r \leq 100$). The slope distance was estimated from the drawings of SSE – Horizontal and Vertical Alignment dated on November 11, 2019 (**Appendix D** of **Appendix B3**). The estimation from this

assessment could be considered as conservative since TRL Report 429 states that “in soft ground, this is likely to be excessively conservative”.

The ZOI, the zone where the vibration levels are predicted to be at, or above the City of Toronto Bylaw 514 screening threshold of 5 mm/s, was predicted. Mapping the ZOI would aid in efficiently determining which locations would be within the ZOI.

The TBM supply train, the train used to transport tunnel lining sections to the front of the TBM, has been known to occasionally cause some disturbance. Predictions for the TBM supply train cannot be completed at this stage as equipment selection is not determined and generic data is limited. Recommendations for the contractor to make provisions for some mitigation can be made at this time. A re-evaluation of information during the next stage of design should be conducted in case additional information is available.

4.4.1.3 Operations Noise Assessment

Guidelines and Bylaws

Ministry of the Environment, Conservation and Parks

Rail transportation noise in Ontario is typically assessed using agreements and protocols between the MECP and the applicable agency, in this case, Metrolinx. As the subway will be entirely underground (except for the stationary noise sources, such as stations) operational airborne noise from the subway trains is not considered in this assessment.

Noise from stationary noise sources in Ontario are regulated by the MECP using guideline NPC-300. NPC-300 sets out noise level limits for various land use classifications. The noise sensitive areas surrounding the Project can generally be classified as Class 2 areas. A Class 2 area is and defined as “an area with an acoustical environment that has qualities representative of both Class 1 and Class 2 areas”. This is characterised by sound levels dominated by the “urban hum” during the daytime as late as 23:00, and a low evening and night time sound level defined by natural environment and infrequent human activity, starting as early as 19:00.

Noise level limits are set out for the worst-case 1-hour period for both plane of window and outdoor points of reception. Noise level limits for Class 2 areas are summarized in **Table 4-8** below.

Table 4-8: Base Noise Level Limits for Class 2 Areas

Location	Time Period	Sound Level Limit (Leq, 1 hr)
Outdoor	Daytime (7:00-19:00)	50
Outdoor	Evening (19:00-23:00)	45
Outdoor	Night (23:00-07:00)	Not Applicable
Plane of Window	Daytime (7:00-19:00)	50
Plane of Window	Evening (19:00-23:00)	50
Plane of Window	Night (23:00-07:00)	45

Note that noise level limits can be adjusted upwards using ambient background levels (lowest applicable for each time period); emergency equipment testing is assessed separately from other noise sources, and noise level limits for the testing are 5 dB higher than otherwise applicable.

To support the application for Environmental Compliance Approvals (ECA) and completion of Environmental Activity and Sector Registries (EASR) for this project, background levels used for the adjustment of noise limits should be verified by calculations as per MECP noise prediction standards.

Methodology

Approximate locations and design of facility buildings are known at this stage of design. Building orientation, locations on sites, and routing of buses at the stations were assumed. Key inputs and assumptions were used to prepare an acoustic model using the ISO 9613 prediction algorithm.

A preliminary model was prepared to determine what additional mitigation measures would be required for the facilities to operate in compliance with the applicable criteria. The model was then rerun with additional mitigation measures to verify performance of mitigation measures to make recommendations for the next phase of design. Mitigation measures at this stage of the project are preliminary and are subject to review and updating at the next stage of design.

For each of the EEBs, noise impacts at the worst-case receiver were reviewed. For each station, the two worst-case receivers were reviewed. Other receivers are expected to have lower noise impacts due to distance and orientation of the project sites.

4.4.1.4 Operations Vibration Assessment

Guidelines and Bylaws

Metrolinx and Previous Environment Assessment

Metrolinx rail projects are typically assessed using protocols developed with the MECP.

This assessment will follow the same vibration criteria used in the approved Subway Extension EA (AECOM, 2017), which were developed by the TTC and the MECP. The vibration limit was of 0.1 mm/s root-mean-square velocity (RMSV) to be assessed at sensitive points of reception. This level equates to 72 VdB.

Ministry of the Environment, Conservation and Parks

Rail transportation vibration in Ontario is typically assessed using agreements and protocols between the MECP and the applicable agency, in this case, Metrolinx. Discussion on Rail transportation vibration guidelines and limits are the section above.

Other Guidance

Some medical equipment (such as MRI and high-power optical microscopes) have higher sensitivities to vibration than humans. The only location identified at this stage along the proposed alignment with high sensitivity equipment is the Scarborough General Hospital. A baseline study was completed which compared the measured existing vibration levels and other applicable criteria.

Recent Ontario public transit rail projects have considered ground borne noise (regenerated noise from the room surfaces of a sensitive receiver due to ground borne vibration) in their assessment and contractual obligations for detailed design phase of those projects. As such, ground borne noise is considered in this assessment.

Similar to the other recent Ontario public transit rail projects, ground borne noise criteria have been adopted from the FTA Guide. Criteria for ground borne noise is set out for generalized categories of land uses, as well as for specific special buildings for varying frequency of events. As the subway will be a mass transit system, the criteria for frequent events have been adopted for this assessment. A summary of ground borne noise criteria is provided in **Table 4-9** and **Table 4-10**.

Table 4-9: Indoor Ground Borne Noise Criteria for General Categories

Land Use Category	Frequent Events	Occasional Events	Infrequent Events
Category 1: Buildings where vibration would interfere with interior operations	Not applicable as vibration sensitive equipment are not generally sensitive to ground borne noise.	Not applicable as vibration sensitive equipment are not generally sensitive to ground borne noise.	Not applicable as vibration sensitive equipment are not generally sensitive to ground borne noise.
Category 2: Residences and buildings where people normally sleep	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	40 dBA	43 dBA	48 dBA

Table 4-10: Indoor Ground Borne Noise Criteria for Special Buildings

Type of Building/Room	Frequent Events	Occasional or Infrequent Events
Concert Halls	25 dBA	25 dBA
TV Studios	25 dBA	25 dBA
Recording Studios	25 dBA	25 dBA
Auditoriums	30 dBA	38 dBA
Theatres	35 dBA	43 dBA

Methodology

The subway alignment traverses approximately 7.8 km, with a large number of potential sensitive receivers. To efficiently review the vibration impacts of the subway, a two-stage approach was taken to assess the impacts. Stage one is a screening to determine which areas would require a more specific location assessment. The screening distance was calculated by estimating the distance from the subway track at which the vibration criteria would be met, and determining what sensitive locations fell within that distance. An estimated basement depth for potential sensitive buildings was also considered during this review.

The second stage was to predict the vibration and ground borne noise levels at representative worst-case sensitive receivers identified in the stage one screening.

Screening distances, vibration levels, and ground borne noise levels were estimated using the FTA Guide's General Vibration Assessment Method.

Note that the assumptions included in the FTA Guide are binary, whereas the actual conditions would be between the two binary options in most cases.

4.4.2 Points of Reception

Noise sensitive points of reception are typically defined as:

- Property that accommodates a dwelling and residential use;
- Property that accommodates a noise sensitive commercial purpose such as a hotel or motel; and
- Property that accommodates noise sensitive institutional purpose such as places of worship or day nursery.

Specific points of reception for the noise assessments were selected to be representative of the worst possible receptor in relation to the project construction and operational noise levels. Receptors located further away will have lower noise impacts. For most cases, these receptors were the same for both construction and operations.

Due to the stage of design, exact locations of project buildings and construction areas have not been finalized, as such construction areas and building locations were assumed where there was a large area for possible project construction. Locations are shown in **Appendix D** of **Appendix B3**. Assessed noise sensitive locations are summarized in **Table 4-11**.

Table 4-11: Assessed Noise Sensitive Points of Reception

Associated Surface Facility Area	Address	Notes
Installation of Pocket Tracks at Kennedy Station, Launch Shaft, and ancillary SSE facilities at Kennedy Station	38 Kenmark Boulevard	Semidetached residential dwelling
Installation of Pocket Tracks at Kennedy Station, Launch Shaft, and ancillary SSE facilities at Kennedy Station	2493 Eglinton Avenue East	Midrise residential – construction only – no nearby project buildings
EEB1	88 Winter Avenue	Detached residential dwelling
EEB2	1250 Danforth Road	Detached residential dwelling
TPSS	2785 Eglinton Avenue East	Townhouse
TPSS	1275 Danforth Road	Midrise residential
TPSS	25 Trudelle Street	Midrise residential
TPSS	1266 Danforth Road	Detached residential dwelling
EEB3	152 Thicketwood Drive	Detached residential dwelling
EEB4	1505 McCowan Road	Detached residential dwelling
Station at Lawrence East	21 Valparaiso Avenue	Detached residential dwelling
Station at Lawrence East	640 McCowan Road	Detached residential dwelling

Associated Surface Facility Area	Address	Notes
Station at Lawrence East	3060 Lawrence Avenue East	Scarborough General Hospital
Bus loop	1 Kencliff Crescent	Detached residential dwelling
EEB5	962 McCowan Road	Detached residential dwelling
EEB6	30 Hurley Crescent	Detached residential dwelling
Scarborough Centre	77 Town Centre Court	Townhouse
Scarborough Centre	88 Grangeway Avenue	Highrise residential
EEB7	25 Channel Nine Court	Church
Station at Sheppard East	50 Hallbank Terrance	Detached residential dwelling
Station at Sheppard East	4675 Sheppard Avenue East	Midrise residential
Station at Sheppard East	1705 McCowan Road	Midrise residential
EEB8	50 Hallbank Terrance	Same as Sheppard East Station assessment
EEB8	4675 Sheppard Avenue East	Same as Sheppard East Station assessment
EEB8	1705 McCowan Road	Same as Sheppard East Station assessment

Vibration sensitive receptors include many more potential locations adjacent to the length of the tunnel alignment. Buildings not normally considered noise sensitive are vibration sensitive for building damage. As discussed below, construction vibration was assessed based upon the City of Toronto's ZOI concept and receptors were selected based upon location within the ZOI. This is done to efficiently determine if the City of Toronto's Prohibited vibration levels would be exceeded at any receptor location; and to determine if vibration levels are expected to trigger monitoring and preconstruction inspections also as per the City of Toronto's Bylaw 514.

As discussed below, the assessment of operational vibration is only expected from the subway trains. Due to the large area and number of possible receptors, a two-phase approach was taken, the first stage was to determine what areas required mitigation review. The second stage picked specific representative receptors to determine the preliminary mitigation requirements. The selected representative receptors are the worst-case receptors. Other locations further away from the project would have lower vibration impacts. A summary of the representative vibration sensitive receptors is presented in **Table 4-12**.

Table 4-12: Representative Vibration Sensitive Points of Reception

Address/Description	Nearest Intersection	Description
2472 Eglinton Avenue E (appt)	Eglinton Avenue East and existing Line 3	Midrise residential

Address/Description	Nearest Intersection	Description
110 Townhaven Place	Eglinton Avenue East and Townhaven Place	Townhouse
2495 Eglinton E second storey (has commercial 1st floor)	Eglinton Avenue East and Townhaven Place	Midrise mixed use
815 Eglinton Avenue East	Eglinton Avenue East and Midland Avenue	Highrise residential
121 Commonwealth Avenue	Eglinton Avenue East and Commonwealth Avenue	Detached residential dwelling
2575 Eglinton Avenue	Eglinton Avenue East and Huntington Avenue	Fire station
84 Falmouth Avenue	Eglinton Avenue East and Falmouth Avenue	Detached residential dwelling
2624 Eglinton Avenue E (2nd floor)	Eglinton Avenue East and Bimbrok Road	Lowrise mixed use
2703 Eglinton Avenue E (2nd Floor)	Eglinton Avenue East and Brimley Road	Lowrise mixed use
1250/1252 Danforth Avenue	Eglinton Avenue East and Danforth Road	Detached residential dwelling – unsure about property acquisition
10 Trudelle Street	Danforth Road and Trudelle Street	Highrise residential
1299 Danforth Avenue	Danforth Road and Trudelle Street	Highrise residential
1 Savarin Street	Danforth Road and Savarin Street	Detached residential dwelling
60 Carslake Crescent	Danforth Road and Carslake Crescent	Detached residential dwelling
604 McCowan Road	Danforth Road and McCowan Road	Detached residential dwelling
636 McCowan Road	McCowan Road and Lawrence Avenue East	Detached residential dwelling
3060 Lawrence Avenue East	McCowan Road and Lawrence Avenue East	Scarborough General Hospital
871 McCowan Road	McCowan Road and Benleigh Drive	Detached residential dwelling
920 McCowan Road	McCowan Road and St Andrews Road	Detached residential dwelling
151 Brimorton Drive	McCowan Road and Brimorton Drive	Detached residential dwelling
1 Huronia Court	McCowan Road and Huronia Court	Detached residential dwelling
22 Stoneton Drive	McCowan Road and Ellesmere Road	Detached residential dwelling
61 Town Centre Court	McCowan Road and Town Centre Court	Highrise residential
73 Town Centre Court	McCowan Road and Town Centre Court	Townhouse
9 Channel Nine Court	McCowan Road and Highway 401	CTV Studios

Address/Description	Nearest Intersection	Description
25 Channel Nine Court	McCowan Road and Channel Nine Court	Church
47 Keyworth Trail	McCowan Road and Pitfield Road	Detached residential dwelling
1 Invergordon Avenue	McCowan Road and Invergordon Avenue	Detached residential dwelling
360 Pitfield Road	McCowan Road and Pitfield Road	Highrise residential
1705 McCowan Road	McCowan Road and Sheppard Avenue East	Midrise residential
54 Hallbank Terrance	McCowan Road and Sheppard Avenue East	Detached residential dwelling
4675 Sheppard Avenue	McCowan Road and Sheppard Avenue East	Midrise residential

4.4.3 Description of Existing Conditions

Baseline noise measurements were conducted to characterise the existing noise levels. Measurement locations were selected to be representative of the nearest noise sensitive locations surrounding the project (see **Appendix B** of **Appendix B3**). Measurements were conducted between October 10th and November 11th, 2019 using type 1 and 2 sound level meters (Quest Sound Pro) mounted in outdoor weather enclosure. Measurements were conducted over the course of several days, with periods of inclement weather (defined as any period with precipitation and/or windspeeds greater than 20 km/hr) discounted from analysis. Results were tabulated into one-hour, sixteen-hour daytime, and eight-hour night time statistics to enable comparison with Ontario noise criteria. Details of the measurements conducted are documented in **Appendix C** of **Appendix B3**. Results were tabulated into one-hour, sixteen-hour daytime, and eight-hour night time statistics to enable comparison with Ontario noise criteria. A summary of results and statistics are presented in **Table 4-13**. The noise monitor locations are also shown in **Figure 4-4**.

Baseline noise results for the locations measured along McCowan Road, Danforth Avenue, and Eglinton Avenue East are consistent with locations adjacent to arterial thoroughfare roadways; with monitors located further setback from the arterial thoroughfares having lower noise levels.

Table 4-13: Baseline Existing Noise Summary

Monitor ID	Location	7 AM - 7 PM MIN Leq 1 hr (dBA)	7 AM - 7 PM MAX Leq 1 hr (dBA)	7 AM - 7 PM AVG Leq 1 hr (dBA)	7 PM - 11 PM MIN Leq 1 hr (dBA)	7 PM - 11 PM MAX Leq 1 hr (dBA)	7 PM - 11 PM AVG Leq 1 hr (dBA)	11 PM - 7 AM MIN Leq 1 hr (dBA)	11 PM - 7 AM MAX Leq 1 hr (dBA)	11 PM - 7 AM AVG Leq 1 hr (dBA)	Daytime 7 AM-11 PM Leq 16 hr (dBA)	Night time 11 PM-7 AM Leq 8 hr (dBA)
N01	Kenmark Blvd.	50	55	53	50	52	51	43	56	48	52	49
N02	Midland Ave.	72	74	73	63	67	65	60	76	67	70	69
N03	Winter Ave.	54	58	56	52	54	53	46	56	50	55	51
N04	Eglinton Ave.	71	74	72	68	69	69	61	71	66	71	66
N05	Thicketwood Dr.	66	75	73	68	74	71	62	73	66	72	66
N06	Barrymore Rd.	58	65	63	60	64	62	52	62	56	62	57
N07	Scarborough Gen. Hospital	60	70	65	62	67	64	54	65	59	65	59
N08	Maldazy Dr.	55	63	58	55	58	57	48	58	52	58	53
N09	Huronia Gate	64	69	67	65	68	66	57	68	62	67	62
N10	Town Centre Ct.	63	71	69	67	71	69	59	68	63	70	64
N11	Ch. 9 Court	69	72	70	64	69	67	60	72	67	70	68
N12	McCowan Rd.	73	76	76	74	76	75	66	76	71	75	71
N13	Hallbank Terr.	54	61	57	52	67	56	47	57	51	57	52

The natural environment does not have any normally occurring sources of perceptible vibration; and there are no significant sources of man-made vibration along the alignment. As a result, baseline vibration measurements were not conducted for the majority of the project area as the existing vibration levels are expected to be below the threshold of human perception. Attended baseline vibration measurements were conducted at Scarborough General Hospital as there is vibration sensitive medical imaging equipment located there, which can be more sensitive to vibration than human perception. A summary of the results is presented in **Table 4-14**. Also note that the baseline vibration levels were compared to FTA criteria for rooms with vibration sensitive equipment (operating rooms and MRI). Values are expressed here in terms of root-mean-square velocity (RMSV).

Table 4-14: Scarborough General Hospital Baseline Vibration

Location	Maximum Vibration (mm/s, RMS)	Typical Vibration (mm/s, RMS)	Criteria[11] (mm/s, RMS)
MRI Waiting Room (Basement)	0.018	0.01	0.013
Supply Room (Basement)	0.015	0.008	n/a
CT Processing Room (Ground Floor)	0.11	0.05	0.102
Angiography Processing Room (1st Floor)	0.015	0.01	0.102
Operating Room Area Staircase Landing (3rd Floor)	0.028	0.008	0.102

4.5 Cultural Environment

4.5.1 Archaeological Resources

4.5.1.1 Methodology

In 2015, AECOM completed a Stage 1 Archaeological Assessment of the proposed extension of the Bloor-Danforth Subway north from Kennedy Station to Sheppard Avenue. The Stage 1 Archaeological Assessment consisted of a background study to evaluate the potential for archaeological resources to be present within the Study Area. The background research was conducted through the review of relevant archaeological literature and previous archaeological assessment reports, an examination of the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) Provincial Archaeological Sites Database, and a review of historic maps and archival materials as they relate to possible archaeological concerns.

11. Recommended Criteria from FTA guide. Please see Appendix C of Appendix B3.

The Stage 1 Archaeological Assessment was conducted to meet the requirements of the MHSTCI Standards and Guidelines for Consultant Archaeologists (2011). The objective of the Stage 1 Archaeological Assessment background study was to:

- Provide information about the Study Area's geography, history, previous archaeological fieldwork and current land condition;
- Identify and map known archaeological sites, areas of archaeological potential and features of archeological potential on land within the Study Area limits;
- Determine whether a Stage 2 Archaeological Assessment is required for all or parts of the Study Area; and
- Recommend appropriate strategies for a Stage 2 Archaeological Assessment.

AECOM completed a Stage 2 Archaeological Assessment in 2018 for the Study Area land recommended for further archaeological assessment as identified in the Stage 1 Archaeological Assessment completed as part of the 2017 EPR. The Stage 2 Archaeological Assessment was conducted to meet the requirements of the MHSTCI Standards and Guidelines for Consultant Archaeologists (2011) and consisted of the physical inspection and field survey of the land to be impacted that was identified in the Stage 1 Archaeological Assessment as retaining archaeological potential. The Stage 2 field investigation was conducted through test pit survey to determine if any archaeological resources were present within the Study Area. The Study Area is shown in **Figure 3-1**.

4.5.1.2 Description of Existing Conditions

Scarborough Subway Extension 2017 EPR Summary

The Stage 1 Archaeological Assessment conducted for the 2017 EPR included approximately 2,681 ha and was roughly bounded by Eglington Avenue East to the south, just beyond Markham Road to the east, Sheppard Avenue East to the north and Kennedy Road to the west. The Study Area included a total of nine possible corridor alternatives. Once the preferred corridor and subway facilities locations were selected, areas deemed to have archaeological potential within the proposed construction footprint were recommended for Stage 2 Archaeological Assessment. The recommended Stage 2 Archaeological Assessment was completed in 2018 and concluded that there were no archaeological resources within the proposed construction footprints. See **Table 4-15** below for a summary of the Stage 1 Archaeological Assessment and Stage 2 Archaeological Assessment completed for the 2017 EPR. This EPR Addendum includes new construction footprints in areas that have archaeological potential and therefore require a Stage 2 Archaeological Assessment.

Table 4-15: Summary of 2017 EPR Archaeological Assessments

Information	Stage 1[1]	Stage 2[2]
Report Information	April 30, 2018 AECOM Canada Ltd. P123-0274-2015	November 29, 2018 AECOM Canada Ltd. P123-0364-2017, P123-0403-2018
Summary of Scope	The purpose of the Stage 1 was to conduct a background study to determine if all, or any, parts of the study area retained potential for the presence of archaeological resources. This was completed through a review of the geographical and archaeological land use history as well as previous archaeological assessments in the area.	The Stage 2 was conducted for the areas retaining archaeological potential that were identified during the Stage 1. The scope of this work was to conduct a field survey to determine if any archaeological resources were present within the identified study areas.
Summary of Results	The results of the Stage 1 determined that the SSE study area once possessed a multitude of environmental characteristics which would have made it attractive to both pre-contact and historic Euro-Canadian populations; however, archaeological potential has been removed from much of the study area as a result of significant urban development. Some portions of the study area retain potential for the presence of both pre-contact and 19th century archaeological resources.	The results of the assessment indicated that the study areas subject to Stage 2 field survey or visual assessment were either previously disturbed or did not contain archaeological resources.
Recommendations	Based on the findings of the Stage 1, it was recommended that a Stage 2 archaeological assessment be conducted for the portions of the study area that were determined to retain archaeological potential. These areas should be subject to Stage 2 test pit survey.	The areas that were subject to Stage 2 field survey were cleared of archaeological concerns and no further work was recommended. The land located at 23 and 25 Durrington Crescent were not subject to a Stage 2 field survey and further Stage 2 archaeological assessment is recommended for these properties.
Report Status	Entered into the MHSTCI Register on September 27, 2017.	Entered into the MHSTCI Register on January 2, 2019.

Notes:
1. Full report name: Stage 1 Archaeological Assessment, Scarborough Subway Extension, City of Toronto/Toronto Transit Commission, Various Lots and Concessions, Geographic Township of Scarboro (now Scarborough), County of York (Now the City of Toronto), Ontario. Transit Project Assessment Process
2. Full report name: Stage 2 Archaeological Assessment, Scarborough Subway Extension, Lot 23, Concession D, Lot 23, Concession I, and Lot 23, Concession II, Geographic Township of Scarboro, County of York, Now City of Toronto, Ontario

Identified Areas Requiring Stage 2 Archaeological Assessment

Four areas have been identified as requiring Stage 2 Archaeological Assessment, including land at EEB 7, EEB 8, the proposed station at Sheppard, and the launch shaft at Kennedy Station. These areas have also been identified as retaining archaeological potential on the City of Toronto's Map of Archaeological Potential and require further work. All other land impacted by this project are cleared of archaeological concerns.

A Stage 2 Archaeological Assessment is currently underway for the project.

Michi Saagiig Historical Context

A written historical context on the Michi Saagiig (Mississauga Anishinaabeg) and their traditional homelands has been provided by Curve Lake First Nation. Please refer to **Appendix C-2** for this content.

4.5.2 Built Heritage Resources and Cultural Heritage Landscapes

4.5.2.1 Methodology

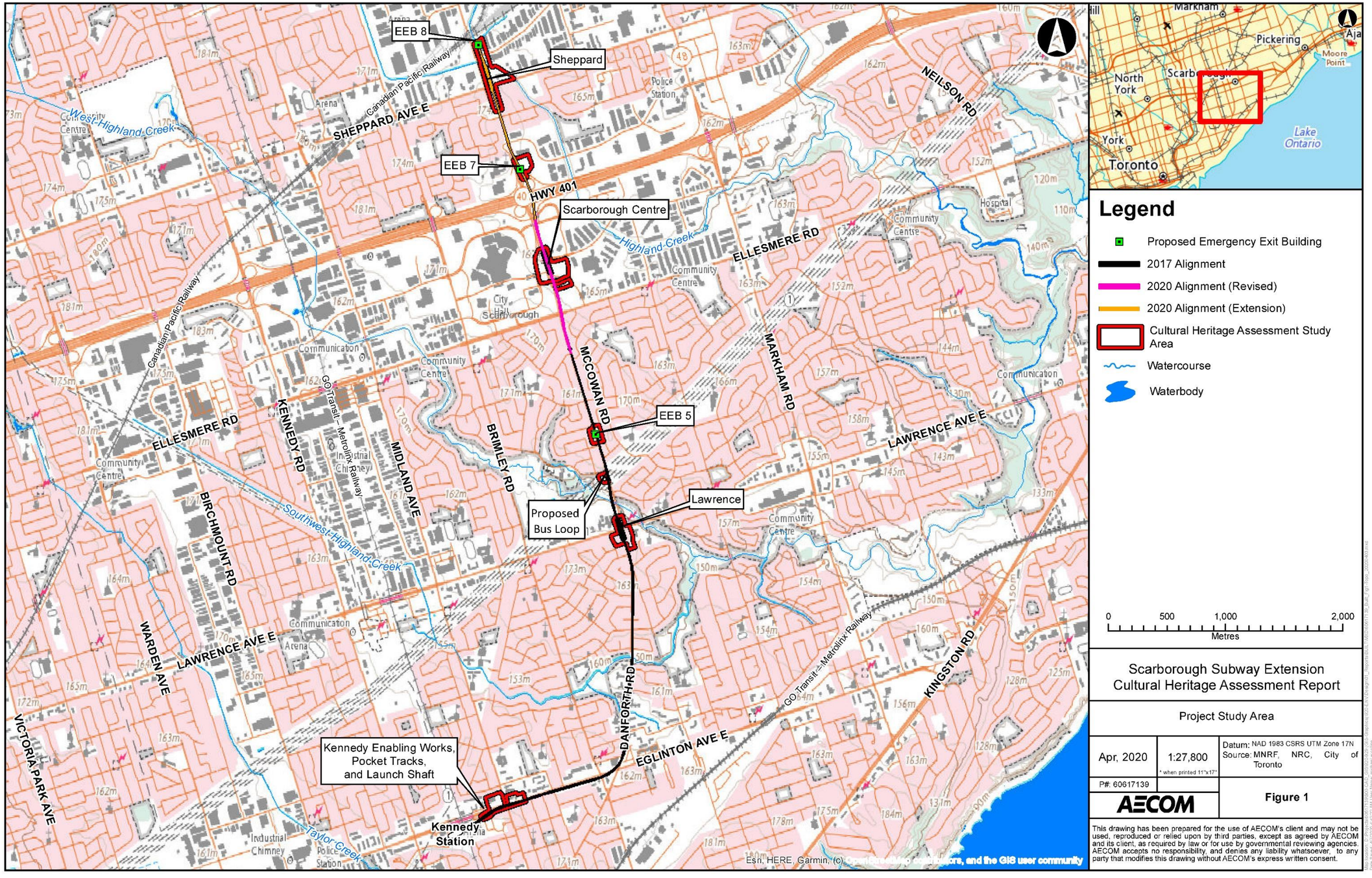
A Cultural Heritage Report was undertaken in accordance with the MHSTCI February 2019 TPAP Guidance document. The Cultural Heritage Report was prepared to identify properties with recognized or potential cultural heritage value or interest. The Cultural Heritage Report consisted of data collection, background historic research, review of secondary source material and field review conducted in December 2019 and March 2020 to identify the presence of known and potential built heritage resources and cultural heritage landscapes in or adjacent to the Study Area. The Cultural Heritage Study Area includes a 30 m buffer around the locations of the proposed design changes. The Cultural Heritage Study Area is shown in **Figure 4-5**.

In addition to the data collection on formally protected cultural heritage resources (CHR), the Cultural Heritage Report used the 40-year threshold, an indicator for identifying properties with the potential to have heritage value, in order to screen the Cultural Heritage Study Area for the potential of a site or property to be of cultural heritage value or interest. In addition to the 40-year rule, the Criteria Checklist (MHSTCI 2016) was also applied to screen for potential CHRs within the Cultural Heritage Study Area.

More details on the methodology and data collection are presented in the Cultural Heritage Report (**Appendix B4**).

For the purposes of **Section 4.5.2** and **Section 5.5.2**, CHR specifically refers to built heritage resources and cultural heritage landscapes. Archaeology is addressed separately under **Section 4.5.1** and **Section 5.5.1**.

Figure 4-5: Cultural Heritage Study Area



The definition of “adjacency” in the City of Toronto OP purposes of identifying properties within the Cultural Heritage Study Area. The following definition is included in Section 3.1.5 (Heritage Conservation) of the City of Toronto Official Plan:

> Adjacent: means those lands adjoining a property of the Heritage Register or lands that are directly across from and near to a property on the Heritage Register and separated by land used as a private or public road, highway, street, lane, trail, right-of-way, walkway, green space, park and/or easement, or an intersection of any of these; whose location has the potential to have an impact on a property on the heritage register; or as otherwise defined in a Heritage Conservation District Plan adopted by by-law.

Adjacent lands have also been considered in the Cultural Heritage Report in the form of the 30 m buffer around the area potentially impacted by the proposed design changes.

4.5.2.2 Description of Existing Conditions

The Cultural Heritage Study Area and adjacent lands include multi-lane roadways, and the surrounding landscape has been largely redeveloped as a result of continuing urban expansion in Scarborough and the City of Toronto. The landscape is comprised of industrial parks, commercial buildings, and dense mid-to-late twentieth century residential development.

Scarborough Subway Extension 2017 EPR Summary

As part of the Project, a number of environmental studies were completed for the 2017 EPR, including two Built Heritage and Cultural Heritage Memoranda. These studies were completed as a part of the TPAP, under which project impacts are assessed as prescribed in O. Reg. 231/08 under the Environmental Assessment Act.

A Built Heritage and Cultural Heritage Landscape Memorandum was issued in 2017, addressing resources around Kennedy Station, and the 2017 EPR EEBs and TPSSs along the 2017 SSE Corridor. The Memorandum concluded that there are no Built Heritage Resources or Cultural Heritage Landscapes in the 2017 EPR Study Area or in proximity to the McCowan Corridor of the SSE that would be adversely impacted by the construction of the Kennedy Station, TPSS, or EEBs. The Scott House, a designated heritage property at 520 Progress Avenue was identified in the 2017 Memorandum as being within 100 m of the formerly proposed launch shaft. It was determined however that this property would not be adversely impacted by the project.

Identified Cultural Heritage Resources

Based on the results of data collection, field investigation, application of the 40-year threshold and Criteria Checklist (MHSTCI 2016), no properties with recognised cultural

heritage value or interest are located within, or contiguous to the Cultural Heritage Study Area. However, the Noise and Vibration Assessment Report (**Appendix B3**), which assessed a 500 m radius around the proposed bus loop, documented 146 St. Andrews Road as the closest heritage building to the proposed design changes. This property is not contiguous with the Cultural Heritage Study Area as it is separated by St. Andrews Road. The structure on the property is set back from St. Andrews Road, more than 50 m from the proposed construction footprint. Even though the resource is not within the Cultural Heritage Study Area which includes a 30 m buffer, for consistency with the Noise and Vibration Report and transparency, 146 St. Andrews Road, which is designated Part IV of the Ontario Heritage Act (OHA), was included in the Cultural Heritage Report. It should be noted that the Noise and Vibration Assessment Report identified 146 St. Andrews Road as outside the vibration ZOI, at a safe distance from vibration impacts.

More details and results of the data collection and existing conditions are presented in the Cultural Heritage Report (**Appendix B4**).

4.6 Transportation

A Transportation Impacts Memo was prepared to undertake a preliminary assessment of transportation and traffic impacts related to the proposed 2020 design changes. The Study Area is shown in **Figure 3-1**.

4.6.1 Scarborough Subway Extension 2017 EPR Summary

The 2017 EPR considered the extension of the existing Bloor-Danforth Subway to Scarborough Centre (one-stop only). In reference to the transportation and traffic assessment of impacts, the Study Area of 2017 EPR was limited to the vicinity of the proposed station at Scarborough Centre, and to a limited degree, Kennedy Station.

The proposed station at Scarborough Centre was located on west side of McCowan Road at Scarborough Town Centre, with a TBM launch shaft just south of Highway 401 and west of McCowan Road. The proposed station included a new bus terminal along the existing Triton Road, which included provision for 34 bus bays.

The 2017 EPR considered the following qualitative discussion regarding transportation and traffic impacts:

- Summary of existing transit services including Line 3 and local bus routes and Line 3 stations;
- Summary of future planned transportation infrastructure;

- Discussion on impacts and mitigation strategies to automobile and transit service, pedestrians and cyclists resulting from the construction of station at Scarborough Centre and the TBM extraction site at Eglinton Avenue; and
- Discussion on impacts and mitigation strategies to automobile and transit service, pedestrians and cyclists resulting from the ultimate configurations and operation of the new station, bus terminal and new road segments associated with the station in the Study Area.

Most of the major roads in the Study Area operate at or near capacity during the morning and afternoon peak hours.

4.6.1.1 Description of Existing Conditions

A description of existing conditions of the road network, pedestrians and cyclist facilities, and transit services pertaining to this EPR Addendum are discussed in this section. Only aspects of the existing transportation network that are new to the project as a result of this EPR Addendum are included. The details of the proposed design changes assessed in this EPR Addendum are discussed under **Section 2**.

Road Network, Pedestrians and Cyclists

The revised alignment as part of this EPR Addendum expands the road network impacted by the project to include McCowan Road from Highway 401 north to Sheppard Avenue, and now includes crossing arterial roads including Sheppard Avenue East and Lawrence Avenue East.

North of Highway 401, McCowan Road generally has a 6-lane cross section to Sheppard Avenue West, with a posted speed limit of 60 km/h. In the vicinity of the intersection with McCowan Road, Sheppard Avenue West has a 4-lane cross section with a centre two-way left-turn lane and a posted speed of 60 km/h. There are minimal access points to the roadways in this segment. Sidewalks are present on either side of McCowan Road and Sheppard Avenue East. There are no cycle lanes in this segment.

At Lawrence Avenue East, McCowan Road has a 4-lane cross section with a posted speed of 60 km/h, and sidewalks on either side of the roadway. Lawrence Avenue East has a 6-lane cross-section with a posted speed of 60 km/h, and sidewalks also present on both sides of the roadway. There are many closely spaced private access points to both McCowan Road and Lawrence Avenue East in the south-west quadrant of the intersection. There are no cycling facilities present on either roadway, however a multi-use trail is located in the Gatineau Hydro Corridor and crosses McCowan Road just north of Lawrence Avenue East.

At Midland Avenue, Eglinton Avenue has a 6-lane cross section with a posted speed of 60 km/h, and sidewalks on either side of the roadway. Midland Avenue has a 4-lane cross-section with a posted speed of 50 km/h, and sidewalks also present on both sides of the roadway. There are no cycling facilities present on either roadway.

Transit Services

Several TTC bus routes operate in the vicinities of the intersections of Lawrence Avenue East and McCowan Road and Sheppard Avenue and McCowan Road (source: www.ttc.ca):

- **16 McCowan** operates between Warden Station on the Bloor-Danforth Subway and Scarborough Centre Station on the Scarborough RT, generally in a north-south direction. Accessible service is provided on the route. Bike racks are available on this route. Scarborough Centre Station is an accessible RT station.
- **54 Lawrence East** operates between Eglinton Station on Line 1 Yonge-University-Spadina, the area of Lawrence Avenue East and Orton Park Drive, and the area of Lawrence Avenue East and Starspray Boulevard, generally in an east-west direction. It also serves Lawrence East Station on Line 3 Scarborough. Accessible service is provided on the route. Eglinton Station is an accessible subway station. Bike racks are available on this route.
- **85 Sheppard East** operates between Sheppard-Yonge Station on the Yonge-University-Spadina Subway, Don Mills Station on the Sheppard Subway, and Rouge Hill GO Station, generally in an east-west direction. It also operates to the Toronto Zoo on weekends and holidays only. Accessible service is provided on the route. Both Sheppard-Yonge and Don Mills Stations are accessible subway stations. Bike racks are available on this route.
- **129 McCowan North** operates between Scarborough Centre Station on Line 3 Scarborough, the area of McCowan Road and Steeles Avenue East, and the area of McCowan Road and Major Mackenzie Drive East in the City of Markham, generally in a north-south direction. Accessible service is provided on the route. Scarborough Centre Station is an accessible station. Bike racks are available on this route.
- **130 Middlefield** operates between Scarborough Centre Station on Line 3 Scarborough and the area of Middlefield Road and Steeles Avenue East, generally in a north-south direction. Scarborough Centre Station is an accessible station. Bike racks are available on this route.

- **131 Nugget** operates between Scarborough Centre Station on Line 3 Scarborough and the area of Old Finch Avenue and Morningview Trail, generally in an east-west direction. Scarborough is an accessible station. Bike racks are available on this route.
- **169 Huntingwood** operates between Don Mills Station on Line 4 Sheppard and Scarborough Centre Station on Line 3 Scarborough, generally in an east-west direction. At off-peak times the route also serves the Van Horne Avenue area. Accessible service is provided on the route. Both Don Mills Station and Scarborough Centre Station are accessible stations. Bike racks are available on this route.
- **939 Finch Express** operates between Finch West Station and Finch Station on Line 1 Yonge-University, Scarborough Centre Station on Line 3 Scarborough, and the Morningside Heights neighbourhood, generally in an east-west direction. Accessible service is provided on the route. Finch West Station, Finch Station, and Scarborough Centre Station are accessible subway stations. Bike racks are available on this route.
- **954 Lawrence East Express** operates between Lawrence East Station on Line 3 Scarborough and the area of Lawrence Avenue East and Starspray Boulevard, generally in an east-west direction.
- **985 Sheppard East Express** operates between Don Mills Station on Line 4 Sheppard, Scarborough Centre Station on Line 3 Scarborough, and the area of Sheppard Avenue East and Meadowvale Road, generally in an east-west direction. Accessible service is provided on the route. Both Don Mills Station and Scarborough Centre Station are accessible stations. Bike racks are available on this route.

5. Impact Assessment, Mitigation and Monitoring

5.1 Natural Environment

The following sections identify terrestrial and aquatic features that may be potentially affected by the proposed construction and operation of the Project. Mitigation and compensation measures and environmental monitoring recommendations are provided below. Should there be any design changes or additional design components developed through detailed design phases, additional field work, effects assessments, mitigation measures and monitoring, and permitting requirements may be required with respect to both terrestrial and aquatic environments.

5.1.1 Fish and Fish Habitat

5.1.1.1 Potential Effects

Construction

It is anticipated that the subway extension will be tunneled (i.e., trenchless method) at least 10 m below each watercourse that the TBM crosses. It is acknowledged that TRCA does not support an open-cut crossing at the Highland Creek Markham Branch north of Sheppard Avenue East for the installation of the tail tracks at the terminal station. Consideration will be given to undertaking a trenchless crossing at this location following the completion of the necessary technical studies to confirm its feasibility; ongoing consultation with the TRCA, DFO and Toronto Water will continue as feasibility is confirmed. It is recommended that both the launching and receiving shafts of each trenchless crossing be placed outside of the HWM of each watercourse. Generally, work outside the HWM of a fish bearing watercourse does not require DFO review. If the scope of the project activities does not fall within a Standard or Code of Practice, and/ or it is determined that the proposed construction footprint will be below the HWM of any of the identified watercourses, DFO review is required.

Furthermore, the Markham Branch of Highland Creek and the Bendale Branch of West Highland Creek may also be indirectly affected as result of potential dewatering activities and water discharge into the watercourses during construction of the Shepard Launch Shaft and Lawrence / Extraction Shaft. Effects on fish and fish habitat as result of dewatering and discharge may include changes in water velocity or temperature, soil and erosion, release of contaminated and sediment-laden water, fish habitat structure and cover, food supply, nutrient concentration, access to habitat leading to the

displacement or stranding of fish. Environmental protection and mitigation measures, as well as, monitoring provided in **Table 5-4** to minimize said indirect effects on fish and fish habitat. Preparation of a DFO Self Screening (and if necessary, a submission for Project Review) is recommended for the proposed works at this location if dewatering and water discharge into the Markham Branch of West Highland Creek is proposed. Although there are no wetlands identified within 120 m of the Sheppard Launch Shaft, there are wetlands identified within 120 m of the Lawrence / Extraction Shaft that may also be affected by dewatering activities.

One of the newly amended Fish and Fish Habitat protections provisions included the creation of new Standards and Codes of Practice that will specify procedures, practices or standards in relation to works, undertakings and activities during any phase of their construction, operation, modification etc. It is anticipated that a Standard or Code of Practice will be published for various methods associated with the trenchless crossing of a watercourse, since this method is preferable to open-cut and isolated crossings. Based on the outdated Operational Statements and anticipation of the forthcoming Standards and Codes of Practice for trenchless methods, proponents may have to follow specific mitigation measures and contingency plans related to this type of work in order to remain compliant with the Fisheries Act. General measures and mitigations to protect fish and fish habitat during the trenchless crossing of a fish bearing watercourse can be viewed in **Table 5-1** below.

Operation

Effects on fish and fish habitat (e.g., watercourse flow constraints / loss of habitat / fish passage issues, etc.) are not anticipated during the operations phase beyond that associated with construction activities.

5.1.2 Terrestrial Environment

5.1.2.1 Potential Effects

Potential effects to the terrestrial environment are anticipated as a result of aboveground disturbances associated with the proposed design changes:

- Installation of pocket tracks at Kennedy station and launch shaft;
- Proposed station at Lawrence / extraction shaft;
- New station location at Scarborough Centre;
- Proposed station at Sheppard / EEB 8 / PPUDO / tail tracks / TBM launch shaft;
- Proposed bus loop; and
- New or revised EEB locations 5 and 7.

Table 5-1: Potential Effects to Policy Areas, Vegetation and ELC Communities

Potential Design Change	Potential Construction Effects
Installation of Pocket Tracks at Kennedy Station and Launch Shaft	▪ There are no vegetation communities or policy areas within the Natural Heritage Study Area. ▪ Removal of isolated trees may be required. ▪ Potential for the spread of emerald ash borer, (*Agrilus planipennis*) associated with removal, handing and transport of ash trees.
Lawrence / Extraction Shaft	▪ Properties adjacent to the proposed design changes are within City of Toronto NHS and RNFP area as well as TRCA Regulated Area. ▪ Removal of 0.01 ha of Dry-Moist Old Field Meadow (CUM1-1), <0.01 ha of Fresh-Moist Lowland Deciduous Forest (FOD7) as well as isolated trees may be required. ▪ Damage to adjacent vegetation or ELC communities as a result of accidental intrusion. ▪ Potential effects as result of dewatering activities on adjacent vegetation communities. ▪ Increased erosion and sedimentation. ▪ Soil or water contamination as a result of spills (e.g., grease and / or fuel) from equipment use. ▪ Potential for the spread of emerald ash borer, (*Agrilus planipennis*) associated with removal, handing and transport of ash trees. ▪ Degradation of plant health and loss of vegetation leading to community changes as a result of dewatering activities.
Scarborough Centre	▪ Although the proposed design changes are located within 120 m of City of Toronto NHS and RNFP area, no vegetation removal is proposed therein. ▪ Removal of 1.9 ha of Mineral Cultural Meadow (CUM1), 0.3 ha of Mineral Cultural Woodland (CUW1) as well isolated trees may be required. ▪ Damage to adjacent vegetation or ELC communities as a result of accidental intrusion. ▪ Potential for the spread of emerald ash borer, (*Agrilus planipennis*) associated with removal, handing and transport of ash trees. ▪ Increased soil and sedimentation. ▪ Soil or water contamination as a result of spills (e.g., grease and / or fuel) from equipment use.
Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	▪ Proposed design changes and/or their adjacent properties are within City of Toronto NHS and RNFP area as well as TRCA Regulated Area. ▪ Removal of 0.2 ha of Mineral Cultural Meadow (CUM1), 0.04 ha of Cultural Hedgerow (CUH) as well as isolated trees may be required.

Potential Design Change	Potential Construction Effects
	▪ Damage to adjacent vegetation or ELC communities as a result of accidental intrusion. ▪ Increased soil and sedimentation. ▪ Soil or water contamination as a result of spills (e.g., grease and / or fuel) from equipment use. ▪ Potential for the spread of emerald ash borer, (*Agrilus planipennis*) associated with removal, handing and transport of ash trees. ▪ Degradation of plant health and loss of vegetation leading to vegetation community changes as a result of dewatering activities.
Proposed Bus Loop	▪ Proposed design changes and lands in their immediate vicinity are within City of Toronto NHS and RNFP area as well as TRCA Regulated Area. ▪ Removal of 0.01 ha of Mineral Cultural Woodland (CUW1), 0.1 ha of Meadoway Restoration Areas as well as isolated trees may be required. ▪ Damage to adjacent vegetation or ELC communities as a result of accidental intrusion. ▪ Increased soil and sedimentation. ▪ Soil or water contamination as a result of spills (e.g., grease and / or fuel) from equipment use. ▪ Potential for the spread of emerald ash borer, (*Agrilus planipennis*) associated with removal, handing and transport of ash trees.
Revised EEB 5 Location	▪ There are no vegetation communities or policy areas within the Natural Heritage Study Area. ▪ Removal of isolated trees may be required. ▪ Potential for the spread of emerald ash borer, (*Agrilus planipennis*) associated with removal, handing and transport of ash trees.
Proposed EEB 7	▪ Proposed design change within City of Toronto NHS. ▪ 0.2 ha of Mineral Cultural Meadow (CUM1) as well as isolated trees may be required. ▪ Damage to adjacent vegetation or ELC communities as a result of accidental intrusion. ▪ Potential for the spread of emerald ash borer, (*Agrilus planipennis*) associated with removal, handing and transport of ash trees. ▪ Increased soil and sedimentation. ▪ Soil or water contamination as a result of spills (e.g., grease and / or fuel) from equipment use.
Subway Line Extension	▪ Subway line extension will be tunneled using earth pressure balanced tunneling technology that does not require dewatering; as such, negative affects to aboveground natural heritage features are limited to the at-grade impacts associated with the proposed design changes described above.

Proposed works related to the subway line extension from Highway 401 to just south of the CP rail north of Sheppard will be underground or contained within vicinity of the proposed design changes listed above.

Construction

Policy Areas, Vegetation and ELC Communities and Potential Mitigation Measures

There are no ANSI, PSW or Environmentally Sensitive Areas identified within the Natural Heritage Study Area. The design changes for the proposed station at Lawrence / extraction shaft, station at Sheppard / EEB 8 / PPUDO / tail tracks / TBM launch shaft, bus loop and EEB 7, and their adjacent properties, do however overlap the following policy areas: City of Toronto NHS, RNFP areas and / or TRCA Regulated Areas.

Although the proposed design changes are generally situated in areas that have been previously developed or consist of manicured streetscapes, approximately 2.6 ha of ELC communities may be affected through vegetation clearing. Potential effects associated with each design change are summarized in **Table 5-1**.

Wildlife and Significant Wildlife Habitat

The proposed design changes and their immediate vicinity are generally situated in areas that have been previously developed or consist of manicured streetscapes. Therefore, as described in the 2017 EPR, the potential negative effects to wildlife and wildlife habitat are generally minimal. However, it is important to note that isolated trees and shrubs, vegetation communities and buildings often provide nesting habitat for many migratory birds and may include SOCC (i.e., Eastern Wood-pewee and Wood Thrush).

Although no nests of MBCA-protected species were observed on the buildings or structures that were examined within the immediate vicinity of the proposed design changes at the time of the 2019 site reconnaissance, there is the potential for them to occur should another breeding bird season (April 1 to August 31) elapse prior to the commencement of construction. Disturbance / displacement of migratory birds and / or damage or destruction of their nests and eggs may occur as a result of vegetation clearing or disturbance to buildings / structures if construction activities are conducted during the breeding bird season (April 1 to August 31).

Furthermore, vegetation clearing may also result in the minor loss of candidate or confirmed SWH as summarized by proposed design changes in **Table 5-2**. Furthermore, Snapping Turtle may be using the Bendale Branch of West Highland Creek as a movement corridor and may be encountered in the work area for the proposed station at Lawrence / extraction shaft and bus loop.

Table 5-2: Potential Effects to Wildlife and Significant Wildlife Habitat

Potential Design Change	Potential Construction Effects
Installation of Pocket Tracks at Kennedy Station and Launch Shaft	▪ Disturbance, displacement or mortality of wildlife. ▪ No candidate SWH. ▪ Disturbance or destruction of migratory bird nests.
Lawrence / Extraction Shaft	▪ Disturbance, displacement or mortality of wildlife. ▪ Disturbance or mortality of Snapping Turtle. ▪ Disturbance or destruction of 0.01 ha habitat used by Monarch Butterflies and <0.01 ha of candidate Bat Maternity Colonies and habitat for SOCC (Eastern Wood-pewee and Wood Thrush). ▪ Degradation of candidate Amphibian Breeding Habitat Woodlands as a result of dewatering and discharge activities. ▪ Disturbance or destruction of migratory bird nests.
Scarborough Centre	▪ Disturbance, displacement or mortality of wildlife. ▪ Disturbance or destruction of 1.9 ha of confirmed significant Monarch habitat and 0.3 ha of candidate habitat for Eastern Wood-pewee and Wood Thrush. ▪ Disturbance or destruction of migratory bird nests.
Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	▪ Disturbance, displacement or mortality of wildlife. ▪ Disturbance or destruction of 0.2 ha of habitat used by Monarch Butterflies. ▪ Disturbance or destruction of migratory bird nests.
Proposed Bus Loop	▪ Disturbance, displacement or mortality of wildlife. ▪ Disturbance or mortality of Snapping Turtle. ▪ Disturbance or destruction of 0.01 ha of candidate habitat for Eastern Wood-pewee and 0.1 ha of habitat used by Monarch Butterflies and candidate Migratory Butterfly Stopover Area in the Meadoway. ▪ Disturbance or destruction of migratory bird nests.
Revised EEB 5 Location	▪ Disturbance, displacement or mortality of wildlife. ▪ No candidate SWH. ▪ Disturbance or destruction of migratory bird nests.
Proposed EEB 7	▪ Disturbance, displacement or mortality of wildlife. ▪ Disturbance or destruction of 0.2 ha of confirmed significant Monarch habitat. ▪ Disturbance or destruction of migratory bird nests.
Subway Line Extension	▪ Subway line extension will be tunneled using earth pressure balanced tunneling technology that does not require dewatering; as such, negative affects to aboveground natural heritage features are limited to the at-grade impacts associated with the proposed design changes described above.

Species at Risk

A number of SAR with moderate or high potential to occur within the Natural Heritage Study Area were identified. Potential effects to SAR include morality, injury or disturbance / displacement of individuals and habitat loss as summarized by proposed design changes in **Table 5-3**.

Table 5-3: Potential Effects to Species at Risk

Potential Design Change	Potential Construction Effects
Installation of Pocket Tracks at Kennedy Station and Launch Shaft	▪ None.
Lawrence / Extraction Shaft	▪ Although no Barn Swallow nests were found during 2019 site reconnaissance, buildings and structures at and within the immediate vicinity of the proposed design change locations may provide suitable nesting habitat; as such, there is a potential for disturbance / displacement of breeding individuals or destruction of their nests. ▪ Vegetation removal will result in the loss of <0.01 ha of potentially suitable maternity roost habitat for bat SAR. ▪ Bat SAR may be killed, harmed or disturbed / displaced by construction activities within the Fresh-Moist Lowland Deciduous Forest (FOD7) if construction activities are conducted during the bat roosting season (between March 31 and October 1).
Scarborough Centre	▪ Vegetation removal will result in the loss of 0.3 ha of potentially suitable maternity roost habitat for bat SAR. ▪ Bat SAR may be killed, harmed or disturbed / displaced by construction activities within the Mineral Cultural Woodland (CUW1) if construction activities are conducted during the bat roosting season (between March 31 and October 1).
Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	▪ Although no Barn Swallow nests were found during 2019 site reconnaissance, buildings and structures at and within the immediate vicinity of the proposed design change locations may provide suitable nesting habitat; as such, there is a potential for disturbance / displacement of breeding individuals or destruction of their nests. ▪ One building at and within the immediate vicinity of the proposed design change locations may provide suitable roosting habitat for bat SAR; these species may be negatively affected should this building be demolished. ▪ The Mineral Cultural Woodland (CUW1) may provide suitable habitat for bat SAR. Although no vegetation removal is proposed therein, elevated noise and human activity as a result

Potential Design Change	Potential Construction Effects
	of construction may disturb / displace these species if conducted during the bat roosting season (between March 31 to October 1).
Proposed Bus Loop	▪ Vegetation removal will result in the loss of 0.01 ha of potentially suitable maternity roost habitat for bat SAR. ▪ Bat SAR may be killed, harmed or disturbed / displaced by construction activities within the Mineral Cultural Woodland (CUW1) if construction activities are conducted during the bat roosting season (between March 31 and October 1). ▪ Butternut and Kentucky coffee-tree were identified; however, no negative effects to these species are anticipated given distance to Project footprint (i.e., greater than 50 m).
Revised EEB 5 Location	▪ None.
Proposed EEB 7	▪ None.
Subway Line Extension	▪ Subway line extension will be tunneled using earth pressure balanced tunneling technology that does not require dewatering; as such, negative affects to aboveground natural heritage features are limited to Project footprints associated with the proposed design changes described above.

Operations

Effects on terrestrial natural heritage features (e.g., vegetation loss, wildlife / SAR habitat loss, etc.) are not anticipated during the operations phase beyond that associated with construction activities.

5.1.3 Geology and Groundwater

As mentioned in **Section 4.1.2.8**, the 2017 EPR was reviewed and it was determined that the assessment remains applicable. The proposed design changes as assessed in this EPR Addendum do not result in impacts to geology and groundwater beyond those documented in the 2017 EPR. As a result, the mitigation measures in the 2017 EPR are still applicable to the design changes associated with this EPR Addendum for geology and groundwater and should be carried forward.

The 2017 EPR noted that potential impacts to physiography, geology, soil conditions and groundwater are transient and related to construction activities. Permanent impacts related to the displacement of existing features are not anticipated.

Refer to **Table 7-1** for a list of relevant future commitments, mitigation measures, and monitoring requirements.

5.1.4 Drainage and Hydrology

It was determined that the anticipated impacts documented in the 2017 EPR are consistent and applicable with the design changes presented in this EPR Addendum, except for previously identified impacts related to EEB 5. This is no longer applicable due to the revised location presented in this EPR Addendum.

The proposed design changes as assessed in this EPR Addendum do not result in impacts to drainage and hydrology beyond those documented in the 2017 EPR. As a result, the mitigation measures in the 2017 EPR are still applicable to the design changes associated with this EPR Addendum for drainage and hydrology and should be carried forward.

The 2017 EPR noted that no major changes to drainage and hydrology are anticipated and the proposed works shall be consistent with the approach and recommendations of the City of Toronto's Wet Weather Flow Management Master Plan and Wet Weather Flow Management Guidelines to improve the quality of stormwater runoff.

The operations requirements for drainage and hydrology are dependent on the final design approved for implementation. Refer to **Table 7-1** for a list of relevant future commitments, mitigation measures, and monitoring requirements.

5.1.5 Mitigation Measures and Monitoring

Mitigation measures to avoid and minimize the impacts identified in previous sections are provided in **Table 5-4**. Monitoring activities to verify effectiveness of mitigation measures and inform adaptive management are also provided in **Table 5-4**.

Refer to **Appendix B1** for details regarding specific impacts and mitigation measures at each project component.

Table 5-4: Summary of Potential Natural Environment Effects, Mitigation Measures and Monitoring

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring Requirements	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Lawrence/ Extraction Shaft	Scarborough Centre	Proposed Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7
Policy Areas - City of Toronto NHS	Vegetation removal	■ Refer below to mitigation measures described for Vegetation Communities.	■ Refer below to monitoring described for Vegetation Communities.	Not Applicable	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Applicable
Policy Areas - City of Toronto RFNP Area	Tree removal	■ Refer below to mitigation measures described for Tree Removal under Vegetation Communities. ■ A tree inventory documenting all trees of all diameters that will be impacted may be required during detailed design within 12 m of the construction footprint where it overlaps with RNFP policy areas. ■ Consultation with City of Toronto.	■ Refer below to monitoring described for Vegetation Communities.	Not Applicable	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Not Applicable
Policy Areas - TRCA Regulated Areas	Vegetation removal	■ Consultation with TRCA. ■ Further consideration to minimize potential effects on the TRCA's NHS to the extent possible will be undertaken during detailed design.	■ Refer below to monitoring described for Vegetation Communities. ■ Recommendations for additional monitoring related to vegetation removal within TRCA's regulated areas may be determined through consultation with the TRCA.	Not Applicable	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Not Applicable
Vegetation Communities	Vegetation removal, injury and protection	■ Vegetation removal will be kept to a minimum and limited to within the construction footprint. ■ Construction fencing and / or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ELC communities. ■ Compensation for tree / vegetation removals shall be undertaken in accordance with local by-law requirements and in consultation with the City of Toronto. ■ Temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and / or seed mix appropriate to the site conditions and adjacent vegetation communities. Seed mixes will be used in conjunction with an appropriate non-invasive cover crop as needed. ■ Vegetation removals will also consider and mitigate potential impacts to sensitive species (e.g., migratory birds and SAR) and features (e.g., SWH). Refer to the wildlife and wildlife habitat and SAR mitigation measures described below.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. ■ The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws / regulations and location with respect to ecological functioning.	Not Applicable	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable
Vegetation Communities	Vegetation removal in TRCA's Meadoway Restoration Areas	■ Areas of vegetation removal within the Meadoway Restoration Areas will be confirmed during detailed design. Ongoing consultation with TRCA will be required to confirm compensation, planting plans and post-planting monitoring requirements for the removal of Meadoway Restoration Areas for construction of the proposed bus loop as per TRCA's Guideline for Determining Ecosystem Compensation (June 2018).	■ Required monitoring will be determined in consultation with TRCA.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring Requirements	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Lawrence/ Extraction Shaft	Scarborough Centre	Proposed Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7
Vegetation Communities	Tree removal	■ An Arborist Report by an I.S.A. Certified Arborist may be prepared with regard to the Ontario Forestry Act R.S.O. 1990, and other regulations and best management practices as applicable. ■ The Arborist Report may include, but not be limited to the individual identification of all trees within the Study Area including those that require removal or preservation, or trees that may be injured as a result of the Project. Trees to be identified within the Study Area may include those on Metrolinx property, trees on public and private lands, and boundary trees. The City of Toronto by-laws dictate the minimum area buffers to be inventoried and DBH which requires inventory. ■ Prior to the undertaking of tree removals, a Tree Removal Strategy / Tree Preservation Plan may be developed during detailed design to document tree protection and mitigation measures that follow the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees Guidelines (2016) that adheres with best practices, standards and regulations on safety, environmental and wildlife protections. ■ If a tree requires removal, compensation and permitting / approvals (as required) shall be undertaken in accordance with local by-law requirements and in consultation with the City of Toronto. ■ Pruning of branches will be conducted through the implementation of proper arboricultural techniques. ■ Tree Protection Zone (TPZ) fencing will be established to protect and prevent tree injuries. TPZs will be clearly staked prior to construction using barriers in accordance with local by-law requirements.	■ Regular inspection in areas of vegetation removal will be undertaken as required during construction to ensure that fencing is intact, only specified trees are removed and no damage is caused to the remaining trees and adjacent vegetation communities. ■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. ■ The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws / regulations and location with respect to ecological functioning. ■ Any damaged trees will be pruned through the implementation of proper arboricultural techniques and under supervision of an Arborist or Forester.	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Vegetation Communities	Increased soil and sedimentation	■ Construction fencing and / or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint and prevent accidental damage or intrusion to adjacent vegetation or ELC communities. ■ An Erosion and Sediment Control Plan, in accordance with the GGH's Erosion and Sediment Control Guideline for Urban Construction (December 2006), will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the vegetation communities. ■ Stockpiled materials or equipment will be stored within the construction footprint but shall be kept at least 30 m away from the watercourse.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.	Not Applicable	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring Requirements	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Lawrence/ Extraction Shaft	Scarborough Centre	Proposed Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7
Vegetation Communities	Soil or water contamination as a result of spills (e.g., grease and / or fuel) from equipment use.	■ A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. ■ Refuelling of equipment will occur at least 30 m away from watercourse. ■ Refuelling shall be done within refuelling stations lined with appropriate material to prevent seepage and fuel discharge. ■ All machinery, construction equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al., 2013) prior to arriving and leaving the construction site in order to prevent the spread of invasive species to other locations.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.	Not Applicable	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable
Vegetation Communities	Potential for the spread of emerald ash borer, *Agrilus planipennis* (Fairmaire) associated with removal, handing and transport of ash trees.	■ Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive 'D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the emerald ash borer, Agrilus planipennis (Fairmaire). To comply with this Directive, all Ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. ■ Compensation for tree removals shall be undertaken in accordance with local by-law requirements and in consultation with the City of Toronto.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. ■ Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Vegetation Communities	Degradation of plant health and loss of vegetation leading to vegetation community changes as result of dewatering activities.	■ If dewatering is proposed for the Lawrence / Extraction Shaft, it is recommended to be undertaken during the winter when the potential effects of changes in water levels are less significant. During detailed design the need for a dewatering ZOI assessment and dewatering monitoring plan should be evaluated. The dewatering monitoring plan, should it be deemed required, may be developed in consultation with the TRCA, and will monitor for potential negative effects on adjacent vegetation communities if affected due to dewatering activities, and will provide an adaptive management plan should said negative effects be observed.	■ Monitoring requirements to developed as part of the dewatering monitoring plan, if needed, and may be developed in consultation with TRCA if necessary.	Not Applicable	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring Requirements	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Lawrence/ Extraction Shaft	Scarborough Centre	Proposed Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7
Wildlife	Disturbance, displacement or mortality of wildlife	■ Feasibility of installation of one-way escape gates at regular intervals along fencing in fully enclosed construction sites shall be considered during detailed design. If not feasible, daily monitoring of fenced-in construction sites each morning should be undertaken to identify any trapped urban wildlife. ■ If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and / or its habitat. For example, construction activities will cease or be reduced, and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife or move the wildlife to a nearby suitable habitat outside of the construction site.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
SWH	Disturbance or mortality of Snapping Turtle	■ Refer to general mitigation described above for Wildlife.	■ Refer to monitoring described above for Wildlife.	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable
SWH	Destruction and removal of candidate Bat Maternity Roosting Colonies	■ Refer below to mitigation measures described for bat SAR.	■ Refer below for monitoring requirements described for bat SAR.	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
SWH	Destruction and removal of candidate and / or confirmed Eastern Wood Pewee and /or Wood Thrush	■ Refer below to mitigation measures described for Migratory Breeding Birds and Nests.	■ Refer below for monitoring requirements described for Migratory Breeding Birds and Nests.	Not Applicable	Applicable	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable
SWH	Disturbance or destruction of habitat used by Monarch Butterflies for all applicable proposed design changes and candidate significant Migratory Butterfly Stopover Area in the Meadoway at the proposed Bus Loop.	■ Opportunities to plant milkweed or forage vegetation will be undertaken, where possible.	■ Regular monitoring will be undertaken during construction to prevent unauthorized impacts to habitat used by Monarch and candidate significant Migratory Butterfly Stopover Areas in the Meadoway.	Not Applicable	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable
SWH	Degradation of candidate Amphibian Breeding Habitat (Woodlands) as result of dewatering and discharge activities.	■ If dewatering is proposed for the Lawrence / Extraction Shaft, it is recommended to be undertaken during the winter when the potential effects of changes in water levels are less significant. During detailed design the need for a dewatering ZOI assessment and dewatering monitoring plan should be evaluated. The dewatering monitoring plan, should it be deemed required, will be developed in consultation with the TRCA, will monitor for potential negative effects to nearby marsh wetlands (MAS2-1 and MAM2-2) and adjacent vegetation communities if affected due to dewatering activities, and will provide an adaptive management plan should said negative effects be observed.	■ Monitoring requirements to developed as part of the dewatering monitoring plan, if needed, and may be developed in consultation with TRCA if necessary.	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring Requirements	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Lawrence/ Extraction Shaft	Scarborough Centre	Proposed Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7
Migratory Breeding Birds and Nests (including Eastern Wood-pewee and Wood Thrush)	Disturbance or destruction of migratory bird nests	■ All works must comply with the MBCA, including timing windows for the nesting period (April 1st to August 31st in Ontario). ■ If activities are proposed to occur during the general nesting period, a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by an experienced searcher are required and will be completed by a qualified biologist no more than 48 hours prior to vegetation removal. ■ If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.	■ Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
SAR – General	Habitat loss, disturbance and / or mortality to SAR	■ All requirements of the ESA and SARA will be met. Species-specific mitigation measures will be implemented based on any recommended surveys undertaken prior to construction, and consultation with MECP. ■ If SAR are present and conservation strategies have been developed by MECP, the Constructor will follow the commitments in the recovery strategy. ■ On-site personnel will be provided with information (e.g., factsheets) that address the existence of potential SAR on-site, the identification of the SAR species and the procedure(s) to follow if an individual is encountered or injured.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. ■ Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the ESA.	Not Applicable	Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable
SAR – Barn Swallow	Habitat loss, disturbance and / or mortality to Barn Swallow	■ Surveys will be completed for any structures / buildings that will be affected by proposed works to determine permitting expectations. As Barn Swallows tend to re-use nests from year to year (Brown and Brown, 1999), their nests (i.e., active or non-active at time of survey) are protected year-round under the ESA. ■ Where loss or disturbance cannot be avoided (e.g., due to demolition of buildings), all requirements under the ESA will be met prior to construction, including any registration, compensation, replacement structures and / or permitting requirements. ■ If construction activities are scheduled during the nesting season for Barn Swallow, a nest search will be undertaken to confirm that no Barn Swallows are nesting on structures that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required.	Not Applicable	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring Requirements	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Lawrence/ Extraction Shaft	Scarborough Centre	Proposed Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7
SAR – SAR Bats	Habitat loss, disturbance and / or mortality to SAR Bats	■ Disturbance to bat roosting habitat will be avoided during the bat roosting period, with emphasis on avoiding potential effects during the maternity period and in accordance with MECP requirements. ■ Mitigation, monitoring and compensation to address impacts to SAR bats may be required based on the results of additional surveys and consultation with the MECP.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required.	Not Applicable	Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable
Wetlands and Waterbodies	Removal or impacts to wetland, aquatic and riparian vegetation; erosion and sedimentation to wetlands / waterbodies from construction; risk of contamination to wetlands / waterbodies as a result of spills.	■ Construction activities will maintain the buffers established during the design phase to minimize potential negative impacts to wetlands and waterbodies. ■ Shorelines or banks disturbed by construction activities will be immediately stabilized by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site. ■ Stabilization measures for the slopes within the Highland Creek Valley may be required as determined through geotechnical investigations to be completed during detailed design and shall be designed and reviewed by a licensed Professional Geotechnical engineer to ensure that the stabilization remains stable for the long-term with a minimum safety factor or 1.50. An Erosion and Sediment Control Plan, in accordance with the GGH's Erosion and Sediment Control Guideline for Urban Construction (December 2006), will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the waterbody. ■ A Spill Prevention and Response Plan will be developed before work commences to ensure procedures and policies are in place during construction to minimize impacts to wetlands and watercourses. Spill kits should be kept on site in the event of a spill. ■ In-water works/ potential diversion of watercourse, prior to dewatering isolated work areas, wildlife will be captured and relocated to suitable habitat outside of the work area. ■ If in-water works are required, the project team will consult with TRCA, MECP and DFO to identify restricted activity timing windows.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures.	Not Applicable	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Not Applicable
Wetlands and Waterbodies	Direct impacts to waterbodies from construction.	■ Ongoing consultation with TRCA, DFO and Toronto Water, is warranted and will continue, as detailed design progresses and construction methodology for the crossing of the Markham Branch of Highland Creek is identified.	■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures.	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring Requirements	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Lawrence/ Extraction Shaft	Scarborough Centre	Proposed Sheppard / EEB 8 / PPUDO / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7
Wetlands and Waterbodies	Dewatering activities and water discharge resulting in changes in water velocity, or temperature, soil and erosion, release of contaminated and sediment-laden water, fish habitat structure and cover, food supply, nutrient concentration, access to habitat leading to the displacement or stranding of fish.	■ Design water management system and dewatering operations to prevent erosion and/or release of sediment-laden or contaminated water to the waterbody or adjacent wetlands. ■ Timing restrictions for near-water works may be implemented to protect the sensitive life stages/processes of migratory and resident fish.	■ Monitoring for dewatering Will be undertaken to confirm sediment-laden discharge, visible scour/erosion and/or changes in temperature within any receiving watercourse does not occur.	Not Applicable	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable

5.2 Air Quality

Three conditions were assessed for each station: Existing Conditions, Future No-Build Conditions, and Future Build Conditions. The sources located within each station's Study Area for Existing Conditions and Future No-Build Conditions remained identical, with only anticipated traffic volume changes within each Study Area resulting in a difference to the air quality impact. The Future Build Condition for each station includes additional stationary sources of air quality emission from idling buses and passenger vehicles, while it is assumed that existing road structures will remain the same.

Three parameters were identified for qualitative assessment for each condition within each station's Study Area: proximity to receptors, traffic volumes, and vehicular idling. Each of these three parameters are assessed for each condition at each station, with a rank assigned for potential air quality impact. It should be noted that an accurate prediction of alterations to traffic flow for the Future Build Conditions was unavailable at this time. A conservative assumption was made that Future Build traffic volumes for the No-Build and Build Conditions will be identical, based on a calculated traffic annual increase percentage.

5.2.1 Potential Effects

Table 5-5 describes the qualitative impacts at each station.

As per the summaries provided in **Table 5-5**, the Future Build scenarios are predicted to have the highest local air quality impact on the nearest receptors in the project Study Area. This is due mainly to the addition of new bus idling sources of emission at each station and additional bus routes being re-directed to make stops at each new station. Predominant wind direction also tends to blow directly toward the closest receptor for each station.

The results from this assessment are conservative as they do not consider the TTC's commitment to achieve 100% zero emissions by 2040, which includes a full conversion of their bus fleet to electric vehicles. A significant percentage of the expected emissions from this project would result from the TTC bus movement within the study areas and idling at each proposed station. The TTC's 2040 electric vehicle commitment is expected to result in a lesser air quality impact from the Future Build scenario in comparison to the Existing Conditions and Future No-Build conditions due to reduced roadway emissions from the TTC fleet. Further modelling assessment would be required to confirm these assertions.

Table 5-5: Summary of Qualitative Impacts

Project Location	Condition Impact Description
Sheppard	**Existing Conditions:** ▪ Predominant roads in the Study Area include Sheppard Avenue East, McCowan Road, and Nugget Avenue. Several bus routes run north/south along McCowan Road and east/west along Sheppard Avenue East. ▪ Existing land of proposed station at Sheppard contains several parking lots for the existing auto dealerships. ▪ The closest receptor is located to the south of the proposed station, with other residential receptors located to the southeast and southwest. ▪ Predominant wind blows from the north/northwest towards the closest residential receptor located to the south and southeast of the proposed station.
Sheppard	**Future No-Build Conditions:** ▪ Predominant roads in the Study Area include Sheppard Avenue East, McCowan Road, and Nugget Avenue which would have increased traffic projected for 2041. Several bus routes run north/south along McCowan Road and east/west along Sheppard Avenue East which would remain consistent with Existing Conditions. ▪ Existing land of proposed station at Sheppard contains several parking lots for the existing auto dealerships. ▪ The closest receptor is located to the south of the proposed station, with other residential receptors located to the southeast and southwest. ▪ Predominant wind blows from the north/northwest towards the closest residential receptor located to the south and southeast of the proposed station.
Sheppard	**Future Build Conditions:** ▪ Predominant roads in the Study Area include Sheppard Avenue East, McCowan Road, and Nugget Avenue which would have increased traffic projected for 2041. ▪ Several bus routes run north/south along McCowan Road and east/west along Sheppard Avenue East, with additional routes re-routed to make stops at the future station at Sheppard. ▪ The station at Sheppard would emit bus idling emissions from the TTC bus terminal, and the PPUDO at Sheppard would emit passenger vehicle idling emissions. ▪ The closest receptor is located to the south of the proposed station, with other residential receptors located to the southeast and southwest. ▪ Predominant wind blows from the north/northwest towards the closest residential receptor located to the south and southeast of the proposed station. ▪ **This scenario is likely to have the highest local impact of air emissions due to the increased bus traffic and idling emissions from the station at Sheppard.**

Project Location	Condition Impact Description
Scarborough Centre	**Existing Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, Ellesmere Road, Progress Avenue, Bushby Drive, Town Centre Court, Triton Road, Grangeway Avenue, Consilium Place, and Corporate Drive. ▪ Several bus routes run north/south along McCowan Road, east/west along Ellesmere Road, as well as along Progress Avenue, Bushby Drive, Grangeway Avenue, and Corporate Drive. Almost all bus routes in the Study Area converge along Triton Road, which only hosts buses travelling towards the existing Scarborough Centre bus station. Buses include both TTC and GO transit buses. ▪ Existing land for the proposed station at Scarborough Centre is either green space, contains the existing McCowan bus and Line 3 transit station, or is additional parking space. ▪ The closest receptor is located to the south/southeast of the proposed station, with other residential receptors located to the north and southwest. ▪ Predominant wind blows from the north/northwest towards the closest residential receptor located southeast of the proposed station.
Scarborough Centre	**Future No-Build Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, Ellesmere Road, Progress Avenue, Bushby Drive, Town Centre Court, Triton Road, Grangeway Avenue, Consilium Place, and Corporate Drive. All roads would have increased traffic levels projected for 2041. ▪ Several bus routes run north/south along McCowan Road, east/west along Ellesmere Road, as well as along Progress Avenue, Bushby Drive, Grangeway Avenue, and Corporate Drive. Almost all bus routes in the Study Area converge along Triton Road, which only hosts buses travelling towards the existing Scarborough Centre bus station. Buses include both TTC, Durham-Scarborough Bus Rapid Transit (DSBRT), and GO transit buses. Existing land for the proposed station at Scarborough Centre is either green space, contains the existing McCowan bus and Line 3 transit station, or is additional parking space. ▪ The closest receptor is located to the south/southeast of the proposed station, with other residential receptors located to the north and southwest. ▪ Predominant wind blows from the north/northwest towards the closest residential receptor located southeast of the proposed station.

Project Location	Condition Impact Description
Scarborough Centre	**Future Build Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, Ellesmere Road, Progress Avenue, Bushby Drive, Town Centre Court, Triton Road, Grangeway Avenue, Consilium Place, and Corporate Drive. All roads would have increased traffic levels projected for 2041. ▪ Several bus routes run north/south along McCowan Road, east/west along Ellesmere Road, as well as along Progress Avenue, Bushby Drive, Grangeway Avenue, and Corporate Drive. There would also be increased bus routes travelling within the Study Area re-routed to make stops at the station at Scarborough Centre. ▪ In Existing and Future No-Build Condition scenarios, all bus routes in the Study Area converged along Triton Road, which only hosts buses travelling towards the existing Scarborough Centre bus station. In Future Build condition scenario, this road is expected to now either have reduced bus flow or be entirely repurposed. Buses would include both TTC, DSBRT, and GO transit buses. ▪ The station at Scarborough Centre would include idling bus emissions from both the TTC Bus Terminal and the GO and DSBRT Bus Terminal. ▪ The closest receptor is located to the south/southeast of the proposed station, with other residential receptors located to the north and southwest. ▪ Predominant wind blows from the north/northwest towards the closest residential receptor located southeast of the proposed station. ▪ **This scenario is likely to have the highest local impact of air emissions due to the increased bus traffic and idling emissions from the station at Scarborough Centre.**
Lawrence	**Existing Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, Danforth Road, and Lawrence Avenue East. Several bus routes travel north/south along McCowan Road, and east/west along Lawrence Avenue East. ▪ The existing land for the proposed station at Lawrence contains some parking, two residential homes, and a gas station. ▪ The closest receptors are located to the south of the proposed station at Lawrence, with a significant critical receptor located directly north (Scarborough General Hospital). ▪ Predominant wind blows from the north/northwest towards the closest residential receptors located south of the proposed station.

Project Location	Condition Impact Description
Lawrence	**Future No-Build Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, Danforth Road, and Lawrence Avenue East which would have increased traffic projected for 2041. Several bus routes travel north/south along McCowan Road, and east/west along Lawrence Avenue East. ▪ The existing land for the proposed station at Lawrence contains some parking, two residential homes, and a gas station. ▪ The closest receptors are located to the south of the proposed station at Lawrence, with a significant critical receptor located directly north (Scarborough General Hospital). ▪ Predominant wind blows from the north/northwest towards the close residential receptors located south of the proposed station.
Lawrence	**Future Build Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, Danforth Road, and Lawrence Avenue East which would have increased traffic projected for 2041. ▪ Several bus routes travel north/south along McCowan Road, and east/west along Lawrence Avenue East. Additional bus routes would be re-directed to the Study Area in order to make stops at the proposed station at Lawrence. The proposed station would include idling bus emissions from the TTC Bus Depot. ▪ The closest receptors are located to the south of the proposed station, with a significant critical receptor located directly north (Scarborough General Hospital). ▪ Predominant wind blows from the north/northwest towards the closest residential receptors located south of the proposed station at Lawrence. ▪ **This scenario is likely to have the highest local impact of air emissions due to the increased bus traffic and idling emissions from the station at Lawrence.**
Bus Loop	**Existing Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, and St. Andrews Road. Several bus routes travel north/south along McCowan Road. ▪ The existing land for the proposed bus loop includes residential homes, and open/green space. ▪ The closest receptors are located to the north of the proposed bus loop at St. Andrews Road and McCowan Road. ▪ Predominant wind blows from the north/northwest towards the closest residential receptors located south of the proposed station.

Project Location	Condition Impact Description
Bus Loop	**Future No-Build Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, and St. Andrews Road which would have increased traffic projected for 2041. Several bus routes travel north/south along McCowan Road. ▪ The existing land for the proposed bus loop includes residential homes, and open/green space. ▪ The closest receptors are located to the north of the proposed bus loop at St. Andrews Road and McCowan Road. ▪ Predominant wind blows from the north/northwest towards the close residential receptors located south of the proposed station.
Bus Loop	**Future Build Conditions:** ▪ Predominant roads in the Study Area include McCowan Road, and St. Andrews Road which would have increased traffic projected for 2041. Several bus routes travel north/south along McCowan Road. ▪ The existing land for the proposed bus loop includes residential homes, and open/green space. ▪ One TTC bus route will be redirected north along McCowan Road to arrive at the proposed bus loop. ▪ The closest receptor to the bus loop is directly to the north on Kencliff Crescent. ▪ Predominant wind blows from the north/northwest towards the closest residential receptors located south of the proposed station at Lawrence. ▪ **This scenario is likely to have the highest local impact of air emissions due to the increased bus traffic and idling emissions from the proposed bus loop.**

The regional meteorological data suggests a predominant wind blowing from the north/northwest direction, directly towards the closest receptor to each proposed station. Background air quality levels are predominately below respective Provincial and Federal limits, however they do show significant exceedances with benzo(a)pyrene, as well as lesser exceedances for fine particulate matter ($PM_{2.5}$) and benzene.

As road structures are currently assumed to remain consistent throughout all scenarios, there was a negligible difference between the Future Build scenario and Existing Conditions/Future No-Build scenarios for distance of air quality contaminant sources to receptors, with the exception where new sources would be introduced with the addition of the proposed stations. Some bus routes are expected to change within the station at Scarborough Centre Study Area, pending future plans for the existing Scarborough Centre bus station.

Based on the results of the qualitative air quality assessment, a quantitative air quality study, which will include a detailed emissions assessment and dispersion modelling, to determine the proposed station specific impacts on the local air quality is underway. The quantitative air quality study will also determine if the impact from the proposed stations will result in a significant impact compared to Future No-Build conditions and the applicable Provincial and Federal ambient air quality limits. This quantitative study will also include a regional assessment of increased greenhouse gas (GHG) burden on the region.

The Future Build scenario is likely to have an increased impact of air quality on the local receptors within each Study Area. However, the emissions from roadway and idling vehicles are expected to dissipate beyond the 500 m boundary and are not expected to impact the regional air quality. Furthermore, with new subway service along this corridor, vehicle burden on the local roads may decrease which will result in an overall benefit to the regional air quality.

Table 5-6 summarizes the potential impacts which may result from the implementation of this project.

Table 5-6: Summary of Potential Air Quality Effects, Mitigation Measures and Monitoring

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
Operating Conditions: Idling Bus/Vehicle Emissions	Increased NO_2, CO, SO_2, particulate, and VOC impact levels on nearby downwind receptors, causing potential risks to human health and well being.	▪ Recommended to carry out a quantitative assessment including specific source emission estimation and dispersion modelling to confirm level of impact from project contributions and seek comments from the MECP and the City of Toronto on the draft report.	▪ No other specific monitoring implementation recommended at this time.
Construction Conditions: Vehicle operation and surface particulate disruption	Construction related air pollution may pose risks to human health and wellbeing	▪ Prior to commencement of construction, a detailed Construction Air Quality Management Plan (AQMP) will be developed. The AQMP will: – Define the Project's air quality impact zone and identify all sensitive receptors within this area. – Assess the baseline air quality by continuous measurement of local ambient concentrations of $PM_{2.5}$ and PM_{10} over a minimum period of one week, where large local sources of pollution, such as highways, directly affect the ZOI of the Project. – Estimate and document the predictable worst-case air quality impacts of the Project on sensitive receptors within the air quality impact zone, develop appropriate mitigation measures, demonstrate their effectiveness, and commit to their timely implementation. – Include an approach to monitoring PM2.5 and PM10, as well as monitoring where an air contaminant is predicted to exceed its relevant air quality exposure criterion, or where concentrations of contaminants which already exceed the criterion are predicted to markedly increase – Include explicit commitment to the implementation of all applicable best practices identified in the Environment Canada document, Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (2005). – The Construction AQMP will be provided to the MECP for their records. ▪ Develop a Communications Protocol and a Complaints Protocol in accordance with the Project Agreement.	▪ Development and implementation of Weekly Air Quality Monitoring Reports shall be required to document how air quality monitoring has been conducted and compliance assessed to effectively prevent unacceptable rates of air emissions in accordance with the following guidelines: – The Weekly Air Quality Monitoring Reports will be provided to the MECP for their files. – The construction related air contaminants of primary concern are in the form of particulate matter, with the principal construction related fractions of $PM_{2.5}$ and PM_{10} - particulate matter of less than 2.5 and 10 microns in diameter, respectively. Other contaminants of concern include crystalline silica and oxides of nitrogen. The list of contaminants will be expanded with air pollutants that may be produced as a result of the work. ▪ Siting of the monitors should generally follow the guidelines provided in the MECP Operations Manual for Air Quality Monitoring in Ontario (2018).

5.3 Socio-Economic Environment

5.3.1 Utilities

5.3.1.1 Private Utilities

Impacts

Utilities infrastructure within the Study Area is typically confined to existing road ROWs. Areas of interest include the existing Gatineau Hydro Corridor and all areas that are constructed using the cut-and-cover construction method, including the station, ancillary facilities (i.e., EEBs) and tail track structures.

Utilities impacts are required for the construction of Project facilities. Some utilities will be supported during construction while others may have to be permanently relocated. It is anticipated that there will be temporary impacts to existing utilities during construction, with potential relocations and associated disruptions to be determined. Temporary traffic detours are also anticipated during utility relocations.

Potential impacts to private utilities for each project component are provided in **Table 5-7** below. Potential impacts to utilities are currently being reviewed to support this EPR Addendum and will be confirmed during detailed design.

Table 5-7: Impacts to Private Utilities

Project Component	Utility Company	Proposed Impact or Potential Interface
Launch Shaft at Eglinton Ave E	Bell	Protect existing underground cable and pedestal on the north side of Eglinton Avenue East.
Launch Shaft at Eglinton Ave E	Rogers	Protect existing underground cable and pedestal on the north side of Eglinton Avenue East.
Launch Shaft at Eglinton Ave E	Aptum	Relocate Aptum handwell and lower existing conduit on the north side of Eglinton Avenue East.
Station at Lawrence	Bell	Protect existing Bell structure.
Station at Lawrence	Rogers	Temporarily relocate aerial cable to relocated hydro poles to west side of McCowan Road.
Extraction Shaft	Private Hospital Sewers	Relocate outside of the excavation area.
EEB 5	Rogers	Temporary relocation to relocated hydro poles on the north side of McCowan Road.
EEB 5	Aptum	Temporary relocation to relocated hydro poles on the north side of McCowan Road.

Mitigation Measures

During detailed design, the potential impacts to utilities, relocations and mitigation measures will be further refined and confirmed. Appropriate mitigation measures including next steps related to consultation with utilities and phasing plans will be determined once the impacts are confirmed.

5.3.1.2 Public Utilities and Municipal Servicing

Impacts

Utilities infrastructure within the Study Area is typically confined to existing road ROWs. Areas of interest include all areas that are constructed using the cut-and-cover construction method, including the station, ancillary facilities (i.e., EEBs) and tail track structures.

Utilities impacts are required for the construction of Project facilities. Some utilities will be supported during construction while others may have to be permanently relocated. It is anticipated that there will be temporary impacts to existing utilities during construction, with potential relocations and associated disruptions to be determined. Temporary traffic detours are also anticipated during utility relocations.

Potential impacts to public utilities for each project component are provided in **Table 5-8** below. Potential impacts to utilities are currently being reviewed to support this EPR Addendum and will be confirmed during detailed design.

Table 5-8: Impacts to Public Utilities

Project Component	Utility Company	Proposed Impact or Potential Interface
Launch Shaft at Eglinton	Municipal Mains	Combined 375 mm STM and 250 mm SAN will be temporarily by-passed and relocated temporarily within the launch shaft.
Launch Shaft at Eglinton	Municipal Mains	750 mm STM sewer will be temporarily by-passed and permanently relocated.
Launch Shaft at Eglinton	Municipal Mains	300 mm watermain will be temporarily by-passed and permanently relocated near to south side curb of Eglinton Avenue.
Station at Lawrence	Toronto Hydro	Shift existing hydro aerial HV line and poles on the west side of McCowan Road.
Station at Lawrence	Municipal Mains	250 mm SAN temporary bypass.
Station at Lawrence	Municipal Mains	600 mm STM temporary bypass.
EEB 5	Toronto Hydro	Shift existing hydro aerial HV line and poles on the west side of McCowan Road

Project Component	Utility Company	Proposed Impact or Potential Interface
EEB 5	Municipal Mains	250 mm SAV temporary bypass.
EEB 5	Municipal Mains	300 mm STM temporary bypass.
EEB 5	Municipal Mains	300 mm watermain temporary bypass.
Station at Scarborough Centre	Municipal Mains	300 mm watermain temporary bypass.
EEB 7	Toronto Hydro	Streetlight is impacted/to be relocated.
EEB 7	Municipal Mains	300 mm WM support and protect.
Headwall for Sheppard Crossover	Toronto Hydro	Streetlight is impacted/to be relocated.
Headwall for Sheppard Crossover	Municipal Mains	300 mm WM support and protect.

Mitigation Measures

Master servicing, SWM, and hydrogeological studies will be completed during detailed design. Metrolinx will consult with the City of Toronto during the development of these studies to ensure concerns are addressed.

Metrolinx will coordinate with the City of Toronto and Toronto Water during detailed design regarding potential impacts to municipal infrastructure and servicing and ensure that applicable City standards, guidelines, and criteria are met.

5.3.2 Building and Property

5.3.2.1 Impacts

Permanent Property Acquisitions

Approximately 80% of the SSE is located within municipal and provincial road allowances. However, certain sections of the SSE alignment cross under private property. In addition, private properties will need to be acquired along the preferred alignment in order to accommodate the stations (including bus terminals, station entrances, PPUDOs, TPSSs and ventilation structures) and tunnel infrastructure (traction power substations, tunnel ventilation shafts and EEBs). Lastly, private properties will also be acquired for the tunnel mobilization site at Midland and Eglinton.

Property acquisition will be necessary in order to obtain the parcels of land required to construct the system and may include the following:

- **Full Property Interest** – The acquisition of an entire parcel of land. This may be required where a surface facility, such as a TPSS, will occupy all of the affected property.
- **Partial Property Interest** – The acquisition of only a part of a parcel of land. This may occur where a surface feature, such as a station entrance building, occupies only a small portion of the overall property, or where an underground corridor through a property is required in order to accommodate the tunnel structure. Such subsurface acquisition may not preclude the construction of buildings and structures over and adjacent to the acquired lands but would be subject to Metrolinx review and approval. This would apply for all tunnelled sections of the SSE crossing private property and may also apply where a 3 m tunnel buffer area is proposed under private property.

At this time, a total of 32 properties are anticipated to be impacted. Acquisitions for these properties are broken down as follows:

- 25 full properties; and
- 7 partial properties.

These property requirements will be refined as design progresses. Property owners will be engaged as project details and property requirements are confirmed. All property acquisitions required for the Project will be conducted by the Property Acquisition Unit on behalf of the Metrolinx.

5.3.2.2 Potential Mitigation Measures

By locating approximately 80 percent of the preferred SSE alignment within municipal and provincial road allowances, the need for acquiring private property interests is reduced. Property requirements will be carefully determined and refined during the Detailed Design Phase of the Project, in order to minimize the amount of private land required for the Project.

In acquiring property, Metrolinx balances community needs with the rights of individual property owners, including tenants and business owners. Metrolinx's objective is to ensure that the individual's rights are respected and protected, and to provide fair compensation within the framework of the Expropriations Act for any property interest acquired or affected by civic projects. The acquisition process emphasizes negotiation

and the achievement of a mutually satisfactory agreement between Metrolinx and the owner. Only when negotiation has not produced an agreement and the property is required for construction to begin, will Metrolinx initiate expropriation.

The property acquisition process and resulting compensation is intended to leave the affected owner “whole”, thereby mitigating any negative impacts.

5.3.2.3 Construction Impacts

Temporary Property

Temporary property will be required during the construction phase to establish work zones, material laydown areas, equipment storage or maintenance areas, construction worker parking, and to obtain access for construction activities.

The planned tunnelling sequence will require two tunnel mobilization sites in the vicinity of the proposed Sheppard Station (north side of Sheppard Avenue, east of McCowan Road) and the second in the vicinity of Kennedy Station (north side of Eglinton Avenue, east of Midland Avenue). A TBM extraction shaft is required at the proposed Lawrence Station (north of Lawrence Avenue, west side of McCowan Road).

Adjacent Property

Types of impacts that can potentially occur during construction include vibration and ground settlement. Under certain conditions, physical damage to nearby buildings and property may occur as a result of construction activity. See **Section 5.3.1** for further information.

Demolition

The following buildings and structures will need to be demolished during construction:

- 3 residential buildings (all single-family dwellings); and
- 15 commercial/ retail buildings.

There may be further structures that are identified during the Detailed Design phase of the Project.

5.3.2.4 Potential Mitigation Measures – Construction

Temporary Property

Metrolinx will negotiate temporary permission to enter and construction agreements with property owners on a case-by-case basis following the procedures described in **Section**

5.3.2.1. The permission to enter agreements allow access to properties to help inform the design and establish existing conditions (for example utility survey to understand extent of utilities in an area). Only when negotiation has not produced an agreement and the property is required for construction to begin, will Metrolinx initiate expropriation. Metrolinx's objective is to provide fair compensation within the framework of the Expropriations Act. The acquisition process and resulting compensation is intended to leave the affected owner "whole", thereby mitigating any impacts.

Following construction, the lands will be restored to pre-construction conditions, to the extent possible.

Adjacent Property

A ZOI will be identified and all property owners within this zone will be approached to have precondition surveys completed.

There will be a precondition survey done on all surrounding buildings within the ZOI, see **Section 5.3.2.2** for mitigation proposed for the surrounding buildings.

Demolition

Metrolinx will work with affected property owners to address concerns and ensure that any impacts are mitigated, to the extent possible. Mitigation measures associated with the demolition of Line 3 will be determined during the Detailed Design Phase of the Project.

Monitoring

For the properties identified as needing monitoring, monitoring during construction will include ground settlement measurements, inclinometers and surface monitoring points for structures. Monitoring duration and frequency will be determined during detailed design.

The monitoring program will include Review and Alert levels. If instrument readings exceed "Review" levels, Metrolinx will assess the necessity of altering the method, rate or sequence of construction. At "Alert" levels, Metrolinx can order construction operations to cease until the necessary mitigation measures are undertaken.

Following construction, a joint post-construction inspection of buildings / structures and utilities will be arranged with the respective owners. The results of these surveys will be compared with the pre-construction surveys.

Metrolinx will monitor horizontal and vertical movements and tilt of adjacent structures and utilities on a daily basis during active excavation or backfilling. In the event that

instrument readings reach “Alert” levels, (as to be defined on a structure specific basis in the construction contract documents), site supervisory staff will order construction operations to cease and take necessary actions to mitigate unacceptable movements, including, but not limited to, alternative construction methods or construction equipment and / or additional support / protection measures.

Contingency

In the event that mitigation efforts are unsuccessful and damage to private property occurs as a result, Metrolinx will conduct further investigations and, if appropriate, will negotiate a settlement with the affected property owner.

5.3.2.5 Operations Impacts

No permanent impacts to building or property are anticipated as a result of the operations associated with the Project. Impacts to buildings and property are either permanent displacements or are transient and related to construction.

5.3.3 Business and Recreational Disruption

5.3.3.1 Impacts

Disruption at the locations listed below are anticipated to be construction-related and temporary in nature.

Key locations where construction sites will be located in the vicinity of local businesses and institutions include:

- EEB 8 – McCowan Road and Nugget Avenue;
- Station at Sheppard – McCowan Road between Nugget Avenue and Sheppard Avenue East;
- EEB 7 – McCowan Road and Highway 401 Collector off-ramp;
- Station at Scarborough Centre – McCowan Road between Progress Avenue and Town Centre Court;
- Station at Lawrence – McCowan Road and Lawrence Avenue East; and
- Kennedy Station – Midland Avenue and Eglinton Avenue East.

In addition, construction at EEB 5 will be in the vicinity of residential homes at McCowan Road and Meldazy Drive.

The impacts to local businesses and residents are predicated to primarily be changes in vehicle and pedestrian movement patterns, but may also include the following:

- Reduced visibility of storefronts and signs;
- Reduced on-street parking;
- Less convenient access and disruption or closures to any off-street parking facilities; and
- Patron inconvenience due to temporary construction debris, noise and dust.

During testing of emergency equipment nearby businesses and recreational facilities may be momentarily interrupted; however, there will be no business loss from testing the emergency equipment.

Specific property impacts will be determined as design progresses.

5.3.3.2 Potential Mitigation Measures

A number of businesses will be impacted either by tunnelling activities, or general construction activities. These impacts to local businesses will be addressed indirectly through the mitigation efforts noted in other sections of this report (traffic and transit service, pedestrians and cyclists, noise and dust, etc.).

Construction work including utility relocation, excavation, tunnelling and station building will be visible along the corridor as the Project is implemented. Metrolinx will inform communities, residents, business owners and institutions directly impacted by new construction. Specific mitigation measures will be developed once property impacts are further refined and confirmed.

5.3.4 Urban Design

5.3.4.1 Construction Impacts

Visual impacts are anticipated during construction activities; however, they will be temporary in nature. These activities could include, but are not limited to, erection, alteration, repair, dismantling, demolition, land clearing, earth-moving, grading, excavating, the laying of pipe and conduit, concrete pouring and lighting of the site to provide for safer working conditions.

5.3.4.2 Operation Impacts

Once constructed, the addition of SSE facilities to communities will alter the visual setting where they are located. Metrolinx will follow Design Excellence principles and guidelines to ensure that all new infrastructure is constructed to a high visual standard and enhances the surrounding area.

5.3.4.3 Potential Mitigation Measures

During construction, visual impacts will be reduced to the greatest degree possible. Temporary construction hoarding boards will be erected around the construction sites to reduce visual impacts and prevent unauthorized access. Wayfinding signage will also be incorporated to guide people around the temporary construction sites.

Particular attention will be paid to locating and screening of non-public station and tunnel elements such as EEBs, electrical substations and ventilation structures during detailed design to minimize impact on residential or commercial areas, and to not preclude future development potential or planned street network improvements as envisaged by the Scarborough Centre Transportation Master Plan.

5.3.5 Waste Management

5.3.5.1 Impacts

Waste materials will be generated as part of construction activities and may be generated as part of SSE operations. Poorly managed waste may contribute to an increase in waste material on the landscape and contamination of the natural environment.

5.3.5.2 Potential Mitigation Measures

Waste and excess materials will be dealt with in accordance with Ontario Provincial Standard Specification (OPSS) 180, General Specification for the Management and Disposal of Excess Material. Waste generated on-site, which requires off-site removal should be in accordance with O. Reg. 347 under the Ontario Environmental Projection Act which provides for the transportation and processing of hazardous and non-hazardous waste. Additionally, in order to mitigate the potential impacts associated with excess material storage, no stockpiles shall be located closer than 30 m from water features, in accordance with OPSS 180.

Excess soil generated during construction will be disposed of in accordance with O. Reg. 406/19 – On-Site and Excess Soil Management.

Waste material generated during operations activities will be removed regularly from the stations and bus terminal sites and disposed of at an approved waste facility.

5.4 Noise and Vibration

5.4.1 Noise

5.4.1.1 Potential Effects

Construction

Results of the noise prediction model have been tabulated with the average noise levels presented in **Table 5-9**. Discussion of the results is provided below.

Results in the **Table 5-9** indicate that in almost all cases, project construction noise levels will be above the average baseline level. Discussion of other findings include:

- **Kennedy Station Modification**
  - Construction activities along Eglinton Avenue East are predicted to exceed the night time noise level limit during all stages of construction, with the TBM support operations having the highest anticipated noise levels and exceeding the daytime noise level limit.
  - Most construction stages are anticipated to be near the existing daytime average noise levels, while exceeding the existing average evening and night time noise levels.
- **EEB 1**
  - Average construction noise levels are predicted to be at or above the night time noise level limit.
  - Predicted construction noise levels are also expected to be above the existing average noise levels.
- **EEB 2**
  - Average construction noise levels are predicted to be above the night time noise level limit during all stages of construction.
  - Average construction noise levels are predicted to be above the daytime noise level limit as well during the grading/excavation and building construction.
  - Predicted construction noise levels are also expected to be above the existing average noise levels.

Table 5-9: Construction Noise Prediction Results – Average Levels[12]

Associated Construction Area	Address	Assessment Criteria (day Leq8hr/night Leq,8ih)	Average Hourly Baseline Noise Level (day/eve/night) [dBA]	Utility Relocations [dBA]	Auger Piling [dBA]	Grading/ Excavation [dBA]	Station/ Building Construction [dBA]	TBM Support [dBA]
Installation of Pocket Tracks at Kennedy Station, Launch Shaft, and ancillary features	38 Kenmark Boulevard	80/70	53/51/48	61	Not applicable	64	64	Not Applicable
Installation of Pocket Tracks at Kennedy Station, Launch Shaft, and ancillary features	2493 Eglinton Avenue East	80/70	73/65/67	**71**	**71**	**74**	**75**	88
EEB1	88 Winter Avenue	80/70	56/53/50	**70**	**70**	**73**	**74**	Not Applicable
EEB2	1250 Danforth Road	80/70	72/69/66	**77**	**77**	**80**	**81**	Not Applicable
TPSS	2785 Eglinton Avenue East	80/70	68/65/6213	**77**	**78**	**81**	**81**	Not Applicable
TPSS	1275 Danforth Road	80/70	69/66/632	**74**	**74**	**77**	**77**	Not Applicable
TPSS	25 Trudelle Street	80/70	65/62/592	68	68	**71**	**72**	Not Applicable
TPSS	1266 Danforth Road	80/70	72/69/66	67	67	**70**	**71**	Not Applicable
EEB3	152 Thicketwood Drive	80/70	73/71/66	**77**	**78**	**80**	**81**	Not Applicable
EEB4	1505 McCowan Road	80/70	63/63/56	**78**	**78**	**81**	**82**	Not Applicable
Station at Lawrence East	21 Valparaiso Avenue	80/70	65/64/59	**78**	**79**	**81**	**82**	Not Applicable
Station at Lawrence East	640 McCowan Road	80/70	65/64/59	**78**	**78**	**81**	**82**	Not Applicable
Station at Lawrence East	3060 Lawrence Avenue East	80/70	65/64/59	**72**	**73**	**75**	**76**	Not Applicable
Bus Loop	1 Kencliff Crescent	80/70	58/57/52	68	Not applicable	**71**	**72**	Not Applicable
EEB5	962 McCowan Road	80/70	58/57/52	**82**	**82**	**85**	**86**	Not Applicable
EEB6	30 Hurley Crescent	80/70	67/66/62	**79**	**80**	**82**	**83**	Not Applicable
Scarborough Centre	77 Town Centre Court	80/70	69/69/63	66	67	69	70	Not Applicable
Scarborough Centre	88 Grangeway Avenue	80/70	66/66/60	**71**	**72**	**74**	**75**	Not Applicable
EEB7	25 Channel Nine Court	80/70	70/67/67	60	60	63	64	Not Applicable
Station at Sheppard East	50 Hallbank Terrance	80/70	57/56/51	55	56	59	60	73
Station at Sheppard East	4675 Sheppard Avenue East	80/70	57/56/51	63	63	66	66	74
Station at Sheppard East	1705 McCowan Road	80/70	57/56/51	**74**	**74**	**77**	**77**	69
EEB8	50 Hallbank Terrance	80/70	57/56/51	45	47	49	49	Not applicable
EEB8	4675 Sheppard Avenue East	80/70	57/56/51	46	46	49	50	Not applicable
EEB8	1705 McCowan Road	80/70	57/56/51	44	44	47	47	Not Applicable

12. Bolded text used for noise levels that exceed night time criteria, bold and underlined text used for noise levels that exceed both night and day time criteria.
13. Background level adjusted for straight line distance attenuation assuming dominant noise source is Danforth Road. Levels only used for illustrative purposes only. Actual background levels may vary.

- **TPSS**

  - Average construction noise levels are predicted to be above the night time noise level limit during all stages of construction at most locations.
  - Average construction noise levels are predicted to be above the daytime noise level limit as well during the grading/excavation and building construction at 2785 Eglinton Avenue East.
  - Predicted construction noise levels are also expected to be above existing average noise levels.

- **EEB 3**

  - Average construction noise levels are predicted to be above the night time noise level limit during all stages of construction.
  - Average construction noise levels are predicted to be above the daytime noise level limit as well during the grading/excavation and building construction.
  - Predicted construction noise levels are also expected to be above the existing average noise levels.

- **EEB 4**

  - Average construction noise levels are predicted to be above the night time noise level limit during all stages of construction.
  - Average construction noise levels are predicted to be above the daytime noise level limit as well during the grading/excavation and building construction.
  - Predicted construction noise levels are also expected to be above the existing average noise levels.

- **Station at Lawrence Avenue East**

  - Average construction noise levels are predicted to be above the night time noise level limit during all stages of construction.
  - Average construction noise levels are predicted to be above the daytime noise level limit as well during the grading/excavation and building construction at the residential locations.
  - Predicted construction noise levels are also expected to be above the existing average noise levels.

- **Bus Loop**

  - Average construction noise levels are predicted to be above the night time noise level limit during grading/excavation and building construction.

- Predicted construction noise levels are also expected to be above the existing average noise levels.

- **EEB 5**

- Average construction noise levels are predicted to be above the applicable noise level limits.
- Predicted construction noise levels are also expected to be above the existing average noise levels.

- **EEB 6**

- Average construction noise levels are predicted to be above the night time noise level limits during all stages of construction.
- Average construction noise levels are predicted to be above the daytime noise level limit as well during the piling, grading/excavation and building construction.
- Predicted construction noise levels are also expected to be above the existing average noise levels.

- **Station at Scarborough Centre**

- Average construction noise levels are predicted to be above the night time noise level limit at 88 Grangeway Avenue.
- Predicted construction noise levels are also expected to be above the existing average noise levels.

- **EEB 7**

- Average construction noise levels are predicted to be below applicable noise level limits.
- Predicted construction noise levels are expected to be below the existing average noise levels.

- **Station at Sheppard Avenue East**

- Average construction noise levels are predicted to be above the night time noise level limit at during the TBM support operations.
- Average construction noise levels are predicted to be above the night time noise level limit during most construction operations at 1705 McCowan Road.
- Predicted construction noise levels are expected to be above the existing average noise levels in most cases.

- **EEB 8**

  - Average construction noise levels are predicted to be below the applicable noise level limits and below the existing average noise levels.

Operations

The assumptions and key inputs provided in **Appendix B3** were input into a noise prediction model, and results were assessed against the applicable noise criteria. A summary of the assessment completed is presented in **Table 5-10**.

The results in **Table 5-10** indicate that mitigation is required for the project facilities to operate below the applicable criteria limits. Preliminary noise mitigation measures were investigated for the project facilities to operate in compliance with MECP noise guidelines. Mitigation measures investigated include bus idling durations, lining tunnel ventilation shafts and plenums with acoustic material, noise barriers, and bus routes on sites. This mitigation is readily achievable applying measures described in **Section 5.4.1.2.**

Note that the noise impact from the operation of the tunnel ventilation fan at Kennedy Station is predicted to be 10 dB lower than the applicable criteria. This leaves an allowance for the operation of the remainder of stationary noise sources at Kennedy Station.

5.4.1.2 Mitigation and Monitoring

Construction

Criteria will be met by implementing mitigation measures which may include:

- **Noise** – mitigation measures are to be investigated during the next phases of design to bring construction noise levels below applicable criteria. The following measures may be considered to decrease the potential for noise complaints and can be reviewed in the next phases of design:

  - Comply with applicable noise guidelines from the MECP including NPC-115 and NPC-118.
  - Operate construction equipment during daytime hours and avoid night time operations where feasible, in an effort to minimize the potential for complaints.
  - If construction will occur outside of normal daytime hours, inform local residents before construction of type of construction and expected duration outside of daytime hours.
  - Use of upgraded construction hoarding (considering requirements from CSA Z107.9 for noise barriers) between construction equipment and noise sensitive receivers.

Table 5-10: Operational Noise Assessment Summary

Associated Infrastructure	Assessment Location Type	Time Period	Criteria Normal Operation	Criteria Emergency Testing	Predicted Level (dBA) Normal Operation	Predicted Level (dBA) Emergency Testing	Compliance with Criteria Normal Operation	Compliance with Criteria Emergency Testing
Ancillary features at Kennedy Station	Plane of Window – 38 Kenmark Boulevard	Day	50	55	49	60	Yes	No
Ancillary features at Kennedy Station	Plane of Window – 38 Kenmark Boulevard	Evening	50	55	49	-	Yes	-
Ancillary features at Kennedy Station	Plane of Window – 38 Kenmark Boulevard	Night	45	48	49	-	No	-
Ancillary features at Kennedy Station	Outdoor – 38 Kenmark Boulevard	Day	50	55	51	62	No	No
Ancillary features at Kennedy Station	Outdoor – 38 Kenmark Boulevard	Evening	50	55	51	-	No	-
TPSS	Plane of Window – 2758 Eglinton Avenue East14	Day	50	55	55	-	No	-
TPSS	Plane of Window – 2758 Eglinton Avenue East15	Evening	50	55	55	-	No	-
TPSS	Plane of Window – 2758 Eglinton Avenue East16	Night	45	50	55	-	No	-
TPSS	Outdoor – 2758 Eglinton Avenue East	Day	50	55	56	-	No	-
TPSS	Outdoor – 2758 Eglinton Avenue East	Evening	45	50	56	-	No	-
TPSS	Plane of Window – 1275 Danforth Road	Day	50	55	52	-	No	-
TPSS	Plane of Window – 1275 Danforth Road	Evening	50	55	52	-	No	-
TPSS	Plane of Window – 1275 Danforth Road	Night	45	50	52	-	No	-
TPSS	Plane of Window – 25 Trudelle Street	Day	50	55	47	-	Yes	-
TPSS	Plane of Window – 25 Trudelle Street	Evening	50	55	47	-	Yes	-
TPSS	Plane of Window – 25 Trudelle Street	Night	45	50	47	-	No	-
TPSS	Plane of Window – 1266 Danforth Road	Day	71	76	44	-	Yes	-
TPSS	Plane of Window – 1266 Danforth Road	Evening	68	73	44	-	Yes	-
TPSS	Plane of Window – 1266 Danforth Road	Night	61	66	44	-	Yes	-
EEB3	Plane of Window – 152 Thicketwood Drive	Day	66	71	63	74	Yes	No
EEB3	Plane of Window – 152 Thicketwood Drive	Evening	68	73	63	-	Yes	-
EEB3	Plane of Window – 152 Thicketwood Drive	Night	62	67	63	-	No	-
EEB3	Outdoor	Day	66	71	64	75	Yes	No
EEB3	Outdoor	Evening	68	73	64	-	Yes	-
Lawrence	Plane of Window – 21 Valparaiso Avenue	Day	60	65	62	72	No	No
Lawrence	Plane of Window – 21 Valparaiso Avenue	Evening	62	67	62	-	Yes	-
Lawrence	Plane of Window – 21 Valparaiso Avenue	Night	54	59	62	-	No	-
Lawrence	Outdoor – 21 Valparaiso Avenue	Day	60	65	62	74	No	No
Lawrence	Outdoor – 21 Valparaiso Avenue	Evening	62	67	62	-	Yes	-
Lawrence	Plane of Window – 640 McCowan Road	Day	60	65	64	78	No	No
Lawrence	Plane of Window – 640 McCowan Road	Evening	62	67	64	-	No	-
Lawrence	Plane of Window – 640 McCowan Road	Night	54	59	64	-	No	-
Lawrence	Outdoor – 640 McCowan Road	Day	60	65	64	77	No	No
Lawrence	Outdoor – 640 McCowan Road	Evening	62	67	64	-	No	-
Lawrence	Plane of Window – Scarborough General Hospital	Day	60	65	65	75	No	No
Lawrence	Plane of Window – Scarborough General Hospital	Evening	62	67	65	-	No	-
Lawrence	Plane of Window – Scarborough General Hospital	Night	54	59	65	-	No	-

14. Note receptor locations are further setback from roadway than monitoring location, thus base noise level limits in NPC-300 have been used as screening effects cannot be accounted for.
15. Note receptor locations are further setback from roadway than monitoring location, thus base noise level limits in NPC-300 have been used as screening effects cannot be accounted for.
16. Note receptor locations are further setback from roadway than monitoring location, thus base noise level limits in NPC-300 have been used as screening effects cannot be accounted for.

Associated Infrastructure	Assessment Location Type	Time Period	Criteria Normal Operation	Criteria Emergency Testing	Predicted Level (dBA) Normal Operation	Predicted Level (dBA) Emergency Testing	Compliance with Criteria Normal Operation	Compliance with Criteria Emergency Testing
Bus Loop	Plane of Window – 1 Kencliff Crescent	Day	55	60	56	-	No	-
Bus Loop	Plane of Window – 1 Kencliff Crescent	Evening	55	60	56	-	No	-
Bus Loop	Plane of Window – 1 Kencliff Crescent	Night	48	53	56	-	No	-
Bus Loop	Outdoor – 1 Kencliff Crescent	Day	55	60	57	-	No	-
Bus Loop	Outdoor – 1 Kencliff Crescent	Evening	55	60	57	-	No	-
Scarborough Centre	Plane of Window – 77 Town Centre Court	Day	63	68	56	63	Yes	Yes
Scarborough Centre	Plane of Window – 77 Town Centre Court	Evening	67	72	56	-	Yes	-
Scarborough Centre	Plane of Window – 77 Town Centre Court	Night	59	64	56	-	Yes	-
Scarborough Centre	Outdoor – 77 Town Centre Court	Day	63	68	57	63	Yes	Yes
Scarborough Centre	Outdoor – 77 Town Centre Court	Evening	67	72	57	-	Yes	-
Scarborough Centre	Plane of Window – 88 Grangeway Avenue	Day	60	65	60	59	Yes	Yes
Scarborough Centre	Plane of Window – 88 Grangeway Avenue	Evening	64	69	59	-	Yes	-
Scarborough Centre	Plane of Window – 88 Grangeway Avenue	Night	56	61	59	-	No	-
Scarborough Centre	Outdoor – 88 Grangeway Avenue	Day	60	65	61	56	No	Yes
Scarborough Centre	Outdoor – 88 Grangeway Avenue	Evening	64	69	60	-	Yes	-
Sheppard East	Plane of Window – 50 Hallbank Terrace	Day	54	59	53	61	Yes	No
Sheppard East	Plane of Window – 50 Hallbank Terrace	Evening	52	57	53	-	No	-
Sheppard East	Plane of Window – 50 Hallbank Terrace	Night	47	52	53	-	No	-
Sheppard East	Outdoor – 50 Hallbank Terrace	Day	54	59	54	62	Yes	No
Sheppard East	Outdoor – 50 Hallbank Terrace	Evening	52	57	54	-	No	-
Sheppard East	Plane of Window – 1705 McCowan Road	Day	54	59	55	61	No	No
Sheppard East	Plane of Window – 1705 McCowan Road	Evening	52	57	55	-	No	-
Sheppard East	Plane of Window – 1705 McCowan Road	Night	47	52	55	-	No	-
Sheppard East	Plane of Window – 4675 Sheppard Avenue East	Day	54	59	58	62	No	No
Sheppard East	Plane of Window – 4675 Sheppard Avenue East	Evening	52	57	58	-	No	-
Sheppard East	Plane of Window – 4675 Sheppard Avenue East	Night	47	52	58	-	No	-

- Install silencers on tunnel ventilation fans for the tunneling operations. Orient exhaust/intakes away from sensitive receivers.
- Evaluate acoustic enclosures for generators, specifically to power the TBM, when locations of generator plants are known.
- Use of localized noise barriers for specific equipment and operations such as the TBM spoils loading and piling/headstation.
- Enclose the grout plant.
- Minimize simultaneous operation of equipment where possible.
- Implement a no idling policy on site (unless necessary for equipment operation).
- Consider site layout for the TBM operations, position loud noise sources away from sensitive receivers.

Operations

Reduction objectives can be met by using mitigation measures such as:

- **Noise** – the suggested mitigation measures are preliminary and are to be investigated during the next phases of design to bring noise levels below applicable criteria. The project facilities are required to meet MECP guideline NPC-300. The following preliminary measures may be implemented for the assumed worst-case scenarios (including assumed building locations and bus paths) to be revised and refined during the next phases of design. Exact heights and lengths of noise barriers will be determined in the next phase of design. Cantilevered barrier or canopy designs may be developed to optimize the height of noise barriers where applicable.
  - Kennedy Station
    - Line vent shaft and plenum with outdoor rated acoustic material.
  - TPSS
    - Noise barrier on the north, east and south side of the transformer with acoustically absorptive surfaces facing the transformer. Barrier as close to transformer as feasible.
    - Consider the use of low noise options for the cooling units as applicable.
  - EEB3
    - Line vent shaft and plenum with outdoor rated acoustic material.
  - Lawrence Station
    - Line vent shaft and plenum with outdoor rated acoustic material.
    - Noise barrier along the south station property line.

- Bus loop
  - No idling on site
- Scarborough Centre Station
  - Install a cantilevered canopy noise barrier structure along the south and east GO Transit/DRT bus terminal, over the buses.
- Sheppard East Station
  - Line vent shaft and plenum with outdoor rated acoustic material.
  - Route bus routes entrance and exit to McCowan Road.
  - Install noise barrier along busway on site (south and east of busway area).
  - Install noise barrier on south side of transformer.
- Other items not considered in this assessment that could affect the mitigation design include:
  - Orienting fire ventilation openings away from sensitive receivers.
  - Use of acoustic louvres.
  - Use of secondary silencers in the tunnel ventilation systems.
  - Use of quieter tunnel ventilation fans.
  - Refinement of modeling with more detailed bus distribution by hour of the day.
  - Acoustically enclose the transformer.
  - Site plan layout.
- Acoustical lining material in tunnel ventilation to be similar to a two-inch-thick industrial acoustical absorption panel NRC 0.6 or better.

Note that the above recommendations are subject to further design iterations and determination of building locations, site layouts, and equipment selections.

5.4.2 Vibration

5.4.2.1 Potential Effects

Construction

Due to the subsurface vibration generated from the TBM, it was assessed separately from the General Construction Equipment.

Note that the closest heritage building to construction is located at 146 St. Andrews Road, outside of the proposed project area. Construction vibration levels are expected

to be below perception at this location, and therefore damage due to construction vibration is not expected.

The plotted ZOIs are presented in **Appendix E** of **Appendix B3**. A summary of the findings is provided below:

- **Kennedy Station**
  - Modifications to Kennedy Station (new TPSS and Fan Shaft) are expected to only affect Kennedy Station.
- **South TBM Launch Shaft**
  - Most properties are expected to be outside of the City of Toronto Bylaw 514 ZOI, except for 2495 Eglinton Avenue East. This location is predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
  - Most residential areas immediately surrounding the site are predicted to experience perceptible construction vibration.
- **EEB 1**
  - The used car dealership at the intersection of Winter Avenue and Eglinton Avenue East is predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
  - The fire station, homes south on Winter Avenue, and the commercial buildings north of the site are predicted to experience perceptible construction vibration.
- **EEB 2**
  - 2742 Eglinton Avenue East (commercial) is predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
  - 23, 25, and 27 Shaddock Crescent, 1250 and 1252 Danforth Road, the townhouses opposite the construction site, and the commercial building at 2743 Eglinton Avenue East are predicted to experience perceptible construction vibration.
- **TPSS**
  - 2758 Eglinton Avenue East could potentially have vibration levels in excess of the prohibited vibration levels in Bylaw 514 as the townhouses are at the edge of the ZOI for prohibited vibration levels. This should be confirmed once the construction areas have been refined in the next stage of design.
  - 2758 Eglinton Avenue East, and 1275 Danforth Road are predicted to experience perceptible vibration.

- **EEB 3**

  - Vibration levels in Bylaw 514 are not expected to be exceeded at this location.
  - 155, 153, 152, 150 Thicketwood Crescent, 1350, and 1375 Danforth Road (commercial) are predicted to experience perceptible construction vibration.

- **EEB 4**

  - 1505 Danforth Avenue is predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
  - Additionally, 1515 Danforth Road (library) and 582 McCowan Road are predicted to have vibration levels in excess of the ZOI (monitoring) threshold in Bylaw 514.
  - 1, Barrymore Road, 2 Hollyhedge Drive, 1510, 1512, 1514, 1515, 1503 Danforth Road, 582 and 580 McCowan Road are predicted to experience perceptible construction vibration.

- **Lawrence Avenue East**

  - 3060 Lawrence Avenue East (Scarborough General Hospital), 685-697, 640, 638 McCowan Road and 21 Valparaiso Avenue are predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
  - Additionally, 3031 Lawrence Avenue East is predicted to have vibration levels in excess of the ZOI (monitoring) threshold in Bylaw 514.
  - 640, 638, 636, 685-697 McCowan Road, 21, 19, 17, 22, 20, 18 Valparaiso Avenue, 3031, and 3060 Lawrence Avenue East are predicted to experience perceptible construction vibration.

- **Bus Loop**

  - No buildings expected to be within the Bylaw 514 ZOI.
  - 1 Kencliff Crescent is predicted to experience perceptible construction vibration.

- **EEB 5**

  - 964, and 956 McCowan Road are predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
  - 18, 20, 22, 24, 26, 28, 30, 32, 34 Brantwood Drive, 954, 956, 964, 966, McCowan Road, 109, 111, 113 Meldazy Drive, 37, 39, 41, 43 and 45 Kencliff Crescent are predicted to experience perceptible construction vibration.

- **EEB 6**

  - 30 Hurley Crescent is predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.

- 1080, 1082 McCowan Road, 26, 28, 30 Hurley Crescent, 72, 74, 76, 78, 80, and 82 Lynnbrook Drive are predicted to experience perceptible construction vibration.

- **Scarborough Centre**

- 1255 McCowan Road (commercial) is predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
- 88, 111 (commercial) Grangeway Avenue, 1255 McCowan Road (commercial), and 100 Consilium Place (commercial office) are predicted to experience perceptible construction vibration.

- **EEB 7**

- No buildings are expected to exceed the limits in the City of Toronto Bylaw 514.
- No buildings are expected to experience felt vibration.

- **Sheppard Avenue East**

- Parts of 1705 McCowan Road and 4651 Sheppard Avenue East are predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
- 1705 McCowan Road and 4651 Sheppard Avenue East are predicted to experience perceptible construction vibration.

- **EEB 8**

- 55 Nugget Avenue is predicted to have vibration levels in excess of the prohibited vibration levels in Bylaw 514.
- 40 Nugget Avenue (commercial) is predicted to experience perceptible construction vibration.

Perceptible vibration can occur due to construction equipment operating at the edge of the construction sites. The perceptible vibration criterion is intended as a guide to identify the potential extent of public annoyance for information and awareness; but is not necessarily intended as a limit to be applied during construction, whereas the building damage criteria limit will be included as contract requirements.

Tunnel Boring Machine

Note that the closest heritage building to tunneling is located at 146 St. Andrews Road. Construction vibration levels are barely at perception due to the significant depth of the tunnel alignment at this location, and therefore damage due to TBM operation is not anticipated.

The plotted ZOI and annoyance boundaries are presented in **Appendix F** of **Appendix B3**. Two residential buildings were identified within the City of Toronto's Bylaw 514 ZOI due to TBM operation: 1 Huronia Gate and 1066 McCowan Road. These locations are on the edge of the ZOI, and thus vibration may be perceptible but building damage is not expected.

Operations

Screening distances were calculated for use in determining locations where specific vibration calculations would be required. Screening distances were calculated using the criteria for residential receivers. Locations with different criteria were assessed individually. Calculated screening distances are summarized in **Table 5-11**. The ground borne noise screening distances were calculated using the most conservative adjustment factors for building structure (based upon a wood frame house), interior surface amplification (first floor resonance) and worst-case ground borne noise conversion (high frequency characteristics).

Table 5-11: Screening Distances

Condition	Setback Distance for Criteria Compliance Ground Borne Vibration	Setback Distance for Criteria Compliance Ground Borne Noise (High Frequency Conversion)
80 km/hr straight track	53 m	113 m
57 km/hr (within 100 m of station)	40 m	109 m
Crossover - straight move Kennedy (57 km/hr)	95 m	119 m
Crossover - Straight move SCS (80 km/hr)	104 m	121 m
Crossover - Straight move Sheppard (33 km/hr)	65 m	115 m

A review of the alignment drawings shows that most of the residential locations adjacent to the corridor are within these screening distances and that assessment of individual locations is required. Assessment of specific locations was conducted at representative worst-case locations, and recommended vibration reductions were calculated. Locations of specific assessment locations are presented in **Appendix G** of **Appendix B3**.

Building coupling to the ground (e.g., wood frame houses, vs. masonry construction) and subway structure (e.g., open cut vs. bored tunnel) were accounted for in the predictions. The FTA Guide's General Vibration Assessment Method indicates that where there is track with vibration isolation, the conversion to ground borne noise is

typically the low frequency conversion, where otherwise it would typically be a mid-frequency conversion, indicating that there is a shift in in ground borne noise frequency when vibration mitigation is used. As such, for the analysis of mitigation, a shift in frequency was also assumed; the mid-frequency conversion was used to predict ground borne noise instead of the high-frequency conversion that would otherwise be used for efficient vibration propagation.

Predicted ground borne noise levels, and the reduction requirements (vibration insertion loss) to meet the applicable criteria are presented in **Table 5-12** below. Note that CTV studios were assessed with the limit for TV studios while the church near the CTV studios was assessed as a daytime institution. Also note that the hospital has equipment with higher sensitivity to vibration and was assessed based upon the existing vibration levels measured during the baseline measurements (felt vibration only).

Reduction requirements were grouped into general reduction groupings based upon the FTA Guide groupings and consolidated into mapping provided in **Appendix G** of **Appendix B3**. Note that the groupings and recommendations are preliminary, and the analysis is subject to updates during the next phase of design, including detailed vibration assessment as per the FTA Guide with vibration transfer mobility testing. Transition areas have been indicated where mitigation may be required to change frequency characteristics of the resultant vibration and reduce the A-weighted ground borne noise level; transition areas are also required where there is a possibility of deflection discontinuity between different track support/mitigation systems; this will need to be refined in the next phase of design.

5.4.2.2 Mitigation and Monitoring

<u>Construction</u>

Preliminary recommendations to be further refined in the next phase(s) of design. Mitigation measures to meet applicable criteria include:

- Update ZOI mapping and predictions based upon finalized site staging, construction operational areas, and building locations; location and number of buildings within the City of Toronto ZOI may change.

Table 5-12: Vibration Assessment – Specific Locations

ID/Special Note	Address/Description	Predicted Ground Borne Vibration (VdB)	Predicted Ground Borne Noise – Mid Frequency Conversion (dBA)	Reduction Requirement (dB)[17]
V01	2472 Eglinton Avenue East (appt)	65.6	21.6	0
V01 – Crossover	2472 Eglinton Avenue East (appt)	75.6	31.6	3.6
V02	110 Townhaven Place	75.6	39.6	4.6
V02 – Crossover	110 Townhaven Place	85.6	49.6	14.6
V03	2495 Eglinton Avenue East 2nd storey (has commercial 1st floor)	81	38	9
V04	815 Eglinton Avenue East 1st storey	72	31	0
V05	121 Commonwealth Avenue	69.3	33.3	0
V06	2575 Eglinton Avenue	74.3	36.3	2.3
V07	84 Falmouth Avenue	68.9	32.9	0
V08	2624 Eglinton Avenue East (2nd floor)	72.4	34.4	0.4
V09	2703 Eglinton Avenue East (2nd Floor)	75.6	37.6	3.6
V10	1250-1252 Danforth Avenue	81.2	45.2	10.2
V11	10 Trudelle Street	79.4	38.4	7.4
V12	1299 Danforth Avenue	78.5	37.5	6.5
V13	1 Savarin Street	77.6	41.6	6.6
V14	60 Carslake Crescent	78.2	42.2	7.2
V15	604 McCowan Road	77.3	41.3	6.3
V16	636 McCowan Road	73.6	37.6	2.6
V17 – 1st floor (angiography)	3060 Lawrence Avenue East Scarborough General Hospital	62.4	Not applicable	0
V17 – Basement slab (MRI)	3060 Lawrence Avenue East Scarborough General Hospital	58.4	Not applicable	4.4

17. Note that TTC has measured performance of floating slab track with up to 30 dB reduction. See US Depart of Transportation Document UMTA-MA-06-0049-83-4

ID/Special Note	Address/Description	Predicted Ground Borne Vibration (VdB)	Predicted Ground Borne Noise – Mid Frequency Conversion (dBA)	Reduction Requirement (dB)[17]
V17 – Patient Rooms	3060 Lawrence Avenue East Scarborough General Hospital	68.4	32.4	0
V18	871 McCowan Road	72.8	36.8	1.8
V19	920 McCowan Road	77	41	6
V20	151 Brimorton Drive	80.2	44.2	9.2
V21	1 Huronia Court	80.5	44.5	9.5
V22	22 Stoneton Drive	80.5	44.5	9.5
V23	61 Town Centre Court	75.4	34.4	3.4
V24	73 Town Centre Court	75.4	34.4	3.4
V25	9 Channel Nine Court - CTV Studios	63.8	25.8	0.8
V26	25 Channel Nine Court - Church	72.8	34.8	0.8
V27	47 Keyworth Trail	75.7	39.7	4.7
V28 – Crossover	1 Invergordon Avenue	74.5	38.5	3.5
V28	1 Invergordon Avenue	75.2	39.2	4.2
V29	360 Pitfield Road	73.6	32.6	1.6
V30	1705 McCowan Road	81.5	40.5	9.5
V31	54 HallBank Terrance	66.1	30.1	0
V32	4675 Sheppard Avenue	66.1	25.1	0

- Conduct monitoring and preconstruction inspections in accordance with City of Toronto Bylaw 514. Monitoring and preconstruction requirements can be determined by setback of construction equipment to sensitive receivers. ZOI for monitoring as per the City of Toronto Bylaw 514 is shown in **Table 5-13**.

Table 5-13: Vibration Zone of Influence Setbacks

Equipment	ZOI – Monitoring and Inspections (5.0 mm/s) [m]	ZOI – Prohibited (8.0 mm/s lower frequency band) [m]
Vibratory Roller	7.9	5.8
Hoe Ram	4.5	3.3
Large dozer	4.5	3.3
Trucks	4.0	3.0
Jackhammers	2.4	1.8
Excavator	0.5	0.3
Backhoe	0.5	0.3
Bulldozer	4.5	3.3
Grader	0.5	0.3
Semi-Trucks	4.0	3.0
Concrete Pump Truck	4.0	3.0
Cement Trucks	4.0	3.0
Dump Trucks	4.0	3.0
Auger Pile Rig (Drill Rig)	4.5	3.3

- Provide smooth surfaces for trucks to travel.
- Operate construction equipment on lower vibration settings where available.
- Coordinate with Scarborough General Hospital to minimize impact on vibration sensitive equipment and activities – could potentially include monitoring at specific equipment locations.
- Maximize distance between equipment and sensitive receivers while receivers are occupied.
- Do not operate equipment at setback distances less than the prohibited ZOI (based on the prohibited vibration levels in Bylaw 514) as indicated in **Table 5-13**. Use alternative means of construction within these distances that result in vibration levels below the City of Toronto's prohibited vibration limits. Note that ZOI was calculated based upon generic equipment. Equipment with lower vibration emissions, or power settings, can be used provided that they do not exceed the City of Toronto's prohibited vibration limits.

- TBM
  - Update ZOI mapping and predictions based upon updated design.
  - Conduct vibration monitoring at 1 Huronia Gate and 1066 McCowan Road.
  - Make provisions for mitigation and investigation of disturbance due to TBM train. Items that can be considered include train speed and rail support (resilient mounting).

Note that during the next phase of design, areas of operations, property definition, and final building locations can decrease the expected construction noise and vibration impacts from the project. This may enable the use of different construction equipment and change the mitigation requirements. Re-evaluation of mitigation requirements should be completed.

Operations

Mitigation will be provided to meet objectives. Reduction objectives are achievable with mitigations measures such as:

- Vibration
  - Conduct detailed vibration assessment as per the FTA Guide including vibration transfer mobility testing and updated design.
  - Update analysis for updated design inputs.
  - Provision for mitigation as indicated in **Appendix G** of **Appendix B3.**
  - Note that with new technologies, there is more overlap in the range of achievable isolation performance between different mitigation options than indicated for the generic options listed in the FTA Guide. Specific measures used to meet the guideline limits are to be determined in the next phase of design. Available technologies that provide various levels of isolation performance and may be explored in the next stage of design, include floating slabs, resiliently supported ties, and highly resilient fasteners.

Note that the above recommendations are subject to further design iterations and determination of building locations, site layouts, and equipment selections.

5.4.3 Noise and Vibration Recommendations Summary

In addition to the noise and vibration recommendations above, Metrolinx has developed mitigation and monitoring requirements to be specified; including construction noise and vibration control plans, which will be provided to MECP for their files. A summary of recommendations is provided in **Table 5-14**. All recommendations are subject to further review and to design development changes in the next phase of design.

Table 5-14: Summary of Potential Noise and Vibration Effects, Mitigation Measures and Monitoring

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
Construction Noise	■ Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health. ■ The severity of the noise effects resulting from construction projects varies, depending on: – Scale, location and complexity of the project; – Construction methods, processes and equipment deployed; – Total duration of construction near sensitive noise receptors; – Construction activity periods (days, hours, time period); and – Number and proximity of noise-sensitive sites to construction area(s).	■ The following measures may be considered to decrease the potential for noise complaints and can be reviewed in the next phases of design: – Operate construction equipment during daytime hours and avoid night time operations where feasible, in an effort to minimize the potential for complaints. – If construction will occur outside of normal daytime hours, inform local residents before construction of type of construction and expected duration outside of daytime hours. – Use of upgraded construction hoarding (considering requirements from CSA Z107.9 for noise barriers) between construction equipment and noise sensitive receivers. – Install silencers on tunnel ventilation fans for the tunneling operations. Orient exhaust/intakes away from sensitive receivers. – Evaluate acoustic enclosures for generators, specifically to power the TBM, when locations of generator plants are known. – Use of localized noise barriers for specific equipment and operations such as the TBM spoils loading and piling/ headstation. – Enclose the grout plant. – Minimize simultaneous operation of equipment where possible. – Implement a no idling policy on site (unless necessary for equipment operation). – Consider site layout for the TBM operations, position loud noise sources away from sensitive receivers. ■ Prior to commencement of construction, the Constructor will develop and submit a detailed Construction Noise Management Plan to the Contracting Authority. ■ Develop communications and complaints protocol in accordance with the Project Agreement. ■ The Construction Noise Management Plan will: – Be provided to MECP for their files. – Document all measures to be taken for meeting the noise limits adopted for the project at every directly exposed sensitive receptor and throughout the construction phase. – Mitigation measures will be proposed for these sensitive receptors, and the effects of the proposed mitigation measures will then be evaluated using noise modelling. If results of the modelling indicate that any sensitive receptors still exceed noise limits for construction related noise, then the following will apply: • Additional mitigation is proposed and subsequently modelled until the there are no noise exceedances; or • If mitigation strategies are deemed by the Contracting Authority to be not viable, receptor-based mitigation can be proposed.	■ The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and in response to and noise related complaints: – The Constructor will monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. The Constructor will submit reports to the Contracting Authority describing the monitoring conducted and summarizing the data collected for the reporting period. – The Constructor will make provision for monitoring for investigation of persistent complaints.
Construction Vibration	■ Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures.	■ The following measures may be considered and can be reviewed in the next phases of design – Update ZOI mapping and predictions based upon actual site staging, construction operational areas, and building locations; location and number of buildings within the City of Toronto ZOI may change. – Conduct monitoring and preconstruction inspections in accordance with City of Toronto Bylaw 514. Monitoring and preconstruction requirements can be determined by setback of construction equipment to sensitive receivers. – Provide smooth surfaces for trucks to travel. – Operate construction equipment on lower vibration settings where available. – Coordinate with Scarborough General Hospital to minimize impact on vibration sensitive equipment and activities – could potentially include monitoring at specific equipment locations. – Maximize distance between equipment and sensitive receivers while receivers are occupied. – Do not operate equipment where the City of Toronto Bylaw 514 prohibited limits are exceeded. Alternative construction methods, equipment with lower vibration emissions, or power settings, can be used provided that they do not exceed the City of Toronto's prohibited vibration limits. – Conduct vibration monitoring at 1 Huronia Gate and 1066 McCowan Road during TBM operations	■ The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and in response to vibration related complaints: – The Constructor is to monitor vibration continuously at structures where the Construction Vibration Management Plan indicates that structures are deemed to be within the ZOI for construction related vibration. – The Constructor will monitor locations in accordance with City of Toronto Bylaw 514. – The type of Vibration Monitoring Program that is established is based on the ZOI, the project location, duration, presence of night time activity, and receptor proximity. – The constructor is to provision for monitoring at locations where there are persistent complaints.

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
		– Make provisions for mitigation and investigation of disturbance due to TBM train. Items that can be considered include train speed and rail support (resilient mounting). ■ Adhere to vibration limits as defined in City of Toronto's Bylaw 514, limits in City of Toronto's Bylaw 514 can be supplemented by criteria in the US FTA Report No. 0123, Transit Noise and Vibration Impact Assessment Manual (2018) for locations more sensitive operations/structures. ■ Develop communications and complaints protocol in accordance with the Project Agreement. ■ The Construction Vibration Management Plan shall: – Provide Construction Vibration Management Plan to the MECP for their files. – Complete a detailed construction related vibration assessment prior to the commencement of construction that includes assessment of the vibration ZOI. The ZOI for vibration will be established by using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), Transit Noise and Vibration Impact Assessment Manual (2018), and the City of Toronto's Bylaw 514. – Complete pre-construction condition surveys for properties within the vibration ZOI of the planned work to establish their condition and establish a baseline prior to any work beginning, in accordance with City of Toronto's Bylaw 514. – Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements, review/revise vibration limits for these locations and, if necessary, develop mitigation measures. – Identify buildings, where vibration sensitive activities such a sound recording or medical image processing take place, assess requirements, review/revise vibration limits for these locations and, if necessary, develop mitigation measures. – Define a procedure to be implemented during construction for addressing persistent complaints. Procedure to include field investigation, identify provisional alternative vibration control measures that can be implemented to address complaints, and verification of performance of mitigation measures.	
Operational Noise	■ Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health. ■ MECP has defined noise level limits for the operation of the stationary facilities above ground. Noise level limits are defined as hourly average equivalent noise (referred to as "Leq") for each of daytime, evening, and night time.	■ The project facilities are required to meet MECP guideline NPC-300. The following preliminary measures may be implemented for the assumed worst-case scenarios (including assumed building locations and bus paths) to be revised and refined during the next phases of design. – Kennedy Station • Line vent shaft and plenum with outdoor rated acoustic material. – TPSS • Noise barrier on the north, east, and south side of the transformer with acoustically absorptive surfaces facing the transformer. Barrier as close to transformer as feasible. A cantilevered barrier or canopy design may be developed to optimize the height of this barrier, in conjunction with selection of low noise options for cooling units, where available. – EEB3 • Line vent shaft and plenum with outdoor rated acoustic material. – Lawrence Station • Line vent shaft and plenum with outdoor rated acoustic material. • Noise barrier along the south station property line. – Bus Loop • No idling on site – Scarborough Centre Station • Install a cantilevered canopy noise barrier structure along the south and east GO Transit/DRT bus terminal, over the buses. – Sheppard East Station • Line vent shaft and plenum with outdoor rated acoustic material. • Route bus routes entrance and exit to McCowan Road. • Install noise barrier along busway on site (south and east of busway area). • Install noise barrier on south side of transformer. – Acoustical lining material to be similar to a two-inch-thick industrial acoustical absorption panel NRC 0.6 or better. ■ Other items to be considered that could affect the mitigation design include: – Orienting fire ventilation openings away from sensitive receivers.	■ Conduct air-borne noise monitoring in accordance with the Project Agreement, to check compliance and to inform decisions. ■ Regularly assess the condition of the equipment; equipment to operate within original noise specification. ■ Continue to ensure that facilities operate in compliance with MECP noise guidelines.

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring
		– Use of more acoustic louvres. – Use of secondary silencers in the tunnel ventilation systems. – Use of quieter tunnel ventilation fans. – Refinement of modeling with more detailed bus distribution by hour of the day. – Use of acoustic enclosure for the transformer. ■ Apply and obtain ECAs and EASRs for the stationary noise facilities for this project as applicable. ■ To support the application for ECAs and completion of EASRs for this project, background levels used for the adjustment of noise limits should be verified by calculations as per MECP noise prediction standards.	
Operational Vibration and Ground Borne Noise	■ Vibration can cause annoyance, interfere with human activity and affect human health. Operational vibration is unlikely to cause building damage. ■ A change in vibration levels may occur where there are changes in track alignment, addition of new track, and changes to or addition of special track work. ■ Vibration levels may also change with changes in rail vehicle specifications and operating conditions.	■ The Project will be designed to be below 72 VdB at sensitive receptors, to not interfere with vibration sensitive equipment along the route and to meet ground borne noise criteria documented in US FTA Report No. 0123 (2018), *Transit Noise and Vibration Impact Assessment Manual* (2018). The following preliminary mitigation measures are to be revised and refined during the next phases of design. – Conduct detailed vibration assessment as per the FTA Guide including vibration transfer mobility testing and updated design. – Update analysis for updated design inputs. – Provision for preliminary vibration mitigation as documented in Appendix G of **Appendix B3**. ■ Note that with new technologies, there is more overlap between different mitigation options than what is indicated in the FTA Guide. Specific measures to meet the applicable criteria are to be determined in the next phase of design. ■ Special Track Support Systems: floating slabs, resiliently supported ties, high-resilience fasteners, and other track vibration mitigation can be considered where appropriate.	■ Conduct ground-borne and air-borne vibration monitoring in accordance with the Project Agreement, to check compliance and to inform decisions. ■ Assess vibration performance regularly to check compliance and to inform decisions to ensure no degradation of vibration mitigation performance.

5.5 Cultural Environment

5.5.1 Archaeological Resources

The Stage 2 Archeological Assessment conducted by AECOM in 2018 determined that those areas identified as retaining archaeological potential in the Stage 1 Archaeological Assessment had been significantly disturbed by previous construction and no archaeological resources were identified. The Stage 2 Archaeological Assessment concluded that the areas subject to field survey are cleared of archaeological concerns. The Study Area in this EPR Addendum includes new areas within the construction footprint that have archaeological potential and require a Stage 2 Archaeological Assessment.

For the areas identified as part of this EPR Addendum, Metrolinx shall:

- Complete all required AA (Stage 2 and Stage 3 if recommended by the Stage 2 Archaeological Assessment) as early as possible, prior to the completion of detailed design, and well in advance of any ground disturbance;
- Undertake future work in a manner that protects archaeological sites by conserving them in their original location or through archaeological fieldwork, and endeavour to conserve significant archaeological resources in their original location through documentation, protection, and avoidance of impacts. Where activities could disturb significant archaeological resources or areas of archaeological potential, Metrolinx will take appropriate measures to mitigate impacts; and
- Include provisions in contract as recommended by archaeological assessment(s) (e.g. in case archaeological resources are discovered, protection of sites). All future Stage 2 Archaeological Assessment findings will be shared with all Indigenous communities that were engaged during the Stage 1 Archaeological Assessment process.

5.5.2 Built Heritage Resources and Cultural Heritage Landscapes

The background research, data collection and field review conducted for the Cultural Heritage Report determined that there are no known or potential CHRs within the Cultural Heritage Study Area. However, one designated Part IV property, at 146 St. Andrews, was referred to in the Noise and Vibration Assessment Report. The CHR was however, included in the Cultural Heritage Report for consistency with the Noise and Vibration Assessment Report. A preliminary impact assessment determined that the

project would not result in direct or indirect adverse impacts to the CHR. The Noise and Vibration Assessment Report also determined the property would not be impacted by vibration given its distance from the proposed design changes. Therefore, based on the result of the data collection, field investigation, and screening questions, no further cultural heritage investigations are recommended, as no adverse impacts to potential cultural heritage value are anticipated. **Table 5-15** provides the potential effects and mitigation measures for the identified CHR at 146 St. Andrews Road.

Table 5-15: Preliminary Impact Assessment and Mitigation Measures for Cultural Heritage Resources Adjacent to the Cultural Heritage Study Area

CHR Reference Number	Location	Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation Measures
CHR1	146 St. Andrews Road	Designated Part IV under the OHA	1. Potential direct adverse impact: CHR1 is not anticipated to be directly impacted by the undertaking. The proposed work shall be confined to the proposed bus loop footprint which includes a 30 m buffer, more than 50 m from the CHR. There is no plan to displace, disrupt or alter this designated heritage property. Therefore, a Heritage Impact Assessment report is not recommended.	**Preferred Option:** **a)** Continued avoidance of direct property impacts.
CHR1	146 St. Andrews Road	Designated Part IV under the OHA	2. Potential indirect adverse impact: CHR1 is not anticipated to be indirectly impacted by the undertaking. The proposed work shall be confined to the existing Proposed B bus loop footprint, which includes a 30 m buffer, more than 50 m from the CHR. It is not anticipated that the CHR will be indirectly impacted by vibration or noise, given its distance from the construction footprint.[18]	**Preferred Option:** **a)** Continued avoidance of indirect property impacts

18. The Noise and Vibration Assessment Report (**Appendix B3**), noted that the distance of 146 St. Andrews Street to the construction is outside the area where vibration levels are expected and therefore, it is anticipated there will be no damage from vibration on the heritage building.

5.6 Transportation

Transportation impacts are divided into the following categories:

- **Displacement of Existing Features** – Permanent impacts to existing features located within the footprint of the project that are physically altered to accommodate project facilities;
- **Construction Impacts** – Temporary impacts, occurring only during construction activities; and
- **Operation Impacts** – Ongoing and long-term impacts associated with operations activities.

Each of the above impact categories were further divided to assess specific effects on the following transportation modes:

- Automobile Traffic and Transit Services;
- Pedestrian and Cyclist; and
- Rail.

The following discussion will centre around general impacts that are common to all aspects of the addendum scope. Where necessary, location-specific impacts will be discussed in more detail.

5.6.1 Displacement of Existing Features

5.6.1.1 Automobile Traffic and Transit Services

The displacement of existing features is anticipated to be minimal for automobile traffic, as most of the impacts are transient and related to construction activities and the ultimate operation of the SSE facilities. There may be some impacts relating to the displacement and removal of existing parking facilities on lands adjacent to the planned station locations. Local transit routes utilizing Triton Road to access the existing bus terminal will likely be rerouted to access the new bus terminal location.

5.6.1.2 Pedestrians and Cyclists

There are no anticipated impacts to pedestrians and cyclists due to the permanent displacement of existing features as a result of project facilities and activities.

There will be temporary impacts to pedestrians and cyclists due to the Gatineau Hydro Corridor Trail realignment. See **Section 5.6.2.2** for details related to trail realignment

impacts. These impacts will be revisited during the completion of a separate Traffic Impact Study (TIS) to be conducted at later stages of the Project. Refer to **Section 5.6.4** for details regarding the future TIS.

5.6.1.3 Rail

There are no anticipated impacts to rail due to the permanent displacement of existing features as a result of project facilities and activities for the proposed three stations.

5.6.2 Construction Impacts

5.6.2.1 Automobile Traffic and Transit Services

Impacts to the road network as a result of the tunnel mobilization sites at the three stations and the launch shaft activities (at the start and end of the SSE alignment) will include temporary lane restrictions and diversions to prepare for long term construction operations. There will be traffic impacts, the extent of which will depend on property availability and the level of encroachment into the ROW at each construction site.

The estimated construction traffic at the launch shaft locations and station construction sites is to be considered to assess traffic operations during construction. Heavy construction vehicle traffic is expected to be significant, considering the extent of earth removal and material deliveries to each of the sites. Depending on the haul routes available, the addition of these heavy vehicles can impact traffic operations, especially at intersections where construction traffic is required to make left-turning movements. Construction vehicle traffic may also be required to queue on roads adjacent to the construction sites, which may require a traffic lane to be occupied. During the Detailed Design phase of the project, this heavy vehicle traffic should be considered in any intersection capacity or modelling analyses.

Any existing local transit stops located within project footprints will be temporarily relocated and their spacing may result in increased walk times for pedestrians accessing local transit. The temporary relocation of local transit stops will be coordinated with the TTC.

The impacts due to the construction activities specific to each construction site are discussed below:

- **Launch Shaft at Eglinton Avenue East**

  - Partial closure of the intersection of Eglinton Avenue East and Midland Avenue due to cut-and-cover construction activities; and

- In the event of partial closure, major impacts to traffic operations at the Eglinton Avenue East and Midland Avenue intersection due to limited lane capacity, turning movement bans and restrictions.

- **Station at Lawrence**

- Temporary lane closures and reductions in capacity along Lawrence Avenue East and McCowan Road during the construction of the station box. This could result in increased delay, queuing and overall congestion on the surrounding road network;
- Constraints or closures of the existing PPUDO facility located to the east side of SHN General Hospital, potentially resulting in additional delays for visitors and impacts to vehicular traffic; and
- Partial closures due to construction activities may result in changes to travel patterns that are likely to divert east-west traffic on Lawrence Avenue East to Ellesmere Road and Eglinton Avenue East. Similarly, north-south traffic is likely to divert to Brimley Road.

- **Station at Scarborough Centre**

- The required removal of the Progress Avenue bridge over McCowan Road may be staged to allow for partial closure or may be completely closed to traffic between Grangeway Avenue and the McCowan Road southbound off-ramp. A full closure would result in significant traffic diversion to Corporate Drive and Bushby Drive;
- Partial closure of McCowan Road lanes to facilitate station box construction would reduce traffic capacity and would result in increased delays and queuing;
- Increased delays on McCowan Road and Corporate Drive could result in potential impacts to traffic operations at the Highway 401 ramp terminal intersections and Highway 401 mainline lanes; and
- Major impacts on traffic operations at the McCowan Road and Triton Road intersection due to construction activities would likely affect existing bus terminal operations on Triton Road, with longer travel times for local bus routes.

- **Station at Sheppard**

- Station box construction activities are likely to lead to partial closures and lane capacity restrictions along Sheppard Avenue East, leading to increased delay and queuing at the intersection of Sheppard Avenue East and McCowan Road.

- **Emergency Exit Buildings**
  - EEBs are constructed along the alignment. Depending on the location, this may result in temporary lane closures. It is likely that traffic decking can be used to maintain bidirectional traffic flow to minimize interruption.

Mitigation Measures

Traffic operational deficiencies resulting from construction activities can be mitigated by appropriate implementation of traffic staging plans, including design of temporary intersection lane configurations, temporary traffic signals, and modifications to existing signal timings. These should be informed by extensive intersection capacity analyses and traffic modelling in later design phases.

Where partial closures of intersections or roadway segments are required, detour routes can be selected to most adequately service the detoured traffic volumes. Along these detour routes, appropriate signage and driver notifications should be utilized to provide advance warning and direct motorists away from the construction area. Broader communication plans, including notifications in the media and online can help notify motorists and transit users of closures and service changes.

Minor construction activities can be scheduled during off-peak, weekend or overnight hours to minimize disruptions to traffic during the critical peak hours.

Monitoring

All transportation infrastructure should be monitored during construction. At signalized intersections, signal timings proposed by prior traffic analysis should be updated as required based on actual field conditions. Observations relating to transit travel times and pedestrian travel paths should be noted in order to improve transit service and pedestrian access during construction.

5.6.2.2 Pedestrian and Cyclists

Construction impacts to pedestrians and cyclists will primarily be focused on the station sites and at the locations of EEBs. In general, any sidewalks located within project footprints are likely to be impacted by construction activities. However, construction staging plans can be designed to provide redundant routes for pedestrians. This means that pedestrian access is likely to still be available, but overall walking distances and travel times may be increased.

There are no on-road cycling facilities present within any of the project footprints. However, there is a multi-use trail located in the Gatineau Hydro Corridor. At this time,

there may be potential impacts to the multi-use trail in the Gatineau Hydro Corridor from the proposed project construction activities.

Generally, increases in traffic volumes and congestion resulting from partial closures of roadways can impact the safety of pedestrian crossing locations, as pedestrian exposure to traffic increases. The safety of pedestrian crossings at locations where construction vehicle traffic is present may also be impacted.

Passenger transfers between transit services at bus stops adjacent to planned construction sites may be impacted resulting in longer transfer times.

Station at Scarborough Centre

The construction of the station at Scarborough Centre presents some specific impacts to pedestrians and cyclists because of the removal and/or closure of the Progress Avenue overpass. The bridge currently includes a covered pedestrian walkway on the south side of the travelled roadway and has stair connections to either side of McCowan Road. Removal of these connections may result in significant increases in walking distances for pedestrians wishing to access Scarborough Town Centre, considering the next closest pedestrian crossings of McCowan Road (at Town Centre Court to the south and Corporate Drive to the north) are approximately 200 m and 300 m away, respectively.

Mitigation Measures

Mitigation efforts can include maintaining as many pedestrian connections and crossing opportunities at construction sites as possible. This can be accomplished by adding temporary signalized crossings or pedestrian cross-overs, construction of temporary sidewalks or raised decked walkways through construction areas. Appropriate signage should be implemented to provide advanced warning to pedestrians of downstream crossing closures or limited availability of sidewalks.

Pedestrian crossing safety impacts can be mitigated by ensuring appropriate control treatments are implemented, including the use of signals, flashing beacons and signage. Any modifications to pedestrian crossing geometry at signalized intersections should be reflected in revised pedestrian clearance signal timings. This should also account for any Accessibility for Ontarians with Disabilities Act (AODA) requirements. At locations where construction vehicles are present, flagging can be implemented to ensure construction vehicle operators are fully aware of crossing pedestrians.

Temporary local transit stops should be maintained with required commuter waiting areas and shelters in proportion with the demand of transfers.

The design team will work to minimize temporary impacts to the Gatineau Hydro Corridor multi-use trail and mitigate as necessary (e.g., provide temporary trail realignments), in consultation with the Toronto and Region Conservation Authority and City of Toronto staff.

At the station at Scarborough Centre, construction staging should emphasize the continuity of pedestrian crossing opportunities across McCowan Road. If those cannot be maintained on the existing Progress Avenue bridge, consideration can be made to provide a signalized pedestrian crossing at the existing Triton Road intersection.

5.6.2.3 Rail

Launch Shaft at Eglinton Avenue East

East of Kennedy Station, the existing tail tracks already extend under the GO Transit Stouffville rail corridor and under the northside of the Don Montgomery Community Recreation Centre's parking lot. Realignment of these tail tracks was assessed in the 2017 EPR and is not part of the scope of this Addendum.

Station at Scarborough Centre

The construction of the bus terminal at Scarborough Centre may impact operations of McCowan Station on the existing Line 3, if Line 3 continues to be operational by the time of station construction. Specifically, construction of the TTC and GO Transit bus terminals to the north and south of Bushby Drive may require temporary closures of the service because of construction work in close proximity to the elevated guideway structures.

Station at Sheppard

Railway lines connecting to the Canadian Pacific Railway Toronto Yard are present to the north of the planned PPUDO for the station at Sheppard. There are no anticipated impacts to rail due to the construction of PPUDO.

Mitigation Measures

If service interruptions of Line 3 are required, these should be of limited duration and planned on weekends or overnight periods. Construction staging plans for the station at Scarborough Centre can be devised to specifically limit service interruptions to Line 3 as a priority.

5.6.3 Operations Impacts

There are few impacts to the surface transportation network since much of the ultimate operation of the SSE will be below-grade. Operations impacts focus on ancillary features including bus terminals, station entrances and required modifications to surrounding roadways.

5.6.3.1 Automobile Traffic and Transit Services

Upon construction completion, roads that are impacted by construction will be re-instated and existing road capacity will be returned. Traffic operational conditions, therefore, should return to similar levels of service as in the pre-construction condition. The opening of the SSE may impact travel demand in the Study Area. Auto trips in the Study Area may increase as a result of accessing the new subway service, however at the same time, the opening of the SSE should result in a mode shift away from auto uses as passengers begin to choose the subway mode over personal vehicles. Impacts of the opening of the subway on travel demand in the Study Area can be confirmed and informed by travel demand modelling in later stages of the project.

Considering pedestrian and cyclist volumes are expected to increase in the vicinity of the proposed subway stations, auto traffic levels of service may be degraded as a result of increased yielding to crossing pedestrians at signalized and unsignalized intersections.

The opening of the SSE will result in changes to existing bus routing and service frequencies, as local routes will be re-oriented to feed the higher-order transit system. The new TTC and GO bus terminals will have greater capacity and will be able to service higher frequencies of transit vehicles. As such, traffic operations near the new bus terminals may degrade as compared to existing conditions. This will be especially prevalent at locations where buses are required to turn into/out of the bus terminals onto the main road. Additional traffic signals may be required to facilitate these movements.

The operational impacts specific to each station location with respect to automobile traffic and transit services are discussed below:

- **Station at Lawrence**

  - The bus terminal plan in the southwest quadrant of the intersection of McCowan Road and Lawrence Avenue East extends approximately 80 m to the west of the intersection. Any access to the bus terminal from Lawrence Avenue East would therefore need to be within 80 m of the signalized intersection. This limited spacing may result in operational issues for buses exiting the terminal, as traffic queues from the intersection may cause blockages.

- **Station at Scarborough Centre**

- Potential re-configuration and normalization of the Progress Avenue and McCowan Road intersection will significantly impact travel patterns in the area. This may require other roadway and traffic signal modifications. Evaluation of these impacts are outside the scope of this assessment and will be considered in greater detail in a separate study (see **Section 5.6.4** for details);
- Increases in bus turning movement volumes in the area surrounding the bus terminals, especially along Grangeway Avenue and Bushby Drive. Signalization of the Bushby Drive and Grangeway Avenue intersection may be required; and
- The relocation of existing TTC bus terminal to the east side of McCowan Road may result in changes to the current use of Triton Road.

- **Station at Sheppard**

- The planned access into the new bus terminal may require a new signalized intersection Sheppard Avenue East or McCowan Road; and
- The proposed PPUDO to the north of Nugget Avenue is likely to produce increases in traffic volumes and may result in changes to traffic operations at the intersection of McCowan Road and Sheppard Avenue East.

- **Emergency Exit Buildings**

- There are no expected impacts to transportation and traffic as a result of the ultimate operation of the EEBs along the alignment.

<u>Mitigation Measures</u>

A detailed TIS will be carried out during the detailed design phase of the project for the road network along the SSE alignment to ensure that traffic can be accommodated within the new road network. Future travel patterns can be assessed using travel demand modelling. This analysis can be used to mitigate expected impacts to traffic and transit operating conditions.

Impacts associated with local transit access points to and from the proposed bus terminals can be mitigated by designing appropriate traffic control treatments. Signal warrant analyses can be carried out to determine if signalization is justified. If so, special transit phasing can be implemented to provide efficient service to transit vehicles while minimizing increases in delay to local traffic. Local transit impacts and mitigations will be discussed and co-ordinated with TTC Service Planning.

5.6.3.2 Pedestrian and Cyclists

Pedestrian and cyclist volumes are expected to increase significantly in the vicinity of the proposed subway stations. It is anticipated that the design of pedestrian and cyclist infrastructure and amenities will be integrated with the design of station features and will therefore provide improved connectivity for these modes. Impacts to pedestrians and cyclists resulting from the ultimate operation of the SSE are expected to be minimal.

No additional impacts will result from the operation of the SSE as all existing road conditions prior to construction are to be restored and reinstated upon completion of the construction operations.

Mitigation Measures

All pedestrian and cycling connections will be restored to existing conditions at all proposed stations or will be improved through the ultimate design of SSE facilities. These improvements should be designed in accordance with AODA standards and should be in line with any pedestrian or cycling infrastructure improvement plans.

5.6.3.3 Rail

There are no permanent impacts to rail resulting from operations associated with the SSE.

5.6.4 Summary of Potential Effects, Mitigation Measures and Monitoring

This assessment of impacts provides a general overview of how changes to the SSE alignment contained in this EPR Addendum may affect transportation and traffic conditions in the Study Area. Potential effects are summarized in **Table 5-16**.

During the detailed design later stages of this project, the following assessments should be undertaken:

- Conduct a TIS for all proposed stations on the SSE alignment, including intersection capacity analysis to quantify changes in traffic operating conditions for the construction and ultimate operation of the SSE. Coordination with the MTO will be a part of the TIS, as the assessment will specifically address impacts to the Highway 401 mainline and ramp terminal intersections; and
- Conduct a detailed traffic modelling exercise for the station at Scarborough Centre, incorporating the effects of potential normalization of the Progress Avenue and McCowan Road intersection.

Table 5-16: Summary of Potential Transportation Effects, Mitigation Measures and Monitoring

Environmental Component	Potential Effect	Mitigation Measure(s)	Monitoring	Installation of Pocket Tracks at Kennedy Station and Launch Shaft	Station at Lawrence / Extraction Shaft	Station at Scarborough Centre	Proposed Station at Sheppard / EEB 8 / Tail Tracks / TBM Launch Shaft	Proposed Bus Loop	Revised EEB 5 Location	Proposed EEB 7 and 8
Displacement of Existing Features	■ Potential removal of existing parking facilities	■ None.	■ None.	Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable
Construction Impacts	■ Reduction in road capacity and increase in delays due to partial road closures	■ Traffic decking can be used to maintain bidirectional traffic flow to minimize interruption. ■ Appropriate implementation of traffic staging plans, installation of temporary traffic signals, and modifications to existing signal timings. ■ Appropriate signage and driver notifications to provide advance warning to commuters.	■ For signalized intersections, signal timings proposed by prior traffic analysis should be updated as required based on actual field conditions.	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Construction Impacts	■ Increase in walking distance for pedestrians	■ Appropriate signage should be implemented to provide advanced warning to pedestrians.	■ None.	Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable
Construction Impacts	■ The presence of heavy construction vehicles on Study Area roadways may have an adverse effect on traffic operations and safety	■ Flagging can be implemented to ensure construction vehicle operators are fully aware of crossing pedestrians and cyclists.	■ None.	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Construction Impacts	■ Adverse impacts to traffic operations at Highway 401 ramp terminal intersections and highway mainline	■ Future consultation with MTO staff to coordinate construction activities and manage traffic impacts. ■ Appropriate construction staging procedures can be used to maintain bidirectional traffic flow to minimize interruption.	■ For signalized intersections, signal timings proposed by prior traffic analysis should be updated as required based on actual field conditions.	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable (EEB 7 only)
Construction Impacts	■ Potential relocation of local transit stops may result in increased walk times for passengers	■ Appropriate signage should be implemented to provide advanced warning to passengers.	■ None.	Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable
Construction Impacts	■ Construction activities may impact operation of Line 3	■ Construction staging plans to be devised to limit service interruptions to Line 3.	■ None.	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Operations Impacts	■ The operation of new bus terminals may impact traffic operations at adjacent intersections	■ Access into and out of bus terminals can be provided by designing appropriate traffic control treatments, including transit signal priority and transit phasing.	■ None.	Not Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable
Operations Impacts	■ Increase in transit service frequency and pedestrian and cyclist activity can adversely affect traffic operations on surrounding roadways and intersections	■ Implementation of mitigation measures and design treatments resulting from a future detailed TIS.	■ None.	Not Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable
Operations Impacts	■ Increase in pedestrian and cyclist volumes affecting traffic operation	■ Implementation of mitigation measures resulting from the detailed TIS.	■ None.	Not Applicable	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable

6. Consultation Process

6.1 Overview of the Consultation Approach

In accordance with Section 8 of O. Reg. 231/08, this section summarizes the consultation activities carried out with members of the public, property owners, review agencies, Indigenous communities and other stakeholders during the course of the Project, including a summary of feedback and comments received prior to the issuance of the Notice of EPR Addendum.

On July 10, 2020, the Notice of EPR Addendum was issued to commence the review period, effective until August 3, 2020. The Notice was distributed to all individuals on the Project Distribution List, properties within 150 m of the proposed alignment, government review agencies, Indigenous communities, and advertised in three major newspapers (Toronto Star, Le Metropolitain, Toronto L'Express) and six community newspapers (Scarborough Mirror, Caribbean Camera, Ming Pao, Sing Tao Daily, Senthamarai, Gujarat Abroad) in multiple languages.

Metrolinx implemented a consultation strategy for the Project that was developed to guide the engagement process described in the following subsections.

6.1.1 Approach to Consultation

Metrolinx offered a wide range of communication and consultation activities and outlets to reach all interested members of the public, property owners, review agencies, Indigenous communities and other stakeholders to solicit comments and feedback related to the SSE, including:

- Project website (www.metrolinx.com/scarboroughsubway);
- Project email address (TorontoEast@metrolinx.com);
- Project phone number: 416-202-3900;
- Elected Officials Briefings;
- Mailings/ notifications;
- Newspaper advertisements;
- Social media posts and advertisements;
- Postcard with mailout;
- Pop-up sessions;
- Public open houses; and
- Letters to Indigenous communities.

Further details regarding the consultation process are included in the Engagement Summary Report, available in **Appendix C3**.

6.1.2 Record of Consultation

Metrolinx maintained a record of all Project consultation undertaken during the regulatory consultation phase. All Project correspondence and meeting summaries are documented in **Appendix C**. All comments received from the public have been redacted to protect personal information.

6.1.3 Identification of Interested Parties

At the outset of the Addendum process, a Project Distribution List (**Appendix C1**) was developed to ensure all stakeholders and interested parties receive notifications related to the Project.

Appropriate contacts at each review agency (i.e., federal, provincial, municipal, conservation authorities) were confirmed through outreach during initial consultation activities. Elected officials (i.e., City Council, Members of Parliament, Members of Provincial Parliament) with jurisdiction in the Project Study Area were confirmed through online resources. Indigenous communities were identified through consultation with the MECP and Ministry of Indigenous Affairs.

The Project Distribution List is a live document that is continuously updated in response to Project feedback (e.g., requests to be added) and is used to inform stakeholders and the public of Project milestones (e.g., Notice of Public Information Session). All Project Notices are provided in **Appendix C3**.

6.2 Public Consultation

Members of the public requesting general Project information were directed to the Project webpage (www.metrolinx.com/scarboroughsubway) and notified of the public information session held in March 2020. As the Project progressed, the distribution list was maintained and updated accordingly. All public comments received by the Project Team via feedback forms at public information sessions, comments at pop-up sessions, email and telephone are detailed in **Appendix C2** and **Appendix C3**.

6.2.1 Pop-up Sessions

Four pop-up sessions were held in February 2020 to reach residents located within the Project study area at accessible locations/ events they were already visiting and to

encourage attendance at the public information sessions. Details regarding the pop-up sessions are provided in **Table 6-1** below.

Table 6-1: Pop-Up Session Details

Date	Time	Location
Tuesday, February 25, 2020	9:00 a.m. – 12:00 p.m.	Scarborough Health Network – General Hospital Campus 3050 Lawrence Avenue East, Scarborough, ON
Tuesday, February 25, 2020	6:00 p.m. – 8:00 p.m.	Don Montgomery Recreation Centre 2467 Eglinton Avenue East, Scarborough, ON
Wednesday, February 26, 2020	10:00 a.m. – 1:00 p.m.	Scarborough Town Centre 300 Borough Drive, Scarborough, ON
Wednesday, February 26, 2020	2:00 p.m. – 4:00 p.m.	Oriental Centre Shopping Mall 4438 Sheppard Avenue East, Scarborough, ON

These pop-up sessions included information on various topics including GO Transit schedules, fares and customer perks and details relating to east-end Metrolinx projects. Each of the pop-up sessions included the following materials:

- Kids GO Free information sheet;
- PRESTO information sheet;
- Niagara Weekend Trip Schedule;
- Regional Transit Network Map;
- Scarborough and Durham Region Bus Rapid Transit (BRT) Overview;
- SSE Overview;
- Eglinton Crosstown LRT pamphlets; and
- Metrolinx buttons, train schedules, train and LRT cut-outs and rail safety tips.

Pop-up sessions attracted approximately 85 passers-by.

6.2.1.1 Summary of Feedback Received at Pop-up Sessions

At the pop-up sessions, the following questions and comments related to the SSE were received:

- When will the SSE be built?
- Are station/ stop locations final?

- Will the Scarborough and Durham Region BRT be built prior to the Scarborough Subway Extension?
- Will Sheppard Line 4 connect to the Scarborough Subway Extension's station at Sheppard Avenue and McCowan Road?
- Will the Scarborough Subway Extension be operated by Metrolinx or TTC?
- Wil the Scarborough Subway Extension end at Sheppard Avenue and McCowan Road or will it continue north to Markham?
- Will Metrolinx reconsider closing the loop to Fairview Mall once the station at Sheppard Avenue and McCowan Road is built?

Detailed summaries of each pop-up session are provided in **Appendix C3**.

6.2.2 Public Information Sessions and Online Consultation Round One

The first round of public information sessions took place in March 2020 to reach residents located within the study area, as outlined in **Table 6-2** below.

Table 6-2: Public Information Session Details

Date	Time	Location
Tuesday, March 3, 2020	6:30 p.m. – 8:30 p.m.	Scarborough Civic Centre 150 Borough Drive, Scarborough, ON
Thursday, March 5, 2020	6:30 p.m. – 8:30 p.m.	Grace Church Scarborough 700 Kennedy Road, Scarborough, ON

Each information session presented identical content that focused on introducing the three-stop SSE, key milestones, Project purpose, what the SSE will include, what is being planned for the future, Project benefits, assessment of the design changes from the 2017 EPR, station locations and studies underway.

In total, 188 individuals signed in at the first round of public information sessions, including 122 at the Scarborough Civic Centre and 66 at Grace Church Scarborough. Participants who chose not to sign in were not counted in the total numbers. A total of 71 feedback forms were received by the Project Team, in addition to seven handwritten notes, letters, or other documents and one question via Metrolinx Engage. All responses collected are provided in **Appendix C3**.

6.2.2.1 Notification

Notification of the public information sessions was accomplished through the following:

- Notification via registered mail to Indigenous communities on February 26, 2020;
- Notification via email to all contacts on the Project distribution list on February 19, 2020;
- Posting on the Project webpage (www.metrolinx.com/scarboroughsubway) on February 20, 2020;
- Postcard mailout via Canada Post to 32,201 residents within at least a 150 m radius of the proposed Scarborough Extension alignment – from Finch Avenue East in the north, Markham Road in the east, St. Clair Avenue East in the south, and Birchmount Road in the west – on February 24, 2020;
- Publication in the Toronto Star on February 20 and 27, 2020;
- Publication in the Scarborough Mirror, Le Metropolitan and Caribbean Camera newspapers on February 27, 2020;
- Publication in Toronto L'Express, Senthamarai and Gurjarati newspapers on February 28, 2020;
- Publication in Sing Tao Daily and Ming Pao newspapers on February 29, 2020; and
- Posting to the @metrolinxofficial Facebook page and @metrolinx Twitter account, including the creation of two event pages on Facebook from February 21 to March 5, 2020.

6.2.2.2 Information Presented

The following information was presented at the public information sessions:

- Why we are here
- Who is Metrolinx?
- What is the Scarborough Subway Extension?
- Regional Transit Network
- Key milestones and timeline
- The Scarborough Subway Extension Benefits

- Improved access and strong connections
- Travel time savings
- Less crowding on your commute
- Stations
- What's happening now?
- Assessment of design changes
- Environmental studies underway
- Natural environment
- Cultural heritage
- Noise and vibration
- Air quality
- Traffic
- How can you stay involved and updated?
- Share your feedback
- Thank you for coming

Information was shared via display boards set up clockwise around the room for participants to review and take-home materials including a map of the Project study area and a tent card that provided high level, general Project information to act as a brief overview with links to the Project webpage where people could receive more information. Information was collected via sign-in sheets where participants included their names, mailing addresses and email addresses and indicated whether or not they would like to join the Project distribution list and feedback forms that participants could fill out and return at the end of the information session or up to two weeks following the last session via email or mail.

The materials presented at the information sessions were also made available online on the Project webpage (www.metrolinx.com/scarboroughsubway). Online engagement was open to the public from March 3 to March 17, 2020 during which time individuals could submit comments and questions via email, Metrolinx Engage or via feedback forms.

6.2.2.3 Summary of Comments Received through Public Information Session and Online Consultation Round 1

The Project Team received 71 feedback forms and 16 comments via email from members of the public during the engagement period for the first round of public information sessions.

The section below summarizes the most common feedback themes provided from engagement participants. The number of participants who contributed to each theme is provided in parentheses. Further details are provided in the Engagement Summary Report (**Appendix C3**).

What is most important to you about this Project?

- Costs and Timeline
  - Requests to complete the Project as soon as possible/ expedite the timeline (18)
  - Comments and concerns related to Project costs and funding sources (4)
- Community Impacts
  - Concerns regarding potential construction impacts (3)
  - Concerns regarding potential neighbourhood impacts during construction and operation (3)
  - Comments related to the engagement process (2)
  - Concerns related to visual impacts/ aesthetics (1)
- Alignment and Design
  - Comments related to the need to improve and integrate transit across the region/ increase connectivity between GO Transit and TTC (14)
  - Suggestions for alternative alignment options (7)
  - Questions and concerns regarding station locations and design (7)
  - Concerns regarding accessibility (5)
  - Questions and concerns related to the consultation and study process/ studies underway (2)
  - Project support (2)

What would you like to hear more about?

- Costs and Timeline

- Requests to know when construction will begin and end (9)
- Requests to receive regular Project status updates (8)
- Questions regarding the transition time from SRT to SSE (2)
- Question regarding Project costs/ budget (1)

- Alignment and Design
  - Requests for more information regarding design and locations of stations (7)
  - Requests for more information related to the study process, including the Preliminary Design Business Case (PDBC) and ridership studies/ projections (5)
  - Requests for more information regarding alternative alignment options (6)
  - Requests for more information related to planned construction methods (4)
  - Requests to know if/ how the SSE will impact current transit routes and how it will connect to other existing and future transit routes (4)
- Community Impacts
  - Requests to know more about potential impacts of construction process on local residents (5)
  - Requests for more in-depth engagement opportunities (3)
  - Requests to learn more about employment/ job opportunities the SSE will create (2)
- Environmental Impacts
  - Request for more information related to potential environmental impacts and the environmental assessment process (1)
- Other Projects
  - Request for more information related to other ongoing Metrolinx projects (1)

How would you like to hear from us going forward?

- Ways to communicate during the next round of engagement
  - Email (21)
  - Mail-outs and Print Advertisements (6)

- Public Meetings (3)
- Social Media (2)

- Other Comments
  - Other (10)
  - Comments regarding the need for improved transit integration (2)
  - Concerns regarding parking (1)
  - Concerns regarding political influence on Project decision-making process (1)

Is there anything we missed? Please let us know if you have additional thoughts or concerns about the Scarborough Subway Extension

- Costs and Timeline
  - Requests to build the SSE as soon as possible (10)
  - Concerns regarding the proposed Project timeline/ skepticism related to delays (5)
  - Request to know more about SSE fares (1)
- Community Impacts
  - Concerns related to potential construction impacts on local residents and businesses (4)
  - Requests for more information related to property impacts/ expropriation (4)
  - Concerns related to lack of presentation and question and answer period at public information sessions (4)
- Alignment and Design
  - Suggestions for alternative alignment options and questions related to potential for alignment to change prior to detailed design phase (17)
  - Concerns related to lack of station locations at Bellamy, Eglinton, University of Toronto and Centennial College (8)
  - Requests for more detailed information related to station locations and design (6)
  - Requests for more details related to future transit integration and lifespan of SSE (3)
  - Concerns related to parking availability (2)

- Requests to know if more stations can be added to the SSE in the future (1)

- Environmental Impacts
  - Request for more details regarding the environmental assessment process (1)
- Other
  - No further questions, concerns or comments (3)
  - Project support (1)

The following table (**Table 6-3**) summarizes the email correspondence with the public related to the Project.

Table 6-3: Summary of Public Email Correspondence

Date of Correspondence	Summary of Public Correspondence	Date of Response	Summary of Metrolinx Response
December 5, 2019	■ Requested when the Project would be implemented and asked Metrolinx to confirm the SSE would be built within the next 20 years	December 6, 2019	■ Metrolinx provided the target completion date of 2029 to 2030 and noted that the SSE will provide seamless travel for Scarborough residents heading into and out of the downtown core with proposed stations at Lawrence Avenue and McCowan Road, Scarborough Centre and McCowan Road, and Sheppard Avenue, which will be the new terminal station for Line 2 ■ Metrolinx noted they are working closely with Infrastructure Ontario to ensure the SSE is delivered in the best possible way
December 6, 2019	■ Stated they were told by a friend that the SSE would have a station at Danforth and Eglinton and requested Metrolinx to provide all proposed station locations for the SSE ■ Voiced strong support for the Eglinton East LRT	December 6, 2019	■ Metrolinx noted that proposed station locations for the SSE include Lawrence Avenue and McCowan Road, Scarborough Centre and McCowan Road, and Sheppard Avenue, which will be the new terminal station for Line 2 ■ Metrolinx stated the SSE would provide seamless travel into and out of the downtown core and connections to GO Transit, the Eglinton Crosstown LRT and DRT ■ Metrolinx noted that the City of Toronto is leading the Eglinton East LRT project and provided the website link for more information
December 24, 2019	■ Received a flyer stating Metrolinx is beginning drilling and testing in December 2019 and requested expected timelines for construction	December 31, 2019	■ Metrolinx confirmed that drilling and surveying work on McCowan Road, Grangeway Avenue and Consilium Place would be taking place for approximately six (6) months to help determine the Project approach ■ Metrolinx provided the Project webpage link for more information
December 31, 2019	■ Requested to know the earliest estimated date the SSE would be operational	January 2, 2020	■ Metrolinx noted the estimated completion date for the SSE is 2029 to 2030
January 2, 2020	■ Noted they live at McCowan and Sheppard and expressed concerns regarding the station on McCowan and Sheppard ■ Requested details regarding plans for residents during construction and potential expropriation of properties	January 2, 2020	■ Metrolinx confirmed that geotechnical drilling is currently taking place to help advance design work for the Project ■ Metrolinx noted that impacted property owners would be contacted at the earliest opportunity, likely further on in the design phase once drilling activities come to an end ■ Metrolinx confirmed they are exploring measures to reduce and manage impacts to residents during construction and operation and provided the Project webpage link for more information
January 8, 2020	■ Noted that the Glen Andrews Community Association (GACA) had several meetings with the TTC from June 2016 to February 2017 regarding the SSE and alternative methods (e.g. Barcelona design proposal) which they felt the TTC dismissed ■ Noted that the Barcelona method of building a cheaper subway with minimal cut and cover, using a large single bore would be preferred ■ Requested to know why the completion of the SSE approved in 2017 has been delayed three years ■ Requested to meet with Metrolinx staff to discuss	January 29, 2020	■ Thanked for sharing the chronology of past events ■ Noted that Metrolinx is in the early stages of planning for the SSE and will be re-evaluating work performed by the TTC ■ Noted Metrolinx would be happy to set up a meeting at a later date to discuss design but at this point, it is too early/ premature ■ Confirmed that Metrolinx is currently focusing on initial communications strategies to incorporate a variety of ways for individuals to get involved/ stage engaged in the Project and look forward to hearing from all interested individuals in the near future

Date of Correspondence	Summary of Public Correspondence	Date of Response	Summary of Metrolinx Response
January 8, 2020	■ Noted that the GACA had several meetings with the TTC from June 2016 to February 2017 regarding the SSE and alternative methods (e.g. Barcelona design proposal) which they felt the TTC dismissed ■ Noted that the Barcelona method of building a cheaper subway with minimal cut and cover, using a large single bore would be preferred ■ Requested to know why the completion of the SSE approved in 2017 has been delayed three years ■ Requested to meet with Metrolinx staff to discuss	February 18, 2020	■ Provided a response on the SSE designated PPUDO ■ Noted a public information session is planned for March 3 at the Scarborough Civic Centre and invited to participate
January 29, 2020	■ Requested to be added to the Project Distribution List	January 30, 2020	■ Confirmed addition to the Project Distribution List
February 20, 2020	■ Provided an email chain from earlier in 2019 stating that meetings were to be set up with GACA to discuss planning and design for the SSE ■ Requested Metrolinx contact the City of Toronto to have the OP amended so the Sheppard/ Scarborough loop corridor can remain intact until optimal routes have been finalized	February 24, 2020	■ Thanked for information
February 25, 2020	■ Attached multiple presentations by Lorne Ross that may help Metrolinx understand the current Sheppard Subway corridor that will be impacted by the changes to the OP being voted on February 26, 2020 ■ Noted that, in their opinion, by removing the approved subway corridor the City would be violating Bill 107	N/A	■ N/A
February 25, 2020	■ Noted they may not be able to attend public information sessions and requested to know if materials would be made available online	March 1, 2020	■ Thanked for interest in the SSE and noted that information displayed at public information sessions would be made available online by March 3, 2020 ■ Provided link to SSE webpage for further information
February 25, 2020	■ Noted they may not be able to attend public information sessions and requested to know if materials would be made available online	March 8, 2020	■ Provided weblink to the Metrolinx Engage webpage where online display boards and other Project information is provided ■ Noted that the next round of public engagement would take place late-spring as updates become available
February 28, 2020	■ Noted they read the SSE Business Case Design but could not understand the language and would like to receive a plain language version or definitions of Business as Usual and “in delivery” ■ Questioned the Problem and Opportunity Statement and what would happen when Line 3 is no longer in service	March 4, 2020	■ Confirmed that Metrolinx will be uploading display boards from the March public information sessions to the Metrolinx Engage website which will provide details in plain language
March 6, 2020	■ Noted that they attended a public meeting for SSE 10 years ago hosted by TTC that did not provide detailed information, in the same way the March public information sessions held by Metrolinx did not provide detailed information ■ Noted that 30% of design has already been completed but details were not provided at the public information sessions and requested to receive design details	March 6, 2020	■ Thanked for feedback and noted that the Province of Ontario assumed carriage of the SSE in 2019 and as a result, Metrolinx is conducting an EPR Addendum ■ Provided a link to the Metrolinx Engage webpage where the display boards and other Project information is provided ■ Confirmed addition to the Project Distribution List

Date of Correspondence	Summary of Public Correspondence	Date of Response	Summary of Metrolinx Response
March 6, 2020	■ Commended Metrolinx on the organization and quality of staff/ experts at SSE public information sessions ■ Suggested focusing on the users of public transit for next round of engagement advertising (e.g., TTC and GO advertisements and pamphlets available at stations)	March 7, 2020	■ Thanked for feedback and confirmed that comments would be shared with the Project Team ■ Noted that a second round of public engagement would be held as soon as more information becomes available
March 6, 2020	■ Provided answers to Feedback Form questions via email, requesting to receive a more accurate cost estimation as the Project progresses and requesting regular Project updates via email ■ Requested that online comments be made public as a discussion board ■ Questioned the Business Case and requested a plain language summary	March 7, 2020	■ Thanked for providing feedback
March 6, 2020	■ Requested a copy of the display boards presented at the SSE public information sessions	March 7, 2020	■ Provided weblink to the Metrolinx Engage website where online display boards and other Project information are provided
March 7, 2020	■ Questioned why public information sessions were held when it seemed like major decisions had already been made ■ Requested an LRT be implemented in place of the SSE	March 12, 2020	■ Acknowledged that some residents prefer LRTs over SSE but noted that all three governments adopted the subway platform and Metrolinx has been commissioned to develop this model ■ Noted that the general sense from public information sessions was that Scarborough residents see the benefits of fluid transit to Scarborough Centre and beyond, without having to transfer at Kennedy ■ Provided Metrolinx Engage weblink for Project updates
March 8, 2020	■ Noted that an LRT would be more beneficial to Scarborough than a subway as it would serve more people and be constructed faster	March 9, 2020	■ Thanked for comments and noted that all three governments agreed on a subway extension for Scarborough and Metrolinx has been commissioned to develop this model ■ Encouraged individual to sign up to the Project Distribution List to receive Project updates
March 8, 2020	■ Concerned about noise and vibration on McCowan Road once SSE is operational ■ Requested to know if Metrolinx will insulate nearby buildings to mitigate noise and vibration	March 11, 2020	■ Noted that Metrolinx is responsible for bringing high order transit to all areas of the city, with Scarborough being one of those areas ■ Noted that the three-stop SSE will bring better, faster and more reliable transit to the region ■ Confirmed that the subway program noise and vibration management approach will consider the guidance provided in the Ontario Ministry of the Environment and Energy/ GO Transit Protocol for Noise and Vibration Assessment (MOEE/GO Transit, 1994) and Ontario Ministry of the Environment and Energy/ TTC Protocol for Noise and Vibration Assessment (MOEE/TTC, 1993) ■ Confirmed that Metrolinx is committed to implementing mitigation measures for noise and vibration, as necessary and that measures will be considered to reduce impacts at the source which could include the use of seamless rail and high resilient rail fasteners ■ Noted that the SSE is planned to be approximately twice as deep as Line 1 and 2, thereby reducing noise and vibration impacts ■ Provided Project webpage link for more information
March 15, 2020	■ Requested that an LRT be built instead of a subway as the construction process would be faster and more cost effective	March 19, 2020	■ Thanked for comments and noted that they will be added to the consultation record ■ Confirmed that Metrolinx has been mandated by the Province of Ontario to further study the SSE platform ■ Stated they would inform all individuals on the Project Distribution List of next steps and Project updates

6.3 Engagement with Other Stakeholders

6.3.1 Indigenous Communities

As the list of Indigenous communities that may have an interest in the Project was already determined as per the 2017 EPR for the SSE, the Project Team did not need to send a new formal request to the MECP's Environmental Assessment and Permission Branch to request assistance in identification. On January 27, 2020, Metrolinx reached out to the appropriate Indigenous communities to provide the Draft Cultural Heritage Report for review and comment. At this time, Metrolinx also notified Indigenous communities that the Draft EPR Addendum Report would be sent for review and comment on February 10, 2020. On February 10, 2020, Metrolinx provided all Indigenous communities with a download link to the Draft EPR Addendum Report and requested feedback be submitted by February 28, 2020. Indigenous communities notified of SSE activities are listed below and also provided in **Appendix C1**.

- Alderville First Nation;
- Beausoleil First Nation;
- Chippewas of Georgina Island;
- Chippewas of Rama First Nation;
- Curve Lake First Nation;
- Hiawatha First Nation;
- Huron-Wendat Nation;
- Kawartha Nishnawbe First Nation;
- Metis Nation of Ontario;
- Mississaugas of the Credit First Nation (MCFN); and
- Mississaugas of Scugog Island First Nation.

The following table (**Table 6-4**) summarizes the outreach, and correspondence with Indigenous Communities related to the Project. Detailed correspondence records are provided in **Appendix C2**.

Table 6-4: Summary of Email Correspondence and Consultation with Indigenous Communities

Indigenous Community	Date	Summary
Alderville First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Alderville First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Alderville First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Beausoleil First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Beausoleil First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Beausoleil First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Chippewas of Georgina Island	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Chippewas of Georgina Island	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Chippewas of Georgina Island	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Chippewas of Rama First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Chippewas of Rama First Nation	January 30, 2020	▪ Chippewas of Rama First Nation requested a new direct download link for the Draft Cultural Heritage Report
Chippewas of Rama First Nation	January 30, 2020	▪ Metrolinx provided link for the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Chippewas of Rama First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Chippewas of Rama First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Curve Lake First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Curve Lake First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020.
Curve Lake First Nation	February 12, 2020	▪ Curve Lake First Nation provided comments on the Draft EPR Addendum Report and requested the file on the Michi Saagiig history be included in the final report, either as part of the text or in an appendix
Curve Lake First Nation	February 13, 2020	▪ Metrolinx thanked Curve Lake First Nation for their feedback and confirmed the provided Michi Saagiig history would be included in the final report (see **Appendix C** for the Michi Saagiig history) ▪ Metrolinx provided the Draft Cultural Heritage Report and associated comments sheet for review by February 28, 2020
Curve Lake First Nation	February 13, 2020	▪ Curve Lake First Nation confirmed the completion of their review with no further comments
Curve Lake First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Hiawatha First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Hiawatha First Nation	January 27, 2020	▪ Hiawatha First Nation acknowledged the email provided regarding the Project and inquired about additional phones calls received from Metrolinx staff
Hiawatha First Nation	January 27, 2020	▪ Metrolinx provided clarifications regarding contact from other Metrolinx staff were for different projects
Hiawatha First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE and requested review and comments to be submitted by February 28, 2020
Hiawatha First Nation	February 24, 2020	▪ Metrolinx sent a follow-up email reminding the community about the deadline for comments and their review
Hiawatha First Nation	February 26, 2020	▪ Hiawatha First Nation informed Metrolinx that they do not have any questions or concerns related to the SSE at this time
Hiawatha First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Huron-Wendat Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020

Indigenous Community	Date	Summary
		▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Huron-Wendat Nation	February 3, 2020	▪ Huron-Wendat Nation acknowledged the email provided regarding the Project and noted they do not currently have comments
Huron-Wendat Nation	February 28, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Kawartha Nishnawbe First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Kawartha Nishnawbe First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Kawartha Nishnawbe First Nation	February 11, 2020	▪ Kawartha Nishnawbe First Nation acknowledged the email regarding the Project and have confirmed that the Project will impact the Kawartha Nishnawbe First Nations' Treaty Rights. However, as they do not have funding for unpaid staff, they will not be able to participate in consultations
Kawartha Nishnawbe First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Metis Nation of Ontario Head Office	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Metis Nation of Ontario Head Office	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Metis Nation of Ontario Head Office	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Mississaugas of the Credit First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Mississaugas of the Credit First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Mississaugas of the Credit First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage
Mississaugas of the Credit First Nation	June 11, 2020 **Metrolinx Subways Program MCFN Update Meeting**	▪ The purpose of this meeting was to discuss the Subways Program ▪ MCFN provided an overview of the MCFN, Department of Consultation and Accommodation, and the Field Liaison Representative Program ▪ Metrolinx provided an overview of the Subways Program, including the SSE ▪ Metrolinx provided an overview of the environmental works for SSE which resulted in no comments on the project by the MCFN ▪ Next steps of the meeting entailed sharing of a list of natural environment studies planned for SSE
Mississaugas of Scugog Island First Nation	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review and comment and requested feedback by February 28, 2020 ▪ Metrolinx noted the Draft EPR Addendum Report would be provided for review on February 10, 2020
Mississaugas of Scugog Island First Nation	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for the SSE for review and comment and requested feedback by February 28, 2020
Mississaugas of Scugog Island First Nation	February 27, 2020	▪ Metrolinx provided a formal letter with high level Project details including Stage 2 archaeological work and a link to the Project webpage

6.3.2 Technical Stakeholders – Review Agencies and Elected Officials

The following table (**Table 6-5**) summarizes the outreach, meetings and correspondence with Technical Stakeholder groups regarding the Project. Detailed correspondence records are provided in **Appendix C2** and meeting minutes and presentations are provided in **Appendix C4**.

Table 6-5: Summary of Email Correspondence and Consultation with Technical Stakeholders

Agency	Date	Summary
Federal – Canadian Pacific Railway	January 27, 2020	▪ Metrolinx provided download links for the draft technical reports for the SSE EPR Addendum ▪ Metrolinx confirmed the Draft Noise and Vibration Assessment Report and Draft EPR Addendum Report would be provided for review between February 3 and February 10 ▪ Metrolinx requested the agency provide their review and comments for the Draft Natural Environment Report, Draft Cultural Heritage Report, Draft Traffic Impacts Memo, Draft Air Quality Assessment Report, Draft Noise and Vibration Assessment Report, and Draft EPR Addendum Report by February 28, 2020

Agency	Date	Summary
Federal – Canadian Pacific Railway	January 29, 2020	▪ Canadian Pacific Railway acknowledged receiving the reports and requested conceptual design information for temporary or permanent works in the vicinity of Canadian Pacific Railway (North of Nugget Avenue)
Federal – Canadian Pacific Railway	January 30, 2020	▪ Metrolinx provided two (2) additional figures; one (1) illustrating the alignment and another illustrating the potential Project footprint within the area near existing Canadian Pacific infrastructure
Federal – Canadian Pacific Railway	February 10, 2020	▪ Metrolinx provided the Draft Noise and Vibration Assessment Report and Draft EPR Addendum Report for review and comment and requested feedback by February 28, 2020
Federal – Canadian Pacific Railway	February 24, 2020	▪ Metrolinx informed the Canadian Pacific Railway of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Federal – Canadian Pacific Railway	February 26, 2020	▪ Canadian Pacific Railway reviewed the reports, draft Appendix A to the Draft EPR Addendum Report and has indicated that they do not have any comments.
Federal – Canadian Pacific Railway	February 26, 2020	▪ Canadian Pacific Railway confirmed their review of all reports and indicated that they do not have any comments
Federal – Fisheries and Oceans Canada	January 27, 2020	▪ Metrolinx provided the Draft Natural Environment Report for review and comment ▪ Metrolinx noted that the Draft EPR Addendum Report would be provided for review on February 10, 2020 with feedback required by February 28, 2020
Federal – Fisheries and Oceans Canada	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for review and comment and requested feedback by February 28, 2020
Federal – Fisheries and Oceans Canada	February 24, 2020	▪ Metrolinx informed Fisheries and Oceans Canada of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Agriculture, Food and Rural Affairs	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ministry was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Provincial – Ministry of Agriculture, Food and Rural Affairs	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Citizenship and Immigration	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ministry was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Provincial – Ministry of Community Safety and Correctional Services	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ministry was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Provincial – Ministry of Community Safety and Correctional Services	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Economic Development, Job Creation and Trade	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ministry is a member of the EA Government Review Team and asked if they are interested in receiving the draft technical reports and the EPR Addendum for review
Provincial – Ministry of Economic Development, Job Creation and Trade	January 23, 2020	▪ The Ministry thanked Metrolinx for sharing the report and requested Michael Falconi be removed from the Project distribution list ▪ Metrolinx confirmed the Project distribution list update
Provincial – Ministry of Economic Development, Job Creation and Trade	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for review and comment and requested feedback by February 28, 2020

Agency	Date	Summary
Provincial – Ministry of Economic Development, Job Creation and Trade	February 11, 2020	▪ The Ministry acknowledged receiving the report
Provincial – Ministry of Economic Development, Job Creation and Trade	February 21, 2020	▪ The Ministry provided Metrolinx with their review, comments and suggestions regarding to the potential economic impacts of the proposals on the City of Toronto and adjacent areas within the GTA
Provincial – Ministry of Economic Development, Job Creation and Trade	February 23, 2020	▪ Metrolinx thanked the Ministry for their comments ▪ Metrolinx noted that costs and assessment of economic impacts are not typically included in an EPR and provided a link to the SSE PDBC where economic benefits and the economic case can be found ▪ Metrolinx noted that the EPR addendum would be finalized in April 2020
Provincial – Ministry of Economic Development, Job Creation and Trade	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Education	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ministry was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Provincial – Ministry of Education	January 22, 2020	▪ Metrolinx sent a follow-up email regarding an automated email reply notifying the recipient is no longer at the Ministry and requested contact information for appropriate contacts
Provincial – Ministry of Education	January 22, 2020	▪ The Ministry of Education provided revised contact information and requested clarification regarding if the four local school boards have been included in Metrolinx's notification process
Provincial – Ministry of Education	January 22, 2020	▪ Metrolinx confirmed notification to the Toronto Catholic School Board and Toronto District School Board ▪ Metrolinx requested additional guidance as the Toronto District School Board contact is no longer with the organization and inquired about contacts for the additional two school boards
Provincial – Ministry of Education	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Energy, Northern Development and Mines	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ministry was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Provincial – Ministry of Energy, Northern Development and Mines	January 22, 2020	▪ The Ministry of Energy, Northern Development and Mines confirmed the information has been forwarded to their transmission planning team, who may contact Metrolinx directly ▪ The Ministry requested that Metrolinx update their distribution list with Andrea Pastori's information and connect with her going forward
Provincial – Ministry of Energy, Northern Development and Mines	January 22, 2020	▪ Metrolinx thanked the Ministry for providing updated contact information and confirm the modification of the distribution list
Provincial – Ministry of Energy, Northern Development and Mines	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Municipal Affairs and Housing	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ministry was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Provincial – Ministry of Municipal Affairs and Housing	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Natural Resources and Forestry	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020

Agency	Date	Summary
		▪ Metrolinx noted that the Ministry was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Provincial – Ministry of Natural Resources and Forestry	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ontario Power Generation	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that Ontario Power Generation is a member of the EA Government Review Team and asked if they are interested in receiving the draft technical reports and the EPR Addendum for review
Provincial – Ontario Power Generation	February 24, 2020	▪ Metrolinx informed Ontario Power Generation of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ontario Provincial Police	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the Ontario Provincial Police is a member of the EA Government Review Team and asked if they are interested in receiving the draft technical reports and the EPR Addendum for review
Provincial – Ministry of Heritage, Sport, Tourism, and Culture Industries	January 27, 2020	▪ Metrolinx provided the Draft Cultural Heritage Report for review ▪ Metrolinx confirmed the Ministry should expect to receive the Draft EPR Addendum Report for their review on February 10, 2020 and requested that comments regarding both reports be provided by February 28, 2020
Provincial – Ministry of Heritage, Sport, Tourism, and Culture Industries	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report and the revised Draft Cultural Heritage Report for review ▪ Metrolinx requested comments be provided by February 28, 2020
Provincial –Ministry of Heritage, Sport, Tourism, and Culture Industries	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Heritage, Sport, Tourism and Culture Industries	February 27, 2020	▪ The Ministry submitted comments regarding the Cultural Heritage Report and the Draft EPR Addendum Report ▪ The Ministry requested that a teleconference be scheduled to discuss additional details regarding the reports
Provincial – Ministry of Heritage, Sport, Tourism and Culture Industries	February 28, 2020	▪ Metrolinx requested the Ministry to confirm if any other comments should be expected in addition to the comments provided February 27, 2020 ▪ Metrolinx confirmed meeting availability on March 3, 2020 for the teleconference
Provincial – Ministry of Heritage, Sport, Tourism and Culture Industries	March 3, 2020	▪ The Ministry provided comment tables regarding the reports and a copy of the Ministry's TPAP Guidance documentation as it is referenced in their comments
Provincial – Ministry of Heritage, Sport, Tourism and Culture Industries	March 23, 2020	▪ Metrolinx provided the updated Cultural Heritage Report and EPR Addendum Report and responses to the Ministry's comments ▪ Metrolinx noted that if the Ministry would like to discuss any remaining key items, Metrolinx could schedule a meeting prior to March 27, 2020
Provincial – Ministry of Heritage, Sport, Tourism and Culture Industries	March 27, 2020	▪ The Ministry thanked Metrolinx for sending the revised Cultural Heritage Report and the EPR Addendum Report and associated table of responses ▪ The Ministry confirmed their second review and provided their final outstanding comments/ concerns for Metrolinx to address
Provincial – Ministry of Heritage, Sport, Tourism and Culture Industries	April 8, 2020	▪ Metrolinx thanked the Ministry for their comments on the Cultural Heritage Report and EPR Addendum Report and provided associated actions and responses
Provincial – Ministry of Heritage, Sport, Tourism and Culture Industries	April 8, 2020	▪ The Ministry noted that all Metrolinx responses had been reviewed and that the Ministry has no further comments ▪ The Ministry requested an electronic copy of the Final EPR, when available
Provincial – Hydro One Networks Incorporated	February 3, 2020	▪ Metrolinx provided the Draft Natural Environment Report for HONI's review ▪ Metrolinx noted that the Draft Noise and Vibration Assessment Report and the Draft EPR Addendum Report will also be provided shortly
Provincial – Hydro One Networks Incorporated	March 6, 2020	▪ HONI requested additional reports regarding the Line 2 East Subway Extension
Provincial – Hydro One Networks Incorporated	March 6, 2020	▪ Metrolinx provided the requested Line 2 report ▪ Metrolinx requested that comments be received by March 12, 2020
Provincial – Hydro One Networks Incorporated	March 6, 2020	▪ HONI noted that the bus loop is proposed on transmission corridor lands which are owned by the provincial government, giving HONI statutory rights to these corridor lands

Agency	Date	Summary
Provincial – Hydro One Networks Incorporated	March 11, 2020 **Metrolinx Subway Program HONI Update Meeting**	▪ The purpose of the meeting was for Metrolinx to provide an overview of the Subway Program and to discuss HONI conflict areas/ EA requirements and next steps ▪ Following the meeting, Metrolinx followed up via email to thank HONI for the discussion and provide further details on the SSE bus facility in the hydro corridor and plans for the Eglinton Crosstown West Extension ▪ Metrolinx provided the PowerPoint Presentation and noted that they look forward to receiving HONI comments related to the SSE by March 27, 2020
Provincial – Hydro One Networks Incorporated	April 2, 2020	▪ HONI provided their review and comments on all EA reports provided by Metrolinx
Provincial - Hydro One Networks Incorporated	April 2, 2020	▪ Metrolinx thanked HONI for their review and response
Provincial – Hydro One Networks Incorporated	April 24, 2020	▪ Metrolinx provided responses to HONI's comments on the EPR Addendum Report and noted looking forward to working with HONI as design progresses
Provincial – Infrastructure Ontario	February 3, 2020	▪ Metrolinx provided download links for the draft SSE environmental reports for review and requested all comments to be provided by February 28, 2020 ▪ Metrolinx noted that Infrastructure Ontario should expect to receive the draft Noise and Vibration Assessment Report and the Draft EPR Addendum Report for their review and comment before February 10, 2020
Provincial – Infrastructure Ontario	February 3, 2020	▪ Infrastructure Ontario confirmed receipt of reports and requested the Stage 1 Archaeological Assessment Report be provided
Provincial – Infrastructure Ontario	February 3, 2020	▪ Metrolinx indicated that a Stage 1 Archaeological Assessment was completed for the original 2017 EPR which also covers the current scope change area and that a new assessment was not required ▪ Metrolinx noted that a scope change warrants a Stage 2 Archaeological Assessment which is outside of the EA process
Provincial – Infrastructure Ontario	February 10, 2020	▪ Metrolinx provided the Draft Noise and Vibration Assessment and Draft EPR Addendum Report for review and comment and requested feedback by February 28, 2020
Provincial – Infrastructure Ontario	February 24, 2020	▪ Metrolinx informed Infrastructure Ontario of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Infrastructure Ontario	February 24, 2020	▪ Infrastructure Ontario provided comments related to proposed mitigation and monitoring measures
Provincial – Infrastructure Ontario	March 23, 2020	▪ Metrolinx thanked Infrastructure Ontario for their input and provided responses related to the proposed mitigation and monitoring measures
Provincial – Ministry of Transportation of Ontario	February 3, 2020	▪ Metrolinx provided the Draft Traffic Impacts Memo for review ▪ Metrolinx noted that the Ministry should expect to receive the Draft Noise and Vibration Assessment Report and Draft EPR Addendum Report for their review in approximately one week ▪ Metrolinx requested that comments regarding both reports be provided by February 28, 2020
Provincial – Ministry of Transportation of Ontario	February 10, 2020	▪ The MTO requested clarification regarding the Draft Traffic Impacts Memo and additional environmental reports
Provincial – Ministry of Transportation of Ontario	February 19, 2020	▪ Metrolinx provided clarifications regarding the MTO's inquiries and provided the Draft Noise and Vibration Assessment Report and Draft EPR Addendum Report again ▪ Metrolinx also confirmed the Reference Concept Design would be sent to the Ministry for review on March 2, 2020
Provincial – Ministry of Transportation of Ontario	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Transportation of Ontario	February 25, 2020	▪ The MTO provided their review and comments
Provincial – Ministry of Environment, Conservation and Parks	February 10, 2020	▪ Metrolinx contacted the Ministry to introduce the Metrolinx EA team
Provincial – Ministry of Environment, Conservation and Parks	February 10, 2020	▪ Metrolinx provided the Draft Air Quality Qualitative Assessment Report, Draft Natural Environment Report, Draft Noise and Vibration Assessment Report and Draft EPR Addendum Report ▪ Metrolinx requested that all comments be submitted by February 28. 2020

Agency	Date	Summary
Provincial – Ministry of Environment, Conservation and Parks	February 10, 2020	▪ The Ministry acknowledged receipt of the reports and provided comments related to the Draft EPR Addendum Report
Provincial – Ministry of Environment, Conservation and Parks	February 11, 2020	▪ The Ministry acknowledge the reports sent for their review and have indicated that due to the tight timeline they are unable to provide all comments regarding the reports by February 28, 2020 and will require more time to review
Provincial – Ministry of Environment, Conservation and Parks	February 12, 2020	▪ Metrolinx acknowledge the Ministry's request for additional time and suggested arranging a meeting to expedite the review process to address preliminary concerns
Provincial – Ministry of Environment, Conservation and Parks	February 24, 2020	▪ Metrolinx informed the Ministry of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Provincial – Ministry of Environment, Conservation and Parks	March 3, 2020	▪ The Ministry provided their review and comments on the EPR Addendum Report
Provincial – Ministry of Environment, Conservation and Parks	March 23, 2020	▪ Metrolinx provided the updated technical reports and EPR Addendum Report and associated responses to the Ministry's comments ▪ Metrolinx noted that if the Ministry would like to discuss any remaining key items, Metrolinx could schedule a meeting prior to March 27, 2020
Municipal – Toronto Catholic School Board	January 22, 2020	▪ Metrolinx provided a formal letter with Project details informing of the availability of draft technical reports for review on January 27, 2020, and the draft EPR Addendum on February 10, 2020 ▪ Metrolinx noted that the School Board was engaged during the drafting and distribution of the 2017 EPR but did not provide comments and therefore requested confirmation of interest in receiving the draft technical reports and the EPR Addendum
Municipal – Toronto Region Conservation Authority	January 23, 2020 **SSE TRCA Update Meeting**	▪ The purpose of this meeting was for Metrolinx to provide a high-level update on the Project, including proposed station locations, construction methods, contract information (e.g., tunnel contract and railway contract), and details related to the public-private partnership (P3) process ▪ Metrolinx reviewed the 2017 TPAP and EPR process and explained the current addendum process as part of the Project update ▪ Metrolinx provided an overview of the Natural Environment Report results ▪ Next steps include Metrolinx sending TRCA two hard copies and one digital copy of the Draft Natural Environment Report and the link to the Draft EPR Addendum Report for TRCA to review by February 28, 2020
Municipal – Toronto Region Conservation Authority	January 27, 2020	▪ Metrolinx provided the Draft Natural Environment Report for review and confirmed the TRCA should expect to receive the Draft EPR Addendum Report on February 10, 2020. ▪ Metrolinx requested that all comments be submitted by February 28, 2020
Municipal – Toronto Region Conservation Authority	February 10, 2020	▪ Metrolinx provided the Draft EPR Addendum Report for review and noted that hard copies will be couriered to the TRCA's office the following day ▪ Metrolinx requested that all comments be submitted by February 28, 2020
Municipal – Toronto Region Conservation Authority	February 12, 2020	▪ The TRCA acknowledged receipt of the report and indicated that they have 20 business days to review as per their Service Level Agreement but will try to provide comments as soon as possible
Municipal – Toronto Region Conservation Authority	February 24, 2020	▪ Metrolinx followed up with the TRCA to request that all comments be received by February 28, 2020
Municipal – Toronto Region Conservation Authority	February 24, 2020	▪ Metrolinx informed the TRCA of the first round of information sessions for the SSE Project would be hosted on March 3 and March 5, 2020 ▪ Metrolinx extended an invitation to attend the information sessions and provided logistics details along with the Project postcard
Municipal – Toronto Region Conservation Authority	February 27, 2020	▪ The TRCA informed Metrolinx that the Draft Natural Environment Report will be reviewed together with the EPR Addendum Report as it provides better context ▪ The TRCA confirmed comments would be submitted by March 3, 2020
Municipal – Toronto Region Conservation Authority	February 27, 2020	▪ Metrolinx requested preliminary comments be received by February 28, 2020 so that they may be reflected in the Addendum ▪ Metrolinx requested that all comments be placed within the consolidated comment sheet provided and that no duplication or conflict among comments is provided
Municipal – Toronto Region Conservation Authority	February 28, 2020	▪ The TRCA provided comments on the Draft Natural Environment Report and indicated that they will provide comments for the EPR Addendum Report as soon as possible ▪ Metrolinx thanked the TRCA for providing comments on the Draft Natural Environment Report

Agency	Date	Summary
Municipal – Toronto Region Conservation Authority	March 3, 2020	▪ The TRCA provided an updated version of their comments as there was a minor text change
Municipal – Toronto Region Conservation Authority	March 23, 2020	▪ Metrolinx provided the updated Natural Environment Report and EPR Addendum Report along with associated responses to TRCA comments ▪ Metrolinx noted that if the TRCA would like to discuss any remaining key items, Metrolinx could schedule a meeting prior to March 27, 2020
Municipal – Toronto Region Conservation Authority	April 3, 3030	▪ Metrolinx and the TRCA participated in a telephone meeting to discuss TRCA comments related to the Natural Environment Report and the EPR Addendum Report
Municipal – Toronto Region Conservation Authority	April 6, 2020	▪ Metrolinx provided a summary of the telephone meeting that took place April 3, 2020 along with updated language and commitments for the Natural Environment Report and the EPR Addendum Report
Municipal – Toronto Region Conservation Authority	April 7, 2020	▪ The TRCA requested Metrolinx for minor revisions to the updated language for commitments
Municipal – Toronto Region Conservation Authority	April 8, 2020	▪ Metrolinx thanked TRCA for their comments and noted that all language and commitments discussed during the meeting on April 3 have been incorporated to a comment sheet for TRCA's records ▪ Metrolinx requested that any further comments be provided by end of day April 8, 2020
Municipal – City of Toronto	January 27, 2020	▪ Metrolinx provided the Natural Environment Report, Air Quality Report, Cultural Heritage Report and Traffic Memo for review ▪ Metrolinx noted that the Draft Noise and Vibration Report and the EPR Addendum Report would be submitted for the City's review in the coming weeks, and that they will follow up with an additional email providing a high-level overview of the upcoming environmental report review windows across the subway program
Municipal – City of Toronto	February 7, 2020 **Community Working Group Meeting**	▪ The purpose of this meeting was to provide a look-ahead/ overview of Metrolinx's Subway Program ▪ Metrolinx provided an overview of each Project process ▪ Metrolinx provided anticipated circulation dates for technical reports and the review periods for each Project
Municipal – City of Toronto	February 10, 2020	▪ Metrolinx provided the City of Toronto with the Noise and Vibration Report and the Draft EPR Addendum Report ▪ Metrolinx requested that all comments be submitted by February 28, 2020
Municipal – City of Toronto	February 10, 2020	▪ The City acknowledged the receival of reports and noted they would begin their review as soon as possible
Municipal – City of Toronto	February 24, 2020	▪ Metrolinx followed up on the City's review of reports and suggested a meeting, if necessary, to help facilitate the review process
Municipal – City of Toronto	February 28, 2020	▪ The City provided comments for the EPR Addendum Report and confirmed they will provide comments from TTC and Heritage Preservation Services on March 2, 2020 ▪ Metrolinx acknowledged receipt of comments
Municipal – City of Toronto	March 3, 2020	▪ Metrolinx followed up with the City to request timeline for receiving comments from the TTC and Heritage Preservation Services ▪ The City provided comments from the TTC related to the Traffic study and noted that comments from Heritage Preservation Services would be provided shortly
Municipal – City of Toronto	March 9, 2020	▪ The City noted that the Cultural Heritage Report references consultation with the City of Toronto and requested Metrolinx provide further detail regarding this consultation, including copies of emails
Municipal – City of Toronto	March 10, 2020	▪ In response to the City's data request on March 9, Metrolinx confirmed that comments from Heritage Preservation Services have been captured from December 2019 and February 2020 and provided copies of emails related to the Cultural Heritage Report
Municipal – City of Toronto	March 12, 2020	▪ The City provided comments from the Heritage Preservation Services with requests to provide clarifications
Municipal – City of Toronto	March 23, 2020	▪ Metrolinx thanked the City for their comments and provided updated reports along with associated responses to the City's comments ▪ Metrolinx noted that if the City would like to discuss any remaining key items, Metrolinx could schedule a meeting
Municipal – City of Toronto	March 24, 2020	▪ The City thanked Metrolinx for providing updated reports and confirmed the City team would review
Municipal – City of Toronto	March 31, 2020	▪ Metrolinx requested the City provide feedback on updated reports by April 3, 2020 in order to meet the project schedule and finalize the EPR Addendum

Agency	Date	Summary
		▪ The City requested Metrolinx resend links to the updated reports ▪ Metrolinx provided new links to updated reports for City review
Municipal – City of Toronto	April 1, 2020	▪ Metrolinx requested any additional feedback from the City related to updated reports be provided by April 8, 2020 ▪ The City confirmed all comments would be submitted to Metrolinx on April 8, 2020
Municipal – City of Toronto	April 8, 2020	▪ The City provided feedback on updated environmental reports from City divisions and noted that responses to the Noise and Vibration Assessment and Qualitative Air Quality Assessment reports would be provided upon receipt of consultant input
Municipal – City of Toronto	April 9, 2020	▪ Metrolinx thanked the City for their comments and confirmed responses would be provided shortly ▪ Metrolinx requested the City provide an estimated date for comments related to Noise and Vibration and Air Quality reports ▪ The City provided feedback related to the Noise and Vibration Assessment and Qualitative Air Quality Assessment reports
Municipal – City of Toronto	April 24, 2020	▪ Metrolinx provided responses to the City's comments received on April 8 and 9, 2020 and noted they look forward to working with the City as design progresses
Elected Officials – MPP Scarborough Guildwood	March 6, 2020	▪ The MPP's office requested a copy of the display boards presented at the information session held at the Scarborough Civic Centre ▪ Metrolinx provided a link to the display boards presented at the information sessions and noted that the MPP's office and Scarborough residents will be kept informed through the study process

6.3.3 Other Stakeholders

The following table (**Table 6-6**) summarizes the outreach, and correspondence with Technical Stakeholder groups related to the Project. Detailed correspondence records are provided in **Appendix C2**.

Table 6-6: Summary of Email Correspondence with Other Stakeholders

Date of Correspondence	Summary of Stakeholder Correspondence	Date of Response	Summary of Metrolinx Response
December 5, 2019	▪ Inquired about the potential station locations and number of stations planned for the SSE	December 6, 2019	▪ Confirmed that the SSE will add three more stops onto the Line 2 subway, including: Lawrence Avenue and McCowan Road; Scarborough Town Centre and McCowan Road; and Sheppard Avenue ▪ Noted that the SSE will provide seamless travel for Scarborough residents heading into and out of the downtown core ▪ Noted that the target completion date is 2029-2030
December 12, 2019	▪ Expressed interest in becoming a service provider for the SSE	December 18, 2019	▪ Thanked for interest in the SSE ▪ Confirmed that all procurement opportunities are publicly posted on MERX and more will be posted as they arise ▪ Confirmed that no pre-registration is required

6.4 Commitment to Future Consultation

Metrolinx is committed to continuing stakeholder and public engagement and consultation beyond the regulatory requirements set out in Section 8 of O. Reg. 231/08. Specifically, Metrolinx will:

- Host a second round of public consultation in Summer 2020, focusing on online activities via the Project webpage and Metrolinx Engage;
- Develop an online engagement strategy to keep interested members of the public and stakeholders informed during the addendum process;

- Maintain the Project webpage (www.metrolinx.com/scarboroughsubway) throughout detailed design and construction where the public can access updated Project information;
- Maintain the Project distribution list to help ensure all interested individuals receive Project updates throughout planning, design and construction;
- Design and implement a response strategy to address/ resolve potential construction concerns; and
- Continue discussions with members of the public, local stakeholders and Indigenous communities with respect to potential impacts and mitigation during detailed design and construction, as appropriate.

7. Commitments to Future Work

7.1 Permits and Approvals

In addition to the commitments to future work outlined in **Table 7-1**, permits and approvals obtained for the proposed works, as outlined in the following sections, may identify the need for additional mitigation. Any additional mitigation measures required in connection with a permit or approval shall be implemented.

The following permits may potentially be obtained for the Project:

- Permit to Take Water (PTTW) from the MECP for locations where construction dewatering exceeds 50,000 litres per day;
- Sewer Use Permit for discharge with the City of Toronto for construction dewatering;
- ECAs for Air and Noise from the MECP for bus terminals and potentially TPSS;
- Permit under Section 17 of the ESA from the MECP;
- Voluntary Project Review (VPR) and/or Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (O. Reg. 166/06) within TRCA-regulated areas; and,
- Tree Removal or Injury Permits from the City of Toronto in accordance with Chapters 658 and 813 of the Toronto Municipal Code.

Permitting requirements will be confirmed during detailed design. Refer to the following sections for more detail regarding permits and approvals.

7.1.1 Federal

Migratory Birds Convention Act, 1994

Where possible, vegetation removal shall take place outside of the primary breeding bird season (April 1 to August 31). If vegetation must be removed during the overall bird nesting season, nest and nesting activity searches will be conducted by a qualified Biologist within 48 hours prior to vegetation removal.

If construction activities occur during the bird nesting season (April 1 to August 31), bird exclusion methods such as covering potentially suitable nesting locations on machinery,

equipment or stockpiled materials in addition to other types of exclusion methods shall be implemented to prevent migratory birds from accessing and building nests in the constructions site. If a nest is found in the construction site, all work in the immediate vicinity must stop and a Qualified Biologist be contacted to determine appropriate avoidance measures in order to avoid contravention of the MBCA.

Section 5.1.2 describes the prescribed avoidance timing windows and associated mitigation measures required for vegetation removal and any further migratory breeding bird surveys that may be undertaken.

7.1.2 Provincial

Ministry of the Environment, Conservation and Parks

All requirements of the ESA will be met. Species-specific mitigation, monitoring, surveys and corrective action will be implemented in accordance with permits and approvals under the ESA, and in consultation with MECP, as necessary.

7.1.3 Municipal

Metrolinx, as a Provincial Agency, is not subject to municipal permits and approvals (Metrolinx Act, 2006); however, Metrolinx will endeavour to adhere to the intent of the relevant municipal permits/approvals to the greatest extent possible and shall submit applications for review and information.

Water, sanitary, and storm servicing will be reviewed during detailed design. Metrolinx will consult with the City of Toronto during detailed design to address impacts to municipal water, sanitary, and storm sewer systems.

Metrolinx shall continue to communicate and engage with the City of Toronto during detailed design and construction planning to address municipal concerns.

7.1.4 Conservation Authorities

Metrolinx will engage with the TRCA as detailed design advances, including regarding compensation and post-planting monitoring in or near water works and dewatering, as necessary. As a provincial Crown corporation, Metrolinx may work in co-operation with the TRCA to consult on detailed design activities associated with project construction, maintenance or emergency activities through the environmental assessment/infrastructure projects application for VPR.

7.1.5 Utilities

Co-ordination with both the City of Toronto and the relevant private utilities will be undertaken during detailed design. Potential utility conflicts shall be reviewed in consultation with each utility company as part of detailed design. Implementation and construction obligations shall be undertaken pursuant to the crossing agreements with each of the utility companies as required. The City of Toronto will be engaged regarding impacts to municipal servicing and required permits will be obtained prior to construction.

7.2 Commitments to Future Work

7.2.1 Summary of Mitigation and Monitoring Requirements

A summary of EPR Addendum commitments is provided in **Table 7-1**. The mitigation measures and future commitments described in **Table 7-1** are applicable to this EPR Addendum. Where different, mitigation measures and future commitments prescribed in the 2017 EPR are in addition to the mitigation measures and future commitments described below, and such, should still be carried forward as applicable. However, mitigation measures and future commitments prescribed in the 2017 EPR specific to EEB 5 location and TPSS 2 in the Gatineau Hydro Corridor are no longer applicable, as those project components are no longer consistent with this EPR Addendum.

All applicable permits, licences, approvals and monitoring requirements under environmental laws shall be reviewed, confirmed and obtained prior to the construction of the Project. Permits, licenses and approvals may require additional mitigation measures as a condition of their issuance.

Table 7-1: Summary of Future Commitments, Mitigation Measures, and Monitoring Requirements

Discipline	Project Phase	EPR Commitments: Mitigation Measure (or related action) or Future Commitment
Natural Environment – Policy Areas, Vegetation and ELC Communities	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Table 5-4**. ▪ Consultation with City of Toronto may be required to determine requirements for vegetation removal and compensation. ▪ Discussions with TRCA to determine if compensation and post-planting monitoring is required for the removal of Meadoway Restoration Areas for construction of the proposed bus loop as per TRCA's Guideline for Determining Ecosystem Compensation (June 2018). ▪ Further consideration to reduce the footprint of the proposed bus loop to minimize potential effects on the TRCA's and City of Toronto's NHS to the extent possible will be undertaken during detailed design. ▪ Recommendations for additional monitoring related to vegetation removal within regulated areas may be determined through consultation with the TRCA. ▪ Areas of vegetation removal will be confirmed during detailed design, and TRCA will be consulted to determine any requirements for vegetation removal and compensation, which will consider TRCA's Guideline for Determining Ecosystem Compensation (June 2018). ▪ A tree inventory may be completed during detail design for all city- or private-owned trees within 6 m of the construction footprint or 12 m of the construction footprint where it overlaps with RNFP policy area. A review of the final footprint during detail design shall be completed to confirm the potential injury or destruction to any trees protected under the City of Toronto's by-laws and thus confirm any necessary permits. ▪ An Arborist Report by an I.S.A. Certified Arborist may be prepared with regard to the Ontario Forestry Act R.S.O. 1990 and other regulations and best management practices as applicable. The Arborist Report may include, but not be limited to the individual identification of all trees within the Study Area including those that require removal or preservation, or trees that may be injured as a result of the Project. Trees to be identified within the Study Area may include those on Metrolinx property, trees on public and private lands, and boundary trees. The City of Toronto by-laws dictate the minimum area buffers to be inventoried and DBH which requires inventory. ▪ Prior to the undertaking of tree removals, a Tree Removal Strategy / Tree Preservation Plan may be developed during detailed design to document tree protection and mitigation measures that follow the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees Guidelines (2016) that adheres with best practices, standards and regulations on safety, environmental and wildlife protections. If a tree requires removal, compensation and permitting / approvals (as required) shall be undertaken in accordance with local by-law requirements and in consultation with the City of Toronto. ▪ An Erosion and Sediment Control Plan, in accordance with the GGH's Erosion and Sediment Control Guideline for Urban Construction (December 2006), will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the vegetation communities. ▪ A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. ▪ A dewatering monitoring plan, should it be deemed required, may be developed in consultation with the TRCA, and will monitor for potential negative effects on adjacent vegetation communities if affected due to dewatering activities, and will provide an adaptive management plan should said negative effects be observed.
Natural Environment – Wildlife and Wildlife Habitat	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Table 5-4**.
Natural Environment – SAR	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Table 5-4**. ▪ Surveys and species-specific mitigation measures will be implemented as per permits and approvals obtained under the ESA.
Natural Environment – Aquatic Environment	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Table 5-4**. ▪ Ongoing consultation with TRCA, DFO and Toronto Water, is warranted to identify feasible construction methodologies for the installation of the tail tracks underneath the Markham branch of Highland Creek. It is acknowledged that TRCA does not support an open-cut crossing at the Highland Creek Markham Branch north of Sheppard Avenue East. Consideration will be given to undertaking a trenchless crossing at this location following the completion of the necessary technical studies to confirm its feasibility. ▪ An Erosion and Sediment Control Plan, in accordance with the GGH's Erosion and Sediment Control Guideline for Urban Construction (December 2006), will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the waterbody. TRCA will be consulted for review during detailed design. ▪ A Spill Prevention and Response Plan will be developed before work commences to ensure procedures and policies are in place during construction to minimize impacts to wetlands and watercourses. Spill kits should be kept on site in the event of a spill. ▪ An assessment of potential impacts on fish and fish habitat may need to be completed upon confirmation of construction methodology during the detailed design phase of the Project. The proposed works adjacent to the Markham Branch of Highland Creek (Crossing under McCowan Road north of Sheppard Avenue East) will occur within 30 m of and/ or have the possibility of encroaching on the HWM of this watercourse. If works are to occur below the HWM of this watercourse, submission of a DFO project review is recommended.
Geology and Groundwater	▪ Detailed Design / Construction	▪ Dewatering permits, including PTTW, and any discharge requirements will be determined during detailed design. Supporting hydrogeological report(s) will be prepared in consultation with TRCA and City of Toronto.

Discipline	Project Phase	EPR Commitments: Mitigation Measure (or related action) or Future Commitment
Drainage and Hydrology	▪ Detailed Design / Construction	▪ Conduct Hydraulic Analysis and Modelling to define the level of impact on flow rates, runoff volumes, and water levels and velocities as a result of Project ancillary facilities during detailed design. ▪ Complete a SWM report in compliance with TRCA's Living City Policies and the City of Toronto's Wet Weather Flow Management Guidelines and Design Criteria for Sewers and Watermains, during detailed design. TRCA and the City will be consulted during detailed design to ensure concerns and recommendations are considered. TRCA will also be provided the opportunity to review the SWM report. ▪ During detailed design, the following TRCA policy programs and guidelines will be used to design components of the EEBs, stations, and TPSSs: – TRCA Stormwater Management Criteria (2012); – Low Impact Development Guidelines for Storm Water Management Design; – Greater Golden Horseshoe Area Conservation Authorities Erosion and Sediment Control Guidelines for Urban Construction (2006); – TRCA Geotechnical Engineering Design and Submission Plan Guidelines; and – TRCA Environmental Impacts Statement Guidelines. ▪ To mitigate potential interference with existing drainage as a result of cut-and-cover construction, the following mitigation measures shall be followed: – Co-ordinate with the City of Toronto for ongoing City projects within the Bendale Branch of West Highland Creek. – Prepare an Erosion and Sediment Control Plan, which complies with prevailing TRCA and Toronto Water guidelines and requirements prior to the start of Project construction activities. ▪ Coordinate with Toronto Water during detailed design to manage potential impacts to: – Basement Flooding Study works. – Existing servicing and servicing recommendations as per the City's Servicing Study. ▪ It is acknowledged that it is the TRCA' s preference for Project features to avoid flood vulnerable areas to prevent flood risk to staff, nearby properties or the general public. The TRCA will be consulted at later stages regarding flood proofing and siting options to avoid flood risks. A future hydraulic assessment will be completed during detailed design to support the site assessment. ▪ An assessment by a geotechnical engineer to identify adequate setbacks will be completed with continued consultation with TRCA. If setbacks cannot be achieved, mitigation measures will be implemented to prevent risks to the creek bank and slope.
Air Quality	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Table 5-6.** ▪ Prior to commencement of construction, a detailed Construction AQMP will be developed and provided to MECP for their files. ▪ Development and implementation of Weekly Air Quality Monitoring Reports shall be required and will be provided to MECP for their files. ▪ Recommended to carry out a quantitative assessment including specific source emission estimation and dispersion modelling to confirm level of impact from project contributions.
Noise and Vibration	▪ Construction / Operations	▪ Implement mitigation and monitoring requirements documented in **Table 5-14.** ▪ Prior to commencement of construction, develop and implement a detailed Construction Noise and Vibration Management Plan to the Contracting Authority. Provide the Construction Noise Management Plan to MECP and Contracting Authority for their files. ▪ Develop construction noise and vibration communications and complaints protocols in accordance with the Project Agreement. ▪ Apply and obtain ECAs and EASRs for the stationary noise facilities for this project as applicable. To support the applications for ECAs and completion of EASRs, background levels used for the adjustment of noise limits should be verified by calculations as per MECP noise prediction standards.
Socio-Economic Environment – Utilities	▪ Detailed Design	▪ Implement mitigation and monitoring requirements documented in **Section 5.3.1**. ▪ Subsurface utility engineering investigations will also be conducted during detailed design to provide further information on the type, size and location of all utilities and to support the impact evaluations.
Socio-Economic Environment – Building and Property	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Section 5.3.2**. ▪ For permanent impacts, property requirements will be carefully determined and refined during detailed design, in order to minimize the amount of private land required for the Project. ▪ For temporary impacts, Metrolinx will negotiate temporary permission to enter and construction agreements with property owners on a case-by-case basis following the procedures described in **Section 5.3.2.4**. ▪ Metrolinx will work with affected property owners to address concerns and ensure that any impacts are mitigated, to the extent possible. Following construction, the lands will be restored to pre-existing conditions, to the extent possible.
Socio-Economic Environment – Business and Recreational Disruption	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Section 5.3.3**. ▪ Metrolinx will inform communities, residents, business owners and institutions directly impacted by new construction. Specific mitigation measures will be developed once property impacts are further refined and confirmed.

Discipline	Project Phase	EPR Commitments: Mitigation Measure (or related action) or Future Commitment
Socio-Economic Environment – Urban Design	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Section 5.3.4**.
Socio-Economic Environment – Waste Management	▪ Construction	▪ Implement mitigation and monitoring requirements documented in **Section 5.3.5**. ▪ Phase One and Two Environmental Site Assessments will be conducted prior to property acquisition to identify contaminated sites and determine appropriate mitigation.
Archaeological Resources	▪ Construction	▪ Complete all required AA (Stage 3 Archaeological Assessment if recommended by the Stage 2 Archaeological Assessment) for the areas identified in this EPR Addendum as early as possible, prior to the completion of detailed design, and well in advance of any ground disturbance. ▪ Undertake future work in a manner that protects archaeological sites by conserving them in their original location or through archaeological fieldwork, and endeavour to conserve significant archaeological resources in their original location through documentation, protection, and avoidance of impacts. Where activities could disturb significant archaeological resources or areas of archaeological potential, Metrolinx will take appropriate measures to mitigate impacts. ▪ Include provisions in contract as recommended by archaeological assessment(s) (e.g. in case archaeological resources are discovered, protection of sites). All future Stage 2 Archaeological Assessment findings will be shared with all Indigenous communities that were engaged during the Stage 1 Archaeological Assessment process.
Built Heritage Resources and Cultural Heritage Landscapes	▪ Construction	▪ Implement mitigation and monitoring requirements documented in **Table 5-15.**
Transportation	▪ Detailed Design / Construction	▪ Implement mitigation and monitoring requirements documented in **Table 5-16.** ▪ Future consultation with MTO staff to coordinate construction activities and manage traffic impacts. ▪ Consult with the TRCA and City of Toronto staff during detailed design, if it is determined that there will be impacts to the multi-use trail in the Gatineau Hydro Corridor during construction of the proposed bus loop. ▪ Completion of detailed TIS and implementation of mitigation measures resulting from the detailed TIS.
Municipal Service and Public Utilities	▪ Detailed Design	▪ Metrolinx will coordinate with the City of Toronto and Toronto Water during detailed design regarding potential impacts to municipal infrastructure and servicing and ensure that applicable City standards, guidelines, and criteria are met.

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