

# GARDINER EXPRESSWAY AND LAKE SHORE BOULEVARD EAST RECONFIGURATION

Environmental Assessment and Urban Design Study

## Executive Summary

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WATERFRONToronto



# Executive Summary

The Gardiner Expressway and Lake Shore Boulevard corridor passes through the City of Toronto's downtown waterfront area to provide one of the most significant transportation corridors in the city. The combined infrastructure of this elevated expressway and major at-grade arterial roads cuts through many prominent existing and planned waterfront communities. The transportation connections provided by this infrastructure are important to the economic prosperity of the city, region and province. However, notwithstanding these important connections, the Gardiner - Lake Shore Boulevard corridor also presents many challenges in the communities through which the corridor traverses. The size and design of the infrastructure presents a connectivity challenge between the city and the waterfront, in particular for those crossing underneath or travelling adjacent to the corridor on foot or by bicycle. For decades there have been calls to consider reconfiguration options for this corridor that would better balance modes of transportation and create new and improved connections between the city and the waterfront. More recently, an urgency to manage deteriorating components of the elevated structure and invest significant money in the long-term rehabilitation of the Gardiner Expressway have ignited interest to consider alternative configurations for this infrastructure.

The deck and concrete barriers east of Jarvis Street are in poor condition and are considered to be at the end of their service life. Toronto City Council has authorized \$14 million of interim repairs to make this eastern portion of the structure safe and extend its service life to 2020.



*Above: Gardiner Expressway and Lake Shore Boulevard looking west towards downtown.*



*Above and Below: Gardiner Expressway and Lake Shore Boulevard looking east towards Port Lands.*



These repairs consisted of: temporary timber bracing under the deck; localized concrete deck repairs; and repair and replacement of severely deteriorated parapet walls. After decades of uncertainty and numerous studies on the future of the Gardiner/Lake Shore corridor, agreement and decisive action are needed with respect to the eastern segment of the expressway, which traverses redevelopment lands planned for future waterfront neighbourhoods with new trail systems, inviting streets and open spaces that help to reconnect the city with its waterfront.

Waterfront Toronto and the City of Toronto (City), the project co-proponents, have jointly undertaken an Individual Environmental Assessment to determine the future of the eastern portion of the elevated Gardiner Expressway and Lake Shore Boulevard East from approximately Lower Jarvis Street to approximately Leslie Street. From the various maintain, improve, replace and remove options explored throughout the study, the process has led to the identification of the Hybrid Option #3 as the preferred undertaking, so called because of the removal and relocation at-grade of the easternmost portion of the current expressway, while maintaining a continuous and elevated ramp connection between the Gardiner Expressway and the Don Valley Parkway.

The study process is made up of two overarching components:

1. An Environmental Assessment (EA) pursuant to the Ontario *Environmental Assessment Act* to assess proposed changes to the existing eastern section of the elevated Gardiner Expressway and Lake Shore Boulevard; and
2. An urban design review that demonstrates compatibility with existing waterfront revitalization plans within the study area, while generating a new vision for the future of the area occupied presently by the eastern section of the elevated Gardiner Expressway and Lake Shore Boulevard East.

This unique integrated study process has focused on completing a thorough technical analysis and generating a preferred undertaking that is rooted in strong city-building objectives.

This study followed an Individual EA process, as detailed in **Chapter 1** of this report. This EA Report represents a complete record of the Individual EA study that was completed for the Gardiner Expressway and Lake Shore Boulevard East Reconfiguration EA and Urban Design Study (referred to as the Gardiner East Project) and which led to the identification of a preferred undertaking that was endorsed by Toronto City Council in March 2016.

The future of the Gardiner Expressway has been the subject of study since its construction in the 1950s and 1960s. The Frederick G. Gardiner Expressway was built at a time when Toronto's central waterfront was not a civic waterfront destination as it exists today, but rather considered a heavy industrial area and transportation corridor, providing the City with goods and materials.



**Rendering of Preferred Undertaking**

Since the late 1980s, the City of Toronto has taken interest in enhancing public access to and from the waterfront by reducing the waterfront barrier effect associated with the alignment, footprint, and ramp locations of the Gardiner Expressway through the downtown area. Key City planning policies, plans and initiatives support this including the Official Plan, Central Waterfront Plan, various waterfront renewal activities and recent fresh looks at the waterfront and its role in the City's growth, economy and quality of life development. In 1996, planning and an EA process were undertaken for the removal of a 1.3 kilometre section of the Gardiner east of the Don River, between Bouchette Street and Leslie Street. The removal of this section of the Gardiner was completed in 2001.

From 2004 to present, Waterfront Toronto has been working in collaboration with the City on the commissioning of several reports that studied the impact of various options for the future of the Gardiner. In 2008, Toronto City Council approved Waterfront Toronto's proposal to undertake an Individual Environmental Assessment regarding the eastern section (east of Jarvis Street) of the elevated Gardiner Expressway. Council identified the need to also study the reconfiguration of Lake Shore Boulevard East in the same area so as to comprehensively determine the function and feel of the corridor in the future.

Dillon Consulting Limited was awarded the assignment to lead the completion of the Gardiner East Project. This study commenced in 2009 with the Terms of Reference (ToR) which was approved by the Minister of the Environment (now the Minister of the Environment and Climate Change) in November 2009. The ToR set the direction for the EA study from inception. This EA report presents the complete study process, approach, findings and recommendations for the future of the Gardiner East following an Individual EA study process.

## **Phase 1 – Terms of Reference (ToR)**

Phase 1 of the study included the aforementioned ToR (a copy of which can be found in **Appendix A**) and the establishment of project goals and principles to guide the development and evaluation of alternatives. The ToR established four study lenses through which this EA has been prepared: Transportation and Infrastructure, Urban Design, Economics and Environment. As well, four families of alternatives were identified in the ToR including: Maintain, Improve, Replace and Remove. These families of alternatives provided the framework for the development of the alternative solutions in Phase 3 of the EA. The ToR also included an outline of the consultation program and objectives. Consultation for the EA study focused on multiple levels of engagement throughout the study process with the public, stakeholders, landowners, agencies, technical municipal staff, and Aboriginal communities. The consultation program was managed by an independent Consultation Consultant and Facilitator, LURA Consulting. A full

report of the consultation activities undertaken throughout the EA study is provided in **Chapter 7** of this report.

During the preparation of the ToR, the project team also completed a review of what other cities around the world have done to address similar aging highway infrastructure in urban centres. Many North American cities are facing similar challenges, with infrastructure that is now more than 50 years old that requires significant investment to maintain. Cities are faced with the question as to whether maintaining and rehabilitating the infrastructure is the best investment for the city and its growing urban population. The project team reviewed and considered these case studies to identify opportunities and challenges that could be applied to the Gardiner East Project.

## EA Overview

The following summarizes the EA process by each key phase. In this summary, the content of the EA Report chapters is also summarized.

**Chapter 1.0** of this Report provides an Introduction to the EA study and outlines the historical background to the project, introduces the City of Toronto and Waterfront Toronto as the project co-proponents, describes other anticipated project approvals and provides an overview of the consultation process that was followed.

In **Chapter 2.0** of this EA Report, the Purpose of the Undertaking and Rationale for the Undertaking is presented. Included is a description of the Problems and Opportunities, EA Study Areas considered and Temporal Boundaries. A description of how other ongoing and planned studies were coordinated with is also provided.

The Purpose of the Undertaking is to address current problems and opportunities in the corridor. Key problems include a deteriorating Gardiner structure and a disconnection of the City from the waterfront. Key opportunities include the potential to Revitalize the Waterfront, Create a Sustainable Waterfront, Generate and Capture Economic Value and Rebalance Transportation Modes.

The preferred undertaking, that includes Hybrid Option #3 as previously described, was rationalized through a multi-step evaluation process conducted in this EA study that considered both alternative solutions and alternative designs. When compared to other alternative designs, the preferred undertaking emerged not only as compatible with the larger Strategic Plan for the expressway's rehabilitation, but also most capable of meeting a set of five project goals developed during the ToR phase of work in 2009.

## Phase 2 – Baseline Conditions and Ideas Generation

Phase 2 of the study focused on establishing a thorough understanding of the complex study area which roughly includes the portion of the Gardiner/Lake Shore Boulevard corridor that

extends from Jarvis Street to Leslie Street. **Chapter 3** of this Report describes the baseline conditions including, for example, land use and urban design, environmental, economic, cultural resources, transportation conditions and other infrastructure.

The Gardiner East extends through an area of the waterfront that is undergoing extensive transformation. As part of Toronto's waterfront revitalization initiative, many of the historical industrial uses in the area are changing into complete mixed-use communities not only with new population and employment growth, but with new servicing, infrastructure, public spaces and amenities. The planning process for many of the communities in the Study Area is still underway and as such, the project team needed to understand two conditions for assessment: the existing baseline conditions that consider what is on the ground and functioning in the Study Area today (based on 2013 reporting); and a future condition that depicts what the Study Area will be like once the undertaking is fully operational (a 2031 condition) and surrounding land use has been built-out.

Also completed during Phase 2 was a "Design Ideas Competition" in which four different international design teams submitted their vision on the families of alternatives. The ideas generated through this exercise provided inspiration for the development of the alternative solutions in Phase 3. **Appendix B, Record of Consultation**, includes a summary of the inputs that were received through this Design Ideas process. Full copies of the design submissions were made available to the public on the project website.

## Phase 3 – Alternative Solutions

Phase 3 of the study focused on the development and evaluation of four alternative solutions: Maintain (or "Do Nothing"), Improve, Replace, and Remove (or Boulevard). The process of developing the alternatives involved the consideration of the study goals, baseline conditions, the results of the "Design Ideas Competition" and public, stakeholder and agency input. Extensive consultation was undertaken during Phase 3 over the course of two years. The evaluation of the alternative solutions involved extensive technical work including the completion of traffic modelling to forecast future travel times associated with the alternatives. **Chapter 4** of this report describes this study phase which is summarized below.

The evaluation of alternatives was based on an extensive set of evaluation criteria organized on the basis of the four study lenses. The initial evaluation of alternative solutions resulted in the identification of the Remove alternative as the technically preferred alternative. This technical recommendation was then reviewed by the City's Public Works and Infrastructure Committee (PWIC), which requested additional mitigation of auto travel time impacts associated with the Remove option, as well as the development and evaluation of an additional alternative solution

– the Hybrid. The Hybrid concept involved maintaining a continuous freeway connection between the Gardiner and the Don Valley Parkway (DVP), removing the elevated expressway (Logan Ramps) east of the Don Roadway, and realigning Lake Shore Boulevard East as per the Keating Channel Precinct Plan.

Several concepts for the Hybrid alternative were explored with the preferred concept involving: the removal of the Logan ramps, maintenance of the existing expressway connection with the DVP, creation of new access ramps just east of Cherry Street, and the realignment of Lake Shore Boulevard East, between Cherry Street and the Don River.

As directed by PWIC, the study team was able to optimize the Remove (Boulevard) alternative to improve upon previously reported peak period auto travel times for the Boulevard alternative, although travel times remained generally 2–3 minutes longer than those modelled for the Hybrid Alternative. The optimization largely involved traffic operation type modifications including traffic signal timing adjustments and controlling of turns at key intersections as well as some lane configuration adjustments. The Hybrid alternative solution was then evaluated against the optimized Remove (Boulevard) alternative in a final paired comparison considering a similar set of criteria used to compare the four alternatives solutions. In completing the evaluation, consultation was undertaken with the public agencies, and stakeholders.

The advantages and disadvantages of both alternatives were presented. The Hybrid alternative was identified to be preferred on the basis of the Transportation and Infrastructure lens while the Remove (Boulevard) was preferred on the basis of the Urban Design, Economics and the Environment lenses. Considering the evaluation results, both alternatives facilitate:

- Revitalization of the Don River Mouth and Flood Protection project;
- Development of the First Gulf site; and
- Implementation of new public transit projects.

However, there are differences in the benefits between the two alternatives, including:

- **Remove (Boulevard)** represents a lower cost to both construct and maintain, offers greater potential for cost recovery to the City from public land redevelopment, creation of a lively Lake Shore Boulevard, facilitates better connections to the waterfront and is to result in less greenhouse gas emissions.

- **Hybrid** maintains an expressway connection function and equivalent (to today) level of service between the Gardiner and Don Valley Parkway, has lower auto travel and goods movement times, and less construction disruption.

The decision as to which of these two alternatives should be recommended as preferred was found to be difficult. Opinions on the alternatives were highly divergent. Some stakeholders felt that the Gardiner infrastructure is integral to the City's transportation system, while others expressed that the Gardiner East is out-dated infrastructure that largely only serves as a ramp connecting the DVP to the downtown core and beyond, and presents an obstacle between the city and the waterfront.

This decision required a trade-off between two very important and related City priorities: managing traffic congestion and promoting City building/prosperity (understanding that traffic congestion is a product of City growth and prosperity). There was not a strong technical case to select one alternative over the other. With or without the Gardiner, the waterfront/downtown core will continue to grow as it has in the recent past, and traffic congestion in the City will increase – even with new transit projects being developed. In short, both the Hybrid and Remove alternatives were found to be technically viable while offering various distinct and shared advantages and disadvantages.

City Council reviewed and considered the technical evaluation results at their June 10–12, 2015 meeting. Primary issues discussed and debated during that meeting included: the merits of preserving a continuous elevated Gardiner–DVP freeway; an acceptable level of impact on road capacity and travel times; findings of goods movement and economic competitiveness studies, capital and lifecycle cost comparisons; applicable City of Toronto Official Plan policies, and various waterfront revitalization initiatives; and potential for impact to the parks, open spaces and development opportunities identified within the Keating Channel Precinct Plan. After significant Council debate on the advantages and disadvantages of the two alternative solutions, City Council endorsed the Hybrid as the preferred solution and further directed City staff to develop and evaluate alternative designs for the Hybrid solution.

## **Phase 4 – Alternative Designs**

Phase 4 of the study focused on the development and evaluation of alternative designs for the preferred Hybrid solution identified through the Phase 3 work and is described in detail in **Chapter 5** of this EA Report and summarized as follows. Various alternative designs were examined that included the consideration of: ramp design speeds, alignments, need for new access ramps, and ways to cross the rail corridor including a possible fly-over design. During

this phase two other concepts were examined as suggested by members of the public: The Green Gardiner Concept and the Viaduct Concept. These alternatives helped to inform the development of Hybrid alternative designs, including consideration for improved green spaces and the utilization of neglected space on the north side of Lake Shore Boulevard East adjacent to the rail berm.

Ultimately, three alternative Hybrid designs were developed and carried forward for assessment. All three designs include the same more northern realignment of Lake Shore Boulevard East through the Keating Channel Precinct and the removal of the Logan Ramps east of the Don River. The alternative designs include:

- Hybrid 1 – Maintaining the existing Gardiner–DVP connection and building new access ramps near Cherry Street.;
- Hybrid 2 – Removal of the existing Gardiner–DVP connection and rebuilding it through the Keating Channel Precinct further north of Hybrid 1 with a new “tighter” ramp connection to the Don Valley Parkway; and
- Hybrid 3 – Removal of the existing Gardiner–DVP connection and rebuilding the connection along an alignment close to the rail corridor that is even further north than Hybrid 2. This design also requires the lengthening of the Metrolinx Don River/DVP rail bridge.

For all of the Hybrid alternatives, the Gardiner west of Cherry Street is to be maintained and rehabilitated according to a Gardiner Strategic Rehabilitation Plan managed by the City of Toronto's Transportation Services and Engineering & Construction Services Divisions. Further, no substantial infrastructure changes to Lake Shore Boulevard East west of Cherry Street are proposed as part of the undertaking.

The three Hybrid designs were then evaluated on the basis of a comprehensive set of evaluation criteria based on the four study lenses. Through the evaluation it was determined that Hybrid Design Alternatives 2 and 3 are more desirable for the Transportation, Urban Design and Environment lenses. Alternative 3 is more desirable than Alternative 2 for Urban Design and Environment. However, Alternative 3 is more expensive to construct than Alternative 2, with an additional capital cost of approximately \$31 million net present value (NPV). Comments and input received through public and stakeholder consultation, including online and in-person meetings, indicate a preference for Hybrid design Alternative 3.

Considering the identified trade-offs among the Hybrid design alternatives and the input received from stakeholders, Hybrid Design Alternative 3 was recommended as preferred. In March 2016, Toronto City Council reviewed and endorsed the Hybrid 3 recommendation.

## Phase 5 – Effects Assessment and Mitigation

In Phase 5, the Hybrid 3 preferred design was described in further detail to present the proposed undertaking for which approval from MOECC is being sought. **Chapter 6** presents the results of this work. The proposed undertaking includes:

1. The removal of the existing Gardiner Expressway east of Cherry Street and the construction of a new expressway link with the Don Valley Parkway.
2. The construction of a realigned Lake Shore Boulevard East from Cherry Street to Don Roadway with new ramps to and from the Gardiner Expressway.
3. Reconstruction of Lake Shore Boulevard East of the Don River to Logan Avenue including a reconstructed Don River bridge.
4. Public Realm Improvements that will extend the full length of the corridor from Jarvis Street to Leslie Street.

An effects assessment of the undertaking has been completed for both the near term construction period (2020 –2025) and for the long term operation period (2031 and beyond) which is also described in **Chapter 6.0**. The assessment of the undertaking was based on a set of criteria and measures that were developed by the City, Waterfront Toronto, and the Consulting Team to reflect the Study Area, project characteristics and the input received from stakeholders through the course of the EA study. In completing the assessment of effects, mitigation measures have been identified to minimize or reduce the identified adverse environmental effects. These identified mitigation measures form part of the commitments for this undertaking. The criteria reflect the four study lenses, Transportation and Infrastructure, Urban Design, Economics and Environment, and are organized on the basis of the following criteria groups:

- Transportation
- Public Safety
- Planning and Urban Design
- Social and Health
- Natural Environment
- Cultural Resources

- Economics

Anticipated effects of the undertaking are largely restricted to the construction phase of the project. During the construction period there will be temporary traffic delays, particularly during the AM and PM peak travel period as well as typical construction nuisance types of effects such as noise, dust, possibly vibration and potential for sedimentation during storm-runoff. Some disruption to users of recreation trails (Martin Goodman Trail) is also possible although detours will be provided. As the lands immediately adjacent to the project are undeveloped, project disruption effects are largely minimized. During operations, few if any additional effects over the future baseline condition are anticipated. It is expected that there will be improvements over baseline conditions including for example with respect to storm water management.

Where necessary and appropriate, mitigation and monitoring commitments are identified and net residual effects determined. In completing the effects assessment, consideration was given to climate change, cumulative effects and effects on source water protection areas.

As documented in this EA Report, both the City and Waterfront Toronto have programs in place to reduce effects on climate change. This EA has considered potential effects on climate change and effects from climate change. Considering the potential for effects on climate change, the project:

- Does not contribute to an increase in automobile use. With the removal of the Logan Ramps, there is a small reduction in road capacity that might provide incentive for commuters to use alternative modes of transportation;
- Includes the provision of a new multi-use pathway along Lake Shore Boulevard East providing a new cycling route into the downtown area providing further incentive for commuters to use alternative modes of transportation;
- Includes significant new plantings of trees within the roadway corridor;
- Complements if not enhances the opportunities for future Waterfront Transit; and
- Enhances new development lands close to the downtown core, reducing long distance commuting requirements for some.

Regarding effects from Climate Change, the project by its nature is not considered to be overly susceptible to changing climate conditions and certainly is not any more susceptible than the future Do Nothing baseline condition. The project will be constructed using more advanced materials to withstand weather effects and extend the lifespan of the infrastructure. Further, the

project will be designed to withstand extreme weather events, more frequent freeze/thaw cycles, and to better withstand the effects of roadway salting (chlorides) which is a major contributor to the deterioration of concrete and steel reinforcements. The design will also manage more intense rainfall events through the use of bio-retention and Low Impact Development within the rights-of way.

The overall advantages and disadvantages of the Gardiner East project were also determined and compared against the “Do Nothing” Alternative. As documented in this EA Report, most of the project’s negative effects will occur during the construction period and, as such, will be temporary. Adverse effects on the natural environment are minimal considering the low quality of existing habitat in the project vicinity. Similarly, there are few negative social impacts due to an absence of receptors in the project area. The most notable effects are increased travel times for commuters during project construction when road closures will occur and travel between the downtown and the northern and eastern parts of the city will be affected. Once the project is constructed and operational, the only negative effects of note are the increase in travel time for auto commuters between the downtown and the east during peak travel periods (average increase of 3 minutes in the AM peak hour). It is noted that 90% of downtown commuters will not experience any change in their peak period travel time as a result of the implementation of the project. To manage impacts during construction and operation, Waterfront Toronto and the City are committed to ongoing coordination with other projects in the surrounding area and with agencies and stakeholders including Metrolinx and the Toronto and Region Conservation Authority.

In contrast, the project offers many city building advantages and fulfills in some measure all of the study goals as defined in the EA ToR. Further, the public has indicated support for Hybrid 3 (as the preferred alternative design). City of Toronto Council and the Waterfront Toronto Board of Directors have provided their support for the project.

In conclusion, the negative net effects of the Gardiner East Project, many of which will occur during construction and are temporary, are considered to be offset by the positive contributions of the project. These include:

- The opportunity to redevelop the Keating Channel Precinct with direct access to the water;
- The creation of new public realm space, contributing to the creation of a better connected waterfront, improved pedestrian and cycling experience, and complementing other major projects such as the Don Mouth Naturalization Project and Port Lands development;

- The accommodation of major private sector development projects including the First Gulf development; and
- The promotion of alternative modes of transportation through the provision of a new multi-use pathway.

**Chapter 7.0** of this EA Report provides a summary of Consultation activities that have occurred over the course of this EA study. During the subsequent EA phase of the study, five rounds of public consultation, based on the technical work completed for each phase of the study, were held between May 2013 and January 2016. Nearly 30,000 points of contact were achieved with citizens (including website visits). Consultation with government agencies and ministries, Aboriginal communities, a Stakeholder Advisory Committee and the project's Technical Advisory Committee were also convened throughout the study. In addition to the above noted five phases of consultation, a Draft EA Report was made publicly available for a voluntary 45-day review period as described in **Section 7.2.7** of this report. These consultation activities had many influences on this EA study which are summarized in **Section 7.3** of this Report.

**Chapter 8.0** presents an outline of the project amendment procedures to be followed if changes to the undertaking are required or desirable. These changes may be as a result of the project detailed design process and/or changes to other projects and plans in the immediate project area which is in a state of transition.

Finally, **Chapter 9.0** presents the EA study conclusions and commitments to future work including work related to:

- Detailed Design;
- Construction Detour Route Review;
- Coordination with Other Infrastructure and Planning Projects; and
- Public Realm Phasing and Implementation Strategy.

## Next Steps

Key next steps for this project include:

- Development of a detailed design for the undertaking as well as construction staging plans that include the consideration of the designs and construction sequencing of other planned projects in the Study Area;
- Completion of a Public Realm Phasing and Implementation Strategy for the implementation of public realm and urban design recommendations that will be phased with the implementation of other planned and emerging developments along the corridor;
- Review the Keating Channel Precinct Plan to reflect the Gardiner East EA undertaking; and
- Subject to MOECC approval, construction and effects monitoring of the undertaking.