



YONGE NORTH SUBWAY EXTENSION

Project Update

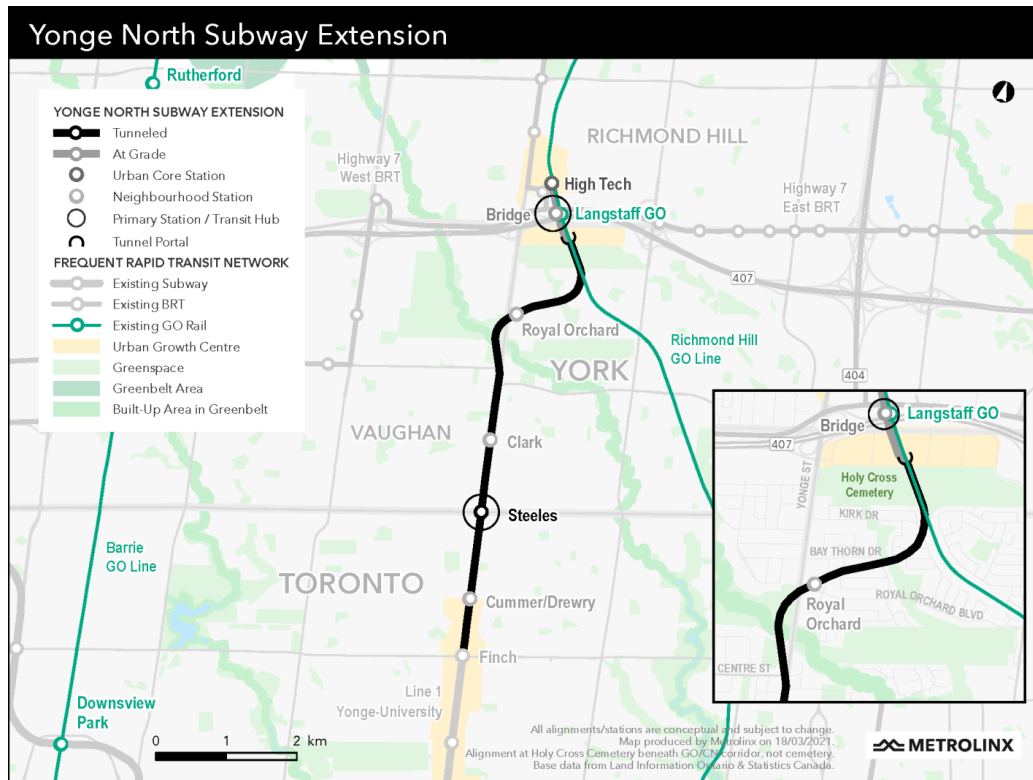
Stephen Collins, Program Sponsor, YNSE

Rajesh Khetarpal, Vice President, Community Engagement

April 26, 2021

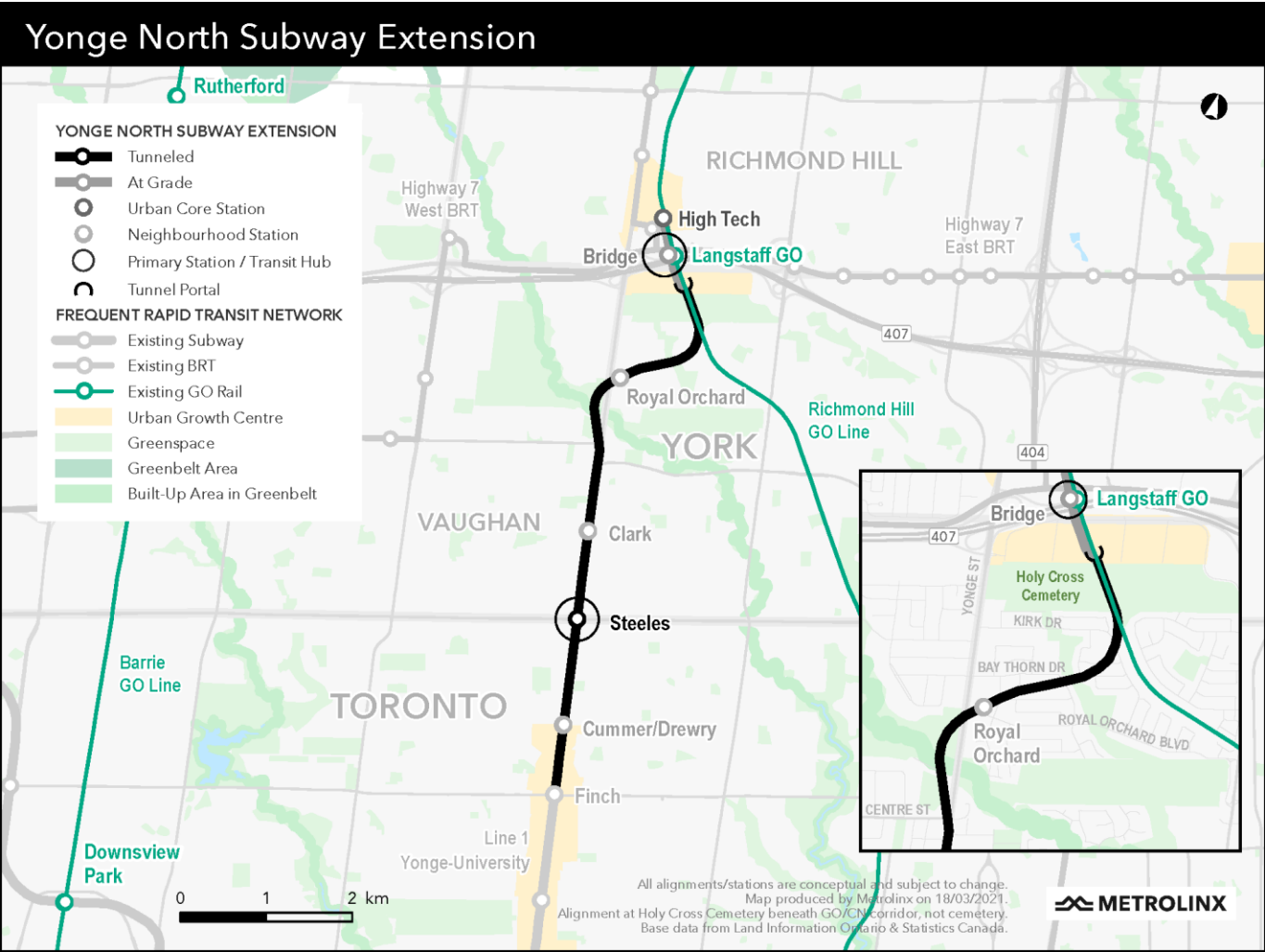
BETTER TRANSIT CONNECTIONS FOR YORK REGION & TORONTO

- Four new stations along an **approximately eight-kilometre extension** of TTC Line 1, from Finch Station north to Richmond Hill.
- Steeles Station will be a hub for local bus routes as well as a **future rapid transit line** along Steeles Avenue.



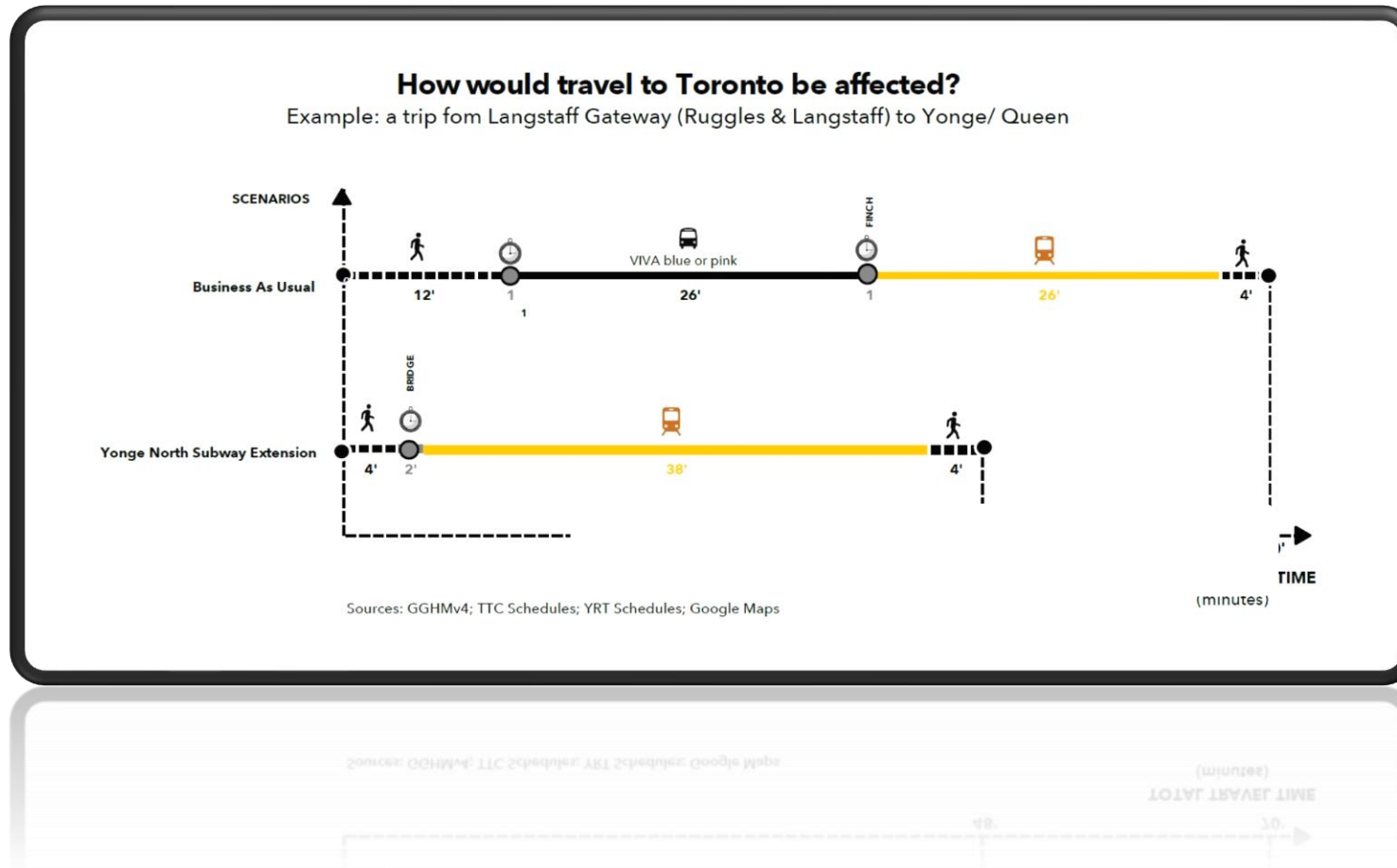
- Bridge Station will **conveniently connect** with GO train, GO bus, and local transit service, including VIVA BRT.
- High Tech Station will **serve future communities** envisioned within the Richmond Hill Centre area.
- Metrolinx is working with municipal partners to **evaluate and determine** the best location for the fourth station as planning work continues.

BY THE NUMBERS



Route length	~8 km
Ridership	94,100 daily boardings
Improved access to transit	26,000 more people within a 10-minute walk to transit
Improved access to jobs	22,900 employees within a 10-minute walk to transit
Daily reductions in traffic congestion	7,700 km in vehicle kilometres traveled
Yearly reductions in greenhouse gas emissions	4,800 tonnes

KEY BENEFITS



The extension will save riders as much as 22 minutes on a trip from York Region to downtown Toronto

- Bridge Station **maximizes TOC opportunities** by connecting two communities in Markham & Richmond Hill that are poised for growth.
- Shifting the alignment in the northern section **reduces construction timelines and property needs** by using a dedicated rail corridor that already exists.
- The project will serve **94,100 riders each day** by 2041, cutting the time spent commuting in Toronto and York Region by a combined **835,000 minutes daily**.

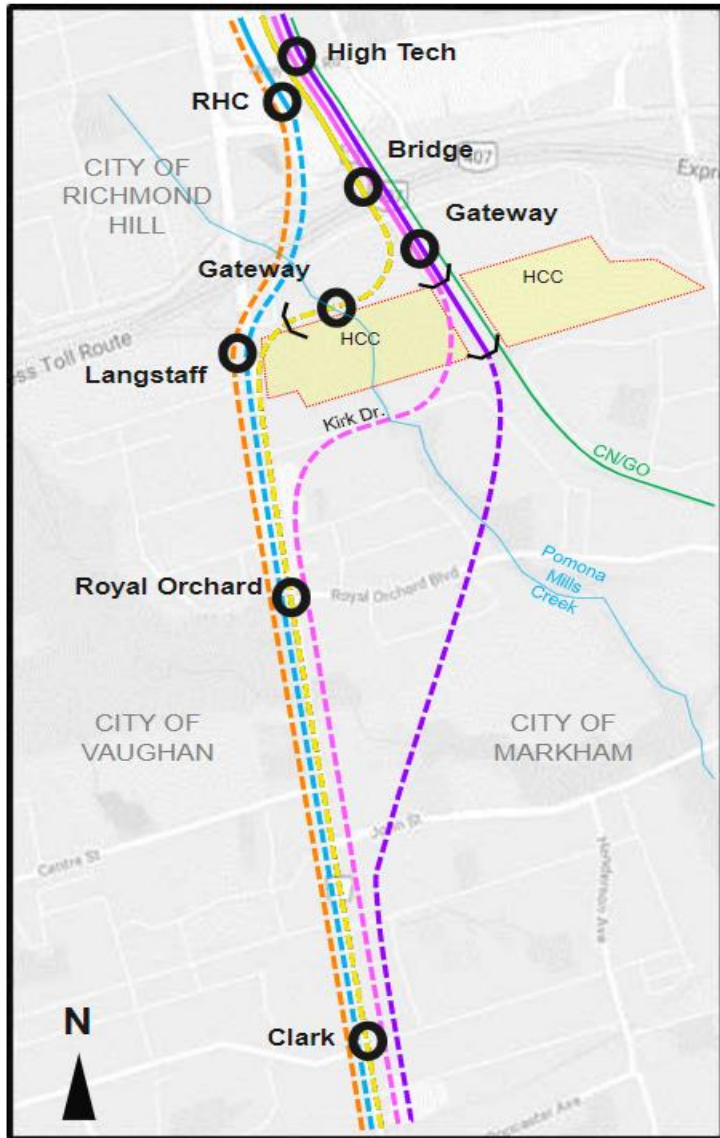
BRIDGE STATION AND HIGH TECH STATION

Bridge Station and High Tech Station will serve the highest density areas to make it faster for riders to use the subway, and better for supporting growth and curbing local traffic congestion.

- **Fast and hassle-free** transfers to GO train/GO bus/local transit
- **Convenient access** to the subway at the heart of Richmond Hill Centre and Langstaff Gateway development areas
- More than half of Richmond Hill Centre residents will live within **walking distance** of High Tech Station by 2041
- Bridge Station site preserves nearby development space to allow the area to evolve into a **thriving urban centre**



ALTERNATE ALIGNMENT OPTIONS CONSIDERED DURING REVIEW



Alternate alignments were screened out as they had similar community impacts and did not protect for Royal Orchard Station, or did not meet the minimum geometric requirements.

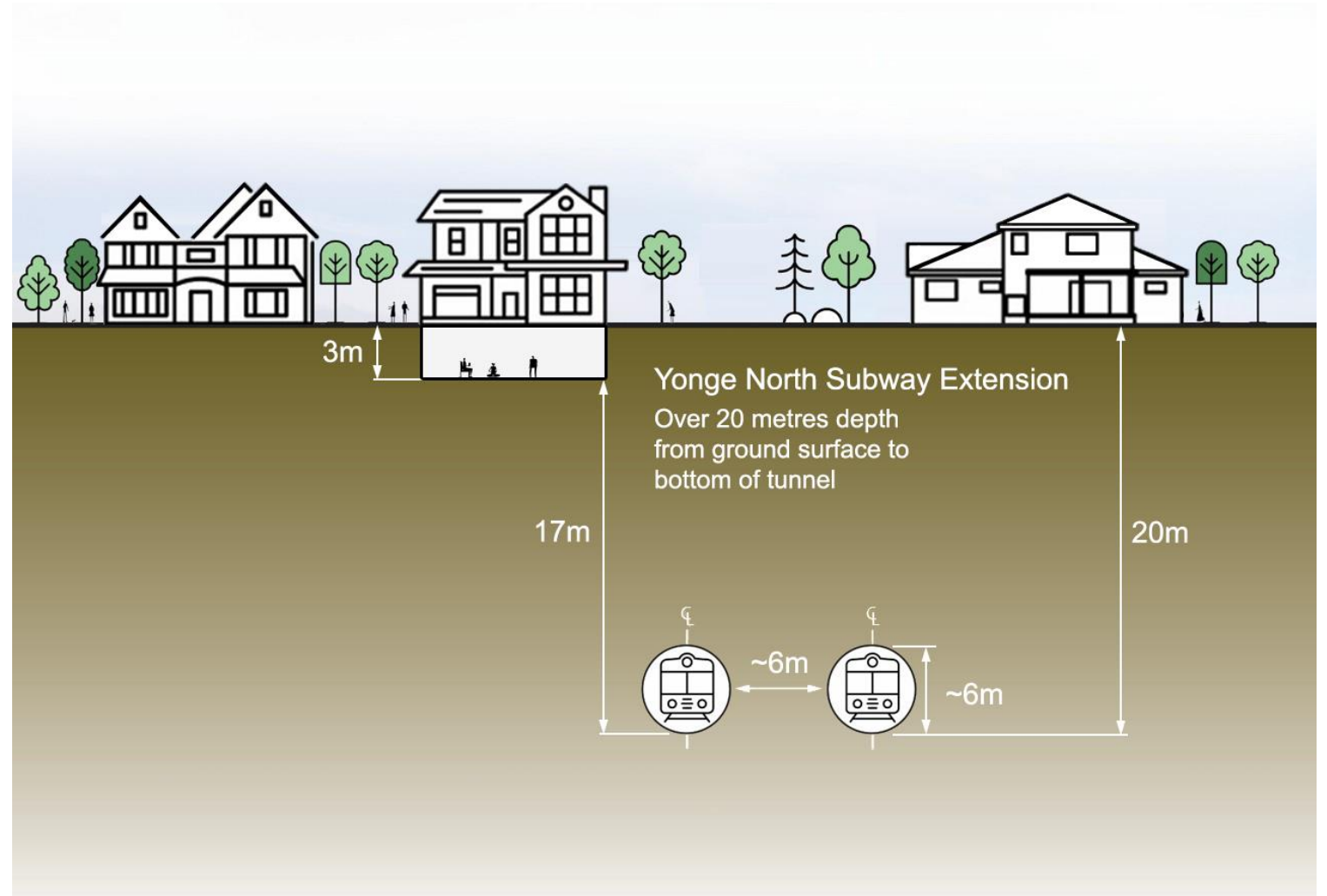


We are refining designs as we conduct and consult on environmental assessments for the project, and our goal will be to minimize impacts to communities as much as possible as we deliver major transit benefits to them.

TUNNEL DEPTH - ROYAL ORCHARD COMMUNITY

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 SOLUTIONS - ENVIRONMENTAL STUDIES

We are preparing an addendum to the existing **environmental assessment** (EA) that will cover off any changes to existing conditions since that EA was completed and evaluate the updated route.

	The EA will study things like...		
<ul style="list-style-type: none">• Noise and vibration solutions• Soil and groundwater quality• The natural environment• Land use			

- Crews are already **collecting ground samples** along the route to inform this work.
- Data and **public input** will help Metrolinx make sure all the necessary solutions are put in place to keep things as quiet and peaceful as possible in each neighbourhood.

NOISE AND VIBRATION SOLUTIONS - LATEST TECHNOLOGY

We will work with your community 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 fasteners keep all the track parts tightly together and compress to absorb vibration



Floating concrete slabs

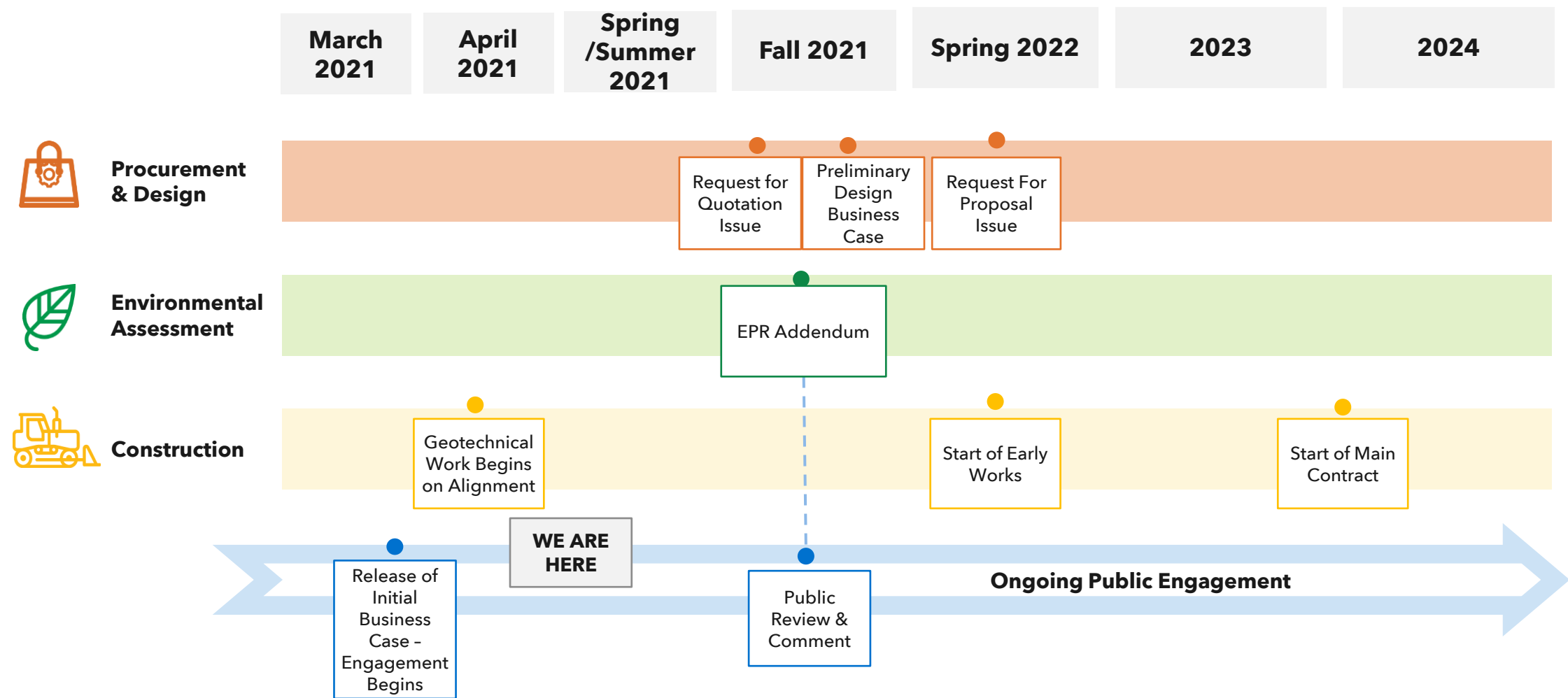
The rails would be attached to large concrete slabs that are cushioned below by thick rubber pads that soak up vibrations.

EXAMPLES OF SUBWAYS NEAR AND UNDER RESIDENTIAL AREAS

There are many existing and future rapid transit lines that run near and beneath homes (measurements taken from ground surface to bottom of tunnel).

- **Westside Subway Extension Metro Purple Line - Los Angeles, California (opening 2025)**
 - Tunnels directly below single family homes and challenging geologic conditions
 - Tunnel depth 21m to 24m
- **Northgate Link Extension - Seattle Washington (opening 2022)**
 - Tunnels directly below single family homes and Washington University Campus
 - Tunnel depth 26m under residential area
- **Canada Line - Metro, Vancouver, British Columbia (2009)**
 - Passes under private residential properties adjacent to False Creek
 - Tunnel depth shallowest 13m to 23m
- **TTC Sheppard Subway - Toronto (2002)**
 - Tunnels along residential property lines
 - Tunnel depth 21m to 24m

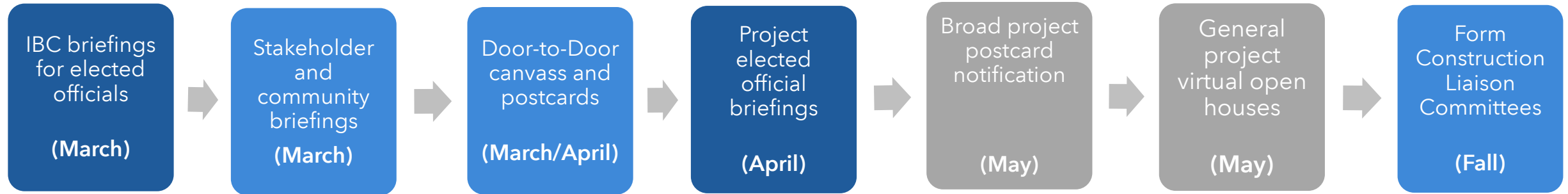
PROJECT MILESTONES



Timelines are subject to change

Communications, Community and Stakeholder Engagement

COMMUNITY & STAKEHOLDER ENGAGEMENT



OFFICIALS BRIEFINGS

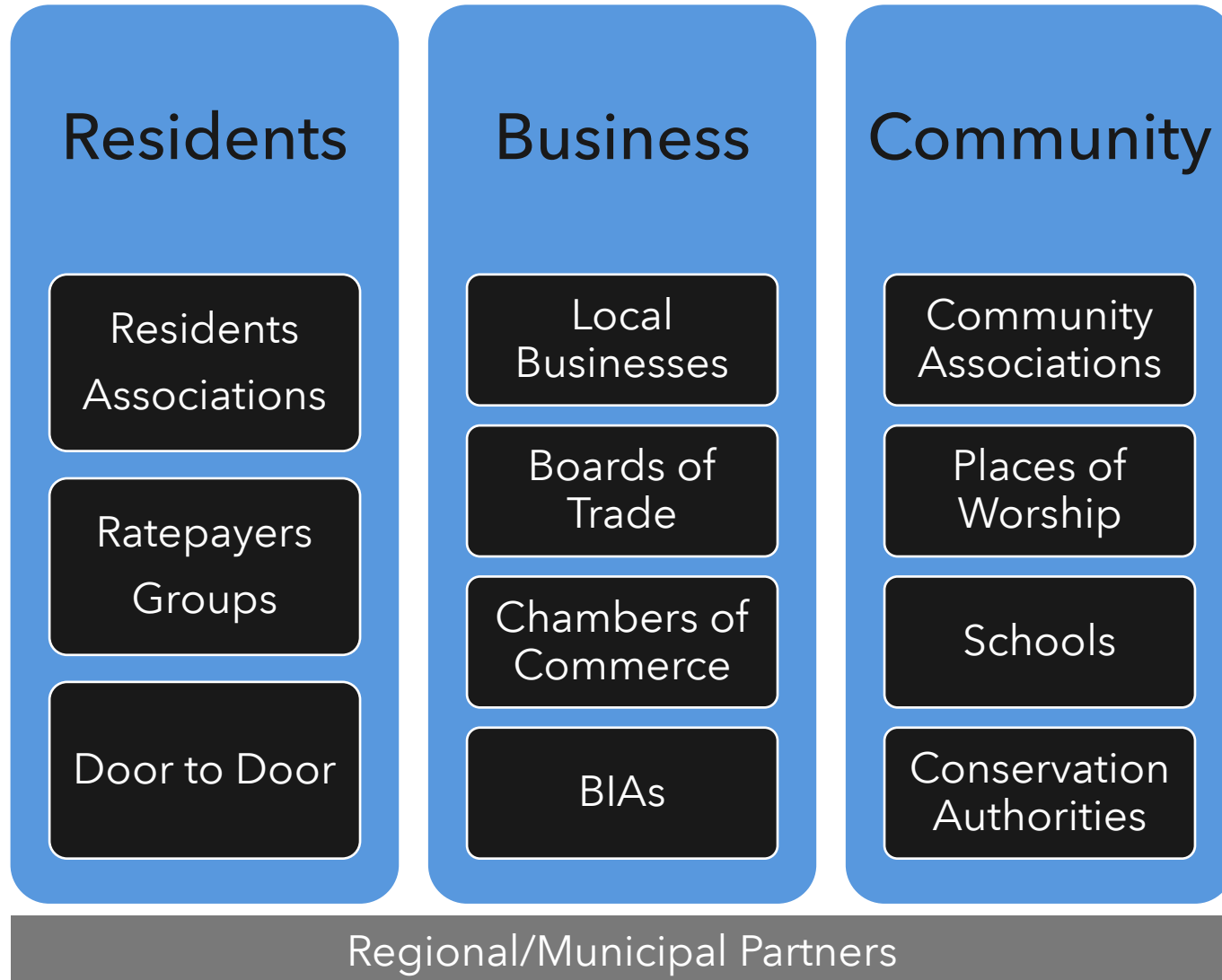
- IBC Briefings for Elected Officials **Ongoing**
- Council Presentations
 - Markham **March 22**
 - Richmond Hill **March 24**
 - York Region **March 25**
 - Vaughan **April 7**
 - Markham DSC **April 26**
- Briefings Elected Officials **Ongoing**
- Project Presentations **May 2021**
 - Municipal Partners, Councils, TEO, TTC
- Update Briefings **June 2021-Jan 2022**

COMMUNITY ENGAGEMENT

- Project Briefings to Community Groups **Ongoing**
 - Resident Groups, BIAs, Chambers of Commerce
 - Indigenous Communities
- Door-to-Door Canvasses **March/April 2021**
 - Royal Orchard & Bayview Glen communities
 - Willowdale-Newtonbrook community
- Community Virtual Open Houses **April 2021**
 - Royal Orchard & Richmond Hill communities
- Project Meetings/Introductory Post Card **May 2021**
- Stakeholder Briefings **April-Aug 2021**
- Project Virtual Open Houses **May-Aug 2021**
- Project E-Newsletters **Bi-weekly**
- Form Construction Liaison Committees **Fall 2021**
- Community Walking Tours **Fall 2021**

Collaboration with Communications Partners (Municipal/Regional Communicators, TTC, YRRTC)

ONGOING COMMUNITY & STAKEHOLDER ENGAGEMENT



Week of April 19:

- Richmond Hill Virtual Open House
- Project postcard mail distribution

Week of April 26:

- Markham Development Services Committee meeting
- Elected official briefings

Week of May 3:

- Northern municipalities Virtual Open House
- Elected official briefings

Week of May 10:

- Ongoing briefings for resident, business and community groups

Ongoing Metrolinx News articles

UPCOMING ACTIVITIES

Field work begins this spring:



- Noise & vibration monitoring
- Natural Environment/Archeology surveys
- Exploratory work for tunnels & launch shaft
- Utility investigations

Our commitment to keeping communities informed

Residents near planned field work and natural environment/archeology surveys will receive **notification flyers** at least two weeks in advance

Updates on major field work, and natural environment/archeology surveys will be distributed regularly via **email newsletter**

Major notices of work will be posted on the **Metrolinx Engage** website

Construction Liaison Committees will open the lines of communication about all aspects of the project

UPCOMING ENGAGEMENT AND FIELD WORK IN MARKHAM

- Upcoming Engagement
 - Northern York Region Communities Virtual Open House (May 5)
 - York Region and City of Toronto Virtual Open House; introduction to EA (May 19)
 - EA MetrolinxEngage online portal (May-onwards)
 - Project Information Postcard mail distribution (ongoing)
- Upcoming Field Work
 - Noise and vibration testing and Utility Scans (ongoing)
 - Geotechnical Surveying in Royal Orchard Community (upcoming)
 - Archaeological, built heritage and natural environment surveys (upcoming)

STAY CONNECTED - WE'RE HERE FOR YOU!




Subscribe:

- YongeSubwayExt@metrolinx.com
- 416-202-7000
- Bi-weekly E-Blast (subscribe via email)

Project Information:

- [Metrolinx.com/YongeSubwayExt](https://metrolinx.com/YongeSubwayExt)
- Virtual Open House link:
www.metrolinxengage.com/YongeSubwayExt

Follow:

-  [@YongeSubwayExt](https://twitter.com/YongeSubwayExt)
-  [@YongeSubwayExt](https://www.instagram.com/YongeSubwayExt)
-  [Yonge North Subway Extension](https://www.facebook.com/YongeNorthSubwayExtension)





Appendix

CREATING CONNECTIONS IN MARKHAM

UNIONVILLE GO STATION

Improving Station Access & Enhanced Accessibility

- 300 new parking spots, replacing stairs with ramps
- Safe pedestrian walkways through the parking lot
- More bicycle storage and New pedestrian tunnels

Enabling More Service

- A second track and a turnaround track so trains can travel both ways on the Stouffville line

Platform Improvements

- Canopies over the platforms with shelters
- A new island platform and a relocated east platform with new snow-melting systems

FORECAST COMPLETION 2021



MOUNT JOY GO STATION

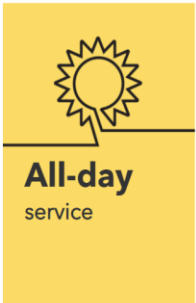
Early Station Improvements

- Enhanced safety and communication features now complete
- Installation of tactile yellow tiles at the edge of the train platform
- New digital signs on the train platform



GO EXPANSION IN MARKHAM

- Future service on the Stouffville line includes **two-way all-day service** between Mount Joy and Union Station, and fifteen minute service or better between Unionville GO Station and Union Station.
- Metrolinx is currently pursuing road-rail grade separations at Kennedy Road and Denison Street.
- Proposed Unionville Storage Siding as part of the New Track and Facilities TPAP



CREATING CONNECTIONS IN YORK REGION

In Construction:

- Bloomington GO Station (new)
- Rutherford GO Station and Grade Separation
- Unionville GO Station
- Lincolnville GO Station
- York vivaNEXT BRT
- Steeles Grade Separation

In Procurement:

- Barrie Contract 2 (Maple GO Upgrades)
- Barrie Contract 3 (King City GO Upgrades)
- Station upgrades at Aurora GO, Centennial GO, Markham GO, Mount Joy GO, East Gwillimbury GO, Stouffville GO
- GO Bus Expansion; Keswick to 404 Terminus at Woodbine



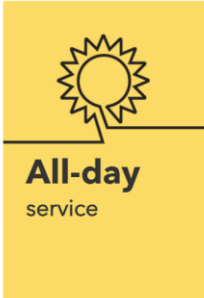
In Early Design:

- McNaughton Grade Separation (Vaughan)
- Wellington Grade Separation (Aurora)
- Network Electrification and infrastructure
- New rolling stock and locomotives



GO EXPANSION IN YORK REGION

- On the Stouffville line, **two-way all-day service** between Mount Joy and Union Station, and fifteen minute service or better between Unionville GO Station and Union Station.
- On the Barrie line, **two-way, all-day fifteen minute service** or better between Aurora GO Station and Union Station
- Parking expansions, station enhancements, grade separations, electrification.



APPROVED REFERENCE ALIGNMENT

Refined Option 3 Alignment	
Strategic Case	
Strong Connections	<ul style="list-style-type: none"> 94,100 daily riders¹
Complete Travel Experiences	<ul style="list-style-type: none"> 835,000 person-minutes daily travel time savings compared to BAU 22 minutes saving on a trip from Langstaff Gateway area (Langstaff/Ruggles) to Downtown Toronto (Yonge/Queen) compared to BAU
Economic Case	
Total Economic Impacts (Benefits) (\$2020, Present Value)	\$3666.5 M
Total Costs (\$2020, PV)	\$4386.3 M to \$5135.5 M
Net Present Value (\$2020, NPV)	\$-1358.6 M to \$-607.9 M
Benefit-Cost Ratio	0.74 to 0.86
Financial Case (\$2020, PV)	
Total Revenue Adjustment	114.4 M
Capital Costs ²	\$4,625.0 M
Operating and Maintenance Costs	\$ -39.0 M
Total Costs	\$4,447.1 M
Deliverability and Operations	
Constructability Matters	<ul style="list-style-type: none"> Coordination with the York Durham Sewage System (YDSS) at Steeles East Don River Crossing Construction within the busy Yonge Street corridor Maintaining services on Line 1 during construction Interface with the Highway 7 and 407 Corridor
Property Impacts	<ul style="list-style-type: none"> No tunneling under Holy Cross Cemetery
Operations	<ul style="list-style-type: none"> Integrated into current Line 1 Operations Fully automated operation allows for higher service frequencies

PROPOSED MAJOR CHANGES TO PROJECT ELEMENTS CONSIDERED IN IBC

Steeles Station

Moving Steeles Bus Terminal from Below Steeles Avenue to at-grade integrated with development

- Original proposal planned the bus terminal below Steeles Avenue perpendicular to and above the subway station
- Value engineering recommended relocating to at-grade to reduce costs and minimize impacts to YDSS and construction disruption

East Don River

Tunneling below instead of bridging over the East Don River

- Original proposal planned a two level (upper for road - lower for subway) bridge spanning the river valley
- Value engineering recommended tunneling below the watercourse to reduce costs and disruptions during construction

Train Storage Facility

Moving the YNSE Train Storage Facility north of High Tech Road from below ground to at-grade

- Original proposal planned a 3-track, 12 train below ground storage facility
- Value engineering recommended bringing the facility to at-grade in order to reduce costs while maintaining similar functionality

YNSE Alignment

Changing the point where the subway alignment shifts off of Yonge Street

- Original proposal for the alignment to shift east of Yonge Street north of Holy Cross Cemetery
- Value engineering and peer review identified potential benefit increases and cost reductions from bringing the subway to at-grade adjacent to the CN corridor, which will also better serve the central portions of the Richmond Hill Centre and Langstaff Gateway Urban Growth Centre