Yonge North Subway Extension

York Region Council Presentation

June 17, 2021

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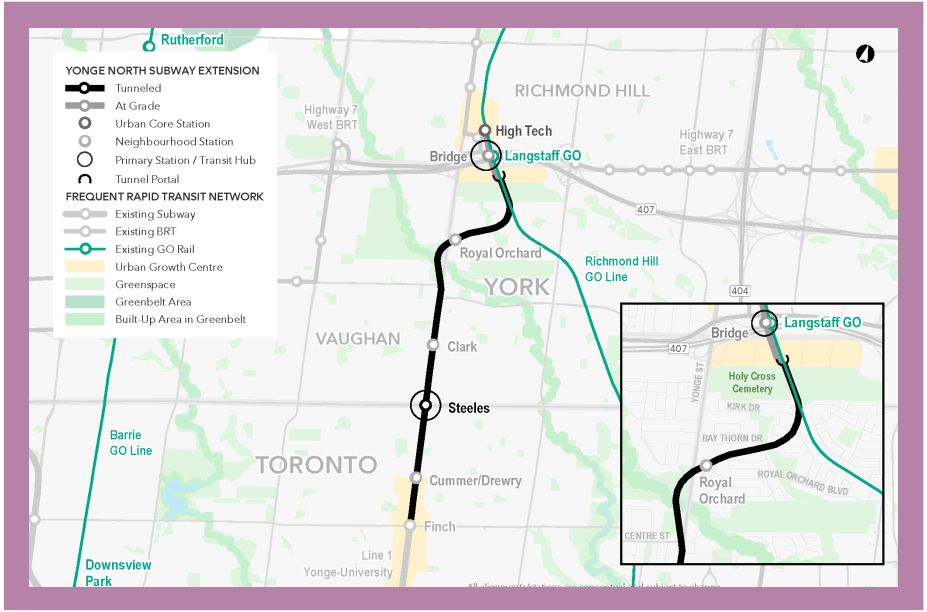
By the Numbers



~8 km route

4 new stations

Confirmed	Potential
• High Tech	• Royal Orchard
• Bridge	• Clark
• Steeles	• Cummer

94,100 daily riders

26,000 more people with in 10-minute walk to transit

22,900 employees with in 10-minute walk to transit

22 minutes saved travelling from York Region to downtown Toronto

835,000 minutes saved on time spent commuting

7,700 fewer km travelled during morning rush hour

4,800 tonnes in yearly greenhouse gas emission reductions

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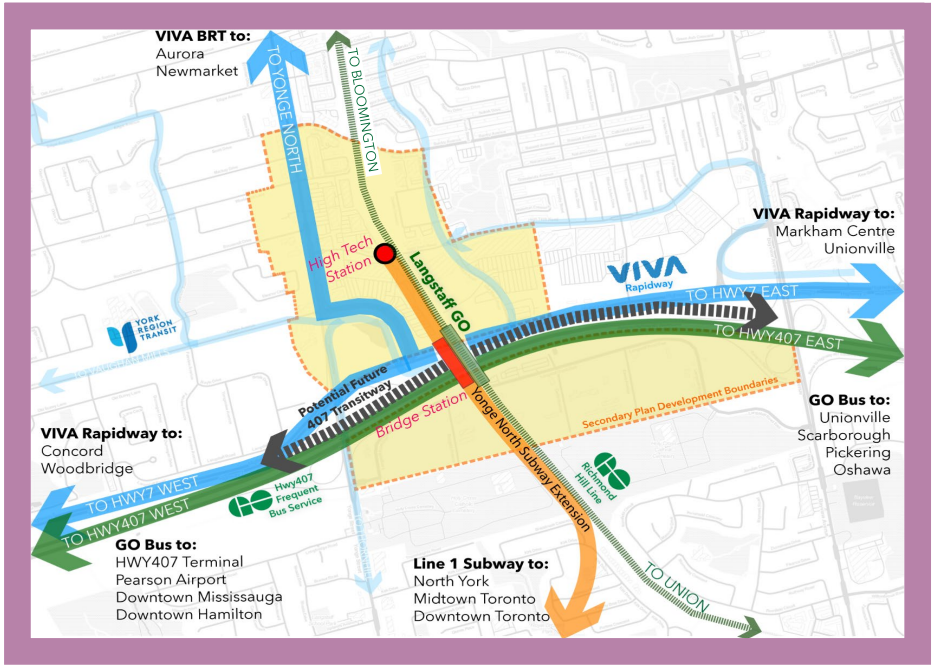
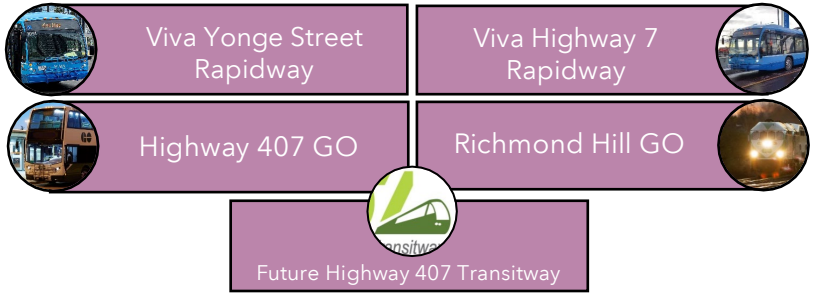
A Launchpad to Explore the Region



A new transit hub at Bridge Station will open up new travel possibilities in York Region and beyond.

- Brings **convenient transit access** to the heart of the Richmond Hill Centre and Langstaff Gateway development areas
    - This will lead to less traffic congestion as these communities grow
- Offers **fast and convenient transfers** to as many as **five** existing and future regional transit lines:



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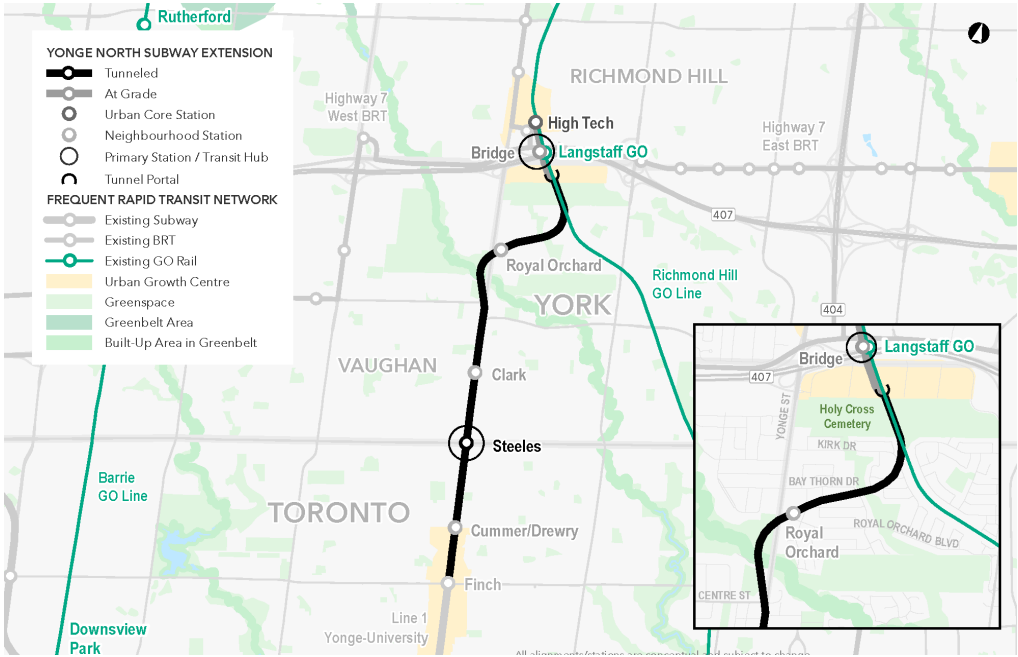
Tunnel Route and Depth

Metrolinx has heard the concerns from the community with the proposed route. Through our Preliminary Design Business Case phase we are:

- Continuing to assess and refine the route and tunnel depths to reduce impacts on residential properties
- Completing geotechnical investigations to inform our analysis and allow for the development of specific solutions to address noise and vibration
- Reviewing options and solutions to address questions raised during community engagement



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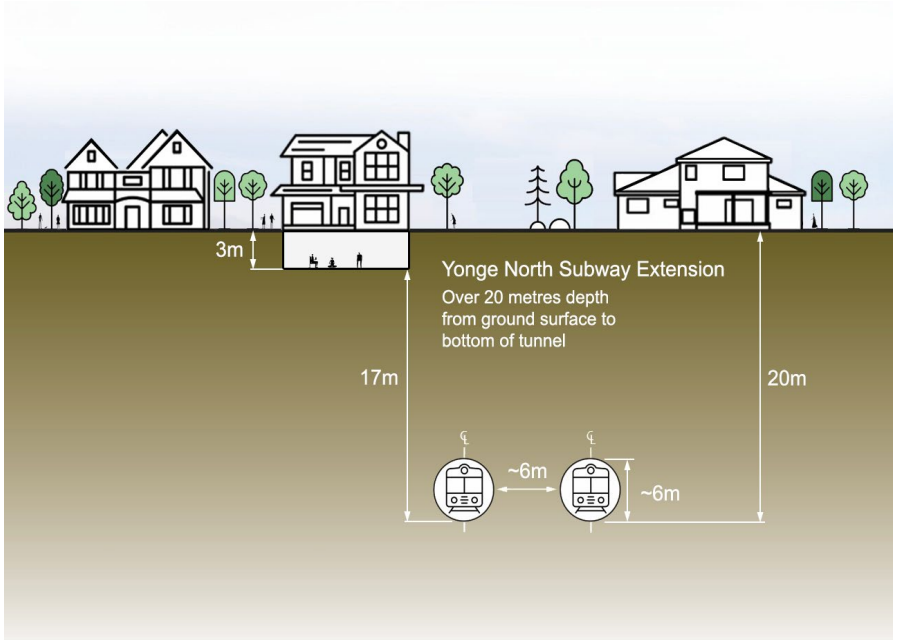
Tunnel Route and Depth

At every turn, Metrolinx considers the latest technology and proven solutions to keep neighbourhoods as quiet and peaceful during construction and operation as before.

- Tunnels are proposed to be built at a depth where there would be **no direct impact** on the homes above
- **Modern, innovative tunneling technology** is available to help minimize impacts through construction and operations
- Exact tunnel depths will be determined through further study.



More detailed information about potential impacts and mitigations will be available as further design work is refined

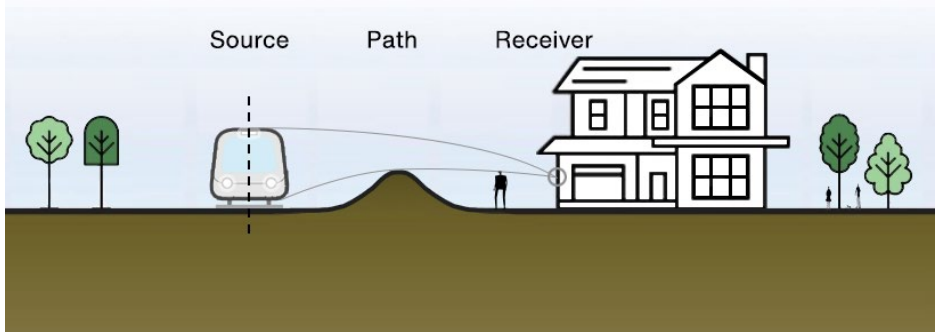
Noise and Vibration

Metrolinx assesses and mitigates noise and vibration by following:

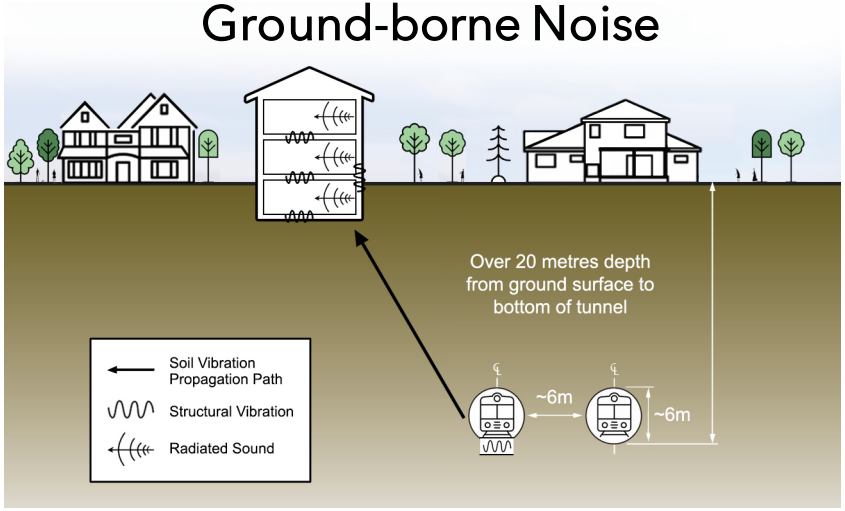
- Ministry of the Environment, GO Transit and the TTC protocols
- Provincial guidelines for transportation sources

Metrolinx abides by the US Federal Transit Administration criteria for ground-borne noise and vibrations

Air-borne Noise



Ground-borne Noise



Noise and Vibration Solutions – Latest Technology

We will work with communities to ensure a comprehensive array of solutions are in place to address noise or vibration impacts. These solutions can include, but are not limited, to:

Resiliently supported rail ties

An elastic pad under the rail ties that prevents vibration caused by coming into direct contact with the crushed rock that forms the track bed

Rubber rail dampers

Discs that tend to look a lot like oversized hockey pucks attach to the rails and help soak up the vibration energy to reduce the sound of passing trains

Ballast mats

A continuous layer of material that reduces the vibration transmitted into the ground as trains pass over

Noise walls

These walls can be designed with a combination of solid and transparent panels, and have been installed across many parts of the Metrolinx rail network

High-grade rail fasteners

These fasters keep all the track parts tightly together and compress to absorb vibration

Floating concrete slabs

The rails would be attached to large concrete slabs that are cushioned below by thick rubber pads that soak up vibrations.

Noise and Vibration Solutions – Latest Technology

For tunnels below residential properties and sensitive land uses, we use the technology best suited for the ground and site conditions

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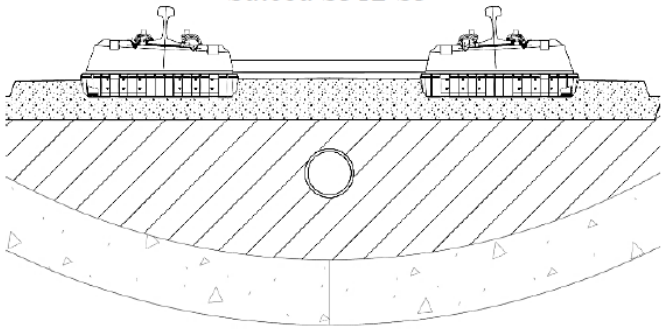
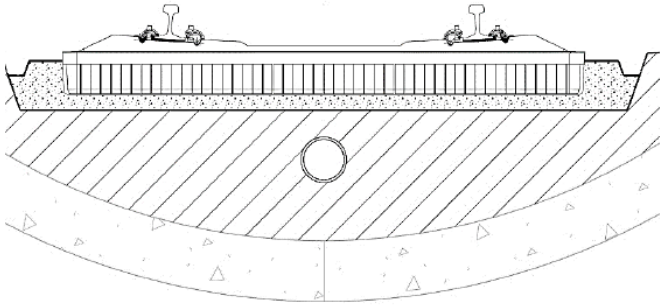
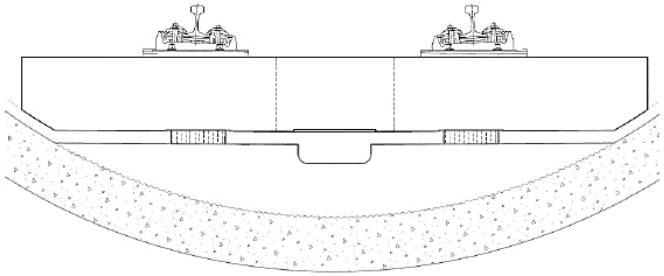


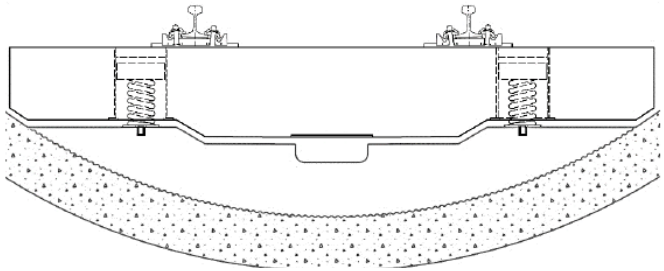
High Attenuation Sleeper



FST elastomer bearings



FST spring bearings

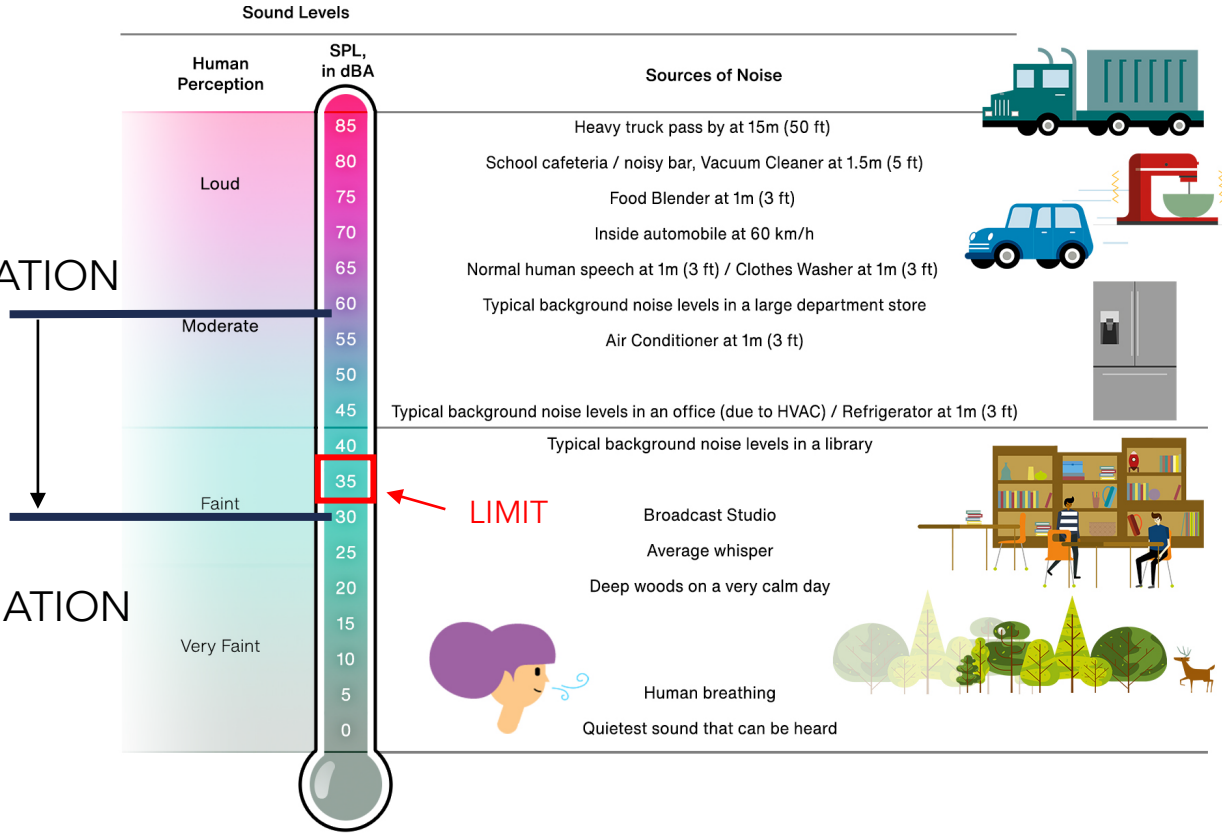


Modelling - Ground-borne Noise below Royal Orchard Community

With mitigation, the sound levels are predicted to range **up to 29 dBA for** ground-borne noise.

NO MITIGATION

WITH MITIGATION



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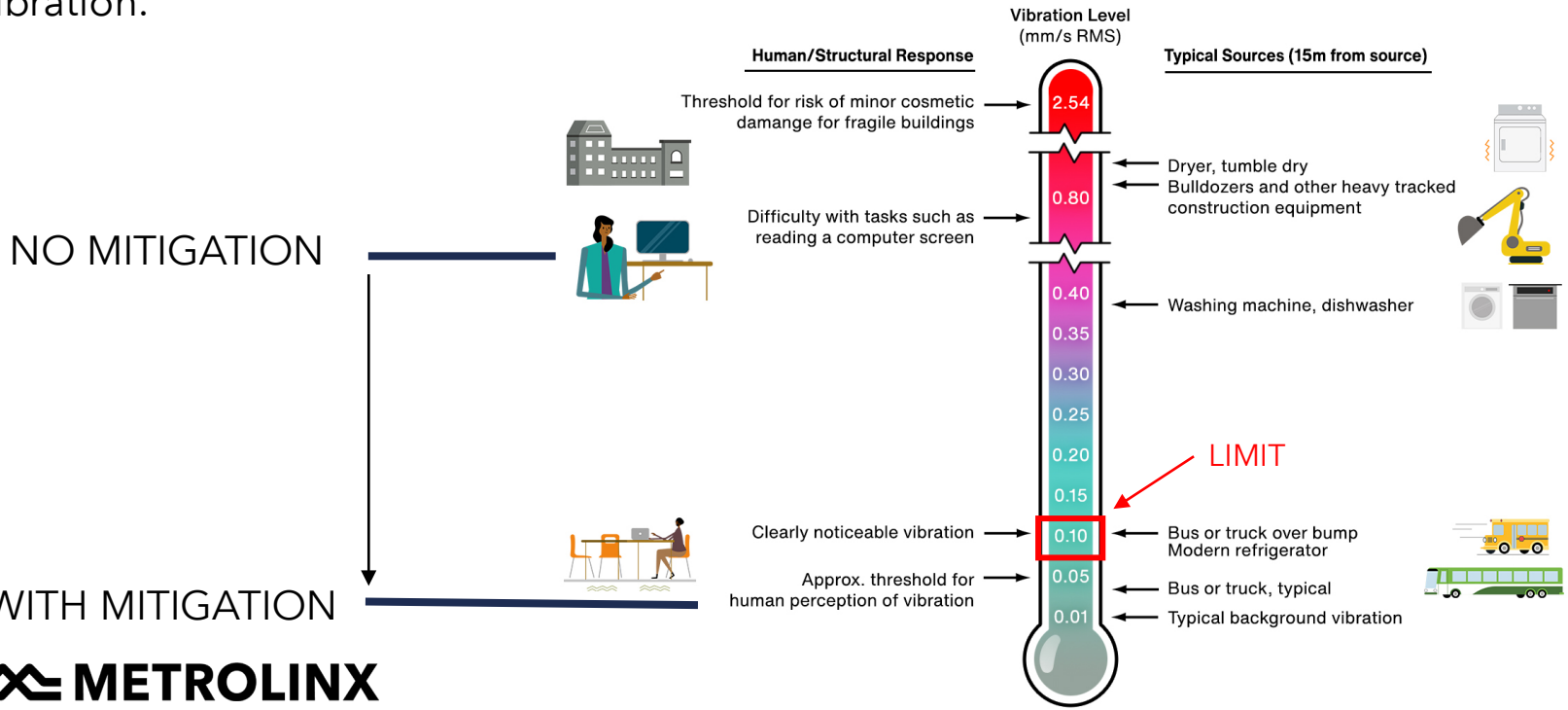
Modelling - Ground-borne Vibration below Royal Orchard Community

With mitigation, the vibration levels are predicted to range **up to 0.05 mm/s** for ground-borne vibration.



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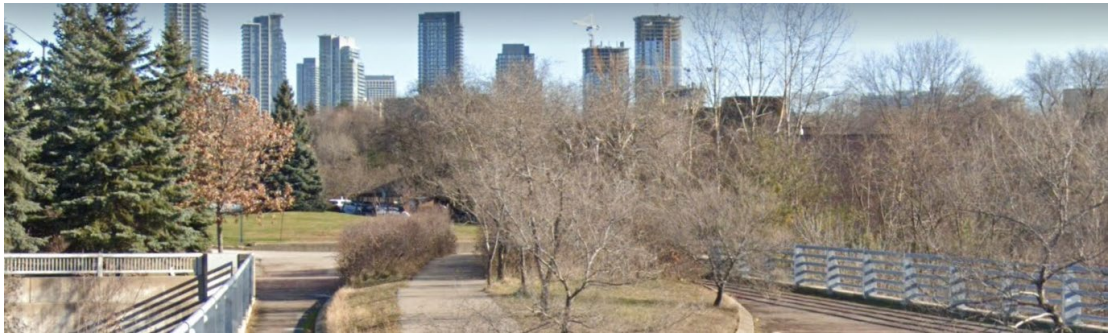
Noise and Vibration Briefing &Tour

Line 4 – Sheppard at Leslie

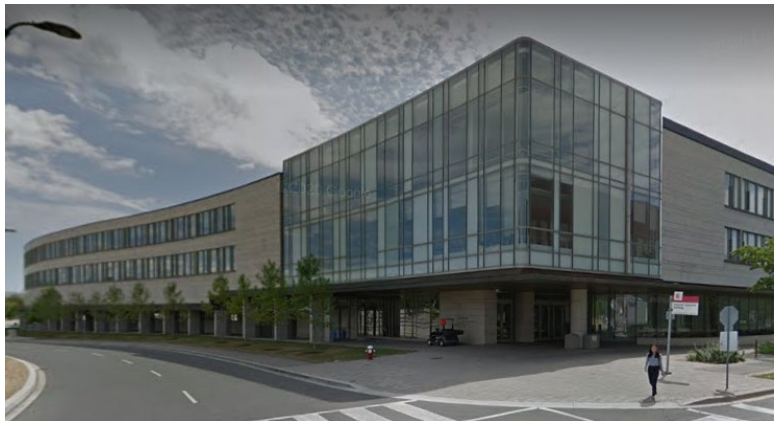


The Metrolinx team and international experts provided a noise and vibration briefing for municipal elected officials and senior staff to share:

- A ground borne noise and vibration overview
- An update on noise and vibration studies for YNSE
- International experiences

Attendees visited two locations on the existing TTC subway network.

- Line 4 - Sheppard (east of Leslie Station)
- Line 1 – Toronto York Spadina Subway Extension (York University - Schulich building)



Line 1 – York University Schulich Building

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Environmental Assessment (TPAP) Addendum Studies

Natural Environment

- Plant inventories
- Fish and fish habitat assessments
- Bird surveys
- Wildlife habitat assessments
- Species at risk surveys

Cultural Heritage

- Research and document historical homes and properties
- Surveys of buildings, areas and features (landmarks) with potential heritage significance

Air Quality

- Review data from air quality monitoring stations
- Identify places sensitive to air quality issues, like:
  - Schools
  - Care facilities
  - Parks
- Predict air quality based on potential changes the project will bring

Noise and Vibration

- Measure and document current levels of noise and vibration
- Identify places sensitive to noise and vibration, like:
  - Residences
  - Schools
  - Hospitals
  - Care facilities
- Investigate potential solutions

Traffic

- Review of potential impacts to traffic during construction and operations:
  - Automobile traffic and transit services
  - Pedestrians and cyclists

Environmental Assessment (TPAP) Addendum Studies

Land Use and Socio-Economic Impacts

- Review of how surrounding land is used, and plans for future development
- Identify socio-economic and land use features, like:
  - Bicycle and pedestrian routes and multi-use trails
  - Parks and open spaces
  - Places of worship

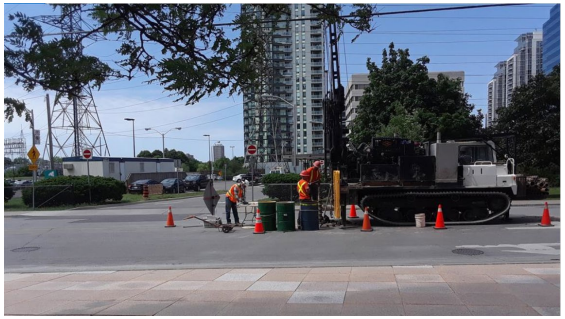
Archaeology

- Review records and perform on-site research to determine areas with potential for archaeological finds
- Confirm whether there are any known archaeological sites
- Engagement with Indigenous Nations

Geotechnical Field Investigations

Geotechnical field investigations in the Royal Orchard community begin July 2021, until approximately the end of October 2021.

- **When:** Daytime hours, on public property only including parks.
- **Where:** Royal Orchard community.
- **What does this mean:** Temporary lane reductions during the day, minor noise and vibration impacts.
- **Notice**: To be distributed to residents two weeks in advance of work beginning.



This is an important stage of the planning and design work for the Yonge North Subway Extension. We're trying to learn as much as we can about the ground, soil and groundwater quality conditions in the area. This work is necessary to inform our analysis and project plans.

Early Works

Early works are construction activities that are carried out in advance of main construction in order to reduce the risk of project delays and prepare specific sites for forthcoming work.
As part of the Yonge North Subway Extension, the following early works will be undertaken to help prepare for the extension of Line 1 of the TTC subway to Richmond Hill.

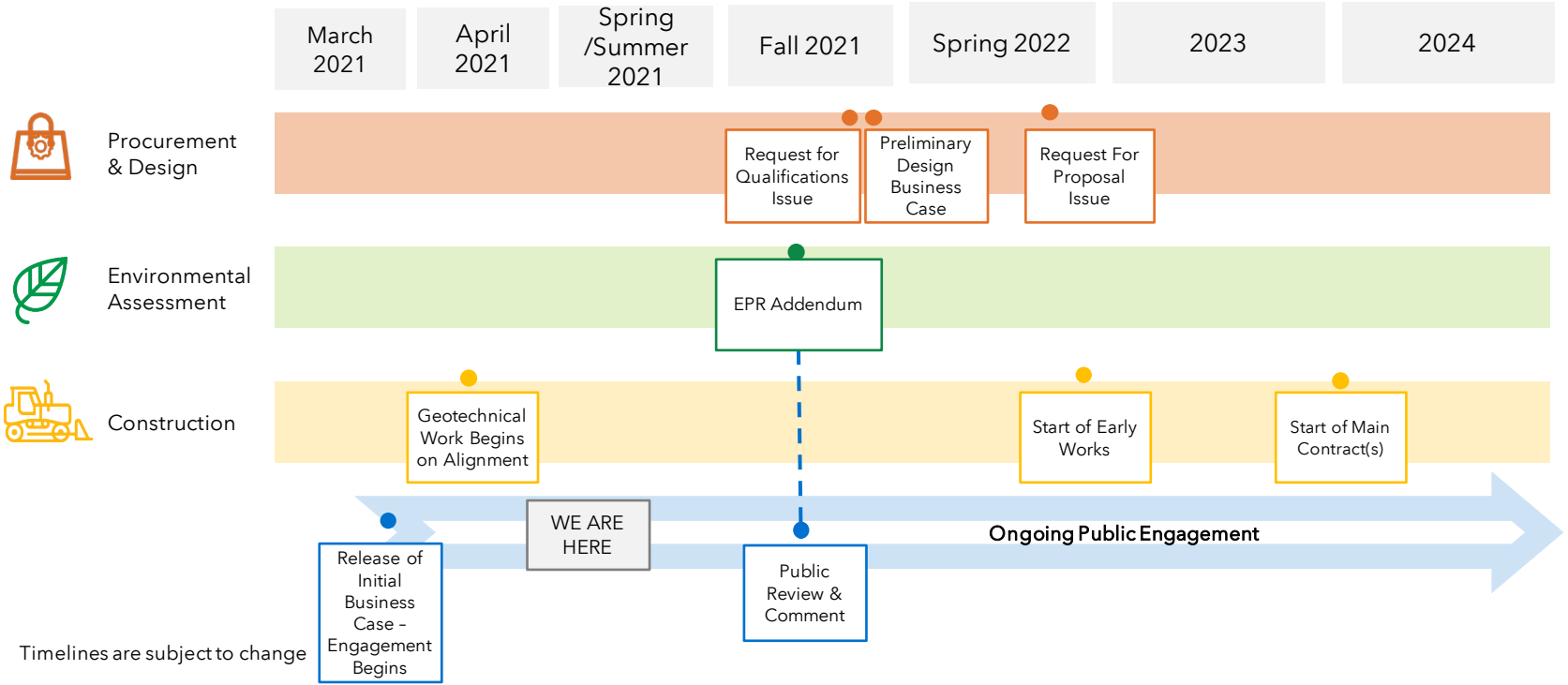
Surface Segment

- Creation of a construction staging area and access road
- Temporary diversion of the existing CN tracks to avoid conflict
- Construction of temporary separation barriers along the CN corridor
- Installation of supportive temporary shoring structures to prepare the launch shaft site for planned work during main construction

Finch Station Modifications

- Upgrading the rail track and systems within the track area
- Installing a new conduit duct bank to accommodate traction power cables from the existing substation to Finch Station
- Modifications to existing back of house rooms within the station

Project Timeline



Royal Orchard Community Liaison Committee

We are committed to keeping residents and businesses informed during every phase of the project, including launching working groups with community members and our project team called **Community Liaison Committees (CLC)**

The first CLC for the Royal Orchard community will be held this evening, Thursday June 17

- The Committee will be an organized venue to review designs, hear concerns, answer questions, and keep the community updated on the project at every turn.
- The Committee will meet once per quarter, with the option to occur more frequently as needed.
- Community members may include representatives from resident, tenant and/or ratepayer associations; local business owners; and local elected representatives.

Going forward, we will be launching other CLCs for different communities and topics relevant to the Yonge North Subway Extension.

Share your feedback!

Thank you for taking the time to learn more about the project. Your input is vital to the work we do and will help us move the Yonge North Subway Extension forward in the best way possible.

Please visit **Metrolinx Engage** to submit your comment or question on our *Ask A Question* forum.

You can reach us anytime:

- YongeSubwayExt@metrolinx.com
- 416-202-7000
- Visit our website:
  Metrolinx.com/YongeSubwayExt
- Participate online:
  MetrolinxEngage.com/YongeSubwayExt

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Thank You

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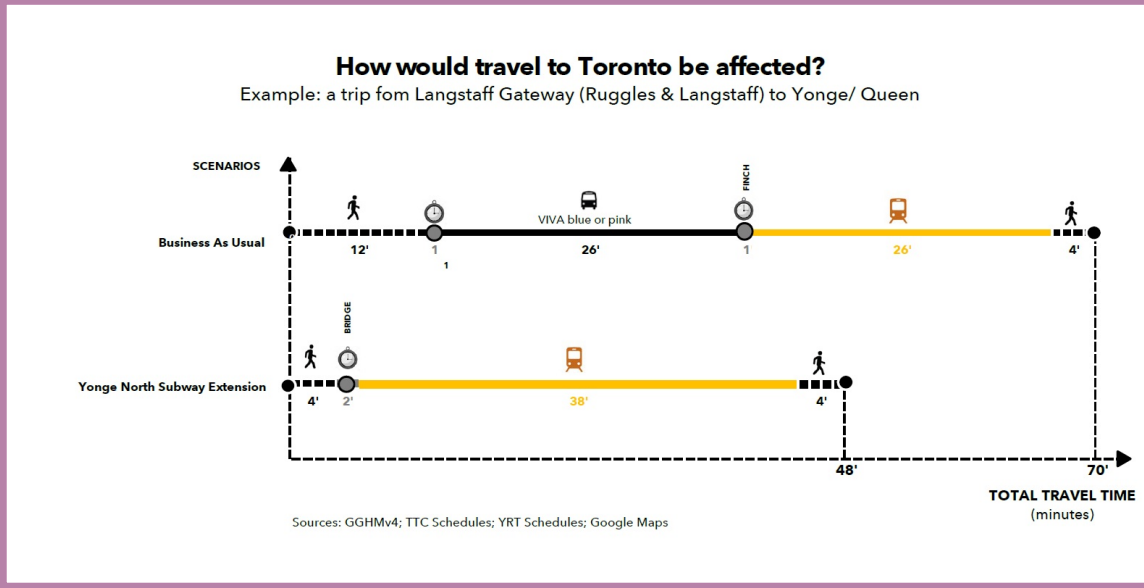
Noise and Vibration

Mitigation is explored where studies and the Environmental Assessment predicts potential exceedance of these criteria

Effect	Metric	Limit
Air-borne Noise	Daytime Adjusted Noise Impact (16-hour average, 7 a.m. to 11 p.m.)	5 dB relative to the higher of pre-project sound levels or 55 dBA
	Night-time Adjusted Noise Impact (8-hour average, 11 p.m. to 7 a.m.)	5 dB relative to the higher of pre-project sound levels or 50 dBA
	Subway vehicle L_{passby}	80 dBA

Effect	Metric	Limit
Ground-borne Noise	Subway vehicle L_{passby}	35 dBA
Ground-borne Vibration	Vibration Velocity RMS	0.1 mm/s RMS (equivalent to 72 VdB)

Key Benefits



Up to 22 minutes saved on a trip from York Region to downtown Toronto

Cuts time spent commuting in York Region and Toronto by 835,000 minutes daily

7,700 fewer km traveled by cars during morning rush hour

4,800 tonnes in yearly greenhouse gas emission reductions

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