Preliminary Planning

TPAP commenced on April 27, 2017

*To be completed as part of the Official Plan Transportation Review.*
City Council Direction

• The Scarborough Subway Extension (SSE) project and budget were approved by City Council in 2013, prior to an alignment or station concept being developed.

• In 2016, Council approved an express subway option to Scarborough Centre as part of a Scarborough transit network plan that also includes SmartTrack and a Light Rail Transit (LRT) on Eglinton Avenue East. Council directed staff to continue to develop an express subway option.

• In 2017, Council approved the extension of Line 2 (Bloor-Danforth Subway) from Kennedy Station to Scarborough Centre via the McCowan alignment, including the station concept, tunnel at-grade facilities, and Triton bus terminal concept. Council also authorized the initiation of the Transit Project Assessment Process (TPAP) for the SSE project.
Transit planning priorities for Scarborough support the development of:

1. Scarborough Centre as a vibrant urban node
2. Complete communities along the Avenues to improve local accessibility

The SSE is one part of the transit network plan in Scarborough.

Other projects include:

• Extension of Line 5 – Eglinton Crosstown LRT
• SmartTrack stations at Lawrence Avenue East and Finch Avenue East
• A rapid transit solution on the Sheppard East corridor
Scarborough Subway Extension Study Area

Rapid Transit

- Scarborough RT - to be removed
- Line Z - Bloor-Danforth Subway

Scarborough Centre
Kennedy Station
Study Area
Evaluation of Express Corridors

The key criteria to evaluate and identify the preferred alignment and station location included:

- The ability to support the existing and planned development within Scarborough Centre, including provisions for future extensions
- Impacts to existing customers on Scarborough Rapid Transit (SRT) – Existing Line 3 during construction
- Property impacts
- Costs

The corridors evaluated (as per City Council’s direction in January 2016) included:

- SRT – Existing Line 3
- Midland
- Brimley
- McCowan
Initial Business Case (IBC)

- July 2016, Council received the SSE IBC
- Alignments were evaluated on four cases:
  - Strategic
  - Economic
  - Financial
  - Deliverability & Operations
- Council removed the 3-stop McCowan option from consideration and directed staff to further develop the McCowan express option and other possible express subway alignment options
Express Alignments Evaluated

1 - Brimley, underground
2 - Midland, elevated
3 - Midland, elevated
4 - Midland, underground
5 - Midland, underground
6 - McCowan, underground
7 - SRT Corridor, elevated
Updated Business Case

- Council received the updated Initial Business Case at its March 2017 meeting.

- The updated Business Case included an Express Brimley option.

- Staff continued to support the McCowan Express option to Scarborough Centre.
Scarborough Centre Gateway

Recommended Subway Station

Source: Google Earth
Preferred McCowan Alignment

Both feedback from the community & the technical analyses performed identified McCowan as the preferred alignment:

• Station would be in the most central location relative to existing and future developments
• Offers travel times as fast as any alternative
• Allows SRT to remain operational during construction
Transit Project Assessment Process

In March 2017, City Council provided approval to proceed with the TPAP.

What is the TPAP?

- A streamlined (6-month) environmental assessment process specific to transit projects in Ontario to satisfy the requirements of the *Environmental Assessment Act* (Ontario Regulation 231/08).
Overview

The 6.2 km express subway from Kennedy Station to Scarborough Centre, includes the:

- Alignment – including the location and configuration of the SSE
- Scarborough Centre Station
- Bus Terminal
- Ancillary Facilities – supporting components required for the operation of the subway
- Construction Methods
Scarborough Centre Station

Main components include:

- Side platforms
- Concourse
- Ventilation Shafts
- Bus Terminal
- Traction Power Substation
- 3 Station Entrances (potentially more in the future)
- Barrier Free Access
- Bicycle Facilities
- Associated Road Improvements (new Borough Drive Extension)
Bus Terminal

Refined bus terminal option:
• Minimizes property impacts
• Does not preclude future roadways
• Protects key development blocks

Bus Terminal features:
• Indoor waiting areas and outdoor platform (weather protected)
• Bus bays serving local and regional routes
• Internal circulation
• Direct access to Scarborough Centre Station and Scarborough Town Centre

Construction Phasing:
• 2 phases
Ancillary Facilities

Emergency Exit Buildings (EEB)
- Provide emergency access to the surface
- 8 EEBs are required (maximum 762 m spacing)

Traction Power Substations
- Provide electrical power to the trains and other electrical equipment
- 3 substations are required, 1 at Scarborough Centre Station and 2 stand-alone structures along the alignment

Tunnel Ventilation Structures
- Provide fans for mechanical ventilation in case of fire
- 3 ventilation structures are required (2 consolidated with EEBs)
Construction Methods

Single Large Diameter Tunnel

• Entire tunnel planned to be constructed using a single large tunnel boring machine
  – Tunnel spans approximately 6 km

• 10.7 m diameter
  – Toronto-Yonge Spadina Subway Extension tunnel constructed using twin tunnel boring machines (6 m diameter)

• Minimizes areas that must be constructed using cut-and-cover construction (i.e. Crossover tracks), reducing construction disruption at the surface
Construction Methods

Cut-and-Cover

Cut-and-cover locations throughout the extension include:

• Scarborough Centre Station
• The shallow section immediately east of Kennedy Station
• Emergency exit buildings and ventilation structures which extend from the subway tunnel to the surface
• Traction Power Substations where the cable runs into the ground

At locations where cut-and-cover construction crosses a roadway, decking is placed on the surface to allow road traffic to cross while work is being completed below.
Preliminary Construction Plan

Tunnelling Sequence

• At the tunnel launch site #1 assemble and launch tunnel boring machine
• Tunnel through station box
• Establish tunnel construction site #2 south of station box
• Continue tunnelling south along alignment
• Extract tunnel boring machine at cut-and-cover section east of Kennedy Station

Typical Tunnel Work Site Activities

• Extract soil
• Inspect tunnel liners
• Store equipment & materials
• Maintain the tunnel boring machine
Project Impacts

An environmental assessment is founded on the consideration of impacts caused by the Project.

SSE impacts have been categorized as follows:

1. Displacement of Existing Features (Permanent)
   - Emergency exit buildings, traction power substations

2. Construction (Temporary)
   - Dewatering, traffic diversions

3. Operations and Maintenance (Long-term & Ongoing)
   - Subway operations, bus operations, testing of emergency equipment
Mitigation, Monitoring & Commitments

Mitigation
• Measures put in place to minimize impacts

Monitoring
• Ensures the mitigation measures are effective

Future Commitments
• Future work based on the identification of impacts, mitigation & monitoring, including further studies, permits & approvals
• A complete list of commitments can be found in the Draft Executive Summary (scarboroughsubwayextension.ca; reference copies available at this event)
Impacted Features

What features are likely to be impacted?

**Natural Environment**
- Terrain & Soils
- Groundwater
- Drainage & Hydrology
- Fish & Fish Habitat
- Terrestrial Ecosystem

**Emissions**
- Air Quality
- Noise & Vibration
- Electromagnetic Interference
- Climate Change
Impacted Features

What features are likely to be impacted (contd.)?

**Socio-Economic**
Utilities; Buildings & Property; Business & Recreation; Urban Design

**Transportation**
Auto Traffic & Transit; Pedestrians & Cyclists; Rail

**Cultural Environment**
Archaeology; Built Heritage
Terrain & Soils / Groundwater

Potential Impacts:

- **Displacement** of surplus excavated material (*Permanent*)
- **Settlement** or structural stress due to tunnelling, dewatering & installation of excavation support (*Construction*)
- **Dewatering** – need for handling & discharge
- Potential impacts to **existing facilities, infrastructure and buildings** (*Construction*)

Mitigation Measures:

- **Soil & Groundwater Management Strategy**
- **Monitoring program** for groundwater management
- Tunnel will be installed using **earth pressure balancing tunnel boring machine**
- **Additional ground stabilization** such as grouting, using groundwater cut-offs and the installation of underpinning & support for infrastructure
Drainage & Hydrology

Potential Impacts:

- **Impacts to segments requiring cut-and-cover** (Construction)
- The proposed driveways, bus bays, access roads are subject to pollutant loadings, resulting in **poor storm run-off water quality** (Operations and Maintenance)

Mitigation Measures:

- **Hydraulic analysis and modelling** to further refine controls
- **Erosion and Sediment Control Plan**
- Temporary **erosion and sediment control measures** during construction, such as erosion control blankets and silt fences
- **Lot level controls**
Terrestrial Ecosystem

Potential Impacts:
- Displacement & disturbance to vegetation communities (Permanent)
- **27 bird species** recorded that are protected under the Migratory Bird Convention Act (MBCA) (Construction):
  - No nests of migratory birds but evidence of potential to nest within the vicinity of the SSE

Mitigation Measures:
- **Tree Preservation Plan** to determine tree protection and mitigation
- A **nesting survey** to determine active nests
- **Site specific mitigation plan**
Air Quality – Construction

Potential Impacts:
• Temporary **dust, nitrous oxides & volatile organic carbon** emissions

Mitigation Measures:
• **Best management practices** during construction, for example:
  – Material wetting or use of chemical suppressants to reduce dust
  – Wind barriers & limiting exposed areas
Noise & Vibration – Construction

Potential Impacts:
• Noise & vibration from construction activities including tunnelling, building demolition, excavation & truck movements

Mitigation Measures:
• Construction Noise & Vibration Management Plan
• Construction activities controlled by:
  – Selection of low sound / vibration emission equipment
  – Construction of temporary noise barriers (if feasible)
Buildings & Properties

Potential Impacts:
• For the Bus Terminal, Station Entrances, Traction Power Substations, EEBs & the tunnel structure *(Permanent)*:
  – Small portion of 35 private & 6 public properties
  – 1 full private property

Mitigation Measures:
• Majority of the subway alignment falls **within the municipal & provincial road allowances** reducing overall Project footprint
• **Single 10.7 meter diameter bored tunnel** has smaller property impact than traditional twin tunnels
Utilities – Construction

Potential Impacts:
- Impacted by **cut-and-cover**
- Potential **disruption to users / customers** of impacted utility services

Mitigation Measures:
- Careful **planning & discussions with utility companies**
- Where cut-and-cover is required (for example, station box and emergency exits):
  - **Temporary support & protection**
  - **Relocation** (large utilities that cannot be temporarily supported)
Transportation – Construction

Potential Impacts:

- Key areas of impact include:
  - Eglinton Avenue, Danforth Road and McCowan Road
  - Kennedy Station; EEB locations; Traction Power Substation; East-side of Scarborough Town Centre
  - Traffic delays and queues; lane restrictions; re-routing; temporary bus stops

- Operation of SRT during SSE construction

Mitigation Measures:

- Traffic Impact Study
- Protection of SRT during SSE construction
Commitment to Engagement

Highlights of consultation to date (preliminary planning phase)

- 21 Public Meetings
- 8 Technical Advisory Committee meetings
- 5 Stakeholder Advisory Group meetings
- 2 Government Review Team meetings
- Multiple meetings with residential & commercial property owners
- Multiple meetings with key agencies
- Online consultation, Project email address & phone number

TPAP “120-day” consultation period – May to August 2017

Consultation will continue through detailed design & construction

- Public Information Office
- Construction Liaison Committee
Next Steps

Collect feedback from this public meeting

Consult government authorities/agencies on the Draft Environmental Project Report. Discuss & address questions / concerns (May - August 2017)

Commence 30-day Review of the Final Environmental Project Report (August - September 2017)

35 days for Minister to act & give notice (September - October 2017)

Submit a “Statement of Completion” & proceed to detailed design
Your Feedback is Important

• Speak to a member of the Project Team at this meeting

• Fill out a comment form

• Review the Draft Environmental Project Report Executive Summary & other Project materials online: scarboroughsubwayextension.ca

• Email: scarboroughsubwayextension@toronto.ca

• Call us: 416-338-3095