



STAFF REPORT ACTION REQUIRED

Scarborough Rapid Transit Options: Reporting on Council Terms and Conditions

Date:	October 3, 2013
To:	City Council
From:	City Manager
Wards:	All
Reference Number:	

SUMMARY

This report has been prepared in conjunction with the Chief Executive Officer of the Toronto Transit Commission (TTC).

On July 16, 2013, City Council confirmed conditional support for the extension of the Bloor-Danforth subway north to Scarborough City Centre and Sheppard Avenue East, with an alignment along the McCowan road corridor ("McCowan Corridor Subway"). Council's support for the project is contingent on meeting specific terms and conditions, which include a \$1.8 billion provincial contribution (in 2010 dollars, or \$2.45 billion in inflated dollars), and a federal contribution (50% of the remaining net capital cost not covered by the Province), to augment City funding for the estimated \$2.5 billion project (in 2010 dollars, or \$3.56 billion in inflated dollars). Council committed to fund the City's share through potential development charges and a property tax increase. Council also requested the provincial and federal governments to commit funding by September 30, 2013.

The purpose of this report is to inform Council that the terms and conditions for supporting the McCowan Corridor Subway have been met with the exception of the \$1.8 billion (\$2010) commitment from the Province. As a result, the City Manager does not have authority to amend the Master Agreement signed by the City, TTC and Metrolinx in November 2012. The Scarborough LRT remains an approved project under the Master Agreement. The Province has confirmed \$1.48 billion (in \$2010, or \$1.99 billion in inflated dollars) is available for the replacement of the Scarborough RT. The federal government has provided a commitment of up to \$660 million (inflated dollars) in funding under the New Building Canada Plan for the McCowan Corridor Subway, subject to a number of conditions including a P3 assessment of non-traditional procurement methods.

In addition, on September 4, 2013, a new proposal was tabled by the Province for an alternative extension of the Bloor-Danforth subway along the RT corridor ("RT Corridor Subway"). This report provides an overview of the two subway alignments, including the preliminary technical analysis of the RT Corridor Subway conducted by the TTC and presented to the TTC Board on September 25, 2013. The findings indicate there is no advantage to the RT Corridor Subway proposal over the McCowan Corridor Subway in terms of cost and schedule to construct. The RT Corridor Subway also presents a number of concerns regarding transit operations, customer and community impact that are not present with the McCowan Corridor Subway proposal.

Regardless of the alignment, as stated in the July 16, 2013 report (CC37.17), the impact of extending the Bloor-Danforth line on the transit network as a whole is not clearly understood at this time. The ridership growth attributed to the extension of the subway would require the early implementation of Automatic Train Control (ATC) on the entire Bloor-Danforth line, in addition to other system improvements to relieve overcrowding on the Yonge Subway, south of Bloor and at Bloor-Yonge Station. The construction of a Relief Line subway or equivalent may become a prerequisite to address the higher ridership on the Bloor-Danforth line that will be accelerated by construction of the subway extension.

The terms outlined by City Council in July 2013 providing conditional support for a McCowan Corridor Subway have not been fully met, requiring Council to give new direction to the City Manager. The report outlines two options for Council's consideration. First, the City Manager and CEO of the TTC recommend that should Council wish to proceed with pursuing a subway option for the replacement of the Scarborough RT that the McCowan Corridor Subway alignment supported by Council on July 16, 2013, and by the TTC Board on September 25, 2013 continue to be the position of Council. The second option is for Council to reconfirm support for the fully funded Scarborough LRT as it currently stands under the Master Agreement.

Correspondence from Metrolinx and the Federal government are attached to this report.

RECOMMENDATIONS

The City Manager recommends that City Council consider the following two options with respect to rapid transit for Scarborough:

- A. City Council reconfirm its support for a Scarborough Subway, extending the Bloor-Danforth line along the McCowan Road corridor to Sheppard Avenue East (the "McCowan Corridor Subway"), subject to approval of the final alignment through an Environmental Assessment, to Recommendation A(3) and to reaching agreements under Recommendations A(1) and A(2); and

- (1) Authorize the City Manager to negotiate an amendment of the Master Agreement, and, if necessary, a separate agreement with Metrolinx and the Province, to:
 - (a) remove the Scarborough LRT from the description of the program to be constructed by Metrolinx under the Master Agreement (the "Program");
 - (b) accept the redirection of a minimum of \$1.48 billion (in 2010 dollars) of Provincial funding to the City, for the purpose of the construction of the McCowan Corridor Subway, which amount shall be indexed by an appropriate cost escalation factor from 2010 to the date of transfer to the City, currently estimated at \$1.99 billion (the "Indexed Amount"), payable to the City in a manner to be agreed upon by the parties having regard to ensuring that the City's financing charges or contract payments related to the Indexed Amount are fully offset over the life of the City's financing, or contract payments in respect of the Indexed Amount;
 - (c) amend the overall Program budget under the Master Agreement by reducing it by the \$1.48 billion (in 2010 dollars);
 - (d) ensure that the Master Agreement continues to apply to all interchange stations to which it currently applies;
 - (e) ensure that no funding currently allocated to other projects under the Master Agreement is reallocated to the McCowan Corridor Subway, as determined by Council at its July 16th, 2013 meeting; and
 - (f) make any further amendments to the Master Agreement as may be necessary to reflect the removal of the Scarborough LRT from the Program;

all on such terms and conditions as are satisfactory to the City Manager and TTC Chief Executive Officer, in consultation with any other relevant City officials, and in a form acceptable to the City Solicitor, and authorize the City Manager and the Mayor and any other relevant City official as may be required to enter into any such agreement.

- (2) Authorize the City Manager to negotiate a contribution agreement with the Federal Government, and any other parties as may be required, to accept the announced federal contribution of up to \$660 million (inflated dollars) to the cost of constructing the McCowan Corridor Subway, upon such terms and conditions as are set out in this report and in the attached letter from the federal Minister of Infrastructure, Communities and Intergovernmental Affairs, including the requirement to undertake a P3 assessment, and upon

such other terms and conditions as are satisfactory to the City Manager and the TTC Chief Executive Officer, in consultation with any other relevant City officials, and in a form acceptable to the City Solicitor, and authorize the City Manager and the Mayor and any other relevant City official as may be required to enter into any such agreement.

- (3) No City revenues allocated to other services or programs provided by the City or City agencies be reallocated to the McCowan Corridor Subway, as determined by Council at its July 16th, 2013 meeting.
- (4) Direct the City Manager to report back directly to Council if agreements cannot be reached under either of Recommendations A(1) or A(2).
- (5) Direct the City Manager to further negotiate the following with the Province and Metrolinx, and to report back to Council with the results of such negotiations:
 - (a) an agreement for the payment by the City to Metrolinx of such actual sunk costs as are independently verified as accurate by a third party auditor that were incurred by Metrolinx prior to or as a result of Council's July decision for work undertaken by Metrolinx on the Scarborough LRT project under the Master Agreement, including any potential costs associated with the LRT vehicle supply contract.
 - (b) an agreement that defines the roles of the City and Metrolinx in the funding of operating and maintenance costs of new rapid transit projects, including the Bloor-Danforth extension and the Metrolinx Program covered by the existing Master Agreement, inclusive of compensation by Metrolinx to the City for any costs which would have been borne by Metrolinx under the Master Agreement in respect of the Scarborough LRT related to operations, capital maintenance and such other costs as may be negotiated between the parties.
- (6) Commit to funding the City's share of the cost of construction of the McCowan Corridor Subway by:
 - (a) implementing a residential property tax rate increase, dedicated to funding the McCowan Corridor Subway, in the following amounts:

Year	Percentage
2014	0.5%
2015	0.5%
2016	0.6%

and implementing a property tax rate increase on the non-residential property tax classes of 1/3 of such a residential rate increase, in accordance with current City policy;

- (b) directing the Deputy City Manager and Chief Financial Officer to prepare a Development Charge By-law to include the City's share of capital costs in respect of the McCowan Corridor Subway for Council's consideration; and
 - (c) requesting the Province of Ontario to make appropriate amendments to the *Development Charges Act* for the purposes of the McCowan Corridor Subway Project similar to those made by the Province for the Toronto York Spadina Subway Extension project;
- (7) Direct the appropriate City officials to seek the necessary approval under the Environmental Assessment Act using the Transit Project Approval Process as set out in Ontario Regulation 231/08, as amended, and to ensure that the process considers the impact of the McCowan Corridor Subway on the transit network as a whole.
 - (8) Refer TTC and City costs associated with initial work to be done in 2014 in respect of the McCowan Corridor Subway to the Budget Committee to be addressed as part of its 2014 budget deliberations.
 - (9) Authorize the City Manager, and as required, the Mayor and other appropriate City officials, to enter into any other agreements with any parties as may be additionally necessary to give effect to these recommendations, and to authorize the appropriate City officials to take all actions necessary to give effect to these recommendations.

OR

- B. City Council reconfirm its support for the Scarborough LRT project under the Master Agreement, and not support a Scarborough Subway.

Financial Impact

The total estimated cost for the McCowan Corridor Subway is \$3.56 billion (expressed in inflated dollars, or \$2.5 billion in 2010 dollars). Current funding commitments received for the construction of the subway extension are as follows: Provincial government- \$1.99 billion (expressed in inflated dollars, or \$1.48 billion in 2010 dollars); and Federal government- \$660 million (expressed in inflated dollars). As a result, the net amount that the City will be required to fund is estimated at \$910 million (inflated dollars).

The City would fund its share of the project through a combination of property taxes and development charges. In order to estimate development charge revenue potential, it has been assumed that the City obtains changes to the *Development Charges Act* for this project similar to those that were provided for the Toronto York Spadina Subway Extension (TYSSE) project. The result is an estimated \$165 million (inflated dollars) in development charges funding, and a balance of \$745 million (inflated dollars) to be funded from property tax supported debt and cash contributions.

Should Council decide to proceed with the Scarborough subway extension, start up funding will be required for costs expected to be incurred by both the TTC and City programs. These costs predominately relate to environmental assessment, geotechnical, business case, P3 analysis and related project management requirements. These subway related costs will be addressed as part of the 2014 Capital Budget process.

A dedicated tax increase of 1.6% is required over the next three years to fund start up costs and reserve contributions in order to finance construction-related costs. A more rapid implementation of required tax increases would have the effect of increasing reserve funding and reducing the debt requirement for the project; a more gradual tax increase would have the opposite effect.

Table 1 below sets out the recommended schedule of dedicated residential property tax increases.

Table 1. Recommended Residential Tax Increase to Fund McCowan Subway

Year	Percentage
2014	0.5%
2015	0.5%
2016	0.6%

In accordance with current City policy, 1/3 of the above-noted residential rate increases would apply to the non-residential property tax classes.

Table 2 below provides a summary of project costs and funding implications to the City.

Table 2. Funding for Scarborough Subway Extension (McCowan Corridor)

Expenditure Estimate:	(\$millions)			
Subway Option Cost Estimate (\$2010)	\$2,300			
SRT Life Extension, Decommissioning & Demolition (\$2010)	\$170			
Total Cost (\$2010)	<u>\$2,470</u>			
Total Subway Option Cost Estimate (\$ inflated)	<u>\$3,560</u>			
Funding Sources:	With Provincial Funding of \$1.48 Billion (\$2010)	With Provincial Funding of \$1.8 Billion (\$2010)		
	(\$inflated)	(\$inflated)		
Federal Funding	\$660	19%	\$420	12%
Provincial Transfer ¹	<u>\$1,990</u>	<u>56%</u>	<u>\$2,450</u>	<u>69%</u>
City	<u>\$910</u>	<u>26%</u>	<u>\$690</u>	<u>20%</u>
Total Funding for Subway Options	\$3,560	100%	\$3,560	100%
City Funding:				
Estimated Development Charges	\$165		\$115	
Estimated Tax Supported Cost	\$745		\$575	
Total Residential Tax Increase 2014 -2016	1.6%		1.1%	
Estimated Future Annual Debt Service Charge	\$38		\$26	

1. Provincial Contribution net of \$85 million sunk costs

2. Calculation of \$inflated assumes inflation rate of 2% p.a. from 2011-2013, and 4% p.a. thereafter

Other Cost Implications

The July 16, 2013 report identified potential transitional, operating and maintenance cost implications to the City for the subway (vs. LRT) option. The subway option would require the City to be the owner/operator of the new asset, versus the LRT which is a Metrolinx project. These other cost implications include:

Cost Over-Runs and Estimation Errors

The funding commitments of both the provincial and federal governments are based on pro forma cost estimates. There is currently no indication that either government would adjust its contribution in the event of cost over-runs or estimation errors.

As previously noted, the City's share of costs is proposed to be largely financed through debenture debt issuance with debt servicing being funded by a combination of dedicated tax rate increases and development charges. Capital markets may adversely change

between now and actual debt issuance (assumed 4 to 5 years from now). The City assumes the risk that interest rates could rise between now and actual debt issuance.

In moving from an LRT delivered by Metrolinx to a City owned and operated subway extension, the City assumes both construction cost overruns and interest rate risks.

Operations and Maintenance (O&M)

Given that the City will be the owner/operator of the new asset, the City is responsible for incremental operating and capital maintenance costs. The capital maintenance costs are estimated to be in the order of \$30 to \$40 million per year. Through the Master Agreement discussions, the City will seek compensation for the future operating and capital maintenance costs that Metrolinx would now avoid by not proceeding with the LRT.

Automatic Train Control (ATC)

The TTC has indicated that extension of the Bloor-Danforth subway would require advancement of the implementation of Automatic Train Control (ATC) on the remainder of the Bloor-Danforth line. Approximately \$450 million for ATC on the existing Bloor-Danforth line is currently included in the TTC's 10 year capital program for post 2023. The cost estimates provided above for the subway extension itself (\$2.5 billion in 2010 dollars) include ATC (\$30-40 million in 2010 dollars for the extension only).

Impact on Other Priorities

Financial Implications Related to Planned Future Transit Infrastructure

The City is currently undertaking a comprehensive review of Toronto's transportation priorities through the Official Plan Review process to identify future transit infrastructure that best meets city building objectives. The decision to adopt subway technology could impact the ability to fund the other priorities that are ultimately established through the Official Plan Review process.

Additional pressures on the anticipated 2014-23 Capital Plan

As reported at the July Council meeting, Council must consider undertaking these costs within the context of other capital and operating pressures and investment options likely to be faced by the City over the period. Other pressures already identified during the 2014 -23 administrative review of the Capital Budget include:

- \$2.5 billion for TTC in new, primarily state of good repair, spending,
- anticipated additional costs of local transit priorities that will be identified as part of the ongoing Official Plan review
- \$750 million for unfunded Social Housing repairs,

- significant capital needs for Transportation Services, Toronto Water, Parks Forestry and Recreation, etc
- currently unbudgeted plans such as the Port Lands Acceleration Initiative

The City's capital budget launch is scheduled for November 26, 2013.

Debt Service Ratio

The City's share of the subway project will be primarily debt financed. The City's debt service ratio, at the end of fiscal 2013, is estimated at 10.7%, and is anticipated to peak in 2017 at 12.7%, declining thereafter. The estimated subway debt will be incurred after 2017, and is not anticipated to affect the projected peak. It is estimated that the additional subway debt would increase the City's debt service ratio by approximately one percentage point by project completion in 2023. Considered in isolation, this would not increase the ratio above the 15% guideline.

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

DECISION HISTORY

On October 30, 2012 City Council considered the report [CC27.6 Metrolinx-City of Toronto - Toronto Transit Commission Master Agreement for Light Rail Transit Projects](#). Council approved the terms of an agreement ("The Master Agreement") for the delivery of four light rail transit (LRT) projects, which includes the conversion of the Scarborough RT to LRT technology ("Scarborough LRT"). The Master Agreement between the City, TTC and Metrolinx was signed on November 28, 2012, and provides the legal framework for the delivery of the \$8.7 billion¹ Toronto Light Rail Transit Program.

On May 7, 2013, City Council considered the report [EX31.3 Metrolinx Transportation Growth Funding-Dedicated Revenues](#). City Council indicated support for the extension of the Bloor-Danforth subway line from Kennedy Station to Scarborough Centre and Sheppard Avenue, during a Council debate on a report outlining potential revenue tools to fund transportation expansion in the Greater Toronto and Hamilton area (GTHA).

At the July 16, 2013 meeting, City Council responded to a request from Metrolinx to clarify its position on the Scarborough LRT project under the Master Agreement. Council considered a report from the City Manager prepared in consultation with the CEO of the TTC, [CC37.17 Scarborough Rapid Transit Options](#). The report outlined the approved Scarborough LRT plan and a subway option, extending the Bloor-Danforth line, along the McCowan corridor alignment north to Sheppard Avenue. City Council passed a resolution supporting the subway option described in the report, subject to key terms and conditions being met (for clarification purposes this report defines the Council approved subway alignment as the "McCowan Corridor Subway"). Council also committed to funding its share of the project through development charges and a property tax increase.

For further decision history on the City-TTC-Metrolinx Master Agreement and Scarborough Rapid Transit see [CC37.17 Scarborough Rapid Transit Options](#).

Toronto Transit Commission

TTC staff provided a presentation and report titled [Scarborough Subway Options](#), on September 25, 2013 to the TTC board providing a preliminary technical review of the RT Corridor Subway proposal announced by the Province on September 4, 2013, and the McCowan Corridor Subway alignment conditionally supported by Council in July 2013. The Board supported the McCowan Corridor subway alignment, and forwarded the report to the City Manager for inclusion in this report to Council (see Attachment 1).

In addition to acknowledging the substantial financial contribution to transit expansion by the Province in Toronto, the Board re-affirmed support for the other three LRT lines (i.e. Eglinton-Crosstown LRT, Sheppard East LRT and Finch West LRT) as agreed to in the Master Agreement. The TTC Board also requested that the Metrolinx Board re-affirm its support for the other three LRT lines in the Master Agreement, in addition to requesting Metrolinx to commit to the Relief Line as the next heavy rail priority for Toronto.

¹ The \$8.7 B program is comprised of \$8.4B in provincial and \$0.3B in federal funding.

ISSUE BACKGROUND

In October 2012 Council approved the terms of an agreement ("The Master Agreement") for the delivery of four light rail transit (LRT) projects, which includes the Scarborough LRT (see Figure 1). The Master Agreement between the City, TTC and Metrolinx was signed in November 2012, and provides the legal framework for the delivery of the \$8.7 billion Toronto Light Rail Transit Program.

On May 7, 2013 City Council indicated support for a Scarborough Subway to Scarborough City Centre and Sheppard Avenue East. In response, Metrolinx requested the City to clarify its commitment to the Master Agreement and the Scarborough LRT project by August 2nd 2013 ([Link to Metrolinx June 28, 2013 letter](#)).

On July 16, 2013 Council confirmed conditional support for the subway option outlined in the staff report *CC37.17 Scarborough Rapid Transit Options* (see Figure 2). The project is a 7.6 km extension of the Bloor-Danforth subway line north through Scarborough City Centre, to Sheppard Avenue East, with an alignment along McCowan Road ("McCowan Corridor Subway").

Figure 1. Scarborough LRT Alignment

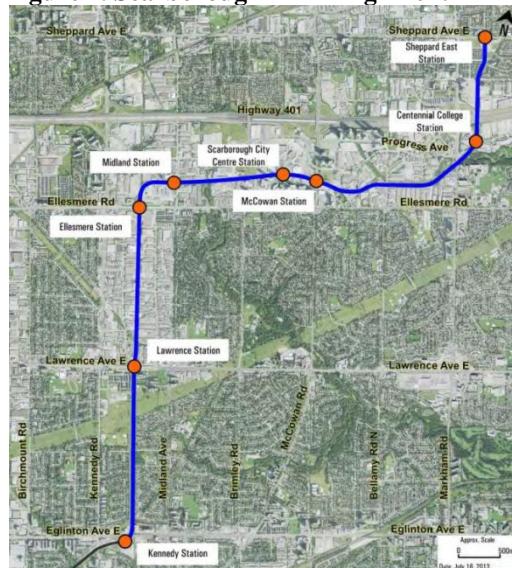
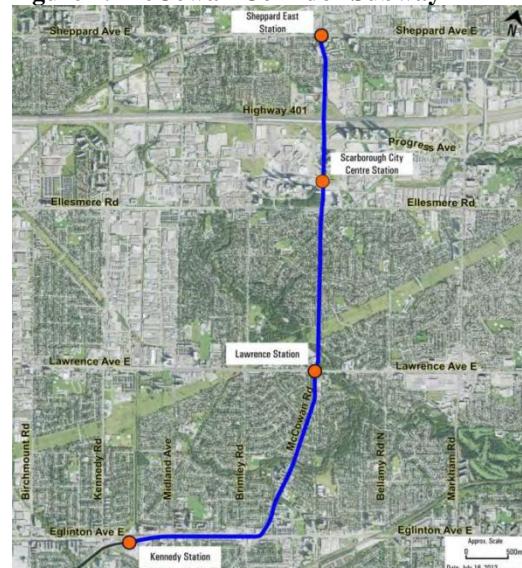


Figure 2. McCowan Corridor Subway



Council's support is contingent on obtaining provincial and federal contributions to augment City funding to cost share in the capital expenditure to build the subway. Specifically, City Council authorized the City Manager to amend the Master Agreement between the City-TTC and Metrolinx to remove the Scarborough LRT from the program description, and if necessary enter into a separate agreement for the McCowan Corridor Subway subject to several terms and conditions being met. Council also requested the Provincial and Federal governments to commit to their portion of funding for the project by September 30, 2013.

COMMENTS

1. Council Terms and Conditions

City Council confirmed support for the McCowan Corridor Subway alignment proposed in the July 16, 2013 report to Council (CC37.17), contingent on several terms and conditions. To date the terms and conditions have been met, with the exception of the \$1.8 billion provincial contribution (in 2010 dollars, or \$2.45 billion in inflated dollars).

Table 3. Summary: Council's Terms and Conditions (McCowan Corridor Subway)

Council Directive CC37.17	Term/Condition	Satisfied
1.A	New Federal Funding Equal to 50% of Net Capital Costs	Yes
1.B	Provincial contribution of \$1.8 billion (\$2010)	No
1.C	Other funding under the Master Agreement not to be reallocated	Yes
1.D	No reallocation of existing City revenues from other services	Yes

As a result, Council's July 16, 2013 decision as a whole has not come into effect and the City Manager does not have authority to amend the Master Agreement with Metrolinx. The Scarborough LRT remains in the Master Agreement. Should Council continue to consider a subway option, the City Manager requires new direction and authority from Council.

Provincial Contribution

City Council confirmed support for the McCowan Corridor Subway contingent on a provincial contribution of \$1.8 billion (\$2010). This condition has not been satisfied.

As outlined in report CC37.17, the Province announced funding of \$1.8 billion (in 2010 dollars, or \$2.45 billion in inflated dollars) for the conversion of the Scarborough RT to LRT technology. The June 28, 2013 letter from Metrolinx indicates that the available funds for the Scarborough LRT has been adjusted to \$1.48 billion (in 2010 dollars, or \$1.99 billion in inflated dollars) to reallocate \$320 million (\$2010) to the Eglinton LRT project, and more specifically the Kennedy Station interchange ([Link to June 28, 2013 letter](#)). Following Council's July 16, 2013 resolution, Metrolinx reconfirmed in an August 2, 2013 letter to the City Manager, that \$1.48 billion (\$2010) remains available for the replacement of the Scarborough RT line (see Attachment 3).

On September 4, 2013, the Province announced an alternative alignment, extending the Bloor-Danforth subway along the RT Corridor ("RT Corridor Subway"). The first phase of the Province's plan includes two stations, Lawrence Avenue and the terminal station at Scarborough Centre. The Province has not committed to funding the subway beyond Scarborough Centre and the timing of such an extension is not known. A preliminary

technical analysis of the RT Corridor Subway is provided in the September 25, 2013 report to the TTC Board, [Scarborough Subway Options](#), and is summarized in this report.

As a result of the Province's announcement, the Chair of the TTC sent a letter to Metrolinx requesting clarification on a number of issues with respect to the new subway proposal and the availability of the \$1.48 billion (\$2010) for replacement of the Scarborough RT (see Attachment 5). The Chair of Metrolinx responded on September 10, 2013 (see Attachment 6) and outlined that "regardless of the alignment that is ultimately approved and constructed" the position of Metrolinx continues to be as follows:

- Provincial funding of \$1.48 billion (\$2010) is available for the project.
- All sunk costs for the approved Scarborough LRT, currently estimated at \$85 million, must be reimbursed by the City.
- Any costs associated with the renegotiation of the contract with Bombardier for the supply of LRVs will need to be reimbursed by the City.
- Provincial contributions towards the project will begin no earlier than 2018/19.
- The extension of the TTC's subway would be a City/TTC project and the City would be responsible for project scope and schedule, including any cost overruns, operating costs and maintenance costs.
- The Province and Metrolinx will work with the City and TTC to align the scope of the project and the routing with provincial growth and transportation objectives, reflecting the need to maximize economic growth and employment along the corridor.
- The Province is interested in building in a role for Infrastructure Ontario to support the City's and TTC efforts to deliver the project to its schedule and budget.

In addition, the September 10, 2013 letter from the Chair of Metrolinx clarified the following with respect to the RT Corridor Subway alignment proposed:

- Metrolinx would assume the net incremental operating costs incurred by the TTC as a result of the construction to offset the SRT closure and the closure from Kennedy to Warden Stations (Bus Bridge);
- The subway alignment would be subject to review as part of the environmental assessment process;
- Metrolinx continues to rely on the Master Agreement as the legal contract with the City and TTC; and
- To implement the proposed extension of the Bloor-Danforth Subway, an amendment to the Master Agreement would be required.

On October 1, 2013, the City Manager received a letter from Metrolinx (see Attachment 8) reconfirming \$1.48 billion (\$2010) of provincial funding is available to support a subway extension from Kennedy Station to Sheppard Avenue East. The letter also stated that the final alignment for the subway must be selected and approved under the Environmental Assessment Act.

As recommended in the July 16, 2013 report and approved by Council, the \$85 million in sunk costs identified by Metrolinx for work undertaken on the Scarborough LRT project require independent third party validation. Should Council reconfirm support for a subway option (regardless of alignment), it is recommended the City Manager be given authority to negotiate with Metrolinx an agreement for the City's payment of verified sunk costs with respect to the Scarborough LRT.

It is also recommended the City Manager be given authority to negotiate with Metrolinx compensation to the City for the estimated value of operations, capital maintenance and other costs that would have been borne by Metrolinx under the Master Agreement for the Scarborough LRT. Negotiations with Metrolinx are required to define the roles of the City and Metrolinx with respect to the funding of operating and maintenance costs of new rapid transit projects, including the Bloor-Danforth extension and the Metrolinx projects covered by the existing Master Agreement.

Federal Contribution

City Council confirmed support for the McCowan Corridor Subway contingent on new federal funding equal to 50 percent of the net capital costs. On September 22, 2013 the Federal Government announced its commitment to supporting Council's July 16, 2013 subway proposal (i.e. McCowan Corridor Subway). A letter received September 23, 2013 from the Federal Minister of Infrastructure, Communities and Intergovernmental Affairs (see Attachment 7) was provided to the City outlining that the Government of Canada will set aside up to \$660 million (inflated dollars) under Ontario's funding allocation of the Provincial-Territorial Infrastructure component of the New Building Canada Plan.

As described in the letter, federal funding for the McCowan Corridor Subway project is conditional upon:

- A renewed commitment by the Provincial government to fund the project approved by Toronto City Council on July 16, 2013;
- A formal project application being received and assessed by Infrastructure Canada once the New Building Canada Plan is available to accept applications;
- The project meeting the New Building Canada Plan terms and conditions, including the requirement for a P3 assessment;
- The provision of all necessary project information required for federal officials to undertake a detailed project review;
- All the typical conditions that apply to federal infrastructure contributions, including the necessary Treasury Board approvals, and the completion of any required environmental assessments and aboriginal consultations; and
- The signing of a contribution agreement that will detail the project elements, scope, schedule, costs and funding parameters.

The federal government has also re-committed to the \$333 million in funding under the current Building Canada Fund-Major Infrastructure Component for the Metrolinx Sheppard East LRT.

Other Conditions Set by Council

A condition of Council's support for the McCowan Corridor Subway is no other funding outlined in the Master Agreement being re-allocated to the project from the other three LRT lines that comprise the Toronto Light Rail Transit Program (i.e. Sheppard LRT, Finch LRT, and the Eglinton LRT). As stated above, Metrolinx has committed to \$1.48B (\$2010) for the replacement of the RT.

Finally, Council's support for the project was conditional on there being no reallocation of existing City revenues from other services to pay for the project. This condition is within Council's authority to implement.

2. Preliminary Analysis of Proposed Subway Alignments

The following provides a preliminary evaluation of the two proposed subway alignments between Kennedy Station and Sheppard Avenue: namely, the RT Corridor Subway and the McCowan Corridor Subway supported by Council in July 2013, and the TTC Board on September 25, 2013. A summary of the analysis provided to the TTC Board in the report [Scarborough Subway Options](#) is included. The RT Corridor Subway proposal in comparison to the McCowan Corridor Subway requires additional funding, and presents a number of operational, customer and community impact concerns. The report recommends that should Council continue to pursue a subway the McCowan Corridor Subway should be reconfirmed as the preferred alignment to the RT Corridor proposal.

As described in the July report to Council, [CC37.17 Scarborough Rapid Transit Options](#), the McCowan Corridor Subway (figure 3) alignment is a 7.6 km, three station extension of the Bloor-Danforth line north to Sheppard Avenue. The entirety of the proposed subway line is below-grade (i.e. tunnel).

The Province's proposed RT Corridor Subway alignment (figure 4) is a 10.2 km, four station extension of the Bloor-Danforth line, operating mostly at-grade or on an elevated structure. The RT Corridor Subway alignment generally follows the alignment of the proposed conversion of the existing Scarborough RT to light rail transit technology between Kennedy Station and Scarborough Centre/McCowan Station and its further extension to Sheppard Avenue. The first phase of the Province's plan includes two stations, the Lawrence Avenue and the terminal station at Scarborough Centre. There is currently no funding committed to extend the line past Scarborough Centre.

Figure 3. McCowan Corridor Subway Option

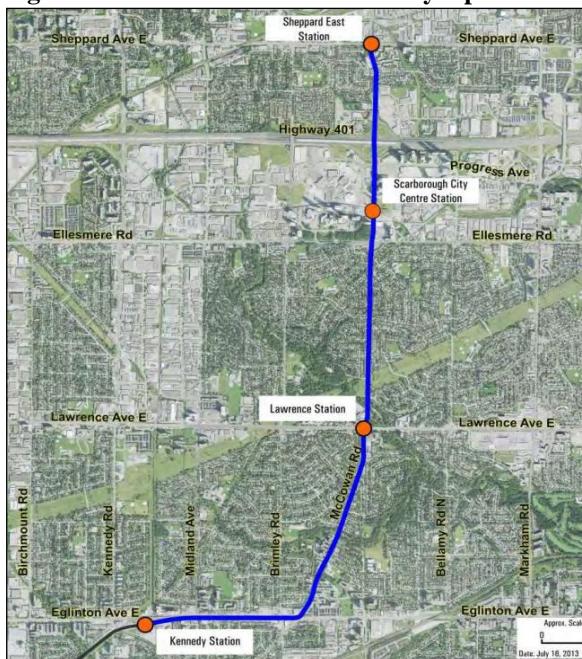
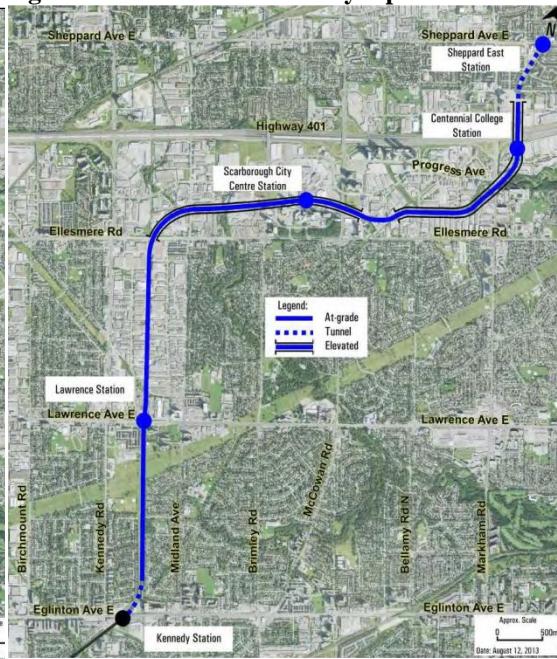


Figure 4. RT Corridor Subway Option



City Building

The McCowan Corridor Subway alignment would pass through largely stable residential areas and the primary trip generation points would be Scarborough Centre and the Sheppard Avenue terminal. Both subway proposals only have one stop between Kennedy Station and Scarborough Centre at different points along Lawrence Avenue. However, it should be noted that the proposed subway station at Lawrence Avenue and McCowan Road, on the McCowan Corridor alignment, is largely surrounded by a stable, low density area with the exception of Scarborough Hospital, General Campus, at the northwest corner. The RT Corridor Subway alignment proposes a subway station at Lawrence Avenue between Kennedy Road and Midland Avenue, and is located in an area of greater redevelopment potential.

The McCowan Corridor subway line would serve one Priority Neighbourhood compared to the RT Corridor subway line which serves three Priority Neighbourhoods or two in its truncated form. Between Kennedy Station and Scarborough Centre, the McCowan Corridor and RT Corridor subways have similar numbers of residents and employees within walking distance (20,000 and 22,000 respectively). However, when taking into account the extensions to Sheppard Avenue, the longer RT Corridor route has more residents and employees within walking distance (resulting in totals of 24,000 and 33,000 respectively).

The RT Corridor Subway proposal has development implications as a result of the westerly relocation of Kennedy Station that has been proposed to satisfy the minimum turn curvature requirements of a subway in making the transition between the existing Bloor-Danforth subway alignment and the existing RT corridor. The station relocation

may potentially reduce the amount of prime developable lands around Kennedy Station and detract from its potential as a designated Mobility Hub in the Regional Transit Plan.

Ridership

Both subway proposals provide reliable, high-quality service and are effective in accommodating forecast levels of travel between Scarborough Centre and Kennedy Station, the dominant pattern of demand in the corridor. The importance of a transfer-free ride through Kennedy Station is a major advantage of either subway proposal.

Both subway lines would attract similar levels of annual ridership (approaching 40 million passengers) and generate similar peak hour, peak direction ridership levels (around 14,000 persons). Our preliminary analysis suggests that in either case, the extension beyond Scarborough Centre has little impact on the peak point, peak direction ridership.

The design capacity of both subway proposals exceed 2031 forecast ridership levels requiring a robust program to attract significant employment growth (and to a lesser extent residential growth) to the Scarborough Centre and other targeted growth areas around the stations in order to increase ridership.

Network Integration

The RT Corridor Subway proposal presents a number of issues with respect to network integration. The proposed relocation of Kennedy Subway station raises unanswered questions about how the station will connect with the Eglinton Crosstown LRT (ECLRT) currently under construction, the existing Kennedy bus terminal, the Kennedy GO Station and the potential for integrating the ECLRT with the future Scarborough/Malvern LRT line. Furthermore, given the lack of any commitment to extend the subway beyond Scarborough Centre to Sheppard Avenue, it is not clear when or if the important network connection with the funded Sheppard East LRT would be realized.

Rail Freight Impacts

The RT Corridor Subway alignment would be parallel to and east of the rail line shared by GO Rail and CN between approximately Eglinton Avenue and Ellesmere Road. This is in contrast to the current situation where the SRT is to the west of this section of rail line. The proposed relocation would negatively impact the existing rail spurs serving industries on the east side of the corridor.

Transit Service Impacts

The RT Corridor Subway alignment is along the current SRT line, requiring two major closures. First a 3-year closure of the SRT line that would be accommodated by a bus bridge from McCowan to Kennedy Station. Then after constructing the new Kennedy Station it must be connected to the existing Bloor-Danforth line requiring the closure from

Warden to Kennedy Stations for an unspecified period of time. This would be accommodated by extending the bus bridge from Kennedy to Warden Station. Currently, Warden Station is not configured to support bus terminal operations of this magnitude and temporary infrastructure would be required. In contrast, the McCowan Corridor Subway alignment would allow the existing Scarborough RT to stay in operation while the subway is constructed and avoid this major disruption.

From a customer convenience perspective, the new Kennedy Station location required under the RT Corridor Subway proposal would increase the passenger transfer time from both the GO station and the bus terminal to the subway. Detailed designs are not available at this to quantify this increase.

Travel Speed

From an engineering and operations perspective, the design of 6 curves on the full RT Corridor Subway alignment is well below optimal and approaching the ultimate allowable design standard. The impact of these tight curves requires that the speed in these areas must be reduced from the standard 80 kilometers per hour down to 50 or 55 kilometers per hour. This results in an increase of the overall trip time and possibly impacts to the remaining Bloor- Danforth line. To fully assess these impacts a computer modelling study is required. As a result, the RT Corridor Subway proposal is likely to operate at a slower travel speed than the McCowan Corridor Subway alignment.

Noise and Visual Impacts

The RT Corridor Subway would operate above grade and on an elevated structure for particular portions of the alignment. The tight curves required to follow the existing RT alignment may create wheel squeal noise which will not be contained by a tunnel. Elevating these curves will allow the noise to be further broadcast. The impact of this noise on the surrounding community has not been assessed.

In addition, the impact on the public realm in terms of visual intrusion and incursion on public space of the elevated structures required to support the heavy rail subway has not been assessed. In comparison with the current SRT or LRT's elevated structure, the elevated subway structures are more massive. This may result in community impact and resistance during the environmental assessment process and presents an urban design issue.

The noise and visual impacts described do not apply to the McCowan Corridor Subway, as it would operate below grade in a tunnel.

Operational Impacts

As with the current SRT alignment, the proposed RT Corridor Subway alignment is at surface and elevated, presenting the same operating challenges as currently experienced during fall and winter resulting in delays.

- During freezing rain and snow there is a build-up of ice on the rails, the third rail and switches. The build-up on the third rail can prevent power from reaching the trains. The significant grades approaching 3.0 % are challenging with icy rails and loss of power.
- The ice build-up can interfere with the operation of the switches, preventing route selection or loss of signal detection.
- In the fall the leaves accumulate on the tracks, causing wheel flats, noise, vibration and increase maintenance costs.
- The extremely tight curves on the alignment will also result in increased wheel and track wear causing premature replacement.

Cost Estimate Comparison

Based on a feasibility study conducted for Metrolinx, the Province's estimated cost for the RT Corridor Subway to Sheppard Avenue was approximately \$2.3 billion (\$2010), at the time of the September 4, 2013 announcement. The cost estimate for the project was not validated by the TTC, and a number of items that were not included in the \$2.3 billion (2010) estimate have since been identified. The TTC estimates the full cost of these exclusions and additions to be \$670 million (\$2010), while Metrolinx estimates additional costs of \$585 million (\$2010). A summary of the exclusions and additions are provided in Table 4.

Table 4. Refined Cost Estimate for RT Corridor Subway (\$2010M)

	To Sheppard	To Scarborough City Centre (SCC)
RT Corridor Subway Initial Estimate	\$2,296	\$1,365
Vehicles	\$180	\$112
Storage	\$171 to 262	\$45 to 210
ATC	\$40	\$28
Sub Stations	\$78	\$62
HST	\$57	\$33
Bus Bridge	\$21	\$21
SRT Life Extension	\$48	\$48
Sub Total	\$585 to 670	\$341 to 506
RT Corridor Subway Revised Estimate	\$2.9B to \$3.0B (\$2010)	\$1.7B to 1.9B (\$2010)
	\$4.14B to \$4.28B (\$inflated)	\$2.43B-\$2.71B (\$inflated)
McCowan Corridor Subway Estimate	\$2.5 B (\$2010)	\$1.9B (\$2010)
	\$3.56 B (\$inflated)	\$2.71B (\$inflated)
Variance (\$2010)	\$410 to 495	-\$215 to -50

The TTC estimate for the Mc Cowan Corridor Subway to Sheppard Avenue is approximately \$2.5 billion² (in 2010 dollars, or \$3.56 billion in inflated dollars), which includes SRT life extension, decommissioning and demolition costs. The refined estimated cost for the RT Corridor Subway to Sheppard Avenue is \$2.9 to \$3.0 billion (in 2010 dollars, or \$4.14 to \$4.28 billion in inflated dollars), based on current information.

A comparison of the estimated cost for the two subway lines to Scarborough City Centre is also provided. The TTC's estimated cost for the RT Corridor Subway to Scarborough City Centre is \$1.9 billion (in 2010 dollars, or \$2.71 billion in inflated dollars), while Metrolinx estimates a cost of \$1.7 billion (in 2010 dollars, or \$2.43 billion in inflated dollars), taking into consideration the additional items identified in Table 4. At the time of the Provincial announcement it was assumed an extension of the Bloor-Danforth line to Scarborough Centre along the RT Corridor alignment could be achieved within the \$1.48 billion (\$2010) provincial funding envelope.

The cost for the McCowan Corridor Subway alignment truncated at Scarborough Centre is approximately \$1.9 billion (in 2010 dollars, or \$2.71 billion in inflated dollars), based on TTC estimates. All estimates for the subway options outlined should be considered higher order magnitude estimates, as detailed study and design has not yet occurred.

Schedule

Both subway proposals, the RT Corridor and the McCowan Corridor, have an approximate start date of 2014 and a completion date of 2023. Given neither subway proposal has been subject to extensive study, an Environmental Assessment Process would be required and comprise the first four years of the project (2014-2018), with construction estimated to commence in 2018/19.

Table 5 provides a summary of key comparative statistics.

² TTC preliminary cost estimates based on historical cost per km to be confirmed at 30% design. The accuracy of these estimates should be considered +/- 30%.

Table 5. Summary: Comparison of Subway Alignment Options

	To Sheppard Avenue		To Scarborough Centre	
	McCowan Alignment	RT Corridor Alignment	McCowan Alignment	RT Corridor Alignment
Cost (\$2010)	\$2.5B ¹	\$2.9B to \$3.0B	\$1.9B	\$1.7B to \$1.9B
Cost (\$ inflated)	\$3.56B	\$4.14B to \$4.28B	\$2.71B	\$2.43B to \$2.71B
Route Length (km)	7.6	10.2	5.9	6.4
Above/Below Grade	Below Grade (Tunnel)	At-Grade (Partly Elevated)	Below Grade (Tunnel)	At-Grade (Partly Elevated)
New Stations	3	4	2	2
New Trains	7	10	5	6
Residents & Employees within walking access of stations	24,000	33,000	20,000	22,000
Priority Neighbourhoods Served	1	3	1	2
Annual Ridership projected to 2031 ²	36 ³ -39 million	39 million	36 million	36 million
Peak Hour Ridership Projected to 2031 in peak direction ²	9,500 ³ – 14,000 persons/hr	13,600 persons/hr	13,400 persons/hr	13,300 persons/hr
Technology Capacity	30,000 persons/hr	30,000 persons/hr	30,000 persons/hr	30,000 persons/hr
Customer Impacts	Maintain SRT during construction	SRT shutdown Warden to Kennedy Station Closure on BD line Less convenient TTC-GO transfer at Kennedy	Maintain SRT during construction	SRT shutdown Warden to Kennedy Station Closure on BD line Less convenient TTC-GO transfer at Kennedy
Community Impacts	Noise contained	Noise from wheel squeal on tight curves Visual impact of large elevated structure	Noise contained	Noise from wheel squeal on tight curves Visual impact of large elevated structure
Operational Impacts		Service impacts due to exposed winter-fall conditions on 3.0% gradient Increased wheel and track wear		Service impacts due to exposed winter-fall conditions on 3.0% gradient Increased wheel and track wear

1. The cost estimate includes \$2.3 billion for the extension of the line in addition to the SRT life extension, decommissioning and demolition costs

2. Except where noted, ridership numbers are from preliminary City Planning model results.

3. This ridership number is from the TTC and was presented to City Council July 16, 2013 ([CC37.17](#)).

3. Funding Subway Options

Table 6 below compares the cost and funding implications of the Council adopted McCowan Corridor Subway with the RT Corridor Subway extension to Sheppard Avenue. Both of these scenarios assume provincial funding of \$1.48 billion (in 2010 dollars, or \$1.99 billion in inflated dollars). As this analysis demonstrates, the cost of the RT Corridor Subway alignment would require an additional funding request of the federal government (totalling \$1.01 billion vs. \$660 million for the McCowan alignment). In order to support the RT Corridor alternative, the City would also need to levy additional taxes, totalling 1.9% (vs. 1.6%), as well as additional development charges totalling \$252 million (vs. \$165 million).

Table 6. Funding for Bloor-Danforth Subway Extension to Sheppard Avenue

	(\$millions)	
	McCowan Corridor Subway	RT Corridor Subway
<u>Expenditure Estimate:</u>		
Total Cost (\$2010)	<u>\$2,470</u>	<u>\$2,900</u> ²
Total Subway Option Cost Estimate (\$ inflated)	<u>\$3,560</u>	<u>\$ 4,139</u> ²
<u>Funding Sources:</u>		
Federal Funding (\$inflated)	\$660	\$1,009
Provincial Transfer (\$inflated)	\$1,990	\$1,990
City (\$inflated)	<u>\$910</u>	<u>\$1,140</u>
Total Funding for Subway Options	<u>\$3,560</u>	<u>\$ 4,139</u>
<u>City Funding:</u>		
Estimated Development Charges (\$inflated)	\$165	\$252
Estimated Tax Supported Cost (\$inflated)	\$745	\$887
Total Residential Tax Increase 2014 -2016	1.6%	1.9%
Estimated Future Annual Debt Service Charge	\$38	\$45

1. Includes costs required vehicles, storage, automatic train control, sub-stations, non-refundable HST, bus bridge. The TTC has provided a range of \$585M to \$670M for these costs.
2. The cost estimate for the RT Corridor Subway to Sheppard Avenue in 2010 dollars ranges from \$2.9B to \$3.0B, or \$4.14B to \$4.28B in inflated dollars.

4. The Scarborough LRT

The second option available to Council is to reconfirm commitment to the Scarborough LRT. Currently, the Scarborough LRT remains in the Master Agreement.

In 2009, the Province announced funding of \$1.8 billion for the conversion of the Scarborough RT to LRT. The current estimate for the Scarborough LRT is \$1.48 billion (\$2010), and is fully funded by the Province.

The Scarborough LRT project scope is defined as the conversion of the existing alignment from Kennedy Station to McCowan Station and extension to Sheppard Avenue—10 kilometres and up to 8 stations. More specific details include:

- Conversion of existing structure and station to accommodate Metrolinx LRVs—6.5 kilometres and up to 6 stations
- Grade separated extension from McCowan to Sheppard Avenue—3.7 kilometres and up to 2 new stations
- Automatic Train Operation employed along entire route
- Connection at Kennedy Station that does not preclude through running with Eglinton Crosstown LRT
- Convenient passenger interchange with Sheppard East LRT at Sheppard Avenue
- Connection to the Scarborough RT/Sheppard East LRT MSF located at Conlins Road
- Designed for 3-car LRV trains

The Scarborough LRT has been extensively studied. The Environmental Assessment for the project was approved by the TTC and Council in 2010. The project is scheduled to be constructed over the period 2015-2020 and Metrolinx would build, maintain and own the project pursuant to the terms of the Master Agreement. The Scarborough RT is slated to be decommissioned in 2016 after the Pan Am Games, to allow for construction of the LRT conversion and extension.

The July 2013 report [CC37.17 Scarborough Rapid Transit Options](#), provided a review of the Scarborough LRT option. Some of the main benefits of the LRT option include a reliable high quality service at a lower cost, more stations providing greater local access and convenient walk-in access to those living and working in surrounding communities and neighbourhoods. In summary the report concluded that the LRT option and subway option both offer distinct advantages and either technology could effectively replace the Scarborough RT. See CC37.17 for further detail.

5. Conclusion

The City Manager does not have authority to amend the Master Agreement. Based on the analysis presented in this report and the findings presented in July 2013 the report outlines two options for Council's consideration:

- A. Confirm support for the McCowan Corridor Subway alignment previously supported by Council, subject to approval of the final alignment through an Environmental Assessment, and provide the necessary authorities to the City Manager to amend the Master Agreement; or
- B. Council reconfirm commitment to the Scarborough LRT currently in the Master Agreement.

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SIGNATURE

This report has been prepared in conjunction with the Chief Executive Officer of the Toronto Transit Commission.

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ATTACHMENTS

1. Toronto Transit Commission Board Decision and Report No.11, Scarborough Subway Options, September 25, 2013.
2. City Manager letter to President and CEO, Metrolinx, RE: Scarborough Rapid Transit Options, (Dated July 29, 2013)
3. President and CEO, Metrolinx letter to City Manager, RE: Response to July 29, 2013 letter, (Dated August, 2, 2013)
4. Mayor Rob Ford letter to Minister of Infrastructure, Communities and Intergovernmental Affairs, RE: Federal Support for Rapid Transit in Scarborough, (Dated: August 12, 2013)
5. Chair, TTC letter to Chair, Metrolinx RE: Minister Murray's September 4, 2013, Scarborough Subway Announcement, (Dated September 6, 2013)
6. Chair, Metrolinx letter to Chair, TTC RE: Response to your letter dated September 6, 2013, (Dated September 10, 2013)
7. Minister, Infrastructure, Communities and Intergovernmental Affairs letter to Mayor Ford (Received: September 23, 2013)
8. President and CEO, Metrolinx letter to City Manager, RE: Master Agreement Amendment (Dated October 1, 2013)