TORONTO

REPORT FOR ACTION

Advancing City Priority Transit Expansion Projects – Eglinton East LRT and Waterfront East LRT

Date: May 25, 2022
To: Executive Committee
From: Executive Director, Transit Expansion Office, and Chief Planner and Executive Director, City Planning
Wards: All

SUMMARY

The purpose of this report is to provide City Council with an update on the City's priority transit expansion projects, namely the Eglinton East Light Rail Transit (EELRT) and the Waterfront East LRT (WELRT) and seek required authorities to continue advancing both projects. This report also provides an update on the Province's Durham-Scarborough Bus Rapid Transit project.

Eglinton East LRT

The EELRT is a proposed 15 kilometre LRT in Scarborough extending from the terminus of the Eglinton Crosstown LRT (ECLRT) to Malvern Town Centre via the University of Toronto Scarborough Campus (UTSC). In 2020, City Council approved the updated alignment and concept for the EELRT as an extension of the Metrolinx-owned ECLRT by extending the ECLRT tracks underground at Kennedy Station, which would enable through-service at Kennedy Station. In February 2022, City Council directed City staff to undertake a constructability exercise for the EELRT to resolve alignment issues at Kennedy station, evaluate the potential to host the Maintenance and Storage Facility (MSF) at the Metrolinx-owned Conlins site, and to work with Metrolinx to protect for higher-order transit connection at the future station of the provincial Scarborough Subway Extension (SSE) at Sheppard Avenue and McCowan Road. This resulting analysis included an assessment, which revealed significant issues with the interface of the EELRT and the provincial SSE project at Kennedy Station.

City staff have worked with Metrolinx in an effort to resolve constructability issues in order to maintain the through-service alignment, however a viable solution that preserved the through-service was not possible due to the conflicts at Kennedy Station between the initial alignment and the planned SSE project. City staff have identified a distinct-service concept with an at-grade connection at Kennedy Station as an alternative solution. Based on preliminary analysis, the distinct-service concept has a number of benefits for the project. This includes cost savings, a shorter construction

duration, reduced property impacts, and design flexibility by avoiding dependency on the ECLRT technology, operations, and maintenance requirements. The design flexibility to select alternative vehicles from the ECLRT would enable vehicles to be accommodated at the preferred MSF at the Conlins Yard over the long term. City staff are also assessing the benefits of the EELRT connection to the SSE at Sheppard Avenue and McCowan Road, which would provide a complete network for the Scarborough rapid transit network.

Further analysis is required to confirm potential benefits and refine the distinct-service concept. This report recommends that City Council direct City staff to advance the Transit Project Assessment Process (TPAP) and 10% design for the distinct-service concept for the EELRT from Kennedy Station to Malvern Town Centre, with an at-grade connection at Kennedy Station, and the Sheppard Avenue segment from Neilson Road to McCowan Road. City staff will report back in Q3 2023 with a Class 4 cost estimate and an updated Initial Business Case.

Waterfront East LRT (WELRT)

The Union Station to Queens Quay Link and the East Bayfront Light Rail Transit (referred to as the Waterfront East LRT (WELRT)) is a priority Waterfront Transit Network project. Since the last update to City Council in December 2020, the City, TTC and Waterfront Toronto have advanced the design for the WELRT to 30%. City staff, the TTC and Waterfront Toronto continue to undertake a value engineering exercise to inform design refinements and an updated cost estimate.

Additional work is required to assess constructability and coordination risks with other planned and in-progress major infrastructure projects in the vicinity of the WELRT alignment, such as the Ontario Line, GO Expansion On Corridor Works, and the Gardiner Expressway Rehabilitation projects. This report recommends that City Council direct staff to finalize design work underway and to undertake a constructability review of the WELRT in relation to these major infrastructure projects, and to report back in Q2 2023 in concert with reports that are expected on the Next Phase of Waterfront Revitalization. The report back on the WELRT will include the recommended scope, an updated cost estimate, and a funding, financing and implementation strategy, including a phasing plan prior to further advancing the design and TPAP.

Durham-Scarborough Bus Rapid Transit

The Durham-Scarborough Bus Rapid Transit is a Metrolinx-led project that will provide approximately 36 kilometres of dedicated transit infrastructure that will connect Durham Region and the City of Toronto. City staff will continue to provide updates to Council as Metrolinx advances implementation of the project and outstanding issues are resolved during detail design with Metrolinx.

RECOMMENDATIONS

The Executive Director, Transit Expansion Office, and the Chief Planner and Executive Director, City Planning Division recommend that:

Eglinton East LRT

1. City Council direct the Executive Director, Transit Expansion Office to:

    a. advance the Transit Project Assessment Process and 10% design for a distinct-service concept with an at-grade connection at Kennedy Station for the Eglinton East LRT (EELRT) from Kennedy Station to Malvern Town Centre, and the Sheppard Avenue segment from Neilson Road to McCowan Road; and
    b. in consultation with the Chief Vehicle Officer, Toronto Transit Commission, complete an assessment of light rail vehicle options for the EELRT distinct-service concept.

2. City Council direct the Executive Director, Transit Expansion Office to report back to City Council in Q3 2023 with a Class 4 Cost Estimate and 10% design for the EELRT as a distinct-service concept based on Recommendation 1.

3. City Council direct the Executive Director, Transit Expansion Office in consultation with the Chief Planner and Executive Director, City Planning, to report back with an updated Initial Business Case for the EELRT in Q3 2023 based on Recommendation 1.

4. City Council request that Metrolinx work with City staff to accommodate and protect for the EELRT distinct-service concept in the design and delivery of the Scarborough Subway Extension project, particularly at the Kennedy Station and Sheppard-McCowan Station interfaces.

5. City Council request the Ministry of Transportation to incorporate provisions to accommodate the EELRT distinct-service concept in the rehabilitation work on the Morningside-401 overpass.

6. City Council confirm that the Conlins Yard owned by Metrolinx is the preferred location for the EELRT Maintenance and Storage Facility and request Metrolinx to provide the City with permanent access to the site.

Waterfront Transit Network

7. City Council direct the Executive Director, Transit Expansion Office to undertake a constructability review of the Union Station to Queens Quay Link and the East Bayfront LRT (the Waterfront East LRT) in consultation with the Chief Planner and Executive Director, City Planning, the TTC and Waterfront Toronto, to assess constructability and coordination risks with major infrastructure projects in the vicinity of the Waterfront East LRT alignment.

8. City Council direct the Executive Director, Transit Expansion Office in consultation with the Chief Planner and Executive Director, City Planning, the TTC, and Waterfront Toronto, to report back to City Council in concert with reports on the Next Phase of Waterfront Revitalization anticipated in Q2 2023 with:

    a. the recommended alignment and scope of the project based on ongoing work and the review outlined in Recommendation 7;
    b. an updated cost estimate; and
    c. a funding, financing and implementation strategy, including a phasing plan.

General

9. City Council forward this report for information to the Toronto Transit Commission Board and the Waterfront Toronto Board.

FINANCIAL IMPACT

Eglinton East LRT

In February 2021, City Council approved the redirection of the City's existing contribution to the Scarborough Subway Extension ($1.2 billion) to the construction of the EELRT. Per Council direction, City staff have advised the Provincial and Federal governments of City Council's funding commitment and requested intergovernmental funding to fully fund the construction of the project. Previously approved budgets will support the planning and design work on the EELRT contemplated in this report.

Waterfront East LRT

There is currently no committed funding for the construction of the Waterfront East LRT. As project design advances, City staff will seek City Council approval for a funding and financing strategy in Q2 2023 for the construction of the Waterfront East LRT in concert with the broader Waterfront Strategy. The constructability review contemplated in Recommendation 7, will be funded by the available funds in the Council Approved 2022 – 2031 Capital Budget (CCI115-02) Constructability Review.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

In January 2018, City Council adopted with amendments *EX30.1 Waterfront Transit Network Plan*, and endorsed the overall Waterfront Transit Network Plan, including identification of priority segments. Council directed staff to complete a focused feasibility

study of light rail and automated funicular technology options for connecting transit below grade between Union Station and Queens Quay.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.EX30.1

In May 2018, City Council adopted *EX34.1 Eglinton East Light Rail Transit Project Update and Next Steps*, which provided an update on the Eglinton East Light Rail Transit (EELRT) project.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.EX34.1

In April 2019, City Council adopted with amendments *EX4.1 Toronto's Transit Expansion Program - Update and Next Steps* to advance the EELRT and components of the Waterfront Transit Network, including the Union Station to Queens Quay and East Bayfront Light Rail Transit projects.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2019.EX4.1

In February 2020, City Council adopted with amendments *PH13.3 Official Plan Review: Transportation - Recommended Official Plan Amendment*, and approved changes to strengthen existing transit and transportation policies. The changes include the expansion and protection of higher-order transit and enhanced surface transit networks that include the EELRT, and the Waterfront Transit Network, captured on Map 4: Higher-Order Transit Corridors and Map 5: Enhanced Surface Transit Network.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.PH13.3

In November 2020, City Council adopted, with amendments, *EX18.3 Update on Metrolinx Transit Expansion Projects – Fourth Quarter 2020* and adopted directives related to several Metrolinx transit expansion projects, including the Ontario Line and the Durham-Scarborough Bus Rapid Transit projects.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.EX18.3

In December 2020, City Council adopted with amendments *EX19.5 Update on the City's Transit Expansion Projects - Fourth Quarter 2020*, and approved the updated design of the EELRT and directed staff to update the business case and advance the Transit Project Assessment Process accordingly. Council also directed staff to report back on the updated business case analysis, recommended schedule, and phasing approach for the EELRT and Waterfront Transit priority segments, including Union Station to Queens Quay Link and the East Bayfront LRT.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.EX19.5

In February 2021, City Council adopted with amendments *EX21.2 2021 Capital and Operating Budgets*, and redirected $1.2 billion in funding from the Scarborough Subway Extension towards the EELRT. Council also directed the City Manager and Chief Financial Officer to request financial support from Provincial and Federal Governments to fully fund the EELRT.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.EX21.2

On July 6, 2021, City Council adopted *EX25.5 Update on Metrolinx Transit Expansion Projects - Second Quarter 2021*, which provided a status update on Metrolinx-led transit expansion projects currently underway in Toronto, with a focus on Metrolinx's Subway Program, SmartTrack Stations Program, and Durham-Scarborough Bus Rapid Transit.

Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.EX25.5

On July 14, 2021, City Council adopted *MM35.22 Mitigating Community Concerns: Refining the Metrolinx Durham-Scarborough Bus Rapid Transit Proposal*, and directed staff to request Metrolinx to further engage the Highland Creek Community on the curbed centre median for the Durham-Scarborough Bus Rapid Transit project and consider design alternatives along Ellesmere Road from Kingston Road to Military Trail.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.MM35.22

In February 2022, City Council adopted with amendments *MM39.8: Requesting Metrolinx to participate in a Joint Constructability Exercise with the City of Toronto to Advance Plans for the Eglinton East Light Rail Transit - by Councillor Jennifer McKelvie, seconded by Mayor John Tory* and requested that Metrolinx undertake a constructability exercise with the City for the EELRT to resolve alignment issues at Kennedy station, evaluate the potential to host the Maintenance and Storage Facility at the Metrolinx-owned Conlins site, and to ensure that the new Sheppard-McCowan Station for the Scarborough Subway Extension does not prohibit future higher order transit connections along Sheppard.
Link: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2022.MM39.8

COMMENTS

Eglinton East Light Rail Transit Project Update

In December 2020, through *EX19.5*, City Council approved the updated design for the Eglinton East Light Rail Transit (EELRT) project. The EELRT is a proposed 15 kilometre extension of the Eglinton Crosstown LRT (ECLRT) from Kennedy Station to Malvern Town Centre via the University of Toronto Scarborough Campus (UTSC).The report also highlighted a potential future segment extending west along Sheppard Avenue. This segment would connect with the terminus of the provincial Scarborough Subway Extension (SSE) and the planned future terminus of the provincial Sheppard Subway Extension at Sheppard Avenue and McCowan Road. The EELRT will provide a connection to other higher-order transit services, including the ECLRT, Guildwood and Kennedy GO stations and Line 2 (Bloor-Danforth). By connecting with Line 2 via Kennedy Station and the future Sheppard-McCowan Station, the EELRT would provide an integrated LRT network. It will improve transit reliability for residents in eastern Scarborough and support the development of complete communities.

Since December 2020, City staff have continued to advance design of the EELRT project to approximately 10% design. Consultant services were retained to support further refinement of the project design and costs, and initiate the Transit Project Assessment Process (TPAP). Given the proximity of the planned EELRT to the SSE, City staff have been working with Metrolinx to identify potential conflicts and propose mitigating solutions based on existing Metrolinx contracts. Efforts are also underway to identify opportunities to coordinate construction of the projects.

The SSE is a proposed 7.8 kilometre extension of Line 2 from Kennedy Station to Sheppard and McCowan via Scarborough Town Centre. The project is being delivered

by Metrolinx as part of the Province's Subway Program. The Advance Tunnel contract was awarded to Strabag Inc. in May 2021 and excavation and construction is currently underway. Metrolinx's Request for Proposals (RFP) for the Stations, Rail, and Systems (SRS) contract is currently in market, with the major design phase of work expected to begin in fall 2022.

The Sheppard Subway Extension is also planned for delivery by the Province and will connect the existing terminus at Don Mills Station on Line 4 (Sheppard) to the SSE terminating at Sheppard and McCowan. The 2022 Ontario Budget[1] reaffirmed the Province's commitment to deliver the Sheppard Subway Extension by advancing planning work for the project. City staff continue to work with Metrolinx to plan for convenient integration of the Sheppard Subway Extension and the SSE with the EELRT to improve passenger connection at the future transit hub at Sheppard and McCowan.

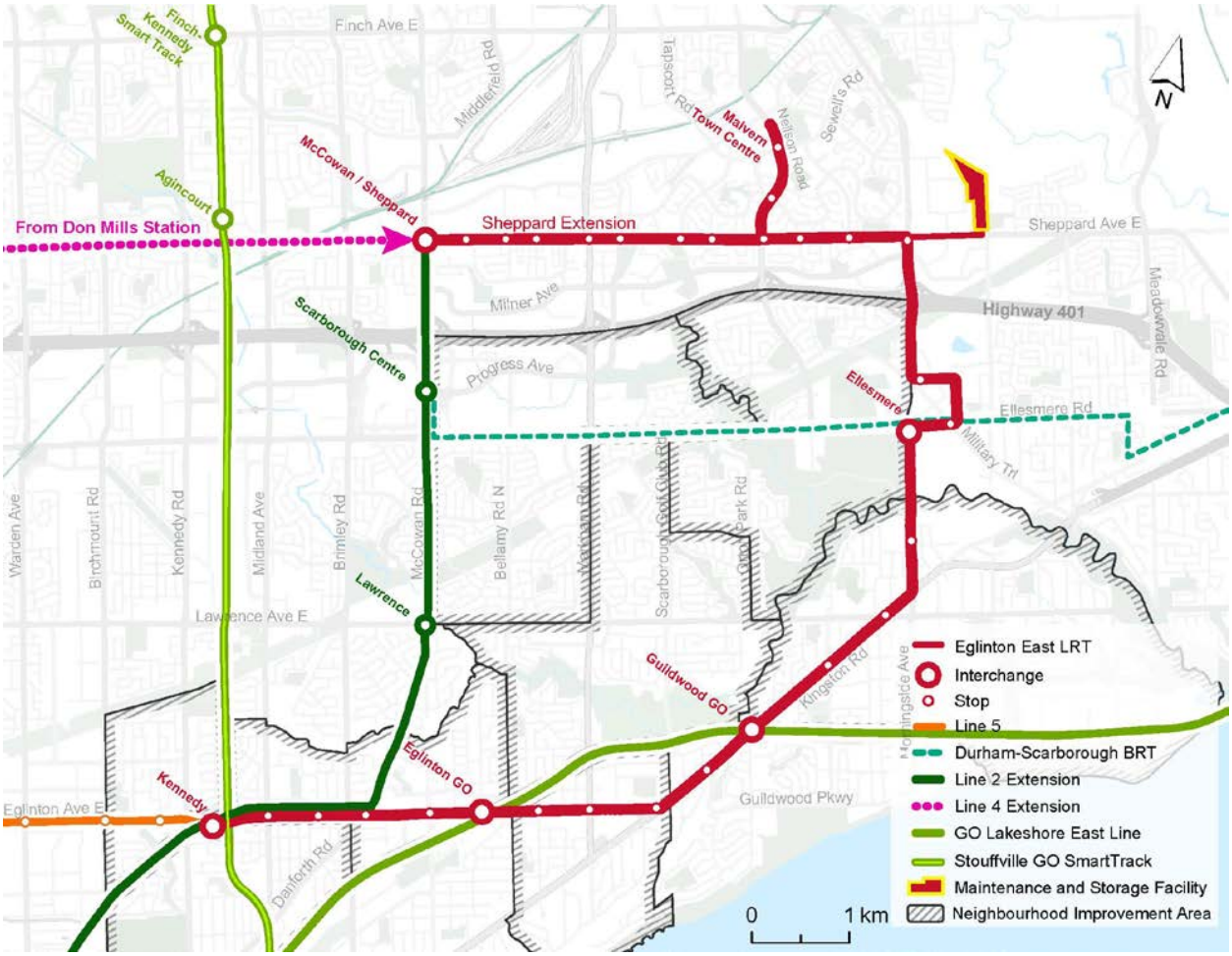

Figure 1. Transit expansion plans in Scarborough

Through-Service Interface Issues and Constructability Assessment

[1] https://budget.ontario.ca/2022/

Initial planning for the EELRT envisioned the project as an extension of the Metrolinx-owned ECLRT by extending the ECLRT tracks underground at Kennedy Station, to enable through-service at Kennedy Station. In 2020, City Council approved the EELRT through-service alignment. As part of the work underway to refine the project design to 10%, City staff undertook a constructability assessment of the EELRT through-service alignment. This assessment identified significant SSE interface issues and challenges delivering the through-service concept at Kennedy Station.

The key challenge is that the eastern end of the EELRT tunnel box would be resting directly on top of the SSE bored tunnel with less than 2 metres of separation estimated between the two tunnels. This is an issue because the SSE bored tunnel has not been designed to support the load of the EELRT tunnel and therefore, the additional load and construction disruption caused by the EELRT would negatively impact the integrity of the SSE tunnel. City and Metrolinx staff considered SSE design changes to incorporate structural protections to mitigate this issue, including realigning the SSE to establish greater distance from the EELRT tunnel, or completing significant ground improvement and soil stabilization before advance tunnelling for the SSE begins. Metrolinx advised that the cost associated with any changes would be significant, as the Advance Tunnel contract has been awarded and construction is currently underway to prepare for excavation by the Tunnel Boring Machine. Additionally, changes to the tunnel design at this stage would significantly delay completion of the SSE. City staff have been unable to identify a viable solution to address this issue in order to maintain through-service at Kennedy Station. Without the ability to make changes to the SSE tunnel design, the Council-approved EELRT as a through service cannot be implemented and by implication, the assumptions for the EELRT in Attachment 1 of *EX19.5 Update on the City's Transit Expansion Projects - Fourth Quarter 2020* are no longer valid. Additional details on the findings of the constructability review are outlined in Attachment 2.

Alternative Alignment: Distinct-Service Concept

As part of the through-service constructability assessment, City staff conducted analysis that identified a distinct-service concept as a viable alternative that mitigates the SSE interface challenges and which could provide other benefits across the alignment. The EELRT distinct-service concept would have an at-grade connection at Kennedy Station and extend to a terminus at Malvern Town Centre. The EELRT would be well integrated to the broader future Kennedy Transit Terminal and provide convenient weather protected connections to Line 2. It will also provide connection to the ECLRT, TTC Bus Terminal, and future 15 minute two-way all-day GO Transit services. Passengers intending to continue their journey on the ECLRT would need to transfer in the same manner as those continuing on Line 2 and GO. For both the through and distinct-service options, it is projected that the majority of EELRT passengers are destined for downtown and the highest number of transfers would be between the EELRT and Line 2 and GO Transit service, rather than the ECLRT.

Based on these benefits, which are described in more detail below, this report recommends advancing the 10% design for the EELRT as a distinct-service with an at-grade interface at Kennedy Station, from Kennedy Station to Malvern Town Centre, and for the Sheppard Avenue segment from Neilson Road to McCowan Road. An updated business case will also be developed for City Council review in Q3 2023.

Features and Benefits of a Distinct-Service Concept

1. At-grade Interface at Kennedy Station

An elevated and an at-grade interface were considered as two possible interface options at Kennedy Station for the distinct-service concept. The at-grade option was selected because it offers numerous benefits over the elevated option, including cost savings, a shorter construction duration (i.e. half that of the elevated option), and avoidance of 21 property takings on Eglinton Avenue. Compared to the elevated option, the at-grade interface at Kennedy Station could result in savings of up to $650 million (2022$) in property and construction related costs based on initial Class 5 level estimates.

The EELRT at-grade option was shown to have approximately 30 seconds longer transit user travel time over the elevated option, primarily due to travel though signalized intersections for the segment between Falmouth Avenue and Kennedy Station. Recognizing this, City staff will continue to refine the at-grade Kennedy interface in the context of long term planning for the Kennedy Transit Mobility Hub and with the overall key objective of enhancing the transit customer experience. Public engagement, as outlined below, will be held on the at-grade interface option before the 10% design phase is complete. Details of the assessment of the at-grade and elevated interface options at Kennedy Station are provided in Attachment 2.

2. Aligning EELRT Service with Demand

The distinct-service concept provides additional opportunities to tailor the service concept to the projected demand east of Kennedy Station. The distinct-service can effectively meet EELRT peak demand over the long term using trains of 50 metres or less, operating at approximately 5 minute frequencies. This provides the greatest operational flexibility to effectively improve service levels as required.

3. Design Flexibility of Distinct-Service Vehicles

The through-service concept at Kennedy Station would have required adoption of the ECLRT design, operations, and maintenance requirements (i.e. 3-car consist Metrolinx Bombardier Flexity Light Rail Vehicles (LRVs)), and the maintenance requirements of the ECLRT ProjectCo, Crosslinx Transit Solutions. The distinct-service concept will allow for the selection of LRVs that are tailored specifically for the EELRT, in terms of length and car parts (e.g. 2-car trains). Use of these LRVs can avoid the requirement for an underground alignment (i.e. grade separation) at Kingston Road between Lawrence Avenue East and Morningside Avenue and avoid the need for a new LRT bridge over Highland Creek, as these EELRT-specific LRVs can operate within the existing grades. The distinct-service alignment can also utilize shorter platforms that reduce impacts to the public right-of-way and property impacts along the corridor. These changes will result in significant cost savings as detailed below.

City staff, in consultation with the TTC, initiated a preliminary assessment of potential LRV options for the EELRT distinct-service concept. A preliminary market scan

identified a number of potential experienced vehicle manufacturers available to consider for procurement of the LRVs. These LRVs are used successfully in various cold weather transit systems in North America (e.g., Kitchener-Waterloo, Edmonton, Calgary, Portland, and New Jersey). City staff, in consultation with the TTC, will continue and complete the assessment of LRVs suitable for the EELRT.

City staff will also continue consultations with UTSC, based on the design flexibility offered by the distinct-service LRVs. Consideration of UTSC's expansion plans, including the recently announced new academy of medicine proposed at the intersection of Morningside Avenue and Military Trail will inform the discussions.

4. Cost Savings

A preliminary Class 5 cost comparison, inclusive of construction, property and vehicles, has been completed for the EELRT distinct-service concept from Kennedy to Malvern Town Centre (approximately $3.9 billion in 2022$). Compared to the through-service (approximately $6 billion in 2022$), the distinct-service is estimated to result in cost savings of up to $2.1 billion (in 2022$). The cost savings are mainly attributed to the alignment remaining at-grade along its entire length, using existing road infrastructure, requiring less property acquisition, and using shorter trains and platforms. As a next step, City staff will develop a Class 4 Cost Estimate for the distinct-service concept and will report back in Q3 2023.

5. Construction and Schedule Implications

The distinct-service concept will have a shorter construction duration by simplifying the connection at Kennedy Station (i.e. at-grade versus tunneled or elevated). This results in an opening date in the early or mid-2030s, or that may be 3 to 4 years earlier than the through-service concept, which avoids an extended construction period directly affecting businesses and residents along Eglinton Avenue East from Kennedy Station to Bimbrok Road. The distinct service will also have a reduced construction footprint.

6. Maintenance and Storage Facility (MSF) Location and Capacity

In December 2020, City Council approved an updated design of EELRT that includes the option to locate an MSF to the north of UTSC. In February 2022, City Council requested that Metrolinx and the City evaluate the potential to host the MSF at the Metrolinx-owned Conlins Yard. City staff have transmitted Council's request to Metrolinx and have completed a preliminary evaluation of the Conlins Yard which indicated the site has capacity to accommodate the distinct-service EELRT vehicles to meet demand beyond 2051. Conversely, the through-service would require greater MSF capacity and analysis to-date indicates that the Conlins Yard would not meet storage capacity requirements beyond 2051.

7. Connection to Higher-Order Transit at Sheppard and McCowan

The EELRT segment on Sheppard Avenue from Neilson Road to McCowan Road will connect with the terminus of the provincial SSE and the future planned provincial Sheppard Subway Extension at Sheppard Avenue and McCowan Road. By providing this additional connection, the EELRT would be able to achieve an integrated Scarborough rapid transit network, with improved travel times for passengers travelling from Malvern Town Centre. City staff have initiated discussion with Metrolinx to begin planning for an at-grade EELRT interface with the SSE at Sheppard-McCowan Station. Subject to City Council approval of the recommendations in this report, City staff will continue planning with Metrolinx to identify a preferred EELRT interface design at Sheppard-McCowan Station and will submit a formal request in fall 2022 to the Metrolinx SSE project team to accommodate the design plans accordingly.

Through-Service and Distinct-Service Benefits Summary

Table 1. EELRT Comparison of through and distinct-service benefits

Consideration	**Through-Service** (with below-grade Kennedy Station Interface)	**Distinct-Service** (with at-grade Kennedy Station Interface)
Interface Risks	Significant interface risks and dependencies with the SSE construction	Limited interface risk and increased project autonomy in construction and operations
Cost Estimate	$6B (2022$)*	$3.9B (2022$)* (up to $2.1B in potential cost savings)
Kennedy Transfer Time (weighted average transfer time to all modes and street)	1.5 mins	2.8 mins (+1.3 mins)
Business and Neighbourhood Construction Impacts	Extended construction period with direct impact to businesses and new residential fronting in the Kennedy-Falmouth area	Shorter construction duration and smaller footprint resulting in reduced direct impacts
In-Service	2036 or later	Early to mid-2030s
Natural Environment Impacts	New structure and infill within Highland Creek valley	No new structure in Highland Creek valley
Conlins MSF	Constrained MSF capacity for future growth due to ECLRT 3-car trains	MSF capacity sufficient for future growth due to EELRT tailored LRVs

Consideration	Through-Service (with below-grade Kennedy Station Interface)	Distinct-Service (with at-grade Kennedy Station Interface)
Aligning Service with Demand	ECLRT 3-car trains limit flexibility to adjust service levels cost effectively	Greater operational flexibility to improve level of service cost effectively (e.g., mixed 1-car/2-car service)

**Class 5 Order-of-Magnitude Cost Estimate for Construction and Vehicles, inclusive of property acquisition. Costs are considered accurate within a range of -25% to +30% for comparison purposes only in early $2022, noting the ongoing unprecedented inflation observed in construction projects across Canada and globally.*

Morningside Bridge over Highway 401 Coordination Next Steps

The EELRT alignment requires the use of the Morningside Bridge over Highway 401. The Ontario Ministry of Transportation (MTO) indicated plans for rehabilitation of this bridge in 2025, presenting an opportunity to coordinate some of the work required for the EELRT. MTO advised City staff that accommodation for the EELRT design requirements was included as a provisional item within the design contract. As a next step, City staff will engage MTO to coordinate planning for the projects. This report seeks authority to request MTO to incorporate provisions to accommodate the EELRT distinct-service concept in the rehabilitation work on the Morningside-401 overpass.

Next Steps

Subject to City Council's approval of the recommendations in this report, City staff will:

- Advance the TPAP and 10% design for the EELRT based on the distinct-service concept with at-grade interface at Kennedy Station, from Kennedy Station to Malvern Town Centre and for the Sheppard Avenue segment from Neilson Road to McCowan Road;
- Continue work to identify Light Rail Vehicle options in consultation with TTC;
- Work with Metrolinx to begin planning for the use of the Conlins Yard as the MSF for the EELRT and confirm permanent access to this site;
- Work with Metrolinx to incorporate protections for the EELRT in the SSE design and SRS contract and to determine a preferred design for the EELRT connection to the SSE and future Sheppard Subway terminus at Sheppard Avenue and McCowan Road;
- Undertake public engagement on the distinct-service concept in Q1 2023, including on the Kennedy Station interface, Kingston-Lawrence-Morningside segment, integration with UTSC, and the Sheppard Avenue segment including the terminus at Sheppard-McCowan Station for the SSE; and
- Report back in Q3 2023 with the updated design for approval and seek approval for funding required to advance the project to 30% design.

Waterfront Transit Network Update

City Council approved the Waterfront Transit Network Plan in 2018, and in 2019, City Council directed staff to commence the preliminary design and engineering phase of the Waterfront Transit Network priority projects – Union Station to Queens Quay Link and the East Bayfront Light Rail Transit, known collectively as the Waterfront East LRT (WELRT) as outlined in Figure 3. The WELRT is a partnership between the City, TTC and Waterfront Toronto, with each organization delivering a component of the preliminary design and engineering work in accordance with their mandates and expertise. The TTC is overseeing the design of the below grade segment of the project from Union Station to the future portal on Queens Quay east of Bay Street (Area 1). Waterfront Toronto is leading design of the project from the portal to Cherry Street (Area 2A and 2B) and City staff are providing overall program coordination and oversight.

In December 2020, City staff provided an update which indicated a terminus point for the WELRT would be pursued at the Distillery Loop on Cherry Street, in order to advance the plans for redevelopment of the Quayside site at Parliament and Queens Quay. City Council directed staff to report back on the schedule and funding requirements for the WELRT, including phasing options.

Since the last update to City Council, the City, TTC and Waterfront Toronto have advanced the design for Area 1, 2A and 2B from 10% to a draft 30% design. The project team also is also examining options to extend the WELRT south on Cherry with a loop in the Port Lands (Area 2C) as a replacement for the Distillery Loop. Preliminary cost estimates indicated costs for the WELRT would exceed $2 billion (2021$). Consequently, City staff, Waterfront Toronto and the TTC are undertaking a value engineering exercise to inform the design and contain costs. This has included consideration of several design options for the tunnel and the at-grade portion of the WELRT. This additional design and costing work will be incorporated into the business case and Transit Project Assessment Process (TPAP) for the project.

The project team has worked with partners, including Metrolinx, to better understand planned major infrastructure works in the vicinity of the WELRT alignment. This includes planned City work on the Gardiner Expressway and Metrolinx works on the Ontario Line and GO Expansion On Corridor Works projects. As part of the work under way on the project, additional work is required to assess and mitigate constructability and coordination risks, in order to inform development of a robust project schedule, including a phasing plan, and an updated cost estimate.

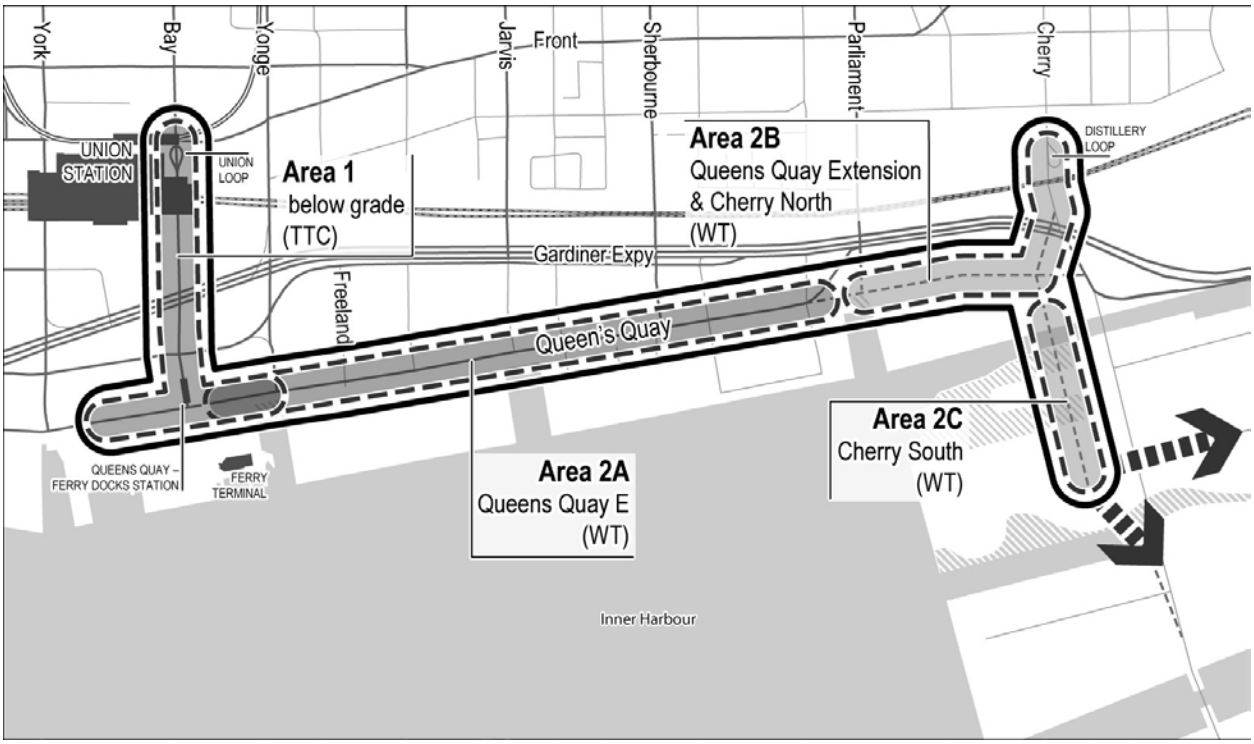

Figure 3. Waterfront East LRT

Area Updates

Area 1 – Union Station

Area 1 from Union Station to Queens Quay, including the new LRT portal proposed to be located 90 meters east of Bay Street, is in the final stages of the 30% design. A value engineering exercise is underway by the TTC which includes consideration of scope refinements, such as a refined 4-platform solution at Union Station and some improvements to the Ferry Terminal Station at Queens Quay. TTC will continue work to finalize the 30% design including the at-grade surface condition on Bay Street after construction, complete a Metrolinx third party project review of the proposed design within the Union Station Rail Corridor, and update the cost estimate.

Area 2A – Queens Quay East to Silo Tower

Area 2A includes the at-grade section of Queens Quay from the new LRT portal east of Bay Street to the existing silo tower east of Parliament Street. Waterfront Toronto has advanced the design on this segment to approximately 30%. This includes: the filling of a portion of the Yonge Street slip to accommodate the LRT portal; and the filling of a portion of the Parliament Street slip to accommodate the extension of Queens Quay to the east and the realignment of Parliament Street. The Yonge Street slip will be designed as an open space that can be integrated with the plans for a future park on the east side of the Yonge slip. The road and LRT design at Parliament Street includes consideration of the latest development plans for the Quayside site, consistent with approved Precinct Plans.

Area 2B – Silo Tower to Cherry Street

Area 2B continues the extension of Queens Quay from the silo tower to Cherry Street, north on the new Cherry Street alignment (currently in the early works stage of construction), and through a new rail corridor underpass with the intention of connecting to the existing Distillery Loop. Design of the underpass and connection to the Distillery Loop would require complex construction coordination with the City's Gardiner Expressway - Lake Shore Boulevard reconfiguration project, the storm water management plans in the Cherry Street corridor, as well as the Province's Ontario Line alignment and other Metrolinx projects in the GO rail corridor. The preferred design for the rail underpass will require relocating the existing Metrolinx signal tower building on the north side of the rail corridor to a new position just east of the current location. The new rail underpass must be constructed at a lower elevation than the grade of the existing Distillery Loop and this will require elimination of the existing loop once construction of the WELRT is complete. Improvements to the Cherry Street underpass are part of a larger study for improved pedestrian and cycling connections and objectives to improve waterfront connectivity in the City.

A replacement for the Distillery Loop will be identified working within the approved Waterfront Transit Network Plan. Options for a new location in Villiers Island will be explored, which would take advantage of the current road network and flood protection work in the area. The new LRT loop location will also be assessed in close coordination with the next phase of the Villiers Island development project. The next step will be to advance a new loop location within Villiers Island to 30% design.

Advancing the WELRT to Villiers Island would support the broader development strategy for this new and emerging mixed use community. Higher order transit is an important element of enabling infrastructure called for in the Waterfront Secondary Plan to unlock the development of this area. An update on the vision and priorities for the Next Phase of Waterfront Revitalization will be provided in a report to Executive Committee and City Council in July 2022.

Waterfront Toronto is also advancing the TPAP for Areas 1, 2A and 2B. In addition, an EA addendum will be prepared to the Lower Don Lands Environmental Assessment Master Plan for the Distillery Loop decommissioning and the proposed Villiers Island loop, and another EA addendum will be prepared for the East Bayfront Class EA Master Plan for the proposed land creation in Parliament Slip.

Constructability Review

Construction of the WELRT will require coordinated staging with numerous projects, including but not limited to the Ontario Line, the Gardiner Expressway reconfiguration, and the GO Expansion On Corridor Works projects. Some of these projects will begin construction activity as early as this year. Coordinated delivery of the projects will require staging of road and GO Transit closures, which will require review and approval by Metrolinx as applicable. It may also be necessary to incorporate requirements in procurement documents for the interfacing projects to ensure WELRT works continue to advance. The protections required, schedule constraints, and potential construction

risks will be better understood as contractors are selected and on-boarded to deliver these projects.

Given the size, duration and complexity of these major infrastructure projects, additional work is required to assess constructability and coordination risks with the WELRT. As such, this report is seeking authority to procure consulting services to conduct a constructability review, in addition to the ongoing work, prior to seeking City Council approval of a funding and implementation plan for advancing the WELRT. The scope of the constructability review includes recommendations and options to:

- Assess construction coordination risks and develop mitigation strategies;
- Develop a phasing plan for the project; and
- Refine the project scope as required.

Funding for this review is within existing budgets of the Transit Expansion Office (TEO).

Next Steps

Through this report, City staff are seeking authority for the TEO to undertake the contructability review and to provide coordination and oversight to implement the resulting recommendations in consultation with Waterfront Toronto and TTC in preparation to advance the next phase of the WELRT project. This review will enable City staff in consultation with TTC and Waterfront Toronto to report back to City Council in Q2 2023 in concert with further reporting on the Next Phase of Waterfront Revitalization. The report back on the WELRT will include any recommended scope changes as required, an updated cost estimate and funding strategy, and an implementation plan that considers options to phase the delivery of the project to mitigate construction coordination risks.

Subject to Council approval, TEO will undertake a request for proposals (RFP) to identify potential consultants to support the constructability review. During this time, Waterfront Toronto will continue value engineering assessments and related refinements to the 30% design for Area 2A and 2B, initiate 30% design for a loop in Villiers Island in coordination with Villiers development plans, and prepare and update documentation for the TPAP. TTC will continue the value engineering exercise to inform 30% design refinements and the development of an updated cost estimate for Area 1.

Waterfront West Transit Update

In January 2018, City Council directed staff to report back on next steps for the design and construction of a dedicated LRT right-of-way connecting Exhibition Loop to Dufferin Gate Loop as part of the Council-approved Waterfront Transit Network plan. The Exhibition Loop-Dufferin Loop Extension will allow for greater operational flexibility and the future westward expansion of the Waterfront West LRT towards Humber Bay Shores. The TTC had substantially completed preliminary design and engineering work on the 30% design plans, however, the work on the LRT right-of-way design was paused to allow for better coordination with Metrolinx's evolving design for the combined Exhibition GO and Ontario Line Station. The TTC is in the early stages of restarting the

project based on an updated understanding of plans for the Ontario Line and other surrounding projects.

Work is continuing on identified issues, including connections with the planned Metrolinx station infrastructure and the accommodation of surge crowds originating in Exhibition Place crossing the proposed LRT right-of-way. Other projects that are being considered include linkages to Ontario Place in conjunction with development plans for that site, Exhibition Place development plans, the Dufferin Street bridge replacement, the Dufferin Gate loop rehabilitation, and Liberty New Street. Early works have commenced for the Ontario Line Exhibition Station with the rest of construction anticipated to start in 2023 and an anticipated completion date of 2030.

Durham-Scarborough Bus Rapid Transit

The Durham-Scarborough Bus Rapid Transit (DS-BRT) project will provide approximately 36 kilometres of dedicated transit infrastructure that will connect Durham Region and the City of Toronto. Figure 1 shows the recommended route.

Figure 4. Durham-Scarborough Bus Rapid Transit Route

The preliminary design divides the project into three segments in Toronto; generally the preferred road design is six lanes with a centre-median BRT. The three segments are:

- Ellesmere Road from Grangeway Avenue to Military Trail (6-Lane Median BRT)
- Ellesmere Road from Military Trail to Kingston Road (4-Lane Median BRT)
- Kingston Road from Ellesmere Road to Pickering border (6-Lane Median BRT)

The DS-BRT will foster a safe and accessible multi-modal network connecting communities, and will provide:

- Dedicated lanes for buses, where feasible, resulting in shorter travel times and more reliable transit service;

- Better connections, with TTC, Durham Region Transit and GO Transit routes using the dedicated lanes and sharing the same stops, making it easier to travel throughout Toronto and the surrounding region; and
- Frequent service with a bus arriving every 5 minutes or less during peak hours when both TTC and DRT services are considered.

Community Engagement and TPAP Process

City staff have been engaged for several years on the DS-BRT and worked collaboratively with Metrolinx to shape the direction of the project. Together with Councillors' offices, staff worked with Metrolinx to postpone the commencement of the Transit Project Assessment Process (TPAP) and extend the community consultations timeline to better understand and respond to issues raised by the local community. This allowed for an additional virtual open house for the Ellesmere community in September 2021. Metrolinx staff also met with local elected officials and the Highland Creek community for a walk-about of the area. The additional community engagement helped to refine the proposed preliminary design along the study corridor and to secure future commitments from Metrolinx as outlined below.

City staff support the dedicated transit lane and also acknowledge the local residential context of the Official Plan designated Neighbourhood areas on Ellesmere Road between Military Trail and Kingston Road. City and TTC staff will continue to work with the Metrolinx project team to refine the project during detailed design to minimize impacts on the local community.

Metrolinx issued the notice of commencement and completion for the TPAP on October 14, 2021 and January 20, 2022, respectively. The TPAP included the preparation of the Environmental Project Report (EPR) and preliminary design that will be used to initiate detailed design and procurement when the project is funded. The EPR was made available for public review and was approved by the Ontario Minister of Environment, Conservation and Parks on March 28, 2022.

The current stage of the planning and design work is fully funded by Metrolinx. As the project advances, City staff will seek Council authority as required to negotiate any future funding commitments related to capital construction costs and ongoing operating and maintenance arrangements and costs.

Preliminary Design Refinements

As noted above, additional stakeholder and public engagement helped to refine the proposed preliminary design along the study corridor. Some key proposed design changes in this process include:

- Reducing the number of general traffic lanes on Ellesmere Road between Military Trail and Kingston Road from six lanes (Four general traffic lanes and two dedicated centre median bus lanes) to four lanes (2 general traffic lanes and two dedicated centre median bus lanes).
- Adding new signalized intersections to improve vehicular and pedestrian access to the local community and businesses on Ellesmere Road at Muirbank Road,

Mornelle Court, and across the main driveway leading to Centennial Recreation Centre.
- Proceeding with six lanes for the Kingston Road design between Ellesmere Road and Raspberry Road; with two dedicated centre-median bus lanes and four general traffic lanes, two lanes per direction.

Future Commitments to Address Outstanding Project Impacts

Some outstanding challenges will require additional analysis and mitigation measures, particularly relating to:

- Impacts on goods movement operations along the study corridor, with particular attention to the area around Markham Road; and
- Impacts to multi-modal traffic operations in the residential neighbourhood areas on Ellesmere Road between Military Trail and Kingston Road.

With the City's intervention, Metrolinx is committed to working with the impacted businesses and the community to further refine the transit project during detailed design. Metrolinx and City staff will continue to explore the following enhancements to ensure these mitigation measures are addressed:

- *Additional signalized intersection opportunities* will be reviewed to provide more vehicular left-turn options and protected pedestrian crossings along Ellesmere Road between Military Trail and Kingston Road. While additional traffic signals may impact transit travel times, they have the potential to improve access to local side roads and local transit bus stops. Additional BRT stops may be explored at these locations if substantial operational benefits are identified.

- *Median design alternatives* such as rolled curb and median interruptions will be considered at key locations, where feasible, without creating adverse impacts on road and pedestrian safety.

- *A safety audit of the corridor* will be completed, which will assess impacts to multi-modal safety as a result of the proposed raised median curbs.

- A multi-modal *Traffic Management Plan* is to be developed and implemented in coordination with Durham Region.

- A *Truck Haul Route Analysis* bundled within an Access Management Plan will be completed to confirm that heavy single unit trucks are not subject to detour routes through residential areas, that there is adequate turning radius for safe operation on detour routes, and that these vehicles can safely and easily access loading and unloading facilities.

- *The location of local bus stops* will be refined.

- The *consideration of a phased delivery approach* with construction commencing in Durham Region ahead of Scarborough. With a phased approach, curbed

medians through the Ellesmere community can be delivered in the later stages of project delivery, as traffic conditions evolve.

- Future integration with transit projects in the area (e.g. Scarborough Subway Extension and the Eglinton East LRT).

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ATTACHMENTS

Attachment 1 – Eglinton East LRT: Initial Business Case

Attachment 2 – Eglinton East LRT: Constructability Review and Assessment of Interface Options at Kennedy Station