TORONTO

STAFF REPORT
ACTION REQUIRED

Gardiner Expressway and Lake Shore Boulevard East Reconfiguration Environmental Assessment (EA) and Integrated Urban Design Study – Updated Evaluation of Alternatives

Date:	May 6, 2015
To:	Public Works and Infrastructure Committee
From:	John Livey, Deputy City Manager, Cluster B
Wards:	Ward 28 – Toronto Centre-Rosedale Ward 30 – Toronto-Danforth
Reference Number:	P:\2015\Cluster B\WF\PWI10052

SUMMARY

This report seeks a Council decision related to the preferred alternative for the Gardiner Expressway and Lake Shore Boulevard East Reconfiguration Environmental Assessment (EA) and Integrated Urban Design Study (Gardiner East EA). The Gardiner East EA study area is a 2.4-kilometre segment of the elevated expressway and Lake Shore Boulevard, from approximately Lower Jarvis Street to Logan Avenue.

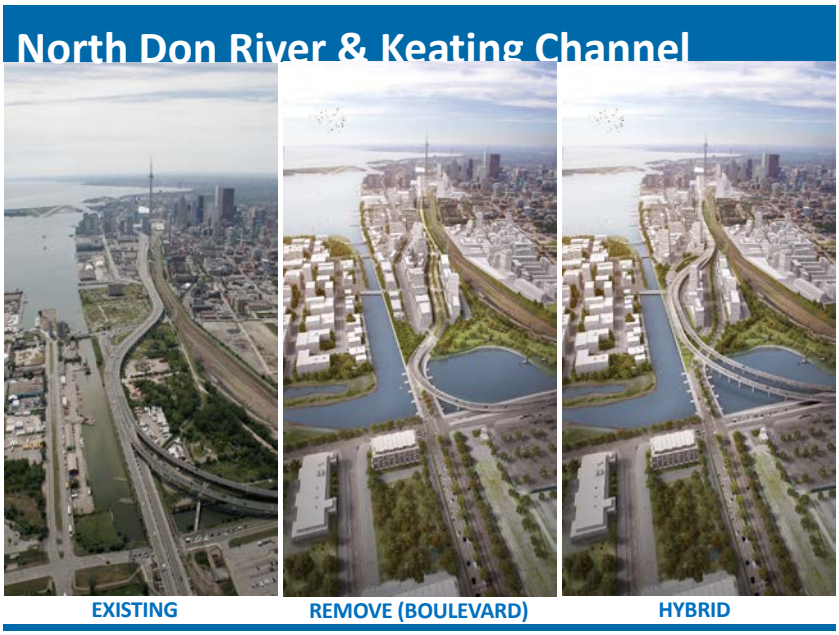
A decision on the Gardiner East EA is urgent. The elevated Gardiner structure was constructed in sections between 1955 and 1966. The deck and concrete barriers are in poor condition and considered to be at the end of their service life. Since 2012, incidents of falling concrete have occurred along the corridor, including the area east of Jarvis Street. In advance of Council's 2013 decision to reallocate funding for the Gardiner East EA, a phased approach had been planned for the replacement of the deck and parapet (concrete barrier) walls from Jarvis Street to the Don Roadway for the period 2013 to 2018. Recognizing that work to implement a preferred EA option would not likely commence until 2020, Council authorized a series of interim repairs to make the structure safe and extend its service life to 2020. These repairs consisted of: temporary timber bracing under the deck; localized concrete deck repairs; and repair and replacement of severely deteriorated parapet walls. An estimated $9 million has already been spent on emergency and interim repairs for this section of the Gardiner, and an additional estimated $5 million will be required to complete the interim repairs.

Given the current condition of the Gardiner East, a final decision on the Gardiner East EA is now imperative, particularly given that the interim repairs were only intended to extend the service life to 2020, and considering the timelines required to complete the Environmental Assessment process, including approval from the Ontario Minister of the Environment and Climate Change (MOECC), undertake the engineering design, prepare construction tender documents and procure the necessary construction contractor(s).

Further, given Council support of the accelerated approach for the implementation of the Strategic Rehabilitation Plan for the Gardiner Expressway, there is tremendous value in including the preferred Gardiner East EA alternative solution within the scope of work for the implementation of the Plan. There are efficiencies of scale which can be expected to decrease overall costs and, as presented in the Plan, if undertaken as one large construction project across the at-grade and elevated sections combined, should result in significant traffic impact reductions during construction.

This report presents "Remove" and "Hybrid" as two viable EA alternatives for Council consideration. Maintain remains the EA base case.

Figure 1 – Don River and Keating Channel Looking West under Existing Conditions, Remove and Hybrid



The Remove alternative, optimized, comprises:

- Removal of 1.7 kilometres of elevated expressway east of Jarvis Street and replacement with an at-grade eight-lane tree-lined Lake Shore Blvd;
- Realignment of Lake Shore Blvd. from Cherry Street to Don River;
- Removal of about 750 metres (eastbound lanes) and 850 metres (westbound lanes) of the existing Gardiner on/off ramps west of Logan Avenue;

- Removal of all road infrastructure along Keating Channel;
- Construction of a new Lake Shore-Don Valley Parkway ramp connection;
- Construction of new three-lane on/off ramps at Jarvis Street; and
- Construction of a new multi-use pathway, as well as pedestrian and intersection improvements.

The Hybrid alternative retains continuous expressway linkage to the DVP as well as:

- Re-decking of the existing elevated expressway east of Jarvis Street;
- Re-decking of existing Gardiner-Don Valley Parkway ramps;
- Removal of about 750 m (eastbound lanes) and 850 m (westbound lanes) of the existing Gardiner on/off ramps west of Logan Avenue;
- Addition of two new ramps (two lanes each) in the Keating precinct:
  - about 470 metres of new westbound on-ramp; and
  - about 425 metres of new eastbound off-ramp;
- Realignment of Lake Shore Blvd. from Cherry Street to Don River; and
- Construction of a new multi-use pathway, as well as some pedestrian and intersection improvements.

There are key differences in the benefits related to the two alternatives:

- Remove would feature significantly lower lifecycle costs, higher forecasted revenues from public land sales and lower greenhouse gas emissions. It would create an animated Lake Shore Boulevard, additional public realm space and amenities, as well as new linkage to the DVP and better connections to the waterfront; and
- Hybrid would retain a continuous expressway linkage between the Gardiner and the DVP. It would have lower auto and goods movement travel times, and result in less construction disruption.

Both alternatives would facilitate the significant opportunity for a secondary office market presented by the First Gulf site, as well as the potential of other developments proposed for the Port Lands and South of Eastern area. In addition, both alternatives would complement the flood protection and sediment management components of the Don Mouth Naturalization and Port Lands Flood Protection project. For these reasons, the Remove and Hybrid options are preferred over Maintain.

In a February 21, 2014 staff report, City staff recommended Remove as the preferred Gardiner East EA alternative. Staff's recommendation was based on assessing the alternatives against 16 unweighted criteria groups that summarized approximately 60 criteria measures. Each alternative was compared against the measures, then against each other, until a preferred alternative – Remove – emerged as the best option for meeting the EA study goals and objectives.

The Remove alternative remains a strong and viable option. The design has been "optimized" to address traffic congestion concerns by adjusting proposed traffic signal phasing and coordination, as well as modifying Lake Shore Boulevard intersection

configurations by the addition of turning lanes and elimination of some turning restrictions. Transportation modelling demonstrates that the optimized Remove alternative would involve morning peak hour travel time increases of three-to-five minutes (for the modelled Origin-Destination pairs) instead of the previously presented five-to-10 minutes. The Remove alternative performs better than Hybrid in a number of EA study criteria groups, including several related to urban design, environment and economics.

On March 4, 2014, the Public Works and Infrastructure Committee directed staff to work with Waterfront Toronto to develop and evaluate an additional option (now known as Hybrid) that preserves expressway linkage and functionality between the Gardiner and the DVP.

Like Remove, the Hybrid alternative has emerged as a strong and viable option. Hybrid has evolved from what was originally proposed in March of 2014 because the original concept was not deemed viable when taking into account geometric, operational and safety criteria and standards, as well as existing and planned initiatives (discussed in Section 3.2). The alternative performs better than Remove in relation to a number of EA study criteria groups, including auto travel times, goods movement and construction impact. Hybrid performs as well as Remove in terms of cycling and transit, social and health impact, and global economic competitiveness impact. Hybrid delivers some benefits related to public realm, planning and built form east of the Don River. However, it also consumes land in the Keating Precinct slated for mixed-use development.

Fundamentally, the Gardiner East EA decision comes down to addressing two very important priorities: traffic congestion and city building. The Hybrid alternative is preferred on the basis of the EA Transportation and Infrastructure study lens while the Remove is preferred on the basis of the Urban Design, Environment and Economics study lenses. The EA process involved consultation with public participants on the relative importance of the study criteria groups, however, feedback was strongly divided. City Council will need to make a decision based on the advantages and disadvantages of the alternatives. This report presents two viable EA alternatives for Council consideration. The EA study findings provide the rationale for each of the two options, Remove and Hybrid, from which Committee and Council will make a decision.

Should City Council not be able to make a decision on a preferred Gardiner East EA alternative, staff should be directed to cancel the EA and proceed with the rehabilitation of the existing structure due to its rapidly deteriorating condition. This would have the effect of returning to the EA base case, the Maintain option, which precludes many of the benefits associated with the Remove and Hybrid options. Rehabilitation of the Gardiner East Deck could be incorporated into the implementation of the Strategic Plan for the Rehabilitation of the F.G. Gardiner Expressway, now underway, as a state-of-good-repair undertaking.

If either Remove or Hybrid are endorsed by Council, the preferred alternative would be designed and assessed through the "alternative designs" stage of the EA process. Staff

would complete this stage using a compressed schedule given the associated urgency. This stage would evaluate public realm and functional/traffic design options, and would result in a more detailed construction implementation plan. In addition, the phase would further investigate and refine mitigation opportunities related to the preferred alternative, for example, opportunities to use corridor design, intelligent transportation systems and other best practices to reduce user impacts. The process would include opportunities for public and stakeholder consultation. At the conclusion of this phase, anticipated for early 2016, an EA study report would be finalized and submitted to the MOECC for an approval decision.

An estimate of schedule, assuming conventional implementation and seven months of MOECC review, is:

- Complete EA (alternative designs): by end of 2015;
- Submit EA: by winter 2016;
- EA approval decision by MOECC: by end of 2016;
- Detailed design: by early 2018;
- Tendering: by end of 2018; and
- Start of implementation: 2019.

The 2015 to 2024 approved Capital Budget and Plan for Transportation Services, coupled with previously planned funding in the year 2025, totals a $232 million budget for rehabilitation of the Gardiner East deck. In addition, there is potential Development Charge funding of $32 million for projects included in both the Remove and Hybrid alternatives that are also captured in the City Wide Development Charge By-law. Further, additional potential offsets include approved funding for program management and accelerated deck replacement budgets related to the Strategic Plan for the Rehabilitation of the F.G. Gardiner Expressway, and rehabilitation budgets for major roads and bridges. These items are dealt with comprehensively in the Financial Impacts section which follows. Staff can report on funding for the implementation of whichever option is selected through the 2016 Budget process.

Both the Remove and Hybrid options would require review and revision of the Keating Channel Precinct Plan as it relates to lands east of Cherry Street. In July 2010, Council deferred approval of the Keating Channel Precinct Plan and the Keating Channel Class EA Environmental Study Report as they relate to lands east of Cherry Street until the Gardiner East EA was further advanced. Upon submission of the Gardiner EA to the MOECC for an approval decision, the City Planning Division will review the Keating Channel Precinct Plan, in partnership with Waterfront Toronto.

Implementation of either Remove or Hybrid as the preferred EA alternative can be accommodated in the Strategic Plan for the Rehabilitation of the F.G. Gardiner Expressway. It is recommended that staff report back to the Executive Committee on incorporating the preferred alternative into the Strategic Plan for implementation.

The approved budget for the Gardiner East EA included in the Waterfront Revitalization Initiative Transportation Initiatives Capital Project is approximately $7.7 million. Funds

earmarked for the EA alternative designs stage have been spent on work completed in the last 12 months, including optimization of the Remove alternative and development of the Hybrid alternative. Thus, additional funding of $780,000 is required to complete the EA.

Information about the Gardiner East EA, including summaries related to public consultation, can be found on the project web site at www.gardinereast.ca.

RECOMMENDATIONS

The Deputy City Manager, Cluster B, recommends that:

1. City Council make a decision on a preferred Gardiner East EA alternative – either:
    a. Remove, on the basis of greater emphasis on the EA urban design, environment and economics study lenses; or
    b. Hybrid, on the basis of greater emphasis on the EA transportation and infrastructure study lens.

2. The Chief Planner and Executive Director of City Planning be requested to report to Toronto and East York Community Council after Gardiner East EA approval by the Ontario Minister of Environment and Climate Change on a review of the Keating Channel Precinct Plan as it relates to lands east of Cherry Street, in partnership with Waterfront Toronto;

3. The Deputy City Manager, Cluster B, and the Deputy City Manager and Chief Financial Officer be directed to report back to Executive Committee on incorporating the preferred alternative into the Strategic Plan for the Rehabilitation of the F.G. Gardiner Expressway, including a preferred procurement delivery option, project delivery schedule, multi-year cash flow requirements and financing strategy;

4. City Council authorize staff to develop and evaluate alternative design concepts of the Gardiner East EA preferred solution, including the further investigation of options to mitigate negative impacts and all required public consultation;

5. City Council authorize staff to complete the Gardiner East EA and submit the final EA report to the Ontario Minister of the Environment and Climate Change;

6. Subject to Council approval of a preferred Gardiner East EA alternative, City Council direct the Deputy City Manager and Chief Financial Officer and the appropriate officials to report as part of the 2016 Budget process on

implementation funding for the preferred EA solution in conjunction with the completion of the preferred design and the resulting refined capital cost estimates;

7. That the approved 2015 Capital Budget for the Waterfront Revitalization Initiative be adjusted to reflect an increase in project costs of $780,000 allowing for the completion of the Gardiner EA, that will be accommodated within the Transportation Initiatives sub-project in 2015, resulting in a $0 net change to the 2015 Capital Budget.

FINANCIAL IMPACT

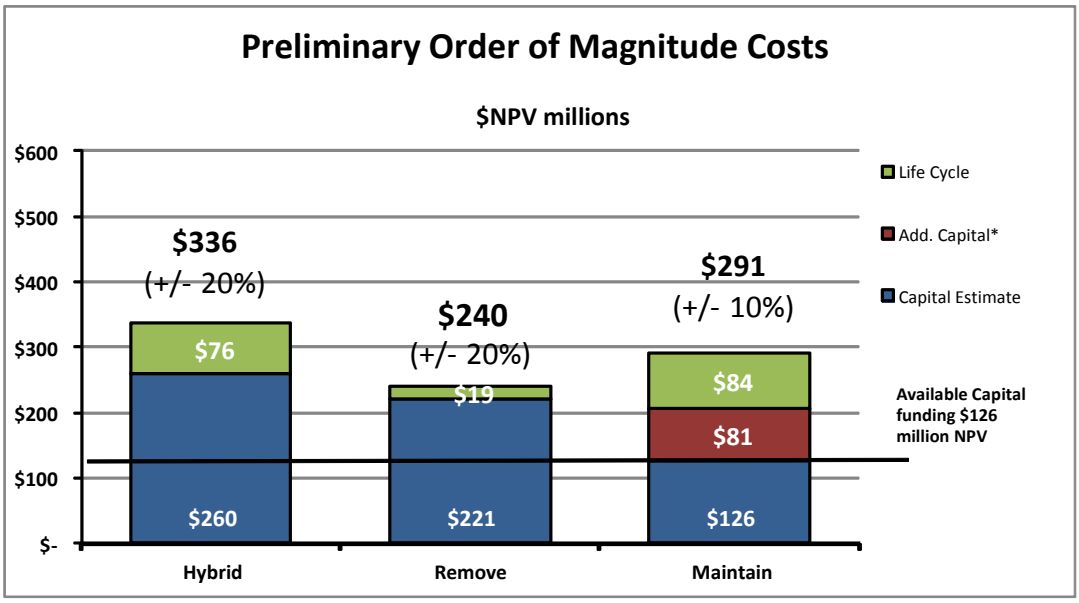
i) Business Case Decision Making (Discounted Cash Flow Analysis – Net Present Value)

This EA process had presented four alternative roadway configurations that were considered by the Public Works and Infrastructure Committee at their meeting of March 4, 2014. Capital cost estimates for each of the four roadway configurations were developed along with longer term lifecycle costs for capital replacement over a 100-year time frame for comparison and evaluation purposes. See Section 5.4.4 for these costs presented in 2013 dollars as well as net present value (NPV). The consultant used real discount rate of 4% in calculating the NPV.

Due to the long timeframe and variances in costs and timing of capital features amongst alternatives, a discounted cash flow analysis was prepared, and all figures represented a NPV in current dollars for comparison and evaluation purposes.

In consideration of report "PW29.2 Gardiner Expressway and Lake Shore Boulevard East Reconfiguration Environment Assessment (EA) and Integrated Urban Design Study," Public Works and Infrastructure Committee directed staff to optimize the Remove option to mitigation congestion concerns and prepare an additional option that combines the maintain and replace components to preserve expressway linkage and functionality between the Gardiner Expressway and the Don Valley Parkway. Based on this direction the evaluation now focuses on the optimized Remove and Hybrid options, with Maintain remaining as the base case. The other alternatives were not recommended.

Based on this additional analysis and, as demonstrated in the table below, the Remove option was determined to be the lowest cost alternative on an NPV basis over a 100-year timeframe, reflecting $51 million and $96 million in lower costs from the Maintain (base case) and Hybrid options respectively. All figures are estimates only and can vary between 10% and 20%.



Source – Project Engineering Consultants – Morrison Hershfield, Peer Reviewed by Delcan

The Maintain option is comprised of the current Rehabilitation Plan for the East Deck ($126 million in NPV) and additional capital costs of $81 million in NPV for future year costs for Lake Shore Boulevard realignment, longer term replacement costs of a Don River Bridge, future replacement of Don and Logan Ramps, and the future deck replacement between Yonge and Jarvis.

Note: Net present value represents the sum of the present values of future capital expenditures, in this case for each of the EA alternatives. It is one of the most reliable measures used in project decision making as it accounts for time value of money. Some options may have higher initial costs but will realize longer term savings into the future and vice versa. The NPV analysis properly accounts for such variations over time and brings future costs back to an appropriate current cost so as to compare alternatives along the same basis.

ii) Budgetary Impact (Inflated Dollars Required for Construction)

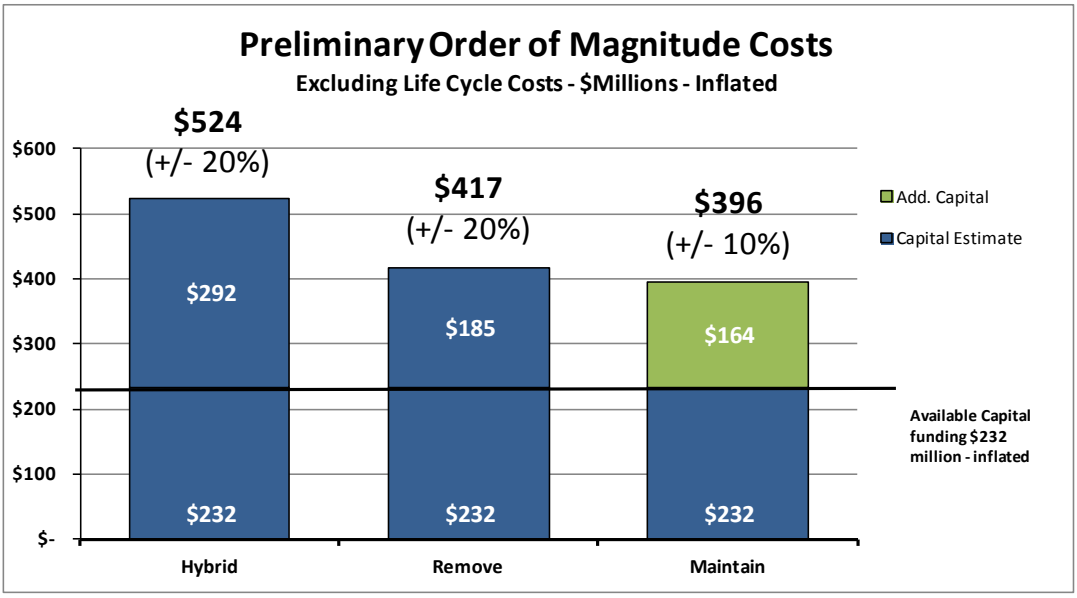
A discounted cash flow analysis is an effective decision making tool for evaluating different options. For budgeting and financing purposes, the actual construction costs need to be inflated to the year of proposed construction. These costs can then be considered within the City's capacity to fund as part of establishing the 10-Year Capital Budget and Plan.

Transportation Services' 2015 to 2024 Capital Budget and Plan includes capital funding of $970 million over the 10-year period for the Gardiner Rehabilitation Program for the entire length of the expressway. When considering funding approved prior to 2015 as well as planned funding for the year 2025, the 13-year total cost estimate for the rehabilitation is $1.1 billion (including $433 million in funding added as part of the 2015 Budget process for project acceleration).

Of the 13-year total cost estimates for which a funding strategy is already in place, $232 million has been included for the years 2020 to 2025 for East Deck and Bent Repairs under the Rehabilitation Program (excluding funding added for project acceleration).

Within all EA options, additional necessary capital work outside the Jarvis Street to Don River area will be required in future years beyond the current Rehabilitation Plan for the East Deck replacement of $232 million (inflated to year of construction). These additional items include future year costs beyond the current 10-Year Approved Capital Plan for Lake Shore Boulevard realignment, longer term replacement costs of a Don River bridge, future replacement of Don and Logan ramps, and the future expressway deck replacement between Yonge Street and Jarvis Street. The addition of these costs to the base case (Maintain option), estimated at $164 million, ensures a true apples-to-apples comparison of the EA alternatives.

The following table illustrates the estimated budgetary impacts of the EA options above the base level of planned funding to rehabilitate the East Deck of the Gardiner Expressway.



See Section 5.4.4 for these costs reflected in 2013$ over a 100 year period (including lifecycle costs).

iii) Impact on the Revised F.G. Gardiner Expressway Approved Capital Program

The Remove Gardiner EA alternative which, based on preliminary estimates, requires capital funding of $417 million from 2020 to 2026, will result in an increase in required funding of $21 million as compared to the Maintain option.

The Hybrid Gardiner EA alternative, based on preliminary estimates, requires capital funding of $524 million from 2020 to 2026, resulting in an increase in required funding of $128 million as compared to the Maintain option.

While the Remove and Hybrid options will require an additional upfront capital investment beyond the Maintain option, the net impact on the City will be substantially less than $21 million and $128 million identified, as this initial investment will generate additional revenue from public land value creation estimated at $176 million for the Remove alternative and $39 million for the Hybrid alternative, reflected in 2013$, as well as long term savings from the avoidance of future lifecycle capital replacement costs in the case of the Remove option.

iv) Potential Funding Sources

As noted above, adoption of either the Remove or Hybrid options would yield revenues from excess land sales as described in this report and, in the case of the Remove option, savings in the form of ongoing lifecycle capital replacement costs. The land sales revenue will likely occur after the construction period has ended, and the savings from ongoing capital replacement costs will occur over a longer timeframe.

While these savings and revenues will be realized over the longer term, the preliminary estimate of additional upfront capital costs totalling $185 million for the Remove option and $292 million for the Hybrid option will require additional financing above current funding, as illustrated in the table below:

Table 1 – Preliminary Capital Cost Estimates – Inflated to Year of Construction ($Millions)

F.G. Gardiner East EA Budget Impact	2020	2021	2022	2023	2024	10-Year Plan	2025	2026	*Future Years	Total
Current Budget – Maintain East Deck	33.0	61.0	28.0	32.0	33.0	**187.0**	45.0			**232.0**
EA Options										
Maintain – EA Option	33.0	61.0	28.0	32.0	33.0	**187.0**	45.0		164.0	**396.0**
Impact above Budget						**0.0**			164.0	**164.0**
Remove – EA Option	55.0	57.0	58.0	60.0	61.0	**291.0**	63.0	64.0		**417.0**
Impact above Budget	22.0	(4.0)	30.0	28.0	28.0	**104.0**	18.0	64.0		**185.0**
Impact above Maintain EA Option (Base Case):										**21.0**
Hybrid – EA Option	83.0	85.0	102.0	105.0	58.0	**433.0**	59.0	32.0		**524.0**
Impact above Budget	50.0	24.0	74.0	73.0	25.0	**246.0**	14.0	32.0		**292.0**
Impact above Maintain EA Option (Base Case):										**128.0**

The Maintain option is comprised of the current Rehabilitation Plan for the East Deck ($232 million) and additional costs of $164 million for future year costs for Lake Shore Boulevard realignment, longer term replacement costs of a Don River Bridge, future replacement of Don and Logan Ramps, and the future deck replacement between Yonge and Jarvis.

Subject to Council approval of a preferred EA option, the Deputy City Manager and Chief Financial Officer will report back as part of the 2016 Budget process on a detailed financing strategy in conjunction with the completion of the preferred design and the

resulting refined capital cost estimates. This report will consider the City's conventional method for financing capital projects that is by way of issuance of debenture debt.

Assuming 30-year debenture debt is applied to finance preliminary estimates, additional annual debt charges would be as follows:

- Remove ($185 million above current funding) would require estimated annual debt charges in the amount of $11.2 million over 30 years; and
- Hybrid ($292 million above current funding) would require estimated annual debt charges in the amount of $20 million over 30 years.

These debt charges would be funded primarily through the tax base. Various other sources of funding will be explored to minimize the tax impact of servicing the required debt. Funding sources that will be explored and reported back on as part of the 2016 Budget process may include, but not be limited to:

- Proceeds from future land sales;
- Proceeds from potential development agreements from lands benefiting from the Remove and/or Hybrid options;
- Future operations and maintenance lifecycle cost savings that could be applied to mitigate the impacts of such debt; and
- Any potential cost mitigation that might result through a P3 procurement process.

In addition, staff will also review the extent to which existing approved funding within the Transportation Services' 2015 – 2024 Capital Budget and Plan may be leveraged to support additional upfront capital costs required for both the Remove and Hybrid options. This may include leveraging funding from the following capital projects:

- *Programme Management* funding within the approved F.G. Gardiner Rehabilitation Plan of $43.4 million from 2020 to 2025;
- *Project Acceleration* costs within the F.G. Gardiner Rehabilitation Plan totalling $433 million over the 10-Year Plan;
- The *City Bridge Rehabilitation* project with approved funding of $220 million from 2020 to 2024; and
- The *Major Road Rehabilitation project* with approved funding of $315 million from 2020 to 2024.

Lastly, consideration will also be given to maximizing other non-debt financing sources such as eligible Development Charge funding that may be applied to certain aspects of

the project, specifically the Lake Shore Boulevard Realignment and Don Bridge, which could fund up to $32 million in additional expenditures above the base level of funding.

v) Budget Adjustment Required to Complete the Gardiner EA

This report also recommends that the Waterfront Revitalization Initiative's 2015 Capital Budget be adjusted to reflect additional funding required for completion of the Gardiner EA.

As a result of this change, the total costs for the Gardiner EA budget included within the Waterfront Revitalization Initiative Transportation Initiatives Capital Project will increase from $7.7 million to $8.5 million; with the increase required as a result of funds that had been earmarked for the EA alternative designs stage, which have now been spent on work completed in the last 12 months, including optimization of the Remove alternative, and the development and evaluation of the Hybrid alternative. The additional funding of $780,000 can be accommodated within the cash flow for Transportation Initiatives in 2015, with any required offsetting adjustments to be made through the 2016 Budget process.

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

***Note on Costs:**
Other than costs referencing the City's approved Capital Budget and Plan for the Maintain base case, costs for the Remove and Hybrid alternatives outlined in this report represent high order-of-magnitude costs for comparative purposes only. These costs were based on conceptual designs only and may have a significant margin of error. Current cost estimates have not taken into consideration conflicts and constraints with respect to environmental and utility issues. More refined cost estimates will be derived from the next stage of EA work in which the preferred EA alternative solution is designed in greater detail. Costs for the Maintain option only have been advanced to the 30% design stage and reflect a conventional construction approach.

DECISION HISTORY

In November, 1991 the Royal Commission on the Future of the Toronto Waterfront produced “Report 15: The Toronto Central Waterfront Transportation Corridor Study” that looked at three feasible, generic concepts for the treatment of the elevated Gardiner Expressway between Dufferin and Leslie Streets:

1. Retain (and ameliorate);
2. Remove (and add some additional at-grade road capacity), and/or
3. Bury (put the expressway in a tunnel).

The study recognized that combinations of the three alternatives are possible reflecting different conditions along the corridor. Report 15 did not immediately recommend a single, preferred option but proposed a phased implementation process in which Stage 1

would move towards the stated “vision” while “keeping open the option of retaining or removing the central section of the expressway” (p. 110). The Commission’s final report, “Regeneration: Toronto’s Waterfront and the Sustainable City” (1992), concluded that: “It is both feasible and desirable to relocate and redesign the expressway and Lake Shore Boulevard as part of an integrated and phased plan to improve the Central Waterfront”. To this end, the Commission put forward Recommendation 65 that the Province and relevant municipalities negotiate a Waterfront Partnership Agreement to implement Stage 1 of the program to integrate environment, land use and transportation in the Central Waterfront. The study findings can be found in the Royal Commission's final report: "Regeneration: Toronto's Waterfront and the Sustainable City," Chapter 10 – "The Central Waterfront," pages 303 to 414, at: http://www.waterfronttrail.org/partner-resource-center/publications#regeneration-toronto-s-waterfront-and-the-sustainable-city-final-report-1992

As a first step, the need for the 1.3-kilometre elevated segment of the Gardiner from just west of the Don River to Leslie Street was assessed by the former Municipality of Metropolitan Toronto. Between 1999 to 2001, this segment was dismantled at a cost of approximately $40 million. Public art and pedestrian and cycling trails were installed alongside the exposed section of Lake Shore Boulevard East. A Precinct Plan for this area is underway at this time.

In 2001, the Toronto Waterfront Revitalization Task Force ("Fung Task Force") proposed that the remainder of the elevated Gardiner Expressway be removed as far west as Strachan Avenue, with the section between Strachan Avenue and Spadina Avenue being placed in a tunnel (see: http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=56c94f058377f310VgnVCM10000071d60f89RCRD&vgnextchannel=cf777c6a9967f310VgnVCM10000071d60f89RCRD). On August 1, 2000, Council considered the staff report "Our Toronto Waterfront – Building Momentum" and endorsed, in principle, the Task Force concept plan, and directed the City's Chief Administrative Officer to initiate a discussion with Federal and Provincial governments and report back on a preferred model for a new waterfront development governing body.

In considering an October 17, 2002 staff report entitled "Review of the Gardiner/Lake Shore Corridor Proposal Contained in the Central Waterfront Secondary Plan" in February 2003, City Council approved a "scoping study" to identify Terms of Reference limited to a "retain and ameliorate" strategy for the Gardiner/Lake Shore Corridor, backing off from a staff recommendation to undertake a full EA of three options related to the elevated Gardiner east of Strachan: Retain, Replace and Remove: http://www.toronto.ca/legdocs/2003/agendas/council/cc030204/pof1rpt/cl003.pdf

City Council approved a "Central Waterfront Secondary Plan: Making Waves" in April 2003. The Plan sets out the guiding principles for revitalizing a 10-kilometre designated waterfront area between Dowling Avenue and Coxwell Avenue, including key public priorities, opportunities and an implementation process. Reconfiguration of the Gardiner

Expressway is one of 23 Big Moves identified in the plan.
http://www.toronto.ca/legdocs/2003/agendas/council/cc030414/plt5rpt/cl001.pdf

In 2003, the City asked the Toronto Waterfront Revitalization Corporation (TWRC, now Waterfront Toronto) to examine opportunities for the redesign of the Gardiner/Lake Shore corridor in support of waterfront revitalization. TWRC reviewed three basic alternatives to the existing expressway: Replace, Transform and Great Street: http://www.waterfrontoronto.ca/dbdocs/451d7d515766d.pdf.

1. The Replace option involved the replacement of the entire elevated expressway with a combination of tunnels and at-grade roads;

2. The Transform option retained the elevated expressway, enhanced it with the removal of ramps, addition of architectural features and relocation of Lake Shore Boulevard from beneath it; and

3. The Great Street option called for the replacement of the elevated expressway east of Spadina Avenue with an at-grade street similar to University Avenue.

In 2004, TWRC selected the Great Street as the option worthy of further consideration. The proposal was for a 10-lane, two-way road between Spadina Avenue and Simcoe Street, a pair of five-lane, one-way roads between Simcoe Street and Jarvis Street and an eight-lane, two-way road east of Jarvis Street. TWRC conducted a detailed analysis of the Great Street. The analysis documents are available at:
http://www.waterfrontoronto.ca/misc_pages/search?query=Gardiner+Lake+Shore+Corridor+Report&search_button=Search&filter_pages=none&filter_projects=none&filter_documents=all&filter_match=Match+Any+Occurrence&filter_events=none&filter_galleries=none&filter_news=none

A review of TWRC studies found the cost of the Great Street had increased significantly from earlier estimates, from $780 million (2005) to $1.2 billion (2007), in part because of the additional costs for an underground portion of the Front Street Extension. In 2007, Waterfront Toronto and City staff collaborated to find a more affordable solution to the redesign of the Gardiner. It was found that the less-developed eastern waterfront area offered greater opportunity to both avoid constraints and shape new development patterns. On June 12, 2008, the Waterfront Toronto Board of Directors approved a resolution recommending to the City that an Individual Environmental Assessment (EA) be undertaken to examine options for the 2.4-kilometre Gardiner East. In July 2008, City Council authorized the City and Waterfront Toronto to jointly undertake an Individual EA for the Gardiner East:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2008.EX22.1

In August 2009, City Council authorized the submission of the Gardiner East EA Terms of Reference to the Minister of Environment:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2009.EX33.17

In November, 2009, the Minister of Environment approved the Gardiner East EA Terms of Reference: http://www.waterfrontoronto.ca/explore_projects2/the_gardiner_expressway/the_gardiner_ea_terms_of_reference The City and Waterfront Toronto consequently initiated the EA phase of the study, based on the Terms of Reference.

In July 2010, City Council approved a plan for the Keating Channel Precinct as the first planned precinct within the Lower Don Lands, and a gateway into the Port Lands. The area is located south of the rail corridor on the north edge of the Keating Channel, between Parliament Street and the Don River. Designed with the Gardiner in place, the precinct features 25 development blocks and a realigned Lake Shore Boulevard north of the Gardiner. Council deferred final approval of the Keating Precinct east of Cherry Street, pending completion of the Gardiner East EA: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2010.EX45.15

In considering the City's 2013 Capital Budget and 2014 to 2022 Capital Plan on January 15 to 16, 2013, City Council reallocated $4.41 million within the Waterfront Revitalization Initiative budget for the Gardiner Expressway and Lake Shore Boulevard Reconfiguration East Environmental Assessment (EA) and Integrated Urban Design Study. See Recommendation #84: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.EX27.1

On April 10, 2013, Public Works and Infrastructure Committee received an information report on the Gardiner Expressway and Lake Shore Boulevard Reconfiguration Environmental Assessment and Integrated Urban Design Study. It included a commitment to report back on a preferred Gardiner East EA alternative in spring 2014: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PW22.2

At its meeting of April 10, 2013, Public Works and Infrastructure Committee received a report (March 28, 2013) from the Deputy City Manager, Cluster B on Revisions to the F.G. Gardiner Expressway Rehabilitation Project. The report summarized field work using ground penetrating radar completed in 2012, prioritized areas of the expressway requiring immediate attention and proposed a phasing plan for deck replacement, including the section between Jarvis Street and the Don Roadway: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PW22.1

In considering the report at its meeting of May 7 to 10, 2013, given Council's earlier decision to reallocate funding for the Gardiner East EA wherein work to implement the preferred option would not likely commence until 2020, Council approved the reallocation of cash flow from Transportation's approved 2013 to 2022 Capital Budget and Plan which included:

a) Deferring the full deck replacement east of Jarvis Street; and
b) Undertaking interim repairs, including the associated detailed engineering design, of the expressway east of Jarvis Street. See: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.EX31.26

At its meeting of May 29, 2013, the Bid Committee awarded Tender 139-2013, for the F.G. Gardiner Expressway - Interim Repairs - Jarvis Street to Don Roadway, to Grascan Construction Ltd. / Torbridge Construction Ltd., valued at $6,989,791 (net of all taxes and charges). The interim repairs consisted of temporary timber bracing under the deck; localized concrete deck repairs, and repair and replacement of severely deteriorated parapet (concrete barrier) walls. See:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.BD126.5

On December 16 to 18, 2013, Council adopted By-law 1714-2013 (OPA 231) as amended including a Site and Area Specific Policy 426 for 21 Don Roadway and 30 Booth Avenue which lands are the subject of an anticipated office-retail development proposal from First Gulf. The By-law amends policies to strengthen the City's economic health and employment lands, preserving these areas for economic activities, accommodating retail and institutional uses and setting out a broad policy framework for development of the First Gulf lands in the Lower Don Special Policy Area:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PG28.2

At its meeting of April 1 to 3, 2014, Council considered a staff report and presentation to the Public Works and Infrastructure Committee on the Strategic Plan for the Rehabilitation of the F.G. Gardiner Expressway; where information regarding the current condition of expressway, including the East Deck, was presented. Council approved an accelerated approach for the rehabilitation of the F.G. Gardiner Expressway and directed the Executive Director of Engineering & Construction Services, the General Manager of Transportation Services, and the Deputy City Manager and Chief Financial Officer to report back on a revised Strategic Rehabilitation Plan for the F.G. Gardiner Expressway incorporating the outcome of the Gardiner East Environmental Assessment Study:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.PW29.1

On March 4, 2014, Public Works and Infrastructure Committee deferred selection of a preferred alternative for the Gardiner East, and requested a report back in 2015 following work with Waterfront Toronto and community stakeholders to review the recommended option under the EA process (Remove) to mitigate congestion concerns; and preparation and evaluation of an additional option (Hybrid) that combines the maintain and replace components to preserve expressway linkage and functionality between the Gardiner Expressway and the Don Valley Parkway:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.PW29.2

At its meeting of February 23, 2015, Public Works and Infrastructure Committee approved an amendment of $2,135,162 (net of all taxes and charges) to Purchase Order for the F.G. Gardiner Expressway Interim Repairs, Jarvis Street to Don Roadway, Contract No. 13SE-18S to provide for additional emergency repairs to minimize risks to the structure and public safety:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.PW2.6

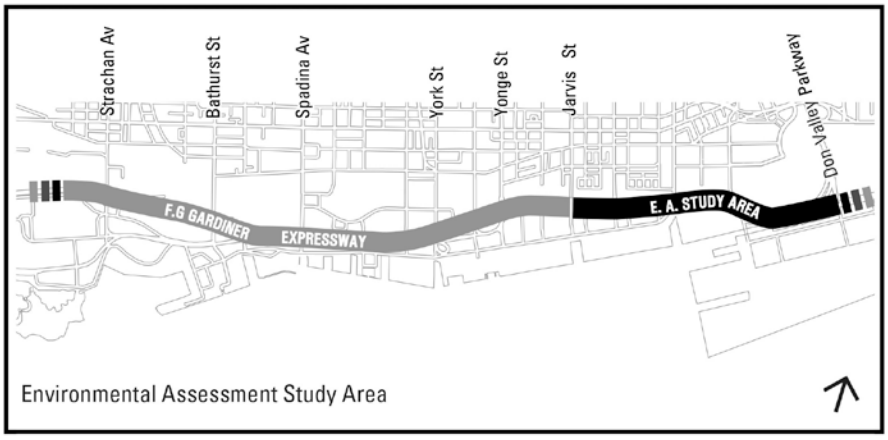
ISSUE BACKGROUND

Gardiner Expressway and Lake Shore Boulevard Reconfiguration EA and Integrated Urban Design Study

The F.G. Gardiner Expressway is a six-lane controlled access highway built between 1955 and 1966 that extends approximately 18 kilometres from Highway 427 to east of the Don Valley Parkway (DVP). Seven kilometres of the Gardiner is elevated, 2.4 kilometres of which comprise the Gardiner East EA study area.

Lake Shore Boulevard is a six-lane arterial road located underneath the elevated Gardiner for about two-thirds of its length. The DVP is a six-lane expressway that connects the Gardiner Expressway and Highways 401 and 404. In combination with the Gardiner, the DVP serves as a central area bypass route, an access route to and from the downtown from the south via the Gardiner, and a connection to the waterfront via the Don Roadway.

Figure 2 – Gardiner East EA Study Area



The Gardiner East EA Terms of Reference notes that the 2.4-kilometre elevated expressway of the Gardiner and Lake Shore East corridor occurs within a broader urban design and environmental effects study area from King Street to the waterfront and Lower Jarvis to Logan Avenue, as well as a transportation system study area that extends from Spadina Avenue to Woodbine Avenue, and from Dundas Street south to the waterfront.

Traffic Volumes in the Gardiner-Lake Shore Corridor

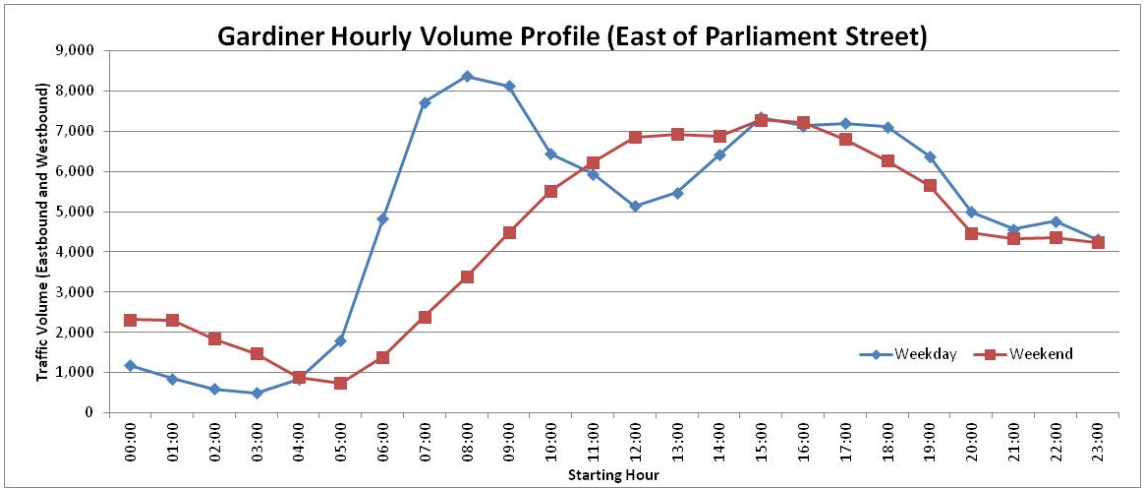
Within the study area, the Gardiner generally contains three eastbound and three westbound through lanes with a vehicular capacity of about 1,800 vehicles per lane per hour, for a total of 5,400 vehicles per hour in each direction. The average daily traffic volume is about 110,000 vehicles per day, equally split in each direction. Lake Shore Boulevard also has three lanes in each direction with a vehicular capacity of about 800

vehicles per lane per hour, for a total of 2,400 vehicles per hour in each direction. Volumes on Lake Shore Boulevard average approximately 18,000 vehicles per day, with approximately 6,000 in the eastbound direction and 12,000 in the westbound direction. The total volume in the Gardiner-Lake Shore corridor, east of Jarvis Street, averages approximately 128,000 vehicles (61,000 vehicles eastbound and 67,000 vehicles westbound). This is just over 60% of the average daily volume of approximately 200,000 vehicles in the Gardiner-Lake Shore corridor in the busiest section to the west (around Bathurst Street).

East of Jarvis Street, volumes on the Gardiner Expressway average approximately 625,000 vehicles per week and approximately 32 million vehicles per year. About 80% of users of this portion of the elevated expressway are destined for Downtown while approximately 20% are through traffic cutting through the City.

The following graph displays the hourly volume profile for traffic on the Gardiner Expressway for typical weekday and weekend conditions. It will be noted from the graph that on a typical weekday, the morning peak period gives rise to the most concentrated volume of trips and traffic congestion. By comparison, weekend volumes never reach the peak of the weekday morning rush hour but do show high volumes sustained through the middle part of the day.

Figure 3 – Gardiner Hourly Volume Profile East of Parliament Street



The Gardiner Expressway EA Planning Framework

Official Plan and Central Waterfront Secondary Plan

Toronto's Official Plan, approved by Council in 2002, provides a policy framework to manage the city's growth and development. It promotes revitalization of Toronto's waterfront, well-designed connections between the city and the lakefront as well as employment and economic policies to support a growing urban population.

Creating dynamic and diverse new communities, removing barriers/making connections, promoting a clean and green environment, and building a network of waterfront parks and public spaces are core principles of the Central Waterfront Secondary Plan, approved by Council in 2003. The Secondary Plan anticipates new mixed-use development and employment and population growth in the waterfront area.

EA Team, Terms of Reference and Purpose of the Undertaking

The EA consultant team is being led by Dillon Consulting Limited (Dillon) supported by Perkins+Will, Morrison Hershfield, Hargreaves Associates, HR&A Advisors and Archaeological Services Inc. Over the last year, CPCS has also participated on the consulting team in regards to the assessment of effects on Goods Movement.

The EA is directed by a joint City and Waterfront Toronto Steering Committee co-chaired by the Deputy City Manager responsible for the Waterfront Initiative and Waterfront Toronto's President and Chief Executive Officer. The Committee is supported by City and Waterfront Toronto project co-leads and a project team consisting of Project Managers from Waterfront Toronto, the Waterfront Secretariat, City Planning and Transportation Services. A Technical Advisory Committee reports to the project team. Waterfront Toronto and City Communications staff also provide support.

The Terms of Reference for the Gardiner East EA were approved by City Council and the Minister of the Environment in 2009. The Terms of Reference include four study lenses: Transportation and Infrastructure, Urban Design, Environment and Economics. The EA study goals are to: Revitalize the Waterfront, Reconnect the City with the Lake, Balance Modes of Travel, Achieve Sustainability and Create Value.

Purpose of the Undertaking

The Purpose of the Undertaking for the Gardiner EA is to address current problems and opportunities in the Gardiner-Lake Shore Boulevard east corridor. Key problems include a deteriorated expressway that needs major repairs, as well as a waterfront that is disconnected from the city. Key opportunities include revitalizing the waterfront through new buildings, neighbourhood streets and new public realm.

There are two assessment phases within the Individual EA. The first analyzes the preferred alternative solution, while the second considers alternative designs for the preferred solution. This report brings forward the assessment results from the first phase of the EA study and introduces design considerations for the preferred alternative solution.

EA Public Consultation Program

The Gardiner East EA is being conducted in an open, publicly accessible manner in accordance with the Environmental Assessment Act. With the assistance of Lura

Consulting as Independent Facilitator, the process features: public forums; outreach to government agencies, landowners, business groups, developers and other affected parties; Aboriginal community engagement in accordance with the City's First Nation Consultation Protocol for Environmental Assessments; Stakeholder Advisory and Technical Advisory Committees to provide advice and input at key milestones; a dedicated project web site; and the use of online engagement tools, Facebook (facebook.com/GardinerEast) and Twitter (@GardinerEast).

Key consultation milestones and public consultation findings are summarized in Section 6 below. The report for Round Four Public Consultation is at Appendix 2 and also available at www.gardinereast.ca.

COMMENTS

1. The Need for a Decision

A final decision on the Gardiner East EA is required urgently. Constructed in sections between 1955 and 1966, the decks and concrete barriers of the elevated section of the Gardiner are near the end of their original design life. The effects of weathering, winter salting, and the loads imposed daily by an estimated 110,000 vehicles, particularly on the steel-reinforced concrete elevated section, have taken their toll on the structure.

Drawing on information contained in existing reports, visual and detailed inspections, observations during past rehabilitation work, and ground penetrating radar surveys, the City's Strategic Rehabilitation Plan for the F.G. Gardiner Expressway confirmed that the deck and concrete barriers of the elevated section are in poor condition and are considered to be at the end of their service life. As a result, the Strategic Plan recommends replacing the existing deck on the entire elevated section as soon as possible.

In advance of the Council decision to resume the Gardiner East EA in 2013, the main deck of the F.G. Gardiner Expressway between Jarvis Street and the Don Roadway was found to be in poor to very poor condition, requiring complete replacement. The following phased approach, prioritized based on need, was planned for the deck replacement:

Phase 1: Don Roadway to Cherry Street in years 2013 to 2014;
Phase 2: Cherry Street to Parliament Street in years 2015 to 2016; and
Phase 3: Parliament Street to Jarvis Street in years 2017 to 2018.

The engineering design for the Phase 1 contract was awarded to MMM Group Ltd. (MMM) in October 2012 and a construction contract was planned to be tendered in 2013.

The resumption of the Gardiner East EA in 2013 necessitated changes to the Gardiner Expressway Rehabilitation Plan. This included the deferral of any plans for the full

reconstruction of the easterly section of the expressway, pending the outcome of the EA. Given that the implementation of a preferred EA option would likely not commence until 2020, and the urgent rehabilitation needs identified in the field survey, the engineering consulting firm MMM was issued a sole source Purchase Order for the design, contract administration and post-construction services for interim repairs in April 2013. The interim repairs to make the structure safe and extend its service life to 2020 consisted of: temporary timber bracing under the deck; localized concrete deck repairs; and repair and replacement of severely deteriorated parapet (concrete barrier) walls.

Given the urgency, a construction tender to undertake the interim repairs extending from Jarvis Street to the Don Roadway was issued shortly thereafter, valued at an estimated $7 million (net of all taxes). However, as construction of the interim repairs progressed, MMM determined that the scope of the necessary repairs was much greater than was originally estimated based on the limited data available at the time. Specifically, additional repairs to bents, parapet walls and deck soffit were required. Given the extent and emergency nature of some of the repairs required, it was determined that the most expedient option was to issue an amendment to the existing contract to undertake emergency repairs for areas with the highest structural priority; and scaling of concrete from areas which are delaminated and where the delamination could result in a safety risk. A Purchase Order Amendment to the existing contract, valued at an estimated $2.2 million (net of all taxes) was approved by the Public Works and Infrastructure Committee in March 2015. Notwithstanding these emergency repairs, additional interim repairs are required for the East Deck. This work, estimated at an additional $5 million, is expected to begin later this year.

A final decision on the Gardiner East EA is imperative given the current condition of the eastern segment of the expressway, the fact that interim repairs were only intended to extend the service life to 2020, as well as the timelines required to: complete the Environmental Assessment process, including approval from the Ontario Minister of the Environment and Climate Change; undertake engineering design; prepare construction tender documents; and procure the necessary construction contractor(s).

Further, given Council support of the accelerated approach for the implementation of the Strategic Rehabilitation Plan for the Gardiner Expressway, there is tremendous value in including the preferred Gardiner East EA alternative solution, within the scope of work for the implementation of the Plan. There are efficiencies of scale which can be expected to decrease overall costs and, undertaken as one large construction project across the combined at-grade and elevated sections, should result in significant traffic impact reductions during construction, as presented within the Plan. A staff report on the procurement plan and financing strategy for implementation of the accelerated Strategic Rehabilitation Plan is forthcoming and, as directed by Council, had been expected to incorporate the outcome of the Gardiner East EA.

Historical Context

Apart from the immediate need to reach a decision on the future of the Gardiner East corridor, there are longer term strategic considerations that also call for a final resolution to this matter. Almost from the time the flyover connection was made to the DVP in 1964, there have been proposals of various kinds to take down all or part of the elevated Gardiner Expressway structure. These types of proposals began to gain credence as the lands adjacent to the central section of the expressway began to transition from heavy industry, warehouse and freight rail uses to more intense employment and residential uses. With these changes in the character of the corridor came increasing demands to re-establish connections between the city and the lake.

These pressures culminated in the 1991 undertaking of a major study of the entire elevated section of the expressway from Dufferin Street to Leslie Street by the Royal Commission on the Future of the Toronto Waterfront. As the Commission's Report 15 commented: "This generation of Torontonians has a unique opportunity to recapture the Central Waterfront as part of the City. . .This opportunity has been created by the massive migration of industrial and freight rail activities outward from the Central Area" (p.43). The report also noted that among the other benefits of a major infrastructure program to reconfigure the Gardiner corridor, "would be a significant stimulus to help lift the strategic centre of the Greater Toronto Area out of its current economic slump" (p. 114). However, of the four alternatives put forward by the Commission, (which included Remove), City and Metro Councils chose the "Retain and Ameliorate" option. Metro advanced a program of physical and operational enhancements to address aesthetic concerns with the elevated structure, as well as the accessibility problems associated with pedestrian and bicycle access to the waterfront.

Consequently, the major opportunity for comprehensively reconfiguring the Gardiner/Lake Shore corridor was largely passed by. As the Central Waterfront continued to develop, an increasing number of "defensive" buildings were developed alongside the expressway to the point where it now makes it more of a challenge to remove the central section. In addition, options for implementing a significant construction detour program are limited because recent development has replaced vacant lots.

As the "Decision History" section of this report shows, there has been renewed interest in reconfiguring the corridor, particularly in the east end where the land use transition process has advanced the least. Between 1999 and 2001, the easternmost section of the elevated Gardiner Expressway, between just east of the Don River (in the vicinity of Logan Avenue) and Leslie Street, was demolished. This triggered a further series of proposals for dealing with the remainder of the east end of the elevated expressway that has led to the undertaking of the present EA study.

After decades of uncertainty and numerous costly studies of the future of the Gardiner/Lake Shore corridor, it is necessary for the City to reach a final decision with respect to the east end of the corridor which is in urgent need of rehabilitation and holds

considerable potential for redevelopment and positive change. Realization of the full benefits of this transition to more intense employment and residential uses requires agreement and decisive action on the future configuration of the area's two major roads, the Gardiner Expressway and Lake Shore Boulevard East.

2. Public Works and Infrastructure Committee Direction

A report to March 4, 2014 Public Works and Infrastructure Committee (PWIC) at http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.PW29.2 recommended Remove as the preferred EA alternative among four Gardiner East EA options studied:

1. Maintain under the City's committed rehabilitation program (i.e., "Do Nothing");
2. Improve the transportation and urban design features of the corridor;
3. Replace with a new expressway structure; and
4. Remove the elevated expressway east of Jarvis Street and replace it with an eight-lane Lake Shore Boulevard that connects directly to the Don Valley Parkway via new ramps.

The options were screened against the four study lenses: transportation and infrastructure, urban design, environment and economics. The Terms of Reference outlined the "paired-comparison" approach to be used in the evaluation process in which each option was compared against another on all measures, without weighting, until one alternative was identified. Remove emerged as the best means of meeting the EA study goals and objectives. The results were summarized in an evaluation matrix, and posted on the project web site at www.gardinereast.ca.

However, the EA Terms of Reference (ToR), envisioned that additional options could arise during the course of the EA. Specifically the ToR states that, "While four alternative solutions have been identified, it is possible that others could be identified and added for further consideration based on the public and agency consultation activities to be undertaken in the EA."

PWIC deferred selection of an EA preferred alternative. It directed optimization of Remove to address travel time impacts, and the development and evaluation of a fifth Hybrid option that maintains the Gardiner-DVP expressway linkage and functionality. Specifically, Public Works and Infrastructure Committee asked staff to:

1. Work with Waterfront Toronto and community stakeholders to review the recommended option under the EA process to mitigate congestion concerns;

2. Prepare an additional option that combines the maintain and replace components to preserve expressway linkage and functionality between the Gardiner Expressway and the Don Valley Parkway, and evaluate it against the EA criteria and the following:

- Transportation functionality;
- Impacts on key economic sectors;
- Cost benefit;
- Future land use considerations;
- Public transit components;
- Environmental impact; and
- Neighbourhood growth and compatibility.

3. Report back to City Council in 2015 through Public Works and Infrastructure Committee.

3. Response to Committee Direction

As detailed below, the project team has completed a number of activities in response to the PWIC direction regarding the 2014 Gardiner EA report:

- Optimization of the Remove option;
- Development of a Hybrid alternative;
- Studies on goods movement and economic competitiveness impacts, including stakeholder consultation; and
- Assessment and comparison of Hybrid against the previously recommended Remove in its optimized form.

The results of the past year of activity are described in Appendix 1: "Gardiner Expressway and Lake Shore Boulevard East Reconfiguration Environmental Assessment and Urban Design Study – Alternative Solutions Evaluation Interim Report Addendum" (Addendum Report) by Dillon Consulting (May 2015).

It should be noted that the list of evaluation criteria references in the PWIC decision are already included in the EA evaluation framework. Also note that the Consultant also uses the terminology of "Remove (Boulevard)" when describing Remove.

3.1 The “Optimized” Remove Alternative

A key direction from Public Works and Infrastructure Committee was to review the recommended Remove alternative “to mitigate congestion concerns.” This has resulted in the project team undertaking further traffic modelling and technical analysis to identify measures to increase road capacity and reduce delays along the Lake Shore Blvd. corridor and intersecting streets. The outcome has been to produce an “optimized” Remove alternative and it is this version that is now being evaluated in comparison to the new Hybrid alternative.

The original Remove alternative included:

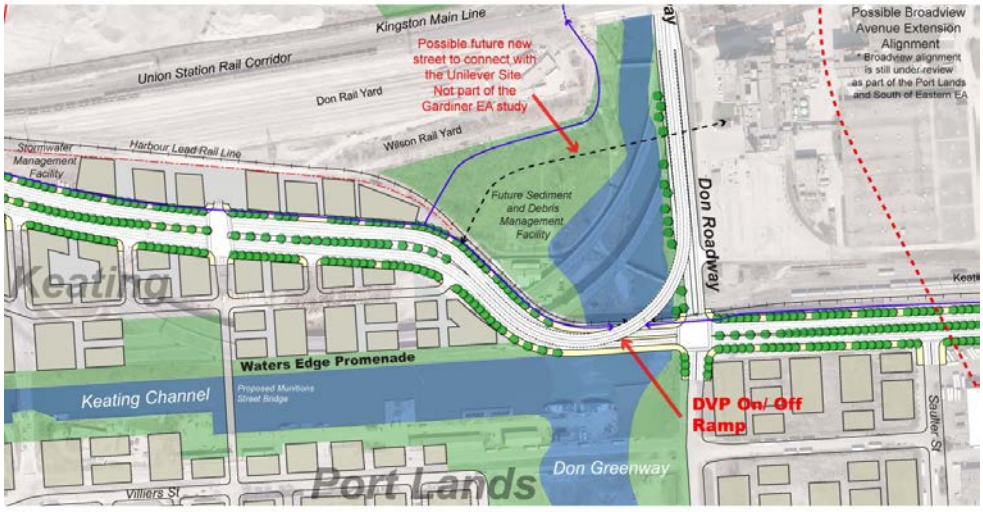
- Removal of 1.7 km of elevated expressway and replacement with an at-grade eight-lane tree lined Lake Shore Blvd.;

- Removal of about 750 m (eastbound lanes) and 850 m (westbound lanes) of the existing Gardiner on/off ramps west of Logan Avenue (hereinafter referred to as the "Logan on/off ramps");
- Removal of all road infrastructure along Keating Channel;
- Construction of a new Gardiner-DVP ramp connection;
- Construction of new two-lane on/off ramps at Jarvis Street; and
- Construction of a new multi-use pathway, as well as pedestrian and intersection improvements.

The optimized Remove alternative built upon the original concept by incorporating changes to increase traffic flow, such as improved traffic signal phasing and coordination, additional turn lanes and/or restrictions and physical alterations to the intersections. Optimization analysis was conducted from the viewpoint of improving traffic conditions. Some of the resulting changes, such as the introduction of right-turn lanes, may come at the expense of public realm and pedestrian amenities. A full list of changes to optimize Remove is attached at Appendix A of the EA Addendum Report at Appendix 3. The key changes are listed below:

- Revised lane configurations at intersections — in particular, identifying opportunities to provide southbound right-turn lanes on streets intersecting with the new Boulevard (Jarvis, Sherbourne, Parliament and Cherry);
- A one-lane increase (to three lanes) in the configuration of the on/off ramps at Jarvis Street;
- Road network adjustments (Queens Quay extension east of Cherry Street);
- Modifications to signal phasing at some intersections, including a review of exclusive left-turn phases, and improvements to accommodate the Cherry Street streetcar and Waterfront East LRT (southbound left-turn and northbound right-turn restriction at Cherry and Lake Shore);
- Confirmation of pedestrian crossing requirements assuming two-stage crossings where a wide median is available as a refuge, and single-stage crossings otherwise (a two-stage crossing permits greater east-west green time);
- Adjustments to the length of green phases at individual intersections to more efficiently allocate capacity between conflicting movements; and
- Improvements to signal coordination between adjacent intersections to minimize delays and reduce queue lengths.

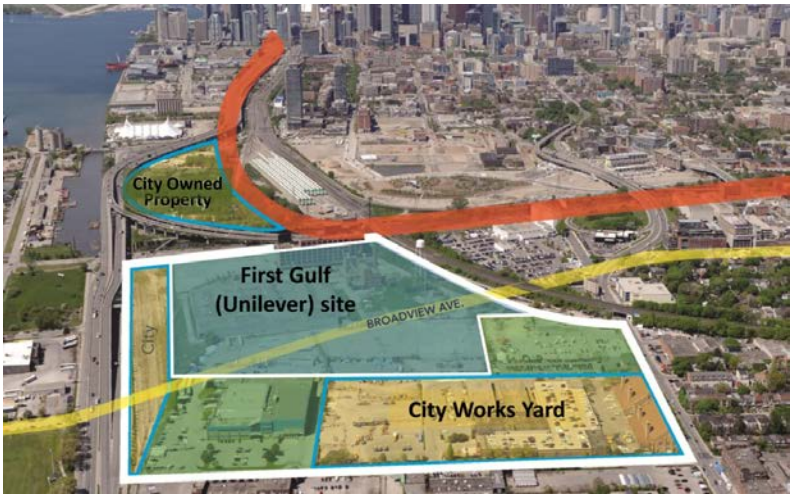
Figure 4 – Remove Connection to Don Valley Parkway



3.2 The Hybrid Alternative

At the March 4, 2014 meeting of the Public Works and Infrastructure Committee, First Gulf presented a new "Hybrid" concept for the Gardiner East corridor which, in the terminology of EA alternatives, can be described as a combination of the maintain and replace options. The First Gulf proposal for the Hybrid retained the existing Gardiner Expressway west of Cherry Street as it is and replaced the section east of Cherry Street with a new elevated expressway and DVP ramps. The east section would swing away from the lake and follow an alignment closer to the existing rail corridor with new, more northerly located, ramps across the Don River providing for a continuous connection to the Don Valley Parkway (DVP).

Figure 5 — Original First Gulf Hybrid Proposal



In considering this concept, Public Works and Infrastructure Committee directed City staff to “prepare an additional option that combines the maintain and replace components to preserve expressway linkage and functionality between the Gardiner Expressway and the Don Valley Parkway, and evaluate it against the EA criteria.” From thereon, this option has been referred to as the Hybrid alternative.

Following the Committee directive, the project team has developed and tested several different designs and alignments for the Hybrid alternative taking into account geometric, operational and safety criteria and standards, existing and planned initiatives, and other objectives. The first step was to examine First Gulf's proposed configuration which would require a 50 km/h design speed for the Gardiner-DVP ramp. It was found that vehicles travelling at 90 km/h on the Gardiner would have difficulty reducing their speed safely to 50 km/h to link to the DVP (and similarly from the DVP to the Gardiner). The conclusion was that the current 70 km/h posted ramp design speed for the existing Gardiner-DVP link is required to maintain a safe vehicular connection between the two expressways.

Next, the team examined different ramp radii to see if moving the footprint of the Gardiner east of Cherry Street closer to the rail corridor would be possible. The tight ramp turning radii in First Gulf’s proposal rested on two key assumptions:

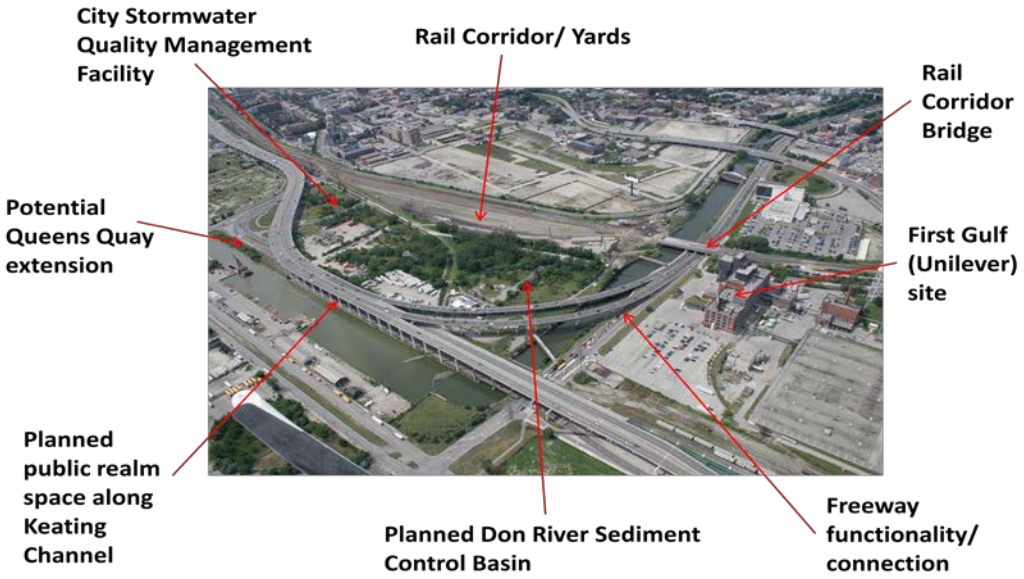
1. Aligning the new expressway immediately adjacent to the existing rail corridor;
2. Landing the ramps further north on the DVP.

However, the existing operations and future plans of Metrolinx preclude moving the new expressway closer to the rail corridor. Also, the constraints imposed by the existing Don Rail bridge and the need for sightline clearances eliminate the possibility of terminating the expressway infrastructure further north on the Don Roadway as proposed by First Gulf. Further design restrictions emerged as a result of discussions with the Toronto Region Conservation Authority and the Toronto Water and Engineering and Construction Services divisions:

- An elevated expressway could not be placed on top of the stormwater quality management facility now under construction east of Cherry Street; and

- Aligning the ramps through the sediment management facility of the Don Mouth Naturalization and Port Lands Flood Protection project would compromise the ability to operate the facility at its proposed location.

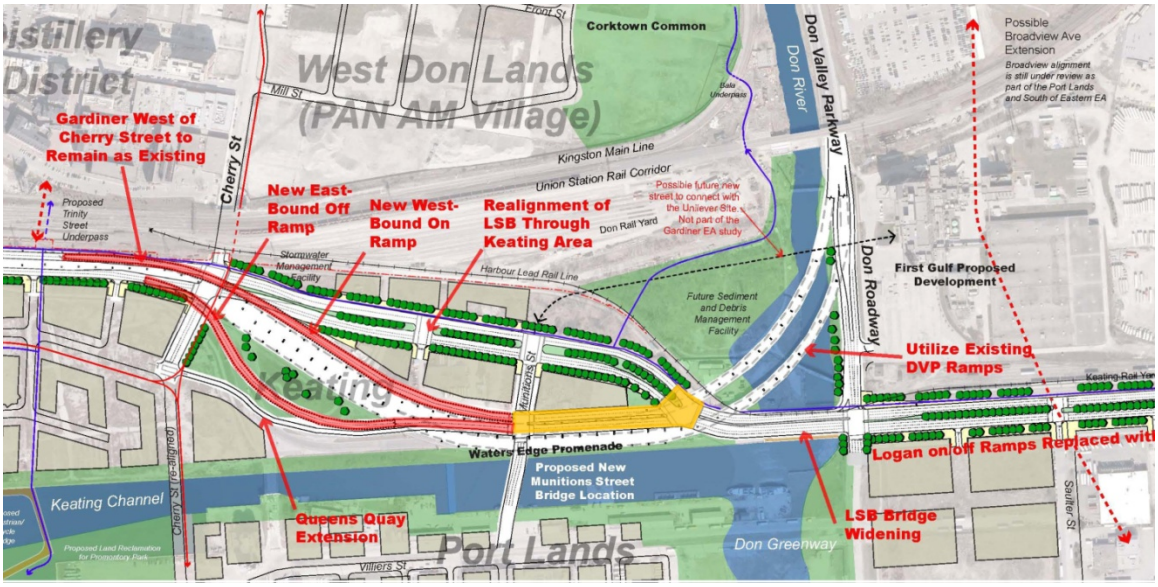
Figure 6 – Study Area Considerations



Consequently, it was determined that the current alignment of the Gardiner/DVP ramps best satisfies the primary concern to ensure a safe ramp speed design while accommodating the City's stormwater facility and the planned Don Mouth Naturalization Project sediment management facility. For these reasons it was decided to maintain the existing ramps in the Hybrid option as there is no benefit, particularly from a capital cost and construction disruption perspective, in removing and rebuilding a new set of ramps essentially in the same location.

As with the Remove alternative, Hybrid involves the removal of the existing Logan eastbound off-ramp and the westbound on-ramp, which are 750 metres and 850 metres in length respectively. The terminal connection from the elevated expressway to Lake Shore Boulevard is brought west of the Don River and is accomplished by building new on/off ramps between Cherry Street and the future extension of Munition Street. These new ramps are shorter than the existing Logan ramps (470 metres for the westbound on-ramp and 425 metres for the eastbound off-ramp) but they have a significant impact on the Keating district and add to the barrier effect of the expressway along this section of water’s edge. New approach roads to the new on/off ramps would be built beneath and north of the Gardiner Expressway, and a new intersection created between an extended Queens Quay and Lake Shore Blvd. under the DVP ramps. It is at this intersection that inbound Lake Shore traffic from the east wishing to access the expressway would make a left-turn to gain access to the road leading to the new on-ramp.

Figure 7: Hybrid EA Alternative – East of Cherry Street Focus



It should be noted that Sherbourne Street has been approved for reconstruction to convert the existing bicycle lanes to a separated bikeway. In conjunction with this work, the intersection of Sherbourne and Lake Shore Boulevard will be redesigned to improve the operational safety at this location. Specifically, the existing westbound Gardiner off-ramp to the northbound Sherbourne channelized lane will be removed and traffic will be redirected to the existing off-ramp lane to Lake Shore from where traffic will then turn right onto northbound Sherbourne. The second safety improvement is the removal of the southbound Sherbourne to westbound Lake Shore channelized right-turn lane.

Both of these improvements will facilitate the introduction of a future multi-use trail on the north side of Lake Shore, which would extend westward from the current terminus at Parliament Street and connect to Yonge Street. The removal of the two vehicular channelized right-turn lanes will improve pedestrian crossings at this intersection by improving sightlines between vehicles and pedestrians, and by lowering the speed of autos. The intersection changes are a current capital works improvement project, which will occur as a base condition, and is assumed to be in place under the Remove alternative as well. The implementation of the multi-use trail is anticipated to occur at some point in the future, subject to further study and budget planning.

In addition, the eastbound Jarvis off-ramp has been changed to allow vehicles destined to eastbound Lake Shore to merge with Lake Shore traffic before the intersection at Jarvis Street. This change eliminates the need for a separate signal phase for this movement, which would improve both traffic operations and delay for pedestrians crossing north/south.

In summary, the Hybrid alternative comprises:

- Re-decking of existing Gardiner structure;
- Re-decking of existing Gardiner to DVP ramps;
- Removal of about 750 m (eastbound lanes) and 850 m (westbound lanes) of the existing Logan on/off ramps;
- Addition of two new ramps (two lanes each) in the Keating precinct:
  - about 470-metre new westbound on-ramp; and
  - about 425-metre new eastbound off-ramp;
- Construction of a new multi-use pathway north of Lake Shore Boulevard between Yonge and Parliament Streets, as well as some pedestrian and intersection improvements.

3.3 Goods Movement and Economic Competitiveness Studies

Based on direction from PWIC, the consulting firms of CPCS and HR&A Advisors were retained to evaluate how the Remove and Hybrid alternatives would impact goods movement and the City's economic competitiveness. Key stakeholders were engaged for both of these studies.

The CPCS study evaluated how local and regional goods movement would be impacted based on travel time, reliability, and cost variables. The CPCS highlighted regional travel route preferences and how impact varies by industry due to supply chain systems.

The HR&A Advisors economic competitiveness study considered how the Remove and Hybrid options would influence the downtown area's global, regional and local competitiveness. Fiscal benefits were also considered.

The two reports are described in detail below in Sections 5.1.2 and 5.4 respectively. They are also appended to Dillon's EA Addendum Report at Appendix 3.

4. Future Development Growth and Transportation Capacity

This section of the report discusses how the Remove and Hybrid alternatives impact opportunities for development growth in the Downtown, and in the Gardiner East corridor in general.

The Downtown

The East Gardiner corridor provides important road access for both people and goods movement in the Downtown and other planned growth areas in the Gardiner East corridor, such as South of Eastern and the Port Lands.

Between 1985 and 2011, employment in the central area has increased by 25% to 442,000 jobs from 352,000 jobs. By 2031, employment in the Downtown is forecast to reach 571,000 jobs, a further 29% increase. The population of the Downtown has grown

even faster than employment, increasing by 65% to 199,300 persons in 2011 from 120,500 persons in 1985. Between 2006 and 2011, a period which includes a significant economic recession, the pace of housing completions increased by 38% over the previous five years. Currently, the Downtown population is growing at four times the rate of the City as a whole. By 2031, the Downtown's population is forecast to grow to 258,000.

As a result of strong Downtown population growth, the ratio of people to jobs has fallen from 1:3 in 1985 to around 1:2.2 today. Improving the balance between population and jobs reduces the need for inbound commuting by increasing the availability of local workers.

Travel data for 2011 indicate that of the 157,200 person trips coming into the Downtown during the morning peak-hour, 68% are taken by transit (49% TTC and 19% GO Transit) while 28% are by auto. Of the 28% auto, 7% of those use the Gardiner Expressway between Bathurst Street and the DVP and, in turn, 3% use the Gardiner East (which represents approximately 12% of the total auto commuter trips).

Given that the Downtown office market competes with other major financial centres in North America and around the world, there is understandable concern over any proposal that would reduce access to the Downtown and increase congestion on its streets. Since the planning policies of the 1970s, Downtown growth has been predicated on increased travel demands being met by expanding transit capacity. Road access has been capacity-constrained by physical constraints. The free-flow design of the Hybrid alternative would result in this option also maintaining its travel time advantage over the Remove alternative during off-peak periods.

To assess future road conditions without transit improvements apart from GO rail improvements (i.e., no Relief Line, Waterfront LRT or LRT service on an extended Broadview Avenue), the regional traffic forecasting model (EMME) was applied to test how the roads crossing the Downtown East Screenline would perform under 75% of the full buildout of known residential and commercial development proposals within the City over the 2001 to 2031 period. Coarse results of the analysis show that, with the Maintain alternative, the roads crossing the Downtown East Screenline reach capacity when 75% of full buildout in the City has been achieved, likely sometime around the year 2022 at current growth rates (assumed similar outcomes for Hybrid). By comparison, the Remove alternative would see roads crossing the east screenline operating at 25% over capacity by this date. As traffic begins to reach or exceed road capacity, drivers will begin to adapt their travel behaviour by taking such measures as: seeking alternative routes; travelling in the off-peak; switching to transit; car sharing; employing technology (e.g. teleconferencing and webinars), and by not making trips at all. This adaptive behaviour of motorists makes it difficult to pinpoint exactly when gridlock on the road network will occur.

South of Eastern and the First Gulf Site

Both the Remove and Hybrid alternatives bring substantial benefits to the development of two key planned commercial growth areas to the east of the Downtown, namely the South of Eastern area and the Port Lands. As experience has shown, simply designating lands for employment uses alone does not ensure their growth. Often infrastructure improvements are required to realize their full potential. Remove and Hybrid facilitate the opportunity for this type of fruitful investment in road and transit improvements to improve access to these two growth areas.

The South of Eastern area covers 135 hectares (334 acres) located east of the Don River, west of Coxwell Avenue and extending south of Eastern Avenue to Lake Shore Blvd. As shown on Figure 8, the South of Eastern area includes the First Gulf site at 21 Don Roadway, formerly the Unilever site. Council's recent adoption of OPA 231 (employment lands) encourages the economic revitalization of the South of Eastern area, for which the First Gulf site at the western end of this planning district may serve as an anchor and catalyst. Council also recently adopted a Site and Area Specific Policy (SASP) 426 for 21 Don Roadway and 30 Booth Avenue, which includes the First Gulf site and adjacent properties. Although the Minister of Municipal Affairs and Housing approved most of OPA 231 in July 2014, City staff are working with provincial staff on a process to obtain approval for SASP 426, as it includes lands within the flood plain as defined in the Lower Don Special Policy Area.

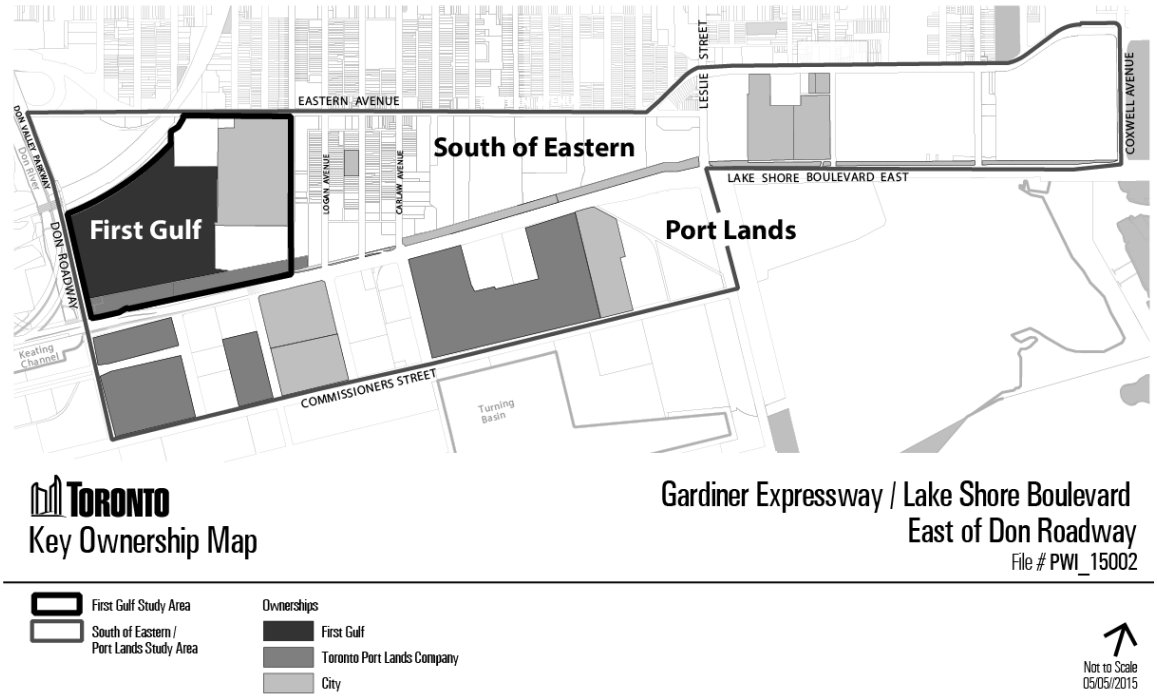
Major developments like First Gulf can be seen as beneficial in terms of relieving commercial development pressures on the Downtown and reducing the focus of commuter trips on Union Station. Already, commercial development in the Downtown has begun to move south of the rail corridor and out towards the “shoulder” areas of the financial district. Examples of this trend can be found in existing commercial developments such as RBC Waterpark Place, the Corus and Coca-Cola buildings to the east of Jarvis Street, and in planned new developments like those of Queens Quay Place and the Globe and Mail at 351 King Street East. In this context, the First Gulf site represents a significant opportunity for strategically located employment growth in Toronto.

The First Gulf proposal is estimated to be a $6-billion project based on a master plan to develop 1.1 million square metres (12 million square feet) of office-retail space proposed to accommodate 50,000 employees. The developer is very much interested in improving road and transit access to the site and has identified the Logan ramps as a potential barrier to access from the south. It was the interest of First Gulf that led to the development of the new Hybrid alternative. A formal development application/proposal for the First Gulf site is expected to be submitted in the coming months.

The City is also undertaking a planning study of the South of Eastern Employment District in response to a request from Planning and Growth Management Committee. City Planning and Economic Development and Culture divisions have started the three-

pronged South of Eastern Strategic Direction to address the area's economic potential and the resulting transportation needs and urban design implications.

Figure 8: Key Ownership Map – Gardiner Expressway / Lake Shore Boulevard East of Don Roadway



The Port Lands

The Port Lands cover an approximately 350 hectare (865-acre) area between Cherry and Leslie Streets, south of the Lake Shore corridor. In 2012, Council adopted the results of the Port lands Acceleration Initiative, which included finalization of the Don Mouth Naturalization and Port Lands Flood Protection EA (DMNP EA). The effect of the EA study is to remove about 240 hectares (593 acres) of land from risk of flooding by restoring the existing mouth of the Don River into a naturalized river channel and completing other associated works. The planning work underway in the Port Lands is coordinated with the DMNP EA, which was recently approved by the Minister of Environment and Climate Change.

As directed by Council, the City, with Waterfront Toronto, is developing a Port Lands-wide planning framework to guide revitalization over the long term. The Port Lands and South of Eastern Transportation and Servicing Master Plan (TSMP), which is exploring the necessary road, local transit and municipal servicing requirements, will inform both the Port Lands Planning Framework and South of Eastern Strategic Direction.

The work completed for the Port Lands and South of Eastern TSMP concluded that the lack of higher-order transit availability and poor local street connections, such as the inability to extend Broadview Avenue south, constrain the amount of commercial development that can occur. As noted above, First Gulf has indicated that the removal of the elevated Gardiner structure is a necessary pre-condition in terms of opening up convenient road and local transit access from the south and facilitating movement between the Port Lands and the South of Eastern area.

Both the Remove and Hybrid alternatives include the elimination of the Logan ramps and would open up the lands north and south of this obstructed section of Lake Shore Boulevard East and provide more flexibility to accommodate Broadview transit and road extension south from Queen Street into the Port Lands. While there are opportunities to achieve a connection of the Broadview Avenue extension to Lake Shore Boulevard further west if the existing Gardiner structure were maintained, opportunities are limited and constrained due to expressway piers. Further, removal of the Gardiner structure in this area provides additional opportunities for achieving new street connections in the vicinity of Saulter Avenue and Bouchette Street. Other benefits of the Remove and Hybrid alternatives include the ability to:

- Achieve an improved built form interface between the Port Lands and the 21 Don Roadway site;
- Accommodate and encourage active transportation; and
- Create synergies between the two areas and foster work-live opportunities as identified in the "Port Lands Planning Framework: Land Use Direction" report adopted by City Council in 2014.

In summary, both the Remove and Hybrid alternatives make significant contributions to realizing the economic potential presented by facilitating the commercial growth and development of the South of Eastern area and the Port Lands. Both these areas have been the focus of ongoing intensive planning efforts and are seen as major generators of economic and employment growth, which are critical to the City's continued prosperity. In this context, the transformative power for positive economic change generated by the removal of the Logan ramps should not be underestimated.

5. Assessing Optimized Remove and Hybrid EA Alternatives Against the Four Lenses

The following evaluation of the Remove and Hybrid alternatives is based on the method applied to the original four alternatives as described in the February, 2014 staff report on the reconfiguration of the Gardiner East corridor. The same 16 criteria, now with over 60 numerical and qualitative measures, are organized according to the four study lenses identified in the EA Terms of Reference (September, 2009).

Apart from extensive work on developing the new Hybrid alternative, the past year has seen considerable efforts made to refine the evaluation measures and, in particular, recent studies of Economic Competitiveness and Goods Movement have provided additional

information for consideration. The Remove alternative is evaluated in its “optimized” form as described earlier in this report. Overall, the evaluation process has taken full account of the recommendations made by PWIC at its meeting of March 4, 2014 regarding further analysis of the Gardiner East corridor.

The four study lenses call for the Remove and Hybrid alternatives to be compared in terms of they how impact: (i) Transportation and Infrastructure; (ii) Urban Design; (iii) Environment, and (iv) Economics. Brief overviews of the comparative evaluations under each of these headings are presented below. The contents are drawn primarily from "Section 6: Remove and Hybrid Comparison" of the consultant team’s EA Addendum Report attached to this report at Appendix 3. Finally, some general comments and caveats on the evaluation process are presented.

5.1 Transportation and Infrastructure Lens

Overview

The transit and cycling impacts of the two alternatives are, overall, quite similar. However, the Hybrid alternative offers advantages in terms of auto travel times, goods movement and traffic disruption during construction. Forecast trips in 2031 for selected origin-destination pairs indicate that inbound, morning peak-hour trips will take two-to-three minutes longer for the Remove alternative as compared to the Hybrid alternative. Over the wider study area, traffic modelling forecasts show that under the Hybrid alternative, 90% of all morning peak-hour trips (both directions) will incur delays of less than two minutes compared to the base case, while this figure falls to 75% for Remove. These faster travel times for Hybrid also benefit goods movement. The construction impacts of the two alternatives are considerable and complex as they are each expected to take six years to complete. However, Remove is expected to result in three-to-four years of traffic detours and disruption compared to approximately one-and-a-half years for the Hybrid alternative.

When assessed through the Transportation and Infrastructure lens, the Hybrid emerges as the preferred alternative.

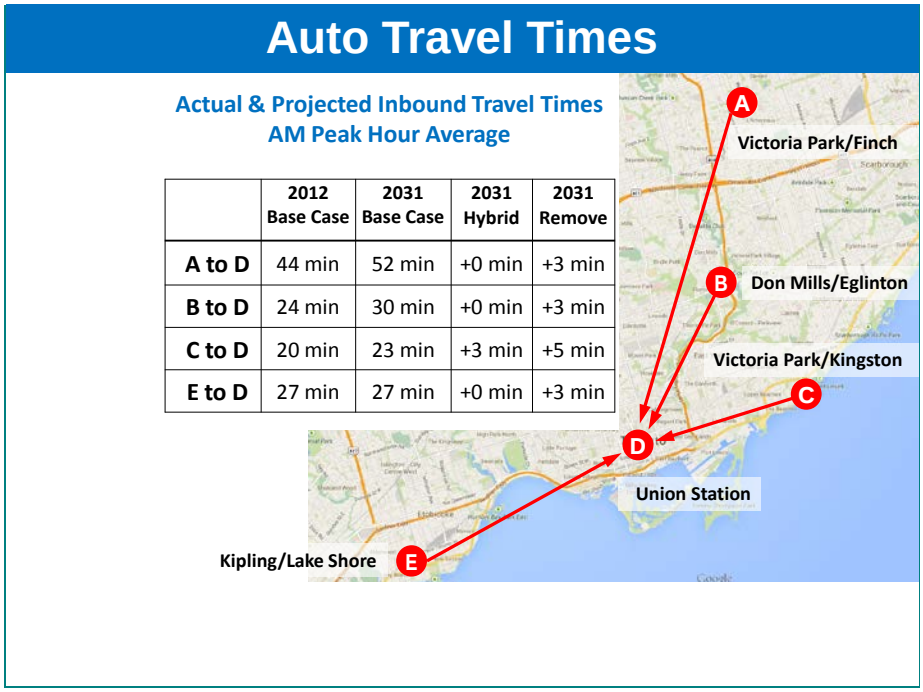
5.1.1 Transportation Assessment Results

Vehicle Travel Time

The 2031 forecast travel times have been updated for various trips into the downtown during the morning peak hour. The trips are from Victoria Park/Finch, Don Mills/Eglinton, Victoria Park/Kingston and Kipling/Lake Shore as representative trip origins. The intersection of Bay Street and Front Street was selected to represent a common downtown destination for comparing travel times. These origin locations represent points in the densest areas of the City in terms of vehicles travelling on the east section of the Gardiner (based on a select link analysis).

Figure 9 summarizes the findings of the travel time analysis. Travel times for 2031 are subject to a number of factors (e.g., weather, major incidents, construction projects and special events). Travel times can also vary on a daily basis under existing conditions.

Figure 9 – 2031 Forecast Auto Sample Travel Times



Note in the above that 2031 Base Case travel times are up to six minutes higher than current travel times due to growth in background traffic volumes.

Previously, the Remove alternative was five-to-10 minutes longer than the Maintain alternative for these trips. The optimized Remove alternative reduces the additional travel time to three-to-five minutes from the previously presented five-to-10 minutes (AM peak hour). For the Hybrid alternative the travel times are up to 3 minutes longer than the Maintain base case. The key difference is the trip from Victoria Park/Kingston to Bay/Front, which increases for both alternatives, and is estimated to be two minutes longer for the Optimized Remove compared to the Hybrid alternative.

In addition to the estimated travel time comparison, the comparative automobile evaluation assessment by Dillon Consulting also considered average peak hour auto travel times and the flexibility of route choice for vehicles moving through the study area network. The results indicate that 75% of all the trips in the study area travelling during the AM peak hour will experience delays of less than two minutes under the Remove alternative. Under the Hybrid alternative, 90% of trips will experience delays of less than two minutes.

The road network flexibility, which indicates the amount of choice available to drivers in selecting a route, is measured by the amount of vehicle turn prohibitions at key

intersections. Remove and Hybrid both reduce the number of restrictions as compared to the Maintain base case. The Hybrid offers marginally more flexibility as it has one restriction at Jarvis Street (no westbound left turns), while the Remove has two restrictions at Cherry Street (no southbound left turn onto Lake Shore and no northbound right-turn onto Lake Shore; in order to improve east-west movements on Lake Shore and LRT operations on Cherry). As mentioned earlier, network flexibility is one important option in terms of the adaptive behaviour of motorists in avoiding highly congested conditions. Other options that motorists have include: travelling in the off-peak; switching to transit; car sharing; employing technology (e.g. teleconferencing and webinars), and not making trips at all.

Additional information on travel time comparisons is included in Appendices 1 and 3 attached to this report.

Transit Impacts

The impact on transit service and assumptions are similar for both the Remove and Hybrid alternatives. There is, however, a greater impact of the Remove alternative when a 75% interim build out of future land use is considered in conjunction with the removal of major new transit improvements in the study area.

The analysis for future conditions with 100% land use and all of the transit assumptions in place indicate that transit is required to meet the future travel needs for all alternatives. A sensitivity test was then conducted assuming 100% land use, but without the Relief Line, the Broadview LRT extension into the Port Lands, and the Waterfront East LRT extension also into the Port Lands (improvements to GO rail service were maintained). The results indicate that all alternatives would place additional constraints on the TTC and GO Transit services beyond their capacities in some circumstances. The analysis also indicated that additional constraints would be experienced on the road network, particularly for auto trips on the DVP.

The most recent analysis tested a scenario that assumes 75% of land use is built before the major new transit improvements identified above are in place. This analysis was conducted using the regional forecasting model, and the results show that the roads crossing the Downtown East Screenline would reach capacity under the Hybrid alternative. By comparison, the Remove alternative would see roads crossing the east Screenline operating at 25% over capacity. The analysis illustrates the point that road capacity limits will be reached sooner under the Remove alternative, and that both the Remove and Hybrid alternatives rely on increased transit capacity becoming available to accommodate projected 2031 trip increases.

The City is also continuing with short to medium term improvements to increase transit capacity into downtown, until such time that the major new transit improvements are in place.

Pedestrian and Cycling

Pedestrian experience is slightly better under Remove, and safety is ranked equally for the two alternatives. The Remove alternative offers improved sightlines and lighting conditions, removal of ramp conflict points, overall improved public space in the corridor and increased traffic volumes at grade. The Hybrid option offers less traffic at grade, but retains the ramp conflict points for pedestrians, along with poor lighting and visibility caused by the Gardiner columns and the elevated structure. Hybrid creates longer north-south distances for pedestrians crossing Lake Shore Boulevard at Jarvis and Sherbourne Streets.

The City has conducted additional work on the feasibility of extending the multi-use trail on the north side of Lake Shore so that it is continuous from Coxwell to Yonge Street, and concluded that, subject to further study, it can be implemented under existing conditions. This is based on improvements along the corridor, including the changes to the intersection at Sherbourne and Lake Shore, which are described under the Hybrid alternative. The multi-use trail was previously included in the Remove alternative, so both options now include this facility as a common and important feature. The existing gap in the trail is between Parliament Street and Yonge Street.

5.1.2 Movement of Goods

As mentioned earlier in Section 3.3 of this report, the consulting firm of CPCS were retained to evaluate the impacts of the Remove and Hybrid alternatives on goods movement in the Study Area. The full CPCS study is attached as Appendix B of Appendix 3, the EA Addendum Report.

The CPCS study draws on a variety of data sources, stakeholder consultations and further traffic modelling analysis. Traffic count and truck movement data from the City's Transportation Services Division and from the Provincial Ministry of Transportation (MTO) were reviewed to ascertain current truck flows and average speeds, including movements on the important 400-series highways. The study was informed by extensive stakeholder consultations. Stakeholders were identified through Canadian Business Patterns data, truck stop data, industry associations and suggested contacts to ensure a comprehensive and balanced representation of interests. A number of the stakeholders had deputed at the March, 2014 meeting of PWIC.

The stakeholder consultations involved the discussion of a wide range of issues related to the movement of commercial vehicles. It emerged that the stakeholders can be differentiated by three primary types of "supply chain" operations, each with somewhat different issues and concerns:

- Industrial/manufacturing;
- Retail, and
- Courier/logistics.

Where possible, stakeholder comments were converted into quantifiable measures to be used in the evaluation process.

Currently, the Gardiner Expressway is a key link in the peripheral expressway system that frames the City (the other links being the DVP, Highways 401 and 427). Although the Gardiner Expressway carries less truck traffic than the 400-series highways, it is the preferred route for most truck trips with terminal points in the EA Study Area. Longer distance, through trips by truck tend to take the 400-series highways to avoid traveling across the bottom of the Downtown. In fact, around 80% of truck traffic on the Gardiner Expressway either begins or ends in the study area, particularly in the Port lands.

The stakeholder consultation revealed three factors to be of primary concern in the movement of goods:

- Travel time (or speed);
- Reliability, and
- Costs (to the shipper).

The goods movement evaluation of the Remove and Hybrid alternatives was primarily undertaken on the basis of these three factors or criteria. The importance of each of the three criteria varies in degree by stakeholder type. Industrial/manufacturing stakeholders generally focus more on costs while retail stakeholders place greater emphasis on reliability and courier/logistics stakeholders are most concerned with both travel time and reliability.

In terms of travel time, the two-to-three minute advantage the Hybrid has over Remove for auto travel equally applies to truck traffic (in both the peak and off-peak periods). However, as for autos, the Remove alternative would have a significantly longer period of substantial traffic disruptions during its six-year construction period.

The CPCS study also analyzed how truck movements would be impacted by a traffic incident, such as an accident or road repairs, under each alternative. To mimic the effect of a typical traffic incident, the traffic forecasting model assumed the closure of one lane of traffic east of Jarvis Street for one half hour in the peak period.

For the Remove alternative, the result of a traffic incident was to reduce average traffic speed by an average of 2 km/hr and to reduce traffic volume by 1,685 vehicle trips. By contrast, the Hybrid alternative sees travel speeds lowered by 0.5 km/hr on Lake Shore Boulevard and by 4.5 km/hr when the incident is on the Gardiner Expressway, with accompanying volume reductions of 368 vehicles and 2,211 vehicles on Lake Shore and the Gardiner respectively. Based on these results for the estimated impacts of incident delays on goods movement, the study concluded that there is not a significant difference between the Remove and Hybrid alternatives.

Many of the industrial/manufacturing operations in the study area (e.g. sugar, cement, concrete, cooling systems etc.) are particularly dependent on and sensitive to changes in road conditions in the Gardiner/Lake Shore corridor. Stakeholders in the retail and

courier sectors are generally less dependent on the Gardiner Expressway and operate over a wider, more diverse pattern of locations. However, retail and courier stakeholders are concerned about slower speeds and reduced reliability, claiming that persistent delays can lead to the need for additional delivery vehicles to meet customer demands which, in turn, adds to costs.

The CPCS study proposes a number of mitigation measures to either reduce overall congestion in the corridor or improve goods movement for specifically targeted types of truck traffic. These measures include:

- Wider application of the City's Congestion Management Plan tools;
- Off-peak delivery periods;
- Truck-only lanes and peak shoulder lanes;
- High-occupancy vehicle (HOV) lanes and high-occupancy toll (HOT) lanes;
- Congestion pricing;
- Increased alternative road capacity and improved public transit services;
- Roadway operational improvements, and
- Improved wayfinding for trucks for alternative routes.

Overall, the Hybrid alternative is preferred on the basis of goods movement considerations, primarily because of faster travel times and less disruption during construction.

5.1.3 Safety

The intersections of Lake Shore Boulevard at Jarvis, Sherbourne and the Don Roadway were in the top 20% of list of roadways in need of improvement based on the frequency of collisions between 2007 and 2011. The safety risk to pedestrians, cyclists and motorists in the Gardiner / Lake Shore corridor was examined as part of the EA. Overall, Remove would result in a higher preference ranking for most of the safety criteria, mainly because of improved intersection designs along the Lake Shore Boulevard corridor, and a more normalized street pattern with safer pedestrian crossings. Hybrid improves fewer intersections and maintains the presence of the Gardiner's support columns which can obscure sightlines, and consequently is less preferred. Safety criteria include the number of lanes at intersection crossing points, uncontrolled conflict points, design speeds, road safety concerns, such as limited sightlines and visibility, and availability of shoulders along the expressway**.**

5.1.4 Constructability and Construction Impacts

Both the Remove and Hybrid alternatives require an approximate six-year construction period but Remove would have approximately three-to-four years of road detours while Hybrid would have about one-and-a-half years of road detours. The detours associated with Remove would result from rolling lane closures of Lake Shore Boulevard to facilitate the removal of the expressway and the reconstruction of Lake Shore. It is expected that the new on/off ramps east of Cherry Street for the Hybrid alternative can be

built while maintaining traffic flow along Lake Shore, although some temporary detours will be required.

Detailed and refined construction staging plans will be developed for the preferred EA alternative approved by Council. This will provide further opportunity to evaluate and mitigate the negative impacts of construction.

Conceptually, the staging for the Remove alternative is expected to unfold as follows:

Year 1: Prepare and extend detour roads, including Queens Quay, Commissioners Street, Don Roadway and Cherry Street, along with detour road connections to LSB east of the Don River; Realign LSB as per the Keating Precinct Plan; Install temporary Gardiner bents to support demolition activities.

Years 2 to 5: Close eastbound then westbound Gardiner travel lanes and demolish in two stages; Detour traffic and demolish DVP and Logan ramps; Pre-build new eastbound and westbound Boulevard lanes, intersections and DVP off-ramp and reroute traffic to them.

Year 6: Complete Boulevard construction, including public realm, and remove detour roads.

Conceptually, the staging for the Hybrid alternative is expected to unfold as follows:

Year 1: Realign LSB east of Cherry Street as per the Keating Precinct Plan and detour Lake Shore traffic to the new LSB. Initiate re-decking of the Gardiner East. Two Gardiner travel lanes at a time would be closed for re-decking which is expected to last about six years. Re-decking of the Gardiner east of Cherry Street should preferably occur after LSB has been realigned and traffic detoured from underneath this section of the Gardiner. Re-decking east of Cherry Street needs to also be coordinated with new on/off ramp connections in Keating.

Years 2 to 3: Build new Keating eastbound and westbound off-ramp and connection roads; prepare and extend temporary detour roads, including Don Roadway, Commissioners Street and Cherry Street.

Years 4 to 5: Route LSB traffic east of the Don River to temporary detour roads (traffic west of Cherry Street is unchanged), demolish the Logan and build the new LSB.

Year 6: Reroute traffic back to LSB; complete the new Boulevard including public realm features, and remove detour roads.

5.2 Urban Design Lens

Overview

Urban design is the second of the four evaluation lenses considered in the Gardiner East EA. This metric encompasses public realm and built form, and assesses to what extent the proposed changes to the Gardiner East would be consistent with key policy documents that define the City's waterfront planning and urban design objectives and principles: the Official Plan, Central Waterfront Secondary Plan and more detailed precinct plans.

With respect to Urban Design, both the Remove and Hybrid alternatives present similar benefits east of the Don River. Here, both alternatives involve the removal of the Logan ramps, which reduces the number of road structures over the mouth of the Don River and eliminates the barrier to the lands north and south of Lake Shore Boulevard. Greater opportunities for development growth, public realm improvements and better street-related built form are common to both alternatives. However, west of the Don River, the Hybrid alternative maintains the elevated expressway structure along the north edge of the Keating Channel and introduces new Gardiner on/off ramps between Cherry Street and the planned future Munition Street extension. These features present obstructions that would impact redevelopment opportunities along this stretch of the corridor, obstructions which are not part of the Remove alternative. Consequently, the Remove alternative provides more flexibility to accommodate development (including supporting the Keating Precinct Plan) and presents greater opportunities to improve the public realm, allowing for a more attractive grade-related pattern of development to evolve with better connections and sightlines to the waterfront.

In terms of the Urban Design lens, Remove is clearly the preferred alternative based on the benefits of transforming the character of the entire corridor both east and west of the Don River.

5.2.1 Planning

Both alternatives propose taking down the overhead expressway ramps east of the Don River which would facilitate key urban design, transportation network, economic and employment improvements in the Port Lands and South of Eastern districts, including the Unilever site.

West of the Don River, Remove would better support the development of highest value land uses due to the removal of the entire elevated expressway structure. The Remove option would fully achieve Central Waterfront Secondary Plan built form and public realm goals. West of the Don River, the Hybrid alternative would maintain the elevated expressway along the north edge of the Keating Channel and introduce new on/off ramps between Cherry Street and the planned extension of Munition Street.

Between Cherry Street and the Don River, Remove would help achieve the Keating Precinct Plan's mixed-use objectives and allocation of parkland. To the south, it would provide a better interface with the future Villiers Island neighbourhood and create stronger opportunity for a successful public realm by lining both edges of the Keating Channel with mixed-use development. Both alternatives anticipate a proposed future Munition Street crossing of the Keating Channel, which will be an important connection from both capacity and connectivity perspectives. The Remove alternative would greatly improve the attractiveness of Lake Shore Boulevard for mixed-use development west of Cherry Street, extending into the East Bayfront.

Remove would further enhance Lake Shore Boulevard through the creation of 4.6 acres of additional development parcels along its north side (between Yonge Street and Bonnycastle Street), on lands currently under the elevated Gardiner. Hybrid would not allow these development opportunities because the elevated structure west of Cherry Street would be retained.

Between Cherry Street and the Don River, Remove would create a further 12.9 acres of redevelopment land while Hybrid would create only 5.5 acres. The difference of 7.4 acres in this area is because of the new on/off ramps and connecting road infrastructure for Hybrid, as well as the existing elevated Gardiner East deck that would remain.

5.2.2 Public Realm

Hybrid would result in minimal improvements to the quality, consistency and character of Lake Shore Boulevard. The greatest improvements would occur east of the Don River as described above. The streetscape between Jarvis Street and Cherry Street would see little change. The intersection of Cherry and Queens Quay is important because it is the intersection through which all waterfront precincts connect. The new eastbound off-ramp would be visually prominent at this intersection. East of Cherry Street, the parkland "promenade" adjacent to the Keating Channel would need to be narrowed to sub-standard widths to accommodate the new access road next to the Channel.

However, there have been recent examples of successful public realm in spaces under elevated expressways and ramps in Toronto. Examples include the Fort York Visitors Centre and Underpass Park in the West Don Lands. There have also been examples of public art projects that have animated elevated expressway and ramp infrastructure, such as "Watertable," an audio and lighting installation under the Gardiner near Fort York.

The Remove alternative would achieve significant public realm benefits. The elimination of the overhead expressway would greatly improve Lake Shore Boulevard's appearance, allowing sunlight exposure, and eliminating noise amplification. The character of the urban boulevard would be consistent throughout the study area with minor variations as required by the width of the corridor. This would result in a high quality of experience for drivers, pedestrians and cyclists with potential for ground-floor retail and outdoor patios adjacent to the enhanced streetscape. East of Cherry Street the character and quality of

parkland, including the Keating Promenade, would benefit from the removal of the elevated structure.

The opportunities for improving view corridors were considered when reviewing Remove and Hybrid alternatives, specifically the opportunity to enhance views along Lake Shore Boulevard, and between the city and the waterfront. West of the Don River, Remove would provide significantly more open views while east of the Don River Remove and Hybrid would be equal.

Figure 10 – Remove and Hybrid Alternatives Looking West

Remove **Hybrid**

Consideration was also given to the quantity of land that each alternative might generate for public open spaces including multi-use paths, landscaping, parks and plazas. While both Remove and Hybrid provide for a multi-use path north of Lake Shore Boulevard, Remove would provide more opportunity for tree-lined sidewalks, soft landscaping, and additional development opportunities west of the Don River. Remove would also reduce the visual and noise impacts of the rail corridor on pedestrians with proposed development on the north side of Lake Shore Boulevard between Jarvis and Sherbourne Streets.

5.2.3 Built Form

The assessment considered the opportunities for leasable, active, at-grade space which would be supported by the design of the corridor. The number and quality of podium floors available for development fronting on Lake Shore Boulevard were examined for each alternative. Both alternatives enable additional connections and better built form interface between the Port Lands and the First Gulf site, including the Broadview Avenue road and transit extension into the Port Lands.

To the west of the Don River, the elevated structure of Hybrid retains the existing poor quality of space within the lower four-to-seven floors of buildings fronting on Lake Shore Boulevard and does not provide for active at-grade uses. In addition, the proposed new on/off ramps and access road along the Keating Channel may limit public use of the water's edge in the Keating Precinct. Remove would present the greatest benefit for development adjacent to Lake Shore Boulevard with the full corridor uncovered and an improved streetscape. Remove has the potential to provide for 3,800 linear metres of frontage for retail and active uses along 80% of the corridor while Hybrid provides for 900 linear metres east of the Don River, or 15% of the corridor.

5.2.4 Compatibility with Neighbourhood Plans

The potential impact of the Remove and Hybrid alternatives on emerging waterfront communities, which are being planned to absorb significant future population and employment growth, is an important evaluation measure. As outlined below, these precincts are the subject of considerable planning, business, transit and transportation studies authorized by City Council. They are also the subject of public and private investment through the tri-government waterfront revitalization initiative, which prioritizes public transit as the primary mode of transportation.

(a) South of Eastern and Port Lands

It has already been noted in Section 4 of this report that the Remove and the Hybrid alternatives will both facilitate commercial development in the South of Eastern area and the Port Lands, two planning districts of considerable importance to the City’s future prosperity in terms of their potential for employment growth. The South of Eastern area includes the site of the First Gulf major development proposal and the Port Lands include the Film Studio District and the Villiers Island District for which precinct plans are currently in preparation. Section 4 also draws attention to broader planning initiatives that are underway in these two areas, such as the Port Lands Acceleration Initiative and the Port Lands and South of Eastern Transportation and Servicing Master Plan (TSMP).

(b) Lower Don Lands

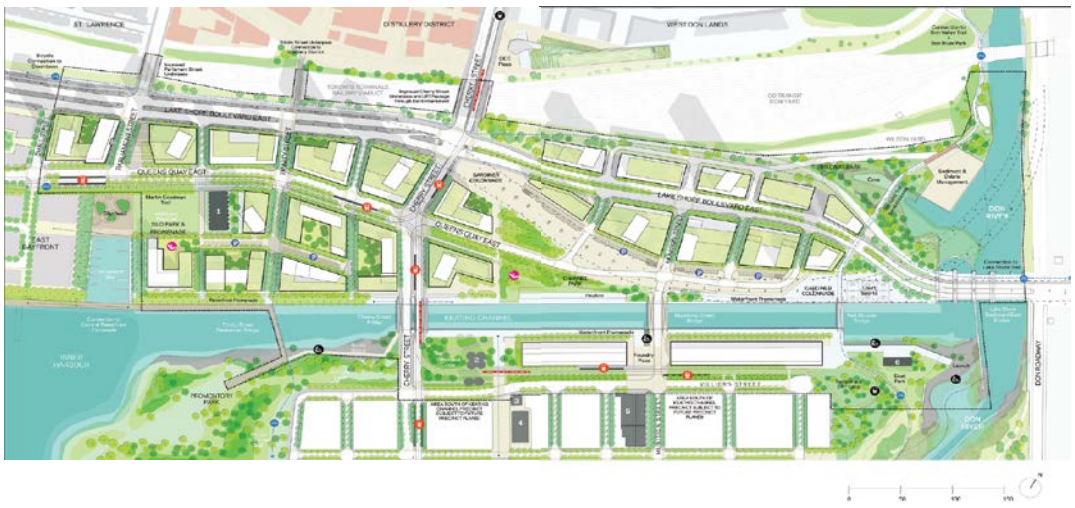
Naturalization of the Don River mouth is the cornerstone of revitalizing the 125 hectare (309-acre) Lower Don Lands that extends from Parliament to the Don Roadway, and from the rail corridor south to the Ship Channel. It includes four precincts – Keating, Villiers Island, Polson Quay and South River. The creation of the new river channel with spillway south of Keating Channel will remove the risk of flooding to the Port Lands and a majority of the South of Eastern / Riverdale areas. The Don Mouth Naturalization and Port Lands Flood Protection EA (DMNP EA) was recently approved by the MOECC. In general terms, the Remove and Hybrid alternatives are both supportive of these planning initiatives in the Lower Don Lands.

(c) Keating Channel Precinct

The Keating Channel Precinct includes lands between Parliament Street and the Don River, south of the rail corridor and north of Villiers Street. It includes the City's holdings at 480 Lake Shore Boulevard East, as well as Waterfront Toronto and privately owned lands adjacent to the Parliament Street Slip. In July 2010, City Council endorsed the Keating Channel Precinct Plan as it relates to lands west of and including Cherry Street; however, Council deferred approval of the plan as it relates to lands east of Cherry Street until the Gardiner/Lake Shore Boulevard Reconfiguration EA was further advanced.

The Keating Precinct Plan consists of 25 development blocks with a combined land area of about 9 hectares or 22 acres. The Precinct Plan incorporates the existing Keating Channel as its central public space, leveraging potential for a canal-like setting as an opportunity for a signature outdoor entertainment zone. The precinct plan proposes to relocate Lake Shore Boulevard north of the Gardiner. The plan acknowledges uncertainty as to the future of the Gardiner Expressway, but assumes the elevated Gardiner remains in place, although the expressway piers would restrict the alignment and design options for Lake Shore Boulevard, Cherry Street, Parliament Street and local streets in the precinct.

Figure 11 – Keating Channel Precinct



Remove would best accommodate existing plans for Keating district and create additional opportunities not currently provided in the Keating Precinct Plan. Remove offers the best opportunities to optimize block patterns, road alignments, parks and public spaces in North Keating. The option frees land adjacent to the channel to maximize its potential as the focus of public realm. As discussed above, Remove would create 7.4 acres of additional redevelopment land in the Keating precinct over Hybrid because of the additional on/off ramps, connecting road infrastructure and retention off the existing elevated Gardiner East deck associated with Hybrid.

Privately owned lands in the Keating Channel Precinct west of Cherry Street (where Council has endorsed the Precinct Plan) are currently the subject of Ontario Municipal Board mediation to resolve appeals of the Central Waterfront Secondary Plan and the Keating Channel Precinct Zoning By-law. The progress of these settlement discussions has been the subject of several confidential reports to Council. Hybrid has the potential to impact lands associated with the emerging settlement with one of the landowners. City staff and the landowner have discussed the implications of this potential impact on a without prejudice basis as part of mediated settlement discussions.

Remove will require review and revision of the Keating Channel Precinct Plan as it relates to lands east of Cherry Street in order to take advantage of new opportunities. Hybrid will also require a review of the Precinct Plan to reconfigure development blocks and to determine strategies to mitigate the public realm impacts of the proposed on/off ramps.

(d) East Bayfront

East Bayfront is located immediately south of the Gardiner East corridor between Jarvis and Parliament Streets, directly on the waterfront. The East Bayfront Precinct Plan identified the Gardiner as a "barrier along the north-south passages that impacts the built form of new development along that edge." There are a number of active development sites along the south side of Lake Shore Boulevard which are premised on adjacency to an elevated expressway. The Remove option would provide the opportunity to reorient these projects toward the new boulevard, with buildings on the north side of Lake Shore. It would also enable active frontage on the boulevard, should this alternative be implemented in a timely manner. Improvements to Lake Shore Boulevard, as well as to north-south streets such as Jarvis, Sherbourne and Parliament, would improve the opportunity for connections between neighbourhoods to the north, East Bayfront and the waterfront.

(e) Lower Yonge Precinct

The Lower Yonge Precinct is experiencing significant development pressure. A precinct plan for the area is presently under development by the City of Toronto and Waterfront Toronto following City Council endorsement of initial planning and policy directions in

August 2014. The portion of the Lower Yonge Precinct from Lower Jarvis Street west to Yonge Street is within the westerly transition area of the Gardiner East EA study area. Phases 1 and 2 of a Transportation Master Plan EA have been completed for Lower Yonge. Phases 3 and 4 will continue in 2015. This work, along with the approved York-Bay-Yonge Interchange Reconfiguration EA, will result in modifications to the ramps and street configurations of the area.

Under the Remove option, Lake Shore Boulevard through the Lower Yonge Precinct would be the transition area from the elevated expressway to the new at-grade boulevard, with limited public realm opportunities. Despite spatial constraints, Lower Yonge's Lake Shore Blvd. frontage would be greatly enhanced by the removal of the adjacent elevated structure and leasable, active at-grade space along the street would be more viable.

Figure 12 – Renderings of Remove and Hybrid Alternatives Looking North

Remove (Boulevard)

Hybrid

5.3 Environment Lens

Overview

The Environment Lens is concerned with noise and air effects and the potential for natural habitat enhancement within the corridor. Recognizing the baseline conditions of the corridor, many of the noise/air receptor locations represent future residential development locations as lands along much of the corridor are either vacant or are to be redeveloped. Regarding the natural environment, the corridor is highly degraded due to historical development and land use activities; the only natural feature of note in the corridor is the mouth of the Don River/Keating Channel which is proposed to be realigned and re-naturalized. Overall, the Remove alternative, which has lower traffic volumes, speeds and vehicle kilometers travelled (VKT), result in slightly lower noise impacts, slightly lower local air emissions and a 12% reductions in regional greenhouse gas emissions as compared to the Hybrid alternative. The Remove alternative creates more opportunities for tree planting and other habitat enhancements but disturbs more known archaeological features than the Hybrid alternative, while both alternatives have little or no impact on built heritage and cultural landscape features.

The Environment lens reveals a moderate preference for the Remove alternative.

Noise

Regarding potential noise effects, based on previous modelling results, the Remove is expected to have slightly lower noise levels in the Gardiner/Lake Shore corridor as a result of lower volumes of traffic (and slower speeds) in the corridor but there is potential for minor increases in noise levels on other city streets due to expected traffic diversion to these streets. The previous model results showed that the relative change in noise levels is greater in the Gardiner/Lake Shore corridor than on other city streets. It also needs to be recognized that most of the receptors potentially affected in the corridor are future receptors. As such, the difference between the alternatives with respect to noise is considered to be minimal.

Air Quality

Considering local air emissions in the Gardiner/Lake Shore corridor, based on previous modelling results, it is anticipated that the Remove alternative would have slightly lower levels than the Hybrid due to lower vehicle volumes in the corridor. As noted above, many of the receptors in the corridor will be future receptors pending the completion of development plans in the area. The difference between the alternatives with respect to regional-scale air emissions/greenhouse gas emissions is considered to be of more relevance in comparing the alternatives given the ability of auto users to freely choose what routes they take to their Downtown destinations. Regarding regional air shed emissions, there is a minor difference between the alternatives and the alternatives are therefore considered to be similar. Regarding regional greenhouse gas emissions, based

on the model results, the Remove has 12% less emissions which is reflective of the lower vehicle kilometers travelled in the transportation system for the Remove.

Natural Habitat

Opportunities for tree plantings and other habitat enhancements are similar for both alternatives east of the Don River but, to the west, Remove results in better sunlight conditions that offer significantly greater "greening' opportunities. Considering aquatic habitat, with the removal of all road infrastructure along the north side of the Keating Channel, the Remove is expected to provide greater opportunity for the enhancement of aquatic habitat in the channel.

Cultural Resources

Neither of the two alternatives results in significantly different impacts on built heritage and cultural landscape features or the activities of First Nation Peoples. However, Remove, which involves the expansion and realignment of Lake Shore Boulevard, results in a greater disturbance of known archaeological features.

5.4 Economic Lens

Overview

The Economic lens includes three criteria groups: Global and Regional Economic Impacts; Local Economic Impacts, and Capital, Operation and Maintenance costs and Revenues. The assessment of economic impacts relies largely on informed judgements based on third-party research and stakeholder consultation as reported in the Economic Competitiveness Study, attached as Appendix C of the EA Addendum Report at Appendix 3.

In terms of regional economic competitiveness, it is felt that the slower vehicle travel times associated with Remove could undermine the attractiveness of the Downtown as a business location, an effect that would be exacerbated by this alternative's longer period of traffic disruption during construction. On the other hand, Remove offers more potential for local job creation by freeing up a greater amount of developable land. Both Remove and Hybrid support the opening up of commercial lands to the north and south of Lake Shore Boulevard east of the Don River where most of the employment growth is expected to occur, particularly in the South of Eastern area which includes the First Gulf major commercial development proposal.

The monetary costs of Remove and Hybrid are expressed as lifecycle costs in net present value terms (NVP) based on the total capital costs and 100-year operational and maintenance costs of each alternative. The NVP lifecycle cost for remove is estimated to be $240 million, considerably lower than the comparable estimate of $336 million for Hybrid. The lower NVP estimate for Remove largely results from the much lower

maintenance costs associated with an at-grade road corridor. In addition the Remove alternative generates greater land revenues.

The EA Addendum Report at Appendix 3 notes "there were varied opinions among stakeholders about the risk to Downtown and what considerations draw businesses to locate and invest in downtown" (page 17). The picture in terms of capital and operating costs appears clearer and Remove offers significant long-term monetary savings over Hybrid.

Overall, the consideration of the economic lens gives preference to the Remove alternative.

The following table is an excerpt from the Economic Competitiveness report prepared by HR&A Advisors. The full report is attached.

Figure 13 – Summary of Economic Findings, HR&A Advisors, May 2015

Category	Description	Conclusion
Regional Economics	Impact of alternatives on Toronto's global competitiveness	The alternatives are unlikely to affect global competitiveness, which is driven by a range of factors, the vast majority of which are unrelated to the alternatives. **The alternatives are equally preferred.**
	Impact of alternatives on the marketability and competitiveness of Downtown to businesses	Both alternatives are projected to result in longer travel times to Downtown from origins around the city, but they are projected to be 2-3 minutes higher in the Remove. Also, the Remove entails a longer construction period than the Hybrid alternative. **The Hybrid alternative is preferred.**
Local Economics	Potential for job creation in the areas adjacent to the alternative alignments, and impact to the marketability of the areas to development	Both alternatives support the potential for job creation, but the Remove alternative makes more land directly available for development and job creation. The Remove alternative makes available parcels west of Cherry Street; and both alternatives make land available between Cherry Street and the Don River. Both alternatives improve the marketability of the local area, the Remove by enhancing public realm and visibility, and the Hybrid by maintaining convenient and direct highway access. **The Remove alternative is preferred.**
Fiscal Net Benefits	Potential revenues from the sale of public land and projected lifecycle costs of the alternatives.	The Remove entails lower lifecycle costs and results in more land revenues than the Hybrid alternative. **The Remove alternative is preferred.**

5.4.1 Regional Economics

As described above, the higher travel times associated with the Remove alternative as well as the higher level of disruption during construction when compared to the Hybrid alternative concludes the Hybrid alternative is preferred in relation to Toronto's regional competitiveness. At the same time, there could be more residents and jobs adjacent to the Gardiner East as a result of the Remove alternative, which would increase the attractiveness of new residential precincts and employment areas. More housing in or close to Downtown would have a positive impact on the City's Downtown, increasing access to labour.

Recent research completed by HR&A Advisors and CPCS and appended to this report examined the role of expressways in or near Central Business Districts in successful North American cities such as New York, Chicago and Vancouver and found that some cities can remove elevated expressways from the downtown area, or not have one altogether, without major adverse traffic impacts. They noted evidence from case studies that travellers adapt to a reduction of vehicular capacity, and a significant share of users adapt by using alternate routes, alternate forms of transportation, such as transit, resulting in no observable negative impacts. However, it is difficult to draw firm conclusions from these comparisons with other cities given their different and unique characteristics.

A 2001 paper published by the National Cooperative Highway Research Program (NCHRP) at: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_463-a.pdf, noted that "wages paid by employers to their employees differ by location and tend to reflect the extent to which workers incur greater costs and travel times for commuting to their jobs. Thus, a foundation of evidence suggests that businesses incur higher labor costs associated with increasing congestion."

Both the Remove and Hybrid alternatives will necessitate temporary traffic detours during the construction phase. Road detours generate negative impacts for business and residents alike and can therefore be expected to cause short-term economic impact. The Hybrid alternative is expected to cause up to one-and-a-half years of road detours whereas the Remove alternative is expected to require three-to-four years of road detours.

5.4.2 Local Economics

The EA study looked at business activity, visitor/tourism attractiveness and on-street parking. The Remove and Hybrid alternatives both facilitate the redevelopment of the First Gulf site which at full build out could accommodate significant job creation. In addition, the Remove alternative minimizes the amount of road infrastructure required west of the Don River, which frees up additional land for more jobs as well as additional residential development. Remove also has the highest potential to attract visitors/tourists to the waterfront. The added job potential of the Remove option, combined with the increased labour pool associated with the local residential development, make the Remove alternative the preferred option for local economics.

5.4.3 Land Value Creation

An analysis of potential revenues from the sale of City land under the different alternatives was undertaken by HR&A Advisors. Maps showing the potential land sale parcels are included in the HR&A report, Appendix C of the EA Addendum Report at Appendix 3.

Remove would create 4.6 acres of redevelopment land west of Cherry Street, north of the realigned Lake Shore Boulevard between Yonge Street and Bonnycastle Street. This land is currently occupied by Gardiner/Lake Shore infrastructure and there would be no change under Hybrid.

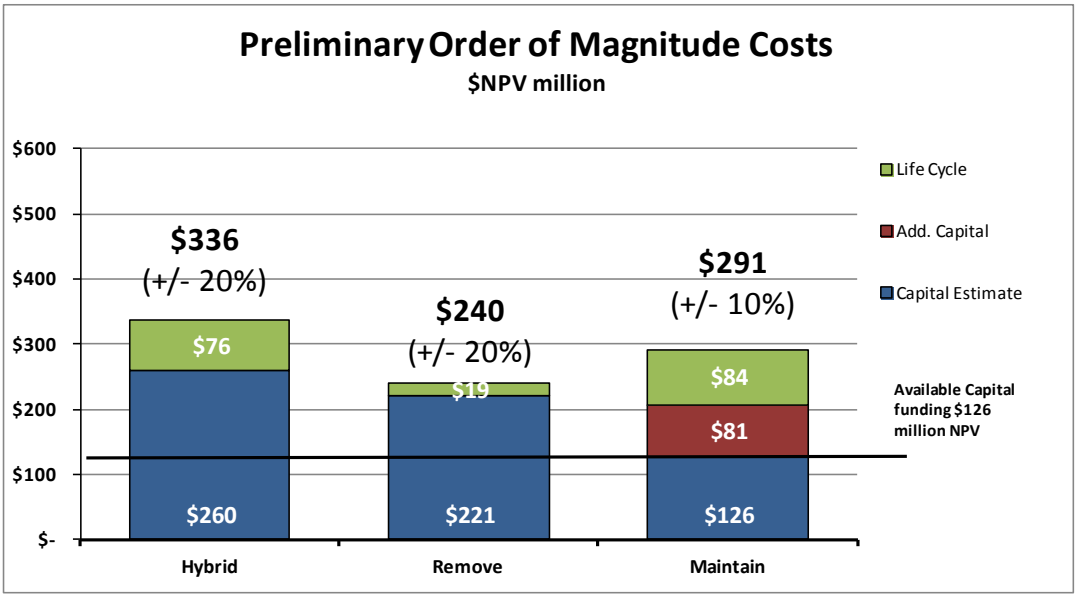
Between Cherry Street and the Don River, Remove would create an additional 12.9 acres of redevelopment land while Hybrid would create only 5.5 acres. The difference of 7.4 acres is because of the additional on/off ramps and connecting road infrastructure for Hybrid, as well as the existing elevated Gardiner East deck that would remain.

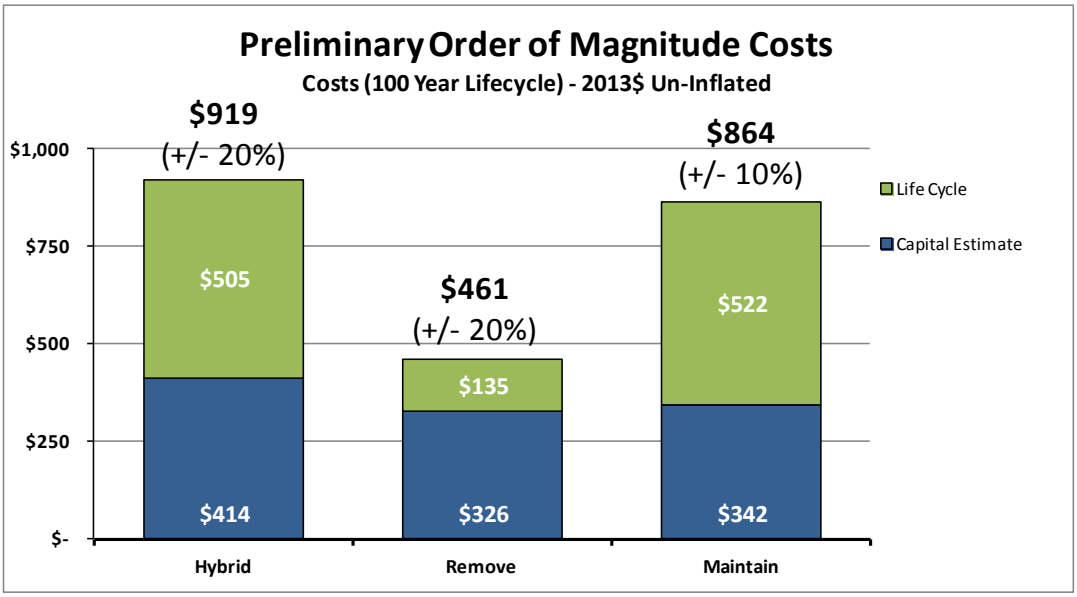
In sum, between Yonge Street and the Don River, Remove would create an additional 12 acres of redevelopment land. Potential revenues from the sale of these City-owned lands have been valued at approximately $140 M in 2013 dollars – the equivalent of $100 M in net present value.

East of the Don River, HR&A estimates that the 14 acre TPLC development block to the southeast of Lake Shore Boulevard and Don Roadway could generate land sale revenues of $64 M in 2013 dollars or $47 M NPV. In addition, there are additional City and TPLC properties further east in the Port Lands and South of Eastern area that cannot be valued until zoning is finalized through the various land use planning exercises that are currently underway. Further, according to a Price Waterhouse Coopers study prepared for First Gulf, 20 acres of City- and TPLC-owned land related to the First Gulf development could generate an additional $100 million in land sales (2014 dollars). It should be noted that HR&A Advisor's analysis of potential land sale revenues did not include the costs of soil and groundwater remediation because they are unknown at this time.

5.4.4 Direct Cost and Benefit

The monetary costs of Remove and Hybrid are expressed as lifecycle costs in net present value terms (NVP) based on the total capital costs and 100-year operational and maintenance costs of each alternative. In terms of capital and operating costs, Remove offers significant long-term monetary savings over Hybrid. As demonstrated in the table below, the Remove option was determined to be the lowest cost alternative on an NPV basis over a 100 year time frame, reflecting $51 million and $96 million in lower costs from the Maintain (base case) and Hybrid options respectively. All figures are estimates only and can vary between 10% and 20%. The lower NVP estimate for Remove largely results from the much lower maintenance costs associated with an at-grade road corridor.





Other than costs referencing the City's approved Capital Budget and Plan for the Maintain base case, costs for the Remove and Hybrid alternatives outlined in this report represent high order-of-magnitude costs for comparative purposes only. These costs were based on conceptual designs only and may have a significant margin of error. Current cost estimates have not taken into consideration conflicts and constraints with respect to environmental and utility issues. More refined cost estimates will be derived from the next stage of EA work in which the preferred EA alternative solution is designed in greater detail. Costs for the Maintain option only have been advanced to the 30% design stage and reflect a conventional construction approach.

Cost estimates do not take into account revenues from the sale of developable land, increase in adjacent land value, property tax revenues that may accrue to the City, or other economic benefits.

5.4.5 Direct User Costs

At recent public meetings, participants asked the study team to calculate the cost to users of the additional travel delay associated with the EA study alternatives.

The staff report to the March 4, 2014 meeting of Public Works and Infrastructure Committee (PW29.2) included a section titled the "Post-Construction Congestion Cost Calculation." The results of this calculation, which was based on an estimate of vehicle kilometres of travel and a methodology contained in a 2008 study by HDR Corporation on behalf of Metrolinx, concluded that there was a slight decrease in the total annual cost to auto users between the Maintain option and the Remove option (from $11.9M to $11.7M). It is important to note, however, that the lower auto user cost for the Remove option was the result of the reduced vehicle kilometres of travel in the study area for this option due to the required diversion of trips from auto to other modes, the re-timing of trips to avoid the busiest hours, and the use of alternate routes to avoid the most heavily congested areas. The calculation yielded no difference between the two options in terms of vehicle operating cost, cost of accidents and cost of vehicle emissions.

As noted above, the estimated traffic congestion cost was based on the forecasted figures for vehicle kilometres travelled ("VKT"). A more appropriate indication of the auto user costs is reflected by the number of vehicle hours travelled ("VHT"). Therefore, the evaluation of the Remove and Hybrid options, from an auto user cost perspective, focused on transportation modelling results for the total VHT in the transportation system during peak periods. The table below summarizes the VHT modelling results (Paramics) and the estimates of additional auto user cost when compared to the Maintain option.

Table 2 – 2031 Forecast Auto User Cost Estimates

Option	Additional VHT (a.m.peak hour)	Daily VHT (peak periods)	Weekly VHT (peak periods)	Annual VHT (peak periods)	Cost of Travel Time ($/hr)	Auto User Cost ($millions)
Hybrid	624	4,368	21,840	1,135,680	$20	$22.7
Remove	1,640	11,480	57,400	2,984,800	$20	$59.7
Difference	1,016	7,112	35,560	1,849,000	$20	$37.0

The results indicate that the estimated auto user cost for the Remove option would be approximately $37 million higher than for the Hybrid option based on the a.m. peak hour volumes extrapolated to reflect the peak periods (both a.m. and p.m.) over an entire year. Delays during the off-peak periods, which might not be insignificant when comparing the two options, are not captured in this analysis. It should also be noted that a simple auto user cost calculation based on a value of time applied to travel time forecasts does not capture the net economic consequences. Nevertheless, the figures provide a reasonable

indication of the relative volume of total hours travelled for the two options and, as expected, the Hybrid option, which maintains the Gardiner-DVP expressway connection and functionality, results in a lower total VHT for the users in the system when compared to the Remove option, which requires motorists to exit to a boulevard facility and through several signalized intersections.

The total VHT figures produced by the model reflect the forecasted auto travel demand in 2031. Any changes in the auto demand estimates (e.g. due to changes in the pace of development, provision of transit alternatives, changes in travel behaviour, etc.) would alter these figures.

5.5 Selecting an Alternative

It is common for an EA evaluation process to find that that no alternative is the preferred choice for all the evaluation criteria. In the present case, the Hybrid alternative is preferred on the basis of the Transportation and Infrastructure lens while the Remove alternative is preferred on the basis of the Urban Design, Environment and Economic lenses.

Determining the preferred alternative for the Gardiner East corridor is not as easy as identifying which of the two alternatives is the preferred option on the majority of the 16 EA criteria groups. Invoking a simple majority rule overlooks the fact that there are significant variations among the criteria and their measures in terms of:

- Scale of impact and number of people or businesses affected (magnitude);
- The degree of certainty attached to the forecasted measure (risk);
- The apparent exactness of quantitative measures compared to the intangibility of qualitative measures (definitiveness);
- The time period over which the measured effect applies (immediate versus longer term impacts); and
- Importance attached by different people or interest groups (perceived significance).

One way to address these issues is to assign weights to the criteria or sets of criteria. The potential to apply weights to the evaluation criteria has been raised by stakeholders, and the public was asked to provide input on the relative importance of the criteria groups. However, feedback on this was split.

As the earlier Royal Commission on the waterfront put it, the decision on what to do with the elevated section of the Gardiner Expressway hinges on the determination of an acceptable balance between the roles of “corridor” and “place” that this thoroughfare and its associated street network serve. There is not a strong technical argument for determining the point at which this balance should be struck.

The current EA for the Gardiner East corridor has endeavoured to present the relevant facts based on the best available data and forecasting methods. This technical study has

been informed by input from the public and stakeholder groups who have shared their opinions on the issue, analysis and trade-offs between the different advantages and drawbacks of the Remove and Hybrid alternatives. The EA study findings provide the rationale for the two alternatives proposed. The study also reveals two underlying features of the analysis which need to be borne in mind when arriving at a final decision on the preferred alternative and these are highlighted below.

5.6 Two Underlying Features

5.6.1 Both Alternatives Preferred to the Base Case

Both the Remove and Hybrid alternatives yield greater net benefits than the base case "do nothing" or Maintain alternative. By removing the extensive Logan ramp system the Remove and Hybrid alternatives create similar and substantive Urban Design lens benefits east of the Don River. The removal of the ramps, as noted above, reduces the number of road structures over the Don River and frees up access to the lands north and south of Lake Shore Boulevard that the ramps currently obstruct. These changes facilitate the Don Mouth Naturalization and Port Lands Flood Protection project and the plans for commercial development in the Port Lands to the south and the First Gulf site to the north. With the Logan ramps gone, it is possible to introduce road and transit service improvements into the area, most notably by extending Broadview Avenue south to connect to Lake Shore Boulevard.

The Maintain option was not recommended in the EA evaluation of the original four alternatives and remains in the current analysis only to provide a base case condition for comparative purposes. It should also be noted that although the Remove and Hybrid alternatives achieve the same benefits east of the Don River, the Remove alternative has lower overall lifecycle costs and does not require the introduction of replacement ramps west of the Don River. The principal disadvantage of the Remove alternative is the slower vehicle travel times during peak hours.

5.6.2 Both Alternatives Rely on Major Transit Improvements

The analysis of 2031 travel conditions assumed the full build out of the study area lands and assumed that major transit improvements such as the Relief Line, the Waterfront LRT, the Broadview extension/streetcar and upgraded GO Rail service would also be in place. Sensitivity tests for the original alternatives without the planned transit improvements (apart from GO Rail improvements) were undertaken. The result of these "no new transit" sensitivity tests indicated that Auto Travel Times for the selected OD pairs would increase by an additional two-to-three minutes for all of the alternatives. In response, some drivers would seek alternatives such as finding alternate routes, taking transit, and travelling in the off-peak. While not modeled, it is assumed that the Hybrid alternative would react similarly without the new transit projects in place (apart from GO Rail improvements). This illustrates that while new transit, while necessary to accommodate future travel demand, does not have a large impact on Auto Travel Times for the selected OD pairs.

6. Summary of Public Consultation Findings

To date, the EA has included four rounds of consultation on May 2013 to April 2015. The process has engaged a total of approximately 12,000 participants in a variety of forums, including in-person and online participation. Public input has been received on EA alternatives, draft evaluation criteria and the preliminary results of the assessment of alternatives. The public consultation records from all rounds of consultation held to date are posted online at www.gardinereast.ca. The Round 4 record is included at Appendix 2 of this report. Key feedback from the consultations has stressed the importance of:

- Balancing modes of transportation (road capacity, travel time, infrastructure costs);
- Providing for enhanced waterfront connectivity and new development opportunities;
- Providing new transportation infrastructure including transit and active transportation;
- Ensuring transit projects identified in the modelling are prioritized and funded; and
- Enhancing the public realm.

The most recent Round 4 of EA consultation has been focused on evaluation of the Remove and Hybrid alternatives. Feedback on the results of additional work and evaluation completed to respond to PWIC direction of March 2014 was sought at the April 15 and April 20, 2015 public meetings, as well as via online consultation. When asked what they felt were the most important considerations in making a decision on a preferred EA alternative, many participants felt that Remove is the most cost-effective alternative, would allow investment of cost savings in other City priorities such as public transit and affordable housing, and would contribute to city building and a better balancing of transportation modes. However, participants were concerned that Remove would continue to pose adverse traffic impacts. By virtue of its continuous east-west and DVP expressway connection, Hybrid was identified as the least disruptive to traffic, congestion, and the movement of goods and services, but it was seen as costly while offering few opportunities to revitalize the area. Other key considerations for both Remove and Hybrid alternatives identified during Round 4 include the protection and enhancement of public assets, increased access to the waterfront, ensuring public transit plans are realized and opportunities to enhance the public realm.

As outlined earlier in this report, the project team also met with key landowners, think tanks and goods movement stakeholders as part of the completion of Economic Competitiveness and Goods Movement studies appended to this report. Overall, the Remove option was seen as a catalyst for both residential and commercial development in the area, particularly commercial office development. Goods movement stakeholders underscored the importance of the Gardiner Expressway to their businesses. Landowners stressed the importance of a viable transportation network, including public transit access, to the success of future development as well as the need for construction impacts to be considered and minimized wherever possible.

7. Design of Preferred EA Alternative (Next Steps)

The final step of the EA process involves the development and evaluation of "alternative designs" for the preferred solution. Under the EA Act, alternative designs are the different methods of implementing the preferred solution. To date, Remove and Hybrid concepts have already considered some alternative design attributes such as: location of roadways, lane numbers and widths, roadway design speeds, traffic signal phasing, ramp locations and intersection configurations. Additional issues to be addressed in the design phase include:

- Confirmation of location of proposed new infrastructure;
- Review of intersections for the safe accommodation of pedestrians and cyclists;
- Detailed investigation of public realm opportunities;
- Consideration of other infrastructure needed to support new roadways (e.g. drainage and lighting);
- Detailing of construction phasing/detours and traffic management;
- Confirmation of the need for private land;
- Examination of impacts to adjacent properties;
- Review of impacts on Keating Precinct;
- Refinement of capital cost estimates;
- Exploration of feasibility of P3/AFP implementation; and
- Review of opportunities to accelerate construction.

Once developed, the identified alternative designs will be assessed against a detailed set of criteria to ensure that all alternatives are evaluated on the same basis. Mitigation measures to reduce negative effects and enhance positive effects will also be further developed, and public consultation and discussions with impacted stakeholders will be undertaken. Net effects of the preferred design will be defined.

The final preferred design and associated EA Report will be presented to the public later in 2015. After public comment has been incorporated, the final EA Report will be submitted to the Minister of the Environment and Climate Change for provincial review and approval.

An estimate of schedule, assuming conventional implementation and seven months of MOECC review, is:

- Complete EA (alternative designs): by end of 2015;
- Submit EA: by winter 2016;
- EA approval decision by MOECC: by end of 2016;
- Detailed design: by early 2018;
- Tendering: by end of 2018; and
- Start of implementation: 2019.

8. MOECC Individual EA Review and Approval Process

Prior to submitting the final EA report, City and Waterfront Toronto staff will submit the draft EA Report to the MOECC for review. This will ensure that any concerns or technical issues are identified and addressed early by the EA proponents before a final submission is made to the MOECC.

Although MOECC guidelines provide for EA decisions within seven months, a decision by the Minister of the Environment can take several months to several years from the date of submission. The MOECC's EA review and approval decision process involves opportunities for government agencies, interested persons and Aboriginal communities to review the EA Report and submit their comments directly to the MOECC. City and Waterfront Toronto staff will have an opportunity to review comments received and advise the MOECC on the issues raised and how they have been addressed during the EA process or how they can be addressed as part of future processes (e.g. during detailed design).

At the completion of its review process, MOECC staff will prepare recommendations for the Minister of the Environment. Under the Environmental Assessment Act, the Minister may:

- Approve the undertaking;
- Approve the undertaking with conditions; or
- Refuse to give approval of the undertaking.

Before making a decision, the Minister may also refer the EA or a specific issue to the Environmental Review Tribunal or to mediation. Cabinet concurrence with the Minister's decision would also be required. A decision about an Individual EA could take additional time if a legal challenge is made. If approval to proceed with the undertaking is given, a signed Notice of Approval (with or without conditions) and an Order-in-Council will be provided.

Should Council approve the Maintain or "do nothing" alternative, staff would withdraw from the current EA process. In addition, in the case of either a Remove or Hybrid decision, should the Gardiner East EA approval process be significantly delayed and the implementation of deck replacement would be required on an emergency basis because of safety concerns, staff would seek Council's authority to cancel the EA. Full deck rehabilitation between Jarvis Street and the DVP would be undertaken as scheduled from 2020 to 2025, unless an accelerated model of rehabilitation is adopted.

9. F.G. Gardiner Expressway Strategic Rehabilitation Plan

In March 2014, a Strategic Plan for the Rehabilitation of the expressway was presented by way of a staff report and presentation to the Public Works and Infrastructure Committee. The plan drew on detailed investigations and available condition assessment

data. It concluded that the decks and concrete barriers (parapet walls) of the elevated section were in poor condition and at the end of their service life. As a result, the Strategic Plan recommended replacing the existing deck and concrete barriers on the elevated section as soon as possible.

In April 2014, City Council:

a) Approved the implementation of the Strategic Rehabilitation Plan using the accelerated method of construction at an estimated cost of $1.8 billion;
b) Authorized staff to award a contract to rehabilitate the West Deck (Exhibition Place to Grand Magazine Street) using the conventional rehabilitation approach;
c) Directed staff to report in 2015 on a financing and procurement plan to implement the Rehabilitation Plan; and to revise the Plan should City Council opt for any option, other than Maintain, for the Gardiner East EA for the section east of Jarvis Street to Logan Avenue.

A report on a recommended procurement and financing plan for the implementation of the Strategic Plan – incorporating the outcome of the Gardiner East EA – is expected to be prepared for the September 21, 2015 Executive Committee meeting.

Implementation of a preferred EA alternative can be accommodated into the accelerated rehabilitation program for the Gardiner. It is recommended that Engineering and Construction Services staff investigate the options for doing this and report back on this through Executive Committee.

10. Conclusion

A decision on the Gardiner East EA is needed as soon as possible. The expressway is safe and remains operable, however, there are significant costs associated with ongoing inspections, maintenance and repair work. Given the time needed to complete design, procurement and construction for any of the Gardiner East EA alternatives, a decision is required urgently.

This report presents two viable EA alternatives for Council consideration. The EA study findings provide the rationale for each of the two options, Remove and Hybrid, from which Committee and Council will make a decision. Should Council not make a decision between these two alternatives, Maintain is available as the EA base case.

This report was prepared by the City's Waterfront Secretariat in conjunction with Transportation Services, Corporate Finance, Financial Planning, City Planning, Economic Development, Engineering and Construction Services, City Legal and Waterfront Toronto. Information about the Gardiner East EA, including summaries of public consultations, can be found on the project web site at www.gardinereast.ca

CONTACTS

David Stonehouse
Director, Waterfront Secretariat
City Planning
416-392-8113
dstoneh@toronto.ca

John Mende, P.Eng.
Director, Transportation Services
Transportation Services Division
416-396-7842
jmende@toronto.ca

SIGNATURE

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John W. Livey, F.C.I.P.
Deputy City Manager

APPENDICES:

Appendix 1: Gardiner East EA Transportation Modelling Analysis, City of Toronto, May 2015

Appendix 2: Gardiner East EA – Round Four Consultation Report, Lura Consulting, April 2015

Appendix 3: Gardiner Expressway and Lake Shore Boulevard East Reconfiguration Environmental Assessment and Urban Design Study – Alternative Solutions Evaluation Interim Report Addendum, Dillon Consulting, May 2015

Appendix A: Remove (Boulevard) Optimization Road Design Changes
Appendix B: Goods Movement Study Report, CPCS, May 2015
Appendix C: Economic Competitiveness Study Report, HR&A Advisors, May 2015
Appendix D: Capital Cost and Net Present Value Estimate Approach, Morrison Hershfield, May 2015

Appendix 1: Gardiner East EA Transportation Modelling Analysis, City of Toronto, May 2015

Transportation Modelling Assumptions and Background

This section of the report documents the updated assumptions regarding the alternatives and the refinement of the modelling analysis.

Transportation Modelling

The City of Toronto's regional travel demand forecasting model (EMME/2) is the basis for assessing future road and transit network conditions for the Gardiner alternatives. The model is currently being updated to reflect 2041 forecast conditions. For the purposes of the Gardiner East EA study, the forecast year reflects 2031 conditions, which is the most current information. The time period represented in the model is the three-hour AM peak period, an industry standard to represent the greatest demand for travel and most likely period for congestion to occur. The results from the model were further analyzed by the consultant for a more detailed study area (Spadina to Woodbine and Dundas south to the lake) using the Paramics modelling tool, and impacts are based on the peak hour conditions.

The Remove and Hybrid alternatives were assessed by Dillon Consulting using the Synchro tool to optimize the traffic signal operations in the Lake Shore corridor. The results were then input back into Paramics to complete the study area analysis, and confirm the road network and lane configuration assumptions. Once this work was completed, the travel time and other performance measures were calculated for the two alternatives.

Transit Assumptions

Assumptions in the EMME/2 model reflect the importance of future transit improvements as keys factors in managing transportation congestion, facilitating growth and supporting new jobs. "Feeling Congested," the transportation component of the City's five-year Official Plan review, identifies 24 future rapid transit projects for review. The major projects assumed in the model are:

- Relief Line (subway) between the Danforth subway line and the Yonge-University line (2021);
- Waterfront East LRT – Union Station to Leslie (Phase 1 to Parliament – 2020);
- Cherry Street LRT south of King Street East (2015 completion for the extension to Mill Street/rail corridor) and south to the Ship Channel in the Port Lands;
- Broadview Avenue transit extension south of Queen Street into the Port Lands (pre-2031);
- Union Station Improvement Plan (2016); and

- GO Transit improvements (Regional Express Rail), including increased peak period frequency, reverse commute trains and off-peak service increases.

The following transit projects outside of the Gardiner study area are also included in the model:

- Eglinton Crosstown LRT (Jane – Kennedy);
- Finch West LRT (Humber College at Hwy 27 to Spadina Subway extension at Keele);
- Sheppard East LRT;
- Scarborough RT Replacement and Extension to Sheppard;
- Toronto-York Spadina Subway Extension; and
- Yonge North Subway Extension.

There are other transit projects or improvements that are not included in the modelling work since the exact service impacts are still to be determined. The projects and improvements include new subway vehicles on the full system network, new streetcar vehicles with higher capacities, and the recently initiated Union-Pearson (UP) link.

Future transit lines in the city and the timing of these projects have been evolving throughout the course of this study. New concepts for improving transit, such as SmartTrack, would provide added transit capacity and potentially impact other assumptions. This work on assessing the city's ongoing transit needs is currently underway. The list above reflects the City's official direction on both funded and unfunded projects at the start of this EA and has been maintained for consistency through the study process.

Road Network Assumptions

The study area for the Gardiner EA includes a number of roadway improvements that are either recently completed, under construction or planned for the future. The list of projects that are included in the modelling analysis is as follows:

- Queens Quay Revitalization (Spadina to Bay) – opening 2015;
- Queens Quay Reconfiguration (Bay to Parliament) – EA completed;
- Queens Quay Extension (Parliament to Cherry);
- Front Street Reconfiguration (York to Bay) – opening 2015;
- John Street Redesign (Queen to Front) – in the detailed design stage;
- Bremner Boulevard new road section (Bathurst to Spadina) completed 2015;
- York-Bay-Yonge Ramp redesign – EA completed and design underway; and
- New and reconfigured roads in the West Don Lands (Bayview, Front, River, Mill, Cherry).

Modal Split and Travel Patterns

The latest evaluation work is based on the same modal split assumptions as reported last year. The existing auto/transit mode splits for morning peak hour trips into the detailed study area (Spadina to Woodbine and Dundas to the lake) are approximately 31% auto/60% transit, and the 2031 forecast by the EMME/2 model is 28% auto/66% transit. The most recent available data (2011), however, indicates that the EMME/2 forecast mode splits are already being achieved.

Dillon Consulting conducted further research and analysis to refine the mode split assumptions to capture travel behaviour changes and emerging trends not accounted for in the regional forecasting model. Travel behaviour changes include: people travelling less times per week by car; traveling at other times outside of the peak hour; increased trip sharing; use of technology to reduce trips (telephone and video conferencing, work from home, webinars, etc.); and additional mode shift away from auto use. As a result of this work, the modal split in the Paramics model was adjusted to 22% auto/71% transit.

These assumptions also reflect the historical pattern for trips arriving into the downtown during the morning peak period. The growth in travel demand has almost exclusively been accommodated by transit, and predominantly by GO Transit, with marginal growth in automobile traffic, and this pattern is anticipated to continue into the future.

The study was also informed by the results of a 2009 Bluetooth survey, which indicated the following key findings:

- 22% of eastbound vehicles on the Gardiner from west of Bathurst travel straight through the downtown and do not exit;
- 21% of westbound vehicles on the Gardiner from the DVP/Lake Shore travel straight through the downtown and do not exit;
- 40% of southbound vehicles on the DVP exit at Richmond Street; and
- the majority of trips in both directions are destined to the Yonge-Bay-York and Spadina off-ramps (54% from the west and 35% from the east).

Transportation Modelling Peer Review

Waterfront Toronto, in collaboration with the City of Toronto, commissioned the consultant ARUP to conduct an updated peer review of the modelling process which built upon the findings from their previous peer review of the modelling work performed for this project. The objective of this recent peer review was twofold: to confirm that the Paramics micro-simulation and network optimization process was performed in an acceptable manner ; and, to confirm the appropriateness of the assumptions and the reliability of the output and conclusions drawn from the process.

The peer review provided a detailed examination of the Paramics micro-simulation process used for the transportation analysis, including its assumptions, and suggested recommendations for improvement where applicable. The peer review identified some issues which would require further refinement of the micro-simulation model under future phases of the Gardiner EA, and it identified other minor issues which were deemed to have minimal potential impact to the final analysis results. The conclusion of the peer review was that the optimization strategies and the modelling methodology were sound and met industry-standard practice, and that further refinements of the micro-simulation model could yield better representation of future traffic conditions.