

## **Supplementary Report: Adjustment to the 2017-2026 Capital Budget & Plan for Transportation Services: King-Liberty Pedestrian Bridge**

**Date:** September 29th, 2017

**To:** City Council

**From:** Deputy City Manager, Cluster B

**Wards:** Ward 19 - Trinity-Spadina

### **SUMMARY**

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At its meeting of September 26, 2017, Executive Committee considered EX27.24 - Adjustment to the 2017-2026 Capital Budget and Plan for Transportation Services: King-Liberty Pedestrian Bridge, which proposed amendments to the funding sources and overall project costs for the King-Liberty Pedestrian Bridge. The Executive Committee has requested the Deputy City Manager, Cluster B to report directly to City Council with a full breakdown of costs related to the bridge, the reasons for the cost escalation and measures, if any, to reduce the cost.

The purpose of this report is to respond to this request, as well as provide additional background, history, and context for the changes in overall project costs for the King-Liberty Pedestrian Bridge.

City Council, at its meeting of November 29, November 30 and December 1, 2011, approved the Environmental Study Report (the EA) for the King-Liberty Pedestrian/Cycling Bridge, which will provide a key connection across the Metrolinx Georgetown/Milton rail corridor between the King Street West and Liberty Village neighbourhoods. Better integration of the two neighbourhoods will improve access to public transit services, employment and retail.

As identified in the EA, the estimated cost of constructing the new bridge was between \$4.2 M and \$6.0 M in 2011 dollars or between \$5.1 M and 7.2 M in 2017 dollars depending on the level of architectural design treatment, to be determined at the detail design stage. This cost estimate was based on a conceptual level of design only. A preliminary estimate of \$4.8 million was part of Transportation Services' 2017 Capital Budget, with the expectation that the overall project budget would require refinement as detail design of the bridge advanced.

Since this project was first initiated in 2011, the City's methodology for estimating construction costs through the EA process has been updated to follow the "Stage Gate Process". Under this process, approvals for Environmental Assessments now require a 30% design estimate, rather than the 5% design estimate used in the past.

The detailed design of the project was completed in 2017 and the estimated cost for the bridge is now estimated at \$11.83 M. The cost escalation reflects a number of factors, including:

- An increase in the estimate for the provision of elevators;
- Changes to the vertical clearance requirement over the rail corridor to meet Metrolinx requirements;
- Inclusion of elements omitted from the original estimate such as utility relocations and flagging requirements during construction; and
- An increase in the project contingency estimate.

## **FINANCIAL IMPACT**

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This supplementary report has no financial implications.

Should Council endorse item EX27.24 - Adjustment to the 2017-2026 Capital Budget & Plan for Transportation Services: King-Liberty Pedestrian Bridge, the financial impacts identified in the original report would apply.

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

## **DECISION HISTORY**

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At its meeting of November 29, 30 and 30, 2011, City Council adopted a staff report endorsing the King-Liberty Pedestrian/Cycling Bridge Class Environmental Assessment (EA) Study. The Council decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PW9.6>

At its meeting of February 15 and 16, 2017, City Council approved Transportation Services' 2017 Capital Budget and 2018-2026 Capital Plan, which included approval of a 2017 Capital Budget cash flow of \$420.468 million and 2016 carry-forward funding of \$107.705 million. The Council decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.EX22.2>

At its meeting of April 26, 27 and 28, 2017, City Council approved additional carry forward funding from unspent capital projects and adjustments to the 2017 Approved Capital Budgets for respective City Programs and Agencies in order to continue work on previously approved capital projects, with no incremental net impact on debt. The adjustment to the carry-forwards for Transportation Services resulted in an overall reduction of carry-forward funding to \$100.281million. The Council decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.EX24.18>

At its meeting of July 4, 5, 6 and 7, 2017, City Council authorized the reallocation of funds within Transportation Services' 2017 Capital Budget in the amount of \$2.730 million gross and \$0 debt, for funding of projects and authorized the reallocation of funds from Transportation Services' 2017 Capital Budget to Toronto Transit Commission's 2017 Capital Budget in the amount of \$0.850 million gross and \$0.425 million debt for funding of bicycle parking projects.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.EX26.33>

At its meeting of September 5, 2017, Budget Committee recommended that City Council amend the 2017-2026 Approved Capital Budget and Plan for Transportation Services by changing the funding source from debt to the Development Charge Reserve Fund Roads (XR 2110) for cash flow commitments of \$4.800 million in 2018 for the King-Liberty Pedestrian/Cycling Bridge Project (CTP815-60). Budget Committee also recommended that City Council increase the 2017-2026 Approved Capital Budget and Plan for Transportation Services by \$5.520 million gross and \$0 debt in 2018 and \$1.510 million gross and \$0 debt in 2019 for cash flow commitments required for construction of the King-Liberty Pedestrian/Cycling Bridge Project (CTP 815-60), fully funded by the Development Charge Reserve Fund - Roads (XR 2110).

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.BU34.9>

At its meeting of September 26, 2017, Executive Committee considered a report requesting authority to amend Transportation Services' 2017-2026 Approved Capital Budget and Plan by refinancing all 2018 future debt commitment for the King-Liberty Pedestrian/Cycling Bridge Project (CTP 815-60 - \$4.800 million) to be fully funded by the Development Charge Reserve Fund - Roads (XR 2110) and increasing the future commitments for the same project by \$5.520 million in 2018 and \$1.510 million in 2019 to facilitate the construction of the project. Additional costs will be fully funded by the Development Charge Reserve Fund - Roads (XR 2110). The report was referred to City Council with a request for the Deputy City Manager, Cluster B, to report directly to City Council for its meeting of October 2, 2017, with a full breakdown of the costs related to the bridge, the reasons for the cost escalation and measures, if any, to reduce the cost.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.EX27.24>

## COMMENTS

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### Cost Estimation History

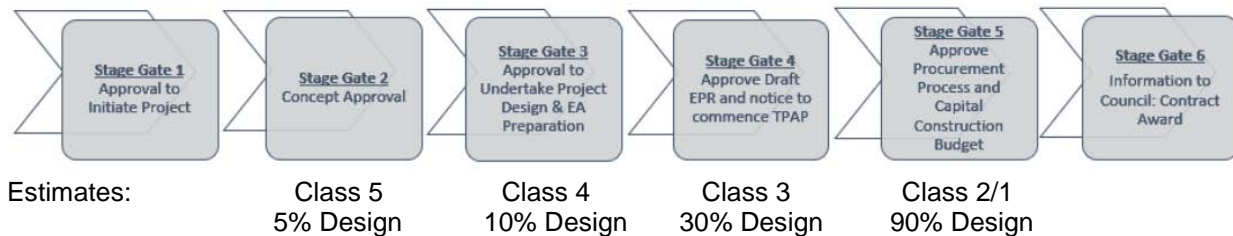
The cost estimation history for the King-Liberty Pedestrian Bridge has progressed through two stages, the EA Study Cost Estimate (originally based on a 5% design estimate) completed in 2011 and the Detailed Design Estimate (representing a 90% design cost estimate) completed in 2017.

As the project has proceeded through the Detailed Design process, the cost estimate for the Bridge has been revised as additional design considerations and requirements have been introduced. The following sections provide a summary of this history and these requirements.

## The Stage Gate Process

When the King-Liberty Pedestrian Bridge EA Study Cost Estimate was completed in 2011, it was Transportation Services practice to proceed through approval of Environmental Assessments based on a 5% design estimate.

Since that time, the City has adopted the Stage Gate Process, which includes seven stages of work and six decision gates where City Council approval will be sought prior to advancing to the next stage of work. The Stage Gate Process was developed initially for SmartTrack, to also reflect cost estimation practices based on AACE industry standards.



According to this process, City Council approval will be sought at six decision gates to: initiate the project; approve the project concept; undertake project design and EA preparation; approve draft Environmental Project Report (EPR) and give notice to proceed to the owning division; approve capital construction budget and request that the project proceed to the procurement process. With this approval, City Council commits to full project costs and implementation. At the conclusion of the procurement, City Council will be advised of the outcome and the cost of the project as a result of a competitive procurement process.

Retroactively mapping to this process, the 5% design estimate for the King-Liberty Pedestrian Bridge that was included in the approval of the Environmental Assessment would represent the estimate for Stage Gate 2 - Conceptual Approval. Moving to approval of the Environmental Assessment itself (the current Stage Gate 4) would now require a 30% design estimate to proceed.

## Environmental Assessment Cost Estimate

At its meeting of November 29, 30 and 30, 2011, City Council adopted a staff report endorsing the King-Liberty Pedestrian/Cycling Bridge Class Environmental Assessment (EA) Study.

As identified in the EA, the estimated cost of constructing the new bridge was between \$4.2 M and \$6.0 M in 2011 dollars or between \$5.1 M and 7.2 M in 2017 dollars depending on the level of architectural design treatment, to be determined at the detail design stage.

As part of Transportation Services' 2017 Capital Budget, \$4.8 M was approved for this project with the expectation that the overall project budget would require refinement as detail design of the bridge advanced.

## Detailed Design

As the project has progressed from the conceptual level of design through to detailed design, a number of new requirements have been introduced. Additionally, as the EA included a cost estimate based on a conceptual level of design (5%) only, which resulted in a number of items being underestimated or omitted altogether.

Changes to the overall project cost estimate are as follows:

- **Elevator Estimate** - EA estimates for the elevator costs have been reviewed by the City's design consultant, which has concluded that the EA underestimated the cost of the elevators at \$1.8 M. \$3.7 M is now estimated based on detailed quantities and experience with other recent projects.

Under the *Accessibility for Ontarians with Disabilities Act* (AODA), barrier free access must be provided to both sides of the bridge. The EA study confirmed the need for a fully accessible pedestrian / cyclist link across the rail corridor in this area. The use of ramps were considered as part of the EA but were not recommended because the length of the ramps (120 m on the south side and 180 m on the north side) would have resulted in property impacts, greater tree removal and maintenance challenges in inclement weather. Given the constraints and issues in this study area, combined with a locational preference for the most westerly (and hence highest) crossing, the EA design identified a stairs and elevator combination for bridge access.

- **Metrolinx Design Requirements** - Since the completion of the EA, starting in approximately 2014, Metrolinx has identified a number of new design requirements that have impacted the cost of the bridge, including an increased clearance requirement (7.4 to 10.4 m) over the rail corridor to maintain sightlines of rail control signals by rail operators and a need to enclose the bridge on both sides to protect for future electrification of the corridor. These changes impact not only the bridge structure itself, but also the piers, stairs, ramps and elevators which all must be extended to account for the increase in height.

The overall cost of raising the bridge to meet the clearance requirement was estimated at \$600,000, which is less than the estimated cost of \$4.0 M to relocate the signals.

- **Design and Contingency** - As a result of additional design requirements and the overall increase to the project cost, engineering design (10% of construction cost) has increased from \$0.39 to \$0.84 M. A contingency amount of 20 % is needed to cover unforeseen expenses and is currently estimated at \$1.76 M instead of the \$0.49M included in the EA level estimate.

Items omitted from the original EA estimate, that have been added as part of the Detailed Design estimate are summarized below and include, utility relocations, the relocation of overhead cables located within the rail corridor, power supply, mechanical drainage and construction management. These design elements add an additional \$955,500 to the total project cost.

Table 1: Cost Escalations

	5% Design Cost	90% Design Cost	Change
Bridge	1,814,400	2,646,100	+831,700
Elevators	1,800,000	3,688,350	+1,888,350
Stairs	272,160	1,595,500	+1,323,340
Road Works/Landscaping	94,575	350,000	+255,425
Engineering Fees	436,656	840,000	+403,344
Contingency	582,984	1,755,990	+1,173,006
Omitted Items	--	955,500	+955,500
Total	5,000,775	11,831,440	6,830,665

Due to these modifications, the total project costs have increased by approximately \$6.8 million to a final cost of \$11.8 million.

### Cost Mitigation

A number of measures were undertaken to ensure that cost increases were minimized to the extent possible. These include:

- Carrying out a sightline analysis to determine the minimum clearance requirements over the rail corridor
- Reviewing the feasibility of relocating rail control signals instead of increasing the height of the bridge
- Selecting a metal roof instead of more costly green roof or solar panel options
- Minimizing the size of the elevator/stair structures by using a standard-sized elevator cab
- Working with Corporate Security to optimize the design of the bridge.

Transportation Services will continue to work with Metrolinx to explore further opportunities to mitigate costs.

### Coordination with Metrolinx

Implementing new design requirements, and funding the additional capital cost of the King Liberty Bridge is not an isolated situation.

Other new bridges over GO Rail corridors that are being built by the City (e.g., Fort York Pedestrian Bridge) or built by others on behalf of the City (e.g., John Street Pedestrian Bridge) also required redesign and incurred higher costs to meet new design standards that were recently imposed by Metrolinx. Specifically, Metrolinx has increased the required clearance and mandated the inclusion of other safety features, on all structures above GO Rail corridors to accommodate the GO Rail electrification program.

The City has launched an assessment of the probable impact on all 52 existing bridges (including 16 pedestrian bridges) above GO Rail corridors that result from the new clearance and safety requirements. The City may need to accelerate and expand the scope of state-of-good repair work to be performed on those structures, or substantially rebuild or replace structures where retrofit is not feasible. Once the full scope of that work has been documented and costs estimated, the City will begin negotiations with Metrolinx regarding the principles of cost-sharing and a timeline for work to be performed.

## **CONTACT**

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## **SIGNATURE**

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