

An aerial photograph of Brampton, Ontario, Canada, taken at sunset. The sky is a mix of orange, pink, and purple. In the foreground, a large brick building with a clock tower and a modern glass-walled building are prominent. A light rail transit (LRT) track runs through the city, with light trails from trains visible. The city lights are beginning to glow as the sun sets.

# City of Brampton: LRT Extension Study

## Virtual Open House 2

2021/04/22

# Land Acknowledgement

*We would like to acknowledge that we are gathering here today on the Treaty Territory of the Mississaugas of the Credit First Nation, and before them, the traditional territory of the Haudenosaune, Huron and Wendat. We also acknowledge the many First Nations, Metis, Inuit and other global Indigenous people that now call Brampton their home. We are honoured to live, work and enjoy this land.*

# Welcome to the City of Brampton LRT Extension Study Virtual Open House 2

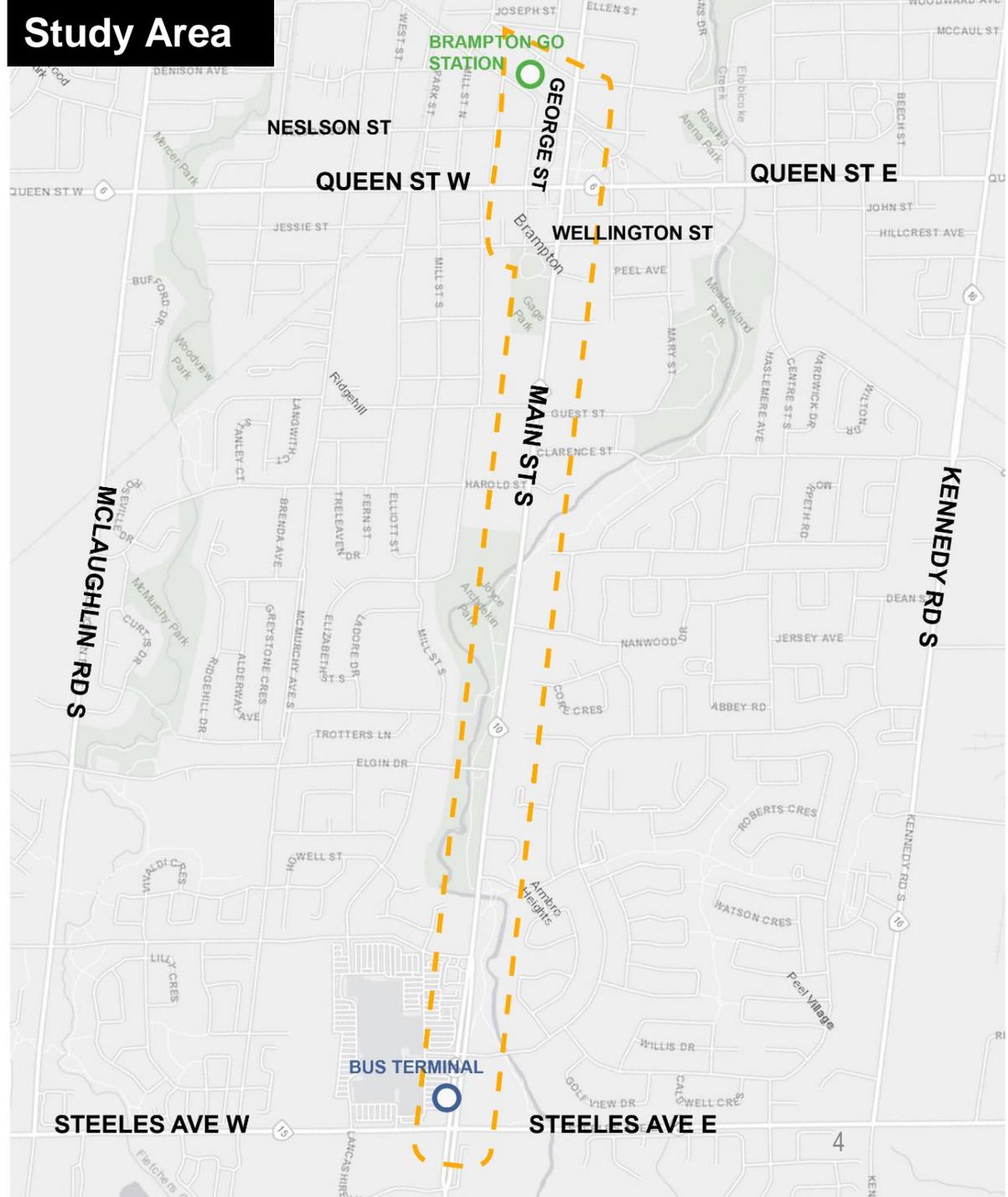
- Welcome to the 2<sup>nd</sup> virtual Open House for the Brampton LRT Extension Project.
- In today's virtual Open House, we will share:
  - an update on the study since the last virtual open house in Summer 2020,
  - the findings of the evaluation of the short list LRT options, and
  - a summary of the emerging preferred options.
- We are looking for input on the two emerging preferred options - scroll through the materials to learn more about the options and to provide your feedback.

# Project Overview

## About the Project

Extending the planned Hurontario LRT from the Brampton Gateway Terminal at Steeles Avenue to the Brampton GO station is a key transit priority and city-building project for the City of Brampton.

Much more than a way to get from A to B, this LRT project will play an important role in the long-term rapid transit network in Brampton and is essential for supporting the sustainable growth and evolution of the Downtown Core and Central Area.



# Vision and Goals

## Vision Statement

The LRT Extension will contribute to a safer and more integrated transportation system to serve the City of Brampton, encouraging civic sustainability, emphasizing transit use and other modes of transportation over traditional automobiles, and supporting the revitalization of Downtown Brampton into an aesthetically beautiful, place-making destination. The vision for the LRT Extension reflects the transportation vision and actions set out in the Brampton 2040 Vision (2018).

## Goals



Strong Connections



Complete Travel  
Experiences



Sustainable and  
Healthy Communities

# Problem Statement

The extension of the Hurontario LRT from Steeles Avenue to Brampton GO is intended to address the growth-related transportation needs in the study area and the City of Brampton.

## In the Study Area



Population is expected to increase by over **26,000** by 2041



Employment is expected to increase by over **13,000** by 2041



To meet the City's growing transportation needs, transit service along Main Street would need to increase by **40%**



If no improvements are made, average trip times will increase by **5%**

# What We Heard at Virtual Open House 1

In the Summer 2020 virtual Open House, we presented the long list of options. We received hundreds of comments from the public regarding the future of the LRT extension. Here are some frequently noted key messages.

Expedite the project

Minimize impacts to Main Street South and Downtown

Provide express service with fewer stops

Create a transit hub at Brampton GO Station

Support businesses and revitalize Downtown

Retain heritage character and mature tree canopy on Main Street South

Provide a pedestrian friendly environment and ease of transfer between travel modes

Calm traffic along surrounding residential streets

Protect for future northward extension

Secure Provincial funding for the project

# Study Process

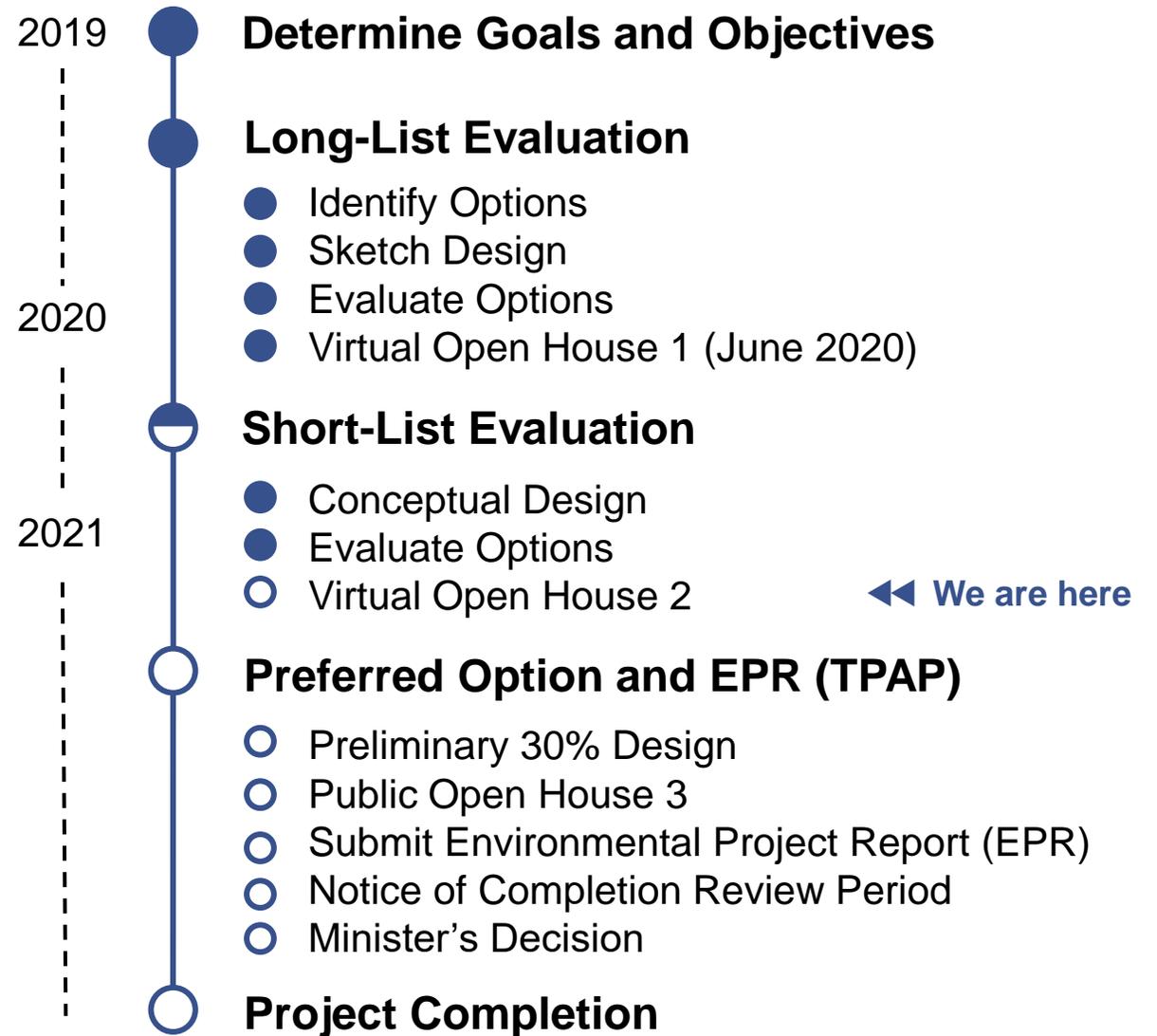
The evaluation of options is a multi-level process that has occurred over the course of the study.

This flow chart is an overview of the study process. Through the three-level process, the long list of LRT options was evaluated and narrowed down to a short list. The short list was evaluated and is being presented at Virtual Open House 2.

## The Transit Project Assessment Process (TPAP)

is a provincial environmental assessment process developed specifically for the approval of public transit projects.

Proponents must complete the prescribed steps of the process within specified time frames.



# Preliminary Design Business Case

- The City of Brampton evaluated the short list options using the Metrolinx Business Case framework. A preliminary design business case (PDBC) was used to assess the seven (7) short-listed options.
- The analysis was completed for four (4) business cases: Strategic, Economic, Financial, and Deliverability and Operations.

# Preliminary Design Business Case

## Strategic Case



How and why should the investment be pursued; based on goals, plans and policies?

## Economic Case



What is the investment's overall value to society?

## Financial Case



What are the financial implications of delivering the investment?

## Deliverability and Operations Case



What are the risks and requirements to consider to deliver and operate the investment?

### Criteria:



### Strong Connections

- Improve access to transit
- Increase access to economic opportunities
- Support city-building objectives



### Complete Travel Experiences

- Improve travel time and level of service
- Improve comfort and safety
- Building an integrated transportation network



### Sustainable and Healthy Communities

- Move people with less energy and pollution
- Improve quality of life and public health
- Reduce impacts to the natural and cultural environment

# Preliminary Design Business Case

## Strategic Case



How and why should the investment be pursued; based on plans and policies?

## Economic Case



What is the investment's overall value to society?

## Financial Case



What are the financial implications of delivering the investment?

## Deliverability and Operations Case



What are the risks and requirements to consider to deliver and operate the investment?

### Criteria:

Project benefits and impacts were monetized to the extent possible and compared with costs in a structured benefit-cost analysis framework, capturing:



### User Benefits

- Travel Time Savings
- Reliability Benefits
- Journey Quality Benefits
- Travel Time Impacts to Vehicles
- Vehicle Operating Cost Savings



### External Benefits

- Decongestion Benefits
- Reduction in Road Accidents
- Reduction in Vehicle Emissions
- Health Benefits



### Costs

- Capital Construction Costs
- Major Maintenance, Rehabilitation and Renewal Costs
- Annual Operations and Maintenance Costs

# Preliminary Design Business Case

## Strategic Case



How and why should the investment be pursued; based on goals, plans and policies?

## Economic Case



What is the investment's overall value to society?

## Financial Case



What are the financial implications of delivering the investment?

## Deliverability and Operations Case



What are the risks and requirements to consider to deliver and operate the investment?

### Criteria:

The financial impact was reviewed by comparing future costs and revenues.



### Costs

- Capital Construction Costs
- Financing Costs
- Major Maintenance and Renewal Costs
- Incremental Operations and Maintenance Costs



### Revenues

- Additional LRT Revenues
- Additional GO Revenues

# Preliminary Design Business Case

## Strategic Case



How and why should the investment be pursued; based on goals, plans and policies?

## Economic Case



What is the investment's overall value to society?

## Financial Case



What are the financial implications of delivering the investment?

## Deliverability and Operations Case



What are the risks and requirements to consider to deliver and operate the investment?

### Criteria:



#### Design and Operational Tradeoffs

- Emergency and Service Vehicles
- Property Impacts
- Driveway Impacts
- Utility Impacts
- Impacts to CN bridge
- Ability extend northward



#### Construction and Mitigation

- Constructability
- Construction Impacts
- Noise
- Traffic Management



#### Procurement and Delivery

- Risks and advantages of traditional and innovative procurement approaches



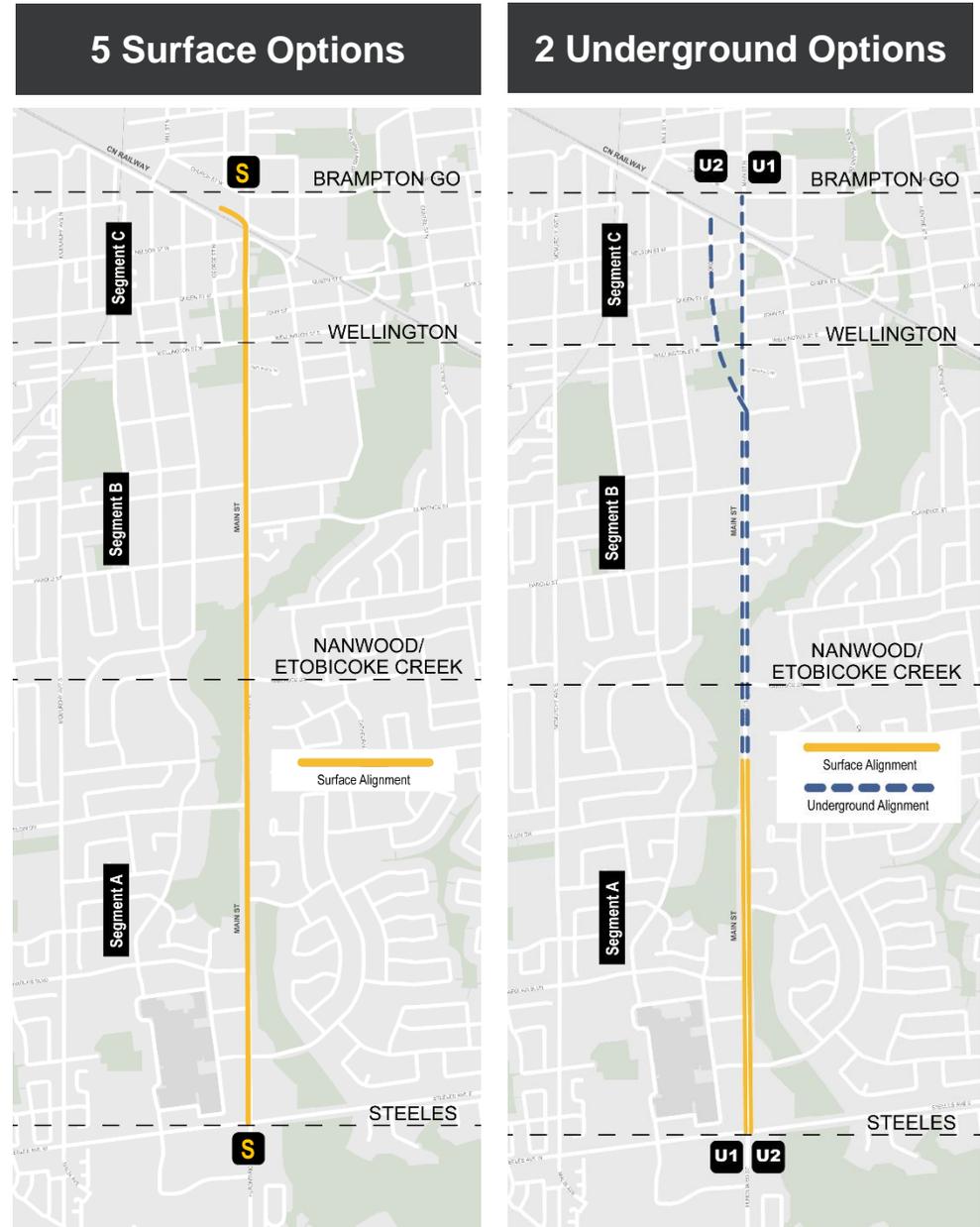
#### Operations and Maintenance

- Limitations and assumptions dictating the system operation and maintenance plans

# Short List of Options

Since the last virtual open house in Summer 2020, we've evaluated the short list options (five surface and two underground).

**Note:** The loop options presented in the previous open house were not advanced to the short list for further assessment due to physical constraints (i.e. issues accommodating longer Light Rail Vehicles / impacts to property)

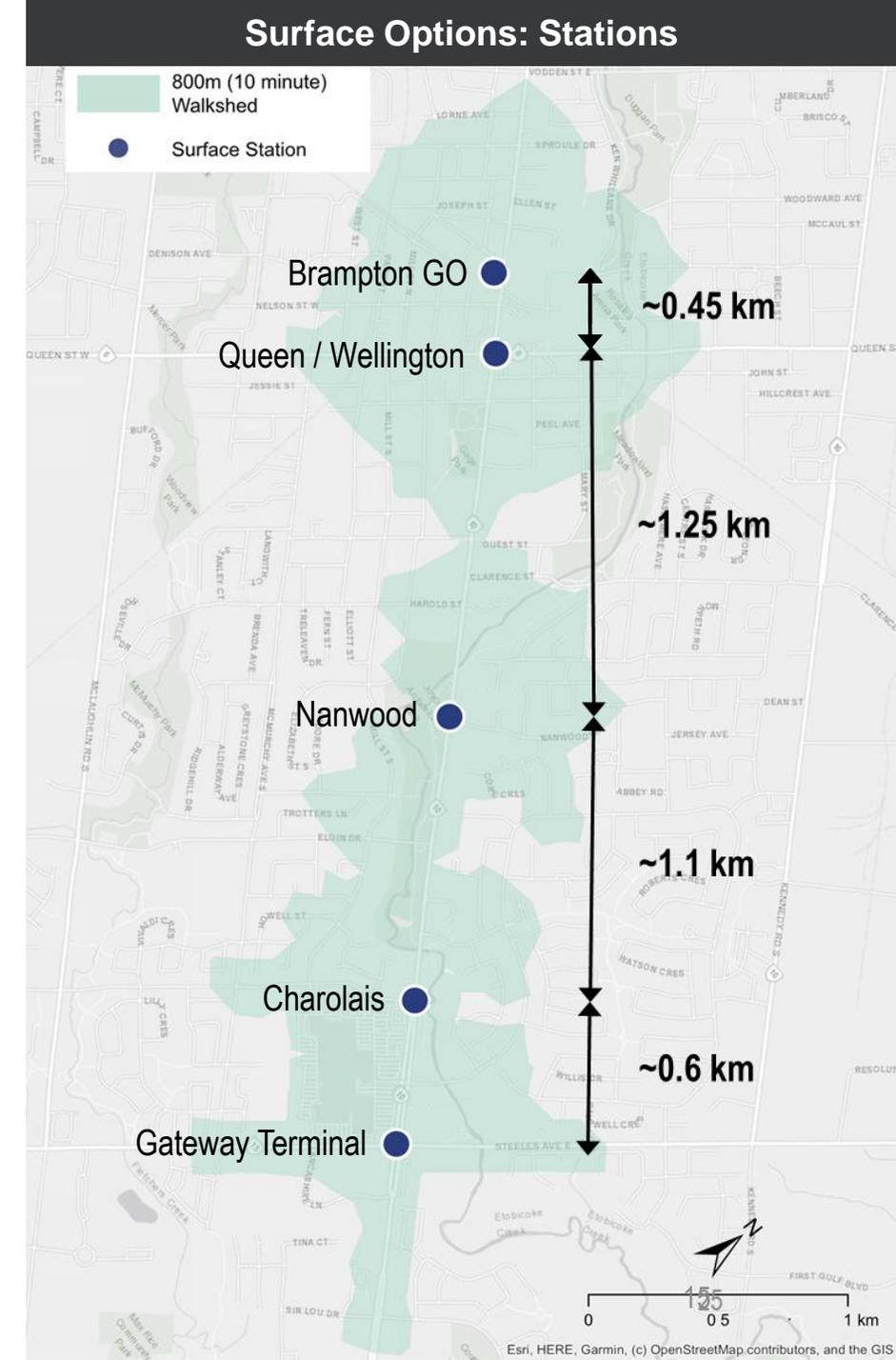


# Proposed Station Locations

For surface options, stations are proposed at:

- Brampton GO
- Downtown (split platform)
  - Queen (Northbound)
  - Wellington (Southbound)
- Nanwood
- Charolais
- Gateway Terminal

**Note:** Station locations for surface options are consistent with 2014 TPAP recommendations.



# Proposed Station Locations

For underground options, stations are proposed at:

- Brampton GO
- Nanwood
- Charolais (surface stop)
- Gateway Terminal (surface stop)

**Note:** A station at Wellington Street was screened out during short list phase due its proximity to Brampton GO Station and high cost.



# Short List: Surface Options



	Option S1	Option S2	Option S3	Option S4	Option S5
Segment C	<b>LRT in Dedicated Curbside Lanes</b> (4 lanes, cycling in mixed traffic)		<b>LRT in Mixed Traffic</b> (2 lanes, cycle tracks)		
Segment B	<b>LRT in Dedicated Lanes</b> (4 lanes, cycling in mixed traffic)	<b>LRT in Mixed Traffic</b> (4 lanes, cycling in mixed traffic)	<b>LRT in Dedicated Lanes</b> (4 lanes, cycling in mixed traffic)	<b>LRT in Mixed Traffic</b> (4 lanes, cycling in mixed traffic)	<b>LRT in Mixed Traffic</b> (2 lanes, cycle tracks)
Segment A	<b>LRT in Dedicated Lanes</b> (6 lanes, cycle tracks)				

All boulevard configurations shown are subject to change.

# Surface Options: Evaluation Summary

Comparison of how each option performs relative to the rest.



The evaluation summarizes key performance measures to help compare the surface options.

**Strategic Case**   
 How and why should the investment be pursued; based on regional goals, plans and policies?

**Transit Travel Time\***

**Auto Travel Time\***

**Cycling Conditions**

	Option S1	Option S2	Option S3	Option S4	Option S5
Transit Travel Time*	8 minutes	11 minutes	9 minutes	12 minutes	12 minutes
Auto Travel Time*	6 minutes	6 minutes	7 minutes	6 minutes	7 minutes
Cycling Conditions	Cycle Tracks in Segment A, Discontinuous network on Main St	Cycle Tracks in Segment A, Discontinuous network on Main St	Cycle Tracks in Segment A and C, Discontinuous network on Main St	Cycle Tracks in Segment A and C, Discontinuous network on Main St	Cycle Tracks in Segment A and C, Continuous network on Main St

**Economic Case**   
 What is the investment' value to society?

**Value for Money**

Value for Money	Highest	Lower	Higher	Lower	Lower
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**Financial Case**   
 What are the financial implications of delivering the investment?

**Total Costs**

Total Costs	Comparable Total Costs				
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**Deliverability and Operations Case**   
 What are the risks and requirement to consider to deliver and operate the investment?

**Driveway Access Impacts**

**Utility Conflicts**

**Property Requirements**

Driveway Access Impacts	77 driveways converted to right-in, right-out	19 driveways converted to right-in, right-out	73 driveways converted to right-in, right-out	15 driveways converted to right-in, right-out	15 driveways converted to right-in, right-out. Safety concerns for left turns from driveways
Utility Conflicts	24 utility conflicts to be relocated				
Property Requirements	Up to 5,100 m <sup>2</sup> of property required				

\* Travel time between Steeles Avenue and Church Street

	S1	S2	S3	S4	S5
<b>Recommendation</b>	 <b>Do Not Carry Forward</b>	 <b>Do Not Carry Forward</b>	 <b>Carry Forward</b>	 <b>Do Not Carry Forward</b>	 <b>Do Not Carry Forward</b>
<b>Reasoning</b>	<ul style="list-style-type: none"> <li>Inability to provide an improved streetscape in Downtown (wider sidewalks, cycle tracks...)</li> </ul>	<ul style="list-style-type: none"> <li>Inability to provide an improved streetscape in Downtown (wider sidewalks, cycle tracks...)</li> <li>Longer transit travel time</li> <li>Lower value for money (economic benefits)</li> </ul>	<ul style="list-style-type: none"> <li>Ability to provide an improved streetscape in Downtown while minimizing transit and auto travel time</li> <li>Higher value for money (economic benefits)</li> </ul>	<ul style="list-style-type: none"> <li>Longer transit travel time</li> <li>Lower value for money (economic benefits)</li> </ul>	<ul style="list-style-type: none"> <li>Longer transit travel time</li> <li>Lower value for money (economic benefits)</li> <li>Safety concerns for left turns from driveways in Segment B</li> </ul>

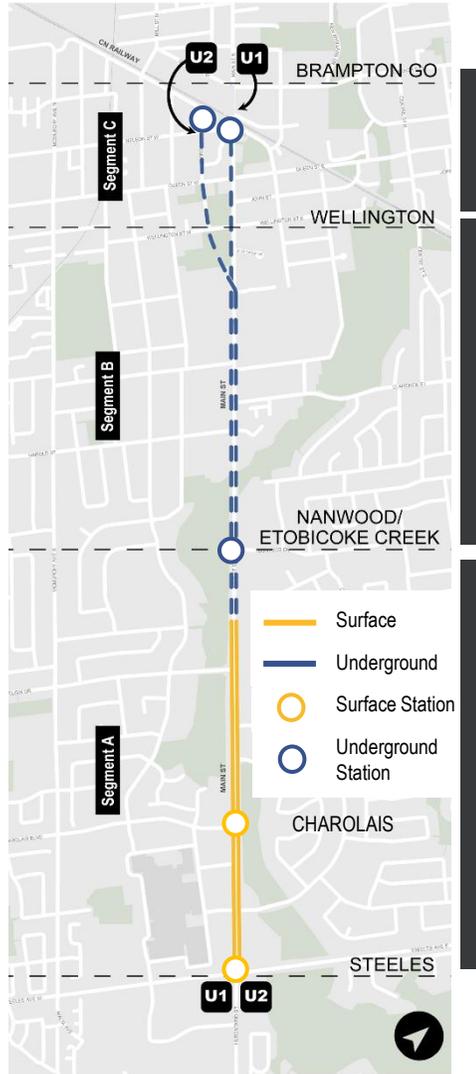
# Surface Options: Evaluation Summary

All surface options perform relatively similar; however, Option S3 provides the opportunity to revitalize Downtown Brampton into an aesthetically beautiful, place-making destination with wider sidewalks, streetscaping, and cycle tracks (consistent with Downtown Reimagined Vision) while minimizing overall transit travel time.

Driveway accesses will be modified as a result of the dedicated LRT right-of-way, but this will ensure safe and efficient travel for all users of the street.

**Therefore, Option S3 is the emerging preferred surface option.**

# Short List: Underground Options 1 (Main St) & 2 (George St)



Segment C

**LRT Underground  
(2 lanes, cycle tracks)**

Note: Cross section is consistent with  
Downtown Reimagined Vision



Segment B

**LRT Underground  
(3 lanes, cycle tracks)**



Segment A

**LRT in Dedicated Median Lanes  
(6 lanes, cycle tracks)**



All boulevard configurations shown are subject to change.

# Underground Options: Evaluation Summary

Comparison of how each option performs relative to the rest.

The evaluation summarizes key performance measures to help compare the underground options.

		Worst		Comparable		Best			
		Option U1 (via Main St)				Option U2 (via George St)			
<b>Strategic Case</b> How and why should the investment be pursued; based on regional goals, plans and policies?	Transit Travel Time*	7 minutes				8 minutes			
	Auto Travel Time*	6 minutes							
	Cycling Conditions	Cycle Tracks in all Segments. Continuous Cycling Network.							
<b>Economic Case</b> What is the investment value to society?	Value for Money	Comparable Value for Money							
<b>Financial Case</b> What are the financial implications of delivering the investment?	Total Costs	Lower				Higher			
<b>Deliverability and Operations Case</b> What are the risks and requirement to consider to deliver and operate the investment?	Driveway Access Impacts	All driveways in Segment A converted to right-in, right-out access (9 driveways)							
	Utility Conflicts	Minor utility conflicts				Minor utility conflicts at Brampton GO station			
	Property Requirements	Up to 2,700 m <sup>2</sup> of property required				Up to 5,300 m <sup>2</sup> of property required			
	Potential to Extend	Able to extend north in the future along Main Street				More difficult to extend north in the future from George Street			

\* Travel time between Steeles Avenue and Church Street

**U1 (via Main St)****U2 (via George St)****Recommendation****Carry Forward****Do Not Carry Forward****Reasoning**

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• Shorter transit travel time</li><li>• North terminus station located closer to the heart of Downtown Brampton</li><li>• Lower cost</li><li>• Lower property requirements</li><li>• Able to extend north in the future</li></ul> | <ul style="list-style-type: none"><li>• Longer transit travel time</li><li>• North terminus station located further to the heart of Downtown Brampton</li><li>• Higher cost</li><li>• Higher property requirements</li><li>• Difficult to extend north in the future</li></ul> |
|---|--|

# Underground Options: Evaluation Summary

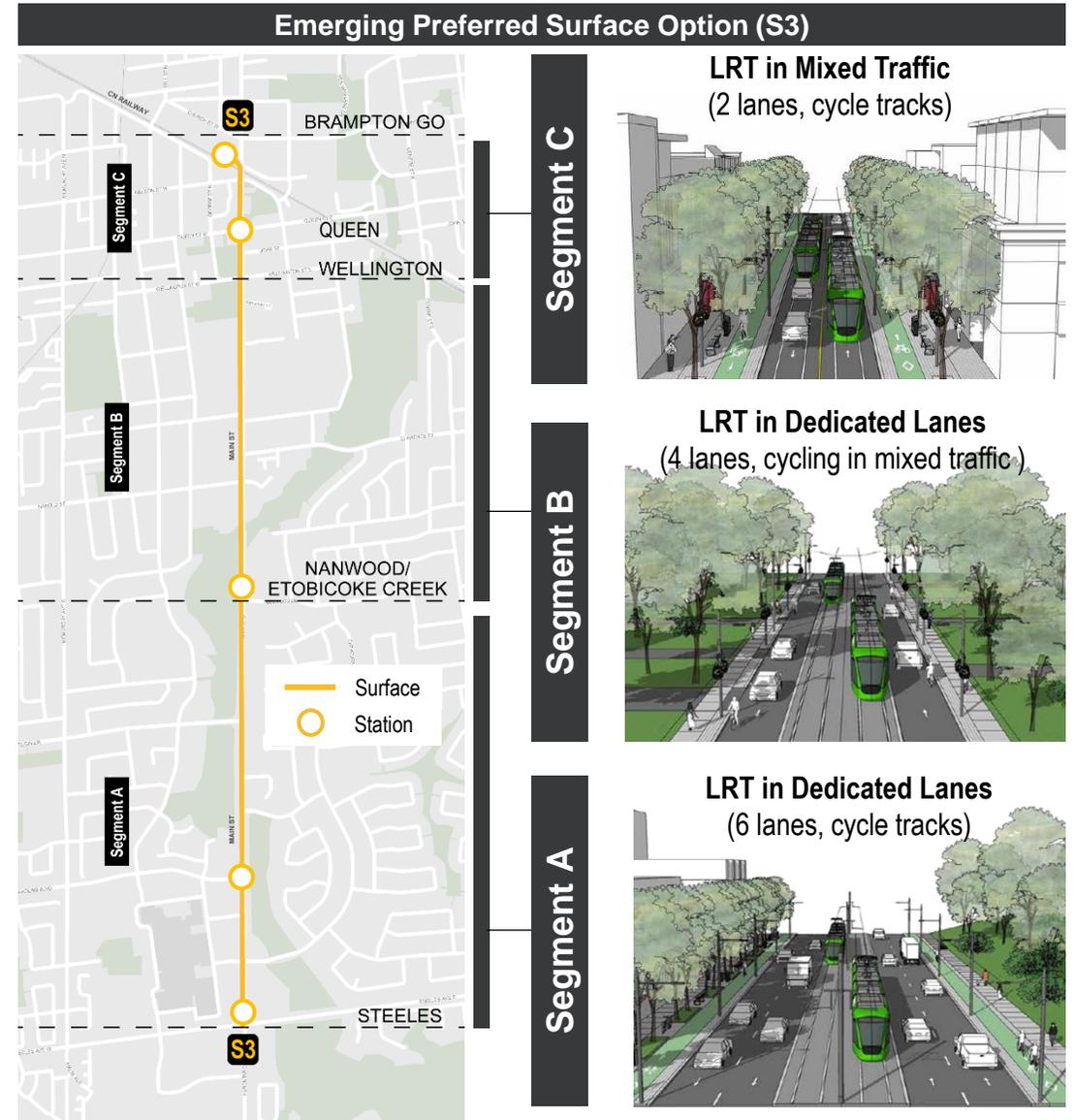
Option U1 (via Main Street) and U2 (via George Street) perform similarly from a strategic perspective. However, Option U1 is more preferred than U2 as it is less costly, located closer to the heart of Downtown Brampton, requires less property takings and is more easily extended north in the future.

**Therefore, Option U1 is the emerging preferred underground option.**

# Emerging Preferred Options

## Surface Option S3

- The LRT will run in dedicated lanes between Steeles Avenue and Wellington Street and in shared lanes from Wellington Street to the Brampton GO Station.
- Option S3 allows for an enhanced streetscape in Segments A and C, including: cycle tracks, widened sidewalks, and a planting and furnishing zone. Cyclists must ride in mixed traffic in Segment B or use parallel routes..
- Driveways in Segment B will be modified to right-in, right out access.
- Overhead catenary systems and traction power substations (TPSS) will be located above ground in the study area.

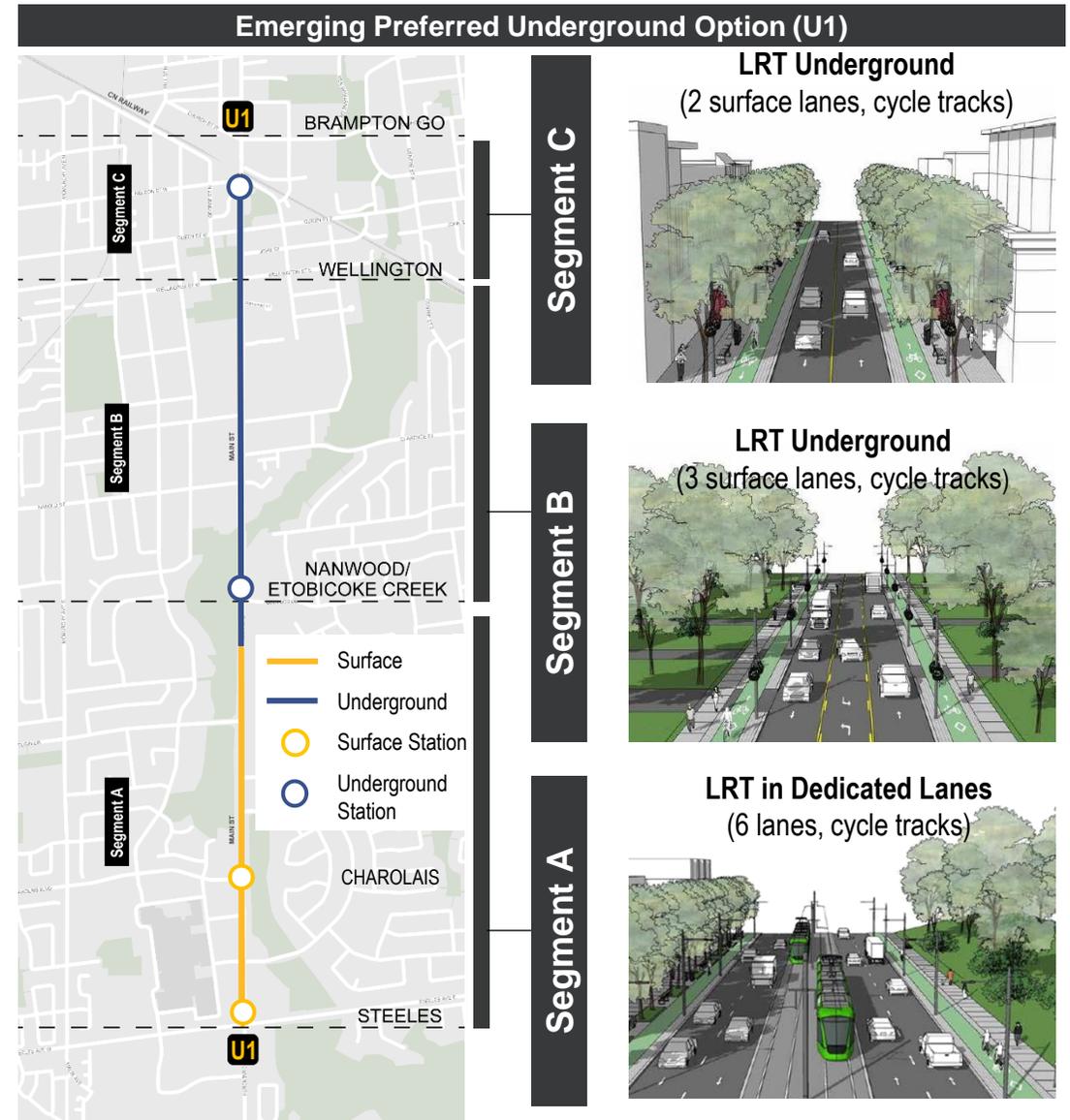


All boulevard configurations shown are subject to change.

# Emerging Preferred Options

## Underground Option U1

- The LRT will run in dedicated lanes north of Steeles Avenue to Elgin Drive then run underground from just south of Nanwood Drive to the Brampton GO Station along Main Street.
- Option U1 allows for an enhanced streetscape in Segments A, B, and C, including: cycle tracks, widened sidewalks, and a planting and furnishing zone. Option U1 allows for a continuous cycling network along Main Street.
- No access modifications are required in Segment B. Traction Power Substations (TPSS) will be located underground within underground station.
- The portal and the two underground stations are located in the floodplain. Potential impacts to be mitigated.



All boulevard configurations shown are subject to change.

# PDBC SUMMARY

Comparison of how each option performs relative to the rest.

		Worst	Comparable	Best
		<b>Option S3</b>	<b>Option U1 (via Main St)</b>	
<b>Strategic Case</b> 	<b>Transit Travel Time</b>	9 minutes from Steeles Ave to Church St	7 minutes from Steeles Ave to Church St	
	<b>Auto Travel Time</b>	7 minutes from Steeles Ave to Church St	6 minutes from Steeles Ave to Church St	
	<b>Cycling Conditions</b>	Discontinuous Cycling Network along Main Street Cycle tracks in Segments A and C and cycling in mixed traffic in Segment B	Continuous Cycling Network along Main Street Cycle tracks in all Segments	
	<b>Pedestrian Conditions</b>	Enhanced Streetscape Features in Segments A and C, including: widened sidewalks and furnishing zones.	Enhanced Streetscape Features in Segments A,B and C, including: widened sidewalks and furnishing zones.	
	<b>Civic Events</b>	Limits Opportunity to Close Downtown Streets for Civic Events	Provides Opportunity to Close Downtown Streets for Civic Events	
	<b>Cultural &amp; Natural Heritage impacts</b>	Greater Impacts	Lower Impacts	
<b>Economic Case</b> 	<b>Value for Money</b>	Higher	Lower	
<b>Financial Case</b> 	<b>Total Costs</b>	Lower	Higher	
<b>Deliverability and Operations Case</b> 	<b>Access Impacts</b>	73 driveways converted to right-in, right-out access Potential for impact to EMS operations	9 driveways converted to right-in, right-out access Minimal impact to EMS operations	
	<b>Utility Conflicts</b>	24 utility conflicts to be relocated	Minor utility conflicts to be relocated	
	<b>Property Requirements</b>	Up to 5,100 m <sup>2</sup> of property required	Up to 2,700 m <sup>2</sup> of property required	

# PDBC SUMMARY

When comparing the two emerging preferred options:

- Both options provide comparable auto and transit travel times and have similar opportunities for economic development within the City and in the Downtown.
- The surface option has a lower cost, provides better value for money and can be constructed more quickly. However, it has more impacts to driveway access, utility, and property.
- The surface option does not allow for a continuous cycling network along Main Street (gap in Segment B) and limits the City's ability to have civic events (such as Farmer's Markets) on Main St in the Downtown without impacting LRT operations.
- The underground option provides many of the benefits that the surface option lacks while minimizing impacts at the surface; however, this comes at a higher cost, worse value for money, and will take longer to construct.

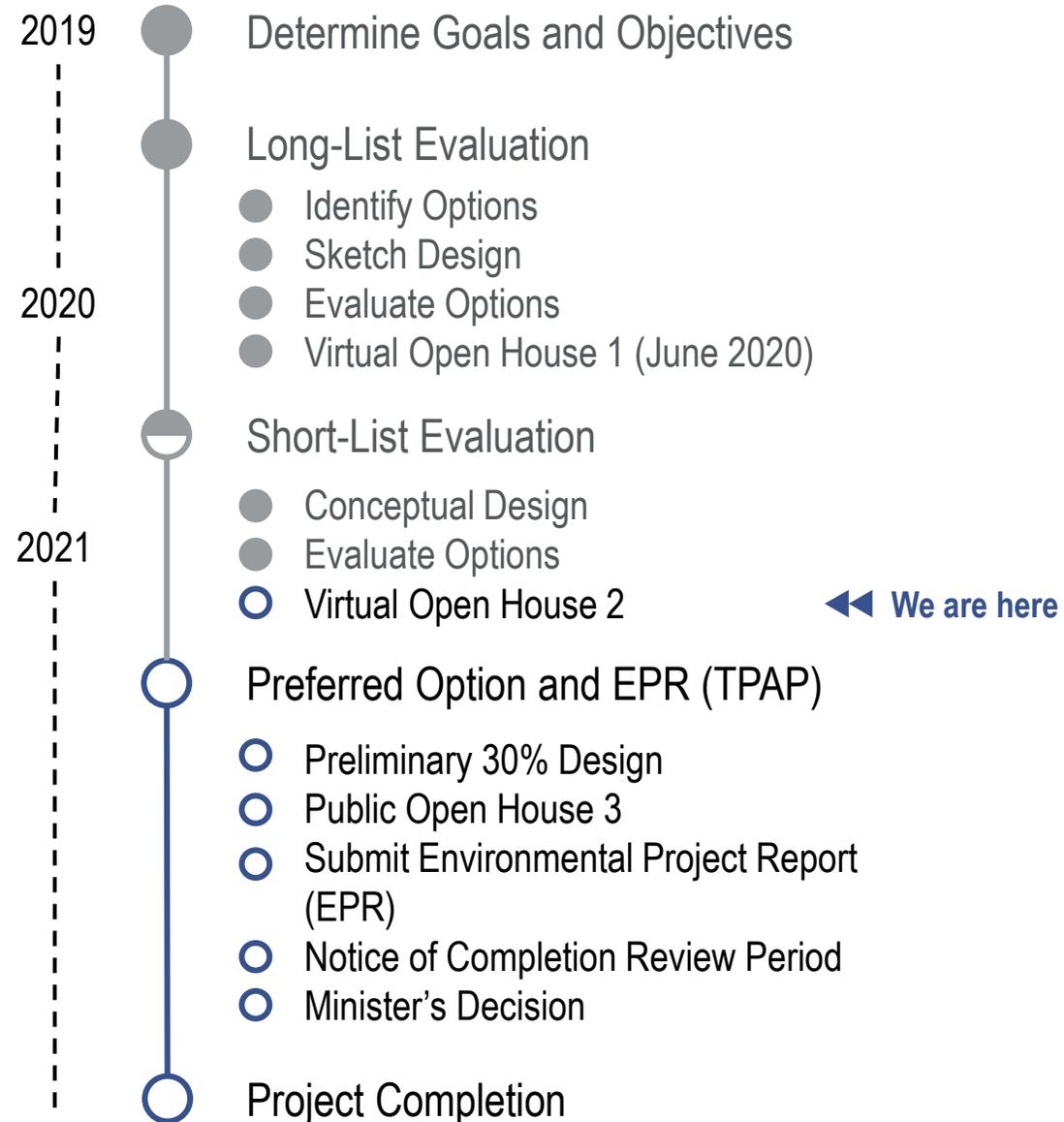
**Note:** Cost estimates for the long list options were presented to Committee of Council on May 15, 2019. Refined cost estimates will be developed and presented during the next phase of the study.

# Next Steps

The Preliminary Design Business Case is currently being reviewed by Metrolinx and will be released to the public following their review.

Following virtual Open House 2, the project team will review and summarize feedback provided by the public and stakeholders.

Staff will prepare a Council Report to update Council on the Public Feedback Report and recommendation for next steps.



# Thank you for attending the Brampton LRT Extension Virtual Open House 2!

## GET INVOLVED

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Visit our website to get information about the study or sign-up to our mailing list and study notifications.



Email the Project Manager

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LET'S CONNECT  
**LRT**  
EXTENSION

 BRAMPTON 