

**Project** SmartTrack Station Cost Validation / WP#7  
**Memo ID** LCPG8711.03/2018.003\_Rev E Project No: LCPG8711  
**Subject** **SmartTrack Stations Cost Estimate Review**  
**From:** David Pratt, P.Eng., Vice President Date: April 11, 2018  
**To:** James Perttula, Director, Transit and Transportation Planning  
 City of Toronto, City Hall, 21<sup>st</sup> Floor, East Tower, Toronto, ON M5H 2N2

**Message:**

Further to the City’s request, our review of the cost estimates issued by Metrolinx and their consultants in February 2018 for the 6 SmartTrack stations was refreshed in light of the additional design work undertaken, re-categorization of estimated costs as Base Station Infrastructure and City Initiated Station Requirements, and in consideration of Metrolinx’s cost cap covering the City’s exposure to these capital expenditures.

**Subject of this review:** Metrolinx’s latest RER Package 2 cost reporting of the estimated capital expenditures comprising of the following categories:

*Table 1: Station CapEx Costs (per City of Toronto summary of Metrolinx output, March 28, 2018)*

SmartTrack Station Cost Category		Current Estimated Cost (Million)
St Clair-Old Weston King-Liberty East Harbour	<b>Base Station Infrastructure</b> (BSI)	\$ 1,195
Gerrard-Carlaw Lawrence-Kennedy Finch-Kennedy	<b>City Initiated Station Requirements</b> (CISR)	\$ 268

For clarity, the above estimates do not include capital expenditures related to third party requests at East Harbour station; Transportation Master Plan (TMP) work associated with the St Clair-Old Weston station; and the grade separation and northern access road work at the Finch-Kennedy SmartTrack station; which we understand are all subject to separate agreements regarding funding.

**Methodology:** Our review entailed desktop studies of Metrolinx documentation including; Initial Preferred Design (IPD) updates; consultant issue logs and project correspondence; cost estimate reports by Metrolinx and their consultants (4Transit and A.W. Hooker Associates), and City of Toronto summary cost breakdowns of the SmartTrack stations.

Interviews were conducted in January and February 2018 with Metrolinx project staff, 4Transit and A.W. Hooker Associates (cost consultant) to review their estimation process and examine pricing back-up data and parametric models used in the preparation of the estimates. We also prepared ‘shadow’ estimates for select components using current market range values to benchmark against the subjects under review.

We are confident this methodology provided a sufficient level of understanding regarding how the Metrolinx project team prepared the capital expenditures to undertake this review.

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# Memorandum

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**Findings:** The following were recorded during our review of Metrolinx's estimation process and capital expenditure deliverables.

**Design:** The maturity of project definition was observed to be at a conceptual stage. Some inconsistencies were noted within stations and between stations. Changes in parameters (e.g. new service concept; level boarding; user amenities) may have hindered the level of definition. Metrolinx's standard components (e.g. platforms, buildings) were observed to have greater clarity than project elements within the urban context. Overall, the level of detail was observed to be consistent with early-stage design development work.

**Cost Estimation:** Quantity takeoffs were obtained using a combination of direct mapping from drawings, use of precedent solutions from Metrolinx projects, and explanations from design narratives for less defined scope. Unit rates were sourced from Metrolinx or similar projects to calculate direct costs. Allowances were used where definition was notional. Mark-up factors were applied to cover for complexity and delivery costs (i.e. overhead, profit). Property costs were calculated using market rates for cost per acre. In general, the process was observed to be consistent with good industry practice for early stage project cost estimation.

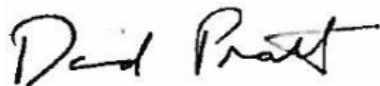
**Risk:** Unallocated contingencies (range 40% to 45%) were included in the estimates to account for undefined or under-defined scope at the time of estimation. Metrolinx added an "Owner's Contingency" to account for flagging (live rail safety measures) and as an incremental risk factor for uncertainty. No contingency specific to property costs was observed. Overall, the use and level of unallocated contingencies was found to be consistent with good industry practice.

**Conclusion:** The cost estimates under review were found to be market range accurate. The methodology used by the Metrolinx team was found to be consistent with industry practices for cost estimation based on an early stage of project definition. The use of unallocated contingencies to protect against unknown costs represents best practice. Furthermore, given the recent agreement with Metrolinx to cap the City's capital expenditures at the current estimated values, in our opinion, the City's exposure to risk has been mitigated.

We trust the above addresses the validation of the Metrolinx estimates. Thank you for this opportunity to continue to support the City on the SmartTrack project.

Best regards,

**LeighFisher Canada Inc.**



David Pratt, P.Eng., Vice President  
Project Director/Principal