Report of the Expert Advisory Panel Regarding Transit on Sheppard Avenue East

March 15, 2012

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1. PANEL LETTER TO TORONTO CITY COUNCIL

March 15, 2012

To the Members of Toronto City Council,

Attached please find the report of the Expert Advisory Panel Regarding Transit on Sheppard Avenue East.

We would first like to thank you for the opportunity to engage with the City in such a crucial decision, that will affect millions of residents of Toronto now and in the future.

We also appreciate and commend the support and resources provided to us by the Office of the City Manager, as well as the TTC, the Planning and Finance Divisions of the City, Metrolinx and Toronto Transit Infrastructure Limited (TTIL).

The terms of reference given to the Panel were "to advise City Council on the most effective means of delivering rapid transit to the greatest number of riders with the funds currently allocated and with projected funds, and report on other funding sources that could augment funds for a public transportation project on Sheppard".

We were able to complete the task mandated to us by Council, in the brief time available, by investing the time necessary to review extensive documents, to consider detailed presentations and to hold thorough discussions exploring the potential of all the options and technologies.

To facilitate a comprehensive discussion and decision-making process, we identified nine criteria to guide our decisions and recommendations: Economic Development; Cost Effectiveness & Fiscal Sustainability; Timeframe; Ridership; Network Connectivity; Level of Service; Equity & Accessibility; Environmental Sustainability; and Community Impact. The criteria were grouped and weighted, to reflect the Panel's terms of reference.

The report provides details of our decision-making process, using these criteria to explore and evaluate three public transit options. Option A was LRT service from Don Mills to Morningside; Option B was a subway from Don Mills to Scarborough Centre; and Option C was a subway from Don Mills to Victoria Park and LRT from there to Morningside.

Having completed our detailed evaluation of options, the Panel concluded that Light Rail Transit (LRT) is the recommended mode of transit for Sheppard Avenue East. With the exception of Dr. Gordon Chong, a strong consensus exists among the Panel members that the LRT is superior to the subway options presented, across the range of assessment criteria under consideration.

The decision concerning Sheppard Avenue East needs to be made within the context of overall, long-term transit needs of Toronto and the Greater Toronto Region. We believe that comprehensive transit planning and expansion has to continue in Toronto and that city-building will require the participation of all three levels of government.

Financial resources are required for the building of expanded transit infrastructure – but also for transit operating and maintenance costs.

Central to the development of a long-term and comprehensive transit plan is the development of sustainable funding that may involve both private and public sector components.

We believe that investment in Toronto's transit infrastructure is an urgent priority.

Toronto has a great opportunity at hand – with $8.7 billion committed to transit by the Provincial and Federal Governments - awaiting final agreement between the City and Province.

We hope that our recommendations help your decision-making.

We respectfully submit this report and our recommendations to the members of City Council, for consideration in their decision about transit on Sheppard Avenue East.

Panel Members

David Crombie	Chair, Toronto Lands Corporation
Professor Eric Miller	Director, Cities Centre, University of Toronto
Dr. Gordon Chong	CEO, Toronto Transit Infrastructure Ltd.
Mitzie Hunter	CEO, Greater Toronto CivicAction Alliance
Prabha Khosla	Chair, Toronto Women's City Alliance
Israt Ahmed	Community Planner - Scarborough, Toronto Social Planning
Ernie McCullough	Executive Director, Sheppard East Village BIA

2. EXECUTIVE SUMMARY

On February 8, 2012, Toronto City Council established an expert advisory Panel to assess options for rapid transit along the Sheppard Avenue East corridor. At its outset, each Panel member acknowledged and recognized the following assumptions and principles:

- That Sheppard Avenue East is a vital transportation corridor within Toronto, which requires a major investment in rapid transit along the corridor to better connect Scarborough and North York Centres, and with the broader rapid transit network.

- That investment in rapid transit is critical to supporting the long term economic competitiveness of Toronto and the broader region. As the economic engine for Ontario and Canada, the Toronto region requires accessible and reliable rapid transit to: stimulate growth, attract businesses, generate and support employment, reduce congestion, generate environmental benefits, and influence land use decisions that support more inclusive, cohesive and efficient communities.

- That an optimal mode of rapid transit must recognize the needs of the neighbourhoods it serves, and align with the Official Plan and a City-wide transit plans that prioritizes transit needs with a committed funding plan.

- That the Provincial and Federal governments have allocated funding for rapid transit expansion in Toronto, and that a Council decision on Sheppard Avenue East is required to complete Toronto's input to the Province--which must decide on a timely basis on how best to fully commit available funds and implement construction across all transit expansion lines that were part of the 2010 Metrolinx plan.

The Expert Panel conducted a comprehensive review of all data and information on available transit options, planning and financial considerations, as prepared by the Toronto Transit Commission (TTC), Toronto Transit Infrastructure Limited (TTIL), Metrolinx, City Planning and Finance.

The Panel agreed that options for rapid transit along Sheppard Avenue East must be evaluated against a comprehensive range of criteria to determine the preferred choice which would provide the greatest: *economic impact, best use of funding, transit service, sustainability and social impact.*

The Panel was mindful that the choice must be broadly sustainable: it must meet today's needs without compromising the ability of future generations to meet their needs; and it must meet Northern Scarborough's needs without compromising the City's ability to meet needs in other areas of Toronto.

Having completed our detailed evaluation of options, the Panel concluded that Light Rail Transit (LRT) is the recommended mode of transit for Sheppard Avenue East. The following report describes the process undertaken, the assessment criteria and option analysis, and provides the key information that informed the decision-making process.

As the Panel examined its options for Sheppard, it became clear that the City must look beyond the Sheppard corridor and the current '5 in 10' plan for transit expansion in Toronto. The City should have a comprehensive plan for transit expansion and a sustainable plan for funding these new lines. The report includes recommendations that the City develop a comprehensive transit plan that would be woven into the Official Plan; and that it pursue sustainable long term funding for transit expansion.

The recommendations of the Expert Panel are summarized as follows:

Council:

- Confirm that Light Rail Transit(LRT) is the preferred rapid transit mode for Sheppard Avenue East, from Don Mills to Morningside, and confirm the Sheppard Avenue East LRT as a priority transit line within the approved Metrolinx '5 in 10 plan'.

- Request the City Manager to develop a communication plan which outlines the significance of transit's role in city building, on Sheppard Avenue East and across the city.

- Request the province, through Metrolinx, to accelerate the preparation of the investment strategy for the "Big Move" transit expansion plan.

City Manager develop:

- For Council's consideration and approval, a comprehensive transit plan, that:
  i. is consistent with Metrolinx's Big Move; ,
  ii. integrates equitable economic development and other city-building strategies;
  iii. recognizes the context of the current 5 year Official Plan review; and
  iv. can ultimately be woven into the City's Official Plan

- A comprehensive public consultation process that provides residents and businesses an opportunity to participate and inform the development of a sustainable transit plan, including funding options, for the City of Toronto.

- An intergovernmental strategy in support of a sustainable transit plan; working with the Federal and Provincial governments (including P3 project delivery), along with appropriate municipal associations (e.g. Federation of Canadian Municipalities), to seek a commitment to the type of long-term tri-partite funding commitment discussed in this report.

3. BACKGROUND

The Panel's Mandate

During a Special Meeting of City Council on February 8, 2012, the City Manager was requested to establish an expert advisory Panel regarding rapid transit on Sheppard Avenue and to report back to a Special Meeting of Council no later than March 21, 2012[1]. The expert advisory Panel was given the following direction:

"The advisory Panel, incorporating a gender and racial equity lens, will advise City Council on the most effective means of delivering rapid transit to the greatest number of riders with the funds currently allocated and with projected funds, and will report on other potential funding sources that could augment funds for a public transportation project on Sheppard;"

City Council also requested the City Manager to invite the following participants to join the Panel:

- Senior representatives from Metrolinx
- Senior representatives from the Toronto Transit Commission
- Senior representatives from the Toronto Board of Trade[2]
- Senior representatives from the Greater Toronto CivicAction Alliance
- David Crombie
- Professor Eric Miller
- Dr. Gordon Chong
- Senior representatives from the Toronto Women's City Alliance
- Senior representatives from Social Planning Toronto, and
- A representative of the Sheppard East Village Business Improvement Association.

In addition, the Panel was also requested by Council to consider the following issues when deliberating rapid transit opportunities for the Sheppard Avenue East corridor:

- A long-term transit strategic funding solution for future transit projects, including Sheppard Avenue.
- Strategies for disposing of non-performing real estate assets used for TTC purposes, in order to utilize revenues to fund the Sheppard Avenue subway plan,
- The feasibility of allocating 20 percent of all net proceeds from the sale of City of Toronto assets to new subway and above-grade LRT construction.
- The feasibility of allocating 20% of the TTC annual capital budget to the design and building of new subway and above-grade LRT track.
- Applying any remaining funds from the Eglinton Crosstown (approximately $650 million) to the extension of the Sheppard subway east from Don Mills Station to Victoria Park as identified in the KPMG report entitled "Sheppard Subway Extensions: Analysis of Funding Options for Toronto Transit Infrastructure Limited and the City of Toronto"
- The implications of dedicating not less than 50% of the City's future annual surplus to the construction of new subway or above-grade LRT construction.

[1] Special City Council Meeting February 8, 2012: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.CC17.1
[2] Note: the Toronto Board of Trade respectfully declined the invitation to participate.

- Establishing a goal of creating no less than one kilometre of new subway or above-grade LRT routes on an annual basis
- Requesting the Federation of Canadian Municipalities to work with the federal government on a national strategy for funding urban and regional transit.
- The need for a federal funding package for the next generation of urban transit.

Note that these issues are addressed under the Financial Considerations section of the report.

The Panel Process

As directed, representatives from the identified organizations were invited to participate in a series of five Panel meetings held from late February to early March, to review options, hear from City staff and other Panel members, and identify recommended actions for City Council to consider.

Panellists received information and presentations from senior officials at the Toronto Transit Commission, Metrolinx and City of Toronto. Additional materials and presentations were provided by other members of the expert Panel. (See Appendix C for a complete list of presentations and documents considered by the expert Panel.)

Provincial Authorities and Expectations

The Province of Ontario, through Metrolinx, has committed to investing $8.4 billion (2010 dollars) in rapid transit projects in the City of Toronto. As a provincially funded project, the transit option selected by the City for Sheppard Avenue East will also require the approval of the Province of Ontario. As the Province's regional transit agency, Metrolinx outlined five key principles that must underlie a final agreement between the City and the Province for rapid transit expansion in the Sheppard Avenue East corridor:

> *"1. Sound Regional Transit Planning: Any project to be paid for by the Province must achieve sound transportation objectives for the City and the region, and reflect the goals and principles of the regional transportation plan, The Big Move*
>
> *2. Budget and Cost: The maximum budget for the provincial contribution to the plan remains fixed at the original $8.4B (2010 dollars). Any plan must be cost-effective and involve no cost increases to the Province over the original budget, in terms of the total provincial investment, the cash flow required in each year and the Province's ability to amortize its investment over the life of the assets. Any additional costs must be paid by the City or other partners.*
>
> *3. Penalties: The Province is not prepared to pay any penalties related to contractual commitments or the loss of investments that result from changes sought by the City. These costs must be borne by the City*

<u>4. Cost of Delay:</u> Delays in the delivery of results to residents are not acceptable. In the event that further delays occur in the delivery of projects, any delay costs must be assumed by the City.

<u>5. Traffic:</u> Any plan should minimize adverse impacts on traffic to the extent reasonably possible"

The Panel considered Metrolinx's principles, in the development of assessment criteria for determining the best rapid transit solution for the Sheppard Avenue East corridor.

Federal Funding Commitment

The Federal Government has committed $333 million to rapid transit expansion in Toronto under the Building Canada Fund.

4. TRANSIT OPTIONS FOR SHEPPARD AVENUE EAST

Summary of Options

Table 1 provides a high level summary of the key features of the three options under consideration by the Panel.

Table1. Summary of Options

	OPTION A	OPTION B	OPTION C
Transit Technology	LRT	Subway	Subway and LRT (hybrid)
Route Alignment	Don Mills to Morningside	Don Mills to Scarborough Centre	Don Mills to Victoria Park (Subway) Victoria Park to Morningside (LRT)
Kilometres	13 km	8 km	13km
Stations	25 stations	7 stations	2 Subway station 24 surface stations
Capital Cost	$1.0 B [1.]	$2.7 to 3.7 B[3]	$1.5 to 1.8 B [2.]

1. Sheppard East estimates should be revisited by Metrolinx and TTC since project has been stopped for a year.
2. Sheppard subway/LRT hybrid includes a contingency of 20% in the $1.8 billion upper range estimate.
3. Includes price escalation

Option A: LRT Don Mills to Morningside

Option A considers a Light Rail Transit technology option for the Sheppard Avenue East Corridor. The route alignment provides 13km of rapid transit connecting the existing subway station at Don Mills to LRT running from Don Mills to Morningside. The proposed LRT line would provide 25 stops.

Fig.1. Option A, LRT, Don Mills to Morningside

Option B: Subway Don Mills to Scarborough Centre

Option B – the subway extension – would provide eight kilometres of rapid transit, with seven stations. It would not provide rapid transit service east of McCowan Road.

Fig.2. Option B. Subway, Don Mills to Scarborough Centre

Option C: Subway to Victoria Park, LRT to Morningside

This option combines subway and LRT in the corridor by extending the Sheppard subway from Don Mills station east to Victoria Park Ave. At Victoria Park station a transfer to surface LRT would be made and LRT would extend easterly in the median of Sheppard Avenue to Morningside Avenue. The subway extension would add approximately 2.7 km of tunnel and 2 subway stations at Consumers and Victoria Park. A rough order of magnitude estimate for the subway portion would be $325 million/km or approximately $900 million in 2010 dollars. This estimate assumes no requirement for an expanded subway vehicle storage yard or an extensive inter-modal terminal at Victoria Park.

The remaining portion of LRT from Victoria Park to Morningside would build approximately 10.3 km of surface LRT running in the median of Sheppard Avenue with 24 surface stations. A rough order of magnitude for the LRT portion would be $60 million/km or approximately $600 million in 2010 dollars. This estimate assumes 35 light rail vehicles and a portion of the cost for the Sheppard/SRT maintenance and storage facility just east of Morningside Ave. Given that there is little engineering for a subway extension to Victoria Park and how LRT would connect to the subway at Victoria Park, it is recommended that an additional contingency of 20% be added to the rough estimates bringing the total estimate for this hybrid option in a range of $1.5 to $1.8 billion in 2010.

Fig.3. Option C, Subway to Victoria Park, LRT to Morningside

5. CITY PLANNING: OFFICIAL PLAN CONSIDERATIONS

The expert advisory Panel received a presentation from the City of Toronto's City Planning Division, on the Official Plan and other key considerations to support the Panel's analysis of the transit options for the Sheppard Avenue East Corridor.

This section presents an overview of City Planning's presentation to the Panel for their consideration, and does not necessarily represent the views of the Panel.

City Planning/ OP Considerations

Toronto will continue to grow. The City's transit system will continue to provide the framework for managing that growth: areas of growth should be well served by transit – and transit should serve areas of growth. Transit's role in accommodating growth in the Sheppard corridor is an important lens through which the choice of subway or LRT should be viewed.

Transit should also improve the quality of life and prospects for existing residents and businesses. The needs and aspirations of residents and businesses in the Sheppard corridor and surrounding area provide another viewpoint from which the choice before us should be evaluated.

Together, these present and future needs point to a series of inter-related City-building criteria for evaluating the choice:

- Sustainability – how will the system meet today's needs without compromising the ability of future generations to meet their needs? How will it help us address resource and environmental challenges such as global warming and higher gas prices, while also supporting healthy and vibrant communities and greater prosperity?
- Access / mobility – how does the system improve access to jobs and other activities for residents and businesses in the area served
- Connectivity – will the new line support better connections with the rest of the transit system, and thus improve overall access for its riders
- Community impact – what are the negative impacts (noise, traffic, etc) and positive impacts (place-making, local intensification, etc) on the local community?
- Ridership – How many riders can be expected to use the new infrastructure? What capacity will be required to achieve access and connectivity objectives?
- Cost – can we afford it? And does the cost of one project mean that other projects will not be funded?

How have we planned for transit in the corridor?

The Sheppard Subway has been planned as an important City-building project for the past 30 years. The North York and Scarborough Centres were identified as growth areas in the Metropolitan Toronto Official Plan of 1980. The Plan was amended in 1986 to show a subway line connecting the two centres along Sheppard Ave. The Sheppard subway was also included in

major transit plans such as Network 2011 (1986) and Lets Move (1990), and retained in the new Metropolitan Official Plan of 1994.

After amalgamation in 1998, the new Official Plan for the City of Toronto (adopted in 2002) continued this approach:

- it identifies the North York and Scarborough Centres as important areas or future growth; and
- it shows a high order transit connection between the two Centres, which would support both a subway and LRT

The Plan specifically notes the importance of extending the Sheppard Subway to Scarborough Centre:

> "Improving the Centre's connectivity will be crucial to its success, particularly improving its regional gateway function, improving service on, and extending the RT route and extending the Sheppard subway east to provide a high speed connection between the Scarborough and North York Centres."

The Official Plan also shows the Sheppard corridor as an Avenue. Avenues are important corridors along major streets where reurbanization is anticipated. The Plan also shows Sheppard Avenue is part of the Surface Transit Priority Network: it is a road where transit vehicles, such as LRT vehicles, should be given priority.

The Official Plan clearly contemplates improved transit connections along Sheppard, without dictating the technology they would entail.

The precise locations for future development in the Sheppard Corridor are shown on the Plan's Land Use maps:

- Mixed Use Areas along Sheppard, generally in the vicinity of the intersections with Victoria Park, Warden and Kennedy;
- Employment Areas in the Consumers Road area and the South Agincourt area between Midland and Kennedy north of Highway 401.

How much growth can we expect?

Table 2 shows that if a subway is built, forecast new development in the corridor over the next 50 years will yield about 70,000 residents and 22,500 jobs. The forecast presented in Table 2 is based on the forecasts developed by N Barry Lyon Consultants Limited (NBLC) for KPMG's study of Capital Funding Options for the Sheppard Subway Extension. The NBLC forecasts were developed to support estimates of CVA growth around the subway stations that could be the basis for Tax Increment Financing. The forecasts indicate significantly greater development than that forecast by City Planning as the basis of its 2002 Official Plan and which had 2031 as its planning horizon. These Official Plan forecasts were also the basis of the ridership forecast developed for the Sheppard LRT EA.

The forecasts were based on the existing Official Plan. If the present planning policy were changed (e.g. permission for residential uses in Employment Areas, or significant redevelopment adjacent to existing stable neighbourhoods) more growth may be supported in some locations. Staff note however, that this would depend on the ability of these locations to attract such growth from other areas of the City or the Greater Toronto Area.

Table 2: Growth Forecast

	Existing[1]	City Planning Official Plan Forecast[2] 2011 - 2031	Subway–related Growth[3,4] 2011 - 2061
Sheppard Subway Corridor (404 - Agincourt)			
Dwelling Units	16,000	2,500	12,000
Population	43,900	6,100	24,000
Employment	28,900	7,700	10,000
Scarborough Centre (Progress – McCowan)			
Dwelling Units	5,800	12,000	23,000
Population	12,200	27,800	46,000
Employment	14,700	6,900	12,500
Consumers Rd Business Park[5]			
Employment	19,000	5,500	8,000

NOTES and EXPLANATION:

[1] Population – 2011 Census; Employment – 2010 Toronto Employment Survey

[2] Population and Employment forecasts for Traffic Zones were developed by City Planning as part of the development of the City's 2002 Official Plan. They are also referred to as the Land Use Forecasts. They were based on projected population and employment growth for the City that had been developed by Regional Planning Commissioners and the Office of the GTA in 2000. These Traffic Zone forecasts within the City were based on existing population and employment in 1996 and on known development opportunities in 2002. The forecasts were used as the basis of the ridership forecasts for the Sheppard LRT EA (with enhanced population growth in Scarborough Centre). They were NOT a forecast of the growth that would occur if an LRT were built. They were also the basis of the ridership forecasts developed by City Planning and the TTC for the Sheppard subway. Therefore, they would not preclude additional growth that may result if the LRT were built on Sheppard. For example, the potential ridership from the recently zoned development potential of over 3,400 units in the Warden-Sheppard area could be accommodated on the proposed LRT.

[3] N Barry Lyon Consulting Ltd (NBLC) developed 'market' housing, office and retail GFA forecasts in the Sheppard Subway corridor assuming a subway were built. They were the basis for estimating the tax increment that would result from building the subway. These GFA forecasts were then converted into likely population and employment yields. NBLC produced two forecasts: a Reference Scenario and a High Growth Scenario. The High Growth Forecasts are shown here – as the upper limit of growth likely to occur with a subway. The forecasts do not recognize changes that might happen in existing housing, office and retail areas in the corridor.

[4] Note that the difference between the Official Plan growth forecast to 2031 and the NBLC growth to 2061 provide only an approximate indicator of growth between 2031 and 2061 since a subway would likely result in greater growth between 2011 and 2031 than the OP forecast recognizes. Nor should the difference be interpreted as growth that would only result from a subway; there will be growth after 2031 with an LRT as well as with a subway.

[5] These data are also included in the Sheppard Subway Corridor data.

There are no 2031 forecasts for the subway option and the hybrid option, beyond the City Planning Official Plan forecasts. We might speculate that if the subway were built, population and employment growth would be higher than shown for the LRT Option, but not significantly so, given the relatively small difference between the City Planning forecast and the Subway–related forecast over the 30 years between 2031 and 2061. Any 'higher' growth to 2031 under the Hybrid Option would likely be even less than under the Subway Option, since this option does not provide a convenient westbound link from the Scarborough Centre to the LRT.

Since the 1980s the City's employment has grown relatively slowly compared with other GTA municipalities, especially in the office sector. Staff suggested, however, despite this relatively poor performance, recent growth provides some reason for optimism. The value of commercial and industrial permits in the City has exceeded those in the other GTA municipalities every year since 2007, something that had not happened since the 1980s.

What does this mean for transit ridership?

Table 3 summarizes ridership forecasts in the Sheppard East Corridor for 2031.

Fig. 4 presents threshold ridership for various transit technologies and identifies forecast peak hour, peak direction ridership east of Don Mills Road, associated with an LRT option (Don Mills to Morningside Avenue) and a subway option (Don Mills to Scarborough City Centre). Ridership east of Don Mills Road would not be sufficient to warrant subway technology, based on the population and employment forecasts used by City Planning in conjunction with the preparation of the City's Official Plan, assuming an easterly extension of the subway from Don Mills Road to Scarborough City Centre.

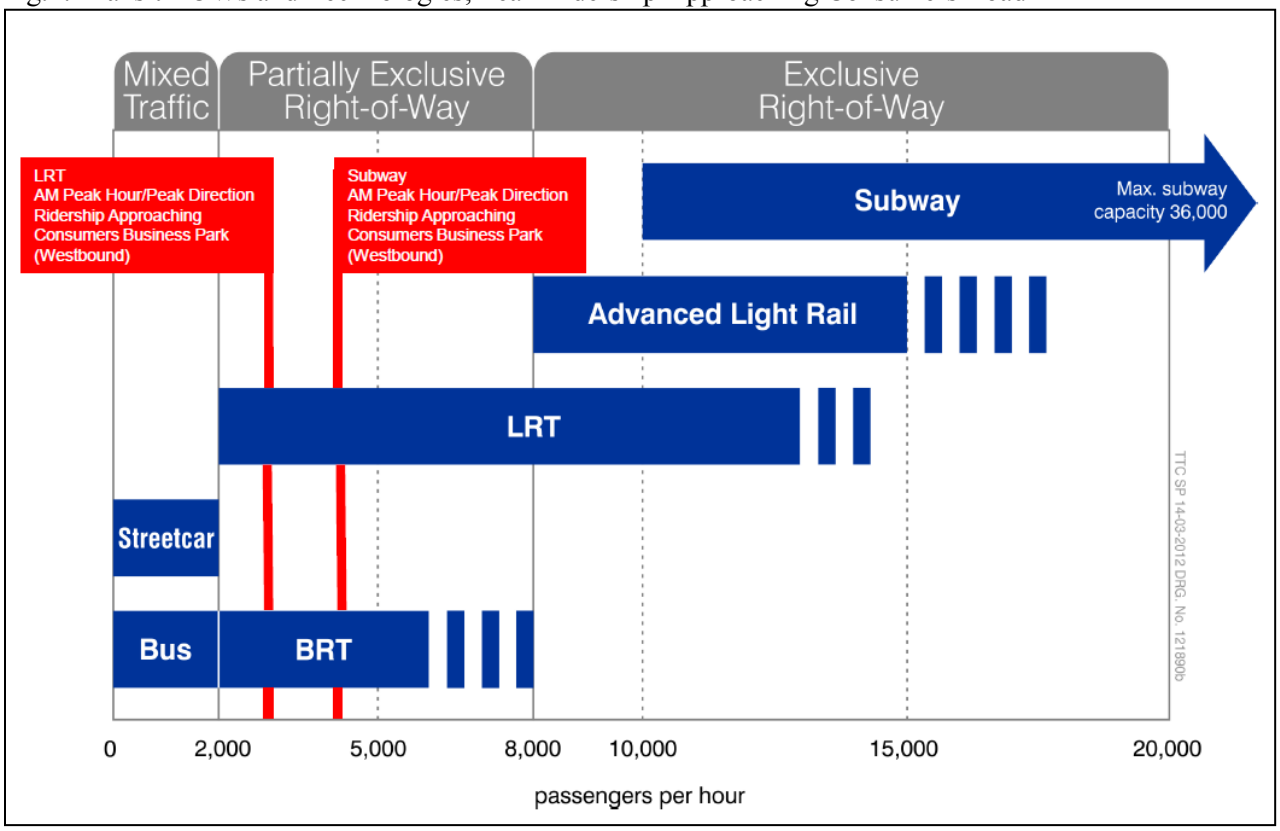
Ridership forecasts for 2061 have not been developed, and staff indicated that anything that could be done at present would be entirely speculative, because solid 2061 estimates of the essential inputs for a ridership forecast are simply not available. These include forecasts of population and employment for small areas for the whole of the City (and proximate areas of York Region); assumptions about transportation network improvements that will be in place in the GTA in 2061 (including new transit lines and road improvements); and assumptions about changes in travel behaviour that are likely by 2061, such as changes in transit modal choice.

Table 3: Sheppard East Ridership Forecast – Peak Hour, Peak Direction Passengers in 2031

Westbound AM Peak	Existing Ridership	LRT Don Mills to Morning-side[1]	Subway Yonge to Scarborough Centre[1]
Approaching Consumers Business Park	1,300	3,000	4,200
Approaching Sheppard-Yonge Station	4,500	6,000	7,800

[1] TTC Service Planning / City Planning, Sheppard East LRT EA, 2008

Fig.4: Transit ROWs and Technologies; Peak Ridership Approaching Consumers Road



The 1992 Environmental Assessment in support of the Sheppard Subway from Yonge to Scarborough Centre was based on employment levels of 93,000 in North York Centre and 65,000 in Scarborough Centre. By 2010, North York Centre had about 39,000 jobs and Scarborough Centre about 14,700. The EA had forecast a North York Centre population of 39,000 and by 2011 it had reached 48,000.

What would be needed to support a subway?

Ridership forecast models are useful for relatively short time horizons, but beyond about 25 years, their assumptions and inputs are too dependent on uncertainties. Beyond that, the City should focus on where it wants development to happen and how it can change travel behaviour to align with its long-term transit building plans.

In the end, City Planning staff concluded that in the absence of reliable long-term ridership forecasts, support for a subway at this juncture would be based on a long-term city-building vision.

The vision would necessarily take a long term perspective:

- The infrastructure would have a long life span and could potentially be the catalyst for a transformation of the area;
- Provincial and federal funding is scarce at present, but this is not the last tranche and as the economy rejuvenates, upper level funding may flow once more;

- There is increasing appetite for private sector involvement in the funding and development of the project.

Nevertheless, building the subway would have to be aligned with other city-building initiatives:

- Zoning should be in place to support the forecast development within walking distance of the subway stations – and more, if it can be supported as good planning;
- The zoning should permit or even require development that consists of a mix of uses to support two-way ridership;
- The use of Development Permits to facilitate development aligned with transit infrastructure;
- Requiring high density development at subway stations when the stations are built;
- Significant growth in employment in the Sheppard corridor, supported by a focussed strategy to bring jobs to the North York and Scarborough Centres and Consumers Road Business Park, including incentives for private developers and a City policy to put its own facilities and jobs in the Corridor.

And, of course, a sustainable funding plan would also need to be in place.

Unless these conditions can be met, a subway is not warranted, and the LRT would be a viable option to meet transit needs in the corridor over the next 20 – 30 years, and may be sufficient beyond that. City staff is concerned, however, that the LRT would under-perform as a City-building option if it doesn't link to the Scarborough Centre.

The Panel notes that Scarborough Centre is serviced by the Scarborough SRT which connects to the Bloor-Danforth subway and which is planned to be extended to connect to the Sheppard LRT at Markham Road, and the Eglinton-Scarborough Crosstown.

6. FINANCIAL CONSIDERATIONS

This section presents an overview of City Finance's presentation to the Panel for their consideration, and does not necessarily represent the views of the Panel.

In this section, City Finance staff discuss the potential options for funding the Sheppard rapid transit improvement project under the following scenarios:

- The use of conventional funding tools which require no additional Provincial approvals
- The use of funding provided to the City by the private sector in return for the right to the growth-related City revenues resulting from the project (this approach will require additional Provincial approvals)
- The use of alternative funding sources, which, for the most part, require additional Provincial approvals

The estimates used for both costs and revenues are very preliminary and are intended to provide a guide in determining which scenarios should be investigated further in more detail.

a. Cost Assumptions For Overall Plan & Total Estimated City Funding Requirements:

The estimated capital costs for the overall transit improvement program are provided below in Table 4 for each of the options. The cost amounts are based on materials provided to the Expert Panel by Metrolinx and the TTC. Table 4 also provides the total required City funding for each option.

Table 4. Estimated Transit Plan Capital Costs in $2010

Project	Revised "5 in 10" Plan	Sheppard Subway Option	Hybrid Option
Eglinton LRT	$ 4.9 B [1.]	$4.9 B [1.]	$4.9 B [1.]
Scarborough RT replacement	$1.8 B	$1.3 B [2.]	$1.8 B
Finch West LRT	$1.0 B	$1.0 B	$1.0 B
Sub Total	**$7.7 B**	**$7.2 B**	**$7.7 B**
Sheppard East	$1.0 B [3.]	$2.7 to 3.7 B [6]	$1.5 to 1.8 B [4.]
Total Cost	**$8.7 B**	**$9.9 to $10.9 B**	**$9.2 to 9.5 B**
Funding Source			
Federal Contribution	$0.3 B	$0.3 B	$0.3 B
Provincial Contribution	$8.4 B	$7.9 B [2 & 5.]	$8.4 B [5.]
City Requirement	**$0.0 B**	**$1.7 to $2.7 B**	**$0.5 to 0.8 B**
Provincial - Uncommitted		$0.5 B	

Notes:

1. Cost for Eglinton LRT will need to be reviewed for grade separation option over Black Creek and additional widening on Eglinton east surface section in order eliminate the need to take travel lanes.

2. If Sheppard subway option is selected SRT would terminate at McCowan yard – this results in Provincial savings of $0.5B
3. Sheppard East estimates should be revisited by Metrolinx and TTC since project has been stopped for a year.
4. Sheppard subway/LRT hybrid includes a contingency of 20% in the $1.8 billion upper range estimate.
5. Sunk cost for the Hybrid option and subway option may be added to the City Requirement. Known "sunk cost" for the all subway option is estimated at a $35 million for Sheppard LRT and $10.9 million for cancelling SRT between McCowan and Sheppard Avenue. These estimates do not include light rail vehicle contract impacts.
6. includes price escalation

b. Conventional Funding Impact

Under a conventional funding scenario, the City would fund its share of the Sheppard Subway using financing methods within existing legislative authority. The conventional municipal funding source for capital expenditures of this type would be debentures with a 30-year term. Development charges are subject to statutory restrictions which render them unavailable for application to this project without changes being adopted by the Province. Accordingly, no development charge offsets are modelled in this section. Potential alternate revenue tools and required statutory changes are described in the following section.

In determining the annual funding requirements, a seven year construction period has been assumed for the hybrid and subway scenarios. The cash flow pattern and price escalation assumptions for the TTIL subway cost estimate have been applied to the TTC subway estimate and to the hybrid option estimates for comparison purposes. Federal and Provincial funding is assumed to apply to Sheppard expenditures on a 1/3 basis until the $650 million Provincial and $333 million Federal funding amounts are exhausted.

The debt service cost impacts of funding the residual municipal costs through 30-year debentures are provided in Table 5. The interest rate assumptions are consistent with those recently presented to Council during capital budget deliberations. To estimate the required tax increase to fund the debt, it is assumed that a 1% residential property tax increase (and 1/3 increase to non-residential classes), would provide on average a $26 million increase in tax revenue.

Table 5. Property Tax Increases Required to Fund Project

	Subway Option		Hybrid Option	
	TTIL Cost Estimate	TTC Cost Estimate	Low	High
Total Tax increase ($26m = 1%)	4.2%	6.5%	1.2%	1.9%
Avg Annual Tax Increase (7 yrs)	0.6%	0.9%	0.2%	0.3%

As shown in Table 5, the impact of paying for the debt service associated with proceeding with the subway scenario is a total property tax increase ranging from 4.2% to 6.5% or an average annual increase over the seven-year construction period of between 0.6% to 0.9%. Under the hybrid option this impact is reduced to a total property tax increase ranging from 1.2% to 1.9% or an average annual increase over the seven-year construction period of between 0.2% to 0.3%.

The net debt and debt service ratios, which provide a measurement of the City's debt capacity, were discussed during the City's 2012 Capital Budget deliberations. The consequences of funding the subway and hybrid scenarios are shown below in Table 6 compared to the current baseline forecast.

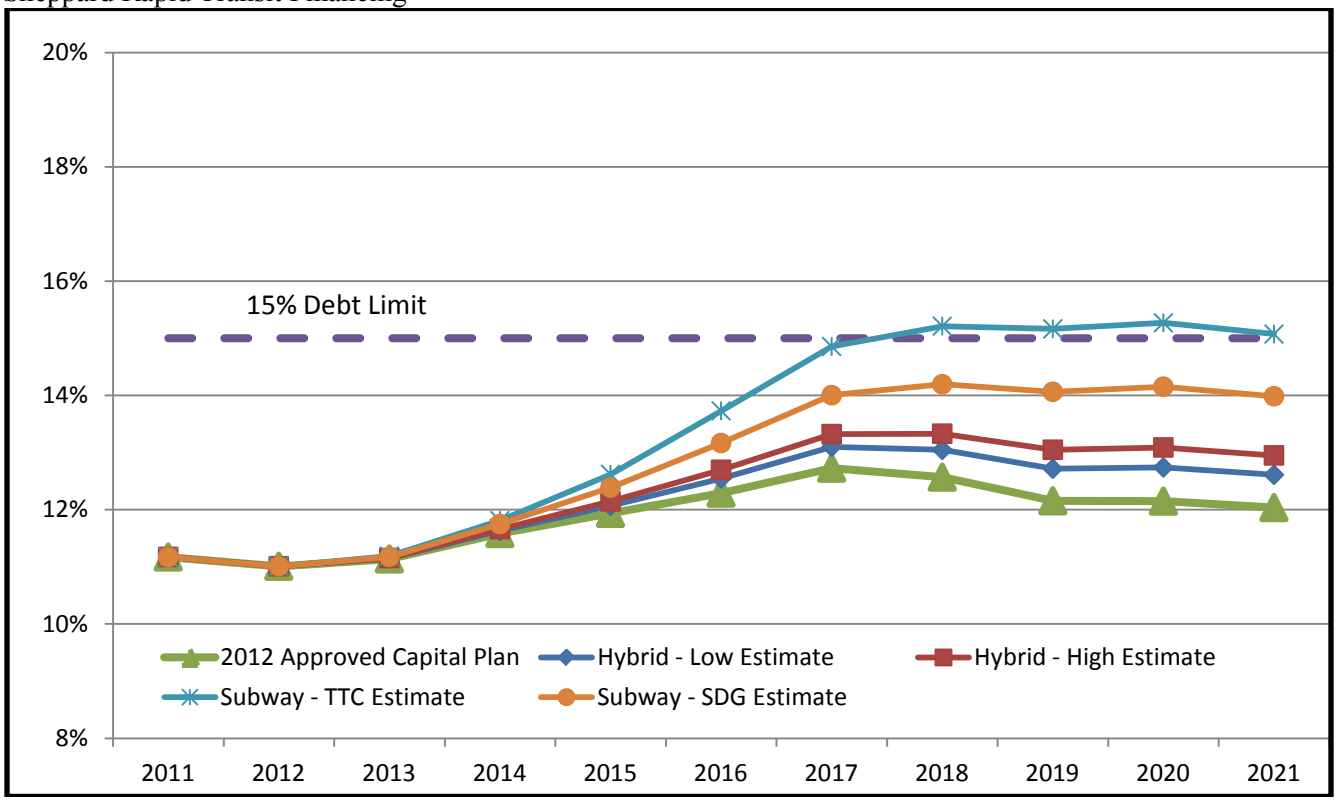
Under the subway scenario, it is projected that net debt in 2021 would increase to between $5.1 billion and $6.0 billion as compared to the current forecast of $3.5 billion. Debt service as a percentage of tax revenue (assuming 3% average increases in the tax base before the impact of the project) would increase to between 14.0% and 15.1% in 2021 versus the current forecast of 12.0%. In the TTC scenario the ratio marginally exceeds Council's self-imposed 15% debt ratio threshold in 2018.

Under the hybrid scenario, net debt in 2021 would only increase to between $3.9 billion and $4.2 billion. Debt service as a percentage of tax revenue would increase to between 12.6% and 13.0% in 2021.

Table 6. Impact of Sheppard Project Debt on City Debt Service Limits

		Subway Option		Hybrid Option	
	Baseline Forecast	TTIL Cost Estimate	TTC Cost Estimate	Low	High
Net Debt 2021	$3.5B	$5.1B	$6.0B	$3.9B	$4.2B
Debt Service Ratio 2021	12.0%	14.0%	15.1%	12.6%	13.0%

Fig. 5. City of Toronto Debt Charges as a % of Property Tax Levy Approved 2012 Capital Plan plus Sheppard Rapid Transit Financing



The increase in debt load under either the subway or hybrid option could potentially exert downward pressure on the City's credit rating, A downwards change in the City's credit rating would increase the City's costs of issuing any new debt.

The above figures do not include any allowance for potential impacts to operating and maintenance costs that may be borne by the TTC as a result of system expansion.

The financial implications associated with the subway and hybrid scenarios could be considered modest in isolation and manageable if they arise during a positive economic phase. However, such implications need to be considered and balanced in the broader context of other known transit and City infrastructure requirements, and in the context of current economic and fiscal restraint.

c. Private Funding Options

Private funding options were examined through a study that was carried out by KPMG in support of TTIL's business case development for the extension of the existing Sheppard Subway. This study was directed by TTIL and City Finance staff. The KPMG study focused primarily on options for funding the eastern extension of the Sheppard subway from Don Mills to Scarborough Centre.

The specific objectives for the study were as follows:

- To determine the total amount of capital funding that private investors would be prepared to provide in return for the right to future project-related revenue streams without any guarantee from the City that the forecast revenue timing and amounts will be realized
- To the extent that there is a shortfall in available private funding, the study was to also provide recommendations on the potential use of other forms of funding based on transit funding approaches used in other jurisdictions

Evaluation of Growth-Related Funding Tools

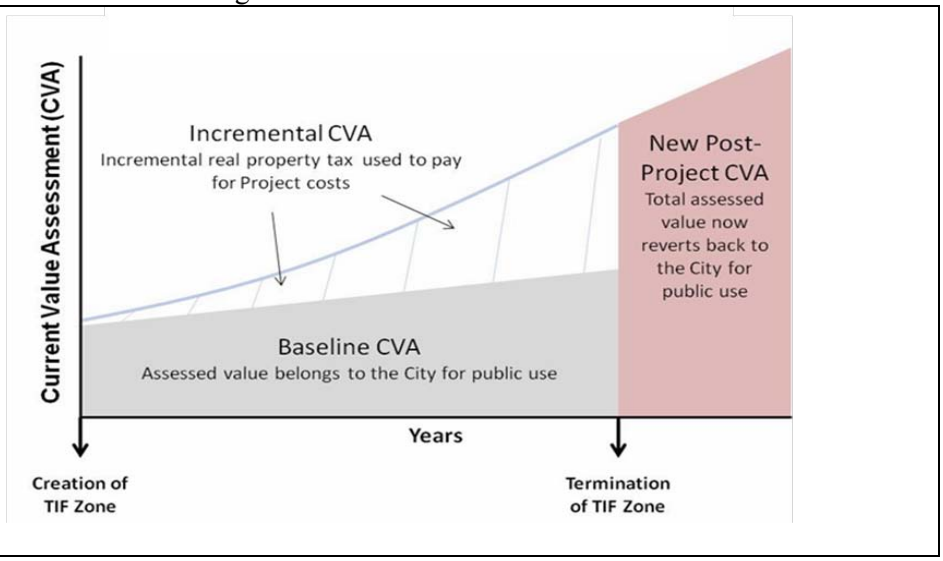
There are three principal sources of project-related revenue that can potentially be assigned to private investors:

- Tax Increment Financing (TIF)
- Development Charges (DC)
- Monetization of City Properties in Subway Corridors

Tax Increment Financing

TIF is a public financing technique used by local government jurisdictions (primarily in the United States) to fund infrastructure initiatives and economic development in designated geographic areas. TIF makes use of the future increase in tax revenue resulting from the construction of new infrastructure to fund the initial cost of that infrastructure. It is assumed that the new infrastructure will result in new tax revenue by spurring new development as well as by increasing the value of existing properties as shown in Fig. 6.

Fig.6. Tax Increment Financing



The KPMG study assumed that all of the future incremental City property tax revenues realized over the next fifty years along the proposed Eglinton-Scarborough Crosstown and Sheppard East

corridors could be applied towards funding the cost of the Sheppard East subway extension. KPMG has forecast that approximately $5.3 billion (including assumed inflation) in total incremental taxes would be raised over a fifty-year period in these corridors.

Development Charges

The KPMG study also assumed that revenues could be generated by applying an additional City-wide development charge amount specifically for the recovery of the capital costs for the Sheppard Subway East extension project. In estimating the development charge amount that could be raised, it has been assumed that this project will benefit from the same special treatment afforded by the Province to the Toronto York Spadina Subway Extension (TYSSE) project with respect to exemptions from various legislated caps on the charge amounts. Based on this assumption, the calculated additional charge on a 2-bedroom condominium unit would be $2,050, which would represent a 19% increase in the existing total charge. Over a period of fifty years, this charge amount would result in a total revenue of approximately $2.2 billion (including assumed inflation).

Monetization of TIF and DC Revenues

KPMG estimated the amounts that could be raised in year five of the project from transferring the rights to the above TIF and DC revenue streams (over a forty-five-year period) to private investors on a non-recourse basis (i.e. the City would not guarantee that any specific revenue forecast would be realized). It was assumed that bond investors would have the first claim to the future revenues for repayment of the bond principal and interest. Equity investors (that might purchase their equity investment through a concession arrangement) would have the right to any remaining residual revenues.

As indicated on Table 7, KPMG has forecast that a total amount of approximately $651 million could be raised for the Sheppard East extension through these growth-related revenues. This amount is much lower than the total nominal revenue amounts referenced above because of the time value of money and also because of the risk profiles associated with the revenue streams.

Table 7- Forecast Proceeds from Monetizing TIF and DC Revenues (Amounts Raised in Year 5 $millions)

	Bond Proceeds	Equity Financing	Total
Tax Increment Financing	156	129	285
Development Charges	292	74	366
Total	**448**	**203**	**651**

Revenues from Underutilized City Properties

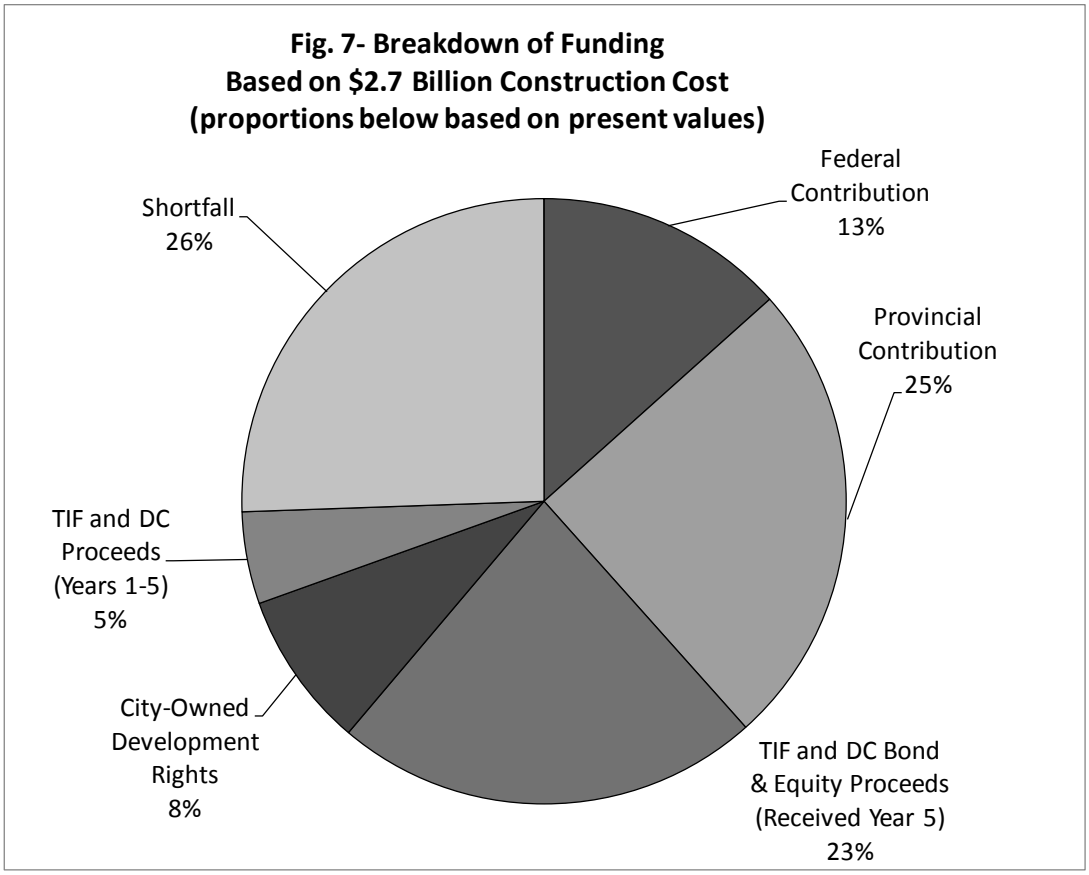
KPMG's sub-consultant, N. Barry Lyon Consultants Ltd. (NBLC) was provided with a listing of all of the City-owned properties in the Eglinton-Scarborough Crosstown and Scarborough East corridors. NBLC estimated that the underutilized properties in the corridors would have a total value of $227 million if they were sold two years after the start of the Sheppard East project.

Remaining Shortfall After Private Funding and Contributions from Government

As shown in Fig.7, KPMG's analysis indicates that the estimated growth-related revenues, together with an assumed total of $983 million in government contributions, will not be sufficient to fund the construction of the eastern extension of the subway.

A shortfall equal to approximately 26% of the capital costs would have to be funded through some other means.

Fig. 7- Breakdown of Funding Based on $2.7 Billion Construction Cost (proportions below based on present values)



Risks and Considerations with Respect to the Core Funding Model

City Finance staff have identified a number of important factors that may impact the forecast financial outcome.

Federal and Provincial Contributions Not Assured

Although the KPMG study has assumed that $983 million in contributions would be available from other levels of government, no formal commitments have been secured specifically for the Sheppard subway extension.

Capital Costs May Vary from the SDG Estimates

The KPMG study made use of capital cost estimates that were prepared for TTIL by Steer Davies Gleave (SDG), which is also acting as the cost consultant for Metrolinx. As previously noted, SDG forecast a total capital cost for the Sheppard East extension of $2011 2.4 billion ($2.7 billion with inflation).

However, the TTC has prepared a significantly higher cost estimate of 3.2 billion (2010 dollars) for this project. If the actual capital cost rises to the amount forecast by the TTC, the funding shortfall would increase substantially.

Growth-driven City servicing costs in TIF zones not accommodated

The KPMG study assumed that all of the incremental property tax revenues in the Eglinton-Scarborough Crosstown and Scarborough East corridors would be assigned to investors in return for up-front funding amounts. KPMG's TIF-related revenue forecast was not adjusted to take the following two factors into account:

- The proposed subway extensions will draw away some development that would have otherwise occurred somewhere else in Toronto
- The development in the corridors will result in an increased demand for municipal services

N. Barry Lyon Consultants Ltd., which prepared the development forecasts along the proposed transit corridors for KPMG, has estimated the portion of the forecast development along the corridors that would occur elsewhere in the City of Toronto if the proposed transit improvements are not built. Based on this estimate, only approximately 59% of the forecast incremental taxes in the corridors would represent new tax revenue to the City. Therefore, if all of the incremental taxes in the proposed corridors are assigned to investors, the City will be foregoing substantial property tax revenues that would have otherwise contributed to addressing various City budget pressures.

The portion of the development in the proposed transit corridors which does represent a net increase in the City's residential and office population will also result in a net increase in servicing costs for the City. These servicing costs have not been quantified.

Potential Credit Rating Impacts

Three credit rating agencies provide ratings for the City's debt: Moody's, Standard and Poors and DBRS. The City's debt is currently rated one to two levels below the top possible rating of AAA (i.e. AA+ to AA). The agencies have indicated that any City revenues that are obligated to a third party, whether the underlying debt is held by the City or not, would be treated as if they supported City debt. As a result, there may be negative pressure on the City's ratings depending on the funding option that is ultimately implemented. Any downgrade in the City's ratings would increase the ongoing cost of debt issued by the City for its own purposes.

Most valuable City properties in corridors already pledged to Build Toronto

There may be potential for the private sector to generate additional real-estate-related revenue on the City's properties including the proposed station locations. However, the City has already entered into transfer or turnover agreements with Build Toronto for the most valuable of the properties in the Eglinton-Scarborough and Sheppard East corridors. It is currently intended that Build Toronto's dividend payments to the City which result from the sale or redevelopment of its properties will be used as part of $700 million in new financing for TTC state-of-good-repair expenditures. If these property revenues are instead applied to fund the Sheppard East extension, other funding will have to be found to fund the TTC's state-of-good-repair needs (e.g. City debt).

Interest rates, investment market conditions may impact the amount of bond, equity financing that can be raised

By transferring the right to future growth-related revenues to private investors, the City would avoid the risk that the revenue projections might not be realized. However, the KPMG study assumed that the bond and equity proceeds will be raised in year five of the construction period in order to allow some development to first occur. The existence of some new development would give greater confidence to investors that the TIF revenue forecast can be realized.

However, waiting until year five would expose the City to the risk that financial market conditions might change. Unanticipated financial market uncertainty could increase the interest or risk-related discount rates applied by investors and reduce the proceeds raised for the project.

Lack of Existing Legal Authority

TIF

Currently the City does not have the legislative authority to pledge future incremental taxes to investors in order to generate infrastructure capital funding. The City of Toronto Act allows the City to issue revenue bonds that are secured by certain types of City revenues, which can include incremental future taxes. However, the incremental taxes must be raised according to the definition of a Tax Increment Financing Bond, which requires the participation of the Province through grants based on incremental provincial education tax revenues. As the Province has indicated that it will not participate in a TIF for the Sheppard Subway extension, there is currently insufficient legal authority for the City to issue TIF bonds.

Development Charges

In estimating the amount that could be raised from DC's, the KPMG study assumed that the Province will grant the City the following exemptions that were applied to the Toronto-York Spadina Subway project:

- Exemption from historical service cap
- Exemption from 10% statutory reduction for transit projects

Also, the study assumed that the DC amounts could be fixed, with adjustments for inflation, over a fifty year period (giving certainty to investors purchasing bonds backed by the future DC revenues). Currently, the DC Act only allows the charges to be fixed for a five-year period.

Finally, it is expected that the City would need to make a request to the Province to specifically provide for the monetization of future development charge revenues.

Potential Limits on the City's Planning Powers

KPMG has made an initial effort to estimate the way in which investors will evaluate the risk associated with the forecasted incremental tax revenues in the corridors. However, they have advised that there is still considerable uncertainty over an investor's potential response to a bond offering that relies entirely on incremental tax revenues for repayment. If investors find the level of risk unacceptable, they may request that the City agree to a restriction on future changes to the planning rules that govern the type of redevelopment which can occur in the corridors.

Alternative Funding Tools Recommended for Consideration by KPMG

In order to address the projected funding shortfall, KPMG has proposed that the City consider a range of alternative funding tools. These tools primarily consist of vehicle-related fees, sales taxes, gas taxes and payroll taxes.

KPMG's analysis of the revenue potential for these tools was very limited but they did provide the following high-level summary of the potential annual revenues (shown in Table 8 below) that could be realized from these tools. Based on KPMG's estimates, these tools could easily provide the necessary revenues required to cover the project's funding shortfall.

Table 8 – Illustrative Revenue Estimates Prepared by KPMG for Alternative Funding Tools

	Year 1 Revenues ($ millions)		Total Over 50 Years ($ millions)	
	Conservative	Aggressive	Conservative	Aggressive
Zone-based Tolls	95	136	8,237	11,860
Expressway Tolls	70	556	6,048	48,388
HOT Lanes	23	185	2,016	16,129
VKT Fees	883	1,766	76,806	153,612
Parking Tax	26	105	2,292	9,169
Parking Space Levy	91	227	7,881	19,703
Gas Tax	321	641	27,899	55,797
Passenger Vehicle Charge	84	168	731	1,461
Regional Sales Tax	251	503	21,856	43,711
Payroll Tax	340	680	29,571	59,143

Risks and Considerations with Respect to the Alternative Funding Tools

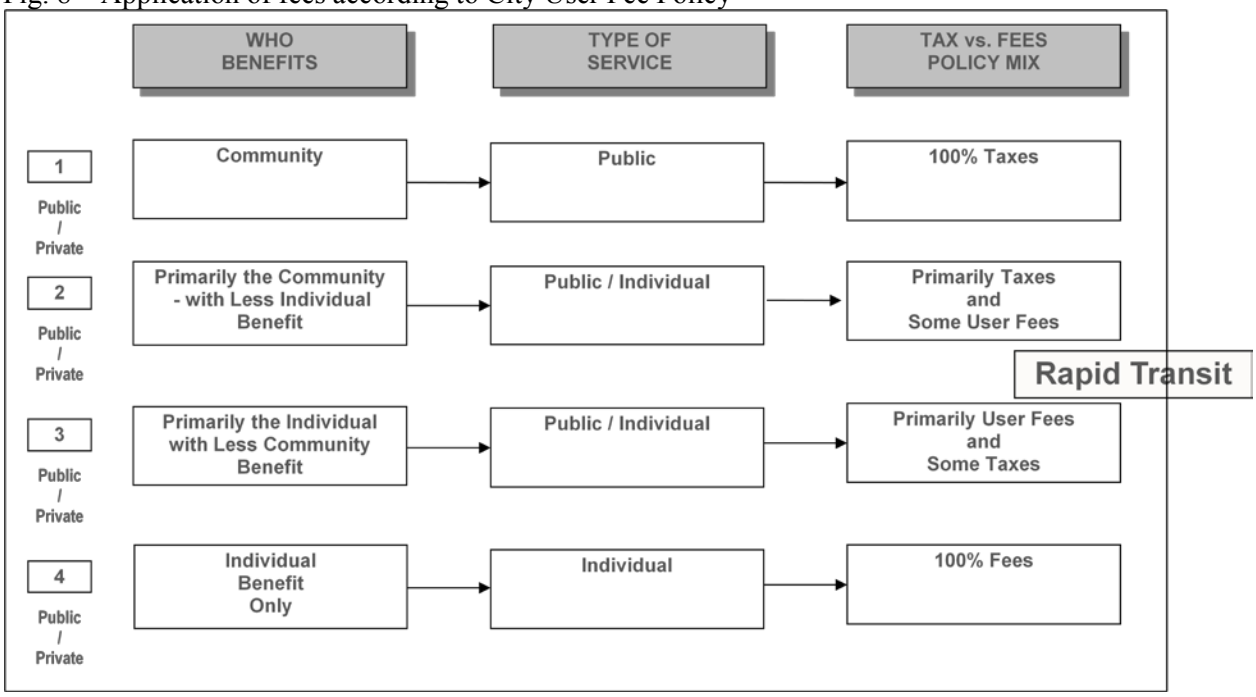
Fairness and Compliance with the City's Fee Policy

Vehicle users would be expected to realize an indirect benefit from the creation of the proposed transit subway infrastructure as it will divert commuters from the City's road network and reduce traffic congestion. Therefore, it may be reasonable to expect vehicle users to contribute towards the cost of the proposed infrastructure. However, the proposed project will also provide the following wide range of benefits to the community as a whole:

- Improved Service for Transit Users
- Increased Land Values for Nearby Property Owners
- Increased Economic Activity Because of Improved Access to Places of Employment and Retailers
- Improved Environment
- Reduced Traffic Congestion

As shown in Fig. 8, the User Fee Policy indicates that an initiative with broad community benefits should not rely heavily on fees and taxes paid by a single group.

Fig. 8 – Application of fees according to City User Fee Policy



Economic Impact

A number of the proposed tools such as road tolls, vehicle-kilometers-travelled fees, and parking levies would likely have a negative economic impact as they would effectively increase the cost of shopping or doing business in Toronto relative to the neighbouring GTA municipalities unless

they are applied across the entire region. If the fees are only implemented in Toronto, their implementation would run counter to the efforts the City has recently made to improve the City's business competitiveness by gradually reducing the relative tax burden on commercial property.

Legislative Authority

The City does not currently have the authority to implement many of the proposed alternative funding tools. Some of the legal impediments are summarized below:

Table 9 – Summary of Legal Authority for Alternative Funding Tools	
Road Pricing	All types of tolls would require additional authority. The City of Toronto Act requires regulations to allow the City to impose tolls. No regulations have been filed to date.
Parking Pricing	A parking sales tax is prohibited by the City of Toronto Act. A parking space levy may be permissible as a direct tax depending on how it is structured. If structured as a sales tax or a tax on parking lot owner's revenues or profit, or structured as an indirect tax, it would be prohibited by the City of Toronto Act.
Regional Sales Tax	The City is prohibited from imposing any form of sales tax.
Gasoline Tax	The City is prohibited from imposing taxes on the sale of gasoline.
Passenger Vehicle Charges	A tax on vehicle ownership imposed on the renewal of permit registrations is permitted.
Employer/Payroll Tax	The City is prohibited from imposing taxes on income, revenue or profits.

<u>Conclusions with Respect to the Funding Tools Discussed in the KPMG Report</u>

There may be some opportunities for the private sector to generate additional revenues that can be applied to the project. These opportunities do, however, present a number of challenges and concerns. As noted by KPMG, the growth-related funding tools will generate an insufficient level of total funding. In addition, the application of TIF along with the revenue from the sale/redevelopment of the City's properties in the corridors will result in negative impacts on the City's general revenues.

The use of the second set of revenue tools identified by KPMG may present competitiveness issues for the City's businesses if they are only implemented in Toronto and not in the other GTA municipalities.

Longer-Term Considerations

Future Transit System Expansion Needs

The proposed rapid transit improvement on Sheppard Avenue is only one of a number of major transit projects that have been identified as necessary to maintain an adequate level of mobility in Toronto. Table 10 provides a sampling of other projects that have been identified as necessary to accommodate growing transit usage. Approximately $15.7 billion of funding would have to be raised in order to carry out the projects shown in Table 10.

Table 10 – Illustrative Example of Future Rapid Transit Projects in Toronto	
Project	Estimated Cost ($ billions)
Eglinton Crosstown—Phase 2 (Jane to Pearson)	1.0
Finch West—Phase 2 (Yonge to Keele)	0.5
Downtown Relief Subway Line (east)	3.0
Downtown Relief Subway Line (west)	2.9
Yonge Subway Extension	3.1
Don Mills LRT	1.8
Jane LRT	1.5
Malvern-Scarborough LRT	1.4
Waterfront LRT	0.5
Total:	**15.7**

Sustainability of the Revenue Tools Recommended for Consideration by KPMG

KPMG has examined a number of growth-related funding tools that could provide long-term funding for transit expansion in the GTA. However, many of the challenges related to these tools would become more acute if these tools were continually applied in an effort to fund a broader transit infrastructure expansion plan.

A very broad application of TIF to fund various infrastructure improvements may, for instance, create significant budget pressures for the City as new tax revenues would be diverted to bond repayment rather than being available to provide core services to new residents. There may also be some limit to the City's ability to levy additional special development charges as these may eventually have a negative impact on the rate of development.

The broad application of the other funding tools identified by KPMG (vehicle-related fees and taxes, sales and payroll taxes) could provide effective funding for transit expansion if applied across the GTA. The application of these tools across the GTA would have the benefit of avoiding the negative economic impacts that would otherwise occur if they are only applied in Toronto and not in the other GTA municipalities.

Metrolinx Investment Funding Strategy

In 2008, Metrolinx published its "The Big Move" regional transit plan, which will involve a $50 billion expenditure on transit over the next twenty-five years. Metrolinx has indicated that it is

currently preparing an investment strategy for funding the plan and that this plan will be provided to the Province in June, 2013.

As part of this strategy, there will be an opportunity for Metrolinx and the Province to consider the possibility of implementing funding tools such as road tolls, sales taxes, gas taxes and parking taxes on a regional level so that they do not have an impact on the relative business competitiveness of individual GTA municipalities.

There will also be an opportunity to consider new direct funding agreements between the three levels of government.

Past Cost-Sharing Between the Three Levels of Government

As shown in Table 11, earlier periods of stable and consistent transit expansion have resulted from broad three-way transit funding agreements between the Federal, Provincial and municipal governments. Under these agreements the City of Toronto was required to contribute approximately 25% of the total capital cost of these projects. Recently, however, the trend has been toward ad-hoc, project-specific funding support from the other orders of governments. This has introduced considerable uncertainty in the planning and financing of large transit infrastructure initiatives.

Table 11 – TTC Capital Subsidies History

Period	Type	Description of Contribution
Pre-1996	Conditional Grants	75% of eligible costs subject to caps
1996-2000	Capital Subsidy Agreement-Term Funding	50% for new projects subject to caps
2001-2003	Funding gap, Ad-hoc Funding Programs (OTRP etc.)	No predictable funding
2004-Present	Project Specific Funding, Initiation of gas-tax sharing	1/3 each contributed by Fed, Prov through CSIF, Building Canada, Move Ontario etc. subject to caps

Using Stable, Dedicated, Region-Wide Revenue Streams for a New Funding Model

In order for transit expansion to once again continue on a more sustainable basis, a new long-term funding model needs to be based on a three-way agreement amongst the Federal, Provincial and the GTA municipal governments. Such an agreement would direct dedicated revenue streams to Metrolinx exclusively for the provision of new transit infrastructure in the GTA. City Finance staff have suggested a funding strategy set out in Table 12 for consideration.

Table 12 – Potential Long Term Funding Strategy		
Phase	Period	Funding Approach
1	1-10	Broad based regional taxes (sales, gas, CVA, DC) to support bond issues to show commitment to long-term funding strategy
2	10-25	Transition to road pricing tools to change drivers into riders, tax room may be available to support other infrastructure priorities (e.g. housing)
3	25+	Road related revenues extended to fund ongoing state of good repair

Region-Wide Sales and Gas Taxes

Table 12, suggests that the Federal and Provincial governments could make their initial contribution to this funding agreement through the application of special GTHA-wide sales and gas taxes. The uniform implementation of these taxes across the GTA would reduce the negative impacts these taxes would have on the business competitiveness of individual GTA municipalities.

These forms of broad-based taxes would also align well with the philosophy of the City's User Fee Policy in that rapid transit projects provide broadly based, economic, social and environmental benefits.

Using the Uplift in Property Values to Fund the Municipal Contribution to Transit Expansion

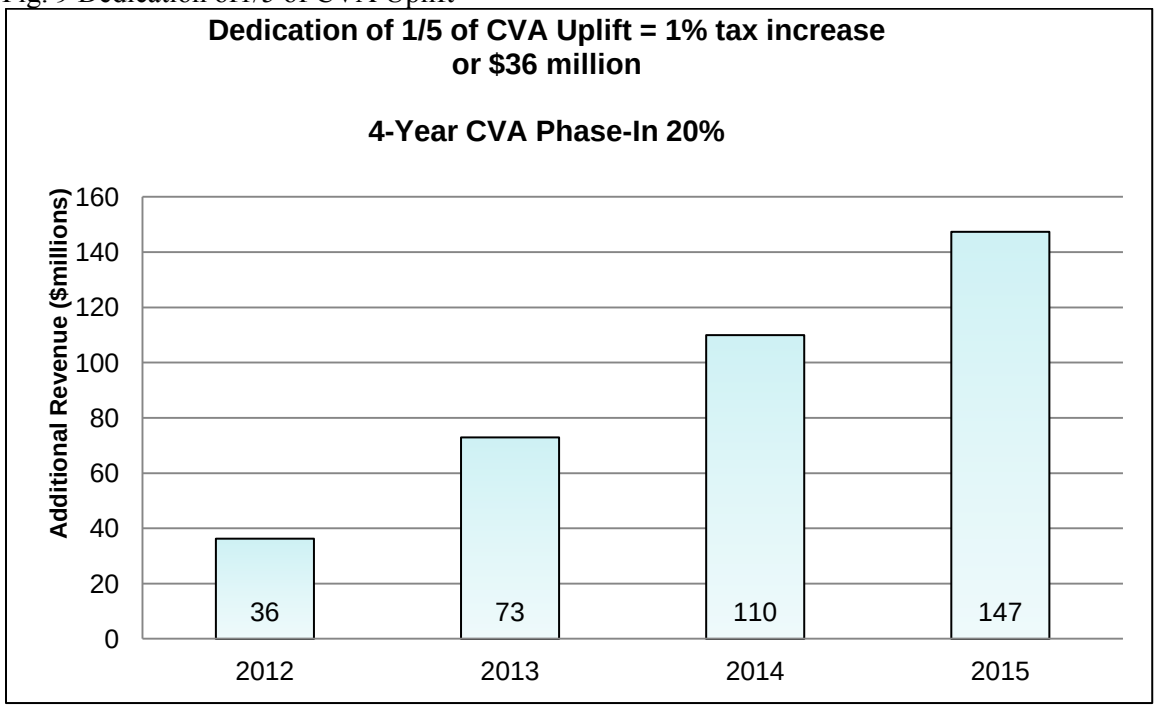
Given the broad community benefits resulting from new transit infrastructure, and given that there has been a historic precedent for municipal participation, City Finance staff have suggested that, in accordance with the City's User Fee Policy, the City's share of funding would most appropriately be made through a broad application of property taxes.

In considering the appropriate way in which to provide property-tax-related funding, one of the primary criteria is the need for stable, broad-based funding that grows in a consistent manner without reliance on tax rate increases that are subject to annual confirmation. Consistent growth in long-term funding will allow for rational project planning and it will also allow for the lowest possible project debt-servicing costs.

The need for consistent growth has led Finance staff to consider the use of a funding model which makes use of the uplift in current assessment values (CVA). Under this CVA-uplift model, the property taxation system would be modified so that it could capture a portion of the overall growth in property values assessed by the Municipal Property Assessment Corporation (MPAC) and convert this into tax revenue that could be collected by the Province and directed to Metrolinx.

As shown in the example presented in Fig. 9 below, the retention of 1/5 share of a 5% average growth in property values in each year over a four-year period would translate into an annual revenue of $147 million after four years. This amount of annual revenue would support the issuance of approximately $2.5 billion in general obligation debt that could be applied towards the funding of transit projects in Toronto.

Fig. 9 Dedication of1/5 of CVA Uplift



Initial Overall Funding Potential

As shown in Table 13, the Toronto-portion of region-wide sales and gas taxes, together with CVA uplift tax and development charge revenues have the potential to generate over $14 billion in transit funding if used to leverage debt over a thirty-year period.

Table 13 – Long-Term Funding Potential

Revenue Source	30-Year Bond Funding ($ billion)
CVA Uplift (4-Year Phase-In with Bond Issuance in Year 5)	2.5
Development Charges ($2,000/residential unit)	0.7
$0.05 Gas Tax	2.7
$0.01 Sales Tax	8.7
Total:	**14.6**

Long-Term Transition to Road Pricing Revenues

As the initial transit infrastructure projects are completed and provide a real alternative to roads, there will be a need to convert drivers into transit riders. Some form of road pricing, be it tolls, congestion charges or parking taxes, could be imposed to encourage this to happen.

Therefore, it is anticipated that the revenues realized from road pricing can begin to be used approximately 10 years after the transit expansion plan is initiated in order to replace the CVA uplift funding originally committed to the transit expansion program. As a result of this shift in

funding sources, the CVA uplift funds can instead be applied towards other City funding priorities such as, for example, community housing or state of good repair for public transit.

Conditions for Reaching a New Transit Funding Agreement

As discussed above, it is expected that a core condition for the dedication of municipal funds to Metrolinx will be that the Province and the Federal government also make binding long-term funding commitments to Metrolinx.

In addition, a strong governance and accountability regime will need to be established at Metrolinx that will provide municipalities with significant input into the agency's long-term transit planning. Metrolinx would need to demonstrate the local benefits that are being realized in return for the municipal funding contributions.

Conclusions

If Council adopts the Panel's recommendation to implement the LRT-only option for Sheppard East, there will not be any impact on the City's capital budget as the capital cost of the project will be funded by Metrolinx and the Federal government.

If Council chooses either the subway or hybrid option, additional capital funding will be required from the City. If a conventional approach is implemented to generate the necessary City funding, the City's capital contribution will be funded through the issuance of debenture debt and property tax increases will be necessary to repay the debentures.

The issuance of the necessary debentures will increase the City's net debt in 2021 by $1.6 - $2.5 billion under the Subway Option and $0.4 - $0.7 billion under the Hybrid Option.

It is estimated that an annual tax increase of 0.6% to 0.9% would be necessary over a seven-year period to generate the revenues necessary to repay the debentures under the Subway Option and an annual tax increase of 0.2% to 0.3% would be required to repay the debentures under the Hybrid option.

There may be some opportunities for the private sector to generate additional revenues that can be applied to the Sheppard East project. These opportunities do, however, present a number of challenges and concerns. As discussed above, the City currently lacks the legislative authority to implement Tax Increment Financing (TIF) and to monetize future TIF and development charge revenues. In addition, the application of TIF will result in negative impacts on the City's general revenues.

The use of the second set of revenue tools identified by KPMG, such as vehicle-related taxes and fees, may present competitiveness issues for the City's businesses if they are only implemented in Toronto and not in the other GTA municipalities. However, the investment strategy currently being developed by Metrolinx for the Big Move regional transit plan may provide the opportunity to consider the GTA-wide application of these tools.

In order to provide stable, consistent funding for a broader program of rapid transit expansion in Toronto, this report proposes consideration of a funding strategy based on commitments by each of the three orders of government to provide dedicated long-term revenue streams to Metrolinx. These dedicated revenue streams could initially be made up of regional sales and gas taxes as well as revenues generated by capturing some share of the overall increase in property assessment values ("CVA Uplift"). Once a significant amount of new transit infrastructure is complete, vehicle-related fees and taxes applied across the GTA could be used to encourage the use of this infrastructure as well as to fund the construction of further transit expansion.

Response to Additional Council Motions

At its meeting of Feb. 8, 2012, Council referred a motion from Councillor Pasternak, which incorporates a number of recommendations related to the Sheppard rapid transit project and to overall rapid transit expansion in Toronto, to the Panel for its consideration. The Panel received the following information from City staff in response to these motions:

Proposed Direction #1: "City Council request the City Manager, the Chief General Manager, Toronto Transit Commission, and the Deputy City Manager and Chief Financial Officer, in conjunction with Metrolinx, to report to the TTC and City Council on a long-term transit strategic funding solution for future transit projects and include but not be exclusive to completing the Sheppard Avenue subway from Don Mills Station to Scarborough Town Centre and from Downsview Station to Yonge and Sheppard".

Response: A potential long-term funding proposal for future transit projects has been provided in the Financial Considerations section of the Panel report. This proposal involves commitments by each of the three orders of government to provide dedicated long-term revenue streams to Metrolinx so as to allow for stable, consistent funding for new transit infrastructure.

Proposed Direction #2: "City Council direct the City Manager to report to the Executive Committee on a strategic path for disposing of non-performing real estate assets used for TTC purposes, such report to address whether revenues from such disposals could be directed to funding the Sheppard Avenue subway plan, and the feasibility of allocating 20 percent of all net proceeds from the sale of City of Toronto assets to new subway and above-grade LRT construction."

Response: As discussed in Financial Considerations section of the Panel report, City Council has already put in place a process for identifying surplus City and TTC properties that will result in the transfer of many such properties to Build Toronto for redevelopment or sale. It is currently intended that Build Toronto's dividend payments to the City which result from the sale or redevelopment of these properties will be used as part of $700 million in new financing for TTC state-of-good-repair expenditures. If these property revenues are instead applied to fund the Sheppard East extension, other funding will have to be found to fund the TTC's state-of-good-repair needs (e.g. City debt).

Proposed Direction #3: "Should savings be realized on the Eglinton Cross Town line as a result of confirmation by City Council to have a portion of the Eglinton East line constructed at or above grade, City Council request the Province of Ontario and Metrolinx to apply approximately $650 million of the savings to the extension of the Sheppard subway east from Don Mills Station to Victoria Park as identified in the KPMG report entitled "Sheppard Subway Extensions: Analysis of Funding Options for Toronto Transit Infrastructure Limited and the City of Toronto".

Response: City staff's assessment was based on the assumption that approximately $650 million of funding will be available from Metrolinx under all of the potential options (LRT, Hybrid, Subway) for Sheppard East.

Proposed Direction #4: "City Council request the Chief General Manager, Toronto Transit Commission, to report to Council on the feasibility of allocating 20% of the TTC annual capital budget to the design and building of new subway and above-grade LRT track."

Response: The TTC capital budget is dedicated to maintaining a state of good repair (SOGR) and to ridership growth on existing lines. The recent 2012 to 2021 capital plan provided for an additional $1.15 billion in SOGR funding through increased debt, development charges and $700 million in new financing from future operating budget surpluses, real estate sales, the sale of Enwave and potential new infrastructure funding from the federal and provincial government. In order to dedicate 20% of TTC's capital budget to the design and construction of new rapid transit infrastructure, spending on SOGR would have to be reduced or there would have to be an increase in the City's debt.

Proposed Direction #5: "City Council direct the Deputy City Manager and Chief Financial Officer to report to Council on the implications of dedicating not less than 50% of the City's future annual surplus to the construction of new subway or above-grade LRT construction."

Response: City Council recently re-affirmed a policy of applying 75% of any surplus to capital reserves (forming part of the $700 million in new TTC SOGR capital financing) and 25% of any surplus to underfunded operating budget reserves. Annual surpluses fluctuate from year to year and would not provide for a stable funding source for new rapid transit infrastructure.

Proposed Direction #6: "City Council affirm a goal of creating no less than one kilometre of new subway or above-grade LRT routes on an annual basis."

Response: The setting of specific goals for the creation of new transit infrastructure will depend on the successful implementation of a long-term funding plan such as the plan discussed in the Financial Considerations section of the Panel report.

Proposed Direction #7: "City Council request the Mayor to urge the Federation of Canadian Municipalities to work with the federal government on a national strategy for funding urban and regional transit."

Response: City staff would support this recommendation as part of the development of a long-term funding strategy such as the plan discussed in the Financial Considerations section of the Panel report.

Proposed Direction #8: "City Council request the Deputy City Manager and Chief Financial Officer, in consultation with the Chief General Manager, Toronto Transit Commission, to commence negotiations on a federal funding package for our next generation of urban transit."

Response: The Federal government will be a necessary partner in any long-term transit funding plan. Discussions with the Federal government should be a carried in cooperation with organizations such as the Federation of Canadian Municipalities as discussed above in Direction #7.

7. PANEL'S OPTIONS ANALYSIS

Principles and Assessment Criteria

The Panel established assessment criteria to support the decision-making process and identification of the appropriate rapid transit solution from the options presented. The criteria reflect key considerations put forward by Council, standard transit and City planning principles. The Panel concluded that the preferred transit technology option must consider the following groups of criteria:

Funding and Economic Development

- Economic Development: consider consistency with the City's Official Plan, including corridor density, population and employment growth plans. Other factors to consider include relieving the economic costs of gridlock, supporting economic uplift (i.e. job creation), in addition to associated impacts on property values in the area.

- Cost effectiveness and fiscal sustainability: consider minimizing short and long term operating and capital costs of the project including the costs of the state of good repair. The option must also consider the long term fiscal sustainability of the transit system as a whole.

- Timeframe: meet the timelines required to provide a clear response to the provincial directive.

Transit Service

- Ridership: provide the necessary capacity to meet expected ridership demand in 2031.

- Network Connectivity: provide a transit line that supports better connections with the transit system, improves overall access and network capacity.

- Level of Service: consider the door to door travel time of the end users, including out- of vehicle time (walk, wait and transfer times) in addition to in-vehicle time.

Sustainability and Social Impact

- Equity and Accessibility: contribute to improved equity and accessibility across several dimensions including gender, income, race, age, and ability, in order to improve:
    - social cohesion and access to opportunity;
    - transit safety and mobility;
    - end user affordability (e.g. fares);
    - equity in access to rapid transit across the city

- Environmental Sustainability: support long term environmental sustainability objectives, including addressing resource and environmental challenges such as climate change and higher gas prices, while also supporting healthy and vibrant communities.

- Community impact: consider the impact on the local community taking into account:
    - construction timelines
    - community acceptance of local intensification,
    - impacts on housing affordability
    - other impacts on residents and businesses (i.e. traffic, place-making potential, etc)

Methodology:

The Panel assessed each option according to the nine criteria and scored the options on a scale of 1 to 5 (1= lowest, 5=highest). The Panel also weighted each criteria group. The option with the highest score provides the best transit option for the Sheppard Avenue East Corridor based on the assessment criteria determined by the Panel.

The *Funding and Economic Development* criteria were identified as critical in determining the best transit technology option. The Panel felt that it was important to recognize the contribution transit investment makes in supporting economic development and City building, while balancing the need to provide a transit option that can be realized immediately, to meet the needs of the community, and be financially supported into the future. The *Transit Service* criteria, was determined to be the next most important group, looking at ridership demand, level of service and interconnections with the overall transit system. Table 14 below identifies the weighting assigned to each criteria group.

Table.14 Criteria Grouping and Weighting

Criteria Group	Weighting
Funding and Economic Development (Economic Development, Cost Effectiveness and Fiscal Sustainability, Timeframe)	3x
Transit Service (Ridership, Network Connectivity, Level of Service)	2x
Sustainability and Social Impact (Equity and Accessibility, Environmental Sustainability, Community Impact)	1.5x

The weighted score for each option was normalized to provide a final score out of 100. Table 15 summarizes the final scores for each option by criteria. Based on this analysis the Panel determined Option A, LRT, provides the best transit solution for Sheppard Avenue East.

Table.15 Summary of Panel Scores

Criteria	**Option A:** LRT: Don Mills to Morningside	**Option B:** Subway: Don Mills to Scarborough Centre	**Option C:** Subway: Don Mills to Victoria Park LRT: Victoria Park to Morning side
Funding and Economic Development			
Economic development	3.71	4.14	3.57
Cost effectiveness and fiscal sustainability	4.43	2.14	2.57
Timeframe	5.00	1.86	2.29
Transit Service			
Ridership	4.57	2.29	2.71
Network connectivity	4.71	3.14	3.29
Level of service	4.14	3.57	3.29
Sustainability and Social Impact			
Equity and accessibility	4.57	3.14	3.14
Environmental sustainability	4.14	3.57	3.43
Community impact	3.86	3.57	2.86
Total Unweighted Score (out of 45)	39.14	27.43	27.14
Total Weighted Score (out of 100)	87.3	59.3	59.5

Funding and Economic Development

1. Economic Development

Definition:

The transit option must consider consistency with the City's Official Plan, including corridor density, population and employment growth plans. Other factors to consider include relieving the economic costs of gridlock, supporting economic uplift (i.e. job creation), in addition to associated impacts on property values in the area

Key Considerations:

City Planning Growth Forecast to 2031

Population growth will not generate sufficient ridership to sustain option B, requiring significant concentrated employment growth at North York, and Scarborough Centres, Consumers Business Park and Agincourt Secondary Plan Area beyond the 2031 forecast levels (see Table 2).
City Planning does not have 2061 forecast data for population and employment growth.
There are a number of issues with 50 year projections, particularly employment growth projections, which are subject to various inputs that are highly speculative and unreliable.

Economic Uplift

Table 16: Land Value Premium: North American Research

Technology	Bus	BRT	LRT At Grade	LRT: Grade Separated	Subway	GO Rail
Stations Impact Area (m)	100	400	500	600	800	800
Premium %						
Residential	1%- 2%	2%-4%	10%-25%	15%-30%	20%-50%	20%-50%
Office	1%- 2%	2%-4%	10%-50%	15%-50%	20%-50%	20%-50%
Industrial	0%- 1%	0%- 2%	1%- 2%	1%- 2%	5%- 5%	5%- 5%
Source: Metrolinx 2009: Yonge North Subway Extension Benefits Case Analysis						

Economic Development

TTIL presented data from the American Public Transportation Association (APTA) and Ottawa Light Rail Benefits Case comparing the economic development opportunities associated with subway and LRT investments:

> *"The investment in Subway is predicted to provide a total economic impact of $3.8 billion compared to $1.6 billion for LRT, generate more than 22,800 person-years of direct and indirect employment compared to 9,500 for LRT, and increase business sales by $7.2 billion compared to $3.0 billion for LRT."* (TTIL, 2012, p.15)

Option Analysis and Rationale

Option B, Subway, received a higher score in terms of meeting economic development criteria, with the LRT solution (option A) ranking a close second. Key considerations included 2031 employment and population growth data, in addition to information presented to the Panel by TTIL on economic uplift and contributions to employment, business sales and economic output.

There is potential for different types of economic development opportunity with respect to Options A and B, taking into consideration the different route alignments of the subway and LRT options presented. Importantly, in all three scenarios, Consumers Road Business Park, a key employment zone in the Sheppard Corridor will be served by rapid transit.

Another concern is balancing the desirable economic uplift and spinoff benefits of Option B, with the required employment and population growth in the Sheppard Avenue East corridor, to justify the higher capital investment for a subway. The reliability of the fifty year projection by NBLC is a point of concern, given that past growth projections (i.e. 1992 Sheppard Subway Environmental Assessment) for the

The 1992 Environmental Assessment in support *of the Sheppard Subway from Yonge to Scarborough Centre was based on employment levels of 93,000 in North York Centre and 65,000 in Scarborough Centre. By 2010, North York Centre had about 39,000 jobs and Scarborough Centre about 14,700. The EA had forecast a North York Centre population of 39,000 and by 2011 it had reached 48,000. (Source: City Planning)*

Sheppard Corridor have not been realized. Based on the 2031data, the LRT is a viable option to meet the transit needs of the area. It is also worth noting that investment in LRT will also generate economic uplift, job creation and economic development opportunities.

Finally, the Panel would like to emphasize the importance of integrating transit planning (regardless of option selected) with other key City Building initiatives including economic development and land use planning to ensure that the necessary population and employment growth is achieved, in addition to key City building objectives (see section 8).

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	3.71	4.14	3.57

2. Cost Effectiveness and Fiscal Sustainability

Definition: The best transit option must consider minimizing short and long term operating and capital costs of the project, including the costs of the state of good repair. The option must also consider the long term fiscal sustainability of the transit system as a whole.

Key Considerations:

Table. 17 Cost Effectiveness Analysis

	Option A: LRT	Option B: Subway	Option C: Hybrid	Sheppard LRT & Finch LRT (combined)
Annual New Riders (millions)	7.7	12.2	8.1	14.0
Capital Cost ($billions)	1.0	2.7 to 3.7	1.5 to 1.8	1.9
Cost/New Rider ($)	130	221 to 303	185 to 222	136
Source: TTC Submission to Transit Expert Panel, Feb. 17/12 revised to include option C				

Option Analysis and Rationale:

Cost per New Rider

LRT is the most cost effective transit option presented. In general, there was consensus around the need to maximize the current funding envelope available to serve the greatest number of transit riders. An analysis of the capital investment required for each option on a per rider basis, identified the Subway and Hybrid options to be significantly less cost effective than the LRT solution (see Table 17). The cost per new rider is potentially two times higher under the subway option compared to LRT.

Attracting New Riders

Investing $1.9B in Light Rail Transit (LRT) on Sheppard and Finch will generate more new riders (approximately 14 million combined) than investing in the Sheppard Subway option, resulting in a lower capital cost per rider. The investment of LRT in several neighbourhoods generates more new riders as opposed to a more costly investment in a subway for only Sheppard Avenue East. The maximization of LRT technology across the City is more efficient than Option B for increasing new ridership.

Equity in Transit Investment

From an equity perspective, there is also concern regarding the unsecured funding ($1.7 to 2.7B) required to finance the subway option (option B), and the impact on the City's ability to finance future transit expansion projects in other underserved areas of Toronto (see section 6). All areas of the city need adequate, reliable transit service, and the use of any financial tool to address the financing gap, for Options B or C, needs to be considered through a city wide equity lens.

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	4.43	2.14	2.57

3. Timeframe

Definition: The transit option must meet the timelines required to provide a clear response to the provincial directive.

Key Considerations:

On January 31, 2012, Metrolinx sent a letter to Mayor Rob Ford and TTC Chair Karen Stintz requesting Toronto City Council to come to a decision "*at the earliest possible date consistent with your processes*", regarding the investment of $8.4B in rapid transit in Toronto.

Option Analysis and Rationale:

Option A, LRT, is the best transit option for meeting the Province's request to Council to provide clear direction on transit expansion in the Sheppard Avenue East Corridor. The LRT option has secured funding, a completed environmental assessment and builds on previous planning work to provide a more immediate rapid transit solution to an underserved area of the City. Options B and C, however, require additional unidentified funding sources in order to proceed. The Panel is

concerned how this funding gap will be addressed, and the timeliness of securing alternative funding sources that will not impede the City's ability to invest in future transit expansion.

The merits of pursuing private sector investment for future transit expansion projects, is recognized by the Panel as worthy of further analysis and consideration by City Council (see section 6). Acquiring the necessary legislative authorities to utilize tools such as road tolls, TIFs and other private funding options, however, is not timely for the Sheppard Avenue East project (based on Provincial timelines).

The Panel feels strongly that city building requires all three orders of government, and the current opportunity to invest $8.4 B in Toronto's transit infrastructure can no longer be delayed. The opportunity to create jobs, enhance the liveability of the region and build for future economic success must not be passed by.

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	5.00	1.86	2.29

Transit Service

4. Ridership

Definition: The transit option must provide the necessary capacity to meet expected ridership demand in 2031.

Key Considerations:

The Panel considered ridership forecasts for 2031, recognizing that solid estimates for 2061 are unavailable and would be highly speculative (see City Planning: Official Plan Considerations). The peak period ridership levels forecasted to 2031 for LRT is 3000 peak hour, peak direction passengers, while the ridership for the subway is expected to be 4200 peak hour, peak direction passengers (approaching Consumers Road). The 2031 forecast for the proposed extension of the line east of Don Mills Station indicates that Bus/ Bus Rapid Transit (BRT) and LRT technologies support ridership demand (see figure 4)

Option Analysis and Rationale:

The Panel's preferred option is the LRT solution, as it provides the necessary capacity to serve the needs of current and future transit riders. The ridership forecast for 2031 indicates that the demand for rapid transit does not approach the level required to support a subway.

The Panel also considered that the subway option on Sheppard Avenue East will generate 12.2 million new riders annually, compared to 7.7 million new riders annually under the LRT scenario (Sheppard Avenue East only). However, as discussed under *'Cost Effectiveness and Fiscal Sustainability'*, factoring the cost to build the new transit line into the equation, the subway option is the least cost effective solution to increase the number of transit riders in the city. At a cost of $221 to $303 per new rider under the subway option, compared to $130 per new rider under the LRT option, investment in a subway is less cost effective in terms of new ridership.

More new riders can be achieved by investing in other LRT lines (such as those outlined in Table 10) instead of spending additional dollars for a subway on Sheppard Avenue East.

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	4.57	2.29	2.71

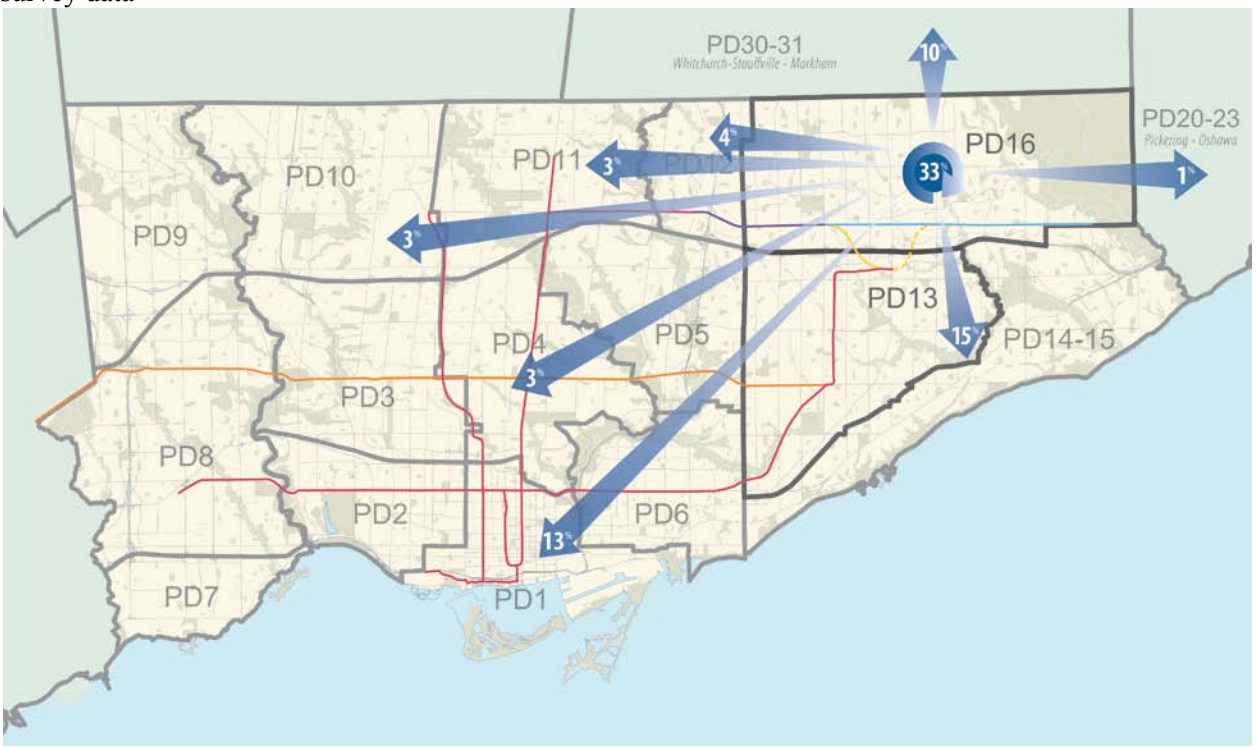
5. Network Connectivity

Definition: The transit option must provide a transit line that supports better connections with the transit system, improves overall access and network capacity.

Key Considerations:

Data from the Transportation Tomorrow Survey (TTS) provided key information on the travel patterns of local residents. The following map illustrates travel patterns from 2006 observed data in planning district 16, where Sheppard Avenue East is located.

Fig.10: Scarborough North of 401 (Planning District 16) Trip Distribution (% of AM Peak Trips), 2006 survey data



Source: Professor Eric Miller's Presentation on February 24, 2012 (2006 TTS Survey data)

Comparison of 2006 Observed to 2031 Forecast Travel Behaviour

The following table provides a comparison of 2006 observed behaviour to 2031 forecasted behaviour for Scarborough. The table indicates that the proportion of forecasted Scarborough intra-zonal trips is consistent with observed 2006 travel behaviour. Access to Downtown is also an important destination.

Table 18. Scarborough North of 401, AM-Peak Period Trip Distribution (PD16)

	2006 Observed	Sheppard Subway 2031 Forecast	Sheppard LRT 2031 Forecast
Within District	33%	33%	33%
To Rest of Scarborough (PD13/14/15)	15%	14%	14%
To Markham/Whitchurch Stouffville	10%	11%	11%
To Pickering, Ajax, Whitby, Oshawa	1%	1%	1%
To Downtown	13%	14%	14%
To Midtown	3%	3%	3%
To Central North York	3%	3%	3%
To Downsview/York University (western	3%	3%	3%

NY)			
To Consumers and environs (eastern NY)	4%	5%	5%

Source: City Planning Presentation, March 2 2012. Commentary on Prof. Eric Miller's Presentation

Option Analysis and Rationale

Travel within Scarborough

The data for Planning District 16 (Scarborough North of the 401), indicates approximately a third of all trips are taken within the district, according to 2006 and forecasted 2031 data. An analysis of trips within Planning District 13, Central Scarborough, also indicate approximately 30% of all trips are also within the district. The LRT and hybrid options (A and C) provide more access points within Scarborough, both providing 25 stations and 13 km of transit across the Sheppard Avenue East Corridor. In contrast, the subway option (option B) provides 7 additional stations and 8km of transit within the area. The greater geographic coverage and access points of the LRT option support the local transit needs of residents and contributed to the Panel's higher ranking of option A.

North and South Connections

The continuous loop provided by the subway option, connecting the existing Sheppard Line to the Scarborough RT was recognized as a distinct benefit of the subway option. The drawback of the subway option route alignment is the loss of rapid transit access to the most eastern section of Sheppard Avenue East, beyond Kennedy Road.

The shortcoming of the LRT option in terms of providing direct access to Scarborough Centre, is rectified by future plans to extend the Scarborough RT to Sheppard Avenue at Markham Road, one of the stations on the LRT line. There is an interchange between the Sheppard LRT and the future Scarborough RT extension and this provides a north-south connection and direct access to the Scarborough Centre from Sheppard Avenue, east of Markham Road. Extension of the Scarborough RT will not proceed under the subway option.

Building a Transit Network

The proposed LRT line (option A) provides greater east west connectivity across Sheppard and provides a backbone to support future north-south lines that will improve the transit network within Scarborough. The LRT has longer run potential for building a network that supports the travel demand and origin-destination flows of transit residents in the area. Finally, the LRT fits into the Metrolinx's "The Big Move" and will support movement towards a transit network for Scarborough, the city and the region, that includes north south and east west connections.

In Section 8 of the report, the Panel outlines the need to look beyond the immediate decision regarding Sheppard Avenue and move towards planning a comprehensive network of transit that best balances coverage, connectivity, frequency and speed.

Result

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	4.71	3.14	3.29

6. Level of Service

Definition:

The transit option must consider the door to door travel time of the end users, including out-of vehicle time (walk, wait and transfer times) in addition to in-vehicle time.

Key Considerations:

In determining the option that provides the best level of service, two key concepts were considered that determine the door to door travel time of end users.

In-vehicle-travel time (IVTT) looks at vehicle speed, and the travel time incurred while in transit. Given the greater distance between station stops, subways reach higher travel speeds than LRT.

Another factor to consider in trip making decisions is the out-of-vehicle travel time (OVTT). Out-of-vehicle travel time constitutes a significant portion of transit travel times, and consists of the walking and driving time to access transit, wait time and transfer times. Research has shown that OVTT is weighted more heavily by trip makers than in-vehicle travel time (usually two or more times higher), in determining their preferred mode.

Option Analysis and Rationale:

Walk Access

LRT (option A), provides a greater level of service when taking into consideration the importance of out-of-vehicle travel time (OVTT). While the subway option provides faster in-vehicle-travel-time, the station stops are further apart in Option B and require longer walk and driving times for transit riders to access the system. It is important to consider the door-to-door trip of transit riders, and the portions of the trip (i.e. access/egress walk times, wait/transfer times) that more strongly influence decisions on the preferred transportation mode. Individuals consider the time it takes to complete the full trip, as opposed to how fast the vehicle travels.

Frequency and Reliability

Research has shown that people use transit when it is accessible (within easy walking or driving distance), frequent, reliable and takes them to their destination in reasonable time. The subway option provides a higher level of reliability. However, the LRT provides a sufficient level of reliability to meet the needs of the area. The investment in LRT or subway will provide an increased level of service to the Sheppard Avenue East area, as both operate on designated right of ways, an improvement over the current bus system that shares the road. All three options presented would improve frequency and reliability of transit service to Scarborough residents.

Improving Walkability

At present the Sheppard Avenue corridor is auto-dominated and there is a need to consider pathways that improve pedestrian access to any new transit line (i.e. LRT or subway). Improvements in urban form and walkability will be necessary, in addition to considering new innovative ways to provide feeders to the transit line.[3]

The LRT option will provide an opportunity to improve streetscaping along the corridor, improve pedestrian life and walkability of the neighbourhood. Integrating transit investment with sound planning is critical.

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	4.14	3.57	3.29

Sustainability and Social Impact

7. Equity and Accessibility

Definition:
The transit option must contribute to improved equity and accessibility across several dimensions including gender, income, race, age, and ability, in order to improve:

- social cohesion and access to opportunity;
- transit safety and mobility;
- end user affordability (e.g. fares);
- equity in access to rapid transit across the City

Key Considerations:

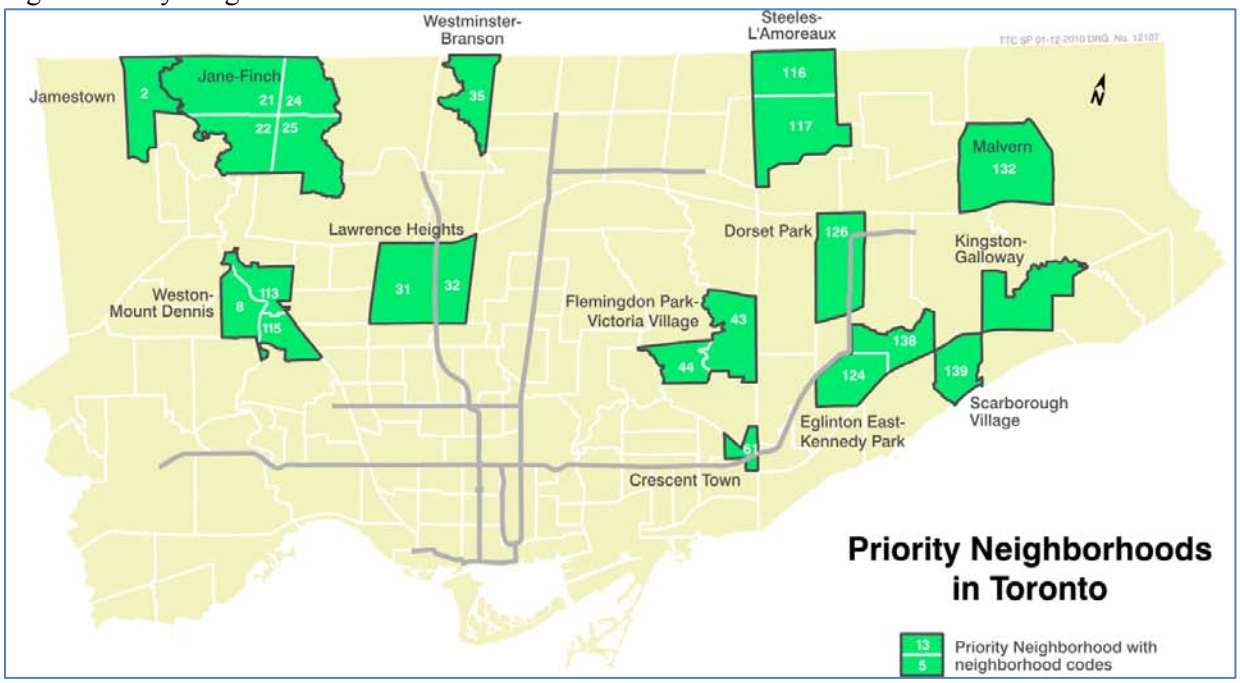
The TTC ridership profile indicates that nearly 60 percent of the system's users are female, 41 percent do not have a driver's license and 34 percent have no vehicle in the household. Also,

[3] These might include "mini-bus" services which connect neighbourhoods to transit stops or stations

66% of current transit users are employed, 32% are students and 43% live in an apartment or condominium.

The route alignments for each option will provide different access points for commuters residing in the Sheppard Avenue East corridor, and provide different levels of connectivity to neighbourhoods within the area (see figures 1 to 3).

Fig.11 Priority Neighbourhoods in Toronto[4]



Option Analysis and Rationale:

Neighbourhood Access

The Panel's preferred option for delivering greater neighbourhood access is the LRT option. The LRT solution provides 24 station stops providing rapid transit access to key segments of the Sheppard Avenue East corridor that are currently underserved.

Under Option A and C, the LRT route alignment will provide access to Sheppard Avenue East extending to Morningside Road. Future north-south rapid transit access to Malvern with connection to Scarborough Centre will be achieved once the Metrolinx planned extension of the S RT connects with the Sheppard East LRT line.

Under the subway option, the SRT extension will not proceed. The route alignment of the subway does not provide access to residents east of Kennedy Road on Sheppard Ave, and will not deliver rapid transit to Malvern, one of the city's Neighbourhood Improvement Areas

[4]Priority Neighbourhoods are now referred to as Neighbourhood Improvement Areas, http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.CD10.3

(formerly known as a Priority Neigbourhood). Further, another key corridor of deep poverty that is not served under the subway option is Birchmount Road, which is provided a station stop under the LRT option. The Panel feels strongly that the LRT option provides greater access to residents who require and rely on transit the most, to access employment and other economic and social opportunities in the city and region.

Safety

The Panel also considered the demographic composition of transit riders, and the need to ensure that transit infrastructure is built with safety considerations in mind. The LRT solution will deliver streetscape improvements and frequency of stops which provide for improved pedestrian life along the corridor and improved safety for women (approximately 60% of TTC users) travelling by public transit.

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	4.57	3.14	3.14

8. Environmental Sustainability

Definition:

The transit option must support long-term environmental sustainability objectives, including addressing resource and environmental challenges such as climate change and higher gas prices, while also supporting healthy and vibrant communities.

Key Considerations:

Mixed-use, higher density, more walkable and bikeable neighbourhoods are an essential component in promoting healthier less auto-dependant lifestyles. Moving towards this type of urban form in Scarborough will be difficult under any option being considered.

Table 19. Environmental Sustainability (TTC Data)

	Option A: LRT	**Option B: Subway**	**Option C: Hybrid**
Annual New Riders (M)	7.7	12.2	8.1
Annual Car Trips Diverted (M)	6.4	10.1	6.7
Annual Reduction in GHG's (tonnes)	25.0	39.6	26.3
Capital Cost ($B)	1.0	3.7	1.8
Annual Car Trips Diverted per	6.4	2.7	3.7

Billion Capital Cost			
Annual GHG Reduction per Billion in Capital Cost	25.0	10.7	14.6

Option Analysis and Rationale:

The Panel considered the opportunity to build more sustainable neighbourhoods, reduce Green House Gases (GHG), and divert the number of car trips, when selecting the LRT option as the preferred transit mode.

The Panel considered the best approach for maximizing GHG reduction with the available funding for transit expansion. Implementing a subway on Sheppard Avenue achieves greater GHG reductions, when viewed in isolation from other transit investment opportunities that are foregone. GHG reduction per dollar of transit investment is higher under an LRT solution (25.0 tonnes compared to 10.7 tonnes per billion in capital cost for a subway) when you consider the opportunity to invest in other LRT lines, such as Finch. This means that for a fixed amount of investment in transit, greater GHG reductions can be achieved through investment in a more extensive LRT network relative to investing this same amount in the Sheppard East subway.

The Panel also recognizes that any option selected requires planning provisions to capitalize on the significant transit investment, and support the development of a more sustainable urban form along the Sheppard Avenue East corridor. On-street LRT has greater potential for facilitating more walkable neighbourhoods than the subway option and has been proven as a neighbourhood-building technology in cities around the world.

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	4.14	3.57	3.43

9. Community Impact

Definition:
The transit option must consider the impact on the local community taking into account:
- construction timelines
- community acceptance of local intensification,
- impacts to housing affordability
- other impacts on residents and businesses (i.e. traffic, place-making potential, etc)

Key Considerations:

Section 5 of the report, Official Plan Considerations outlines the need for high density development at subway stations if the subway is built. A key consideration with respect to Option B is to understand whether there will be community acceptance of local intensification.

Option Analysis and Rationale:

The LRT and subway option were ranked closely with respect to community impact criteria. Option A (LRT) was selected as the preferred option, in part due to recognition that implementation and construction timelines to deliver the LRT to the community is shorter.

Construction Timelines

Disruption to the community during the construction period is of particular concern to businesses and residents of the area. Development and implementation of a strategy to mitigate disruption and disruption impacts to the community should be considered. Such a strategy should build on the lessons learned from past projects, and should be developed in consultation with the community and local BIA. The LRT has a shorter construction timeline than the subway option.

Impact of Further Delay

The LRT solution can be delivered more quickly to the community than Options B or C, providing needed rapid transit to serve a population that would benefit from improved access to employment opportunities and connectivity to the city as a whole. The Panel is concerned that further delay will result in further social and economic costs, if rapid transit is delayed any longer.

Acceptance of Local Intensification

Another issue the Panel discussed is the community acceptance of higher densities within the Sheppard Avenue East corridor. As discussed in the City Planning presentation (see City Planning: Official Plan Considerations) considerable intensification around subway stations is required to justify the large investment in a subway. Such high density development may not be accepted by local residents.

Communication and Community Outreach

The current debate around LRT or subway needs to be lifted up to focus on what is the best transit technology to serve the needs of the community, and to more effectively engage the residents in discussions that impact their daily lives. Toronto is a diverse city, with different neighbourhoods and varying transit needs. There is a need to improve communication and general knowledge on transit-related issues that support meaningful public discussion on the best ways to move the transit system forward.

Results

	OPTION A: LRT	OPTION B: SUBWAY	OPTION C: HYBRID
Avg. Score	3.86	3.57	2.86

8. BEYOND SHEPPARD: A SUSTAINABLE TRANSIT FUTURE FOR TORONTO

As the Panel examined the options for Sheppard, it became clear that the City must look beyond the Sheppard corridor and the current '5 in 10' plan for transit expansion in Toronto. The City should have a comprehensive plan for transit expansion and a sustainable plan for funding these new transit lines.

A Comprehensive Transit Plan

As Toronto continues to grow, there will be a continuing need to improve the current transit system and to build new lines beyond those now under construction. A comprehensive transit plan is required to guide this future expansion. The following considerations should guide the development and contents of such a plan:

- The transit plan must be consistent with Metrolinx's Big Move plan for the GTA-Hamilton. The Big Move shows a series of new transit lines in Toronto, including those in the current '5 in 10' plan. There is a 15 year plan and a 25-year plan. Other proposed lines in the 15-year plan include:
    - Jane St from Bloor to Vaughan
    - Don Mills from Highway 7 to Danforth
    - Connections to Mississauga from the Bloor Subway and from the Eglinton LRT
    - From Scarborough Centre to Downtown Pickering
    - A Lakeshore West rapid transit line from Union Station to Port Credit.

- The transit plan must align planning, economic development, and the transit system as an overarching exercise in city-building, including:
    - the continuation of planning policies that encourage population growth and employment in areas well served by transit (much of the City's new development is happening close to higher order transit lines);
    - a strategy to bring jobs to areas served by transit;
    - the use of transit as a catalyst for transformation of areas of the City.

- Development of the transit plan should be integrated with the 5-Year Review of the Official Plan that is now underway.
    - The 5-Year Review, which is required by the Planning Act, was initiated through a report to Council in May 2011.
    - So far, an initial round of public consultations has been held and major research and analysis is now ongoing.
    - A specific direction to examine a transit plan for the City would provide a clear focus for some of this work and particularly for the review of the Plan's transportation policies, although additional resources may be required for this.
    - As part of the review, City staff have been working with Metrolinx to align the Official Plan with Metrolinx's plan and its associated policies.

- Ultimately, the transit plan should be a part of the City's Official Plan, so that it has the Official Plan's strength as a statutory document behind it.

- The transit plan should address the following transit system considerations:
    - We must get back to thinking about a comprehensive, hierarchical network that best balances coverage, connectivity, frequency and speed.
    - A hierarchical network includes both high capacity trunk lines and feeder services that provide long-distance line-haul and local accessibility.
    - The Yonge Subway is at capacity: we need to very carefully consider how new lines connect to it (if at all).
    - Transit plans must consider the ridership demand for better north-south connection, in order to provide access to employment areas.
    - All technology options should be on the table, including bus rapid transit.

- The assessment criteria used by the Panel (see previous section) should be used to establish the plan's priorities for new transit lines and how they are funded.
    - They provide a comprehensive set of criteria that encompasses transit service and transit system operations, capital and operational funding, planning policies, local community impacts, and broader economic, social and environmental impacts.

- Toronto is not one kind of city, so there must be a diversity of options to meet its transit needs. The transit plan should identify the best solution / option for each neighbourhood.
    - The residents of some neighbourhoods will be more dependent on transit for their daily travel than those in other neighbourhoods.
    - Some areas of the City are planned to accommodate extensive population and employment growth, which should be aligned with appropriate transit.
    - Other areas are stable areas developed at relatively low densities that generate lower potential ridership.

- Developing the transit plan must include a comprehensive public consultation process to recognize the benefits of transit as well as its impacts on the local community.
    - The first round of consultation for the five year review of the Official Plan and the ongoing input being received from stakeholders and the general public could provide a useful starting point.
    - Transit's role in connecting areas of the City is an important theme of comments received so far, and has been identified as a key issue in recent surveys conducted by City Planning as part of the 5-Year Review.

A Sustainable Funding Plan for Transit

An earlier Section of this report, 'Financial Considerations,' has outlined possible elements of a sustainable long-term funding plan for transit in Toronto and the GTA. Key considerations include:

- Provincial and Federal partners must come to the table to help address sustainable funding for transit.
    - A key Federal and Provincial contribution would be to facilitate dedicated revenue streams not presently available to the City or Metrolinx.

- Other partners could also be involved in developing sustainable funding for transit through the involvement of the Federation of Canadian Municipalities and the Canadian Urban Transit Association.
    - This is more than a Toronto or GTA issue: transit is an important element of infrastructure for successful cities.

- A wide range of revenue tools should be examined, including those outlined in KPMG's report.
    - Potential revenue tools will have a greater or lesser impact on the City's on-going ability to fund its services,

- The funding plan must be aligned with Metrolinx's investment strategy for the 'Big Move'.
    - Many of the potential revenue tools should be implemented region-wide, since Metrolinx is planning a regional transit system.
    - They may also present competitiveness issues for the City's businesses if they are only implemented in Toronto.

- There are opportunities for private sector involvement, particularly through Public Private Partnerships (P3s) that recognize an increasing appetite for private sector involvement in the delivery of transit.

- The City should also look at opportunities to leverage Infrastructure Ontario in future transit expansion projects.

9. RECOMMENDATIONS

The recommendations of the Expert Panel are summarized as follows:

1. Council:

    a. Confirm that Light Rail Transit(LRT) is the preferred rapid transit mode for Sheppard Avenue East, from Don Mills to Morningside, and confirm the Sheppard Avenue East LRT as a priority transit line within the approved Metrolinx '5 in 10 plan'.

    b. Request the City Manager to develop a communication plan which outlines the significance of transit's role in city building, on Sheppard Avenue East and across the city.

2. Council:
    a. Request the province, through Metrolinx, to accelerate the preparation of the investment strategy for the "Big Move" transit expansion plan.

3. Council request the:

    a. City Manager to develop, for Council's consideration and approval, a comprehensive transit plan, that:
        i. is consistent with Metrolinx's Big Move;
        ii. integrates equitable economic development and other city-building strategies;
        iii. recognizes the context of the current 5 year Official Plan review; and
        iv. can ultimately be woven into the City's Official Plan.

    b. City Manager to develop a comprehensive public consultation process that provides residents and businesses an opportunity to participate and inform the development of a sustainable transit plan, including funding options, for the City of Toronto.

    c. City Manager to develop an intergovernmental strategy in support of a sustainable transit plan; working with the Federal and Provincial governments (including P3 project delivery), along with appropriate municipal associations (e.g. Federation of Canadian Municipalities), to seek a commitment to the type of long-term tri-partite funding commitment discussed in this report.

10. APPENDICES

Appendix A: Option A, LRT from Don Mills to Morningside

The following is a summary prepared by TTC staff for the Panel's consideration.

Light Rail Transit: Applicability in the Sheppard Avenue Corridor

High-quality transit is a vital contributor to the health and prosperity of cities. By bringing workers, shoppers, students, and residents within convenient access of employment, retail, educational, and cultural opportunities, transit stimulates economic growth, attracts business, supports employment, provides accessibility for people with mobility limitations, increases land values, and reduces congestion and pollution.
Light-rail transit (LRT) – electrically-powered high-capacity transit vehicles which run on the surface, in their own rights-of-way, but which share intersections with all other road users, as shown in the picture below -- has become established world-wide as a preferred transportation technology for situations which require greater capacity and higher quality than bus service, but which do not warrant the very-high capacity or expense of subways. Light-rail lines are currently being constructed or have recently been opened in over 100 cities world-wide. For example, Paris – with its' long and storied history of metros -- has implemented three LRT's and is presently building another seven lines. These cities chose LRT because it offers many advantages, including:

- Reliable, fast service (twice as fast as traditional streetcars) because it operates in its own right-of-way, protected from traffic and congestion, and people get on and off like subways
- High passenger-carrying capacity of up to 8,000 passengers per hour per direction (four times higher than the TTC's current busiest bus and streetcar routes) without the need for expensive tunnelling or above-grade elevated structures
- The quietness of electrically-powered vehicles, and the smoothness of rail service, resulting in comfortable and enjoyable travel
- Accessible to people with disabilities and people using wheelchairs, scooters, and mobility aids
- Convenient community access, because stops are closer together than subway stations, and are typically located at street level so that elevator or stair access is not required
- Environmentally- and community-friendly, with zero local emissions, smooth, quiet operation, while keeping travellers and activities on the street, not pushed underground
- Consistent and proven increases to property values, attracting private-sector investment and development
- Affordable, with per-kilometre costs approximately 60%-70% cheaper than subways.

Fig. 12 Strasbourg, France: Typical modern light rail in the centre of the road

Selecting the right transit technology depends on what land uses and densities you're trying to serve and, therefore, what capacity you need. Toronto's land-use, development, and economic outlook has changed significantly since the mid-1980's when plans called for concentrations of high-density employment nodes at urban centres which would be linked together by subways, and when Toronto's neighbouring municipalities were much less developed. Toronto's current Official Plan de-emphasizes the "centres" concept and, instead, calls for more-dispersed lower-density development spread out along the city's major arterial roads, referred to as "Avenues". At the same time, Toronto's neighbours are now all cities unto themselves, and they have competed fiercely, through taxation and economic incentives, to attract employment. This has resulted in the employment originally envisioned for Toronto's centres, not materializing as expected.

The two centres which were intended to anchor the Sheppard Avenue corridor – North York Centre and Scarborough Centre – today have a total employment of 44,000 compared to the 1980s projection of almost 160,000 by 2011. So, the travel demand which these centres now generate is much lower than was expected back when a Sheppard Subway was conceived. Moreover, Toronto's needs have changed in other ways. Today, there are thirteen "priority" neighbourhoods scattered throughout the city, which need improved access to employment and educational opportunities. Today, Toronto needs a city-wide network of high-quality transit to provide good access to every part of the city. The earlier arguments for one or two very-high capacity subways serving a limited part of the city no longer hold. And governments have repeatedly shown that they can't afford the huge capital funding required to build and maintain subways. This has never been truer than today. Any funding available for public transportation must now, more than ever, be used to deliver the best and most-affordable transit benefits to the

largest number of people and to the widest area of the city. The Expert Panel established by City Council has been asked to determine how to achieve this objective within the specific context of Sheppard Avenue.

There is already a subway on Sheppard Avenue between Yonge Street and Don Mills Road, so the matter of transit on that section of Sheppard Avenue is settled. The question is: what transit should be provided on Sheppard Avenue east of Don Mills, where the subway stops. Toronto's Official Plan projections of future population and employment in the areas which would be served by either a light-rail line or subway on Sheppard Avenue, result in a projected future travel demand on Sheppard Avenue, east of Don Mills Road of between 3,000 and 4,500 passengers per hour. Even with very optimistic assumptions about additional future growth and possible future transit expansion, that demand increases to only 6,000 passengers per hour. None of these projections can justify the expense or capacity of a subway east of Don Mills Road, which could carry up to 30,000 passengers per hour. The projected demand on Sheppard can be comfortably accommodated by LRT, whose capacity can be increased up to 8,000 passengers per hour, thus providing for future additional demand on Sheppard Avenue.

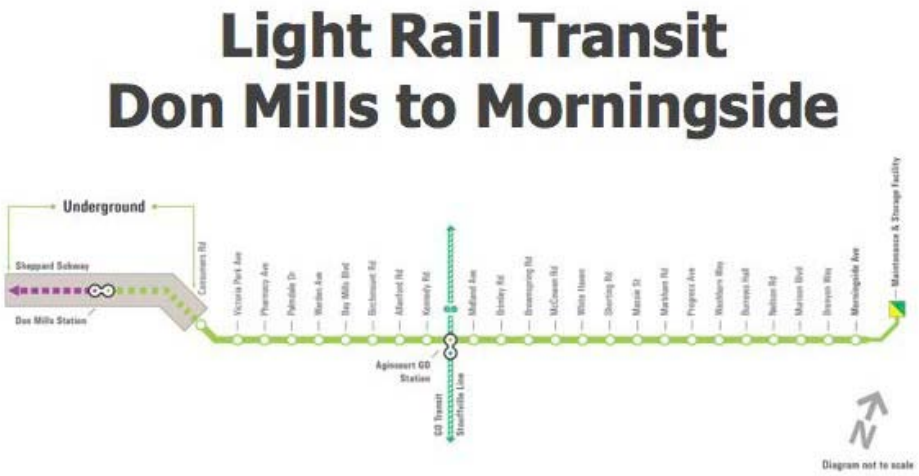
The Expert Panel has considered two primary transit options for Sheppard Avenue, east of Don Mills:

1. A continuation of the existing subway, east along Sheppard Avenue, and south to Scarborough Civic Centre

This first option – the subway extension – would provide eight kilometres of rapid transit, with seven stations, serving an adjacent population of 34,000 people, and carrying 27 million passengers per year. It would not serve any of Scarborough east of McCowan Avenue. It would cost between $3.25 billion and $4.73 billion (2010 $), depending on whether it were also extended west to Allen Road from Yonge Street.

2. A light-rail transit line, connecting with the subway at Don Mills, and proceeding east along Sheppard Avenue to Morningside/Conlins Road in its own right-of-way except at signalized intersections.

This second option – a light-rail line – would provide thirteen kilometres of rapid transit, with 25 stations, serving an adjacent population of 58,000 people, and carrying 17 million passengers per year. It would serve the entirety of Scarborough east to the Rouge River. It would cost $1 billion (2010 $), thus freeing-up funding which could be used to provide rapid transit service elsewhere in Toronto.



Toronto's development and economic outlook, and its resulting changing travel needs and demands, call for the establishment of high-quality light-rail transit throughout the city. Sheppard Avenue, in particular, would be well and adequately served by light-rail transit, with capacity available for future growth, and at a much-lower cost than a subway. Light-rail transit on Sheppard Avenue would meet the corridor's needs while making the most effective use of taxpayers' dollars.

Appendix B: Option B, Subway from Don Mills to Scarborough Centre

The following is a summary prepared by City staff of key information contained in Toronto Transit Infrastructure Limited's presentation and documents submitted to the Panel.

The panel received a presentation from Toronto Tranit Infrastructure Limited (TTIL), a subsidiary company of the TTC which was created to examine public-private partnership procurement options for the extension of the Sheppard Subway.

The TTIL presentation focused primarily on the following:

- A review of the 1992 Environmental Assessment ("EA") carried out for the original Sheppard Subway project
- TTIL's assessment of the TTC's project procurement record
- Recommended Next Steps

1992 Environmental Assessment

According to TTIL, the 1992 EA made a strong case for the subway option being more cost-effective over the long-run than an LRT built at grade in the middle of the road. TTIL summarized the EA's findings with respect to cost efficiency as follows:

- LRT less competitive per passenger carried
- LRT vehicles cost more than subway and storage costs greater than subway
- LRT annual operating costs higher than subway
- LRT requires more property acquisition and has a greater impact on municipal taxes
- LRT capital costs only 15% less than subway at 15,000 pphpd
- LRT other costs greater than subway – e.g. congestion, environment, social, land use, economic cost

In addition, the EA also concluded that the subway option would be more favourable with respect to factors such as carrying capacity, ridership, noise levels and construction period impacts.

Comparison of TTC's Procurement Practices with Other Jurisdictions

The second principal component of TTIL's presentation was directed at building the case that the TTC's procurement model is not delivering the best value for money. TTIL provided the following comparison below in support of this position:

Table 20. Rapid Transit Project Delivery Comparison					
	Madrid	Vancouver Canada Line	Toronto Sheppard Line	Toronto Spadina Line	Metrolinx Sheppard Extension 2011
Construction Dates	1995-2007	2005-2009	1994-2002	2009-2015	2012-2018
Construction Period	12 years	4 years	8 years	6 years	6 years
Length Constructed	Nearly 50km	19.2km	5.5km	8.6km	6.7km
# of Stations	120	16	6	6	7
Cost per km	<$90M/km	$105M/km	$170M/km	$305M/km	$177M/km

Recommended Next Steps

TTIL recommended the following steps for moving forward with rapid transit improvements on Sheppard Ave.:

1. Clarify funding sources, timing, conditions, overall funding gap, market realities
2. Analyze capital and operating costs over 10 year, 20 year, 30 year and 40 year period for the Sheppard corridor
3. Undertake delivery model, value for money and integrated analysis required to determine optimal delivery model and value for money for governments
4. Update 1992 Environmental Assessment (comprehensive assessment of alignment and technology alternatives etc.)
5. Undertake market and opportunity assessment with development community
6. Clarification and public awareness on LRT proposal before public consultation

Appendix C: Supplementary Background Documents

Presentations and Background Information

- Comments by Professor Eric Miller, February 25, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_1.pdf

Metrolinx

- Presentation to the Expert Advisory Panel, February 17, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_2.pdf

- Achieving 5 in 10: A Revised Plan for the Big 5 Transit Projects (May 19, 2010)
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_3.pdf

- The Big Move: Transforming Transportation in the Greater Toronto and Hamilton Area (November 2008)
  http://www.metrolinx.com/thebigmove/Docs/big_move/TheBigMove_020109.pdf

- Management Report, UK / Madrid Study Tour (January 25, 2008)
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_5.pdf

TTC

- Presentation to the Expert Advisory Panel, February 17, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_6.pdf

- Presentation to the Expert Advisory Panel, February 24, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_7.pdf

- Rapid Transit For Toronto, February 8, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_8.pdf

TTIL

- Summary of Subway Option, March 12, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_9.pdf

- Presentation to the Expert Advisory Panel, February 16, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_10.pdf

- Toronto Transit: Back on Track – Presentation to Toronto Executive Committee (TTIL: February 13, 2012)
  http://www.toronto.ca/legdocs/mmis/2012/ex/bgrd/backgroundfile-45195.pdf)

- Sheppard Subway Extensions: Analysis of Funding Options for Toronto Transit Infrastructure Limited and the City of Toronto (KPMG: November 7, 2011)
  http://www.toronto.ca/legdocs/mmis/2012/ex/bgrd/backgroundfile-45062.pdf

- Sheppard Subway Extensions: Presentation to Toronto Executive Committee (KPMG: February 13, 2012)
  http://www.toronto.ca/legdocs/mmis/2012/ex/bgrd/backgroundfile-45207.pdf)

City

- City Planning presentation to the Expert Advisory Panel, March 2, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_14.pdf

- City Planning presentation to the Expert Advisory Panel, February 24, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_15.pdf

- City Finance presentation to the Expert Advisory Panel, February 15, 2012
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_16.pdf

- PG13.7, Sheppard Corridor Study - Final Report
  http://www.toronto.ca/legdocs/mmis/2008/pg/bgrd/backgroundfile-10465.pdf

- PG17.1, Official Plan Amendment for Sheppard East Light Rail Transit (LRT) – Final Report
  http://www.toronto.ca/legdocs/mmis/2008/pg/bgrd/backgroundfile-13885.pdf

- PG17.8, Request for Approval of the Sheppard East LRT Environmental Assessment Study
  http://www.toronto.ca/legdocs/mmis/2008/pg/bgrd/backgroundfile-14148.pdf
  http://www.toronto.ca/legdocs/mmis/2008/pg/bgrd/backgroundfile-14149.pdf

Third Party Documents

- Presentation by the Sustainable Urban Development Association (February 2012)
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_20.pdf

- Making Tracks to Torontonians (Pembina Institute, February 2012)
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_21.pdf

- Understanding the travel needs of London's diverse communities (Transport for London, 2011)
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_22.pdf

- Gender Auditing: an Overview, (Stafford Pettersson Neath, 2004)
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_23.pdf

- Gender and Sustainable Urban Mobility (Deike Peter, 2011)
  http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_24.pdf