Attachment 1

Eglinton East Light Rail Transit and the Waterfront Transit Network

Eglinton East Light Rail Transit

In April 2019, City Council approved an alignment for the Eglinton East Light Rail Transit (EELRT) that would extend the Eglinton Crosstown LRT (ECLRT) from Kennedy Station through the University of Toronto Scarborough (UTSC) to Malvern. City staff were directed to continue the planning and design work for the project, and to report back to Council with a plan, schedule, cost and funding requirements.

This section of Attachment 1 provides a detailed overview of the design changes and updated cost estimates for the EELRT. Changes have been made to reflect the updated transit expansion plans in Scarborough (see Figure 1), including the updated design for the Scarborough Subway Extension (SSE).

Figure 1. Scarborough transit expansion plans.

Kennedy Station Connection Analysis

As part of the updated SSE design, a third subway track for service reliability improvements has been introduced under Eglinton Avenue East near Midland Avenue, and the depth of the SSE tunnel east of Kennedy Station has been modified. These

infrastructure changes preclude the previously developed tunnel design for the interface of the SSE and EELRT.

Accordingly, City staff assessed seven potential alignments for the EELRT to connect at Kennedy Station, including three tunneled options that would allow direct connection and continuous service with the ECLRT, and four above-grade options that would require a transfer at Kennedy Station. The options were put through an initial screening to identify any fatal flaws (see Table 1), resulting in the elimination of four options.

Table 1. Option pass/fail analysis.

Option Description	Safety	Property Impacts	Route Alignment	SSE Design	Traffic
1. Tunnel with Center Portal	Pass	Pass	Pass	Pass	Pass
2. Tunnel with Northside Portal	Pass	Pass	Pass	Pass	Failed
3. Tunnel with WB Road Shift	Pass	Failed	Pass	Pass	Pass
4. Elevated Guideway North of Overpass	Pass	Pass	Failed	Pass	Pass
5. Elevated Guideway SRT Overbuild	Pass	Pass	Pass	Failed	Pass
6. Elevated Guideway Busway Overbuild	Pass	Pass	Pass	Pass	Pass
7. Center Running on Overpass	Pass	Pass	Pass	Pass	Pass

The remaining three options were assessed in greater depth using the City's Rapid Transit Evaluation Framework, presented in Table 2.

Table 2. Option evaluation scoring matrix.

Criteria	Description	Option 1 Average	Option 6 Average	Option 7 Average
A. Serving People				
Transit User Choice	Develop an integrated network that connects different modes to provide for more travel options.	4.0	3.0	2.3
Experience and Performance	Capacity to ease crowding/congestion; reduce travel times; make travel more reliable, safe and enjoyable	3.5	2.5	3.0

Criteria	Description	Option 1 Average	Option 6 Average	Option 7 Average
Social Equity	Provides residents with improved access to work, school and other activities	3.0	3.0	2.0
B. Strengthening Places				
Shaping the City	Use of transportation networks as a tool to shape the residential development of the City	2.0	3.5	3.5
Healthy Neighbourhoods and City	Changes in the transportation network should strengthen and enhance existing neighbourhoods; promote safe walking and cycling within and between neighbourhoods	3.8	2.5	2.5
Public Health and Environment	Support and enhance natural areas; encourage people to reduce how far they drive; mitigate negative impacts	3.0	2.5	2.5
C. Supporting Prosperity				
Cost and Schedule	Improvements to the transportation system should be affordable to build, maintain and operate	2.7	3.3	2.3
Supports Growth	Investment in public transportation should support economic development; allow workers to get to jobs more easily; allow goods to get to markets more efficiently	4.0	3.7	2.7
TOTAL AVERAGED SCORE		25.9	24.0	20.8
		81%	75%	65%

The preferred and recommended option for advancing design work is a tunneled option (Option 1: Tunnel with Center Portal); Figure 2 shows its connection with Kennedy Station. This option maintains EELRT through-service connectivity with the ECLRT, which attracts higher levels of ridership and is consistent with the original project objectives. It would require a longer tunnel into Kennedy station, with an underground station at Midland Avenue and the potential for market-driven Transit Oriented Development above the station.

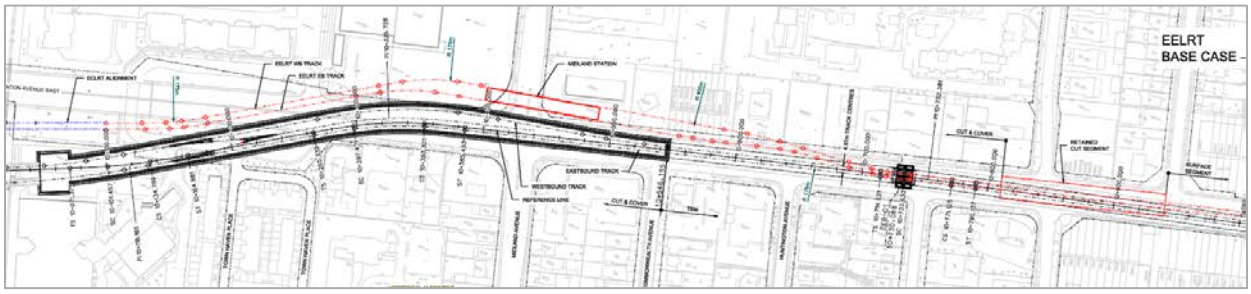

Figure 2. Recommended Eglinton East Light Rail Transit Kennedy Station connection.

The tunneled option mitigates potential pedestrian and cycle conflicts at Eglinton Avenue and Midland Avenue, and supports active transportation close to key transit modes. It also mitigates operational and design concerns at the eastern end of the Eglinton Avenue overpass. Further design of this option will need to limit and address any potential property impacts within the study area to optimize the benefits to the community.

Morningside Bridge

The EELRT alignment requires the use of the Morningside Bridge over Highway 401. The Ministry of Transportation of Ontario (MTO) will advance the rehabilitation of this bridge over the next few years, presenting an opportunity to coordinate some of the work required for the EELRT. Additional technical work was required to update the cost of EELRT works on the Morningside Bridge to reflect discussions with MTO about the scope of the bridge rehabilitation project.

Sheppard Avenue East Transit Plans

The EELRT design presented to City Council in 2019 was based on the expectation that the Sheppard East LRT (SELRT) would be constructed before the EELRT would begin service. The design of the EELRT north of the UTSC campus to Malvern assumed that some of the SELRT infrastructure, including the Maintenance and Storage Facility (MSF), would also serve the EELRT.

As part of the 2019 Ontario Budget, the Province announced its intention to extend the Sheppard Subway (Line 4) east to McCowan Road, following the construction of the SSE. Given the Province's new plans for rapid transit along Sheppard, the EELRT design and cost estimates have been updated to include additional infrastructure as part of the EELRT project. The updated EELRT project plan now recommends the option to locate an MSF to the north of UTSC.

Cost Estimate Update

The EELRT project cost estimates were updated to address the new design requirements discussed above (i.e., Kennedy Station connection, Morningside Bridge work and MSF) and to apply recent TTC and market experience with the design and construction of comparable transit infrastructure projects in the City and GTHA. The updated project cost estimates are presented in Table 3.

Table 3. Preliminary updated cost estimates.

Updated Cost Estimate	Baseline Cost Estimate	Variance
$4.0-4.4 billion	$2.3 billion	$1.7-2.1 billion

Notes:
1. Cost estimates are Class 4, except for elements related to the Morningside Bridge work. Those costs will be confirmed through design work to be undertaken by the Ministry of Transportation as part of the Morningside Bridge rehabilitation project.
2. Class 4 estimates are considered accurate within a range of -30% to +50%
3. Costs include the full cost of the MSF. Earlier reported cost estimates did not include MSF costs, as the sharing of the costs with the SELRT had not been determined.
4. Estimates exclude costs associated with procurement, escalation, lifecycle maintenance, and operations and maintenance.

As part of the next phase of design work, City staff will further refine the cost estimate, including the identification of ways to contain costs. Opportunities for savings through potential project delivery models and potential partnerships in Transit Oriented Developments may help to offset some project costs.

Phasing

Staff have examined opportunities for the phasing of the EELRT project. As a first phase, the EELRT could be constructed from Kennedy Station to UTSC, plus the MSF, which would allow operations to begin while the final phase of the project to Malvern is completed. MTO work on the Morningside Bridge may allow the City to advance early works for the EELRT. Further details on phasing will be included in future reports to City Council.

Next Steps

It is recommended that City Council authorize staff to update the business case for the project and advance the EELRT Transit Project Assessment Process (TPAP) for the EELRT based on the updated design described in this report. It is also recommended that City staff report back on the updated business case, including project costs, recommended schedule and a phasing approach, prior to the 2022 Budget process.

As the TPAP and design work for the EELRT progress, City staff will work with UTSC to align with their expansion plans. The EELRT would run along a realigned Military Trail through the UTSC campus as an important transit connection to and through the campus. A Secondary Plan is currently under development to guide the future of the

campus, and UTSC is actively advancing planning, design and construction of several new buildings. To ensure that the University's construction program continues to protect for the provision of EELRT infrastructure along a realigned Military Trail, the City and UTSC will work together to coordinate the planning, design, approvals and construction of these related ongoing initiatives.

City Planning has undertaken some initial planning analysis along the EELRT corridor to coordinate future growth with the transit investment. This work will continue to ensure the planning framework along the corridor supports suitable transit oriented development.

Further discussions with the Provincial government and Metrolinx will focus on outstanding questions related to the design of the EELRT, including technical and commercial details related to establishing a through-connection to the Eglinton Crosstown at Kennedy Station.

Waterfront Transit Network

Work on Waterfront Transit Network priority projects—the Union Station to Queens Quay Link and the East Bayfront LRT—is currently well underway with the 30% design and Class 3 cost estimate being developed as directed by City Council. The scope of the projects runs from Union Station to the foot of Bay Street, and along Queens Quay to the Cherry Street loop (see Figure 3). The projects are a coordinated effort between the City, the TTC and Waterfront Toronto, and would provide new and improved infrastructure to operate additional streetcar services to the East Bayfront development area.

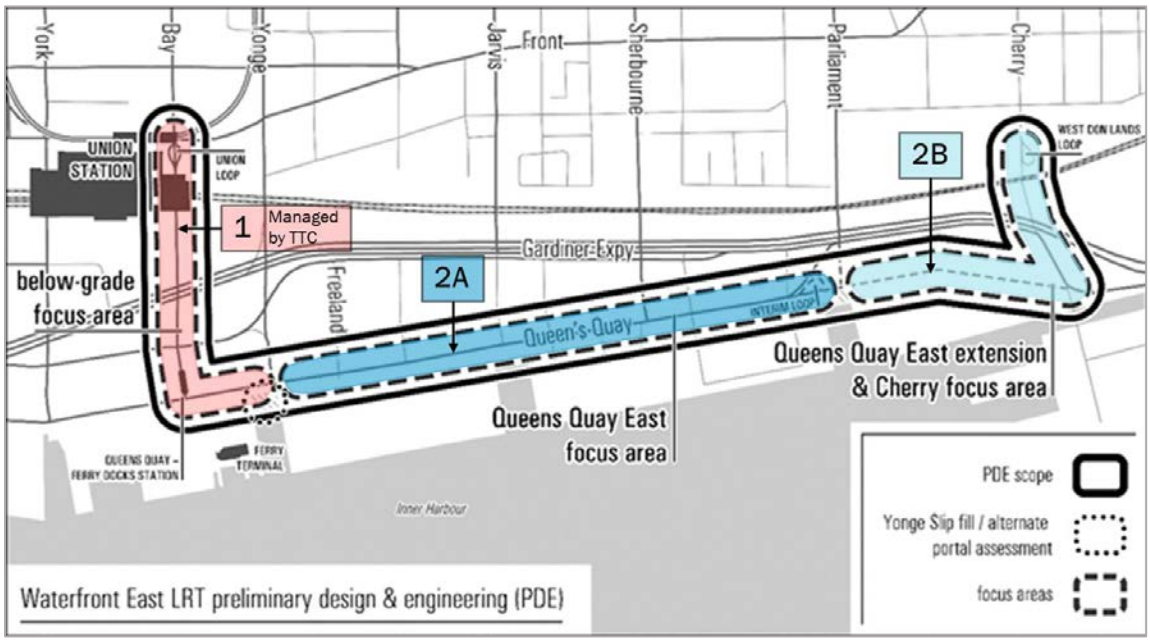

Figure 3. Waterfront Transit Network priority projects.

In April 2019, as part of agenda item EX4.1, City Council endorsed the streetcar loop expansion over a People Mover at Union Station as the preferred option for the Union Station to Queens Quay Link. Council also directed staff to commence the preliminary

design and engineering phase in 2020 for the extension of streetcar service to the East Bayfront.

As part of the design work, staff are assessing the network implications of the Ontario Line in relation to the East Bayfront LRT expansion. Early indications are that the Ontario Line may help support the case for the implementation of phased interim improvements at Union Station, and interim solutions for implementing the Waterfront Transit Network.

Also in April 2019, staff reported on the concept plan to improve the existing turnaround loop at Union Station. This concept plan proposed four platforms at Union Station to meet the 2041 forecast for transit ridership, as well as upgrades to the existing underground LRT station at Queens Quay and Bay. Work is ongoing to confirm the preferred design for the concept plan, and also to identify the potential to implement an interim phased improvement plan for the loop. The phasing plan will also assess the opportunities to improve transit service on Queens Quay to serve the East Bayfront and the Lower Don Lands. Options being assessed are a continuous east-west LRT service on Queens Quay, improved bus service, and combinations of the two.

The other key focus of the current work plan is assessing options for the location of a new portal east of Bay Street for the transition of the LRT from a tunnel to the surface right-of-way. The previous Environmental Assessment report identified a preferred location east of Yonge Street at Freeland Street. The team has conducted a comparative evaluation of that plan with an alternative location between Bay and Yonge Streets.

The alternative portal location was developed to address issues with the length of the tunnel, operational and design challenges at the Freeland Street intersection, major utility impacts at the foot of Yonge Street, and existing constraints on Queens Quay between Bay and Yonge Streets that are related to ferry activity, pedestrian and cycling conditions, and vehicular activity associated with private buses and pick-up/drop-off areas.

The alternative portal location will require a partial fill of the Yonge Street slip to consolidate vehicular and servicing access to the Westin Hotel and the Jack Layton Ferry Terminal via a new driveway connection to the Yonge and Queens Quay traffic signal. In addition to providing access, the design of the slip fill would also accommodate some relocated bus loading and pick-up/drop-off spaces, as well as new open space that can be integrated with the design of a new park planned for the east side of the Yonge slip.

Staff presented the alternative portal and Yonge slip fill option to the project's Stakeholder Advisory Committee (SAC) in July 2020. The purpose of the consultation was to provide a general update on the project and get comments on the preliminary preferred portal solution based on the draft evaluation. Opinions about the portal location were mixed, which was generally reflective of the proximity of residents to the portal location. The project team needs to address some questions related to operations and ownership for the Yonge slip fill area. The project team will continue to refine the design of the alternative, assess the implications for utilities in the area, work with impacted parties, and finalize the cost differences between the options, before returning to the SAC in the fall and a broader general public meeting.

The City, TTC and Waterfront Toronto are currently reviewing 10% design drawings for Queens Quay from Yonge Street to east of Parliament Street, while the TTC is focused on producing a 15% design for the underground section from Union Station to a portal on Queens Quay East. Design work on the section east of Parliament will commence shortly.

The next key challenges on Queens Quay and Cherry Street are the overall design elements of the street, such as: intersection treatments, coordination with active and planned developments along the corridor, realignment of Parliament Street south of Lake Shore Boulevard and associated slip fill at this location, extension of Queens Quay through the private lands between Parliament and Cherry, and the connection of the LRT under the rail corridor to the existing streetcar loop on Cherry Street at Mill Street.

The study will also continue to address the requirements of the Environmental Assessment (EA) process through the next stages. The scope of the work was previously approved under the East Bayfront Transit EA (Union Station to Parliament Street) and the Lower Don Lands EA (Parliament to Cherry Streets). Both EAs would require updates based on the anticipated scope of design changes; the East Bayfront Transit EA from 2010 also surpassed the 10-year approval period in April 2020.

Based on preliminary discussions with the Ministry of the Environment, Conservation and Parks, and considering current project parameters, a Transit Project Assessment Process (TPAP) will be undertaken to address the scope of the project for the complete area, rather than pursuing two EA addenda. As such, the project is considered to be in the pre-planning stage of the process prior to issuing a Notice of Commencement, and will follow all requirements for public consultation.

The Notice of Completion under the TPAP and completion of the 30% preliminary design and engineering phase of the Union Station-Queens Quay Link and East Bayfront LRT to Cherry Street is anticipated for late 2021. This work will be followed by a report to Council on the preferred design and a recommended implementation schedule prior to the 2022 Budget process. That report will also make recommendations and identify associated costs for potential phased implementation of transit improvements.