



Gardiner Expressway and Lake Shore Boulevard East Reconfiguration

Environmental Assessment and Urban Design Study Chapter 6: Description of Undertaking and Effects Assessment

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AMENDED APRIL 2017



Contents

6.0	Description of Undertaking and Effects Assessment	6-1
6.1	Description of the Preferred Undertaking	6-1
6.2	Operations and Maintenance Activities	6-9
6.3	Retirement Activities	6-9
6.4	Planned Public Realm Improvements	6-11
6.4.1	Don Roadway to Leslie Street Public Realm	6-19
6.5	Effects to the Environment	6-19
6.5.1	Effects Assessment Approach	6-19
6.5.2	Effects Assessment	6-20
6.6	Consideration of Source Water Protection	6-67
6.7	Consideration of Climate Change	6-68
6.8	Coordination With Other Projects - Cumulative Effects	6-72
6.9	Advantages and Disadvantages	6-74
6.10	Commitments and Monitoring of the Undertaking	6-80

List of Figures

Figure 6-1: Gardiner Elements Requiring Removal6-4

Figure 6-2: Gardiner Deck Removal (2001) East of Logan Avenue6-5

Figure 6-3: Alignment of New Expressway Link with Don Valley Parkway6-6

Figure 6-4: Lake Shore Boulevard Design East of Don River6-10

Figure 6-5: Example Rendering of Pedestrian and Multi-Use Trail (east of Sherbourne Street looking west)6-14

Figure 6-6: Example Rendering of Intersection Improvements (Cherry Street and Lake Shore Boulevard)6-17

Figure 6-7: Hybrid 3 Conceptual Design Plan between Cherry Street and Don Roadway (Keating Channel Precinct)6-18

Figure 6-8: Preferred Undertaking – Keating Channel Precinct Conceptual Development Concept.....6-53

List of Tables

Table 6-1: Construction Period - Project/Environmental Component Interaction6-22

Table 6-2: Construction Period Net Effects.....6-25

Table 6-3: Operations Net Effects.....6-41

Table 6-4: Project Advantages and Disadvantages6-75

Table 6-5: Construction Effects Monitoring.....6-82

Table 6-6: EA Commitments and Compliance Monitoring6-85

Table 6-7: Additional Commitments Resulting from Final EA Report Review6-92

6.0 Description of Undertaking and Effects Assessment

6.1 Description of the Preferred Undertaking

On March 30, 2016 Toronto City Council endorsed the City Staff recommendation for the Hybrid 3 alternative design that was supported by the technical analysis and public consultation process undertaken during the alternative design phase of study. As such, the Hybrid 3 alternative design is the preferred undertaking for the Gardiner East Project.

The Gardiner East Project includes five distinct components:

- 1) The rehabilitation of the existing Gardiner Expressway deck from Jarvis Street to Cherry Street.
- 2) The removal of the existing expressway east of Cherry Street and the construction of a new expressway link with the Don Valley Parkway (DVP).
- 3) The construction of a realigned Lake Shore Boulevard from Cherry Street to Don Roadway with new ramps to and from the Gardiner Expressway.
- 4) Reconstruction of Lake Shore Boulevard east of the Don River to Logan Avenue including a reconstructed Don River bridge.
- 5) Public Realm Improvements from Jarvis Street to Leslie Street.

All items above except item 1) form the undertaking for which an EA approval under the EAA is being sought. Item 1) does not require EA approval and does not form part of the undertaking for which an approval under the EAA is being sought. The combination of the infrastructure changes noted in items 2), 3) and 4) along with the public realm improvements as per item 5) provide the complete picture of how the Study Area will transform as a result of the Gardiner East undertaking.

The undertaking described in this EA Report has been developed to a conceptual level of detail only. Some aspects of the undertaking may therefore require refinements or changes between EA approval and implementation that is planned to begin in 2020. As described in Chapter 8.0 some of the refinements and/or changes to the undertaking may result from detailed design work and/or be desired because of other planned developments and other projects in the Study Area. Changes to the undertaking could also result from roadway and corridor operations and maintenance activities as described further below in **Section 6.1.1**. As a result, it is important to appreciate that some amount of flexibility is required with the concept design of this undertaking. To allow for this flexibility, EA Amendment procedures have been included as part of this EA which are described in Chapter 8.0. Further, the Project co-proponents commit to constructing the undertaking as per the detailed design that is to be developed.

The following describes the key elements of the undertaking:

West of Cherry Street Gardiner Deck Rehabilitation

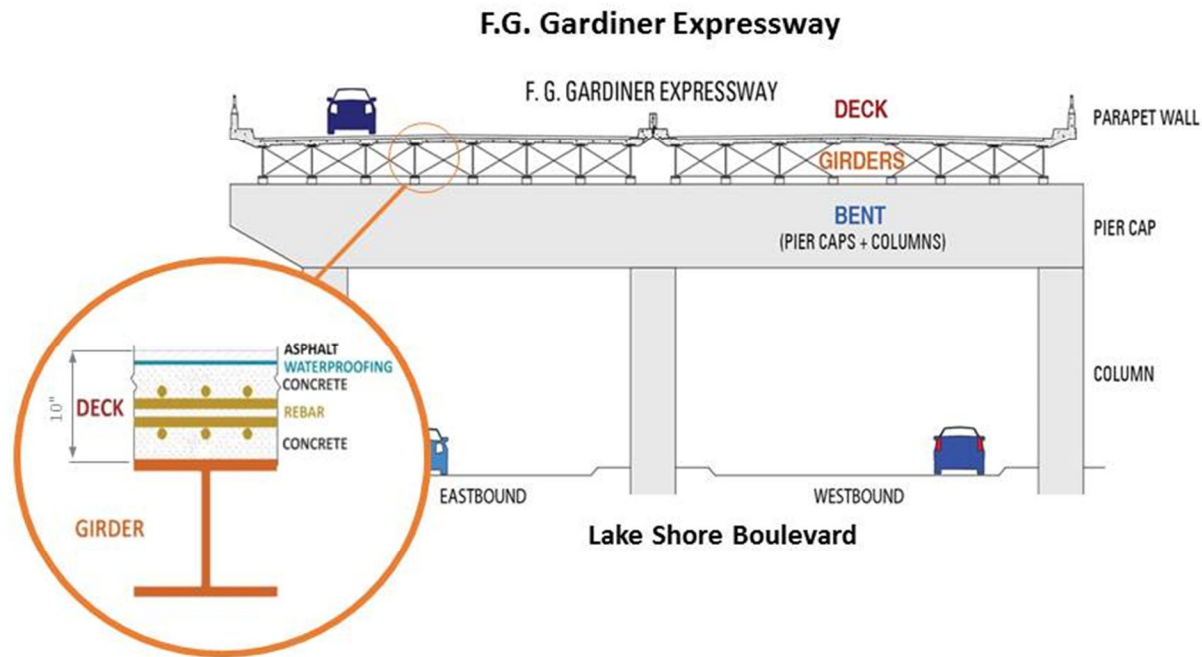
West of Cherry Street only, the elevated Gardiner deck is to be replaced. This work would be undertaken as part of the broader Gardiner Strategic Rehabilitation Program managed by City of Toronto Transportation Services. There would be no significant changes to the expressway support structure and/or ramps (with the exception of a proposed change to the Jarvis Street eastbound off-ramp that is to be reduced in length as per the Lower Yonge Precinct Plan). For this section, the City is contemplating an accelerated deck replacement approach whereby new girders and deck segments would be prefabricated in advance, at a remote facility, and then transported to the site and placed in their final locations, using crane hoisting equipment. The existing deck would be saw-cut in sections and each deck section, together with the supporting girders, would be hoisted and removed utilizing the same equipment used to handle the prefabricated components. The timing for these works is currently projected for the 2020-2025 period.

West of Cherry Street, Lake Shore Boulevard will remain in its current configuration with modifications to streetscaping and minor intersection improvements at Jarvis Street, Sherbourne Street and Parliament Street. Along the north side of Lake Shore Boulevard there will be the addition of a new east-west multi-use trail. Public space improvements will be designed along the north and south sides of Lake Shore Boulevard to create a more inviting pedestrian environment. The details of public realm, streetscaping and trail configuration will be defined through additional study.

East of Cherry Street Gardiner Removal and New Link Construction

The existing elevated Gardiner Expressway that runs east of Cherry Street, including the connecting ramps to the DVP and the Logan ramps that are located east of the Don River, would be demolished. This would include the removal of the deck, bent/pier caps and piers/support columns. The existing column/pier support footings would require removal only if they are in conflict with any proposed new underground works, including earthworks required for landscaping, along the existing Gardiner corridor between the Don River and Cherry Street and underneath the existing DVP ramps. **Figure 6-1** below illustrates the existing Gardiner components that will require removal.

Figure 6-1: Gardiner Elements Requiring Removal



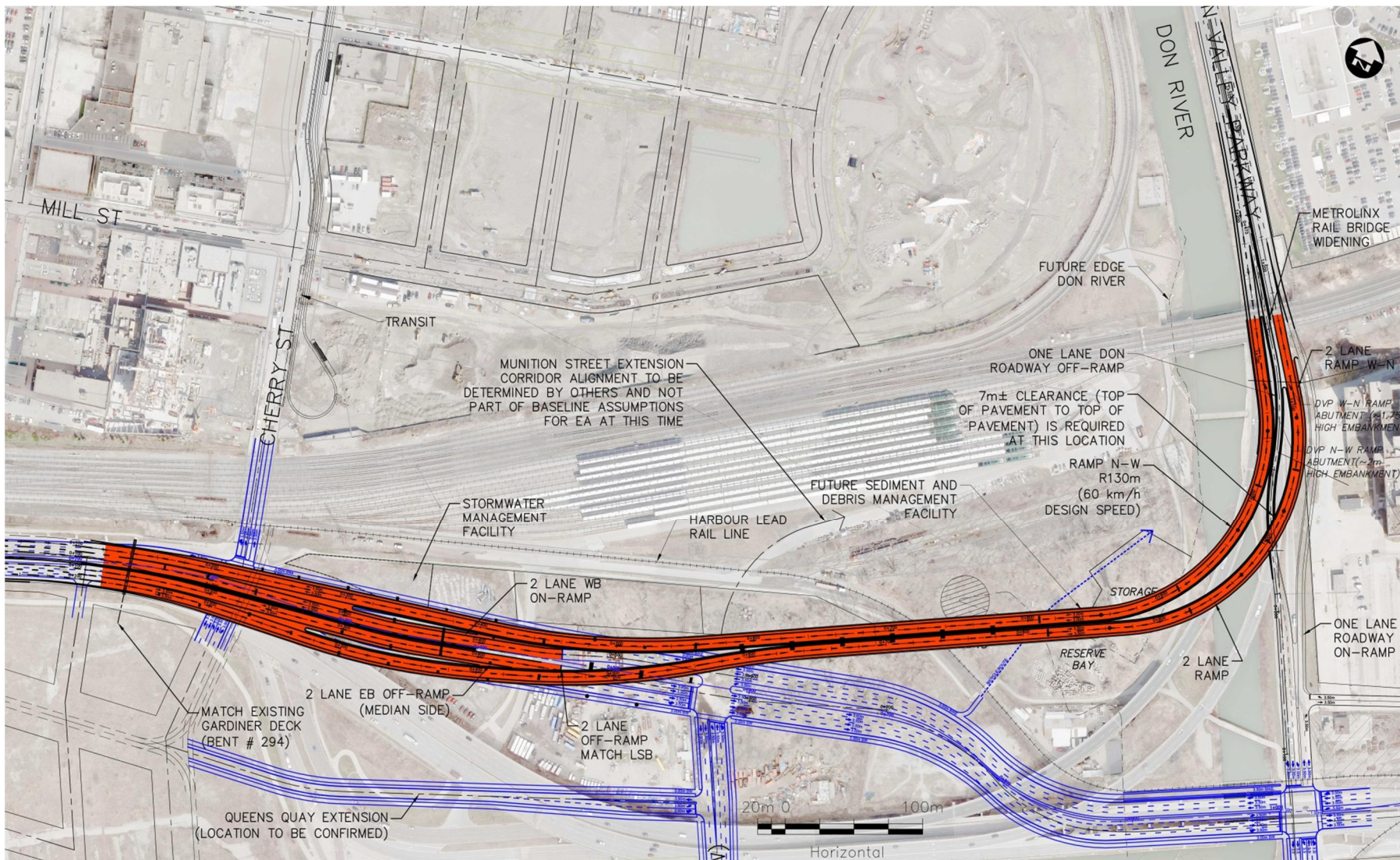
It is anticipated that the expressway would be removed through mechanical means. Removal would likely require mechanical splitting, concrete sawing and drilling, use of pneumatic breakers or other percussive tools to break up the concrete for removal by smaller bucket loading vehicles. Blasting will not be allowed. The photograph in **Figure 6-2** illustrates the demolition of the Gardiner's east end, east of Logan Avenue, which was removed in 2001. The debris from removal would be hauled away by truck to an appropriate disposal area. It is anticipated that the existing steel girders would be recycled.

Figure 6-2: Gardiner Deck Removal (2001) East of Logan Avenue



A new elevated expressway link would be constructed between the Gardiner at Cherry Street and the DVP, including new ramps over the Don River to connect the Gardiner with the DVP. This would include the construction of a new support structure that includes bent caps and support piers/columns with footings and piles to support the new deck. The new elevated expressway would consist of 2 lanes in each direction. It is recommended that wider right (outside) shoulders be provided on the ramps (2.5 m). Wider shoulders will provide space for safety and emergency purposes. **Figure 6-3** illustrates the proposed alignment of the new expressway link between Cherry Street and the DVP, through the Keating Channel Precinct, and shows the approximate location of the support piers. Future detailed design work will confirm the design of the facility.

Figure 6-3: Alignment of New Expressway Link with Don Valley Parkway



To facilitate the tighter 130 m radius ramp that allows for a more northern alignment of the expressway through the Keating Channel Precinct and to accommodate the reconfigured DVP/Gardiner roadway/ramp combination plus the exit and entrance ramps to Don Roadway at this location, it will be necessary to lengthen the Metrolinx rail bridge that extends over the DVP to provide for the appropriate bridge spans. **Figure 6-3** on the previous page indicates the location of the existing Metrolinx rail bridge and the bridge lengthening required. The existing bridge at this location is a four span bridge with a wide west side span over the Don River and three smaller spans east of the river. Based on the concept design of the undertaking, it is anticipated that the bridge would need to be reconstructed to replace the three eastern spans with new spans that have a total width of approximately 35 m. The design for the bridge reconstruction is to be confirmed during detailed design. Metrolinx has been an important stakeholder in this study and provided input to this EA process including recommended mitigation measures related to the bridge widening. A letter was received from Metrolinx dated May 12, 2016 outlining coordination expectations for input and reviews of designs, staging plans and specification that may relate to or affect the rail corridor or rail infrastructure as the project proceeds. Metrolinx will need to be consulted with during the detailed design and construction stages to ensure that disruption to rail traffic is minimized as much as possible. Coordination with Metrolinx will be ongoing to understand Metrolinx planned works in the Study Area and manage project integration.

The new alignment of the expressway also includes the construction of two new access ramps that would be located east of Cherry Street connecting the Gardiner with the realigned Lake Shore Boulevard (see **Figure 6-3**). A new 2-lane eastbound off-ramp and a new 2-lane westbound on-ramp would be constructed. These ramps would each be supported by a bridge structure that would be integrated with the structure to support the main expressway deck.

An example description of construction staging with how the Gardiner Expressway will be demolished and the new expressway constructed between Cherry Street and the DVP/Don Roadway is provided in **Appendix D, Construction Staging Report**. Included are schematic diagrams showing proposed detour roads. The construction staging considered for the EA provides one example of how the staging may occur. This will be refined during future detailed design work in consultation with other major construction projects occurring in the Study Area at the same time.

Other project components associated with the new expressway alignment include the requirement for additional speed reduction measures and advisory signage on the DVP and Gardiner informing drivers of the 50 km/h ramp speed in advance of the tighter ramp curves. It

is expected that speed transition zones will need to be created in advance of the ramps to slow vehicles down in steps from 90 km/h to 70 km/h to 50 km/hr.

Lake Shore Boulevard Realignment

This project component involves the development of a new alignment for Lake Shore Boulevard between Cherry Street and the Don Roadway, in the Keating Channel Precinct. The roadway would be developed as a six-lane cross section with a potential new future intersection with Munition Street should it be extended north from Villiers Island into the Keating Channel Precinct (as proposed in the Lower Don Lands TSMP EA). This realignment of Lake Shore Boulevard is consistent with the Keating Channel Precinct Plan.

The existing road surface of Lake Shore Boulevard that runs along the north edge of the Keating Channel, between Cherry Street and Don Roadway, would be removed. Further treatment of this area would be completed separately as per the Keating Channel Precinct Plan. Public realm improvements include the implementation of additional green space, pedestrian connections, streetscaping, landscaping and cycling connections throughout the Keating Channel Precinct. The public realm improvements will build on the infrastructure improvements of realigning the Gardiner and Lake Shore Boulevard through this area so as to enhance the Keating Channel Precinct.

East of the Don River, after the removal of the overhead Logan Avenue ramps, Lake Shore Boulevard would be rebuilt into a landscaped 6-lane boulevard with generous medians. **Figure 6-4** provides a cross section of the roadway through this section. The roadway would connect and transition into the existing at-grade Lake Shore Boulevard just east of where the existing Logan ramps touch down – roughly at Booth Street.

Lake Shore Boulevard/Don River Bridge

The Lake Shore Boulevard Bridge over the Don River will need to be rebuilt to provide sufficient width for: 6 travel lanes, an eastbound left turn lane to access the northbound Don Roadway/DVP, a multi-use trail, and sidewalk.

It is noted that modifications to the Lake Shore Boulevard bridge over the Don River have been previously proposed in the approved EA reports for the *Lower Don Lands Master Plan, Keating Channel Precinct Environmental Study Report* and the *Don Mouth Naturalization and Port Lands Flood Protection Project* (DMNP Project). The previous studies identified that the new Lake Shore Boulevard-Don River bridge would involve retaining the existing bridge and providing three new spans to the west to accommodate the widening of the Don River Mouth in order to provide the

Don Mouth flood protection, and sediment and debris management works. The selection of this bridge modification option in those studies was based, for the most part, on the existence of the overhead Gardiner Expressway structure in the immediate bridge area as per the current condition.

With the removal of the overhead Gardiner Expressway in the vicinity of the Lake Shore Boulevard-Don River bridge, there may be other opportunities for bridge re-design / modifications to improve river conveyance and sediment management operations north and south of Lake Shore Boulevard. This could include the raising of the future Lake Shore Boulevard-Don River bridge soffit and reducing the number of piers to support the structure. This could further enhance the Don River Mouth naturalization efforts. It is recommended that more detailed examination be completed on this opportunity in coordination with TRCA during future detailed design work.

In addition to rebuilding the Lake Shore Boulevard-Don River bridge crossing, the industrial rail spur connection that links the rail facilities west of the Don River to the east and provides rail access to the Port Lands area will be maintained. This will involve constructing a new rail crossing over the Don River. For the purposes of this EA it has been assumed that a separate rail bridge structure located immediately north of the new Lake Shore Boulevard-Don River bridge would be constructed. It may be possible to integrate the rail bridge into the reconstructed Lake Shore Boulevard bridge. This will be explored as part of detailed design. In addition, opportunities to raise the soffit height of the railway spur bridge will also be explored at detailed design in coordination with TRCA and the appropriate stakeholders.

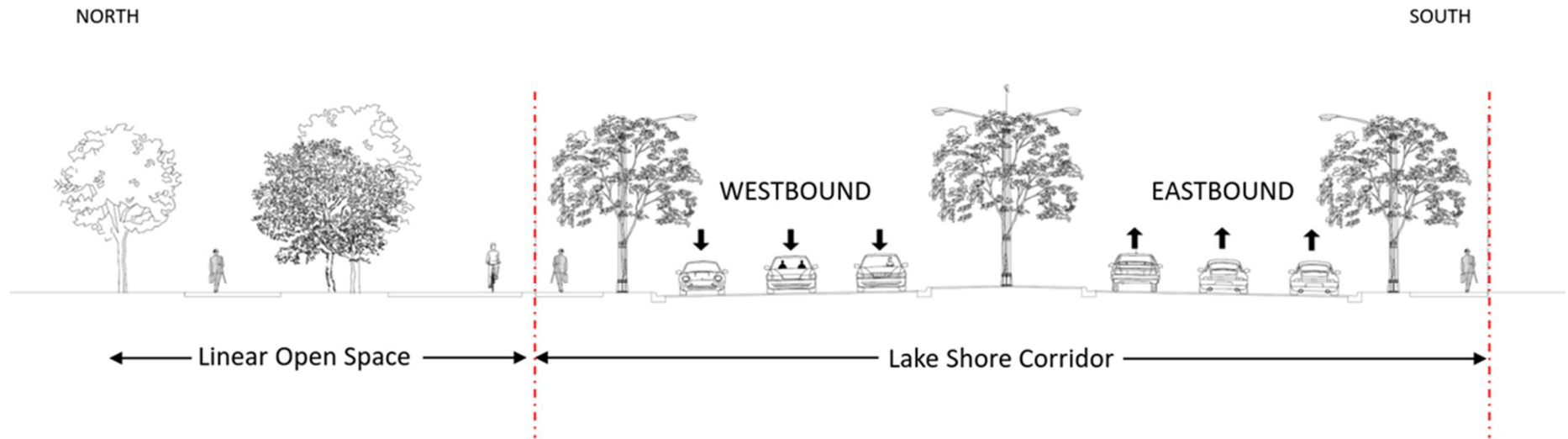
6.2 Operations and Maintenance Activities

Once constructed the project will be subject to routine City of Toronto roadway operations and maintenance activities that would include for example: snow clearing and de-icing, road and roadway structure condition inspections, roadway surface repairs, lane marking repainting, traffic monitoring, road accident assessments, minor roadway design changes to respond to traffic demands and patterns, etc.

6.3 Retirement Activities

The Gardiner and Lake Shore Boulevard are expected to have a lifespan of at least 100 years. Decommissioning or retirement of these roadways is not currently anticipated.

Figure 6-4: Lake Shore Boulevard Design East of Don River



6.4 Planned Public Realm Improvements

This section presents public realm improvements proposed for the corridor. The project co-proponents are committed to improving the public realm adjacent to Lake Shore Boulevard, and carefully coordinating public realm improvements with adjacent city-building efforts in the study area, including future planning and development of the Keating Channel Precinct. The improvements outlined here require further refinement and detailed design through future study as directed by Council. The City intends to issue in 2017 a Public Realm Phasing and Implementation Plan for the Gardiner East corridor that will form part of the Gardiner Strategic Plan detailed design and project delivery. This Public Realm Phasing and Implementation Plan will be linked to other planning and development processes, such as the Keating Channel Precinct Plan review. The recommended corridor public realm improvements recognize the following:

- For the western segment (Jarvis Street to Cherry Street), through the alternative solutions phase of the EA study, it was determined that there would be no significant infrastructure changes to the corridor west of Cherry Street. At the June 10, 2015 City Council Meeting, Council recommended that the western segment of the Gardiner-Lake Shore Boulevard corridor be maintained with the full traffic function that exists today (retaining the same number of roadway lanes and ramps). Although there will be no major infrastructure changes, there will be improvements to the public realm in this area through streetscaping, a multi-use trail and modifications to the intersections. These improvements will focus on enhancing the pedestrian experience, improving pedestrian crossings, connecting a new east-west multi-use trail on the north side of Lake Shore Boulevard, and providing improved hard and soft landscaping along the underutilized edges of Lake Shore Boulevard.
- Between Cherry Street and the Don River, the planned public realm improvements complement the infrastructure changes for the proposed undertaking (Hybrid 3, the recommended preferred alternative design for this section). With the realignment of Lake Shore Boulevard and the new configuration for the Gardiner Expressway through this area, in concert with the planning and development of a new mixed-use waterfront community in the Keating Channel Precinct, there will be a significant transformation and opportunities for improved public realm that includes prominent new public space. This includes streetscaping and landscaping throughout the network of new streets proposed in the area, improved Keating Channel public space, additional open space and significant streetscaping along the opened up Lake

Shore Boulevard that will have improved access to light and air. Through this area will also be the new east-west multi-use trail north of Lake Shore Boulevard.

- For the section from Don Roadway to Logan Avenue, for the undertaking the existing Logan Ramps would be removed and Lake Shore Boulevard would be rebuilt within the same road right-of-way. This rebuilt boulevard would connect with the existing Lake Shore Boulevard east of Logan Avenue. Lake Shore Boulevard is a six-lane boulevard from just east of Logan Avenue to Leslie Street. To the west, the rebuilt roadway would connect with the proposed realigned Lake Shore Boulevard at the current Don River bridge location (which will also be a six-lane roadway). Streetscaping improvements will be made on both the north and south sides of Lake Shore Boulevard to improve what exists today and to provide new pedestrian connections. The existing multi-use trail on the north side of Lake Shore Boulevard will remain in this area. Opportunities to improve the public realm through landscaping and improved pedestrian crossings are encouraged.

It is important to note that the corridor east of Cherry Street passes through a part of the waterfront that is undergoing extensive study that will result in changes to land use and the transportation network. In particular, the plans for the neighbourhoods on either side of Lake Shore Boulevard east of the Don Roadway (Port Lands and South of Eastern) are still being developed and will influence the public realm and streetscape design of Lake Shore Boulevard. This includes the potential for new north-south street intersections, transit and cycling connections. This EA study has included, where possible, consideration for these developing plans and the design allows for some flexibility to accommodate future modifications if needed. Improvements to public realm throughout the corridor will need to be coordinated with relevant precinct plans and planning frameworks to provide a consistent design language that achieves the public realm revitalization goals for the waterfront. The public realm improvements recommended in this EA will be confirmed and refined through a coordination effort led by the co-proponents (which will occur under separate study from this EA). More detailed plans for public realm design throughout the Gardiner – Lake Shore Boulevard corridor should include consideration for opportunities to maintain a high-quality public realm in the vicinity of an elevated expressway. This may include considerations for managing effects of winter salt applications, managing potential impacts to landscaping and public space related to stormwater management and surface runoff contaminants, as well as opportunities to improve the pedestrian and cycling experience related to noise and air quality.

Although Lake Shore Boulevard has unique public realm conditions depending on the segment of the Study Area, there are elements of the public realm design plans that extend throughout the study corridor. These include pedestrian and cycling network connections, streetscape improvements and open space concepts as described below.

Corridor-Wide Design Elements - Common elements of the design plans throughout the corridor include a continuous and connected pedestrian and cycling network, a continuous network of open spaces and public realm improvements through hard and soft landscaping, and public art.

Pedestrian Network and Cycling Connections - Extending the length of the Study Area is a proposed new multi-use trail. The trail would be located along the north side of Lake Shore Boulevard. Along this north side would also be an associated greenway which varies in size depending on both the dimensions of the space available, and the edge condition associated with Metrolinx's adjacent rail corridor infrastructure.

Key north-south connections across the corridor that link into the new multi-use trail along Lake Shore Boulevard include planned or proposed improvements on Yonge Street, Sherbourne Street, and Cherry Street. As the Villiers Island Precinct, Port Lands and South of Eastern area plans evolve, additional important north-south connections across the corridor are anticipated.

The pedestrian network will also be enhanced through the implementation of continuous sidewalks along the north and south sides of Lake Shore Boulevard, where possible. Improved pedestrian connections will enhance connectivity throughout the Central Waterfront and between the planned precincts. As a key principle of the CWSP, improved pedestrian connections will be prioritized throughout the Study Area with attention paid to how connections may facilitate the revitalization of the waterfront.

Figure 6-5 provides an example rendering of what the multi-use trail could look like in the western section of the Study Area between Jarvis Street and Cherry Street.

Figure 6-5: Example Rendering of Pedestrian and Multi-Use Trail (east of Sherbourne Street looking west)



Open Space/Linear Greenway - A system of new open space referred to as a greenway is proposed along the north edge of Lake Shore Boulevard for the entire extent of the study corridor. The greenway would include primarily passive recreational spaces to provide an improved balance of green space including tree planting among the road infrastructure to enhance the pedestrian experience. There may be locations where more active recreational uses such as small skateboard parks would be possible.

Public Realm, Public Art and Animation - There are many public realm design interventions that can be applied throughout the Study Area that do not require infrastructure changes. These include landscaping, public art installations and animation of the existing public realm and open spaces with temporary market space, pedestrian squares, light, and art installations. Planning for public art along the corridor would occur through separate City and Waterfront Toronto public art plans and implementation tools.

Streetscaping - Improved streetscaping will be completed throughout the corridor on the north and south sides of Lake Shore Boulevard. This may include tree planting/landscaping and a continuous pedestrian sidewalk on the south and north sides of the street.

Intersection Improvements - At the existing Lake Shore Boulevard intersections throughout the corridor (at Jarvis Street, Sherbourne Street, Parliament Street, and Cherry Street), improvements will be made to:

- Regularize the intersections where possible to reduce pedestrian crossing distances and improve the legibility of the intersection movements for drivers;
- Reduce turning lanes to improve walkability;
- Provide texture to road surface to demark pedestrian crossing areas. This can be done in coordination with line painting (including zebra markings);
- Add bollards to the pedestrian refuge medians to provide additional safety and separation between pedestrians and vehicles;
- Implement north-south curb enlargements that will allow for bike lanes to be incorporated;
- Increase the setback of intersection stop lines to support safe pedestrian crossings; and,
- Implement hard and soft landscaping along Lake Shore Boulevard to improve the pedestrian and cycling experience.

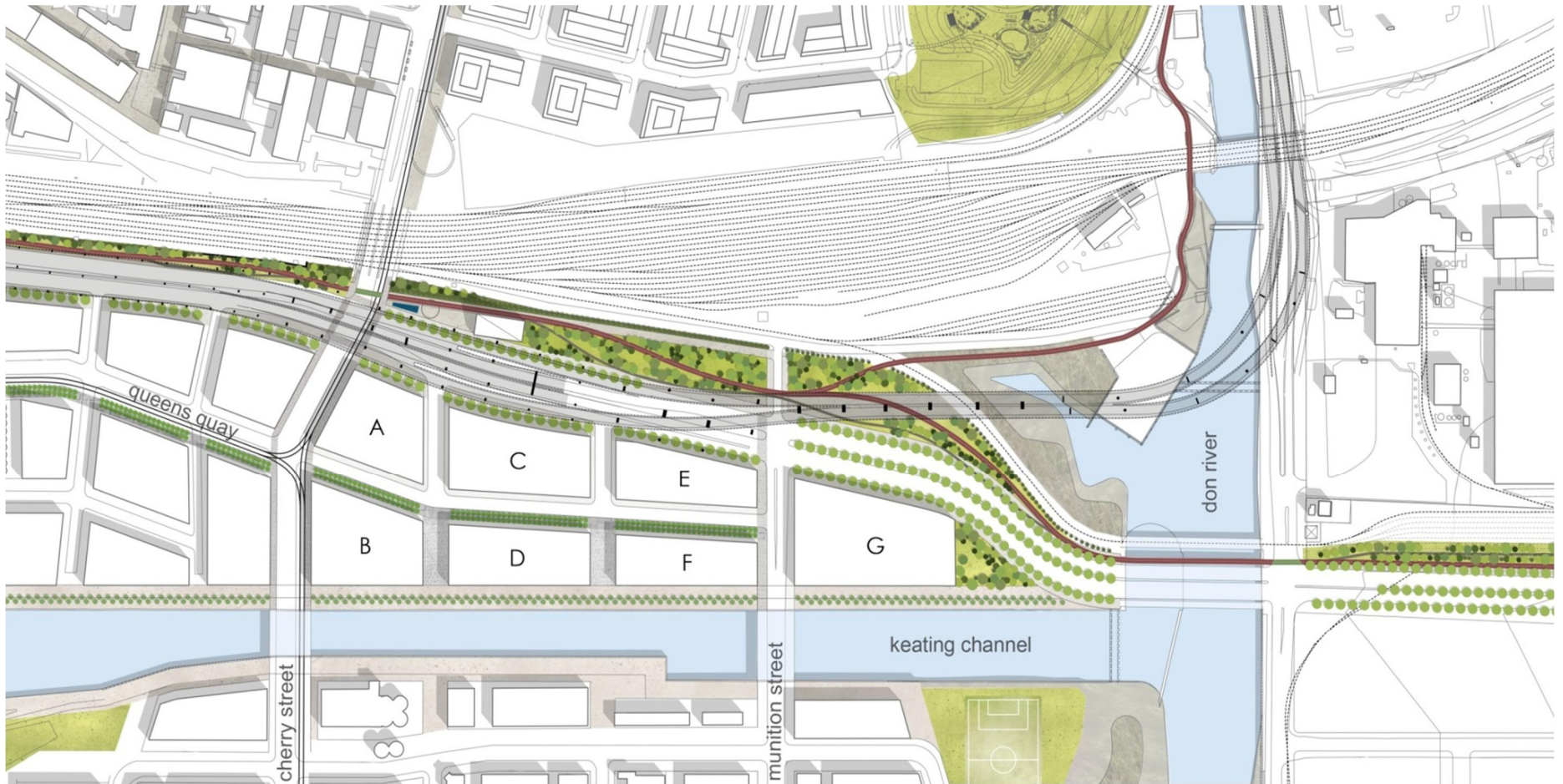
An example rendering of potential intersection improvements is provided in **Figure 6-6**. Some of the improvements noted above have already been made (e.g. at Sherbourne Street).

Public Realm Phasing and Implementation Strategy – A phasing and implementation strategy for the corridor will be completed to provide a coordinated and consistent approach to delivering public realm within the corridor. The strategy will identify opportunities to integrate with complementary projects within or proximate to the Gardiner East EA Study Area. The strategy will include a phasing plan and will identify how proposed public realm improvements can best be coordinated among other initiatives including the Port Lands Planning Framework and the Keating Channel Precinct Plan. In addition, the Keating Channel Precinct Plan will need to be reviewed to reflect the Gardiner East EA undertaking. **Figure 6-7** presents a conceptual plan for the improvements in the Keating Channel Precinct along Lake Shore Boulevard between Cherry Street and the Don Roadway.

Figure 6-6: Example Rendering of Intersection Improvements (Cherry Street and Lake Shore Boulevard)



Figure 6-7: Hybrid 3 Conceptual Design Plan between Cherry Street and Don Roadway (Keating Channel Precinct)



6.4.1 Don Roadway to Leslie Street Public Realm

East of the Don River, the Gardiner Expressway will be removed and a boulevard design will be constructed for Lake Shore Boulevard. The design of the boulevard will generally mirror the design of Lake Shore Boulevard east of Carlaw Avenue. Improvements to the design may include:

- Enhanced tree planting;
- A wider pedestrian median for pedestrian refuge to cross the boulevard;
- Improved paving materials and line painting (including zebra markings) to differentiate intersection crossings and pedestrian, cycling and automobile spaces;
- Enhanced landscaping on the north edge supporting the multi-use trail; and,
- Improved pedestrian sidewalk on the south side of the street.

The public realm plan for the section of Lake Shore Boulevard east of the Don Roadway will be coordinated with the plans for the Port Lands and South of Eastern area.

6.5 Effects to the Environment

6.5.1 Effects Assessment Approach

The provincial EA process requires proponents to identify and describe in detail the potential effects on the environment from the proposed undertaking as well as the measures that would be implemented to reduce or possibly avoid those effects. The assessment uses a broad definition of environment, as stipulated in the Ontario *EA Act*, which includes natural, social, economic and cultural components.

The impact assessment has been developed to provide a certain degree of flexibility in project design and how it would be constructed. This flexibility is required to accommodate potential changes to the conceptual design, construction methods, and baseline conditions including the evolution of other planned projects in the Study Area. These potential changing circumstances would be considered during the detailed design and construction phases of the project. The approach to accommodate these potential changes is provided in **Chapter 8** which includes an outline as to how identified project design changes will be considered, including the assessment of effects from those changes to ensure the integrity of the EA.

The effects assessment was completed for the near-term construction period and the long-term operation period. The construction period is expected to last for approximately six years (2020-2025). For the assessment of construction effects, it has been assumed that current baseline conditions would exist. It is noted that the area to be subject to the most significant construction activity, Cherry Street to Don Roadway/DVP, consists of lands that are largely vacant. This is also the area in which part of the DMNP will occur. The construction effects assessment considers the coordination of the Gardiner East undertaking and the DMNP undertaking should these two projects be constructed during a similar time period. This includes consideration for how traffic detours will be planned and constructed to accommodate the construction of both projects. The long-term operations period assumes that full build-out of the Study Area has been achieved, including the naturalization and habitat restoration of the Don River.

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.

6.5.2 Effects Assessment

The assessment of the undertaking was based on evaluation criteria and measures that were developed by the co-proponents and the Consulting Team that reflect the Study Area, project characteristics and the input received from stakeholders through the course of the EA study. Unlike the previous evaluation steps of the EA (e.g., evaluation of alternative solutions and alternative designs), these criteria are not comparative as we are not comparing facilities. Rather, these criteria provide structure to the assessment of project effects to help in the identification of measures to reduce these effects. The effects assessment was also completed to aid in the assessment of the advantages and disadvantages of the project that is presented in **Section 6.6**. For each of the criteria, one or more measures were developed. The measures specify the data to be collected and/or the effects to be assessed for each criterion. 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

Table 6-1 identifies the effects (environmental interactions) that are expected to occur for each of the major project construction activities. The table focuses on the interaction of construction activities and not the operations of the facilities. Based on the construction period interactions presented in **Table 6-1**, **Table 6-2** presents a summary of the projected project construction related effects, proposed mitigation measures and identifies the net residual effects. **Table 6-3** presents a summary of the projected project operations period related effects, proposed mitigation and monitoring measures, and identifies net residual effects.

Following **Tables 6-1-6-3**, detailed subsections provide a summary description of the more notable effects of the project by each of the seven criteria groups noted above. This description is organized by the construction and operation periods.

Table 6-1: Construction Period – Project/Environmental Component Interaction

Not Affected (NA), Positive Interaction (+), Negative Interaction (-)

Table 6-1: Construction Period – Project/Environmental Component Interaction											
Project Activity (Construction)	Construction Support Facilities (e.g., Staging Areas, Casting/Assembly Yards, Concrete Batch Plant, etc.)	Vegetation Removal / Protection	Topsoil Removal/ Stockpiling / Disposal	Utility Relocations	Construction of Road Detours and Temporary Traffic Facilities	Removal of Gardiner/DVP Ramp Decks and Superstructure	Installation of Bridge Superstructure and Deckworks (including for new Don River/LSB & Rail Bridges)	Roadworks and Retaining Walls	Electrical Works (Signals, Illumination)	Installation of Public Realm & Streetscape Elements	Installation of Signage and Lane Markings
Auto travel time delays	NA	NA	NA	NA	-	-	-	-	-	NA	-
Transit travel delays	NA	NA	NA	-	-	-	-	-	NA	NA	NA
Impact to pedestrian Movement	NA	NA	NA	-	-	-	-	-	NA	-	NA
Impact to cyclist movement	NA	NA	NA	-	-	-	-	-	NA	-	NA
Safety risks to pedestrians	NA	NA	NA	NA	-	-	-	-	NA	-	NA
Safety risks to cyclists	NA	NA	NA	NA	-	-	-	-	NA	-	NA
Safety risks to motorists	NA	NA	NA	NA	-	-	-	-	NA	NA	NA
Impact with other projects and initiatives	NA	NA	NA	-	-	-	-	-	NA	-	NA
Change in views and viewscapes	-	-	-	-	-	-	-	-	NA	NA	NA
Effects from contaminated soil disturbance	NA	NA	-	-	-	-	-	-	-	-	NA
Change in air quality	-	-	-	-	-	-	-	-	NA	NA	NA
Change in noise levels	-	-	-	-	-	-	-	-	-	-	-
Vibration effects	NA	NA	NA	NA	-	-	-	-	NA	NA	NA
Traffic diversion effects on neighbourhoods	NA	NA	NA	NA	-	-	-	-	NA	NA	NA
Impacts on	NA	NA	NA	NA	NA	NA	-	-	NA	-	NA

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Project Activity (Construction)	Construction Support Facilities (e.g., Staging Areas, Casting/Assembly Yards, Concrete Batch Plant, etc.)	Vegetation Removal / Protection	Topsoil Removal/ Stockpiling / Disposal	Utility Relocations	Construction of Road Detours and Temporary Traffic Facilities	Removal of Gardiner/DVP Ramp Decks and Superstructure	Installation of Bridge Superstructure and Deckworks (including for new Don River/LSB & Rail Bridges)	Roadworks and Retaining Walls	Electrical Works (Signals, Illumination)	Installation of Public Realm & Streetscape Elements	Installation of Signage and Lane Markings
recreation use											
Loss of terrestrial features & habitat	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Disruption to terrestrial features & habitat	-	-	NA	-	-	NA	-	-	NA	-	NA
Loss of aquatic features & habitat	NA	NA	NA	NA	NA	-	-	NA	NA	NA	NA
Disruption to aquatic features & habitat	-	-	-	NA	-	-	-	NA	NA	NA	NA
Change in surface water quality from storm run-off	-	-	-	NA	-	-	-	NA	NA	-	NA
Impact on Don River flood conveyance	NA	NA	NA	NA	-	-	-	NA	NA	NA	NA
Potential for change to microclimate/ heat island effect	NA	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ability to accommodate storm event changes from climate change	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Removal of built heritage features	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Change to cultural landscape	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Impact on archaeological resources	-	NA	-	-	-	NA	-	-	NA	NA	NA
Impact on First Nations People and	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 6-1: Construction Period – Project/Environmental Component Interaction											
Project Activity (Construction)	Construction Support Facilities (e.g., Staging Areas, Casting/Assembly Yards, Concrete Batch Plant, etc.)	Vegetation Removal / Protection	Topsoil Removal/ Stockpiling / Disposal	Utility Relocations	Construction of Road Detours and Temporary Traffic Facilities	Removal of Gardiner/DVP Ramp Decks and Superstructure	Installation of Bridge Superstructure and Deckworks (including for new Don River/LSB & Rail Bridges)	Roadworks and Retaining Walls	Electrical Works (Signals, Illumination)	Installation of Public Realm & Streetscape Elements	Installation of Signage and Lane Markings
activities											
Impacts to goods movement	NA	NA	NA	-	-	-	-	-	-	-	-
Impact on downtown mobility	NA	NA	NA	NA	-	-	-	NA	NA	NA	NA
Impact on local business activity	NA	NA	NA	NA	NA	-	-	-	NA	NA	NA

Table 6-2: Construction Period Net Effects

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
TRANSPORTATION			
<p>Impact to auto travel time</p>	<p>The degree of impacts to auto travel times will depend on the construction staging/phasing and traffic management approach adopted by the Contractor. Potential travel and access effects and impacts and issues include the following:</p> <ul style="list-style-type: none"> ● Safety considerations will preclude the removal of major deck panels and substructure components over live traffic or public / inhabited areas. This will require the periodic shut down of lanes and/or sections of Lake Shore Boulevard during deck removal. ● Sections of expressway and surface roads will require lane reductions or complete shut down during periods of construction of the new bridge decks and related facilities. This is expected to involve sections of the Gardiner, Don Valley Parkway, Don Roadway, Cherry Street and Lake Shore Boulevard. ● The total number of available east-west lanes in the Gardiner – Lake Shore Boulevard corridor will be reduced during construction due to the need to provide sufficient working areas for the new construction work. ● It is expected that auto travel time delays will occur during these periods. ● Access to/from the site by construction vehicles could also contribute to additional traffic congestion in the local area. Nearby access to DVP and Gardiner expected to minimize construction vehicle disturbance effects on the local community. 	<ul style="list-style-type: none"> ● The contractor will be required to maintain a specified minimum number of total east-west lanes open to traffic throughout the construction period. This will likely involve the construction of temporary lanes on other area roads as operating lanes are shut down for construction. Traffic will be directed to use other existing and/or widened roadways and constructed detour roads during these periods. See draft Construction Phasing Plan for proposed detour roads (subject to finalization during detailed design). ● Advanced notification and signing will advise motorists of lane reductions and closures. ● New construction work can be staged to allow the existing Gardiner corridor to remain partially operational during construction. ● Example, possible staged construction and the introduction of temporary works/local detour routes include the following: <ul style="list-style-type: none"> ○ Early replacement of the eastern spans of the Metrolinx rail bridge over the Don River/DVP will allow the establishment of a widened Don Roadway as a new, temporary exit/entrance to the DVP while the existing DVP-Gardiner ramps are removed; ○ Phased construction of portions of new Lake Shore Boulevard and the new Lake Shore Boulevard-Don River bridge to allow maximize use for east-west traffic during; ○ Establish a Commissioners Street and/or Villiers Street detour routing to divert Lake Shore Boulevard traffic around the Gardiner East Ramp structures and the Lake Shore Boulevard-Don River bridge. This may include the construction of a new, temporary crossing of the Keating Channel east of 	<ul style="list-style-type: none"> ● Temporary travel time delays to auto users due to lane reductions and temporary road closures.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
		<p>Cherry Street;</p> <ul style="list-style-type: none"> ○ Staged removal and construction of existing Gardiner deck and DVP ramps to allow traffic to use existing deck lanes during construction; ○ Widen the Jarvis-Gardiner ramps to two lanes to facilitate access. <ul style="list-style-type: none"> ● Carry out as much of the bridge deck demolition work as possible on weekends/overnight to avoid the need to shut down sections of the Lake Shore Boulevard during the busier weekday periods ● Traffic vehicle delay will be monitored by the project proponent (City of Toronto). Adjustments to the traffic management plan and construction activity will be made accordingly where possible to minimize delays. ● Construction delays to emergency vehicle service (EMS, fire, police etc.) will be minimized by: <ul style="list-style-type: none"> ○ Regular communication with Emergency Services during construction; ○ Meeting with Emergency Services prior to construction start; ○ A requirement in the construction contract for a, "Emergency Service Provider Notification," to notify Emergency Services in advance of construction start and prior to any full closures. 	
Impact to transit travel	<ul style="list-style-type: none"> ● There are no transit facilities located on the Gardiner-Lake Shore Boulevard corridor in the Study Area. As such there will be no direct impact to transit operations. ● Transit routes utilizing Cherry Street through the Gardiner-Lake Shore Boulevard corridor (e.g., Route 172) may be affected by traffic restrictions due to overhead bridge works. ● The project requires the widening of the Metrolinx Don River/DVP Rail Bridge underpass and may also require relocation of utilities adjacent to the Metrolinx rail corridor (e.g., hydro tower on west side of Don River). And while major disruptions to GO Train service are to 	<ul style="list-style-type: none"> ● Advanced warning and advertising will advise transit users of possible travel time delays during periods of road closures. ● Co-proponents to explore with transit providers, including Metrolinx and Toronto Transit Commission, potential to increase service levels during these periods. ● Co-proponents to coordinate with Metrolinx re: opportunities for joint work on site related to track upgrades so as to minimize impacts to rail service. 	<ul style="list-style-type: none"> ● Potential for periodic/temporary increase in transit travel times including on Cherry Street south of Lake Shore Boulevard.

Table 6-2: Construction Period Net Effects

Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
	<p>be avoided, there is the potential for some minor delays.</p> <ul style="list-style-type: none"> ● During periods of traffic detouring, other nearby roadways could experience increase in auto traffic volumes which could lead to slower street transit travel (e.g., for King and Queen Streets). ● Commuters may opt to use transit instead of driving during periods of road closures which could put more user pressure on the transit system. 	<ul style="list-style-type: none"> ● Project proponent will work with transit providers (TTC and Metrolinx) to ensure that potential increase in service demands are being met and undertake monitoring of impact on bus and street car travel from traffic diversion onto other near-by City streets. 	
Impact to rail (freight) transportation	<ul style="list-style-type: none"> ● The project requires the construction of a new rail spur bridge over the Don River (north of Lake Shore Boulevard-Don River bridge) and will require either the establishment of temporary rail works/bridge crossing or temporary closure of the existing spur line, depending on finalizing rail access needs to the east of the Don River. 	<ul style="list-style-type: none"> ● Co-proponents to explore with freight rail users the potential to reduce rail spur line use during construction periods as needed. ● Co-proponents to coordinate with TRCA and other stakeholders to integrate changes to the Port Lands rail spur with DMNP works related to sediment management area integration and weir installation works. 	<ul style="list-style-type: none"> ● Potential for short periods of closures or limited use of existing rail spur line may be necessary as new and/or temporary rail spur bridge facilities are put in place.
Impact to pedestrian movement	<ul style="list-style-type: none"> ● Existing pedestrian activity in the area is located on Cherry Street and on the Lower Don River trail system situated on the north side of Lake Shore Boulevard through the Keating Channel Precinct, including a Don River crossing. Pedestrians using these pathways will be impacted during construction. Refer to the "Impact to Cyclist Movements" section below for details. ● Any pedestrian travel will be restricted at times through the Keating Channel Precinct and along the Lake Shore Boulevard corridor between Cherry Street and Logan Avenue and along Cherry Street through the Gardiner area during construction – particularly during demolition of the elevated expressway. 	<ul style="list-style-type: none"> ● It is recommended that the path link to the Lower Don River trail system be temporarily relocated during construction when new works conflict with the current location. This will require that some segments of the path be shifted north of the new DVP ramps. ● It is recommended that the path connecting to the east be temporarily established along the proposed Villiers Street and/or Commissioners Street detour route. This will divert pathway users south on Cherry Street to Villiers Street and/or Commissioners Street to reconnect with the pathway via Don Roadway north to Lake Shore Boulevard. ● Appropriate signage will be implemented to identify detour routes at the time of temporary roadway/sidewalk closures. In addition, closure events and restricted access will be minimized to the greatest extent possible to facilitate pedestrian movement during construction. 	<ul style="list-style-type: none"> ● Some short periods of closures to existing pathways may be necessary as new, temporary pathway facilities are put in place. ● The establishment of temporary pathways through the area may increase the trip length which could be a negative impact to commuters.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
Impact to cyclist movement	<ul style="list-style-type: none"> No impacts to the Martin Goodman Trail have been identified. The path connecting to the Lower Don River trail system is currently situated north of Lake Shore Boulevard through the Keating Channel Precinct and a branch off of this provides path access across the Don River (via a separate bridge crossing) to run along the north side of Lake Shore Boulevard. Both of these links will be impacted by the proposed works as they are situated where new facilities will be located. Cyclist travel along Cherry Street could be impacted by construction – particularly during demolition of the elevated expressway. 	<ul style="list-style-type: none"> It is recommended that the path link to the Lower Don River trail system be temporarily relocated during construction when new works conflict with the current location. This will require that some segments of the path be shifted north of the new DVP ramps. It is recommended that the path connecting to the east be temporarily established along the proposed Villiers Street and/or Commissioners Street detour route. This will divert pathway users south on Cherry Street to Villiers Street and/or Commissioners Street to reconnect with the pathway via Don Roadway north to Lake Shore Boulevard. Appropriate signage shall be implemented to identify detour routes at the time of temporary pathway closures. In addition, closure events and restricted access will be minimized to the greatest extent possible to facilitate cyclist movement during construction. 	<ul style="list-style-type: none"> Some short periods of closures to existing pathways may be necessary as new, temporary pathway facilities are put in place. The establishment of temporary pathways through the area may increase the trip length which could be a negative impact to commuters.
PUBLIC SAFETY			
Safety risks to pedestrians	<ul style="list-style-type: none"> Pedestrians will be required to use temporary facilities during the construction period, including those that are on-road rather than the current off-road pathways. Pedestrians could be at risk from the movement of construction related vehicles and equipment on public roadways. 	<ul style="list-style-type: none"> Temporary pathway facilities will be designed to address safety issues (e.g., appropriate path widths, barriers to separate cyclist/pedestrians from vehicle traffic). Construction staging will minimize overall impacts to motorists, residents and trail/pathway users. 	<ul style="list-style-type: none"> Through appropriate mitigation, safety risks to pedestrians are expected to be largely avoided.
Safety risks to cyclists	<ul style="list-style-type: none"> Cyclists will be required to use temporary facilities during the construction period, including those that are on-road rather than the current off-road trails. Cyclists could be at risk from the movement of construction related vehicles and equipment on public roadways. 	<ul style="list-style-type: none"> Appropriate signage and public communication shall be implemented to identify detour routes at the time of temporary roadway/pathway/sidewalk closures. Closure events of roadways and pathways will be minimized to the greatest extent possible to facilitate vehicle, cyclist and pedestrian movement through the area during construction. 	<ul style="list-style-type: none"> Through appropriate mitigation, safety risks to cyclists are expected to be largely avoided.
Safety risks to motorists	<ul style="list-style-type: none"> Motorists could be at risk from the movement of construction related vehicles and equipment on public roadways. Motorists will be initially unfamiliar with detour roads which could include some unconventional road configurations. 	<ul style="list-style-type: none"> The following measures are recommended for further 	<ul style="list-style-type: none"> Through appropriate mitigation, safety risks to auto users are expected to be largely avoided.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
		assessment in the detailed design phase of the project: <ul style="list-style-type: none"> ○ Provision of appropriate signage; ○ Lowering posted speed on approach mainline (with visual clues); ○ Implementation of crash attenuators; ○ Provision of flatter vertical curves to improve sight lines; ○ Provision of end of queue detection systems in areas with potential ramp queuing; ○ Further shoulder widening on the DVP-Gardiner ramps; ● Investigation for increasing the length of speed change lanes on the Don Valley Parkway and on the Gardiner associated with the proposed ramps. 	
PLANNING AND URBAN DESIGN			
Impact with other projects and initiatives	<ul style="list-style-type: none"> ● The current Gardiner construction period is forecasted to be 2020 to 2025. ● There are many other projects proposed in the Study Area (both public and private) that could proceed to construction at the same time that the Gardiner project is to be constructed including for example the DMNP, Cherry Street realignment, Metrolinx Regional Express Rail Program/rail bridge track expansion and the First Gulf Development. ● The project has the potential for impact on the implementation of these other projects should the construction periods overlap. ● There is the potential for cumulative effects on the surrounding community for several projects being constructed at the same time. 	<ul style="list-style-type: none"> ● Many of the other projects/plans are in the control of the project co-proponents. ● Assess the potential for project overlaps (time and space) to determine potential conflicts and/or the potential to re-package infrastructure works to improve coordination amongst projects and eliminate issues. ● Project co-proponents and/or its agent(s) to coordinate with City Transportation Services. ● City and/or its agent(s) is required to apply for permit(s) to coordinate planned lane, pathway and roadway closures to manage impacts to a host of users, including pedestrians, cyclists, transit, and motor vehicles. ● Liaise with transit, police, and other Emergency Services, and provide feedback and guidance to contractors. The project co-proponents and/or its agent(s) are responsible for notifying impacted residents and businesses. 	<ul style="list-style-type: none"> ● With proper coordination and management of the numerous area construction projects, the net negative effects should be minimal.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
		<ul style="list-style-type: none"> ● Project co-proponents and/or its agent(s) will communicate with the implementing/review agencies of other projects such as TRCA and Metrolinx to ensure that the Gardiner East Project construction activities are coordinated with the other projects in the area. ● Refinement of the construction staging plan will be required to address coordination of simultaneous construction projects in the Study Area if timelines for the implementation of major projects coincide. ● In anticipation of the Gardner construction overlapping with the construction of other major projects in the area including the DMNP, the construction activities will be monitored and adjustments made to the Construction Staging Plan in the event of unanticipated effects occurring. 	
Change in views and viewscapes	<ul style="list-style-type: none"> ● Construction activities will be visible through the project area. Some may feel that this is a negative effect despite the current vacant land/former industrial nature of the Study Area (Keating Channel Precinct). 	<ul style="list-style-type: none"> ● No mitigation required. 	<ul style="list-style-type: none"> ● Minor temporary changes in views during the construction period.
SOCIAL AND HEALTH			
Effects from contaminated soil disturbance	<ul style="list-style-type: none"> ● Much of the project area contains soils that are contaminated (oil impregnated). ● The nature and extent of the contamination is to be confirmed in advance of or during detailed design. ● Potential for short-term truck traffic related nuisance effects in the local area from the transportation of contaminated soil off-site for disposal (noise and air emissions). ● Related truck traffic could result in additional traffic congestion in the local area. 	<ul style="list-style-type: none"> ● Contaminate soils and groundwater will be managed as per applicable MOECC requirements (Section 27 and Section 46 approvals under the Environmental Protection Act) and the contaminated soil disposed of off-site at a licensed disposal facility. Collected groundwater may require treatment prior to discharge. ● Project co-proponents and/or its agents will be required to develop a comprehensive materials and groundwater management plan including the identification of intended haulage routes for the removal of materials and to submit the plan for approval. Haulage routes will be restricted to 	<ul style="list-style-type: none"> ● With appropriate mitigation, no adverse effects from contaminated soil disturbances are expected.
Effects from contaminated groundwater	<ul style="list-style-type: none"> ● Any underground works (e.g., new Gardiner/ramp footings, storm sewers) will likely be in the groundwater zone as groundwater in the Keating Channel Precinct area has been reported as being between 		<ul style="list-style-type: none"> ● With appropriate mitigation, no adverse effects from contaminated groundwater disturbances are expected.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
	<p>1.5 m and 2.5 m below surface and fluctuating very little throughout the year. Such works will likely need to pump ground water to keep the excavations dry while the underground works are installed/constructed.</p> <ul style="list-style-type: none"> There is the potential that the groundwater encountered is contaminated (with PHCs, PAHs and inorganic substances). 	<p>appropriate roads to minimize local area impacts. Any collected ground water collection and treatment requirements will be identified.</p> <ul style="list-style-type: none"> A provincial Permit to Take Water may be required if the extent of pumping is above 50,000 litres of water per day, which is expected. This will result in the pumping and potential ground water effects coming under MOECC review and approval requirements. 	
Change in air quality	<ul style="list-style-type: none"> The set-up and use of on-site construction facilities such as concrete batch plants and the operation of construction equipment will result in air emission from use of internal combustion engines. Excavation of soils could result in an increase in dust/particulate matter in the local area. Between Cherry Street and the Don River, the area is undeveloped. The closest receptors are located to north of the Metrolinx rail corridor (West Don Lands). The closest sensitive receptors are about 300 m away. Between the Don Roadway and Logan Avenue there are a few commercial (warehouse) businesses in proximity to the corridor that could experience some air quality effects during removal of the Logan Ramps/rebuild of Lake Shore Boulevard. 	<ul style="list-style-type: none"> The introduction of on-site construction facilities such as batch plants potentially have the effect of reducing truck traffic on area roads by keeping the external delivery of materials such as concrete to a minimum. Air emissions from any construction point sources such as batch plants may require an Environmental Compliance Approval from the MOECC and subsequent monitoring. Apply water and dust suppressants during construction to protect air quality due to dust. Contractors are required to keep idling of construction equipment to a minimum and maintain equipment in good working order to reduce emissions from the construction activities. Air quality related complaints received by the public (e.g. dust) will be monitored by the proponent and/or the project constructor. Follow-up action will be taken were appropriate. 	<ul style="list-style-type: none"> Temporary and localized air quality effects are anticipated (e.g., dust). Effects will be minimal as receptors are generally well removed from the project location.
Change in noise levels	<ul style="list-style-type: none"> Pile driving activities, bridge deck and bent removal and the operation of construction equipment will result in noise generation. Between Cherry Street and the Don River, the area is undeveloped. The closest receptors are located to north of the Metrolinx rail corridor (West Don Lands). The closest sensitive receptors are about 300 m away. Between the Don Roadway and Logan Avenue there are a few commercial (warehouse) businesses in proximity to the corridor that could experience some noise disturbance effects during removal of 	<ul style="list-style-type: none"> Contractor operational constraints related to construction noise will be incorporated into the contract documents. Construction activities throughout the project will conform to current municipal noise by-laws giving due consideration to such factors as the time of day, proximity and size of equipment and type of operation. Contractors are required to keep idling of 	<ul style="list-style-type: none"> Temporary and localized noise effects are anticipated. Effects will be minimal as receptors are generally well removed from the project location.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
	the Logan Ramps/rebuild of Lake Shore Boulevard.	<p>construction equipment to a minimum and maintain equipment in good working order to reduce noise from the construction activities.</p> <ul style="list-style-type: none"> Noise related complaints received by the public (e.g. dust) will be monitored by the proponent and/or the project constructor. Follow-up action will be taken where appropriate. 	
Vibration effects	<ul style="list-style-type: none"> Pile driving activities, bridge deck and bent removal and the operation of construction equipment could result in some off-site vibration effects; The potential for vibration effects will not be fully known until the method of construction is known and geotechnical studies have been completed. This will be determined during detailed design stages of the project. There are few buildings in close proximity to the project location. Between Cherry Street and the Don River, the area is undeveloped. The vacant former Unilever industrial building is about 45 m from the existing DVP/Gardiner ramp. This building is proposed for demolition to allow for the First Gulf development. Between the Don Roadway and Logan Avenue there are a few commercial (warehouse) businesses in proximity to the corridor that could experience some vibration disturbance effects during removal of the Logan Ramps/rebuild of Lake Shore Boulevard (major buildings are 40 to 70 m away). 	<ul style="list-style-type: none"> Should it be determined that vibration inducing construction activities are required in proximity to existing buildings, the following monitoring activity will be undertaken: <ul style="list-style-type: none"> Prior to construction start, nearby buildings will be inspected and documented (pictures etc.) for any defects (e.g., cracks). Vibration monitoring locations will be installed at the perimeter of the construction zone as well as nearest receptor buildings to monitor ground vibration on real-time basis during construction activities that have the potential to result in vibration effects. An upper vibration threshold can be set on the monitoring equipment (using City of Toronto limit as defined in By-Law No. 514-2008) to alert the construction site manager of high ground vibration levels. A list of Best Practices will be prepared for implementation if the threshold level is exceeded during the applicable construction activities. Conduct post construction inspection to determine any damages to structures of nearby receptor buildings. 	<ul style="list-style-type: none"> Some vibration effects are possible during some construction activities (e.g., pile driving, if required) As buildings are generally well removed (40 to 70 m) from the project location, and if required, with the conduct of real-time vibration monitoring and use of Best Practices, effects will be minimized.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
Traffic diversion effects on neighbourhoods	<ul style="list-style-type: none"> ● During construction and periods when traffic detours are in place, traffic diversion into local neighbourhoods is possible as drivers attempt to find less congested routes in/out of the downtown area. ● This traffic diversion, that is expected to be temporary, could result in some increased traffic disturbance effects. 	<ul style="list-style-type: none"> ● Appropriate signage shall be implemented to identify appropriate detour routes during construction. ● Traffic infiltration monitoring undertaken as required by the project co-proponents. ● Traffic turn restrictions may be put in place to limit traffic infiltration into neighbours if identified as a problem. 	<ul style="list-style-type: none"> ● Any traffic infiltration effects will be temporary. ● With appropriate mitigation and monitoring, traffic infiltration effects into local neighbourhoods can be managed.
Impacts on recreation use and tourism	<ul style="list-style-type: none"> ● During construction, use of existing paths through the Keating Channel Precinct will be restricted and/or construction activity could result in noise/air quality effects to users of the path. ● Potential for delays to travel to major events (e.g. sporting, trade shows, entertainment shows, etc..) in downtown area when travelling from/to north and east of the downtown and to travel to events held in the Port Lands/East Bayfront/Keating area. As these events are largely during non-peak periods, delays are expected to be moderate. 	<ul style="list-style-type: none"> ● Temporary pathways will be put in place for use by cyclists/pedestrians during periods when construction disrupts existing pathways in the area. ● Appropriate signage shall be implemented to identify detour routes at the time of temporary roadway/sidewalk closures. In addition, closure events and restricted access to local residents and/or businesses shall be minimized to the greatest extent possible to facilitate cyclist and pedestrian movement during construction. ● Work with major event organizers and time construction activity to minimize travel delays and work with transit providers to ensure that travel alternatives exist. 	<ul style="list-style-type: none"> ● Potential for some temporary disruption to recreation trail users from noise/dust and temporary trail closures. ● Potential for travel delay to visitors of major events.
NATURAL ENVIRONMENT			
Loss of terrestrial features & habitat	<ul style="list-style-type: none"> ● The realignment of Lake Shore Boulevard and the expressway connection east of Cherry Street will result in the removal of approximately 2.5 ha of low quality vegetation that consists primarily of urban species and non-native invasive species that are regenerating in former industrial properties (a "tank farm" facility was located on these lands in the recent past). ● Much if not all of this low quality vegetation will not exist under the future baseline condition as it would be removed as a result of new land development as per the approved Keating Channel Precinct Plan and as a result of the implementation of the EA approved Don Mouth Naturalization Project. The DMNP will result in the alteration of lands 	<ul style="list-style-type: none"> ● Construction contract will include provisions to protect wildlife encountered during construction. ● Salvage plants for replanting were appropriate and a practical. ● To avoid impact to breeding birds, clearing of vegetation to occur outside the period of April 1 to August 15. Alternatively, if tree clearing is required in this period a nest survey is required by an avian biologist to locate any active nests. ● Creation of new green space along north side of the 	<ul style="list-style-type: none"> ● Loss of approximately 2.5 ha of poor quality vegetation. ● The net impact is considered to be low considering the low amount of terrestrial habitat to be removed and the low quality of this habitat.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
	<p>on the west side of the Don River to develop the sediment management facility.</p> <ul style="list-style-type: none"> Urban wildlife that inhabits these areas would be expected to relocate (e.g., birds, raccoons, coyotes, squirrels). Potentially into the Don Valley system that is nearby. 	<p>realigned Gardiner-Lake Shore Boulevard as per the public realm concept for the undertaking will result in the creation of new habitat.</p> <ul style="list-style-type: none"> Co-proponents will integrate with the Port Lands Biodiversity Strategy that is currently being developed (part of the Port Lands Framework Plan), which includes components to develop and protect wildlife corridors through the development of the Port Lands. 	
Disruption to terrestrial features & habitat	<ul style="list-style-type: none"> There is no valued terrestrial habitat in the immediate vicinity of the project that is expected to be affected by the project. 	<ul style="list-style-type: none"> No specific mitigation required other than implementation of standard construction best management practices (BMPs) to minimize off site disturbance effects. 	<ul style="list-style-type: none"> Low potential for disruption to terrestrial habitat due to a lack of habitat in the vicinity of the project.
Loss of aquatic features & habitat	<ul style="list-style-type: none"> The construction of the following new facilities have the potential for loss of aquatic habitat: <ul style="list-style-type: none"> Construction of new DVP-Gardiner ramp columns in the Don River. Two new columns are to be constructed in the river with a diameter of approximately 1.5m each. To minimize construction impacts it is recommended that these columns be extended to bedrock (approximately 10 m below ground level) eliminating the need to construct a local footing for each column in the river. Such column/caisson construction will require in-river works with a slightly larger footprint than the column, approximately 3.0 m diameter, with installation/drilling likely from a barge. This will result in a construction disruption foot print of about 7m² per column, or a total habitat disruption area of 14.0 m² during construction. There will be a net gain of permanent habitat of approximately 8 m² as a result of the new columns being smaller than the existing ones; Lake Shore Boulevard – Don River bridge widening (and raising if possible) (note that work and impacts associated with the proposed Lake Shore Boulevard bridge over the Don River are documented in previous EA reports for the Lower Don Lands Master Plan, Keating Channel Precinct Environmental Study Report and the Don Mouth Naturalization and Port Lands Flood Protection Project). The removal of the east end of the Gardiner deck and columns (i.e., 	<ul style="list-style-type: none"> Apply stormwater run-off BMPs. Prepare and follow a spills response plan for construction activity in proximity to open water areas. The construction contract will include special provisions related specifically to fish and fish habitat (Timing of In-Water Work and Additional Measures to Avoid Serious Harm to Fish under the Fisheries Act). This will also require coordination with TRCA. To protect sensitive life stages/processes of migratory and resident fish, in water work will be conducted between July 1st to March 31st. Fish screens shall be used on all dewatering intake pipes to protect fish, if required. Consult with Aquatic Habitat Toronto to identify permitting requirements, assess monitoring needs and develop offsetting plan. 	<ul style="list-style-type: none"> Permanent destruction of 4 m² of low quality aquatic habitat (the existing columns impact approximately 12 m²). There will be a net gain of permanent habitat of approximately 8 m² as a result of the new columns being smaller than the existing ones which will be removed.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
	<p>"Logan Ramps") will not result in any loss of aquatic features or habitat as the east end of the Gardiner is located directly over Lake Shore Boulevard in the Don River crossing area and the support columns are integrated with the columns supporting Lake Shore Boulevard. As with the demolition of the DVP-Gardiner ramps columns, appropriate demolition procedures are required to minimize the loss of aquatic habitat.</p>		
<p>Disruption to aquatic features & habitat</p>	<ul style="list-style-type: none"> ● The following construction activities have the potential for disruption to aquatic habitat: <ul style="list-style-type: none"> ○ Demolition the existing DVP ramps and Gardiner bridge decks of the Don River and the elevated expressway along the north side of the Keating Channel; ○ Demolition of the existing DVP-Gardiner ramp columns/piers in the Don River; ○ Construction of new DVP-Gardiner ramp columns in the Don River; ○ Placement of a temporary bridge across the Keating Channel to accommodate a temporary detour road; ○ Widening/reconstruction of the Lake Shore Boulevard – Don River bridge (note that Work and impacts associated with the proposed Lake Shore Boulevard bridge over the Don River are documented in previous EA reports for the Lower Don Lands Master Plan, Keating Channel Precinct Environmental Study Report and the Don Mouth Naturalization and Port Lands Flood Protection Project). ● Aquatic habitat quality in the Don Mouth area and Keating Channel is considered to be poor. ● From the above construction activities, there is potential for temporary disturbance to aquatic species and habitat in the Don Mouth and Keating Channel during construction from run-off and sedimentation effects, spills and from demolition debris falling into the river. 	<ul style="list-style-type: none"> ● Consult with Aquatic Habitat Toronto to identify permitting requirements and mitigation strategy (to include Don River and Keating Channel). ● Implement an Erosion and Sediment Control plan as outlined for the criterion below. 	<ul style="list-style-type: none"> ● Temporary disruption of aquatic habitat in Don River mouth and Keating Channel. ● The effect will be of short duration, localized and minimized through implementation of mitigation strategy..
<p>Change in surface water quality from storm run-off</p>	<ul style="list-style-type: none"> ● During construction, particular during period when soil is excavated or exposed, there is the potential for run-off effects into local water bodies including the mouth of the Don River and the Keating Channel. 	<ul style="list-style-type: none"> ● Develop and implement an erosion and sediment control (ESC) plan to mitigate impacts to the Don River and Keating Channel, and associated riparian habitat. These measures should contain the construction area and include measures such as: 	<ul style="list-style-type: none"> ● With the implementation of the mitigation measures, adverse effects to surface water quality during construction will be minimal. ● Any effects will be temporary, short duration and localized.

Table 6-2: Construction Period Net Effects

Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
		<ul style="list-style-type: none"> ○ All disturbed areas will be stabilized with rock or topsoil and seed/mulch to prevent future erosion ○ Appropriate erosion and sediment control measures (e.g., silt fencing) must be installed along exposed surfaces around the work area to prevent sediment-laden runoff from entering the surrounding water body. ○ Erosion and scour control material to be placed on the existing banks (not on the creek bed) under the bridges will be free of fines and placed gently in calm weather so as to not create sediment plumes. ○ Erosion and sediment control measures will be left in place until all exposed soils have been stabilized. ○ Handling of fuel, excess materials and debris will be properly managed on-site and removed as per the standard construction practices necessary to protect the water body. ○ All materials used or generated (e.g., organics, soils, woody debris, temporary stockpiles, construction debris, etc.) will be temporarily stored, handled and disposed of during site preparation, construction and clean-up in a manner that prevents entry into the water body. ● Minimize demolition debris from entering the water. ● ESC measures will be monitored regularly and/or after every 10 mm or greater rainfall event as they could require periodic cleaning, maintenance and/or re-construction. If deficiencies are found, they will be repaired and/or replaced promptly. ● Grading, placement of topsoil and seeding specifications to be implemented to decrease the erosion potential and promote suitable native vegetation regeneration. 	

Table 6-2: Construction Period Net Effects

Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
		<ul style="list-style-type: none"> ● Construction sites will be stabilized prior to removal of erosion and sediment control measures. ● If works require dewatering, then a dewatering plan will be prepared in accordance with environmental best management practices. ● A construction work plan will be developed which designates locations for stockpiling of soils and other materials including fuel. Prior to commencement of construction, the limits of protection areas will be delineated and fenced to avoid inadvertent intrusion of machinery or other activities such as stockpiling of excess material. This fencing should be maintained and remain in place until final grading and landscaping has been completed. ● After major storm events, monitor effectiveness of mitigation measures. Implement corrective action measures if there is visible evidence of sedimentation in receiving water bodies (Don River/Keating Channel). 	
<p>Impact on Don River flood conveyance</p>	<ul style="list-style-type: none"> ● The placement of construction forms, supports etc. in the Don River floodplain could impact flood water conveyance during major storm/flood events. ● This would be a temporary condition. ● Effects might occur if there is a major storm event while construction forms/supports etc. are in the floodplain. 	<ul style="list-style-type: none"> ● The work area(s) shall be stabilized against the impacts of high flow events at the end of each workday. ● Undertake construction under normal weather conditions, to the extent possible, and design project to appropriate specifications to withstand variable weather conditions. ● Project co-proponents to consult with TRCA to coordinate construction of project with the construction and operation of the sediment management area as part of the DMNP. ● Project co-proponents to coordinate with TRCA to minimize the period in which construction impacts to flood conveyance may be felt. Additional hydraulic modelling will likely be required to test construction staging approaches in detailed design. Hydraulic modelling will be managed through TRCA. 	<ul style="list-style-type: none"> ● Some impact on flood conveyance is possible during the construction period but can be minimized through appropriate design specifications. ● Impacts on flood water conveyance will be temporary.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
		<ul style="list-style-type: none"> In coordination with TRCA, monitor effectiveness of Don River flood conveyance during storm/flood events should they occur during period of in-river work. Removal of existing Gardiner support piers as part of the demolition activities may contribute to improved flood conveyance. 	
Potential for change to microclimate/ heat island effect	<ul style="list-style-type: none"> Not applicable to the construction period. 		
Ability to accommodate storm event changes from climate change	<ul style="list-style-type: none"> Adequate storm controls will be put in place during construction as previously described for "Change in surface water quality from storm run-off". As construction is to occur in the near term and will be temporary, significant changes in storm events as a result of climate change are not anticipated. 	<ul style="list-style-type: none"> The ability of the stormwater controls to accommodate storm events will be monitored. In the event that climate change results in different storm characteristics, changes will be made to the storm control system. 	<ul style="list-style-type: none"> No net adverse effects as a result of climate change with appropriate controls and monitoring in place.
CULTURAL RESOURCES			
Removal of built heritage features	<ul style="list-style-type: none"> Based on findings of the Heritage Baseline Conditions Report for the Gardiner East EA, there are no cultural heritage resources within the existing or proposed right-of-way associated with the undertaking. Nonetheless, an assessment will be conducted (post EA outcome) to identify opportunities to document the elevated expressway structure for archival purposes prior to its partial demolition and reconstruction. 		
Change to cultural landscape	<ul style="list-style-type: none"> No cultural landscapes are impacted. The undertaking is located in the Keating Channel Precinct further removed from the water (Keating Channel) than the existing elevated expressway and located closer to the elevated Metrolinx rail corridor to the north. 		
Impact on archaeological resources	<ul style="list-style-type: none"> The project is largely located on areas of historical lakefill that have been subject to extensive past historical development activity. Based on the completed Stage 1 Archaeological Assessment, because of the historical development activities in the area, there is no potential for the survival of Aboriginal archaeological resources in primary contexts. Potential for impact on nineteenth-early twentieth century development features including Toronto Dry Docks, Toronto Iron works and British American Oil. 	<ul style="list-style-type: none"> Prior to construction, once detailed design has been completed which will finalize project component location (e.g., location of support piers), complete archaeological investigations on areas of excavation required for the project. Should deeply buried archaeological resources be uncovered, the co-proponents and/or its agent(s) shall immediately notify MTCS. The <i>Ontario Cemeteries Act</i> applies to discovery of unmarked human remains. 	<ul style="list-style-type: none"> With the completion of additional archaeological investigations, adverse effects on any remaining archaeological features are not anticipated.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
Impact on First Nations people and activities	<ul style="list-style-type: none"> Impacts of First Nations people are not anticipated. The project area is not known to be used by Aboriginal communities for traditional activities. Due to historical land use activities, the potential to encounter intact Aboriginal artefacts is virtually nil. Consultation with interested First Nations groups is on-going. 	<ul style="list-style-type: none"> If required, additional First Nations mitigation activities to be determined. 	<ul style="list-style-type: none"> No net adverse effects on First Nations people or activities anticipated. Continue consultations with First Nations that have an interest in the project.
ECONOMICS			
Impacts to goods movement	<ul style="list-style-type: none"> Significant portions of the project can be constructed with impacts to existing road traffic Sections of expressway and surface roads will require shut down during periods of project construction (e.g., to remove overhead infrastructure and to connect the new ramps to DVP lanes). This is expected to include sections of the Gardiner, Don Roadway and Lake Shore Boulevard. It is expected that some truck travel time delays will occur during these periods. 	<ul style="list-style-type: none"> Local commercial entities that rely on truck traffic will receive advance notice of road closure/detour periods. Truck traffic will be detoured onto existing roadways and constructed detour roads during these periods. Construction Phasing Plan outlines proposed detour roads which are to be finalized during detailed design. Traffic detouring to be coordinated with other projects that might be under construction during the same period such as the DMNP Project. The construction phasing plan proposes the need for and location of detour roads. Consult with local area commercial trucking operators in development of the traffic detour plan. Monitor and review traffic detour plan with input from local commercial trucking operators. 	<ul style="list-style-type: none"> Delays to truck traffic movement will be temporary and minimized as much as possible Provision of detour roads will minimize the effect.
Impact on downtown mobility	<ul style="list-style-type: none"> During periods of road closures/detours, access the downtown by vehicle will take longer and be more inconvenient. This might dissuade some people from coming to the downtown area. 	<ul style="list-style-type: none"> Advance notifications of road closure periods and road detour and transit options will be made well in advance through various forms of media. Traffic will be detoured onto existing roadways and constructed detour roads during these periods. Construction phasing plan outlines proposed detour roads which are to be finalized during detailed design. The construction phasing plan proposes the need for 	<ul style="list-style-type: none"> Delays to traffic movement will be temporary and minimized as much as possible. Transit options to access the downtown will be available and possibly enhanced. Provision of detour roads will minimize the effect.

Table 6-2: Construction Period Net Effects			
Assessment Criteria	Construction Period Effects	Mitigation and Monitoring	Net Effects
		<p>and location of detour roads.</p> <ul style="list-style-type: none"> ● Transit will remain as an option to access the downtown and enhanced transit service may be warranted for periods of time when there are significant road closures. The project co-proponents to work with transit agencies such as GO Transit/Metrolinx. It is noted that GO Transit usage increased during periods of recent lane closures of the Gardiner West. 	
<p>Impact on local business activity</p>	<ul style="list-style-type: none"> ● During the removal of the Logan Ramps, access along Lake Shore Boulevard could be reduced at times which could affect a few local businesses that are located east of the Don River. ● Air quality (dust), noise and vibration effects could result to businesses (2 or 3) located along the Lake Shore Boulevard corridor east of the Don Roadway and to the car dealership located on the east side of the DVP, north of the rail corridor. ● Construction of Lake Shore Boulevard-Don River bridge and associated rail spur bridge may result in impacts to rail operations that serve local port operations and Toronto Water Ashbridges Bay Treatment Plant. 	<ul style="list-style-type: none"> ● Access to area businesses will be maintained during construction. ● Businesses will be notified well in advance of construction timing and any road closures/access limitations. ● Temporary closure of the rail spur Don River crossing will be done in consultation with rail spur users including the Toronto Port Authority and Ashbridges Bay Treatment Plant. ● Appropriate construction BMPs will be implemented to minimize dust and noise disturbance effects during construction. ● Monitor and review traffic detour plan with input from local commercial trucking operators. 	<ul style="list-style-type: none"> ● Any impacts on access and disturbances will be temporary. ● Effects are expected to be largely minimized through mitigation.

Table 6-3: Operations Net Effects

Table 6-3: Operations Net Effects			
Effects Assessment Criteria	Operations Period Effects	Mitigation and Monitoring	Net Effects
TRANSPORTATION			
Impact to auto travel time	<ul style="list-style-type: none"> ● In the AM period, compared to the Do Nothing base condition, the Project will result in longer auto travel times for east to west trips. Traffic modelling projects an increase of 3 minutes during the AM peak hour. ● In the PM period, compared to the Do Nothing base condition, the Project will result in travel time increase for trips originating in the downtown and destined to the east (i.e., along Lake Shore Boulevard). ● Auto travel time increases are not projected for travel to and from areas north and west of the downtown. ● During non-peak travel periods, travel time delay will be less than during the peak period forecasts. 	<ul style="list-style-type: none"> ● The co-proponents and transit providers are planning improvements to the City/Regional transit system including for example the Metrolinx RER program and Waterfront Transit Re-Set program. ● Existing and enhanced transit provide alternative transportation means into the downtown as an alternative mode of travel. ● Pathway system will be enhanced including a new pathway that will run along the north side of Lake Shore Boulevard as far as Jarvis or Yonge Street). This will also provide an alternate mode of travel into the downtown. ● City to monitor traffic operations and make adjustments as required (e.g. traffic signal timing) to optimize the flow of traffic through corridor. 	<ul style="list-style-type: none"> ● Commuters from/to the east that continue to travel to the downtown by automobile will experience delays in the order of 3 min during peak periods. ● It is estimated that about 90% of downtown AM commuters will have delays of less than 2 min with the project in place.
Impact to transit travel	<ul style="list-style-type: none"> ● No impacts to transit operations are projected during the project operations period. ● The project might entice some auto users to use the transit system to commute to downtown. ● The project is consistent with the Waterfront LRT project and facilitates the possibility to bring LRT into the Keating Channel Precinct should Queens Quay be extended east of Cherry Street. 	<ul style="list-style-type: none"> ● No additional specific mitigation proposed. 	<ul style="list-style-type: none"> ● No long term negative net effects to transit travel.
Impact to pedestrian movement	<ul style="list-style-type: none"> ● The project provides for new/improved multi-use pathways that will improve pedestrian travel through the Study Area – in particular the removal of the elevated expressway along the north side of the Keating Channel will facilitate an improved pedestrian promenade through this area. Further the provision of a multi-use pathway east of Cherry Street along the north side of Lake Shore Boulevard will promote pedestrian travel through the corridor. 	<ul style="list-style-type: none"> ● No additional specific mitigation proposed. 	<ul style="list-style-type: none"> ● No long term negative net effects to pedestrians. ● Positive effect through improved/new planned multi-use pathway through the corridor and planned intersection improvements.

Table 6-3: Operations Net Effects			
Effects Assessment Criteria	Operations Period Effects	Mitigation and Monitoring	Net Effects
Impact to cyclist movement	<ul style="list-style-type: none"> The project provides for new/improved multi-use pathways that will improve facilitate cycling through the Study Area. The provision of a multi-use pathway east of Cherry Street along the north side of Lake Shore Boulevard will promote cyclist travel through the corridor. This facility will link with north-south cycle facilities along Cherry, Sherbourne and Yonge Streets. The existing cycle paths east of Cherry St will be improved and linked with the Don Valley cycle route. 	<ul style="list-style-type: none"> No additional specific mitigation proposed. 	<ul style="list-style-type: none"> No long term negative net effects to cyclists. Positive effect through improved/new planned multi-use pathway through the corridor and planned intersection improvements.
PUBLIC SAFETY			
Safety risks to pedestrians	<ul style="list-style-type: none"> Safety risks to pedestrians are reduced as a result of: the removal of sections of the overhead expressway (Logan Ramps) that will improve sight lines, proposed improvements to key Lake Shore Boulevard intersections (e.g., Don Roadway), and the development of an off road multi-use pathway through the corridor. City has committed to undertake a safety review of the Lake Shore Boulevard/Jarvis Street intersection that could lead to further improvements to this intersection for pedestrians. 	<ul style="list-style-type: none"> No additional specific mitigation proposed. 	<ul style="list-style-type: none"> No long term negative net effects to pedestrian safety. Positive effect through improved/new planned multi-use pathway through the corridor and planned intersection improvements.
Safety risks to cyclists	<ul style="list-style-type: none"> Safety risks to cyclists are reduced as a result of: the removal of sections of the overhead expressway (Logan Ramps) that will improve sight lines, proposed improvements to key Lake Shore Boulevard intersections (e.g., Don Roadway), and the development of an off road multi-use pathway through the corridor. City has committed to undertake a safety review of the Lake Shore Boulevard/Jarvis Street intersection that could lead to further improvements to this intersection for cyclists. 	<ul style="list-style-type: none"> No additional specific mitigation proposed. 	<ul style="list-style-type: none"> No long term negative net effects to cyclist safety. Positive effect through improved/new planned multi-use pathway through the corridor and planned intersection improvements.
Safety risks to motorists	<ul style="list-style-type: none"> The proposed Gardiner-DVP ramps are to be developed at a 60 km/hr design speed (speed limit posting of 50 km/hr). The required reduction in vehicle speed from 90 km/hr to 50 km/hr is greater than typical for directional ramps. 	<ul style="list-style-type: none"> City to monitor roadway operations to ensure that motor vehicle accident/incident rates are within typical norms. 	<ul style="list-style-type: none"> With the implementation of appropriate safety measures into the design of the freeway facility, safety risks to motorists are expected to be minimized to acceptable levels.

Table 6-3: Operations Net Effects			
Effects Assessment Criteria	Operations Period Effects	Mitigation and Monitoring	Net Effects
PLANNING AND URBAN DESIGN			
Consistency with secondary/ precinct plans	<ul style="list-style-type: none"> The project is consistent with the Keating Channel Precinct Plan. The relocation of the Gardiner-DVP ramps north of the current alignment allows for a development plan with direct connection to the Keating Channel. The project co-proponents will review and update the Keating Channel Precinct Plan to reflect the new northern alignment for the Gardiner-DVP ramps. Redevelopment in the Keating Channel Precinct is to occur after construction of the project is complete. 	<ul style="list-style-type: none"> No mitigation warranted. 	<ul style="list-style-type: none"> No net negative effects, as construction is to occur in advance of redevelopment in the Keating Channel Precinct.
Consistency/impact with other projects and initiatives	<ul style="list-style-type: none"> Once operational the project is not expected to have negative impacts on other projects in the area. 	<ul style="list-style-type: none"> No mitigation warranted. 	<ul style="list-style-type: none"> No adverse effects on other projects.
Change in views and viewscapes	<ul style="list-style-type: none"> The relocation of the Gardiner-DVP ramps further north will lead to improvements of views over the Don River mouth and along the Keating Channel. Improvements to the Lake Shore Boulevard streetscape and public spaces in the corridor will lead to improvements in the viewscape. 	<ul style="list-style-type: none"> No mitigation warranted. 	<ul style="list-style-type: none"> No adverse effects on views and viewscapes. Project will result in improvements to views and viewscapes along the north edge of the Keating Channel and over the Don River mouth, particularly in combination of the planned DMNP Project. Removal of the Logan ramps will improve views across Lake Shore Boulevard and complement development plans for the First Gulf site that is located north of the Logan Ramps/east of the Don River.
SOCIAL AND HELATH			
Effects from contaminated soil disturbance	<ul style="list-style-type: none"> No interaction with contaminated soil during operations. 	<ul style="list-style-type: none"> No mitigation warranted. 	<ul style="list-style-type: none"> No adverse effects pertaining to contaminated soil;
Effects from contaminated groundwater	<ul style="list-style-type: none"> No interaction with contaminated groundwater during operations. 	<ul style="list-style-type: none"> No mitigation warranted. 	<ul style="list-style-type: none"> No adverse effects pertaining to contaminated groundwater.

Table 6-3: Operations Net Effects			
Effects Assessment Criteria	Operations Period Effects	Mitigation and Monitoring	Net Effects
Change in air quality	<ul style="list-style-type: none"> The future volume of traffic within the corridor with the project in place is forecasted to be similar to the base case Maintain (Do Nothing). As a result, no additional air quality effects are anticipated as compared to the future base case scenario. 	<ul style="list-style-type: none"> No mitigation warranted. 	<ul style="list-style-type: none"> No additional long term adverse effects on air quality.
Change in noise levels	<ul style="list-style-type: none"> The future volume of traffic within the corridor with the Project in place is forecasted to be similar to the base case Maintain (Do Nothing). Future development plans for the Keating Channel Precinct and areas east of the Don River will be finalized to reflect new alignment/configuration of the expressway. Considering the above, and the modelled future noise levels for receptors in the vicinity of the corridor (see Appendix I), the change in noise levels over the base case will not be noticeable over forecasted future base case levels. 	<p>The City of Toronto's Official Plan Policy 2.2.4 requires that new development on lands adjacent to existing and planned transportation corridors and facilities be compatible with, and supportive of, the long-term purpose of the corridors and facilities and be designed to avoid, mitigate or minimize negative impacts on, or from, the transportation corridors and facilities.</p> <p>Future land development proposals in the vicinity of the undertaking (the Hybrid) will need to satisfy City of Toronto noise study requirements, which often includes: the completion of a noise impact study for many development applications, including Zoning Bylaw Amendments, Site-specific Zoning Bylaws, Site Plan Control, Plans of Subdivision and Consent to Sever. Noise Impact Studies are to explore the following matters:</p> <ul style="list-style-type: none"> Impact of noise generated by the development on the surrounding environment; Impact of noise from the surrounding environment (including transportation sources) on the development; Impact of noise generated by the development on itself; and, Mitigation measures to reduce the anticipated negative noise impacts. <p>The City of Toronto Development Guide includes terms of reference for the preparation of a noise impact study (http://www1.toronto.ca/static_files/CityPlanning/PDF/noise.pdf).</p> <p>This Guide requires the consideration of Ministry of the Environment's (now MOECC) minimum standards for noise</p>	<ul style="list-style-type: none"> No additional long term adverse noise effects. Relocation of expressway away from the Keating Channel will be positive for the Villiers Island development from reduced roadway noise levels.

Table 6-3: Operations Net Effects			
Effects Assessment Criteria	Operations Period Effects	Mitigation and Monitoring	Net Effects
		impacts for stationary uses, road and rail traffic, and air traffic, as applicable and references Noise Assessment Criteria in Land Use Planning Publication LU-131.	
Vibration effects	<ul style="list-style-type: none"> The future volume of traffic within the corridor with the Project in place is forecasted to be similar to the base case Maintain (Do Nothing). Future development plans for the Keating Channel Precinct and areas east of the Don River will be finalized to reflect new alignment/configuration of the expressway. As a result, no additional vibration effects are anticipated as compared to the future base case scenario. 	<ul style="list-style-type: none"> No mitigation warranted. 	<ul style="list-style-type: none"> No adverse effects pertaining to vibration.
Traffic diversion effects on neighbourhoods	<ul style="list-style-type: none"> Once operational, the facility is not expected to result in any additional traffic infiltration into local neighbourhoods. 	<ul style="list-style-type: none"> No mitigation warranted other than routine traffic pattern monitoring by City Transportation. 	<ul style="list-style-type: none"> No adverse effects pertaining to traffic infiltration.
Impacts on recreation use and tourism	<ul style="list-style-type: none"> The project, through the development of a new multi-use path along Lake Shore Boulevard will benefit recreation opportunities. No additional traffic delay to downtown area for visitors as compared to the future Do Nothing. 	<ul style="list-style-type: none"> No additional mitigation warranted. 	<ul style="list-style-type: none"> No adverse impacts on recreation use or tourism activity. New multi-use path will lead to positive effects. Project will enhance opportunity to develop a waterfront promenade along the north edge of the Keating Channel which provides a new recreation experience in the local area.
NATURAL ENVIRONMENT			
Loss of terrestrial features & habitat	<ul style="list-style-type: none"> No loss of terrestrial habitat during operations. The project, through proposed landscaping along the Lake Shore Boulevard will result in an increase of the tree canopy. 	<ul style="list-style-type: none"> No specific mitigation warranted. 	<ul style="list-style-type: none"> No adverse effect on terrestrial features during operations. The project will result in a positive effect through proposed landscaping along the Lake Shore Boulevard.
Disruption to terrestrial features & habitat	<ul style="list-style-type: none"> No additional disruption to habitat during operations. 	<ul style="list-style-type: none"> New plantings will be monitored after they are installed to ensure that they are thriving. Plants will be replaced where necessary. 	<ul style="list-style-type: none"> No adverse effects to terrestrial habitat.

Table 6-3: Operations Net Effects			
Effects Assessment Criteria	Operations Period Effects	Mitigation and Monitoring	Net Effects
Loss of aquatic features & habitat	<ul style="list-style-type: none"> No loss of aquatic habitat during operations. 	<ul style="list-style-type: none"> No specific mitigation warranted. 	<ul style="list-style-type: none"> No adverse effect on aquatic features during operations.
Disruption to aquatic features & habitat	<ul style="list-style-type: none"> With improved storm control systems in place, and relocation of expressway away from the Keating Channel, less effect to water quality/aquatic habitat are expected. 	<ul style="list-style-type: none"> No specific mitigation warranted. 	<ul style="list-style-type: none"> The project will result in a positive effect through relocated of the expressway from the Keating Channel allow for further opportunities of shoreline/aquatic habitat enhancement.
Change in surface water quality from storm run-off	<ul style="list-style-type: none"> The removal of the elevated expressway and Lake Shore Boulevard away from the north edge of the Keating channel is expected to contribute to improved water quality in the channel. As well, the new infrastructure provides the opportunity to install improved storm collection and treatment prior to discharge. 	<ul style="list-style-type: none"> No additional mitigation warranted beyond storm- water management system that is to be put in place. 	<ul style="list-style-type: none"> No additional adverse effects to water quality in local water bodies. Potential for improvement to water quality in local water bodies.
Impact on Don River flood conveyance	<ul style="list-style-type: none"> The new ramp location and height over the Don River has been designed to meet TRCA flood conveyance requirements and sediment and debris management operations. 	<ul style="list-style-type: none"> Complete final design for the ramps in consultation with the TRCA to meet flood conveyance and sediment and debris management requirements. 	<ul style="list-style-type: none"> No additional adverse effects to flood conveyance.
Potential for change to microclimate/ heat island effect	<ul style="list-style-type: none"> The project is expected to result in a similar, if not less amount, of impervious paved areas that would contribute to an urban heat island effect considering the removal of the Logan Ramps. The proposed landscape plan, including the planting of street trees along the corridor would provide additional shading reducing heat island effects. 	<ul style="list-style-type: none"> No additional mitigation warranted beyond the landscape/public realm plan that is proposed by the co-proponents including the proposed extensive canopy of street trees along the rebuilt sections of Lake Shore Boulevard (approximately east of future Munition Street intersection). 	<ul style="list-style-type: none"> No net negative effects. Potential for positive effects as a result of the commitment for corridor plantings and removal of Logan Ramps.
Ability to accommodate storm event changes from climate change	<ul style="list-style-type: none"> The design of the elevated expressway will include opportunities to allow more water to drain from the elevated surfaces (deck drains) to accommodate storm events (greater rainfall and intensities). Storm sewers would still be sized for the 2 year storm but the deck drains would allow for greater opportunity for surface drainage from the major system storm. 	<ul style="list-style-type: none"> Complete final design of the Gardiner deck drains to ensure that storm events can be accommodated/ managed. 	<ul style="list-style-type: none"> No net negative effects. The reconstructed section of the elevated Gardiner between Cherry Street and the DVP will have less elevated surface than the existing structure and will provide improved drainage to manage storm events.
CULTURAL RESOURCES			
Removal of built heritage features	<ul style="list-style-type: none"> No impacts during operations period. 	<ul style="list-style-type: none"> Not required; 	<ul style="list-style-type: none"> No impacts during operations period.

Table 6-3: Operations Net Effects			
Effects Assessment Criteria	Operations Period Effects	Mitigation and Monitoring	Net Effects
Change to cultural landscape	<ul style="list-style-type: none"> No impacts during operations period. 	<ul style="list-style-type: none"> Not required; 	<ul style="list-style-type: none"> No impacts during operations period.
Impact on archaeological resources	<ul style="list-style-type: none"> No impacts during operations period. 	<ul style="list-style-type: none"> Not required; 	<ul style="list-style-type: none"> No impacts during operations period.
Impact on First Nation People and activities	<ul style="list-style-type: none"> Impacts on First Nations people are not anticipated. The project area is not known to be used by Aboriginal communities for traditional activities. Consultation with interested First Nations groups is on-going. 	<ul style="list-style-type: none"> Continue consultations with First Nations that have an interest in the project. 	<ul style="list-style-type: none"> No net adverse effects on First Nations people or activities anticipated.
ECONOMICS			
Impacts to goods movement	<ul style="list-style-type: none"> In the AM period, compared to the Do Nothing base condition, the Project will result in longer auto travel times for east to west trips. Traffic modelling projects an increase of 3 minutes during the AM peak hour. In the PM period, compared to the Do Nothing base condition, the Project will result in travel time increase for trips originating in the downtown and destined to the east. Travel times for truck trips originating/destined from the Waterfront/Port Lands area are not expected to be significantly affected with the provision of new Gardiner access ramps located east of Cherry Street. Truck travel time increases are not projected for travel to and from areas north and west of the downtown. 	<ul style="list-style-type: none"> No specific mitigation recommended. City Transportation to work with those entities involved with Goods Movement to ensure that adequate access to road network is provided. 	<ul style="list-style-type: none"> Based on the forecasted future travel times, impacts to the movement of goods in the project area are expected to be minimal and well within variation of typical travel times.
Impact on downtown mobility	<ul style="list-style-type: none"> No negative impact on downtown mobility once the facility is constructed and operational. 	<ul style="list-style-type: none"> No specific mitigation recommended. Improved future transit system expected to improve downtown mobility. 	<ul style="list-style-type: none"> Effects on downtown mobility expected to be minimal.
Impact on local business activity	<ul style="list-style-type: none"> Access to businesses to be maintained. No long-term negative impacts to businesses are anticipated. 	<ul style="list-style-type: none"> No specific mitigation warranted. 	<ul style="list-style-type: none"> No long-term negative impacts to businesses are anticipated.

6.5.2.1 Transportation

Construction Period

During the construction period, the main potential effects relate to delays to road traffic as a result of temporary roadway closures and impacts to pedestrians and cyclists due to temporary closures of the existing pathway through the Keating Channel Precinct as well as the pathway along the north side of Lake Shore Boulevard east of the Don River.

Through the Keating Channel Precinct, much of the new roadway infrastructure can be constructed without impact to road traffic. However, for the connection of the ramps to the DVP, the demolition of the existing elevated expressway including the Logan Ramps, and for the connection of the new elevated section to the remaining section of the Gardiner at Cherry Street, road detouring will be required. An initial road detour plan has been developed as presented in the project description above (also see **Appendix D, Construction Staging Report**). This is an example detour plan. More detailed construction staging planning, including the location of road detours, will need to be developed in concert with the detailed design of the undertaking. Despite the best efforts to detour traffic, delays to road traffic will occur, particularly during the AM and PM peak commuting periods. Other roads including surface streets such as Richmond Street/Adelaide Street can expect increased traffic volumes during road closure periods. The project co-proponents will widely communicate road closure/detour periods and encourage commuters to use public transit or travel during off-peak periods as much as possible. The City and/or its agent(s) will monitor traffic conditions and make adjustments to the traffic management plan accordingly.

Similarly, users of the existing pedestrian/cyclist connections located on Cherry Street, on the Lower Don River trail system situated on the north side of Lake Shore Boulevard through the Keating Channel Precinct, including the Don River crossing, will be affected. Sections of these pathways will require closure at periods (e.g., demolition) to ensure that the public is not at risk. To mitigate these effects, it is recommended that a temporary path through the Keating Channel Precinct to the Lower Don River trail system be created that runs outside of the construction area (i.e., run close to the rail corridor).

It is also recommended that the multi-use pathway connecting to the east (that includes a Don River crossing) be temporarily established along the proposed Villiers Street and/or Commissioners Street detour route. (Note that this detour route needs to be confirmed during the refinement of the construction staging plan.) This will divert pathway users south on Cherry Street to Commissioners and/or Villiers Street to reconnect with the pathway via Don Roadway north to Lake Shore Boulevard. These pathway detours will increase the length of the trip for cyclists and as a result, a decrease in their usage is possible, although auto traffic delays as a result of road closures may make cycling an attractive alternative.

Section 6.5 of this report includes consideration for cumulative effects. Due to the number of redevelopment projects being planned in and adjacent to the Study Area, a review of cumulative effects considers the coordination of traffic management during construction as it relates to the various projects that the co-proponents are undertaking.

Operations Period

The removal of the Logan Ramps will add travel time to those travelling to/from the east (i.e., south Scarborough and the Beach communities that regularly use Lake Shore Boulevard). Travel to/from the north and the west will not be affected. Traffic modelling forecasts that travel time in the AM peak hour will increase by about three minutes over future baseline conditions. Planned transit improvements such as the Metrolinx RER program and the subway relief line will provide alternatives for commuters. It is noted that even under the future Do Nothing condition, auto travel times will increase as a result of growth in background traffic volumes due to population and employment increases in the city, including in the Port Lands area.

Access between the elevated Gardiner Expressway and Lake Shore Boulevard will be provided through the new Cherry Street ramps in the Keating Channel Precinct.

For pedestrians and cyclists, once fully operational the project would include a continuous multi-use pathway that extends from Jarvis Street east along the north side of Lake Shore Boulevard and connecting to the existing Don Valley trail and the path that exists east of the Don River. With this new multi-use pathway, pedestrian and cycling access through the corridor will be improved over the existing condition.

6.5.2.2 Public Safety

Construction Period

All major infrastructure construction projects present some risk to the public. Construction will be staged to ensure public safety. As an example, access below the elevated expressway sections will be restricted during demolition. Vehicles will be detoured away from the construction areas as per the traffic management plan that is to be developed in greater detail by the project co-proponents and its agent(s). There will be appropriate signage and notifications to ensure that drivers are well aware of the detour plans and timing. Similarly, pedestrians and cyclists will be diverted off of existing paths through the area onto temporary paths and detour roads. It is also important that worker safety be maintained. Health and safety plans to maintain staff safety on-site during construction will be required prior to the commencement of construction activities.

Operations Period

The project will involve tighter ramp radii (130 m) at a slower design speed than the current ramps that connect the Gardiner with the DVP. As a result, there is the potential for drivers to expect higher Gardiner-DVP ramp speeds than the posted design speed - 90 km/hr speed limit to transition to a 50km/hr speed limit. In developing the alternative designs, Dillon completed a safety assessment of the design alternatives. In addition, an independent safety audit of the Hybrid Alternatives was completed by AECOM. The safety review focused on the ramp geometry connecting the Gardiner and DVP as well as the new ramp connection to the east of Cherry Street that are included in each of the Hybrid alternative designs. Input from this review resulted in some revisions being made to the alternative designs. AECOM's safety review and Dillon's response to it are available in **Appendix S**. The following measures are recommended for further assessment in the detailed design phase of the project:

- Provision of appropriate signage;
- Lowering posted speed on approach mainline (with visual clues);
- Implementation of crash attenuators;
- Provision of flatter vertical curves to improve sight lines;
- Provision of end of queue detection systems in areas with potential ramp queuing;
- Further shoulder widening on the Gardiner-DVP ramps; and,
- Investigation for increasing the length of speed change lanes on the DVP and the Gardiner associated with the proposed ramps.

With appropriate mitigation, including signage and speed deceleration zones, the ramps can be designed to an acceptable level of safety.

Once operational with the new off-road multi-use pathway in place, as well as the proposed Lake Shore Boulevard intersection improvements, safety levels for pedestrian and cyclists will be improved over future baseline conditions. In particular, the removal of the Logan ramps will improve sight lines at grade along Lake Shore Boulevard.

6.5.2.3 Planning and Urban Design

Construction Period

The area to be subject to the most change from the project includes the Keating Channel Precinct (Cherry Street to Don Roadway) and the section of Lake Shore Boulevard that extends about 575 m east of the Don Roadway (to Booth Street). The Keating Channel Precinct lands east of Cherry Street consist largely of publicly-owned vacant former industrial lands that are planned for future development as per the Keating Channel Precinct Plan. The precinct is expected to remain vacant during the project construction period and as such there will be no direct impact on planned land use in the immediate area as a result of the undertaking. East of the Don Roadway, the First Gulf property (at 21 Don Roadway) is currently being planned for redevelopment. The timing for this development is unknown and approvals for this site have not yet been obtained. It is not anticipated that the removal of the Logan Ramps/re-build of Lake Shore Boulevard will have direct impact on the First Gulf property development.

The project will require a section of the First Gulf site immediately to the east of the Don Roadway. This land is required to facilitate the tighter radius of the DVP-Gardiner ramps allowing for a more northern alignment through the Keating Channel Precinct. This required area is also proposed for a future flood protection berm which is needed to allow the First Gulf development to proceed. There may be an opportunity to integrate the Don Roadway realignment into the flood protection features which will be determined as part of the detailed design work for the Project. The co-proponents will work with First Gulf and TRCA in the finalization of land requirements and acquisition to support the project.

It is noted that there are other planned projects/developments proposed in the project area that could proceed during the period of time that the Gardiner East Project is to be constructed (2020-2025). In particular, the Lower Don Lands and DMNP Project detailed design and implementation, which is being led by Waterfront Toronto in cooperation with TRCA and the City, will lead to a major transition of the mouth of the Don River, Lower Don Lands, Port Lands

and South of Eastern area and has some areas of physical overlap with the Gardiner East Project. Other planned future projects in the project area include the Cherry Street realignment, the Metrolinx RER Program/rail bridge track expansion, the Don River and Central Waterfront Project, the Port Lands and South of Eastern redevelopment, and the First Gulf development. To avoid conflict with the development of these other planned projects, should they proceed to implementation at the same time as the Gardiner East project is being constructed, it will be important for the project co-proponents to collaborate with the agencies/interests that are involved with these other projects. In most cases the project co-proponents are also leading these other projects and as such coordination within and between Waterfront Toronto and the City will be required to manage construction and implementation.

Operations Period

Once construction is complete and operational, the realignment of the elevated expressway/Lake Shore Boulevard and removal of the Logan Ramps will allow for a major transition to the Keating Channel Precinct as well as to the lands that parallel the north and south sides of the existing Logan ramps. With the realignment of the expressway connection towards the north edge of the Keating Channel Precinct and removal of the Logan Ramps, key achievements of the project include the ability to:

- Develop an unencumbered water's edge promenade along the north edge of the Keating Channel;
- Create a new Keating Channel Precinct community with direct access the water – conceptual plans illustrate that approximately 7.5 acres of public development lands with direct access to the water will be created with an estimated value of \$72m-\$83M;
- Extend Queens Quay east of Cherry Street allowing for the creation of a pedestrian friendly street;
- Develop Villiers Island well removed from an elevated expressway; and,
- Develop the First Gulf site with connection to a 2-way Lake Shore Boulevard free of overhead ramps/expressway.

Figure 6-8 shows a draft development concept for the Keating Channel Precinct with the project in place. This is to be finalized through a review and update of the Keating Channel Precinct Plan that the project co-proponents will undertake once the MOECC has approved the Gardiner East EA.

Figure 6-8: Preferred Undertaking – Keating Channel Precinct Conceptual Development Concept



6.5.2.4 Social and Health

Construction Period

This criteria is primarily concerned with impacts to residents and users of recreation facilities. Also considered was the potential for impact on tourism activity. The project area is primarily vacant land that is well removed from existing residences, formal recreation features, and institutions (e.g., schools). The closest residences are in the newly created West Don Lands development that is located north of the rail corridor, approximately 200 m away from the new northern alignment of the Gardiner Expressway east of Cherry Street. There are no institutional uses in close proximity to the project that might be affected. Planned facilities (e.g., on Villiers Island) would not likely be constructed and operating during the Gardiner East project construction period. There is the potential for typical construction disruption effects including noise, dust and vibration. A construction management plan will be developed by the constructor to minimize these effects. Due to the absence of social features in proximity to the project location and the ability to mitigate effects, adverse effects to residents and institutions are not expected.

During periods of road closures, there is potential for traffic patterns to change, particularly during peak travel periods as drivers look for faster routes to the downtown. This could result in additional traffic infiltration into residential neighbourhoods. The South Riverdale/ Riverside community is potentially susceptible to this. During road closure/detour periods, the City will need to monitor traffic patterns and potentially implement measures such as turn restrictions to minimize effects to local neighbourhoods. Impacts to travel from/to the north and east of the downtown will largely occur during peak AM and PM travel periods. Travel to/from the west of the downtown will be largely unaffected. Delays during non-peak periods and weekends are also possible although they are not expected to be as significant due to lower traffic volumes during these periods.

Tourism and Recreation Impacts

For those travelling from the north or east, delays are possible during major events in the downtown area including sporting events, major trade shows, exhibitions etc.. These events can be major tourist draws to the City. As the timing of these events are known in advance, it is likely possible to coordinate construction activity and road closures to minimize travel delay during these periods. As well, to minimize the effects, visitors will be encouraged to use transit, stay downtown etc. The project proponents will work with transit agencies and transportation service providers (e.g. bus companies) to ensure that they are aware of road closures/detours so that adequate travel alternatives exist for travel to/from the downtown during major events.

There are no specific permanent tourist attractions in the project vicinity that would be directly impacted during construction. On occasion the East Bay Front/Keating/Port Lands area can be used for temporary events that would attract visitors to the area. These events are set up on vacant properties (e.g., south of Gardiner/west of Cherry Street or south of Commissioners Street south along Cherry Street. The former Hearn generating Station has also been used for events such for Luminato. These events can last a single day or several weeks. The events are typically held in the evenings or weekends. It will be important to maintain access to these events. The project proponent will work with the event organizers to ensure that delays are minimized during the construction period.

The only existing recreation feature of note is the Martin Goodman Trail to the Don Valley Trail and the pathway (Lower Don Recreation Trail) that runs along the north side of Lake Shore Boulevard east of the Don Roadway. Users of this trail will experience some effects, including nuisance effects, temporary trail closures and perhaps longer required travel distances through provided detours. These effects are previously described under the Transportation criteria group.

The only other recreation feature of note that could be affected is McCleary Park that is situated on the south side of Lake Shore Boulevard where the Logan Ramps touch down. There are two baseball diamonds at this Park. Users of this park could experience nuisance type effects (noise/dust) and could face access restrictions, although alternative access to this park is possible via Commissioners and Bouchette Streets.

Operations Period

Once operational, the project is expected to not result in any greater effects to social features such as residents, recreation feature (trail) users or tourists as compared to the Do Nothing under future baseline conditions. Road traffic is a major contributor to noise and air quality in the project area and the proposed project is not expected to result in a material change to traffic volumes or patterns in the area. The Keating Channel Precinct will be developed, and residential building located in recognition of the new realigned expressway and Lake Shore Boulevard.

6.5.2.5 Natural Environment - Habitat

Construction Period

The realignment of Lake Shore Boulevard and the Expressway connection east of Cherry Street will result in the removal of about 2.5 ha low quality vegetation that consist primarily of urban species and non-native invasive species that are regenerating in former industrial properties (a tank farm was previously located on the site – see previous **Figure 3-8**). **Section 3.1.2** describes the affected vegetation communities which were characterized from vegetation surveys completed to support the Don Mouth Naturalization Project (DMNP) EA and the Keating Channel Precinct EA. The removal of the Logan Ramps located east of Don Roadway will not result in the removal of any notable vegetation as works are contained within an existing road right-of-way.

Most if not all of the low quality vegetation that exists in the Keating Channel Precinct will not exist under the future baseline condition as it will be removed as a result of new land development as per the approved Keating Channel Precinct Plan and as a result of the implementation of the EA approved DMNP. New greenspace lands are to be created as a result of this plan. The DMNP will result in the alteration of lands on the west side of the lower Don River to support the proposed sediment management facility.

In addition to the loss of the above noted vegetation, there would also be the temporary displacement of some urban tolerant wildlife species (e.g., birds, raccoons, coyotes, squirrels). Wildlife is expected to relocate to other natural areas in the Don Valley system that is nearby.

Mitigation related to loss of vegetation and displacement of wildlife during construction is outlined in **Table 6-2**. As an example, to protect birds and comply with the Migratory Bird Convention Act (MBCA), vegetation will be cleared outside of the migratory bird nesting season (April 1 to August 15). Alternatively, if clearing needs to occur during this period, prior to the removal of vegetation, the area will be surveyed by an avian biologist to confirm the presence/absence of active nests. If breeding bird activity (e.g. nests, nest building, etc.) are encountered, works should not continue in the location of the nest until after August 15, or as soon as it has been determined that the young have fledged and left the nesting site.

The creation of new green space from plantings along the north side of realigned Gardiner-Lake Shore Boulevard as per the public realm concept for the undertaking will result in the creation of new habitat. As well, during the construction phase, the project co-proponents will also coordinate with the Port Lands Biodiversity Strategy team to identify opportunities for enhancement of identified wildlife migration corridors.

Aquatic habitat in the Don River mouth area and Keating Channel is similarly degraded. Although these areas are important migration corridors to spring and fall spawning fish species, the existing habitat to support aquatic life beyond acting as a migration corridor is limited. These watercourses are affected by urban run-off in the Don River catchment area and are actively dredged to remove sediment. Further, the shoreline largely consists of sheet piles and lacks riparian habitat. The project will result in the permanent removal of about 4 m² of low quality aquatic habitat from the placement of new expressway piers in the river. There are 12 m² of existing pier structures currently located in the river which would be removed. As such, there would be a total net gain of 8 m² of aquatic habitat area with the removal of the existing larger sized piers and replacement of new smaller sized piers. Pending the requirements of *Fisheries Act* authorization, compensation for loss habitat may be provided which could be integrated into the DMNP Project. On-site compensation opportunities would be coordinated with TRCA before considering off-site compensation. It is noted that the DMNP Project will significantly improve the ecological function of the lower Don River. Project implementation, which could overlap with the construction of the Gardiner East project, would lead to further disturbances/alteration of this poor quality habitat.

Disturbance/alteration of habitat is also possible from storm run-off from the construction site. An erosion/sedimentation management plan will be developed by the co-proponents and/or its agents and is to include the best management practices (BMPs) as outlined in **Table 6-2**. The detailed erosion/sediment management plan should include information on the possible impairment of flood conveyance during construction based on the final constructability approach that will be prepared. Integration with the DMNP Project implementation will be required to manage sedimentation issues. The project co-proponents and/or its agent(s), in coordination with TRCA, will identify an approach that allows for Lower Don River and Keating Channel sediment management operations to occur and will undertake hydraulic modelling during detailed design to minimize possible short-term impacts related to erosion/sedimentation.

The effectiveness of these measures will be monitored after storm events to ensure they are effective and corrective actions taken if necessary. With these measures it is expected that adverse negative effects to the local watercourses can be minimized.

Operations Period

Once the project is operational, compared to the existing/future baseline condition, there would be a net improvement to terrestrial environment through the green space/ landscaping/ public realm improvements that have been committed to by the project co-proponents. In addition, once the project is operational, the co-proponents will coordinate internally with the Port Lands Biodiversity Strategy team to continue the implementation of habitat improvements. Similarly, with the relocation of Lake Shore Boulevard and the elevated expressway away from the Keating Channel and implementation of improved stormwater management (as is described in **Section 6.5.2.6** below), and localized habitat improvements, there is the potential for improved water quality in the channel. As well, the relocation of the connection ramps further north than their current location is also considered beneficial to future sediment management activities required to support the future re-naturalized Don River mouth area.

6.5.2.6 Natural Environment - Stormwater

Stormwater Management Plan Context

Responsible management of stormwater is considered as part of the potential environmental impacts of the preferred alternative. Improperly managed stormwater runoff can lead to the deterioration of natural resources due to poor water quality, increases in runoff volumes due to lack of appropriate controls and adverse impacts to the built landform and adjacent development. The City's efforts to revitalize the Toronto waterfront require sustainable

stormwater management measures that are designed to meet the appropriate regulatory criteria.

Under existing conditions, and as detailed in the 2014 Gardiner East EA Stormwater Management Baseline Conditions Report (**Appendix G**) drainage from the Gardiner Expressway is collected in depressed basins or “hoppers” which either outlet via direct connections to the existing storm sewer system or discharge to the ground. It is assumed that minor system runoff from Lake Shore Boulevard is directed into existing storm sewers via catch basins within the roadway, with minimal water quality treatment.

Due to the conceptual stage of design and lack of detailed information, a hydrologic/hydraulic assessment to quantify the potential impacts of the preferred alternative has not been completed. An increase or decrease in flows under for the preferred alternative cannot be confirmed at this stage, however, it is understood that the total footprint of the road rights-of-way (ROW) for the Gardiner Expressway and Lake Shore Boulevard are expected to remain approximately the same as existing, therefore substantial increases to the total impervious area are unlikely. Consequently, the deviation of peak flows and volumes from existing levels are anticipated to be minimal; however, it is recommended that this be confirmed during subsequent detailed design stages. The proposed public realm improvements within the road right-of-way (ROW) may contribute to natural methods of stormwater management including runoff attenuation and retention, further mitigating the effect of any potential impacts.

It is expected that a level of water quality treatment will need to be undertaken under the preferred alternative, however the sizing or recommendation of specific water quality treatment facilities (e.g. oil-grit separators, end-of-pipe stormwater ponds) has not been undertaken at this stage in order to give designers flexibility on the specific types of SWM measures used to achieve the required level of treatment. During subsequent stages, it is expected that appropriate water quality treatment measures will be put in place, taking into consideration the factors of the preferred alternative and study area, including availability of space, the long-term sustainability and efficiency of proposed measure, and the ability to use existing infrastructure as much as possible.

Any proposed stormwater management measures will be integrated with adjacent development and any other proposed modifications from studies and Environmental Assessments (EAs) within the area. All measures proposed will be reviewed and designed in consultation with the MOECC and other regulatory agencies such as TRCA and City of Toronto to ensure the appropriate policies, procedures and protocol are being followed.

Further, it is noted that the current concept design, which has been reviewed by TRCA, will have no material impact on Don River flood conveyance. The final design will need to be reviewed by TRCA in coordination with Waterfront Toronto and the City to confirm this. The removal of the columns that support the Logan Ramps have the potential to benefit flood conveyance by providing further flexibility in the redesign of the Lake Shore Boulevard-Don River bridge widening that is required to support the DMNP Project.

Construction Period

The potential effects of stormwater runoff during construction on surface water quality are expected to be mitigated by the implementation and monitoring measures as outlined in **Table 6-2**. Examples of these measures include development of an erosion and sediment control (ESC) plan outlining best practices for managing sediment-laden runoff, specifications for topsoil placement and post-construction seeding to decrease erosion potential and on-going monitoring of ESC and temporary SWM measures to ensure minimal effects to surface water quality during construction. It is recommended that temporary SWM measures that can be converted to permanent SWM measures be explored.

Operations Period

Stormwater management (SWM) and drainage considerations for the preferred alternative have been prepared for the three segments of the Gardiner Expressway – Lake Shore Boulevard corridor. The focus of recommendations relates to the management of stormwater from the Lake Shore Boulevard right-of-way (ROW) and the elevated Gardiner Expressway structure.

Recommendations for each segment of the study area reflect the minimum standards for drainage and flood management measures to be considered in the detailed design of the undertaking, specifically water balance, water quality and water quantity requirements. In addition, recommendations have been identified that will support the long term sustainability of the study area in the management of stormwater runoff.

With the proposed reconfiguration of Lake Shore Boulevard and the realignment of the Gardiner Expressway east of Cherry Street, there is an opportunity to include innovative and sustainable SWM measures that will complement the redevelopment of the Toronto waterfront as a sustainable and resilient community. Opportunities to better manage and utilize stormwater should be considered in all aspects of the detailed design process for the undertaking so as to achieve measureable flood reduction improvements that utilize water as a resource and support low impact development (LID).



Example of a Stormwater Planter. *Source: City of Philadelphia, Green Streets Design Manual*

The recommended use of LID measures within the ROW for management of major and minor system flows can allow for additional conveyance and storage capacity, as well as stormwater runoff attenuation and water quality treatment. These measures could include stormwater planters, enhanced grass swales and perforated pipe systems which can provide a level of improvement to meet the quantity, quality and water balance requirements. As a basis for achieving a sustainable ROW design, it is recommended that the detailed design of Lake Shore Boulevard consider SWM approaches to achieve a long term 80% Total Suspended Solids (TSS) removal rate for runoff from the ROW. This would be an enhanced level of sediment removal that may be considered higher than historical practices for road design, however it is recommended as a goal to achieve as a level of pre-treatment for stormwater runoff from the ROW.

The 80% TSS removal efficiency is based on requirements by the MOECC for redevelopment / development properties discharging to the natural environment. The MOECC sets the 80% removal rate as an "enhanced protection level" for sediment-laden stormwater runoff which discharges to a sensitive receiving watercourse (e.g. sensitive aquatic habitat). The City of Toronto Wet Weather Flow Management Guidelines (WWFMG) and TRCA also use this guideline for redevelopment sites. Where appropriate and where conditions are not favourable to practically achieve 80% TSS removal, consideration can be given to the application of treatment train approach or a lower level of TSS removal (e.g. 60% TSS removal described as basic level and 70% TSS removal described as normal level). Specifically, TSS removal can be challenging to achieve as LID measures such as grassed swales can provide less than 80% removal rate owing to site specific characteristics such as soil infiltration rate, groundwater levels, and others.

Segment 1 – Jarvis Street to Cherry Street

The majority of infrastructure for both the Gardiner Expressway and Lake Shore Boulevard is to remain unchanged, no major infrastructure changes are proposed to this section as part of the undertaking. It is assumed that minor system runoff from Lake Shore Boulevard is directed into existing storm sewers via catch basins within the roadway, with minimal water quality treatment. It is expected that this will remain the case; however, the level of water quality treatment provided for runoff generated within the ROW under existing conditions should be reviewed under detailed design as part of the Gardiner Deck replacement program to ensure that the criteria prescribed in the City's WWFMG are satisfied.

In areas where public realm improvements and landscaping are proposed along the Lake Shore Boulevard corridor to replace the current gravel/bare ground cover (and where the discharge is currently directed to the ground), there may be opportunities to re-direct portions of road runoff via curb let-downs to the newly landscaped areas and use LID measures such as rain gardens, bioretention areas and bioswales within the ROW to provide natural treatment and filtration, in a manner that maintains as much as possible existing flow pathways and outlets. The selection and design of LID options for these areas should be undertaken during detailed design of the public realm improvements.

Currently, major system (overland) flows from the Gardiner Expressway are understood to overflow onto the ground adjacent to Lake Shore Boulevard, which is expected to continue to be the case under the proposed reconfiguration. The approach to managing overland flow adjacent to Lake Shore Boulevard involve confirming that the grading/topography of the existing area provides opportunities to direct overland runoff towards an appropriate outlet, low depression area and/or to potential bioswales within the ROW, while maintaining existing flow paths. Overland runoff from Lake Shore Boulevard is to be reviewed to ensure compliance with the City's WWFMG and opportunities for stormwater management improvements should be studied further during detailed design. Standards for design of LIDs include MOECC Stormwater Management Planning and Design Manual (2003) and the Toronto Region Conservation Authority (TRCA)/Credit Valley Conservation (CVC) Low Impact Development Stormwater Management Planning and Design Guide (2010).

Segment 2 – Cherry Street to Don Roadway

There are numerous opportunities to incorporate innovative SWM with stormwater management in this segment. As outlined in the 2010 Keating Channel Precinct Plan, Lake Shore Boulevard East is expected to be generously landscaped and can therefore incorporate the use of LID measures to create features that are visually appealing, educational and functional from a SWM perspective. Similar to Segment 1, the use of bioswales, bioretention areas, and/or rain gardens may all be applied within the ROW of this segment to provide water quality treatment for the runoff from Lake Shore Boulevard and/or the Gardiner Expressway.

The use of native vegetation/plantings within these features can provide aesthetic, socio-cultural and environmental benefits. There may be opportunities to install infiltration pits at the outlets of hopper discharge locations to allow for the dispersion of flows from the Gardiner Expressway. Other potential LID measures that can be incorporated into the landscaped area include sand filters and perforated pipe systems as well as street trees/plantings such as Silva Cells. The high groundwater table within the study area (i.e. between 1-2 m from the surface) may impact the use of infiltration measures but does not entirely preclude them. It is recommended that the infiltration capacity of the soils should be further evaluated before selection of infiltration-dependent LIDs.

The objective of the SWM system for the redesigned segment of Lake Shore Boulevard through the Keating Channel Precinct is to maintain existing drainage patterns, while adequately accounting for external area flows from streets and networks that direct flows to Lake Shore Boulevard as the main overland route. Directing major and minor system flows into the SWM features in the landscaped areas (e.g. enhanced grass swales) could provide an opportunity to minimize the size of storm sewers. In addition to landscaping techniques, other ways to manage stormwater runoff include the use of permeable pavements on sidewalks and/or pathways and sub-surface storage.

A key consideration for this area will be to ensure that the redesigned segments of Lake Shore Boulevard and the Gardiner Expressway take into account regional flood protection and flood protection for the built form requirements, as outlined in the Don Mouth Naturalization and Port Lands Flood Protection Project EA (DMNP EA) report. Another key consideration is the storm runoff flow rate which will be intercepted through the Inner Harbour Tunnel for treatment in the future.

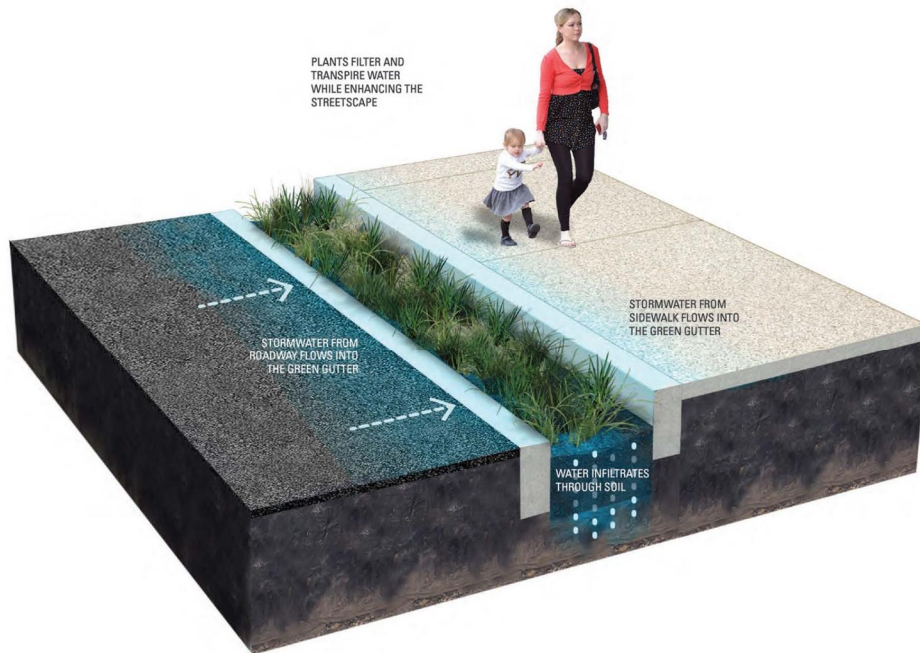
The proposed SWM measures may need to consider restrictions to swale depths, drainage paths and outlets, and the placement of storm sewers and other utilities to ensure they align with the regional flood protection measures recommended in the DMNP EA. During detailed design, coordination with TRCA should be completed to identify specific design requirements for the proposed SWM measures. At a minimum, the major and minor SWM systems for the redesigned Lake Shore Boulevard have to meet the City's WWFMG and MOECC Stormwater Management Planning and Design Manual criteria for water balance, water quantity and water quality. The City's WWFMG also provides road classifications and the associated maximum overland flow depth that should be followed.

Segment 3 – Don Roadway to Leslie Street

The emphasis for this segment will focus on incorporating SWM improvements for Lake Shore Boulevard, as there will not be an elevated Gardiner Expressway structure east of the Don River. This segment falls within the study area for the Port Lands Transportation and Servicing Master Plan (Port Lands TSMP) and, as such, SWM objectives for both studies will be integrated to ensure that the proposed measures are appropriately aligned. Similar to Segment 2, the recommended use of LID measures should feature prominently as part of the proposed SWM measures for this segment. In keeping with the preferred "Water As A Resource" alternative for the TSMP, the proposed SWM measures will be designed to showcase water and highlight natural SWM design principles. As being considered by the Port Lands TSMP, this section of Lake Shore Boulevard may require re-grading to provide an appropriate overland flow route and prevent excessive ponding on the roadway. Any recommended upgrades to the minor system

from the TSMP are to be reviewed in conjunction with the detailed design for Lake Shore Boulevard in this segment.

To be consistent with the Port Lands TSMP, there is an opportunity for water quality treatment to be achieved with the use of "hybrid channels" (i.e., vegetated open channels integrated with storm sewers) in this segment. A portion of the runoff from this segment may need to be directed to a stormwater quality treatment facility for disinfection to meet the City's WWFMG. Coordination with the Inner Harbour Tunnel design team will be required during detailed design to confirm the SWM features and treatment opportunities to be included in this segment of the corridor. At a minimum, the City's WWFMG and MOECC Stormwater Management Planning and Design Manual criteria for water quantity and water quality treatment are to be followed. LID design standards to be considered include: the TRCA /CVC LID Stormwater Management Planning and Design Guide (2010), the soon-to-be-released MOECC LID SWM Manual, and the City of Toronto Green Standards.



Example of a Green Gutter. *Source: City of Philadelphia, Green Streets Design Manual*

6.5.2.7 Cultural Resources

Construction Period

Much of the project area consists of lakefill and lands that have been significantly altered by land development activities in the late 1800s and early 1900s. More recently, lands that are affected by the undertaking in the Keating Channel Precinct were used for industrial purposes (e.g. tank farm). As outlined in the Cultural Heritage Baseline Report (**Appendix C – Figure C**), there are no cultural heritage resources located in the project footprint. Nonetheless, an assessment will be conducted (post EA outcome) to identify opportunities to document the elevated expressway structure for archival purposes prior to its partial demolition and reconstruction.

Based on the completed Stage 1 Archaeological Assessment (**Appendix D**), because of the historical development activities in the area where construction of the undertaking is proposed, there is limited potential for the survival of Aboriginal archaeological resources in primary contexts. There is however the potential for impact on nineteenth-early twentieth century development features including Toronto Dry Docks, Toronto Iron Works and British American Oil. Once detailed design has been completed, and the areas of excavation identified (e.g., for the expressway support piers) further archaeological assessment is warranted to confirm the potential for any features to exist. Additional recovery and/or preservation measures may be warranted.

Operations Period

No effects to cultural heritage resources or archaeological features would occur during the operation period.

6.5.2.8 Economics

Construction Period

There will be no direct removal or displacement of existing businesses as a result of the project. During periods of road closures, there could be delays to truck traffic travelling through the area similar to what automobile users would experience as previously described under the Transportation criteria group. Detour roads will be provided and advance warnings/communications of road closure periods.

Regarding downtown mobility, travel between the downtown and the east will take longer during construction. Travel during non-peak periods and through different modes will be encouraged.

Businesses adjacent to Lake Shore Boulevard east of the Don Roadway may experience some construction nuisance effects and temporary access restrictions. These business owners/operators will be advised of the construction activity and mitigation plans will be developed with their input to minimize negative effects to them.

Regarding the construction of the Lake Shore Boulevard-Don River bridge and rail spur bridge, there is potential for short-term temporary impacts to port related businesses that use rail cars which utilize the rail bridge. This includes the Ashbridges Bay Treatment Plant. The project co-proponents and/or its agents will work with these businesses to minimize impacts during construction and coordinate rail needs during temporary construction disturbances.

Operations Period

During operations, future economic effects of the project are largely related to increased travel times as compared to the future Do Nothing condition. As previously described, traffic modelling work forecasts an increased travel time of three minutes for travel from the east during the AM peak hour. Travel time increases during non-peak periods are expected to be less. Travel to/from the north and west are unaffected and the project will maintain a continuous freeway link between the Gardiner and DVP facilitating regional movement of goods.

The provision of new access ramps in the Keating Channel Precinct just east of Cherry Street will facilitate Gardiner access for businesses located in the Port Lands.

It is noted that future travel times in the corridor will increase without the project in place because of expected growth in background traffic volumes.

6.6 Consideration of Source Water Protection

Source water protection is the protection of any untreated water which is used as a source for municipal drinking water. Drinking water is best protected by taking an approach that uses multiple barriers to prevent contamination from affecting drinking water. This approach includes taking actions to prevent contamination of source water, using adequate water treatment and distribution systems, undertaking water testing and training of water managers.

Within the Study Area there are no source wellhead protection areas and no issue contributing areas (ICA is a documented, existing problem with the quality of the source water). However, there is a concern that flooding from the Don River east towards Leslie Street could potentially impact source water. This would be considered an “Event Based” source water protection concern as it relates to major storm events. The Event Based modelling for the area east of the Don River and south of Eastern Avenue has shown that a disinfection interruption at the Ashbridges Bay Treatment Plant could cause a plant by-pass discharge to the lake and be a potential drinking water threat. Although this is a potential given existing flood potential in the Study Area (without the implementation of the DMNP), the proposed undertaking does not appear to negatively impact this threat as there is an overall reduction in impervious area due to infrastructure changes and therefore there are no additional protection measures recommended. The implementation of the DMNP will be the most significant contributor to addressing the Event Based source water protection concern that exists east of the Don River.

6.7 Consideration of Climate Change

The project co-proponents recognize that future climate changes could have impacts on its services, operations, and infrastructure. As a result, over the last 10 years, the co-proponents have undertaken several climate change related initiatives. In 2007, City Council unanimously adopted *Toronto's Climate Change Action Plan*. The plan sets bold targets for the reduction of greenhouse gas emissions, and outlined actions that would see the city and its residents, businesses and communities reduce emissions, clean the air and create a sustainable energy future. Using 1990 as the baseline year, the City has a target to reduce greenhouse gas emissions (GHGs) by 80% by 2050. Initiatives to help meet this target include: providing incentives to make buildings more energy efficient, cutting landfill gas emissions, promoting bike usage through the bike sharing program and cycling network planning process, increasing the city's tree canopy, and expanding of the public transit system.

Waterfront Toronto is also active in the reduction of GHGs in relation to the redevelopment of the city's waterfront. Through its Minimum Green Building Requirements, Waterfront Toronto requires that all projects achieve a minimum of LEED® Gold certification, including LEED® certification credits in energy efficiency, water efficient landscaping, water use reduction, on-site renewable energy generation and measurement and verification. Other requirements include electric vehicle infrastructure, bicycle parking, green roofs, and waste management.

In 2008, the City released *Ahead of the Storm – Development of a Climate Change Adaptation Strategy*. This report outlines a number of actions that will improve the city's resilience to climate change and extreme weather events. The report recognizes that the City's Wet Weather Flow Master Plan (WWFMP) is Toronto's "single most relevant policy" for climate change adaptation.

Further, in 2012 the City released its Future Weather & Climate Driver Study. This study presents predictions of future climate conditions for the city for the purpose of informing present and future infrastructure decisions. The study results indicate that while the average number of snow storms in the winter is predicted to decrease and the number of storms in the summer is predicted decrease as well. However, extreme rainstorm events in the summer will be more extreme resulting in the maximum amount of rainfall expected in a single day and in any single hour to more than double. There will be a smaller number of storm events but on average each storm will produce a higher amount of precipitation.

In 2015, the Subcommittee on Climate Change Mitigation and Adaptation was established by the Parks and Environment Committee to report on a review of City policies, expert advice and international best practices to mitigate and adapt to climate change.

Climate change has been considered in this EA through the consideration of:

- Effects on Climate Change: effects of the undertaking on climate change; and,
- Effects from Climate Change: effects of climate change on the undertaking.

This assessment was conducted considering input received from MOECC staff as well as the consideration of current best practice regarding climate change integration in EA.

Effects on Climate Change

The following describes how potential effects of the undertaking on climate change were considered in the EA.

Regarding the alternatives evaluation, GHGs were estimated through modelling of the alternative solutions: Maintain, Improve, Replace, and Remove. The results of the assessment were considered in the comparative evaluation of the alternatives. GHGs were not modelled for the alternative designs as all three Hybrid alternatives would generate similar if not the same traffic volumes and patterns and as such, there would not be a difference in the amount of GHGs generated for each of the alternative designs.

It is noted that the project will not encourage greater use of automobiles and as such will not contribute to a greater amount of GHGs over future baseline conditions. In fact, the removal of the Logan Ramps that is part of the preferred undertaking will result in a reduction in some road capacity and as a result, might entice the use of alternate modes of travel.

A major benefit of the project is that it enhances new development opportunities in the Keating Channel Precinct which is close to the downtown core and provides an alternative to living further away with greater commuting distances. The Keating Channel Precinct is within an easy cycling distance to the downtown and will be connected with transit. The project alternatives have been evaluated and the preferred undertaking conceptually designed and assessed on the assumption that planned transit projects will be in place to provide people with an alternative mode of transportation that has a lower carbon footprint than automobile travel. This includes the proposed waterfront LRT project that is planned to run in parallel to the Gardiner- Lake Shore Boulevard corridor. The preferred undertaking also allows for an extension of Queens Quay Boulevard East that might allow for the extension of transit into the Keating Channel Precinct that was not practical under the Maintain alternative.

As part of the preferred undertaking, the project co-proponents have committed to the construction of a new off-road multi-use pathway/bikeway along Lake Shore Boulevard that would extend from the Don Roadway to at least Jarvis Street. This new pathway would complement the existing Martin Goodman Trail that extends south of the study corridor along Queens Quay. The Lake Shore Boulevard multi-use pathway would provide a more direct commuter route for cyclists and connect with the existing multi-use trail that extends east of the Don River. With this new multi-use pathway, improved connections with the surrounding pedestrian/cycling network and with proposed improvements for pedestrian/cycling crossings at intersections, it is hoped that a larger number of commuters will be attracted to active modes of transportation, further reducing reliance on automobiles and encouraging healthy communities. In addition, during future detailed design work, consideration will be given to designing this pathway with features that will encourage people to cycle/walk in various weather conditions or feel safe should extreme weather suddenly arise. Examples may include shade to protect users on extremely hot days, designed to minimize snow and ice accumulation, and allow for adequate snow clearing, also ensure no sections are flood-prone.

The project will involve the demolition of a section of the existing elevated expressway and as a result, a considerable amount of demolition debris will be available. To reduce the amount of new material for project construction and reduce the project carbon footprint, the project co-proponents will explore the potential to reuse some of the construction debris in new road and trail construction. This might involve crushing the old concrete to create granular material that could be used in new roadway construction. Cost, timing and suitability of this material would need to be considered in any decision to re-use this demolition material.

Finally, the project includes a commitment to “green” the corridor which includes plantings along the multi-use pathway (where feasible given the presence of the elevated expressway). With the relocation of the Expressway through the Keating Channel Precinct and the removal of the Logan Ramps, the project will allow for an extensive greening of the corridor from about the middle of the Keating Channel Precinct through to Leslie Street. The greening of the corridor will be a positive net improvement over future baseline conditions.

Effects of 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 new elevated section of the expressway is not prone to flooding and the location of the realigned section of Lake Shore Boulevard will not be any more susceptible than the current alignment that runs along the Keating Channel. With the planned flood protection works associated with the DMNP, the flood risk in the Keating Channel Precinct would be further reduced and as a result, the flood risk to Lake Shore Boulevard would be reduced.

The project will be constructed using the latest advancements in concrete use/manufacturing for both the elevated and at-grade road sections and as a result, is expected to have a lifespan approaching 100 years unlike the current facility which has had about a 50-year lifespan. 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.

Climate change modelling for the project area indicates the potential for larger and more frequent storm events which could contribute to greater amounts of runoff to be managed. The stormwater management system will be designed to meet the City Wet Weather Flow Management Guidelines. Furthermore, the City, through a Resilient City Working Group, has identified several adaptation actions including the use of bio-retention and low impact development within rights-of way. These options to manage stormwater will be considered during the detailed design phase of the project. As a possible climate change adaptation measure, run-off from the Gardiner could be directed to the planned new green space area north of Lake Shore Boulevard for reuse/infiltration. This serves as an alternative to the oversizing of infrastructure including storm sewers to managed high flow events.

6.8 Coordination With Other Projects - Cumulative Effects

Cumulative environmental effects include the combination of adverse effects from the undertaking with effects from other future projects or activities that are planned to be carried out within the same time period and physical space. In identifying future projects to include in the cumulative environmental effects assessment, projects that are "certain" and "reasonably foreseeable" have been considered. These include projects that have approved plans or projects that have plans/studies underway. The main projects that may contribute to cumulative effects in the Study Area are:

- DMNP Project;
- Future development as identified in the Lower Don Lands Master Plan, including Villiers Island Precinct Plan;
- Future Development as identified in the Port Lands and South of Eastern Area Master Plan, including the First Gulf site;
- Don River and Central Waterfront Project; and,
- Cherry Street Realignment.

The main potential cumulative effect associated with these projects is from overlapping construction periods which could contribute to increased disturbance effects to the surrounding area and additional traffic delay. Once operational, adverse cumulative effects from these projects are not expected.

The DMNP Project will provide the critical infrastructure changes needed to manage flood risk to the Port Lands and South of Eastern areas. Without the DMNP the redevelopment of these areas cannot proceed. The timing for construction of the DMNP is still being confirmed but there is the potential that both the Gardiner East project and the DMNP could have overlapping construction periods. Construction for the Gardiner East undertaking will be coordinated with the DMNP construction so as to minimize combined effects. In particular, this applies to construction related effects of works occurring in the Don River, around the banks of the Don River and along the Don Roadway north of Lake Shore Boulevard. Specific consideration will be needed for erosion/sediment management control. This includes the sediment management activities required in the Don River and Keating Channel during construction. Hydraulic modelling of construction staging is to be completed with TRCA. Once both of these projects are constructed, the simultaneous operation of these two projects is not anticipated to result in cumulative effects.

The *Port Lands and South of Eastern Transportation and Servicing Master Plan* (in progress) and the *Lower Don Lands Master Plan* (complete) and *Villiers Island Precinct Plan* (in progress) include population and employment, land use, servicing and transportation changes that will change the existing conditions in the eastern sections of the Study Area. The timing for the construction of these new communities is uncertain. As they require the completion of the DMNP, it is likely that construction activities would occur after the Gardiner East project has been completed. If there is the potential for development activity to occur in the same time frame as the Gardiner East project, then there would be the need to coordinate construction activities with the Gardiner East undertaking so as to limit the potential for cumulative effects.

The Don River and Central Waterfront Project includes a 25-year implementation plan for a series of major servicing projects that will provide solutions to address the problem of stormwater and combined sewer overflow discharges in the city (this is in addition to the flood protection provided through the DMNP). The projects include underground infrastructure that will capture and treat polluted stormwater and combined sewer overflows before they enter Toronto's waterways. They also include upgrades to the Don Sanitary Trunk Sewer system, including twinning of the Lower Don River / Coxwell Bypass Sanitary Trunk Sewer. Other works include an Inner Harbour Tunnel in Lake Ontario, a pumping station, new underground vertical storage shafts, and a new Wet Weather Flow Treatment facility. Not all of the works occur within the Study Area and the phasing for implementing the projects extends over 25 years. As such, the project co-proponents and its agents will need to coordinate construction activities related to the two projects in the areas where overlap is possible. The primary focus will be the Don

River, Inner Harbour and Port Lands improvements. Cumulative effects will be limited through the coordinated planning of these construction projects.

The co-proponents are aware of the potential that the redevelopment of the waterfront and Port Lands could result in multiple years of ongoing construction. As all of the planned and approved projects in the Study Area undergo construction, there may be cumulative effects to residents and businesses if construction is ongoing for multiple years. There is recognition that considerations will need to be made to manage cumulative impacts to residents and businesses that result from ongoing construction. Efforts will be made to:

- Keep the public and businesses informed of construction activities on an ongoing basis (including location and schedules for construction);
- Ensure opportunities are available for the public and businesses to provide feedback regarding construction related concerns;
- Review opportunities to stagger construction years and phases so as to limit continuous construction in one area;
- Review opportunities to coordinate construction activities proposed along individual transportation corridors so as to reduce construction timelines and limit the requirement to commence multiple construction projects in one corridor over consecutive years;
- Coordinate with transit authorities including Metrolinx and TTC to reduce impacts to transit operations and coordinate future transit construction projects in the Study Area; and
- Review construction methods on an on-going basis to identify opportunities for new techniques or the use of new technologies that may reduce construction timelines.

6.9 Advantages and Disadvantages

The overall advantages and disadvantages of the Gardiner Expressway and Lake Shore Boulevard East EA and Urban Design project are presented in this chapter. Advantages are positive net effects to the natural and socio-economic environment, while disadvantages are negative net effects. The purpose of this chapter is to provide an overall conclusion as to whether, in comparison with the “Do Nothing” Alternative, the negative net effects of the project are acceptable, based on a balanced assessment against the positive net effects.

Table 6-4 presents an analysis of the advantages and disadvantages of the project organized by study lens and which draws on the assessment of effects and recommended mitigation measures as presented previously in **Tables 6.2 and 6.3**.

Table 6-4: Project Advantages and Disadvantages

Study Lens	Advantages	Disadvantages
Environment	<p>Potential for improvement to water quality and habitat in the Keating Channel by removing the expressway away from it and the installation of improved storm runoff controls.</p> <p>Construction nuisance/disturbance effects are minimal as the project area is yet to be developed and receptors are well removed from the construction area.</p> <p>Provides opportunities to better complement the planned DMNP Project.</p> <p>Public realm, green space and corridor plantings will increase the amount of quality vegetation/habitat in the area.</p>	<p>Some potential for temporary construction nuisance effects (noise/dust) to users of the pathways through Keating Channel Precinct and McCleary Park (during removal of Logan Ramps).</p> <p>Loss of a minimal amount of poor quality terrestrial and aquatic habitat.</p> <p>Potential for some temporary sedimentation effects to local water bodies (Don River and Keating Channel) from construction site runoff during storm events.</p> <p>Potential negative short-term impacts on Don River flood conveyance during construction until final weirs and bridges have been put in place.</p> <p>Potential short-term impacts on Don River sediment management operations during construction may need to be mitigated/avoided.</p>

Study Lens	Advantages	Disadvantages
<p>Urban Design and Planning</p>	<p>Allows for transformation of the Keating Channel Precinct and the redevelopment of approximately 7.5 acres of public lands with direct access to the water (Keating Channel).</p> <p>Allows for the development of an unencumbered water's edge promenade along the north side of the Keating Channel.</p> <p>Removes the barrier of the elevated expressway through Keating Channel Precinct allowing better connections through the waterfront from the Port Lands through to East Bayfront.</p> <p>Makes the planned Villiers Island community more attractive by relocating the elevated expressway away from it.</p> <p>Removal of the Logan Ramps opens up development opportunities along Lake Shore Boulevard east of the Don Roadway including the First Gulf development which lies to the north of the corridor. Provides potential for development with direct access to Lake Shore Boulevard.</p>	

Study Lens	Advantages	Disadvantages
<p>Transportation and Infrastructure</p>	<p>Maintains continuous freeway connection between the DVP and the Gardiner while also providing a connection that replaces and greatly improves the structure's life span. The existing structure in this area requires significant rehabilitation if it were to be maintained.</p> <p>The removal of the Logan ramps eliminates the need to ever complete/budget for the rehabilitation or maintenance on that stretch of the expressway.</p>	<p>Temporary road traffic delays during periods of road closures during construction - most significant during peak travel periods.</p> <p>Temporary detouring of the pedestrian/cycling pathway through the Keating Channel Precinct will increase travel distances.</p> <p>Potential for short-term traffic infiltration into residential neighbourhoods during periods of road closures.</p> <p>Potential for temporary effects to Metrolinx rail service during widening of the rail bridge underpass.</p> <p>Increase in travel time during the peak period for travel between downtown and the east (south Scarborough).</p>
<p>Economics</p>	<p>Maintains freeway connection and provides access to the Gardiner allowing for the movement of goods.</p> <p>Keating Channel Precinct public lands sales revenue estimated at approximately \$70 to \$80 M.</p> <p>Complements the First Gulf land development proposal which is projected to generate in excess of 25,000 jobs serving as a major economic catalyst to the Port Lands.</p>	<p>Additional cost of \$154 million (NPV) over the Maintain option (Do nothing).</p> <p>Requirement for some private property acquisition (from the First Gulf site).</p> <p>Removal of Logan Ramps will lengthen truck travel to the east.</p> <p>Potential for temporary effects to businesses in the Port Lands and Ashbridges Bay Treatment Plant during construction of rail spur bridge over Don River.</p>

Also to be considered is the extent to which the project achieves the study goals that were articulated in the EA Terms of Reference. The extent to which these goals are achieved with the project are presented below:

Goal 1 - Revitalize the Waterfront - The improvements planned for the corridor contribute to the revitalization of the waterfront and complement other planned waterfront improvements such as the DMNP, Keating Channel Precinct Plan, Lower Don Lands Plan including Villiers Island Precinct Plan, and Port Lands and South of Eastern Master Plan. Planned improvements to the public realm will further support waterfront revitalization by improving the pedestrian and cycling experience throughout the corridor. **Goal 2 - Reconnect the City to the Lake** - The relocation of the Gardiner away from the north edge of the Keating Channel provides an opportunity to connect the Keating Channel Precinct to the water in a manner that was not previously imagined - it achieves city building objectives. The relocation of the Gardiner Expressway through the Keating Channel Precinct also facilitates improved waterfront connections between the Keating Channel Precinct, East Bayfront and the Port Lands. In addition to the improvements realized in the Keating Channel Precinct, the planned improvements at key Lake Shore Boulevard intersections between Jarvis Street and Cherry Street will facilitate better north-south connections to the waterfront for pedestrians and cyclists coming to/from the downtown area.

Goal 3 - Balance modes of Travel - The development of a new multi-use pathway along the north edge of Lake Shore Boulevard will encourage active modes of travel into/from the downtown. The multi-use trail will be coordinated with public realm improvements (e.g., streetscaping) as well as with other planned pedestrian/cycling facilities in the Study Area to improve the overall experience and encourage more active transportation in the area. The project results in some reduction on road capacity which might lead to the adoption of other modes of transportation by auto users not wanting further delay to their auto-based commute. This may also encourage other modes of goods movement such as rail.

Goal 4 - Achieve Sustainability - The project involves the creation of significant improved/new green space that would lie north of the Lake Shore Boulevard creating a new green ribbon. In addition, tree plantings are proposed along the Lake Shore Boulevard corridor, particularly from the future Munition Street intersection east. The project will also result reduced infrastructure in the Don River which will reduce pressures on stormwater management and sediment management facilities. The design of the new Gardiner Expressway-DVP connection through the Keating Channel Precinct will also provide opportunities to consider the use of more sustainable construction materials. Further, the detailed design process will consider opportunities to improve the management of stormwater runoff from the new Gardiner-DVP connection. Finally, with improved stormwater controls associated with the relocation of the Gardiner away from the water's edge, improvements to surface water quality are possible. Future detailed design work presents further opportunities to explore the use of sustainable design techniques.

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. 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 increased travel time for auto commuters between the downtown and the east during peak travel periods (average increase of three minutes in the AM peak hour). It is noted that 90% of the downtown commuters will not experience any change in their peak period travel time as a result of the project.

In contrast, the project offers many city building advantages and fulfills to some extent all of the study goals as defined in the EA ToR. Further, the public has indicated strong support for the Hybrid 3 alternative (as the preferred alternative design) and City of Toronto Council and the Waterfront Toronto Board have also provided 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, including the opportunity to develop 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, complementing other major projects such as DMNP Project and Port Lands development, providing additional trees/plantings within the Lake Shore Boulevard corridor, complementing major private sector development projects including the First Gulf development, and promoting alternative modes of transportation through the provision of a new multi-use pathway.

6.10 Commitments and Monitoring of the Undertaking

A monitoring plan has been developed for both environmental effects monitoring (see **Section 6.10.1**) as well as EA compliance monitoring (see **Section 6.10.2**). The monitoring activities will cover all phases of the undertaking including detailed design, construction, and operations and maintenance. The results of these monitoring activities, including any required follow-up activities will be documented and made available to the Ministry of the Environment and Climate Change upon request in accordance with their Code of Practice for Preparing and Reviewing Environmental Assessments in Ontario, January 2014.

6.10.1 Effects Monitoring

An effects monitoring strategy was developed based on the impact assessments carried out for the undertaking to ensure that the predicted net negative effects are not exceeded, that unexpected negative effects are addressed, and that the predicted benefits are realized.

Table 6-5 summarizes the construction period environment effects monitoring to be carried out in relation to the mitigation measures that have been developed to address the potential adverse environmental effects of the undertaken.

The operations period of the undertaking will largely involve the use of the roadway by vehicles. Effects from the use of the roadway are largely related to vehicle noise. As previously noted in **Table 6-3**, the City requires the consideration of traffic related noise as part of land use planning and development approval processes. Development activity in the vicinity of the undertaking (Hybrid) will need to satisfy to these requirements.

Also, as previously described in **Section 6.2**, once constructed the project will be subject to routine City of Toronto roadway operations and maintenance activities that would include for example: snow clearing and de-icing, road and roadway structure condition inspections, roadway surface repairs, lane marking repainting, traffic monitoring, road accident assessments, minor roadway design changes to respond to traffic demands and patterns, etc. No environmental effects of note are expected from these operations and maintenance activities and thus, effects monitoring is not required.

6.10.2 Environmental Compliance Monitoring

The project proponents have made a number of commitments based on the impact assessments carried out and in response to issues raised and comments received during the EA. A monitoring plan was developed to ensure that the EA commitments made are fulfilled. These commitments have been grouped either as “General” or by individual environmental component. **Table 6-6** outlines the EA commitments.

Table 6-5: Construction Effects Monitoring

Table 6-5: Construction Effects Monitoring	
Transportation	
During construction, roads closures could result in delay to vehicle users, particularly during peak travel periods	Monitor traffic vehicle delay and adjust the Construction Phasing Plan/Traffic Management Plan, where possible, to minimize delays.
Traffic flow may not be fully optimized	During operations period, City to monitor traffic operations and make adjustments as required (e.g. traffic signal timing) to optimize the flow of traffic through corridor as well as monitor vehicle incident rates to ensure that the roadway is operating at a safe level of service.
Public Safety	
As with all roadways, there is the potential for traffic incidents	Once project is operational, City to monitor rate and nature of traffic incidents and make necessary revisions including for example: speed change warnings, speed deceleration zones, etc.
Planning and Urban Design	
During construction, there is the potential for conflict with the implementation of other project proposed for the project study area	Monitor the construction activities to determine potential conflicts with other projects and make adjustments to the Construction Staging Plan in the event of unanticipated effects occurring. This will include working with TRCA regarding the planned DMNP.
Social and Health	
Construction activities could result in local noise and dust disturbances	Monitor public noise and dust complaints and take follow-up action as necessary.

Table 6-5: Construction Effects Monitoring

<p>Some construction activities such as pile driving have the potential to result in ground vibrations that could lead to structural impacts on nearby buildings.</p>	<p>Implement a vibration monitoring program including:</p> <ul style="list-style-type: none"> · Inspection and documentation (pictures etc.) of nearby buildings for any defects (e.g., cracks) prior to construction. · Conduct real-time monitoring of ground vibration at the perimeter of the construction zone and nearest receptors during construction. · Prepare a list of Best Practices for implementation if the vibration threshold level is exceeded (City of Toronto limit as defined in By-Law No. 514-2008) during the applicable construction activities. · Conduct post construction inspection to determine any damages to structures of nearby receptor buildings.
<p>Any soil contamination encountered during construction would be disposed of, remediated and/or monitored in accordance with obtaining Section 27 and Section 46 approvals under the Environmental Protection Act (EPA).</p>	<p>Monitoring may be required depending upon the conditions of approval associated with obtaining Section 27 and Section 46 approvals under the EPA.</p>
<p>During construction, road closures could lead to increases of traffic infiltration into onto local streets and increase traffic related disturbances.</p>	<p>Monitor traffic infiltration in adjacent neighbourhoods during construction. Monitor and respond to any complaints received by residents.</p>

Table 6-5: Construction Effects Monitoring

Natural Environment	
Direct loss of aquatic habitat (Don River) from new pier construction is minimized.	Monitoring during construction will be conducted by a Qualified Environmental Inspector and/or a Fisheries Specialist where a Fisheries Act Authorization is required.
During construction, there could be an increase in sedimentation into local water ways from exposed soil surfaces.	Monitor effectiveness of surface water run-off mitigation measures after major storms and implement corrective action measures if there is visible evidence of sedimentation in receiving water bodies (Don River/Keating Channel).
Ramp related construction works in the Don River could obstruct river flow during flood events.	In coordination with TRCA, monitor effectiveness of Don River flood conveyance during storm/flood events should they occur during periods of in-river work.
New plantings associated with the public realm plan may not all survive.	New plantings will be monitored after they are installed to ensure that they are thriving. Plants will be replaced, where necessary, according to standard warranty periods with project contractors.
Cultural Resources	
Potential for impact to archaeological resources	Monitoring may be required during construction subject to detailed archaeological assessment of excavated areas.
Economic	
Road closures during construction could delay the movement of goods through the corridor.	Monitor and review traffic detour plan with input from local commercial trucking operators.

Table 6-6: EA Commitments and Compliance Monitoring

Table 6-6: EA Commitments and Compliance Monitoring		
General		
The undertaking will be constructed according to the final detailed design that will be developed.	Chapter 6 Sec. 6.1	The City, or its agent, will monitor the construction of the undertaking to ensure that it is consistent with the final detailed design.
Continue to consult with the key landowners, the public and other stakeholders to ensure awareness of project construction.	Chapter 6 Table 6-2	Communication with the public and stakeholders will continue through detailed design and construction. This will include the posting of notifications and as required, direct contact with affected landowners.
Continue to engage with First Nations who have an interest in the project and to determine the need for any construction related mitigation.	Chapter 6 Table 6-2	Communication with First Nations will continue through detailed design and construction.
<p>Coordinate with City Transportation Services and others including:</p> <ul style="list-style-type: none"> · Liaising with transit, police, and other Emergency Services, and providing feedback and guidance to contractors. <p>Communicating with the implementing agencies of other projects such as TRCA and Metrolinx to ensure that the Gardiner East Project construction activities are coordinated with the other projects in the area.</p>	Chapter 6 Table 6-2	Coordination will continue through detailed design and construction.

Table 6-6: EA Commitments and Compliance Monitoring

Transportation		
Finalize the Construction Phasing Plan/Traffic Management Plan during detailed design to outline proposed roadway lane and sidewalk closures and detour routes.	Chapter 6 Table 6-2	These plans will be completed during detailed design and be revised as needed during construction.
Provide advanced notification and signage to advise motorists, transit users, pedestrians and cyclists of lane and sidewalk reductions and closures and identify appropriate detour routes.	Chapter 6 Table 6-2	Public notification and signage will be implemented during construction.
If construction is undertaken by a third party, the constructor is to apply for permit(s) to coordinate planned lane, pathway and roadway closures.	Chapter 6 Table 6-2	As needed during construction.
Carry out as much of the bridge deck demolition work as possible on weekends/overnight to avoid the need to shut down sections of the Lake Shore Boulevard during the busier weekday periods.	Chapter 6 Table 6-2	As possible during construction.
Minimize construction delays to emergency vehicle service (EMS, fire, police etc.) by: <ul style="list-style-type: none"> · Regular communication with Emergency Services during construction; · Meeting with Emergency Services prior to construction start; · A requirement in the construction contract for a, "Emergency Service Provider Notification," to notify Emergency Services in advance of construction start and prior to any full closures. 	Chapter 6 Table 6-2	Liaison with emergency service providers will continue through detailed design and construction.

Table 6-6: EA Commitments and Compliance Monitoring

Work with transit providers (TTC and Metrolinx) to explore potential service level increase during construction. Undertake monitoring of impact on bus and street car travel from traffic diversion onto other City streets.	Chapter 6 Table 6-2	Liaison will continue through detailed design and construction. Make adjustments to construction timing, road closures and road detours where practical if transit service impacts are occurring.
Work with transit providers on future improvements and enhancements to improve transit as an alternate mode of travel into the downtown.	Chapter 6 Table 6-2	This action is ongoing.
Coordinate with Metrolinx re: opportunities for joint work on site related to track upgrades so as to minimize impacts to rail service.	Chapter 6 Table 6-2	Coordination will occur through detailed design and construction.
Explore potential to reduce Portlands rail spur line use during construction periods and coordinate changes to the rail spur works with DMNP works.	Chapter 6 Table 6-2	Coordination will occur through detailed design and construction.
Provide an enhanced pathway system as an alternate mode of travel into the downtown.	Chapter 6 Sec. 6.2	This will be an outcome of the implementation of the undertaking.
Complete a more detailed assessment to confirm appropriate road safety measures to be included as part of the facility design including for example: provision of appropriate signage, lowering posted speed; implementation of crash attenuators, increasing the length of speed change lanes on the Don Valley Parkway and Gardiner, etc..	Chapter 6 Table 6-2	This will be undertaken during detailed design.
Public Safety		
Further assess roadway safety requirements as part of detailed design (e.g. posted speeds, crash attenuators, shoulder widening, etc.).	Chapter 6 Table 6-2	To be completed during detailed design.

Table 6-6: EA Commitments and Compliance Monitoring

Planning & Urban Design		
A public realm phasing and implementation strategy for the corridor will be completed to provide a coordinated and consistent approach to delivering public realm within the corridor. The strategy will identify opportunities to integrate with complementary projects within or proximate to the Gardiner East EA Study Area. The strategy will include a phasing plan and will identify how proposed public realm improvements can best be coordinated among other initiatives including the Port Lands Planning Framework and the Keating Channel Precinct Plan.	Section 6.4	This action is ongoing.
Social and Health		
Gardiner traffic noise to be considered in the planned revisions to the Keating Channel Precinct Plan as well as in the planning and design of buildings that may be in close proximity to the Expressway.	Chapter 6 Table 6-2	To be completed during construction and operation.
Develop a comprehensive management plan for the removal of contaminated materials. Obtain necessary approvals in accordance with obtaining Section 27 and Section 46 approvals under the Environmental Protection Act (EPA). Dispose of any contaminated materials in a licensed disposal facility.	Chapter 6 Table 6-2	To be completed during detailed design and construction.
Apply for necessary permits and approvals as required (e.g. Permit to Take Water for construction such as for concrete batch plant operation).	Chapter 6 Table 6-2	To be completed during detailed design and/or construction as appropriate.

Table 6-6: EA Commitments and Compliance Monitoring

<p>Apply best management construction practices to minimize dust and noise including:</p> <ul style="list-style-type: none"> · Use of water and dust suppressants during construction when appropriate to minimize dust. · Requiring contractors to keep idling of construction equipment to a minimum and maintain equipment in good working order. 	Chapter 6 Table 6-2	To be completed during construction.
Conform to applicable municipal construction noise and vibration by-laws.	Chapter 6 Table 6-2	To be completed during construction.
Work with major event organizers to minimize travel delays during major tourism events.	Chapter 6 Table 6-2	To be completed during construction.
Natural Environment		
Prepare and follow a spills response plan for construction activity in proximity to open water areas.	Chapter 6 Table 6-2	To be completed during construction.
<p>Include special provisions in the construction including provisions to:</p> <ul style="list-style-type: none"> · protect wildlife encountered during construction. · conduct in-water work between July 1st to March 31st 	Chapter 6 Table 6-2	To be completed during construction.
Salvage plants for replanting where appropriate.	Chapter 6 Table 6-2	To be completed during construction.
Consult with Aquatic Habitat Toronto to identify permitting requirements and mitigation strategy. Aquatic habitat Toronto will also be consulted with to determine any aquatic monitoring requirements.	Chapter 6 Table 6-2	Consultation will occur through detailed design and construction.

Table 6-6: EA Commitments and Compliance Monitoring

Integrate with the Port Lands Biodiversity Strategy.	Chapter 6 Table 6-2	To be considered during detailed design and construction.
Create new green space/habitat along north side of the realigned Gardiner-Lake Shore Boulevard as per the public realm concept for the undertaking.	Chapter 6 Sec. 6.2	This will be an outcome of the implementation of the undertaking.
Fish screens shall be used on all dewatering intake pipes to protect fish, if required.	Chapter 6 Table 6-2	To be completed during construction.
Develop and implement an erosion and sediment control plan to mitigate impacts to the Don River and Keating Channel during construction.	Chapter 6 Table 6-2	To occur through detailed design and construction.
Cultural Resources		
Complete archaeological investigation on areas of excavation.	Chapter 6 Table 6-2	To be completed prior to construction activities.
Conduct heritage assessment of the Gardiner to identify opportunities to document the elevated expressway structure for archival purposes prior to its partial demolition and reconstruction.	Chapter 6 Table 6-2	To be complete prior to construction activities.
Economic		
Consult with local area commercial trucking operators in development of the traffic management/detour plan. Provide advanced notice about road closures/detours to commercial entities who rely on truck traffic and others who rely on mobility in the downtown area.	Chapter 6 Table 6-2	Consultations to be undertaken during detailed design. Advanced notice of road closures/detours will be provided through construction.

Table 6-6: EA Commitments and Compliance Monitoring

Maintain access to area businesses during construction and provide advanced notification of road closures/access limitations.	Chapter 6 Table 6-2	Access will be maintained and/or provided during construction.
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Based on the comments received from the public and agencies on the released Final EA Report, **Table 6-7** outlines additional EA commitments to be implemented by the project co-proponents.

Table 6-7: Additional Commitments Resulting from Final EA Report Review

Table 6-7: Additional Commitments Resulting from Final EA Report Review	
General	The co-proponents shall adhere to and ensure adherence by the project constructor(s) or contractor(s) to all environmental mitigation and monitoring commitments listed in the EA report as applicable.
Species at Risk Screening	The co-proponents will complete a Species at Risk (SAR) screening as part of the future design stage work. If necessary, applicable mitigation will be put in place. The Ministry of Natural Resources and Forestry will be consulted.
Archaeology	As per the completed Stage 1 Archaeological Assessment Report, construction excavations in the area of the potential Euro-Canadian archaeological resources will be subject to a program of archaeological monitoring to document any remains, if any, prior to their removal.
Cultural Heritage	As per the completed Cultural Heritage Resource Assessment Report, the identified cultural heritage resources in the project area should be further evaluated as part of future project design work to describe their specific cultural value/cultural heritage attributes and to develop mitigation measures if applicable.
First Nation Engagement	Letters of correspondence noted in the EA Report but omitted from Appendix B are now included. Also included in Appendix B are the notes from a meeting held with the Mississaugas of the New Credit First Nation in 2016. The project co-proponents will continue to engage with indigenous communities who have expressed an interest in the project and will notify these communities of any archaeological findings that may be encountered during construction.
Agency Engagement	TRCA and Hydro One will be invited to participate in the multi-agency coordinating committee that has been established to plan the various projects within the Don Mouth area. One of the goals of this committee will be to minimize impact and disruption to TRCA's planned initiatives and Hydro One's assets.

Table 6-7: Additional Commitments Resulting from Final EA Report Review

Coordination with Don Mouth Naturalization and Port Lands Flood Projection EA	The design and mapping developed through the recent due diligence work for the DMNP EA, that includes advancing the facility design, will be considered in the advancement of the design for the Gardiner East project.
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