

Advancing Waterfront East Light Rail Transit

Date: October 17, 2023

To: Executive Committee

From: Executive Director, Transit Expansion Division

Wards: All

SUMMARY

The Waterfront East Light Rail Transit (WELRT), consisting of the Union Station to Queens Quay Link and the East Bayfront Light Rail Transit, is a City of Toronto priority transit project. According to growth projections, when fully built, the proposed 3.8-kilometre WELRT project will provide over 50,000 daily trips, bringing higher-order transit to support an estimated 100,000 residents and 50,000 jobs. The WELRT will also provide improved transit options to the Central Waterfront, Lower Yonge, East Bayfront, Quayside, Keating Precinct, Lower Don Lands, and the Port Lands communities and is an integral part of the future development of new communities on Villiers Island and the eastern waterfront. The WELRT is a substantial and critical project within the City's broader 2018 Waterfront Transit Network Plan (EX30.1).

City staff last reported to City Council in 2022 under [EX33.2 – Advancing City Priority Transit Expansion Projects – Eglinton East Light Rail Transit and Waterfront East Light Rail Transit](#) and received direction to undertake a constructability review of the WELRT; report back on a recommended alignment and scope; and to provide an updated cost estimate along with a funding, financing and implementation strategy, including a phasing plan. City staff, in partnership with Toronto Transit Commission (TTC) and Waterfront Toronto (WT) staff, have advanced the project to 30% design and completed a preliminary design business case, constructability assessment, phasing plan and cost estimate.

As part of the design process and the constructability review, City staff are working to coordinate construction planning with adjacent civil work, including, but not limited to:

- GO Expansion;
- Ontario Line;
- Inner Harbour West Tunnel;
- Villiers Island development;
- Gardiner Expressway and Lake Shore Boulevard East Reconfiguration; and
- Quayside Infrastructure and Public Realm.

Balancing the City's current financial pressures with City Council's direction to expedite WELRT construction, the recommendations in this report provide an approach to advance the project while reducing immediate costs by phasing segments. To achieve this, City staff in consultation with the TTC and WT are recommending advancing design to 60% for the Queens Quay, Chery Street and Villiers Island segments of the alignment, as well as the Yonge Street Infill and Queens Quay East Extension early works. This report is also seeking authority to advance additional work, including a traffic management study, and design and scope coordination with other major infrastructure projects in the vicinity of the WELRT.

RECOMMENDATIONS

The Executive Director, Transit Expansion Division recommends that:

1. City Council approve the alignment of the Waterfront East Light Rail Transit (WELRT), as outlined in Attachment 1 to this report.
2. City Council approve advancing the 60% design for the full Waterfront East LRT project from Queens Quay to Villiers Loop. This includes all Segment 2 and 3 components, as well as the Yonge Street Infill and Queens Quay East Extension early works.
3. City Council approve the completion of the following activities:
 - a. Secure environmental approvals for all project components consistent with the current alignment;
 - b. Undertake a Traffic Management Plan to address the construction schedule interface between the WELRT and other major infrastructure projects in the area; and
 - c. Design and coordinate scope between the WELRT and the Lake Shore Boulevard East re-alignment and reconfiguration of the Cherry Street and Lake Shore Boulevard East intersection; the WELRT and the Inner Harbour West Tunnel Project in the vicinity of Queens Quay and Jarvis intersection; and the segment between the WELRT Cherry Street portal and the Union Station Rail Corridor (USRC) Hydro One Networks, Inc (HONI) Relocation project.
4. City Council authorize an increase to the Transit Expansion Division's 2023-2032 Capital Budget & Plan for \$63.6 million (\$21.1 million in 2024, \$31.7 million in 2025 and \$10.8 million in 2026), with \$44.7 million funded by the Roads & Related Development Charge Reserve Fund (XR2110), \$10.2 million funded by the Transit Development Charge Reserve Fund (XR2109) and \$8.7 million funded by the City Building Fund (XR1730).
5. City Council direct the Executive Director, Transit Expansion Division, in consultation with the TTC and Waterfront Toronto, to report back to City Council in 2024 with:

- a. An update on the progress made on the design and coordination work identified in Recommendations 2 and 3, along with a broader update on advances to the WELRT project.

FINANCIAL IMPACT

This report recommends an increase of \$63.6 million of new capital funding to the Transit Expansion Division's 2023-2032 Capital Budget & Plan to support the delivery of the following works:

- The advancement of design to 60% for sections of the project,
- The completion of various studies including a Traffic Management plan, and design and scope coordination between various projects, and
- An annual average of 14.8 full-time equivalent (FTE) staff resources to support the activities noted above from 2024 through 2026. Among these, 13.1 FTEs will be comprised of existing staff resources, while 1.7 FTEs will be new temporary capital positions.

The \$63.6 million increase is cash flowed from 2024 through 2026 and will be funded from Development Charges and the City Building Fund as outlined in the table below:

Funding Source (\$M)	2024	2025	2026	Total
Development Charge Reserve Fund				
Roads & Related (XR2110)	14.8	22.3	7.6	44.7
Transit (XR2109)	2.5	4.6	3.1	10.2
City Building Fund (XR1730)	3.8	4.8	0.1	8.7
Total Funding	21.1	31.7	10.8	63.6

Staffing resources to support the activities noted from 2024 through 2026 are estimated to cost \$6.8 million and are detailed by program below:

Division	2024	2025	2026	Total
City Planning	\$65,287	\$65,940	\$66,598	\$197,825
Corporate Real Estate Management	\$121,480	\$122,689	\$123,919	\$368,088
Engineering and Construction Services	\$316,202	\$319,353	\$322,538	\$958,093
Fire Services	\$75,840	\$76,599	\$93,436	\$245,875

Legal Services	\$238,153	\$338,527	\$341,911	\$918,591
Parks, Forestry and Recreation	\$24,236	\$24,478	\$24,723	\$73,437
Toronto Building	\$71,151	\$93,684	\$116,660	\$281,495
Toronto Paramedic Services	\$30,836	\$46,719	\$47,187	\$124,742
Toronto Water	\$290,692	\$293,595	\$296,526	\$880,813
Transit Expansion	\$675,749	\$701,216	\$708,224	\$2,085,189
Transportation Services	\$212,093	\$214,206	\$216,347	\$646,646
Total	\$2,121,719	\$2,297,006	\$2,358,069	\$6,776,794

The updated construction cost estimate for WELRT, based on 30% design, is \$2.57 billion and is currently unfunded and identified as a Capital Needs Constraint. Feasibility of the project along with an updated cost estimate will be considered through a capital prioritization framework along with other City priorities and funding availability. Should construction not proceed, the \$63.6 million of funding related to the works, identified in this report would be sunk costs for the City, along with life to date expenditures of \$36.1 million. The table below outlines the total sunk costs should all budgeted expenditures be incurred:

Total Expenditures	(\$ millions)
Life to Date Expenditures as of June 30, 2023	36.1
Existing Unspent Budget Authority	35.7
Pending Budget Approval	63.6
Total	135.4

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 the identification of priority segments. City 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 April 2019, City Council adopted with amendments *EX4.1 Toronto's Transit Expansion Program – Update and Next Steps* to advance 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 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 December 2020, City Council adopted with amendments *EX19.5 Update on the City's Transit Expansion Projects – Fourth Quarter 2020* and directed staff to report back on the updated business case analysis, recommended schedule, and phased approach for the 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 June 2022, City Council adopted with amendment *EX33.2 Advancing City Priority Transit Expansion Projects – Eglinton East Light Rail Transit and Waterfront East Light Rail Transit* and directed staff to undertake a constructability review of the project and report back on a recommended alignment and scope, an updated cost estimate and a funding, financing, and implementation strategy, including a phasing plan.

Link: <https://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2022.EX33.2>

COMMENTS

Waterfront East LRT Project Update

City Council approved the Waterfront Transit Network Plan in 2018, and in 2019, directed City 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 (LRT), known collectively as the Waterfront East LRT (WELRT).

The WELRT is a planned LRT line extending from Union Station to Villiers Island, via Cherry Street and Commissioners Street; along with an extension of the existing 504A King Street streetcar from the current Distillery Loop to Villiers Island. When fully built, the WELRT is proposed to extend over 3.8 kilometres, providing over 50,000 daily trips, and supporting an estimated 100,000 residents and 50,000 jobs along the route as the area grows.

The WELRT is incorporated in the planning for future residential, community and commercial development in the eastern waterfront and the Port Lands, including Villiers Island. To create complete communities and support the increase in population density, the WELRT was identified as a key component for mobility and efficient, equitable access to the area. In addition, Villiers Island and the rest of the Port Lands have been identified as priority areas for the provision of a range of affordable housing options. Transit mobility in this area will be critical to support the City's housing priorities and to

support the City's goals for Net Zero communities with sustainable transportation options.

Since the 2022 Council update, the City, TTC and WT have completed the preliminary design business case, the TPAP pre-planning work, 30% design and associated costing and constructability assessment, as directed by Council. The details of these findings are outlined in this report.

Preliminary Design Business Case

The Preliminary Design Business Case (PDBC) evaluated the strategic, economic, financial and deliverability cases for the WELRT (see Attachment 2). The PDBC assessed the WELRT as shown in Figure 1 with connections to Union Station and considered the Cherry Street extension. The Business Case highlights several major benefits for when the WELRT is completed, including:

- Supporting an estimated 50,000 jobs and 100,000 residents planned for the waterfront east area, including more than 4,000 affordable housing units that are in the planning and development stages of delivery;
- Creating an equitable, sustainable transportation option for residents and visitors to Toronto's waterfront;
- Expanding the capacity of critical streetcar infrastructure at Union Station;
- Creating a reliable higher-order transit option to Lower Yonge, East Bayfront, Quayside, Keating Precinct, Lower Don Lands, and the Port Lands communities – all areas that are undergoing substantial growth;
- Unlocking significant public land value capture by supporting a transit-first approach to Villiers Island's revitalization;
- Providing an equitable mobility option for access to 34 acres of parkland in the Port Lands;
- Provide improved streetscapes and active transportation routes, including to the Martin Goodman Trail; and,
- Providing higher-order transit options for large-scale events on Villiers Island.

The WELRT project aligns with City priorities and objectives outlined in the City's Rapid Transit Evaluation Framework, HousingTO, TransformTO and Net Zero Strategy, offering clean, efficient, and convenient transportation options to residents, including access to affordable housing. The project also aligns closely with the strategic objectives of all levels of government, including housing targets and enabling sustainable transportation options.

By offering an opportunity to reduce automobile dependency through an accessible active-transportation and electrified-transit network, the WELRT will reduce user carbon emissions in the long-term. The 2041 scenario outputs from the City's EMME model (a multi-modal transportation forecasting software for planning the urban, regional, and national movement of people) support the assumption of a significant shift to transit and active modes as a result of service provision and overall improvements within the WELRT area. The WELRT will provide electrified transit, improve separated bicycle facilities, and develop a generous promenade, reducing the need for automobile

dependency. In addition, the project plan includes the introduction of significant new tree and undergrowth planting to help offset carbon dioxide emissions.

The business case indicated a conventional Benefit-Cost Ratio (BCR) of 0.27 and a Net Present Value (NPV) for the project of -\$1,191 million. However, when accounting for context-sensitive and wider benefits such as incremental revenue from public land sales, tourism, and carbon emissions reductions, the BCR adjusts to 0.52, and the NPV adjusts to -\$691 million. An additional analysis was made considering the target to reduce automobile usage at Villiers Island, aiming for a 25% automobile mode share of all trips taken to, from, and within Villiers Island. In this case, the business case for the WELRT shows a BCR of 0.71 and a NPV of -\$424 million. Of note, these figures did not utilize the existing transit conditions as a base case. Instead, the base case selected by City and TTC staff reflected a scenario for upgraded bus services in mixed traffic. This assumed upgraded bus services between Union Station and East Harbour Transit Hub in mixed traffic, with three-minute service during peak times, and 10-minute service in off-peak times.

Furthermore, the base case relies upon the completion of East Harbour Transit Hub and the Ontario Line construction in 2031, along with supporting infrastructure such as the Queens Quay East extension to Cherry Street and Broadview Avenue extension to Commissioners Street. The rationale for utilizing this enhanced base case was that providing transit options along the waterfront remains a crucial part of the area's growth and alternative measures would have to be explored if the WELRT does not proceed.

The WELRT represents an investment in new higher-order transit infrastructure that benefits the existing network by rehabilitating and expanding the streetcar station at Union Station from its current one-platform configuration to include four platforms, expanded queueing space, and passing tracks. The existing western waterfront LRT tunnel and portal facilities that serve existing TTC western waterfront 509 and 510 streetcar routes would also be reconstructed, and additional through-running track would provide operational flexibility to the network. This work has been identified as necessary to serve projected streetcar demand for these existing lines beyond 2031.

Transit Project Assessment Process

Staff have advanced the Transit Project Assessment Process (TPAP) pre-planning and pre-consultation stages and are finalizing the draft Environmental Project Report (EPR). As a next step, project staff will issue the Notice of Commencement for the TPAP to initiate the 120-day TPAP period, to obtain environmental approvals for the WELRT between Union Station and the future Street A (east of Parliament Street). During the TPAP period, project staff will finalize and publicly distribute the EPR. Within 120 days of the Notice of Commencement, a Notice of Completion of the EPR will be published. This is followed by a 30-day period for the public, regulatory agencies, Indigenous communities, and other interested persons to review the EPR and submit any objections to the Minister of the Environment, Conservation, and Parks. After the public review period, there is a 35-day period for the Minister to act, either allowing the project to proceed (with or without conditions) or requiring that additional work be conducted.

The TPAP process includes the completion of public, stakeholder, and Indigenous consultation. The consultations, executed by WT, the City, and the TTC, will be used to inform the TPAP and are documented in the EPR. WT, the City, and the TTC are committed to ongoing consultation and engagement with Indigenous rights holders and urban Indigenous populations regarding the WELRT, as well as a wide variety of waterfront revitalization projects. Focused discussions with Indigenous rights holders in relation to the TPAP will continue throughout the 120-day TPAP review period and will be documented and reported to the Minister.

EA approvals for the eastern components of the project were completed through the 2010 Lower Don Lands Infrastructure Master Plan and Keating Channel Precinct Environmental Study Report, and the subsequent 2014 Lower Don Lands EA Master Plan and Environmental Study Report. Through design development, some changes to the project alignment have been made since the current approvals, and work will be undertaken to identify and complete any necessary updates to approvals.

Public Consultation

Public consultations on the WELRT have been underway since May 2016, when the City, WT and TTC held a public meeting to present preliminary transit concepts under consideration. In September 2017, the City, WT and TTC held a second public meeting providing an update on the study's findings and in March 2019 the City held a public meeting to gather feedback on the initial plans. In February and June of 2021, virtual community consultations introduced new design work.

The most recent public meeting was held on April 5, 2023. The meeting summarized changes to the preliminary design and engineering elements since the previous consultation, based on further technical analysis and public feedback. This round of consultation also introduced new design elements for feedback. Design elements that the team sought feedback on in this round included:

- The updated designs of Union Station and Queens Quay-Ferry Docks LRT stations;
- An update on the tunnel portal design;
- An update on the Queens Quay East Street Design from Yonge Street to the future Street A;
- An update on the Queens Quay East Street Design from the future Street A to Cherry Street;
- An update on the Intersection Pilot Project;
- An update on the Cherry Street Underpass alignment and transitway;
- A preliminary preferred first phase of delivery for the LRT, travelling from Union Station along Queens Quay, south at Cherry Street to the Port Lands; and
- A new turnaround loop location on Villiers Island.

The meeting also included updates on the TPAP, business case, project phasing, and Constructability Assessment. Following the April 5, 2023 meeting, an online survey was hosted from April 5, 2023 to April 19, 2023, and an additional virtual Q&A session with the City, WT and the TTC was held on April 11, 2023.

WELRT Segment Updates

WELRT design work has been divided into segments (noted as “areas” in past reports) as outlined in Figure 1 and Attachment 1. Segment 1 provides the required capacity and operational improvements to the Union Station Loop and the existing TTC streetcar tunnel (as shown in greater detail in Figure 2). Segment 2 includes the Queens Quay portion from Bay Street to Cherry Street, operating at street level through a dedicated transit right-of-way surrounded by an enhanced public realm. Segment 3 extends the 504A King Street streetcar route south along Cherry Street from the Distillery Loop. Segment 3 also extends south across the Cherry Street rail bridge to a loop on Commissioners Street in the Port Lands, connecting to the new river valley and parks being developed in the Port Lands and the planned communities within Villiers Island. The 30% design and Class 3 cost estimate is now complete for all three segments.

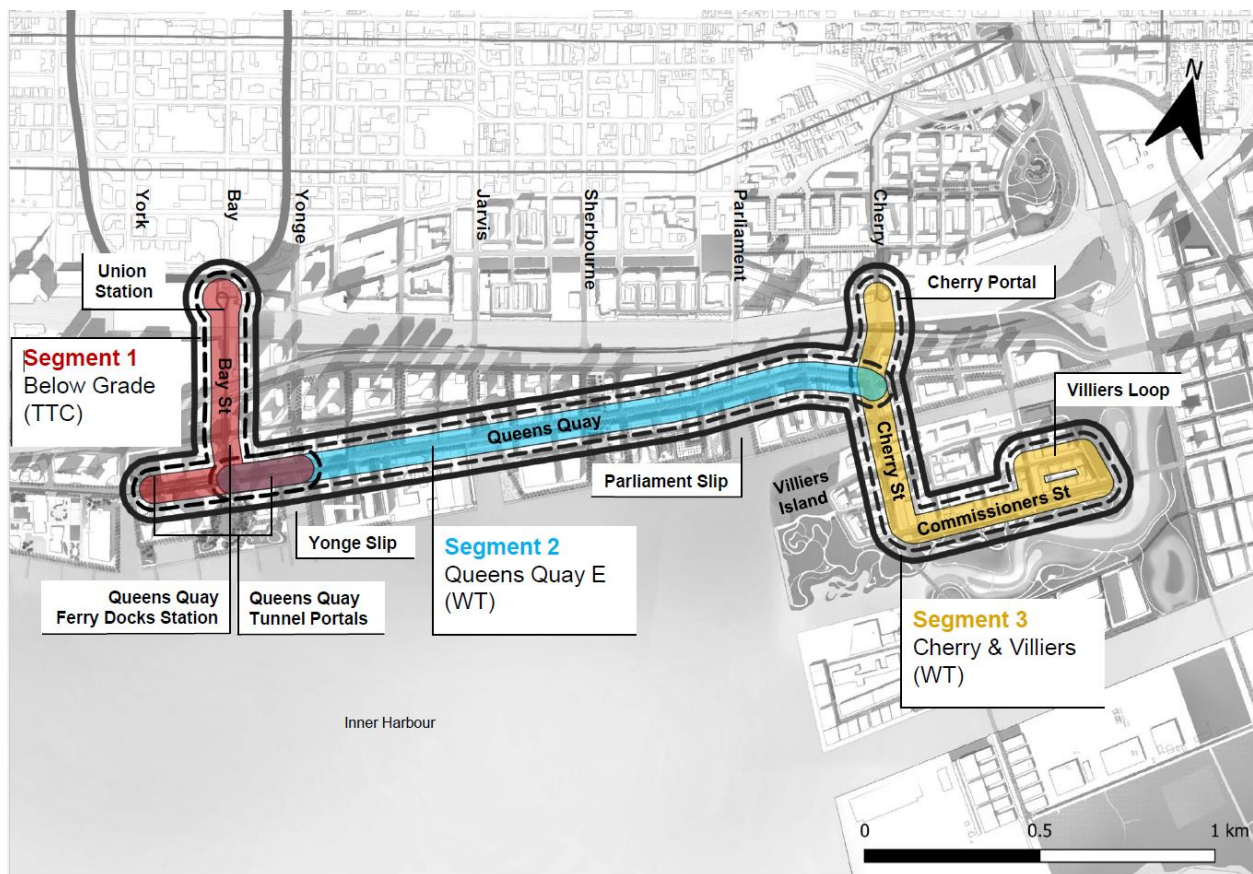


Figure 1. Proposed WELRT segments and components

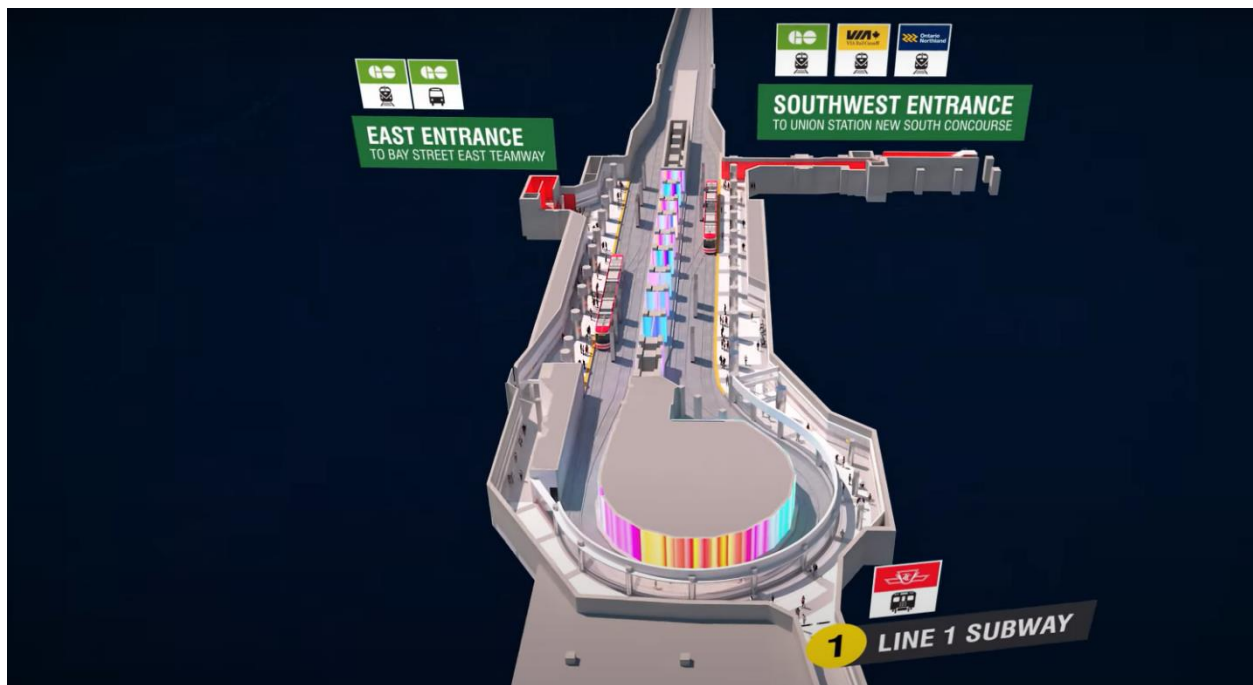


Figure 2. Proposed capacity and operational improvements to the Union Station streetcar loop

Segment 1 – Union Station Loop and Queens Quay Portals

Segment 1 includes the results of a value engineering exercise that considered several scope and cost refinement options. The recommended scope incorporates an optimized four-platform solution at the Union Station Loop (as shown in Figure 2). At Queens Quay-Ferry Docks Station, the station's west entrance would be rebuilt with an improved stair configuration and a larger elevator.

The completion of the Union Station Loop rebuilt with four streetcar platforms and crossover tracks will allow for increased passenger loading capacity, operational flexibility, and reduced streetcar queues. Ridership modelling also indicates the majority of future customers on the WELRT will require a connection to Union Station. The Union Station streetcar loop rebuild is highly complex due to site constraints, the station's multiple connections to the Union Station transit hub, and the number of adjacent public and private project interfaces. This results in unique construction and traffic management challenges that require a flexible approach to construction staging and robust communication and coordination with adjacent stakeholders.

The future delivery of Segment 1 with the expanded Union Station streetcar loop will improve reliability of the 509 Harbourfront and 510 Spadina streetcar routes operating to Union Station and accommodate new eastern service, supporting the provision of reliable service to meet the WELRT's 2041 forecasted service demand. It will also provide a positive customer experience on a connected transit network, creating a dependable long-term service that is resilient to changes in travel patterns, growth, or changes in the transit network.

Also included in Segment 1 is the reconstruction of the west portal and new east portal on Queens Quay West at Bay Street. The east portal will allow WELRT streetcars to

travel to Union Station. The rebuilt west portal will allow the 509 Harbourfront and 510 Spadina routes and WELRT streetcar route to travel straight through Queens Quay as required. The portal connections, along with the tunnel and new west entrance for Union Station, will also allow for future station expansions to accommodate future demand.

City staff are not recommending advancing the design of the Union Station Loop or the portals to 60% due to the City's current financial pressures.

Segment 2 – Queens Quay East to Cherry Street

Segment 2 will provide higher-order transit along Queens Quay East in a dedicated right-of-way, serving the rapidly growing Central Waterfront, Lower Yonge, East Bayfront, Quayside, Keating Precinct, Lower Don Lands, and Port Lands neighbourhoods. This segment extends Queens Quay from its current terminus east to Cherry Street, providing considerable benefits in capacity and convenience of the vehicular, transit, and active transportation networks, along with access and enabling infrastructure required to service planned development sites. Segment 2 also provides ancillary benefits including improved streetscape and public realm, improved active transportation facilities, and green infrastructure improvements.

Advancing the design through East Bayfront and Quayside will support ongoing redevelopment activities, including supporting more than 860 affordable rental housing units being planned in Quayside and more than 200 new affordable rental units being planned in East Bayfront.

Segment 2 includes transforming the existing Queens Quay between Yonge Street and the Quayside development to balance a multitude of future uses, including providing a new dedicated guideway for the LRT, expanding, and protecting active transportation infrastructure, maintaining vehicular access across the guideway, and creating an inviting public realm that activates public life for residents and visitors. This work will begin with realigning and expanding subsurface utilities to accommodate the transit right of way and prepare for future development. To minimize traffic impacts and maintain vehicular access, a phased street reconstruction plan will be utilized.

Queens Quay will be similarly reconstructed and extended through the Quayside Development frontage to provide transit in a dedicated right of way, along with roadway, active transportation, and public realm improvements. A new Traction Power Substation is required to support the WELRT and is planned for construction in this area. This work will occur in close coordination with the Quayside Infrastructure and Public Realm project.

The key risks associated with this segment are related to enabling works and coordination with other parties. This work will require extensive coordination with adjacent property owners and the Toronto Port Authority. City staff are recommending advancing the design of this segment and its corresponding early works to 60% in this report, to continue progressing critical WELRT works. To manage coordination risks, this report seeks Council's approval, to develop a traffic management plan that addresses the construction schedule interface between the WELRT and adjacent projects.

Segment 3 – Cherry Street to Distillery Loop and Villiers Island

Since the last report to City Council, staff reviewed Polson Street and Villiers Island for a turnaround loop and identified Villiers Island (Figure 1) as the preferred option for initial implementation, as it provides improved access to parks and development, reduces project costs, and mitigates construction impacts across the new river valley. The Villiers Island portion of Segment 3 provides a host of benefits, including serving as a standalone extension of the 504A King streetcar line, and connecting higher-order transit service with the Port Lands, supporting the City's broader objectives for development in the area, including increased residential density and affordable housing priorities.

There are several major infrastructure projects in the vicinity of Segment 3 north of Queens Quay, where design and construction coordination between parties is essential for each project's success. These include several Metrolinx projects and the City's Gardiner Expressway East and Lake Shore Boulevard East Reconfiguration project, amongst others. Additional analysis is required to understand the traffic impacts of the various construction projects in the area to reduce congestion across the project limits. This report seeks direction to undertake design and scope coordination across these projects, as coordination with adjacent projects has been identified as a key risk, especially for Segment 3. A traffic management plan is also proposed to assess and manage traffic impacts.

Segment 3 includes the construction of an LRT portal (Cherry Portal) under the Union Station Rail Corridor (USRC) at Cherry Street to allow the 504A King streetcar to extend south from the current Distillery loop to Villiers Island. City staff are working closely with Metrolinx to accommodate this portal, as Metrolinx finalizes designs for a Hydro One utility bridge project at the same location. It is imperative that Metrolinx's design for the utility bridge accommodates the WELRT Cherry Portal. City staff continue to work to secure a design that protects for the WELRT Cherry Portal. City staff are recommending advancing the design of Segment 3 Cherry Street including the portal (north and south of Queens Quay) to Villiers Loop to 60% design to support future development on Villiers Island and provide an LRT turnaround point.

Early Works

This report seeks City Council authority to advance the design of the Yonge Street Infill and Queens Quay East Extension early works to 60% design. These are the key early works required to support the delivery of the Queens Quay to Villiers Loop segments.

The Yonge Street Slip Infill includes works at and south of the Yonge Street and Queens Quay intersection to complete a partial infill of the Yonge Street Slip and reconfigure access to properties on the south side of Queens Quay east of their current location. This early work will accommodate the construction of the Queens Quay Portal for the LRT. It will be necessary to advance the Yonge Street Infill as an early work because it is on the WELRT's critical path. This work must be completed, and property access be established before work may commence for the Segment 1 East portal,

located on Queens Quay West, east of Bay Street. This work will require extensive coordination with adjacent property owners and the Toronto Port Authority.

The Queens Quay Extension's early works include building a connection from Queens Quay East at Parliament Street to Cherry Street. The extension will improve public realm and active transportation connectivity to the Port Lands and provide an alternative routing for TTC bus services that currently use a short stretch of Lake Shore Boulevard before turning south onto Cherry Street. Initial modelling conducted by Transportation Services Division staff has shown positive traffic impacts with delivering this connection as an early work. Furthermore, the extension will allow the early implementation of the district-wide stormwater management infrastructure that is required for the maintenance of Queens Quay East. Of note, an adjacent private landowner will have the option to undertake construction of the municipal infrastructure required to service their proposed development, as they have been granted 'step-in' rights, permitting them to advance construction within 3 years of the Ontario Land Tribunal decision date of June 22, 2022 (Case number OLT-22-002339).

Constructability Assessment

Per direction received from City Council in June 2022, City staff undertook a Constructability Assessment to evaluate construction coordination risks with major infrastructure projects in the vicinity of the WELRT alignment, develop mitigation strategies, a project phasing plan, and refine the project scope as required. This Constructability Assessment was completed by Morrison Hershfield in June 2023 (see Attachment 3). This section details the findings of the assessment.

Considering the recommendations from the Constructability Assessment, City staff took a balanced and reasonable approach, and are proposing recommendations that minimize financial commitments, while ensuring continued delivery of the project per City Council's direction to deliver high-order transit to the eastern Waterfront. As such, this report seeks City Council's approval to advance the design of Queens Quay to Villiers Loop and associated early work portions of the WELRT alignment and scope identified in the assessment. This will allow for new transit service to be added from the existing network to the planned development on Villiers Island.

The Constructability Assessment was initiated prior to discussions regarding the City's financial pressures and in weighing this consideration, City staff are not recommending advancing design for Segment 1 at this time, which is contrary to the recommendations of the Constructability Assessment. This will reduce the immediate cost to the project however, it introduces potential future cost escalations as it delays the advancement of the more complex work.

The Constructability Assessment considered the entire project alignment (i.e., Segments 1-3) to identify sequence and risks, cost estimates and procurement options. As identified in the assessment, and referenced in Attachment 3, each identified segment brings unique benefits to the project, creating a connected and complete transit loop from Union Station across the eastern waterfront. While City staff are recommending proceeding with 60% design for a portion of the WELRT project in this report, an overview of the Constructability Assessment is included below for information.

Project Phasing

The Constructability Assessment presented five possible construction phasing scenarios:

- Scenario 1 – Proceed with the entire project under one contract;
- Scenario 2 – Isolate the more complex construction at the Union Station Loop, to proceed as its own project;
- Scenario 3 – The same as Scenario 2, but also deferring the Cherry Street portal as an independent project, after the completion of the Gardiner and Lake Shore Boulevard East Reconfiguration;
- Scenario 4 – The same as Scenario 1, but also deferring the Cherry Street portal as an independent project, after the completion of the Gardiner and Lake Shore Boulevard East Reconfiguration; and
- Scenario 5 – The same as Scenario 3, but also includes the East and West LRT portals in the Union Station Loop project.

The opportunity to expedite the operation of an WELRT segment and minimize conflicts with interfacing projects was the main criteria used to weigh each scenario. After weighing each option against these criteria, the Constructability Assessment report recommended Scenario 3 as the best approach to phasing the delivery of the WELRT (see Figure 3). Scenario 3 recommends constructing the Queen's Quay, Cherry Street, Commissioners Street, and Villiers Loop LRT segments, as well as the Queens Quay LRT portals. The Queens Quay LRT portals were recommended to be bundled with Segment 2 work to reduce interface risk. All scenarios presented provide an opportunity to allow for the extension of the existing LRT service, enabling an interim LRT service while the Union Station Streetcar Loop construction continues. This interim service was not contemplated to function at final service levels until the entire project is completed.

This scenario also isolates the more complex Union Station Loop as a standalone WELRT sub-project. This sub-project would be delivered in parallel with the above-mentioned work. Two of the main benefits of isolating the Union Station Loop are that this approach will permit earlier operation of the WELRT at a reduced interim level of service for Segments 2 and 3, and, given the Union Station Loop portion is more technical in nature, it affords the use of a different procurement model to secure a contractor that is better suited to the complexities of the project.

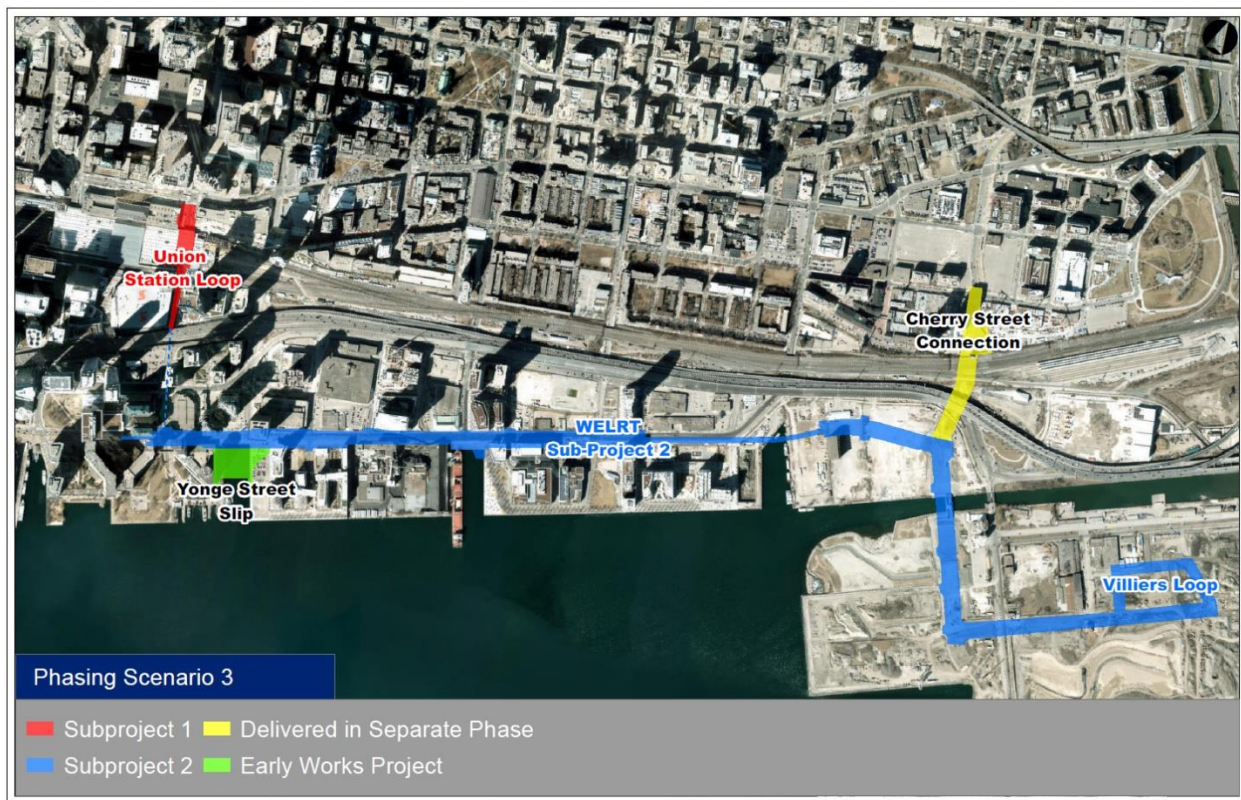


Figure 3. Constructability Assessment Scenario 3 proposed phasing

Procurement Model

As part of the Constructability Assessment, an evaluation of the procurement options for the WELRT was prepared. This included a thorough analysis of various options to deliver the potential work package scope(s) using different project delivery methodologies. The analysis of these delivery options accounted for various criteria such as risk, schedule, and stakeholder culture/experience. The procurement models were assessed based on key criteria, including collaboration, design control, cost certainty, flexibility, and schedule certainty.

For the scenario recommended in the Constructability Assessment, Scenario 3, two large-scale sub-projects would occur simultaneously, namely the Union Station Loop as sub-project 1 and the Queens Quay to Villiers Loop section as sub-project 2. This scenario has the Cherry Street portal under the Union Station Rail Corridor and Cherry Street from Queens Quay to Mill Street included in a later phase.

For sub-project 1, the Constructability Assessment recommends a Progressive Design Build (PDB) model. PDB is an early contractor involvement and collaborative project delivery model recommended for high complexity and high-value projects (above \$50 million), where innovative approaches are needed to incorporate proposed design solutions. Contractor expertise is considered highly valuable through the design process to identify risks and resolve any issues, whether technical, administrative, or relational. Given the complexities of this sub-project, the City would benefit from securing a contractor with the specific experience required for this project.

For the segment excluding Union Station, a Construction Manager / General Contractor (CM/GC) model is recommended. In the CM/GC model, the potential General Contractor is brought in early in the preliminary design by the Owner (first in a Construction Manager assignment) to participate in the detail design development together with the Owner and design team. All parties are involved in the detailed design development, working together to produce a design that eliminates or mitigates project-identified risks by 90% design. At that advanced design level, the scope of work can be priced by all parties with an advanced level of certainty. This model offers similar benefits as the PDB model but affords additional flexibility for the City to negotiate agreements and coordinate with external stakeholders. Given the significant concentration of interfacing projects along these segments, this flexibility is crucial for managing potential conflicts and for maintaining design continuity.

For the Cherry Street Portal north of Queens Quay, CM/GC is proposed as the best delivery model. The Cherry Street portal requires a model that can manage the unique complexities of the project, eliminating or mitigating them, preferably during the detailed design stage.

The additional early works at Yonge Slip Infill are advised to be procured as a standalone Design-Bid-Build project or as a CM/GC project, as described above, including early works provisions in the delivery model.

As noted earlier in this report, while the Constructability Assessment has recommended procurement models for the construction of all segments of the WELRT project, this report only seeks City Council approval to advance design for the Queens Quay to Villiers Loop portion of the project, and early works.

Project Cost Estimates

The Class 3 cost estimate for the WELRT has been updated with information provided through the 30% design and has an accuracy range of –20% to +30%, due to the project risks, market uncertainty and lengthy delivery timeframe. This is a standard accuracy range for this stage of design. A thorough review of costs was conducted as part of the Constructability Assessment. Subsequently, risk assessments were performed by TTC and WT for their respective segments, which resulted in a refined cost estimate as detailed below. Based on this work, the total cost of the project is estimated to be \$2.57 billion over 10 years and assumes the project will reach substantial completion in 2032. Given the changes recommended by City staff in this report, the project may not be completed by this date and as such, additional costs may be incurred.

Based on this work, the total cost of the project is estimated to be \$2.57 billion over 10 years and is based on securing full funding for the project in Q1 2024 to maintain the current schedule. Deferral of a funding decision beyond Q1 2024 will impact the cost and in-service date.

The cost estimate above is based on Scenario 3 (see Figure 3) which includes three large-scale subprojects, as determined by WT and TTC:

- Subproject 1: The Union Station Loop has a total expenditure of \$932M until project completion.
- Subproject 2: The remainder of the project except Cherry North (East and West Portals, Queens Quay Ferry Docks Station, Yonge Slip Infill, Queens Quay East track from Bay to Cherry, Cherry Street South, Commissioners, and the Villiers Loop) has a total expenditure of \$1.3B throughout the project lifecycle (inclusive of \$130M for early works for Queens Quay Extension from the future Street A to Cherry Street).
- Subproject 3 (Cherry Street Connection – Separate Phase): Cherry North extension has a total expenditure of \$337M.

Waterfront West Transit Update

Through [EX33.2](#) City Council directed City staff to determine potential undertakings to expedite the budgetary and design processes for the western extension of the Western Waterfront LRT (between the Long Branch Loop and Exhibition Loop). This extension is included in the Western Waterfront Master Plan, presented to Council on May 25, 2022, under item IE30.15 - Western Waterfront Master Plan – Update. City staff will incorporate this project in their Prioritization of Planned Higher-Order Transit Projects report, tentatively scheduled for Q4 2023. This report will respond to several Council motions regarding a multitude of higher-order transit projects proposed across the city.

Community Benefits

City Council's adoption of the Community Benefits Framework in 2019 signaled the City of Toronto's commitment to maximizing the use of City levers to create inclusive economic impact through community benefits initiatives. All major transit expansion projects, including the WELRT, are potential community benefits initiatives that can be leveraged to address the City's poverty reduction and reconciliation strategies.

The Transit Expansion Division, in consultation with the Social Development, Finance and Administration Division, are working to determine appropriate community benefits clauses to be included in the procurement of the WELRT's future construction. Community benefits clauses are measurable targets that can be enforced through City agreements, to create equity-focused, inclusive economic development opportunities such as local and equity hiring, apprenticeships, as well as social procurement business opportunities for local and diverse suppliers. City staff will report back with a community benefits plan for the WELRT when City staff seek authority to advance the project to construction.

Next Steps

Through this report, City staff are seeking authority to advance design for key segments of the WELRT and protect for future delivery of the remaining portions, while minimizing additional financial commitments for the City. If approved, the recommendations in this report will help advance the design of the Queens Quay to Villiers Loop segments and corresponding early works. These segments are critical components of the project, allowing for the east-west connection to Villiers Island from existing streetcar lines. The funding requested within this report also supports the advancement of key studies and

plans, including the submission of the TPAP, traffic management plan, design, and scope plans for coordinating between adjacent large scale construction projects, and required staff resources.

Subject to Council approval of this report, City staff will report back in 2024 to provide updates to City Council on the design, results of the noted studies, and next steps to continue advancing the project.

CONTACT

Shalin Yeboah, Director, Program Management and Planning, Transit Expansion Division, Shalin.Yeboah@toronto.ca, 647.462.4834

SIGNATURE

Derrick Toigo
Executive Director
Transit Expansion Division

ATTACHMENTS

Attachment 1: Waterfront East LRT Alignment

Attachment 2: Waterfront East LRT Preliminary Design Business Case

Attachment 3: Waterfront East LRT Constructability Assessment Summary