

ATTACHMENT 5

EGLINTON WEST LRT

Introduction

The Eglinton West Light Rail Transit ("EWLRT") is a western extension of Line 5 (Eglinton Crosstown LRT), which is currently under construction and owned by Metrolinx. The EWLRT extension will also be owned by Metrolinx. The project comprises two components: (i) a 9 km **Toronto Segment** from Mt. Dennis Station to Renforth Station at Commerce Boulevard, and (ii) a 5 km **Airport Segment** from Renforth Station to Pearson International Airport (Figure 1).

The EWLRT extension would fill a missing link in the higher-order transit network, connecting the western terminus of Line 5 (Eglinton Crosstown LRT) at Mount Dennis Station and the eastern terminus of the Mississauga Transitway (Bus Rapid Transit line) at Renforth Station.

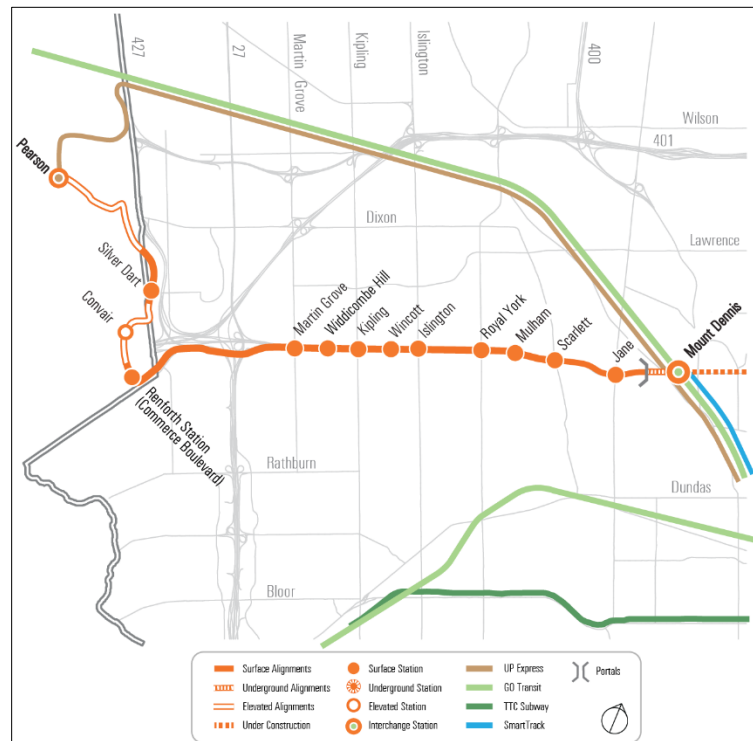


Figure 1. Both segments of the Eglinton West LRT.

Project Benefits

- Choice in order to move around the city and region in the future, particularly given expected growth in traffic along the Eglinton West corridor.
- Serve people travelling between the Mississauga Airport Corporate Centre and midtown Toronto, which could support growth and economic development with the employment zone south of the airport.
- Improve rapid transit connections for users of busy north-south bus routes along the Eglinton West corridor, providing an alternative route to the Line 2 subway.
- Restore the through-transit connection along Eglinton Avenue at Weston Road that will be lost when the Line 5 Eglinton replaces the existing bus service east of Weston Road.
- If the Airport Segment is added to the Toronto segment, the project may also support the Greater Toronto Airports Authority's ("GTAA") plans to develop Toronto Pearson International Airport as a multi-modal transportation hub, connecting air travel and regional transit to local services. The EWLRT may provide good alternatives for accessing the airport for journeys originating in the

region west of Toronto and in Central Etobicoke; benefits may be small for other residents given the UP Express service from the future Mt. Dennis Station.

This Attachment provides an update on the further analysis requested by City Council in December 2017 for the Toronto Segment, which includes outputs resulting from a Community Working Group. Additional analysis on the options for the Toronto Segment of the project continues to demonstrate that the at-grade EWLRT option with 10 stops as recommended by staff in December 2017 best serves the City's planning and transit service objectives, while taking into consideration cost.

Metrolinx continues to undertake early planning work on the Airport Segment of the EWLRT extension, which is currently less advanced than the Toronto Segment. Metrolinx has also advised an interest in further reviewing the options for the Toronto Segment in the context of the overall extension of the EWLRT to Pearson International Airport and potential regional benefits of a tunnelled option. This additional analysis by Metrolinx is not available at this time.

As a result of the current status of Metrolinx analysis, the Toronto Segment of the EWLRT is not ready to move through the Stage Gate Process specifically agreed to for SmartTrack (including the EWLRT project) by the City and Province/Metrolinx under the 2016 Toronto-Ontario Agreement in Principle (see Decision History and Appendix A). Further direction will be sought from City Council once Metrolinx and the GTAA have completed their analysis on the Airport Segment and Regional Transportation Passenger Centre requirements.

Decision History

In January 2015, City Council considered *EX2.2 SmartTrack Work Plan (2015-2016)* and directed staff to undertake a feasibility study of SmartTrack options on the Eglinton Avenue West corridor, from Mount Dennis station to the Mississauga Airport Corporate Centre, including a new heavy rail corridor option.

Link: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.EX2.2>

In March 2016, City Council considered the report *EX13.3 Developing Toronto's Transit Network Plan: Phase 1* and requested City staff and Metrolinx to finalize technical and planning analysis for SmartTrack, and removed heavy rail options on the western corridor from consideration.

Link: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.EX13.3>

In July 2016, City Council considered the report *EX16.1 Developing Toronto's Transit Network Plan to 2031*, and approved a SmartTrack concept that included the EWLRT with 8 to 12 stops between Mount Dennis Station and Renforth Station. City Council also directed staff to consider targeted grade separations to address potential traffic impacts of an at-grade LRT along the corridor, including a review of their associated costs. City Council also requested the City and TTC to work in partnership with Metrolinx, the City of Mississauga, and the GTAA to develop options for the extension of the EWLRT to Pearson International Airport, and assess opportunities for commuter parking along the EWLRT corridor.

Link: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.EX16.1>

In November 2016, City Council considered the report *EX19.1 Transit Network Plan Update and Financial Strategy*, and adopted terms for a broad cost-sharing agreement with the Province of Ontario that included the EWLRT. City Council adopted a "SmartTrack Stage Gate Process", developed by the City and the Province, that allows for key decisions at defined stages of the project. Under the agreement, the City as the proponent of SmartTrack, agreed in principle to contribute full funding for the procurement and construction of the Toronto Segment of the EWLRT, subject to the parties agreeing to advance the project through the Stage Gate Process. Both parties have a right to reconsider commitment to the project as it advances through the Stage Gate Process. To date, City Council has confirmed funding of \$51 million for early planning and design to advance the Eglinton West LRT. No further funding commitment has been made to the project.

Link: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.EX19.1>

In December 2017, City Council considered the report *EX29.1 SmartTrack Project Update and Next Steps*. City Council directed staff to continue planning the EWLRT transit extension concept for the Toronto Segment between Mount Dennis Station and Renforth Station ("Toronto Segment"), with ten stops as described in Attachment 2 to the report. City Council also requested staff to form a working group of community stakeholders in consultation with local councillors, to investigate further grade separation and or tunnelling options to further develop traffic modelling and an enhanced framework that places additional consideration on local community interest.

Link: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.EX29.1>

Attachment 2: Eglinton West LRT Technical and Planning Update:

<https://www.toronto.ca/legdocs/mmis/2017/ex/bgrd/backgroundfile-109250.pdf>

Current Status of Project

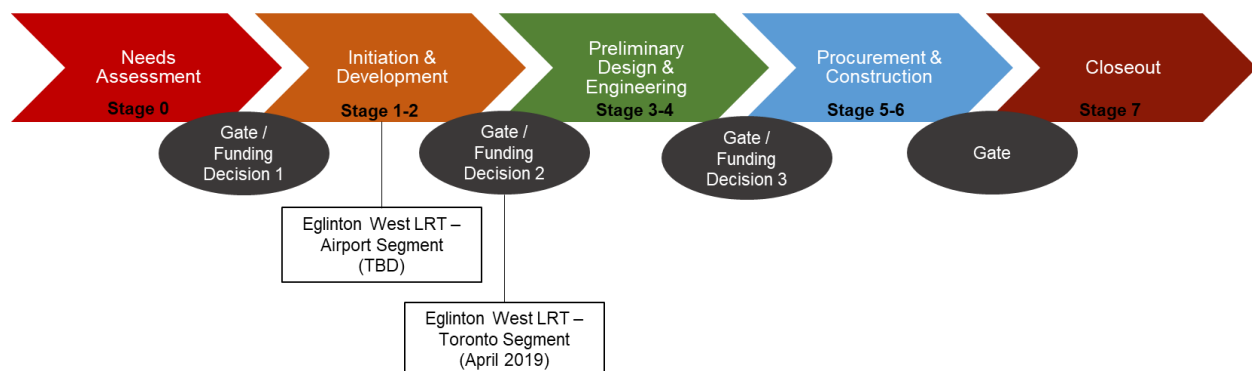


Figure 2. Current status in the project lifecycle

The EWLRT was originally approved under Ontario's Environmental Assessment Act in 2010 as Phase 2 of the Eglinton Crosstown LRT. An Initial Business Case, jointly developed by the City and Metrolinx, concluded that the previously-approved Phase 2 of the Eglinton Crosstown LRT (i.e., surface-running LRT) was the preferred concept for the SmartTrack western corridor. City Council directed staff to complete the remaining technical and planning analysis for an EWLRT extension with between 8 and 12 stops in Toronto.¹

¹ <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.EX16.1>

City staff, in partnership with TTC and Metrolinx, have undertaken the required analysis to complete the requirements of the Initiation and Development phase of the **Toronto Segment** of the project. This corresponds to Stage 3 work outlined in the specific Stage Gate process outlined for SmartTrack as part of the City and Province's Agreement in Principle (see Attachment 1 of 2016.EX19.1).² This work includes completion of conceptual design and the development of a Class 4 cost estimate. In accordance with other City Council direction, City staff have also completed a planning and streetscape study for the corridor, studied opportunities for commuter parking, and conducted significant public consultation.

Planning and conceptual design for the **Airport Segment** from Renforth Station to the proposed Regional Transportation Passenger Centre ("RTPC") at Pearson International Airport is being led by Metrolinx with support from City and TTC staff. The Airport Segment concept has not significantly developed from the alignment contemplated in the project's 2010 Environmental Project Report because the RTPC concept, being advanced by the GTAA, has not advanced to a point where the terminus of the Airport Segment can be identified with any certainty. As a result, the Airport Segment of the overall EWLRT extension is further behind the Toronto Segment in the project lifecycle (Figure 2).

In a March 22, 2019 letter to the City Manager and Chief Executive Officer of the TTC, the Province proposed that a significant portion of the EWLRT be subterranean (i.e., tunnelled), a concept which has been studied throughout this project, including as part of this report and as part of the 2016 Initial Business Case³ jointly developed by Metrolinx and the City.

Notwithstanding the City's identification of a preferred EWLRT concept and development of Class 4 cost estimate for the at-grade LRT option with 10 stops, the next phase of work can only reasonably continue once Metrolinx has completed their analysis. Because Metrolinx is the asset owner of the Crosstown LRT and future LRT extensions, concurrence on the preferred option for the project is required to continue to advance per the agreed to Stage Gate Process between the parties (Appendix A).

Comments/Analysis

In December 2017, City Council directed staff to consult with identified members of the public (the Community Working Group, or CWG) on further grade separated and/or tunnelled concepts for the Toronto Segment of the project. Fourteen community members were identified by local Councillors to form the CWG. City, TTC and Metrolinx staff met with this group six times over a period of four months, to facilitate the CWG in identifying:

- a) their preferred EWLRT Toronto Segment;
- b) additional metrics of interest to the community; and
- c) enhanced approach to traffic modelling.

² <https://www.toronto.ca/legdocs/mmis/2016/ex/bgrd/backgroundfile-97894.pdf>

³ <https://www.toronto.ca/legdocs/mmis/2016/ex/bgrd/backgroundfile-94621.pdf>

All activities of the CWG, including the Terms of Reference, membership, minutes of all meetings and final recommendations of the CWG to City staff, are available on the project website.⁴

City Council's direction to work with the CWG was in response to community concerns that a surface LRT concept would negatively impact traffic conditions in the Eglinton West corridor, and that the City's evaluation had not appropriately considered factors that are important to the local community.

Project team staff have compared tunnelling concepts for the EWLRT, including the concept developed by the CWG. Staff have updated traffic modelling based on advice from the CWG and have ensured that all additional metrics recommended by the CWG are part of the analysis of EWLRT concepts.

The conclusion of this analysis is that the surface-running LRT would achieve the City's objectives and would offer a good choice for travelling between Mt. Dennis and the Mississauga Airport Corporate Centre, and around the community. All other options have much higher capital costs, which would limit the City's ability to invest in other important transit and infrastructure projects. The conclusion of the additional analysis undertaken, is that the surface-running LRT option continues to be the preferred option in meeting the City's project objectives. This is consistent with the concept recommended in July 2016 and December 2017.

1. Summary of Options

Four concepts for the Toronto Segment have been compared:

- Option 1 10-stop surface-running concept as recommended to City Council in both July 2016⁵ based on the findings of the Initial Business Case ("IBC") jointly prepared by the City and Metrolinx, and in December 2017⁶ based on a further review of targeted grade separations to alleviate perceived traffic impacts (Figure 3).
- Option 2 10-stop underground concept, developed in response to both the need to provide transit connectivity to the community, and a strong community desire to construct the EWLRT underground (Figure 4).
- Option 3 3-stop elevated and underground concept, previously considered in the July 2016 Initial Business Case jointly authored by the City and Metrolinx, with parallel bus route (Figure 5).
- Option 4 7-stop elevated and underground concept, developed by the CWG, with parallel bus route (Figure 6).

⁴ <http://www.eglintonwestlrt.ca/project-materials-2/cwg-materials/>

⁵ <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.EX16.1>

⁶ <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.EX29.1>

For Options 2, 3 and 4, all underground segments would be tunnelled, and stations would feature concourse levels. These parameters replicate the approach to the Eglinton Crosstown LRT underground segment and were included based on feedback from the community.

For Options 3 and 4, the EWLRT guideway would be elevated across the Eglinton Flats and Humber River, with elevated stations. The LRT guideway would go underground through a portal between Scarlett Road and Royal York Road and emerge through a portal west of Renforth Avenue.

All concepts would be serviced by an expanded Mt. Dennis Maintenance and Storage Facility (MSF) that is currently being built by Crosslinx for Line 5 Eglinton.

A common Airport Segment alignment was developed by Metrolinx staff based on preliminary alignment work, and added to each Toronto Segment concept to complete the project scope for modelling purposes. The common Airport Segment alignment features:

- a) an elevated segment over Highway 401 with an elevated station at Convoir Drive;
- b) a surface-running segment with a stop at Silver Dart Drive; and
- c) an elevated segment with a station at the proposed Regional Transportation Passenger Centre (RTPC) at Pearson International Airport.

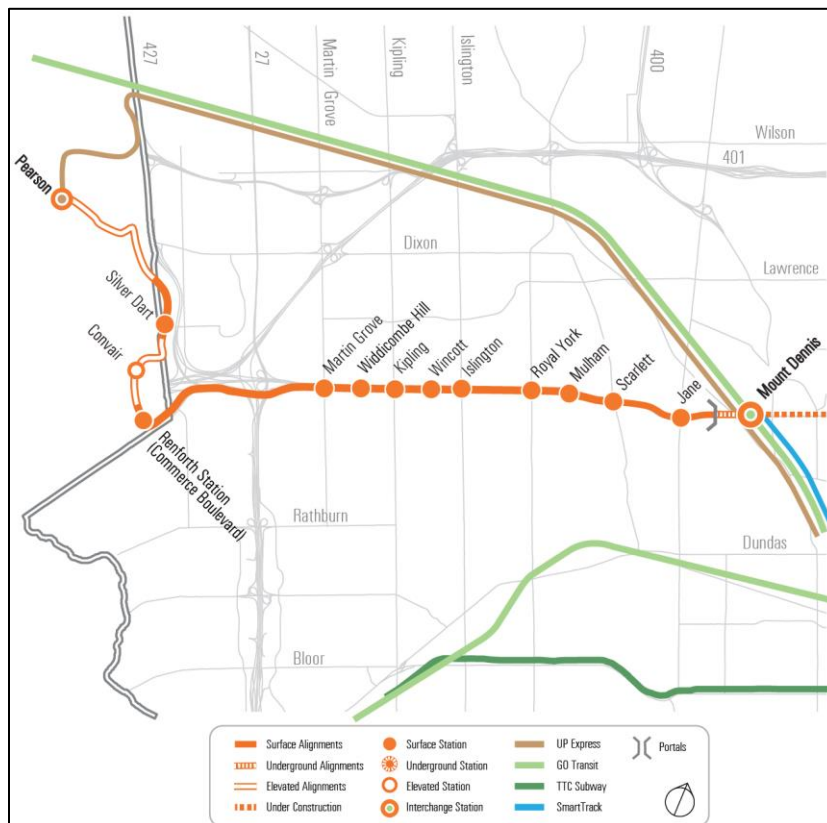


Figure 3. Option 1.



Figure 4. Option 2.

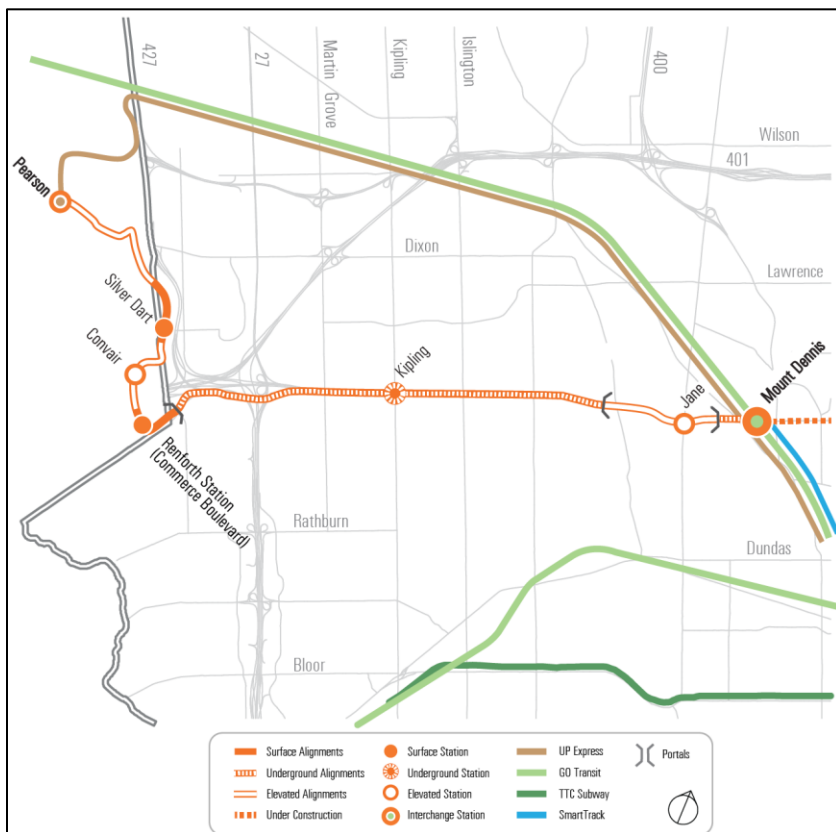


Figure 5. Option 3.

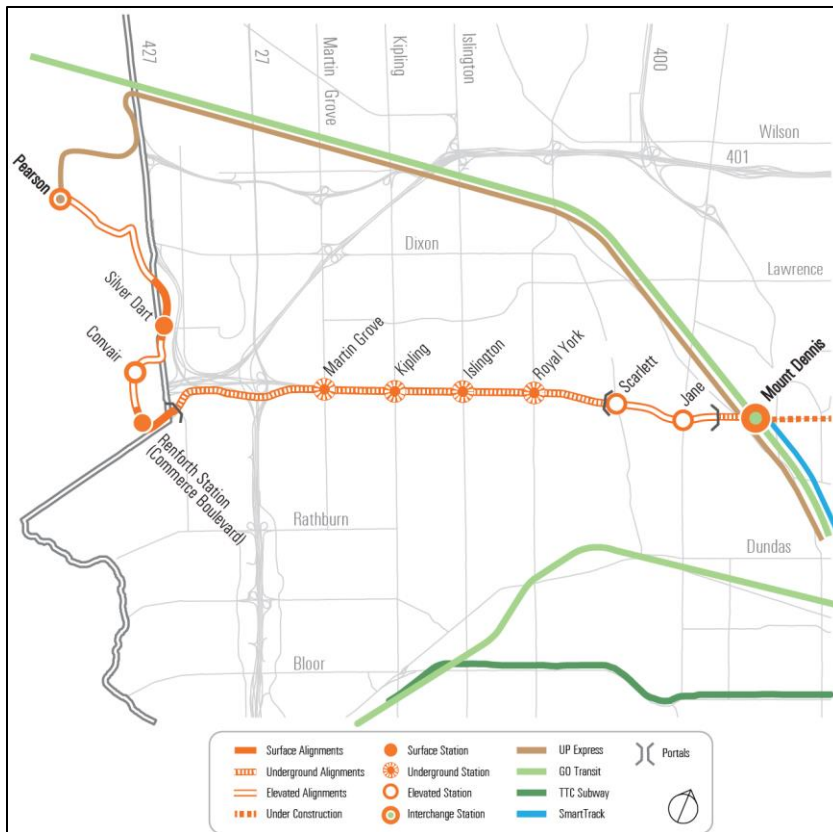


Figure 6. Option 4.

2. Cost Estimate Comparison of Options

The estimated costs of both the 8 to 12-stop surface-running EWLRT concept (corresponding to Option 1) and the 6-stop fully grade separated Eglinton West LRT concept (corresponding to Option 3) were previously reported to City Council in 2016.⁷

To compare the four Toronto Segment options, certified cost estimators under contract to the City prepared updated Class 5 cost estimates for the Toronto Segment based on updated engineering design work. These estimates were reviewed by Metrolinx. The updated cost estimate for the Airport Segment was prepared by Metrolinx. A comparison of costs for all options is shown in Table 1. A Class 3 cost estimate is required to establish the project budget baseline.

⁷ <https://www.toronto.ca/legdocs/mmis/2016/ex/bgrd/backgroundfile-94597.pdf>

Table 1. Comparison of Cost Estimates.

	2016 IBC Class 5 ⁽¹⁾ Estimate (2014\$)	2016 IBC Class 5 Estimate (2019\$) ⁽²⁾	2019 Class 5 Estimate (2019\$)
Toronto Segment Option 1	\$1.2 - \$1.8 B	\$1.4 - \$2.1 B	\$1.5 B
Toronto Segment Option 2	N/A		\$4.0 B
Toronto Segment Option 3	\$1.7 - \$2.7 B	\$2.0 - \$3.1 B	\$2.2 B
Toronto Segment Option 4	N/A		\$3.0 B
Airport Segment ⁽³⁾	\$0.28 B	\$0.33 B	\$1.0 B
<p>Notes: All cost estimates in this table exclude escalation, property acquisition, financing, lifecycle and operations/maintenance, and costs associated with expansion of the Mount Dennis Maintenance and Storage Facility. (1) Class 5 estimates are considered accurate within a range of -50% to +100%. (2) Escalation assumed to be 3% per year for five years. (3) Prepared by Metrolinx.</p>			

3. Comparison of Options

As an extension of the Eglinton Crosstown LRT, the EWLRT must be constructed to the Eglinton Crosstown's design specifications. This means that all options have the same frequency and capacity. The assumed build-out of the EWLRT is assumed to have a capacity of 7,400 passengers/hour in each direction, based on a 96 m, three-car consist with a headway of approximately four minutes.

Option 1 is the preferred concept for the Toronto Segment of the EWLRT because it is has the lowest cost while meeting all of the City and TTC's project objectives and policy objectives for transit connectivity.

1.1 Option 1

Option 1, a 10-stop surface-running LRT in the centre of the Eglinton Avenue West right-of-way, is a variation of the EWLRT concept that was previously endorsed by City Council and the Metrolinx Board, and approved under Ontario's Environmental Assessment Act.

The design of Option 1 has been refined and detailed traffic analysis has been undertaken based on previous City Council direction.

Option 1 would achieve the greatest connectivity for people along the corridor because it includes 10 LRT stops along Eglinton Avenue West. It will provide increased opportunities to board the EWLRT to access jobs, goods, services, and neighbourhoods.

Option 1 would also replace the existing Eglinton West 32 TTC bus and would connect with 11 other TTC bus routes. These connections would offer an alternative rapid transit route to midtown and downtown for people who currently take the bus to Line 2. This would be particularly beneficial for those travelling to or from the Kingsview Village-The Westway Neighbourhood Improvement Area along the Dixon Road corridor to the north of Eglinton Avenue.

Typical Metrolinx LRT program stop designs were assumed for costing purposes. These designs may expose waiting passengers to some weather compared to underground stations. It would be possible to invest in enhanced shelters that would provide greater protection and amenity if weather protection is identified as an important objective. Increased access at surface level also allows visibility to surface destinations and improved wayfinding, as well as ensuring consistently barrier-free access that does not require the use of stairs, escalators, or elevators.

The EWLRT is expected to have a travel time from Mt. Dennis Station to Renforth Station of 25 minutes. This is a similar or better travel time along the corridor than auto traffic during peak periods, which makes the LRT a good alternative for travelling through the corridor. Peak point, peak direction (PPPD) ridership for Option 1 based on this travel time is estimated to be 2,700 passengers/hour, which represents an increase of 1,900 passengers/hour compared to maintaining the existing bus service. LRT travel times may be further improved through the refinement of traffic operations and transit signal priority measures and should be considered a conservative estimate of travel time.

The design has been updated to remove any “Michigan left” turn movements due to community concerns.

While Option 1 would have some negative impacts to traffic operations on the Eglinton Avenue West corridor, advanced traffic simulation modelling suggests that these impacts would be minimal. Implementation of the EWLRT would not decrease the capacity of the existing roadway because there would be no reduction in the number of general road lanes, and left turns for motorists would continue to be possible at all signalized intersections. Traffic operations can also be further improved through refinements to transit signal priority and more detailed design work.

The corridor is predicted to be congested in the future, regardless of whether or not there is a surface LRT. Vehicles are predicted to detour from the corridor particularly at congested segments. See Section 7 for further detail about traffic impacts.

Option 1 would have very minimal property impacts because the EWLRT would make use of under-utilized space in the public right of way, but would require an additional bridge across the Humber River, which was not previously anticipated.

Of the four options, Option 1 is estimated to have the lowest capital cost, lifecycle capital cost and operating cost, as well as the shortest construction period and least construction impact.

1.2 Option 2

Option 2, when compared to Option 1, offers the only direct comparison between a surface-running and underground concept with the same stops.

Option 2 would also achieve the greatest connectivity for people along the corridor because it also considers 10 LRT stops along Eglinton Avenue West. It will provide increased opportunities to board the LRT to access jobs, goods, services and neighbourhoods.

Additional strategic benefits of Option 2 include enhanced shelter for passengers and slightly improved reliability.

While both Options 1 and 2 offer the same connectivity benefits, Option 2 offers a faster service (19 minutes from Mt. Dennis Station to Renforth Station compared to 25 minutes for Option 1) due to it running in a completely dedicated right-of-way. This improved travel time is estimated to increase PPPD ridership during the morning rush by approximately 800 passengers, to 3,500 passengers/hour. Option 2 is assumed to have no impact on traffic operations once LRT construction is complete because the existing roadway configuration would be maintained.

Compared to Option, 1, Option 2 would have a longer construction period with resultant impacts to traffic and adjacent communities, risks associated with construction under the Humber River and ongoing risk of flooding to the tunnel. This option is also has much higher capital, lifecycle and annual operating costs than Option 1.

Option 2 would also have more property impacts than Option 1 to facilitate tunnel boring machine ("TBM") launch and extraction sites, as well as station construction sites and entrances.

Option 2 is not recommended because its high costs would limit the City's ability to invest in other important transit and infrastructure projects.

1.3 Option 3

Option 3, the 3-stop elevated and underground concept previously considered in 2016, would provide the least amount of transit accessibility benefit for local communities with minimal LRT stations/stops. With only three stops along Eglinton Avenue West, this option would provide fewer opportunities for residents to access jobs, goods, and services.

Option 3 is faster than Options 1 and 2 (with a travel time of 12 minutes from Mt. Dennis Station to Renforth Station) and a corresponding increase in PPPD ridership to 3,800 passengers/hour. However, there is such limited connectivity provided for the local community, residents who live or work near the transit line would receive minimal benefit.

Option 3 is assumed to have no impact on traffic operations once EWLRT construction is complete because the existing roadway configuration would be maintained.

Option 3 would have more property impacts than Option 1 but fewer than Option 2, to facilitate TBM launch and extraction sites, as well as station construction sites and entrances.

Similar to the findings of the 2016 IBC, Option 3 is not recommended because it does not meet the City and TTC's objectives for connectivity, and would do little to improve transit in the area where it is built.

1.4 Option 4

Option 4 (Community Working Group option), the 7-stop elevated and underground concept, proposes a different balance between connectivity and speed.

Option 4 would achieve moderate improvement in access to jobs and people with seven LRT station stops at arterials. It will provide moderate opportunities to local communities to access jobs, goods, and services.

Option 4 provides enhanced shelter for passengers in four underground stations, but may expose passengers to greater impacts from the elements at two elevated stations. Noise from the LRT operating across the Eglinton Flats on an elevated guideway may also have impacts which have not been fully studied, would have visual impacts on the park landscape, and would be an intrusion into the apartment neighbourhood around Eglinton Avenue West and Scarlett Road.

Compared to Options 1 and 2, Option 4 removes three stops that are required by TTC service coverage policy but that do not connect to bus services. As a result, the travel time from Mt. Dennis Station to Renforth station is reduced to 16 minutes compared to 25 and 19 minutes for Options 1 and 2, respectively. The PPPD ridership with the LRT increases to 4,100 passengers/hour.

Option 4 is assumed to have no impact on traffic operations once LRT construction is complete because the existing roadway configuration would be maintained.

Option 4 would have more property impacts than Option 1 (but fewer than Option 2) to facilitate TBM launch and extraction sites, as well as station construction sites and entrances.

Compared with Option 2, Option 4's elevated segment across the Eglinton Flats eliminates the risk of construction under the Humber River and ongoing risk of tunnel flooding through the floodplain. The elevated segment and removal of three stations also results in Option 4 having a lower capital cost estimate than Option 2, while lifecycle capital costs and annual operating costs are similar.

4. Public Feedback

Extensive consultation with community stakeholders, the Community Working Group, and members of the public has been undertaken throughout the past two years. Consultation and outreach activities have included:

- Public meetings on March 5 and 7, 2019
- Stakeholder meetings on July 18, 2018 and February 25, 2019
- Six Community Working Group meetings between March and July 2018
- Walking tours on August 1 and September 25, 2018
- Six pop-up consultations at various locations within the community between July and September 2018
- Four workshops with the Kingsview Village-The Westway Neighbourhood Area Planning table, the Toronto Youth Cabinet and the TTC Advisory Committee on Accessible Transit between June and November, 2018
- Online consultation using Social Pinpoint, the project website (<http://www.eglintonwestlrt.ca/>) and email

Through these activities, more than 700 participants were engaged in person and over 600 online responses were received. Feedback shows that there is strong support for an LRT along Eglinton Avenue West in order to improve local and regional connectivity and improve access to jobs, education and services. Some participants have stated that this project is a key link to building a citywide rapid transit network.

Most of the participants adamantly supported Option 4 or Option 2, mainly due to the perception that an underground LRT would have fewer impacts on traffic and vehicular travel times than a surface-running LRT. Those supportive of these options were of the view that a fully underground LRT would provide the most relief to current and future traffic congestion on Eglinton, provide the least number of impacts on the local community during operation, and require less maintenance and fewer delays due to inclement weather. Many participants did not consider project cost to be a significant issue and felt that the additional cost to construct either of these options would be worth the long-term benefit.

Many participants who preferred Option 4 were supportive of the elevated alignment between Jane and Scarlett to mitigate potential impacts to natural features, including the Humber River floodplains. Many Option 4 supporters were also in favour of the removal of the LRT stop at Wincott Drive and were of the view that a stop at this location would cause increased traffic in this primarily low-density residential area.

Many participants supportive of Option 4 or Option 2 raised concern about a surface-running LRT. Despite the results of the analyses and the design work, participants were of the view that a surface-running LRT would increase vehicular travel times, add to congestion in the corridor, result in reductions of traffic lanes along Eglinton Avenue West or could not be built without significant property impacts. Some participants raised concern that a surface-running LRT would negatively impact their daily commutes, be a safety concern for those crossing the street, cause increased noise, and result in visual impediments due to overhead wiring.

Participants who showed support for Option 1 noted the comparatively lower cost to construct the LRT, the faster approval and construction period with the least amount of construction disruptions, the higher number of stops, and the increased comfort and experience for individuals riding the LRT with full access to natural light. Some also stated that Option 1 would be the most accessible to everyone due to the 10 stops on

the surface, allowing the greatest proximity and connectivity to TTC bus routes, local amenities and jobs. Some participants stated that Option 1 would be the best use of the limited resources available for transit expansion and have raised concern that if a more expensive option is selected, the project could be significantly delayed, or move forward at the expense of another transit project.

The least preferred option was Option 3. Those who expressed preference favoured the low cost, the fact that the majority of the line would be underground, and the comparatively fast travel time from Mount Dennis to Commerce Boulevard. Some suggested Option 3 should be chosen with provisions for stops to be added in the future when required.

Further documentation of public feedback is found on the project website.⁸

5. Results of Option Analysis

Options 2 and 3 are not recommended as described above. Based on a direct comparison of Options 1 and 4, the results of the analysis indicate the preferred concept for the Toronto Segment of the EWLRT is Option 1. As described above, Option 1 is the 10-stop surface-running concept (Figure 3).

Option 4 offers a good, pragmatic balance between connectivity and speed of the LRT with economic benefits that exceed those of Option 1. Nonetheless, it does not meet all of the City and TTC's policy objectives for transit connectivity and would require the TTC to maintain the operation of the Eglinton West bus service.

The improvement in travel time between Option 1 and Option 4 is partly due to the reduction of stops, and partly due to the fully-exclusive nature of the transit right-of-way. With further refinements to traffic operations and transit signal priority, travel time for Option 1 can be improved to approach that of Option 4.

Option 1 also has some impacts on traffic operations, ranging from 1 to 3 minutes (up to 5%) for autos travelling from Mt. Dennis to Renforth Station, compared to Option 4 which is assumed to have no impact on traffic operations. A further detailed study of solutions to traffic issues is described in Section 7.

Option 4 has a longer construction period, greater construction impacts, visual impacts and potential noise impacts to both the apartment neighbourhood around Eglinton-Scarlett and the Eglinton Flats.

Option 4 capital, lifecycle capital and annual operating costs far exceed the costs of Option 1. The estimated capital costs, at approximately \$3 billion (2019\$), would limit the City's ability to invest in other important transit and infrastructure projects. This expenditure is not warranted when Option 1 would achieve the City's objectives and would offer an excellent choice for travelling through the community and between Mt. Dennis and the Mississauga Airport Corporate Centre.

⁸ <http://www.eglintonwestlrt.ca/april2019report>

6. Class 4 Cost Estimate for the Preferred Option 1

Further design work was undertaken on the preferred Toronto Segment concept (Option 1), including an updated cost estimate to reflect the maturation of the project definition. A Class 4 cost estimate for Option 1 was prepared by certified cost estimators under contract to the City and reviewed by Metrolinx, to satisfy Gate 4 of the SmartTrack Stage Gate process (see Appendix A). This further design is the completed conceptual design, and has been fully documented to inform the future Preliminary Design & Engineering (PDE) phase of work. Cost estimates for the Airport Segment are at Class 5. A comparison of the maturation of cost estimates is shown in Table 2.

Table 2. Maturation of Cost Estimates for Option 1.

	2016 Initial Business Case Class 5 ⁽¹⁾ Estimate (2019\$)	2019 Class 5 Estimate (2019\$) ⁽²⁾	2019 Class 4 ⁽³⁾ Estimate (2019\$)
Toronto Segment (Option 1)	\$1.4 - \$2.1 B	\$1.5 B	\$1.8 B
Airport Segment	\$0.33 B	\$1.0 B	N/A
Notes: Cost estimates exclude escalation, financing, lifecycle and operations/maintenance, and costs associated with expansion of the Mount Dennis Maintenance and Storage Facility. (1) Class 5 estimates are considered accurate within a range of -50% to +100%. (2) Escalation assumed to be 3% per year for five years. (3) Class 4 estimates are considered accurate within a range of -30% to +50%.			

The Class 4 cost estimate for Option 1 is within the estimate range reported in the 2016 Initial Business Case. The updated cost estimate for the Toronto Segment of \$1.8 B (2019\$) is a Class 4 estimate, and is still not suitable for establishing a baseline project budget. Additional preliminary design and engineering is required to mature the project to a Class 3 level estimate. The 2019 Class 4 updated cost estimate for the Toronto Segment also includes two changes in scope. These changes were:

1. The need for an additional structure across the Humber River because it was determined that the existing structure cannot be widened; and
2. The inclusion of green trackway as recommended by the planning and streetscape study, to achieve the objective of a green corridor and low impact design.

7. Solving the Traffic Problem

Community members have repeatedly raised concerns about traffic operations along the Eglinton West corridor. Concerns about worsening traffic operations as a result of introducing a surface LRT are the most common reason that community members prefer an underground LRT concept. Multiple rounds of detailed traffic simulation modelling have been undertaken to more fully understand the issues that exist and those that may be expected in the future, with and without the implementation of Option 1.

The Eglinton Avenue West corridor is unique in Toronto because it was originally planned to accommodate the Richview Expressway, which was cancelled in 1971. The right-of-way is over 100 metres wide in places, and is characterized by very wide boulevards between the street and private properties.

The Highway 401-Highway 427-Highway 27-Eglinton Avenue interchange at the western end of the EWLRT corridor was also originally designed to direct traffic to the planned Richview Expressway. Because the Expressway was never built, seven lanes of traffic exit the highway interchange and are required to stop at an urban stoplight at Eglinton Avenue and Martin Grove Road. As a result, the Eglinton-Martin Grove intersection is one of the city's most congested intersections. Operational issues spill over to intersections along the Eglinton corridor including Kipling Avenue and Islington Avenue.

Observations of existing conditions and modelling future scenarios suggest that the operational issues are exacerbated, particularly in the afternoon peak period, by:

1. The inability for vehicles leaving the Mississauga Airport Corporate Centre to directly access Highways 401 and 427, forcing traffic to use Eglinton Avenue and one of the north-south arterial roads to access the highway network; and
2. Congestion on Highway 401 due to lack of "collector lanes" between Highways 427 and 409, inciting drivers to use Eglinton Avenue and one of the north-south arterial roads to bypass this segment.

Extensive simulation modelling suggests that the traffic network in the area around the potential EWLRT corridor is saturated during peak hours today, and estimates that travel time in the Eglinton West corridor between Renforth Station and Mt. Dennis Station will approximately double by 2041.

One conclusion of the traffic study is that a surface-running LRT would have a minimal impact on auto traffic, using current assumptions for transit signal priority ("TSP").⁹ Further refinement to traffic operations and TSP assumptions could further reduce the impact of the surface LRT on auto traffic operations.

The surface-running LRT would not remove any through- or turning-lanes of traffic, but would only change signal timing along the corridor. In other words, a surface EWLRT is not the cause of congestion, nor would building an underground LRT mitigate this congestion.

This conclusion notwithstanding, traffic congestion is a concern today and will be of increasing concern in the future. Detailed modelling suggests that normal growth in traffic will significantly increase auto travel times in the corridor even without a surface LRT. The biggest congestion concerns are in the area around the Highway 401-Highway 427-Highway 27-Eglinton Avenue interchange at the western end of the corridor with many vehicles using Eglinton Avenue as an alternative route to the busy highways.

⁹ Available at <http://www.eglintonwestlrt.ca/april2019report>

While several solutions to traffic congestion have been tested through the EWLRT detailed traffic study, these interventions are outside the scope of the EWLRT project because the EWLRT is not the cause of the congestion. In addition, the solutions tested do not capture the full range of possible solutions. Further work to assess these possible solutions requires the full partnership of Ontario's Ministry of Transportation (MTO).

Staff recommend that work already undertaken by the City be advanced, in consultation and partnership with MTO, to identify the preferred solution for traffic congestion on Eglinton Avenue West.

8. Commuter Parking

City Council directed staff to assess opportunities to provide commuter parking along the EWLRT corridor. This assessment has been undertaken as part of a larger multi-modal access plan for the EWLRT that considers how to enhance access to stops and help ensure that the LRT would be attractive to use. Recommendations for multi-modal access have been taken into consideration in the conceptual design for the EWLRT.

A total of nine potential sites for commuter parking were identified, as illustrated in Figure 7. Of these, only the three potential sites in the hydro corridor near Eglinton Avenue West and Martin Grove Road are both large and immediately adjacent to an LRT stop. Given the traffic congestion in this area as described above, traffic generated by the lots themselves could further worsen traffic congestion in the area.



Figure 7. Potential locations for commuter parking lots (highlighted in blue).

Further, commuter parking is not recommended because:

1. It is not consistent with Official Plan policy 2.4(7)(d) that seeks to encourage transit through limiting surface parking as a non-ancillary use;
2. It has relatively high capital, operations, and maintenance costs to implement compared to the revenue that the lots could be expected to generate;
3. Subsidizing parking would have the effect of attracting drivers; and
4. Many of the potential lots identified would occupy land better suited to transit-oriented development or natural preservation.

The provision of commuter parking should be removed from consideration as part of the EWLRT project. Further details can be found in the Commuter Parking Report available on the project website.¹⁰

9. Streetscape Design

Consistent with City Council direction from July 2016, an extensive streetscape design and land use planning study has been undertaken to evaluate development potential along the EWLRT corridor and identify streetscape design principles and opportunities to ensure that the City's objectives are achieved by potential investment in the EWLRT.

Recommendations and key themes from Eglinton Connects – the broad planning study undertaken by the City for the Eglinton Crosstown corridor – were reviewed and adapted for the Eglinton West corridor, in consultation with the local community. Details of the study can be found in the Planning & Streetscape Study Report.¹¹ Recommendations have been incorporated into the conceptual design. Key recommendations include the following:

1. Create direct and wide paths for travel and greater buffers between pedestrians and vehicular traffic;
2. Maintain cycling facilities along the corridor, introduce new cycling connections, and upgrade the multi-use trail to current standards;
3. Design excellent shelters at LRT stops for safe access and comfortable waiting experiences such as designing platform widths to allow for enclosed shelters;
4. Maintain and enhance the existing “green corridor” by implementing a green guideway for the LRT, planting new trees, and designing the street and public realm according to principles of low impact development; and
5. Consider implementing complimentary projects along the corridor to further enhance the public realm, such as public art installations or naturalizing Mimico Creek and Silver Creek.

10. Land-Use Planning

A review of land use planning policy and built form have been undertaken as part of the planning and streetscape study. The study notes that much of the corridor is designated "Neighbourhoods" in the Official Plan with relatively few opportunities for significant changes, and it does not propose substantial changes to land use policies. However, the study does include recommendations regarding future development that may occur, such as:

- Ensuring new development respects the open and green character of much of the area and transitions appropriately between low-rise and high-rise areas;
- Encouraging new development to contribute to pedestrian connectivity by providing direct visual or physical connections, such as mid-block connections to transit stops or stations; and
- Prioritizing mixed uses on larger sites and those near transit stops, particularly to encourage the provision of new or improved community services and amenities.

¹⁰ <http://www.eglintonwestlrt.ca/april2019report>

¹¹ Available at: <http://www.eglintonwestlrt.ca/april2019report>

A separate report on land use planning policy recommendations will be presented to Etobicoke-York Community Council.

11. Conclusion

Of the four options analyzed for the Toronto Segment of the Eglinton West LRT, Option 1 is City staff's preferred concept because it has the lowest cost while meeting all of the City and TTC's project and policy objectives for transit connectivity.

While there is opposition to the preferred concept from many community members and organizations represented on the project's Stakeholder Advisory Group and Community Working Group, the economic and financial cases would not support an underground option because the expected benefits would not be sufficient to offset the significantly higher costs.

The economic case is relatively low for all options, with benefit-cost ratios all below 0.5 and negative net present values of benefits, which means that costs would exceed benefits.

If no higher-order transit infrastructure were built on the Eglinton West corridor, a "Business as Usual" (BAU) scenario could maintain existing buses and increase bus service to meet demand in the future. Continued bus operations could serve the existing demand and are projected to adequately serve a future 2041 demand of approximately 800 riders in the peak period and peak direction.

Metrolinx and the GTAA continue to study options for the Airport Segment on the extension. Metrolinx also continues to study alternative project concepts for the Toronto Segment of the EWLRT, which may include concepts already studied by the City or variations on those concepts, and is evaluating potential regional benefits of the project.

Staff recommend City Council forward this attachment and other technical reports to Metrolinx, the Province and the GTAA as they continue their work on the Eglinton West LRT. Once their work is complete, a report on next steps for the project will be brought back to City Council. The City's commitment to this project is subject to the SmartTrack Stage Gate Process as described in the Toronto-Ontario Agreement in Principle (see Appendix A).

Contact

James Perttula, Director Transit and Transportation Planning, City Planning Division
Email: james.perttula@toronto.ca, Tel: 416-392-4744

Mike Logan, Program Manager, Transit and Transportation Planning, City Planning Division
Email: mike.logan@toronto.ca, Tel: 416-338-5568

Appendix A – SmartTrack Stage Gate Process

In November 2016, City Council approved a Stage Gate Process (Figure A1) for phased decision-making on the SmartTrack project that was developed by the City and the Province and included in a Summary Term Sheet (EX19.1 Attachment 1 – Appendix A).¹² This process allows City Council to consider advancing commitments at defined stages of the SmartTrack project, and identifies decision points in the project where City Council and the Province reserve the right to assess the following:

- Whether the City and Province's conditions outlined in the Summary Term Sheet have been addressed to the City and Province's satisfaction; and
- Whether to cancel or alter the project scope, subject to the party who cancels or alters the project scope making the other party whole for costs incurred to date.

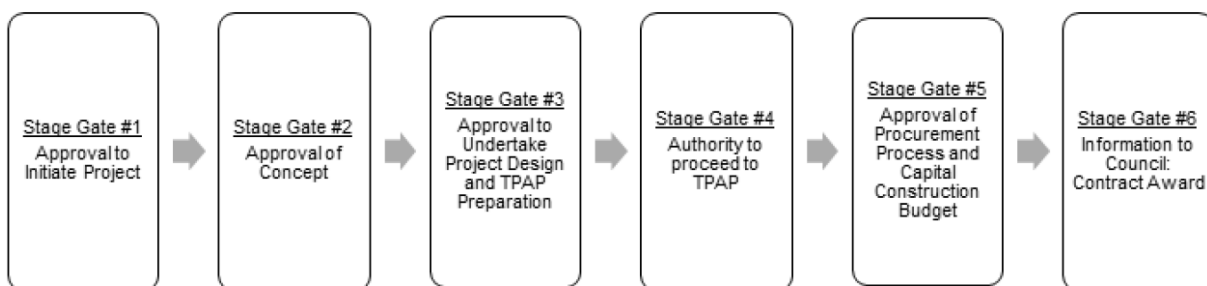


Figure A1. Schematic of the SmartTrack Stage Gate Process

Since 2016, further work has been undertaken by the City and TTC to develop a standard guideline around "stage-gating" and phases of a transit expansion project. There are some differences between the guideline referenced throughout the cover report and the Stage Gate Process developed by the City and Province in 2016 specifically for SmartTrack.

The components of the SmartTrack project are at different stages as outlined in Table A1. The SmartTrack Stations Program component of SmartTrack has gone through Stage Gate 5, and will move into procurement and construction phase subject to the finalization of required agreements in accordance with Council direction from April 2018 (see Attachment 1 for more information). The timelines for advancing both segments of EWLRT to Stage Gate 4 decision-making is subject to the conclusion of further analysis being undertaken by Metrolinx and the GTAA and required reporting back to City Council to determine next steps.

¹² <http://www.toronto.ca/legdocs/mmis/2016/ex/bgrd/backgroundfile-97894.pdf>

Table A1. Status of SmartTrack project components in Stage Gate Process

SmartTrack Stage Gate Process	SmartTrack Stations Program	Eglinton West LRT – Toronto Segment	Eglinton West LRT – Airport Segment
1. Approval to initiate project	February 2015 – Complete (EX2.2)	February 2015 – Complete (EX2.2; EX13.3)	February 2015 – Complete (EX2.2; EX13.3)
2. Approval of concept	July 2016 – Complete (EX16.1)	July 2016 – Complete (EX16.1)	July 2016 – Complete (EX16.1)
3. Approval to undertake project design and TPAP preparation	November 2016 – Complete (EX19.1)	November 2016 – Complete (EX19.1)	November 2016 – Complete (EX19.1)
4. Authority to proceed to Transit Project Assessment Process (TPAP)	December 2017 – Complete (EX29.1)	TBD	TBD
5. Approval of procurement process and capital construction budget	April 2018 – Complete (EX33.1)	TBD	TBD
6. Information Report to City Council: contract award	TBD	TBD	TBD