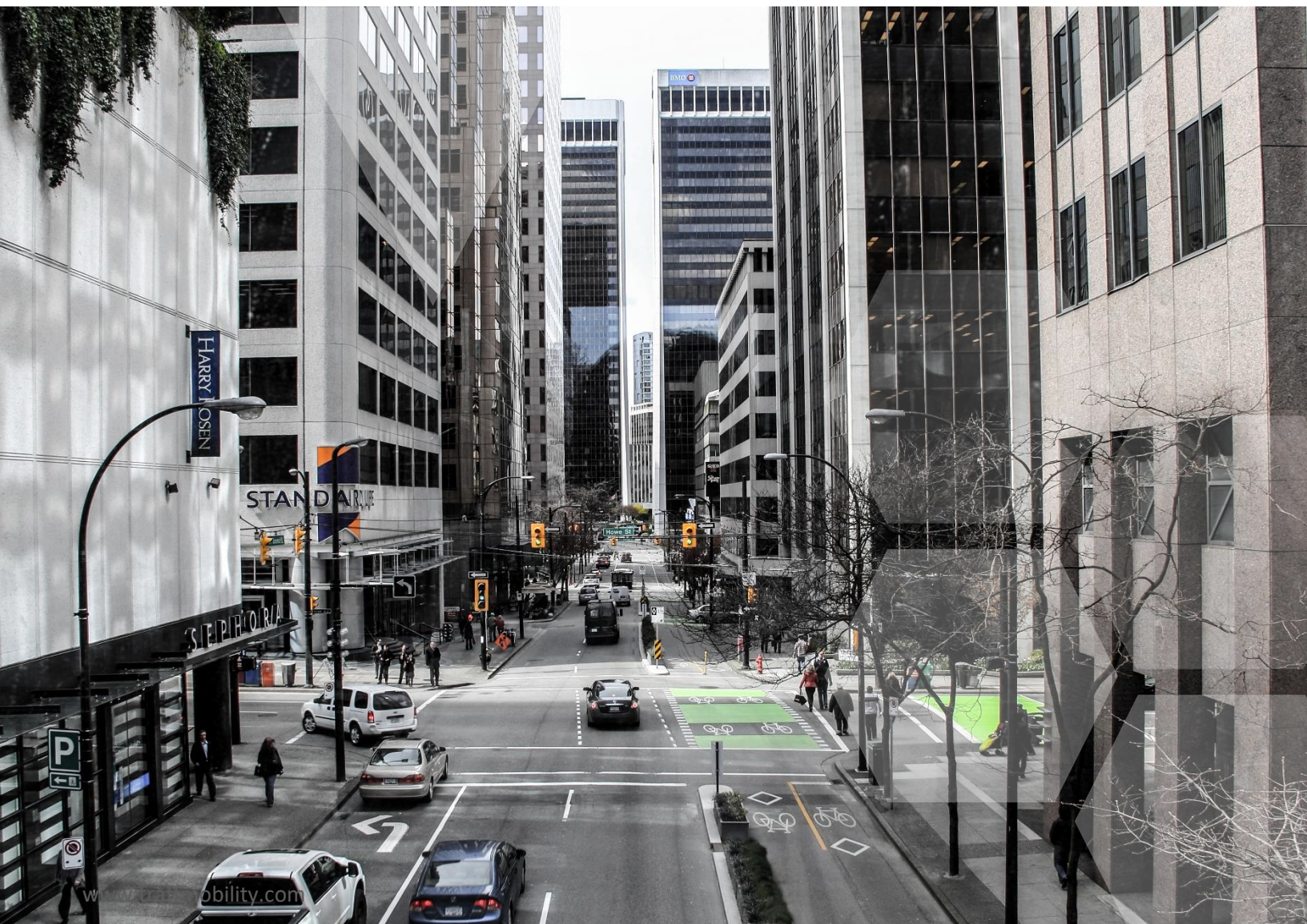


Port Lands Flood Protection Enabling Infrastructure

Updated Traffic Management Plan, Rev 0

Date: October 12, 2021

Prepared for: EllisDon Civil Ltd., Toronto



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Document Revision History

Rev	Description	Date Issued
R0	Updated Traffic Management Plan	October 12, 2021

Executive Summary

The Port Lands Flood Protection Enabling Infrastructure (PLFPEI) project is a major infrastructure program that aims to revitalize 800 acres of flood prone land, located in downtown Waterfront Toronto. The construction schedule to achieve this challenging project will span over 4 years and works are expected to be completed in Quarter 4 of 2024. Due the various construction activities expected and the proximity of several major transportation routes serving several modes (pedestrians, cyclists, transit, and general traffic including trucks), a comprehensive Traffic Management Plan was developed to mitigate impacts for all travel modes.

The location of this site is heavily influenced by other construction activities currently being executed and given that this project spans several years, the TMP will require periodic updating to ensure all parties working in the area are aware of the PLFPEI planned construction activities and traffic management plan.

Traffic Management Study Limits

This updated TMP is for the Lower Don Lands work zone area established along Lake Shore Boulevard to the north between Cherry Street and Carlaw Avenue and Polson Street to the south within the Port Lands area. The Cherry Street / Polson Street intersection and the new Cherry Street alignment are included in this work zone area. The Lower Don Lands TMP work zone limits considered for this project are shown in **Figure ES-1**. It is noted that a significantly wider area was used for the comprehensive transportation assessment undertaken to help develop this TMP.

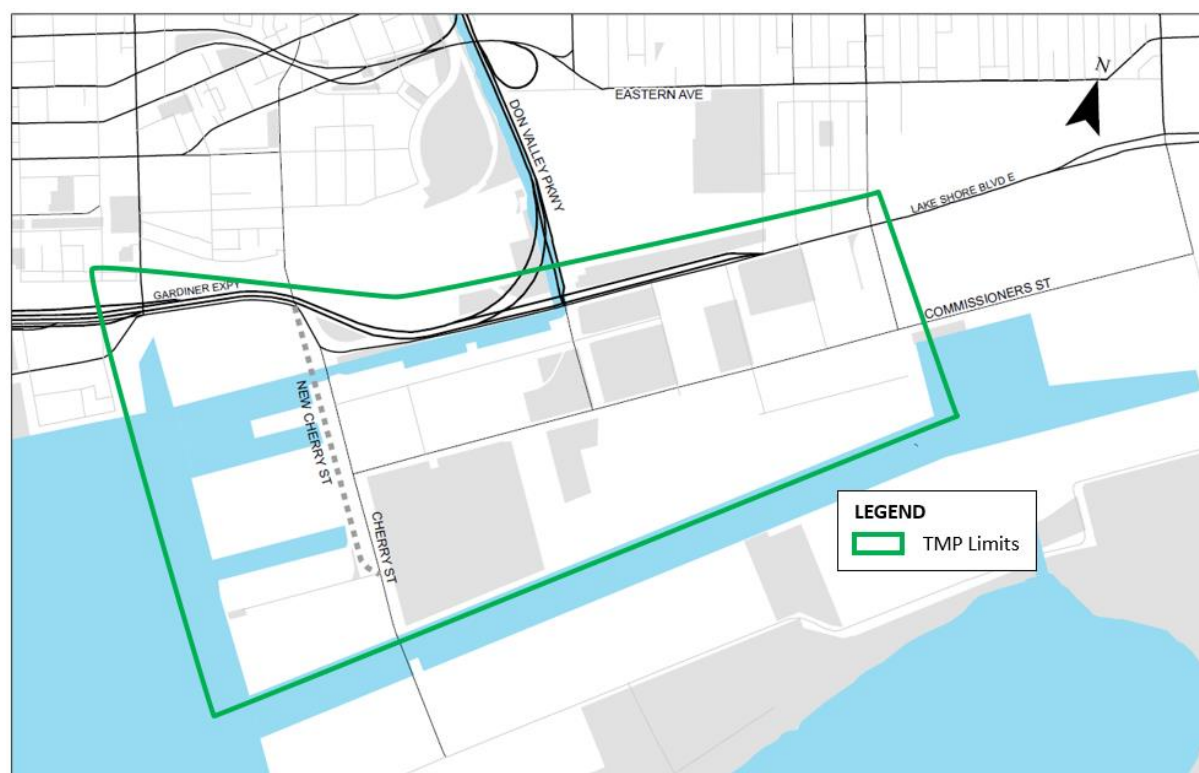


Figure ES-1: Lower Don Lands Traffic Management Plan Work Zone Limits

Construction Activities and Schedule

Ongoing and planned construction activities will influence the type and duration of the traffic management measures to be considered within the TMP study limits and wider influence areas. The updated TMP focus in on the major construction activities planned for the PLFPEI project and known parallel City closures. The construction schedule for long duration construction staging sequences requiring lane and road closures is provided in **Table ES-1**.

Table ES-1: Construction Schedule for Long Duration Construction Staging

PLFPEI Closures	Planned Period		Status
	Start	Finish	
Commissioners Street: Cherry Street to east of Don Roadway	December 2019	August 2022	Ongoing
Don Roadway: Villiers Street to Commissioners Street	December 2019	August 2022	Ongoing
Logan Ramps: Closure and Demolition	September 2021	October 2021	Completed
Don Roadway: Lake Shore Boulevard to Villiers Street	October 2021	January 2024	Not Started
Lake Shore Bridge lane closures: (temporary 2 EB lanes + 1 WB lane)	October 2021	January 2024	Not Started
Lake Shore Boulevard lane closures: (Cherry Street / Lake Shore Boulevard Intersection Realignment)	October 2021	December 2021	Not Started
Lake Shore Boulevard lane closures: Don Roadway to Carlaw Avenue for reconfiguration works	November 2021	December 2024	Not Started

Transportation Assessment of Proposed Closures

A detailed transportation assessment was conducted to identify mitigation measures and develop traffic management strategies to support the construction staging for the PLFPEI project. The construction staging sequence for the PLFPEI project will require significant lane and road closures in the Lower Don Lands work zones. Given that the proposed staging sequence will extend over several years and likely coincide with lane and road closures from City construction activities, discussions were held with staff from the City of Toronto, Waterfront Toronto and EllisDon to develop a transportation assessment framework for the PLFPEI project.

The transportation assessment study area limits are Victoria Park Avenue to the east, Bloor Street / Danforth Avenue to the north, Jameson Avenue / Lansdowne Avenue to the west, and Lake Ontario to the south as shown in **Figure ES-2**. A multi-resolution modelling approach utilizing the Aimsun Next software platform was conducted and the model included two separate hybrid approaches, a Macro-Meso Hybrid for the full study limits and a Meso-Micro study limits located primarily within the PLFPEI area as shown in **Figure ES-2**.

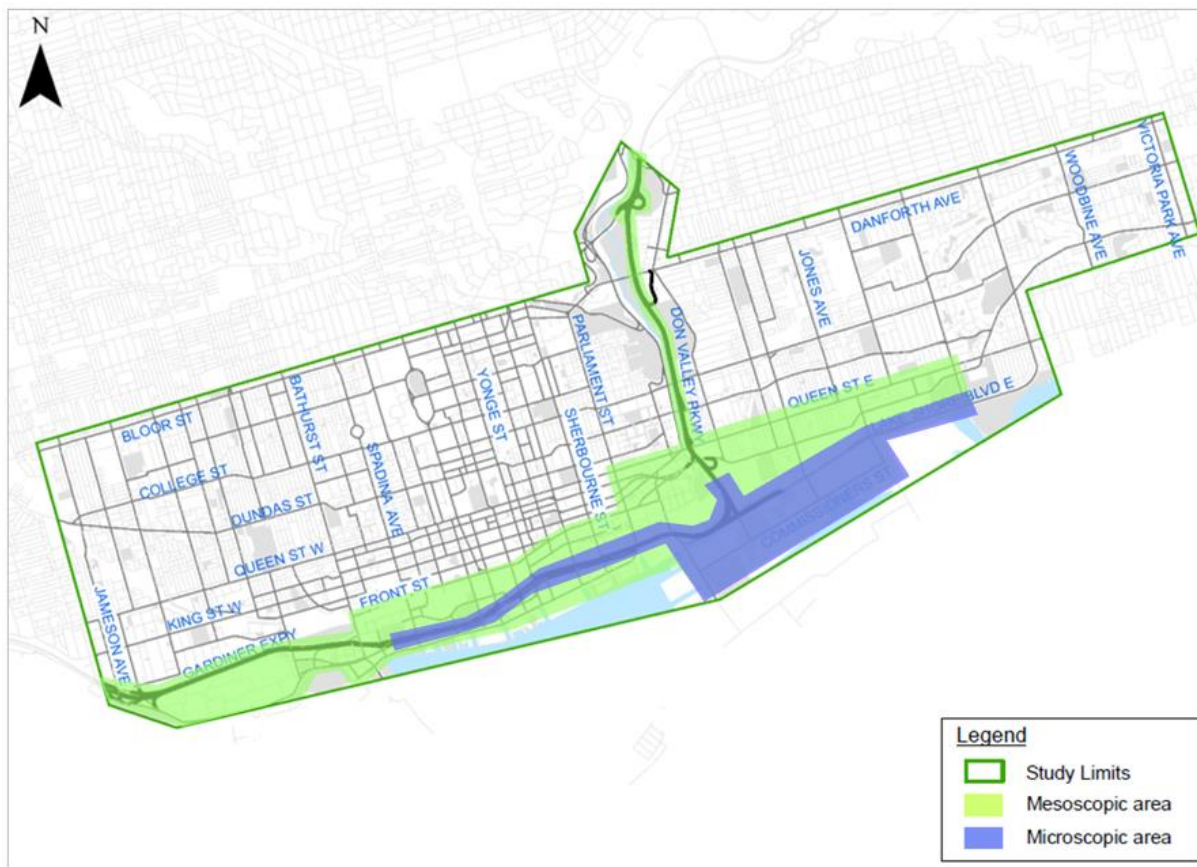


Figure ES-2: Multi-Resolution Modelling Hybrid Study Areas

Systemwide Impacted Travel Patterns

Recognizing that the Logan Ramps are the main links impacted under various closure scenarios for the PLFPEI project, the travel patterns associated with these ramps under existing conditions for both the weekday AM and PM peak periods were identified prior to evaluation of the construction staging closure scenarios. The objective was to summarize existing trip patterns using select link analysis on the existing model to identify the magnitude of trips associated with these ramps and their origin / destinations.

Based on the analysis results, the eastbound Logan Ramp serves over 949 trips during the AM peak hour and significantly more trips during PM peak hour with over 2,580 trips. In the westbound direction, the Logan Ramp serves over 1,882 trips during AM peak hour and fewer trips during PM peak hour with 1,221 trips.

The impacted trips in both directions were further examined to understand their origins and destinations. Based on the patterns, more than 75-80% of trips are destined / originated from west of Gardiner Expressway model limits. Details of the origin / destination of these impacted trips and their percentages with aggregated zones are shown in **Figure ES-3** and **Figure ES-4**. The results show that a significant number of trips need to cross the Don Valley Parkway / Don River north-south barrier where the Logan Ramps and Lake Shore Boulevard are key east-west crossing options along this barrier.

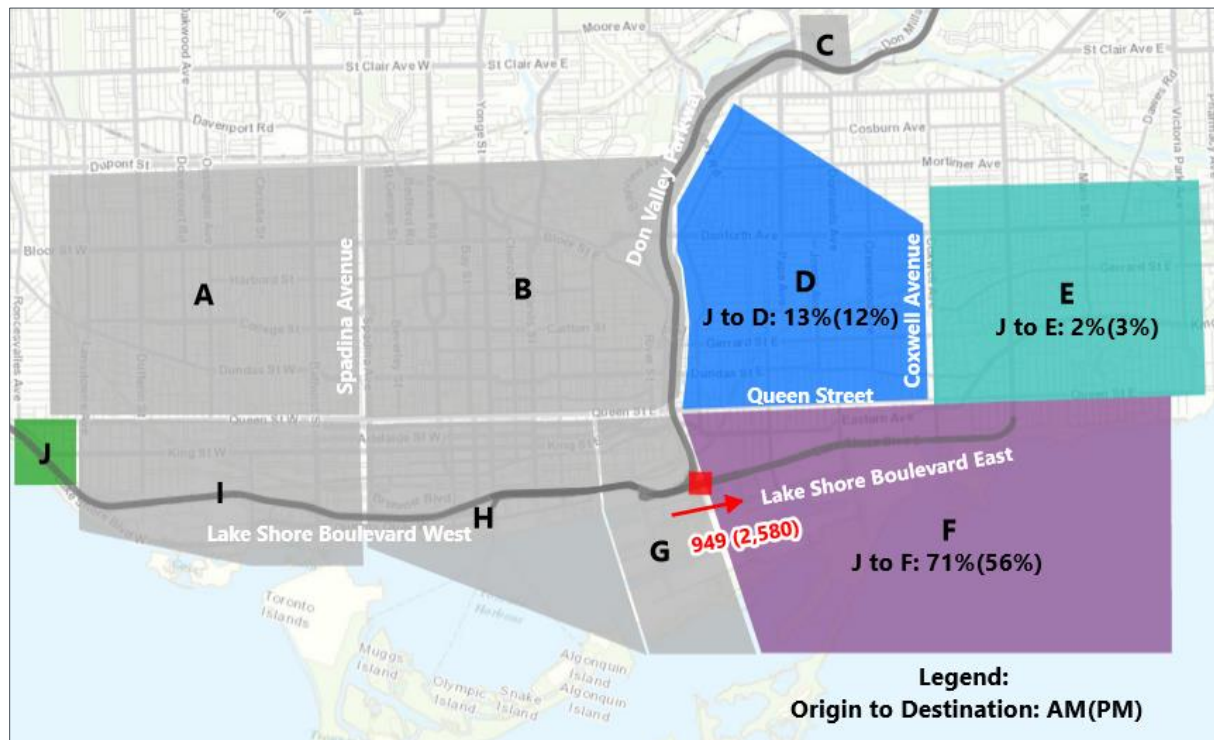


Figure ES-3: Trips Impacted by Logan Ramp Closures and Travel Patterns (Eastbound)

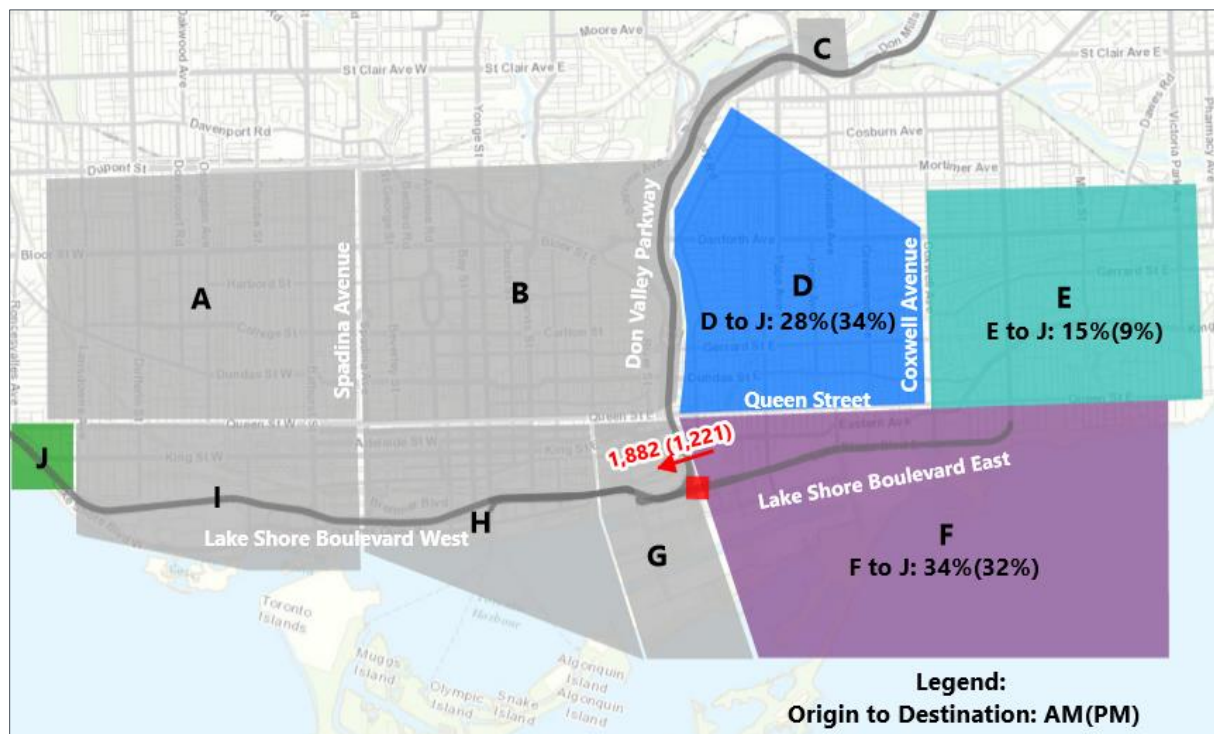


Figure ES-4: Trips Impacted by Logan Ramp Closures and Travel Patterns (Westbound)

Construction Staging Scenarios Modelling

The PLFPEI construction work was planned to be completed in several construction stages starting from Quarter 4 of 2019 to Quarter 1 of 2024 at the time the construction staging scenarios modelled work was done. A total of five construction staging scenarios were identified to be modelled and a description of these scenarios including proposed schedule and closure details are provided in **Table ES-2**.

Table ES-2: Construction Staging Scenarios Modelled

Scenarios Modelled	Planned Period	Closures Modelled
Scenario 1	Mar 2021 to Jun 2021	<ul style="list-style-type: none"> Commissioners St closed between Cherry St to west of Saulter St Don Roadway closed between Villiers St and Commissioners St Eastbound Gardiner Ramp permanently closed Eastbound Lake Shore Bridge (3 EB lanes) closed west of Don Roadway 3 westbound Lake Shore lanes converted into 2 WB lanes + 1 EB lane west of Don Roadway
Scenario 2	Jul 2021 to Nov 2021	<ul style="list-style-type: none"> Commissioners St closed between Cherry St to west of Saulter St Don Roadway closed between Villiers St and Commissioners St Eastbound and westbound Gardiner Ramps permanently closed Eastbound Lake Shore Bridge (3 EB lanes) closed west of Don Roadway 3 westbound Lake Shore lanes converted into 2 WB lanes + 1 EB lane west of Don Roadway NB left at Old Cherry closed and New Cherry realignment opened
Scenario 3	Dec 2021 to Aug 2022	<ul style="list-style-type: none"> Don Roadway closed between Lake Shore and Commissioners St Eastbound and westbound Gardiner Ramp permanently closed Eastbound Lake Shore Bridge (3 EB lanes) closed west of Don Roadway 3 westbound Lake Shore lanes converted into 2 WB lanes + 1 EB lane west of Don Roadway Old Cherry permanently closed between Commissioners St and New Cherry Street Old Cherry St Bridge permanently closed and New Cherry realignment opened Villiers St permanently closed between Saulter St and 400 m west of Don Roadway and Commissioners St opened Modification made to Jarvis EB off-ramp and the signal at Jarvis/Lake Shore

Scenarios Modelled	Planned Period	Closures Modelled
Scenario 4	Sept 2022 to Nov 2022	<ul style="list-style-type: none"> • Don Roadway closed between Lake Shore and Commissioners St • Eastbound and westbound Gardiner Ramp permanently closed • Westbound Lake Shore Bridge (3 WB lanes) closed west of Don Roadway • 3 eastbound Lake Shore lanes converted into 2 EB lanes + 1 WB lane west of Don Roadway • Old Cherry permanently closed between Commissioners St and New Cherry Street • Old Cherry St Bridge permanently closed and New Cherry realignment opened • Villiers St permanently closed between Saulter St and 400 m west of Don Roadway and Commissioners St opened • Modification made to Jarvis EB off-ramp and the signal at Jarvis/Lake Shore
Scenario 5	Dec 2022 to Dec 2023	<ul style="list-style-type: none"> • Eastbound and westbound Gardiner Ramp permanently closed • Westbound Lake Shore Bridge (3 WB lanes) closed west of Don Roadway • 3 eastbound Lake Shore lanes converted into 2 EB lanes + 1 WB lane west of Don Roadway • Old Cherry permanently closed between Commissioners St and New Cherry Street • Old Cherry St Bridge permanently closed and New Cherry realignment opened • Villiers St permanently closed between Saulter St and 400 m west of Don Roadway and Commissioners St opened • Modification made to Jarvis EB off-ramp and the signal at Jarvis/Lake Shore

Key Findings of Traffic Modelling

The key findings from the construction staging lane and road closure scenarios traffic modelling are:

- In all scenarios, westbound trips experience marginal impacts in comparison to eastbound trips. In the eastbound direction, travel times and speeds are impacted significantly because of the Logan Ramps closure.
- With the eastbound direction being the dominant direction of traffic during the PM peak period, PM peak results show higher delays, travel times and levels of congestion in comparison to the AM peak period.
- The Jarvis Street and Simcoe Street intersections at Lake Shore Boulevard are identified as the main points of congestion which are expected to have cascading effects on other parts of the network, primarily eastbound Gardiner Expressway.
- As per the select-link analysis for all scenarios evaluated in this report, Jarvis Street and Simcoe Street locations are parts of the alternative path for 75% to 80% of the re-routed traffic in the

eastbound direction. In the westbound direction, the Jarvis Street on-ramp shows to be part of the alternative path for 78% to 88% of the re-routed traffic in the westbound direction as well. A summary of the key alternative routes and their expected percentages are provided in **Figure ES-5**.

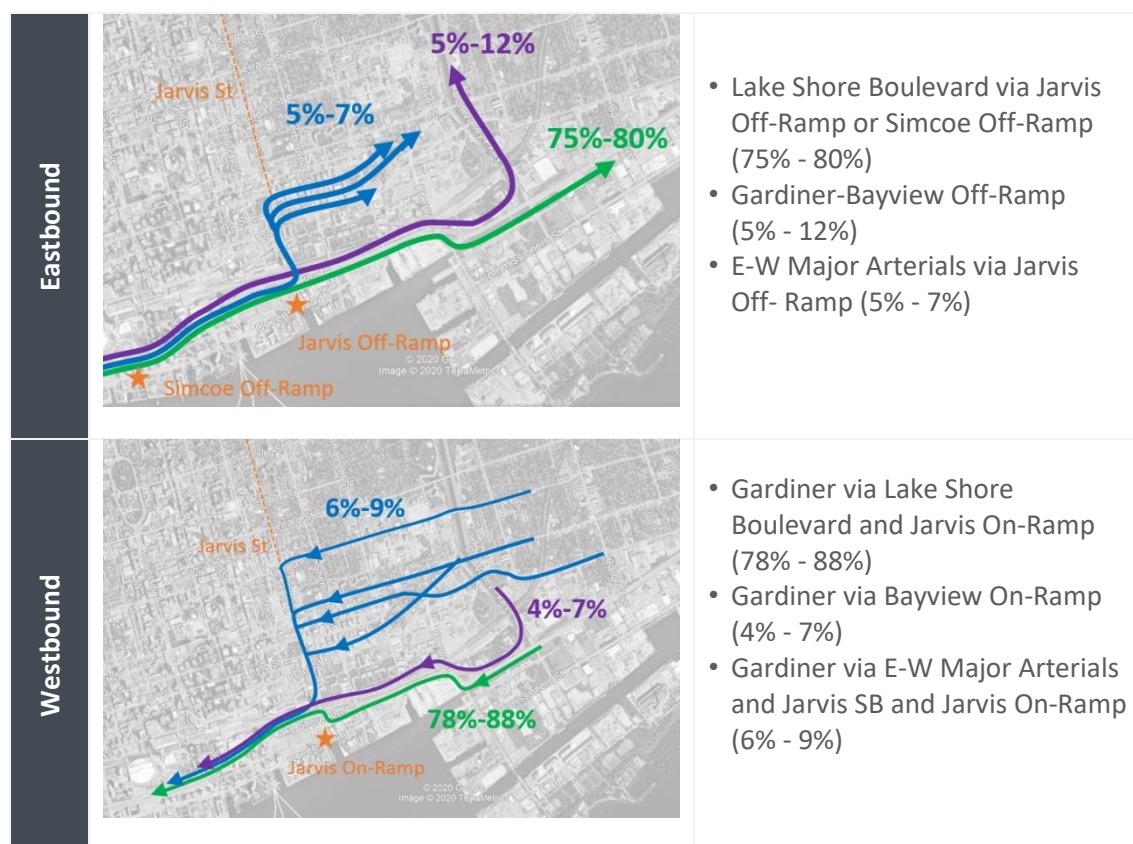


Figure ES-5: Key Alternative Routes by Peak Direction of Travel

- Due to the existing geometry, lane configuration, signal operations and the volume of the detour traffic in each respective direction, the eastbound direction at Jarvis Street/Lake Shore Boulevard experiences much higher delay and queue spill backs and slowdowns in comparison to westbound.
- Traffic slowdowns and travel time increases that are expected for Lake Shore Boulevard in the eastbound direction at intersections of Sherbourne Street, Parliament Street, Cherry Street and Don Valley Roadway are contained locally and can be mitigated by modifications to traffic signals and turn movement configurations.
- Based on the findings from all the model runs, certain construction work and their associated lane closures are recommended to be deferred entirely or only executed after peak hours or weekends to prevent network-wide traffic issues for eastbound trips. These closures are:
 - All construction work planned along Lake Shore Boulevard between Remembrance Drive and Cherry Street should be deferred or executed during off-peak and weekends. The selected closures currently identified based on the list of closures shared by the City are:
 - Enbridge: replacement of gas mains (Cherry Street to Yonge Street)
 - Enbridge: replacement of gas mains (Yonge Street to Remembrance Drive)
- Any work on Jarvis Street at the proximity of Lake Shore Boulevard is recommended to be deferred. During this project, the Jarvis Watermain project was identified to be deferred. However, based on

the revised schedule, this project will be completed before the Logan Ramps are removed. Should other projects be added to the City's capital program that could influence traffic operations at Jarvis Street and Lake Shore Intersection, the City should utilize the current models to understand the impacts and what mitigation may be required.

- For all construction stages on the Lake Shore Bridge, 2 eastbound lanes and 1 westbound lane should be maintained.

Systemwide Mitigation Measures

The findings from the construction staging scenarios modelling helped with the identification of hot spots that could result in potential system level and major operational impacts with planned lane and road closures.

To inform the development of systemwide mitigation management strategies and designs in support of various construction stages for this project, the planned construction staging lane and road closures for 2021 were modelled to evaluate various mitigation measures and this is referred to as Mitigation Assessment Scenario 1. A summary of the lane and road closures modelled in Mitigation Assessment Scenario 1 is provided in **Table ES-3**.

Table ES-3: Mitigation Assessment Scenario 1 Closures Modelled

Scenarios Modelled	Planned Period	Closures Modelled
Scenario 1	Sept 2021 to Dec 2021	<ul style="list-style-type: none"> • Commissioners St closed between Cherry St to west of Saulter St • Don Roadway closed between Villiers St and Commissioners St • Don Roadway between Villiers St and Lake Shore restricted to 1 lane per direction • Eastbound and westbound Gardiner Ramp permanently closed • Eastbound Lake Shore Bridge (3 EB lanes) closed west of Don Roadway • 3 westbound Lake Shore lanes converted into 2 EB lanes + 1 WB lane west of Don Roadway • NB left at Old Cherry closed and New Cherry realignment opened

The modelling assessment for Mitigation Assessment Scenario 1 resulted in the following systemwide mitigation measures which are applicable with minor adjustments for later scenarios:

- Modified Jarvis EB Off-Ramp at Lake Shore Boulevard including changes to signal timing plan phasing structure to increase eastbound throughput at this critical intersection. The removal of the eastbound split phase at this intersection to increase eastbound throughput will require closure of the eastbound Gardiner On-Ramp at Jarvis.
- It is recommended that a minimum of two (2) eastbound lanes be maintained along Lake Shore Boulevard during the entire project duration. The eastbound direction along Lake Shore Boulevard is the critical direction of flow, especially during the PM peak period and the model predicted that a single eastbound through lane will result in significant congestion in the network.
- Optimization of Don Roadway and Lake Shore Boulevard intersection signal timing plan phasing structure and cycle lengths to improve signal efficiency.
- Identify which parallel City closures should be deferred until the completion of the PLFPEI closures or only be considered during off-peak / weekends to minimize impacts to traffic operations. The list of closures identified are primarily along Lake Shore Boulevard in both the eastbound and

westbound directions from Jarvis Street to Carlaw Avenue. In addition, the Jarvis watermain project was identified, but based on discussions with the City, the watermain project is expected to be completed before the Logan Ramps are removed. It is recommended that any work on Jarvis Street within the vicinity be deferred since drivers are expected to use this street to access the Jarvis WB On-Ramp to the Gardiner.

- Bike detour plan to maintain network connectivity with planned closure of the Lower Don Trail between Don Roadway and Carlaw Avenue as shown in **Figure ES-6**.

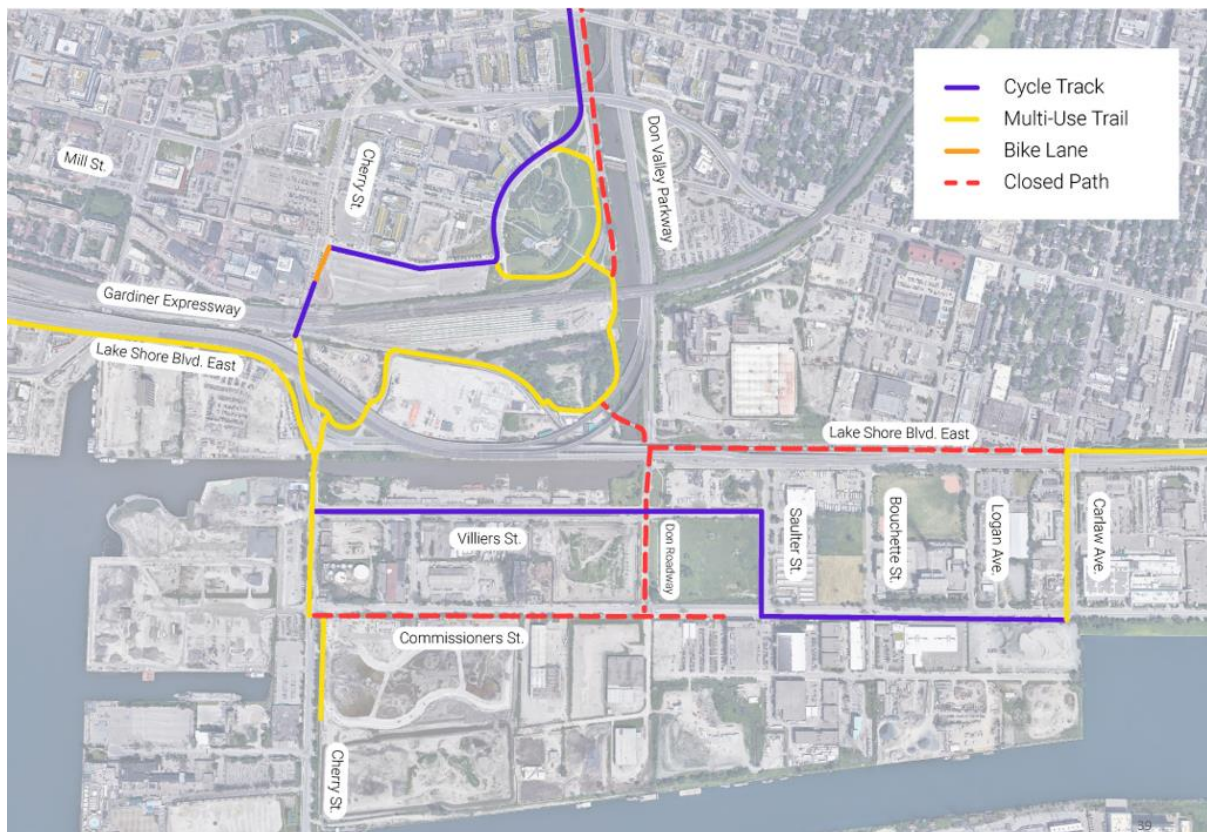


Figure ES-6: Closed Bike Path and Bike Detour (Multi-Use Trail and Cycle Track)

Site-Specific Traffic Management Measures

In addition to the systemwide mitigation measures, more detailed traffic management measures will be required at a more localized level to minimize the impacts of construction staging lane and road closures within the Lower Don Lands area. Site-specific traffic management measures are required for the following construction staging lane and road closures scenarios:

1. Commissioners Street and Don Roadway closures (ongoing)
2. Cherry Street / Polson Street intersection alignment (ongoing)
3. Logan Ramps closure and demolition (work completed)
4. New Cherry Street connection at Lake Shore Boulevard (work not started)
5. Construction staging for the Lake Shore Bridge and public realm improvement along Lake Shore Boulevard from Don Roadway to Carlaw Avenue (work not started)

The workflow to develop, implement and maintain site-specific traffic management measures is shown in **Figure ES-7** for the traffic management influence areas shown in **Figure ES-8**.

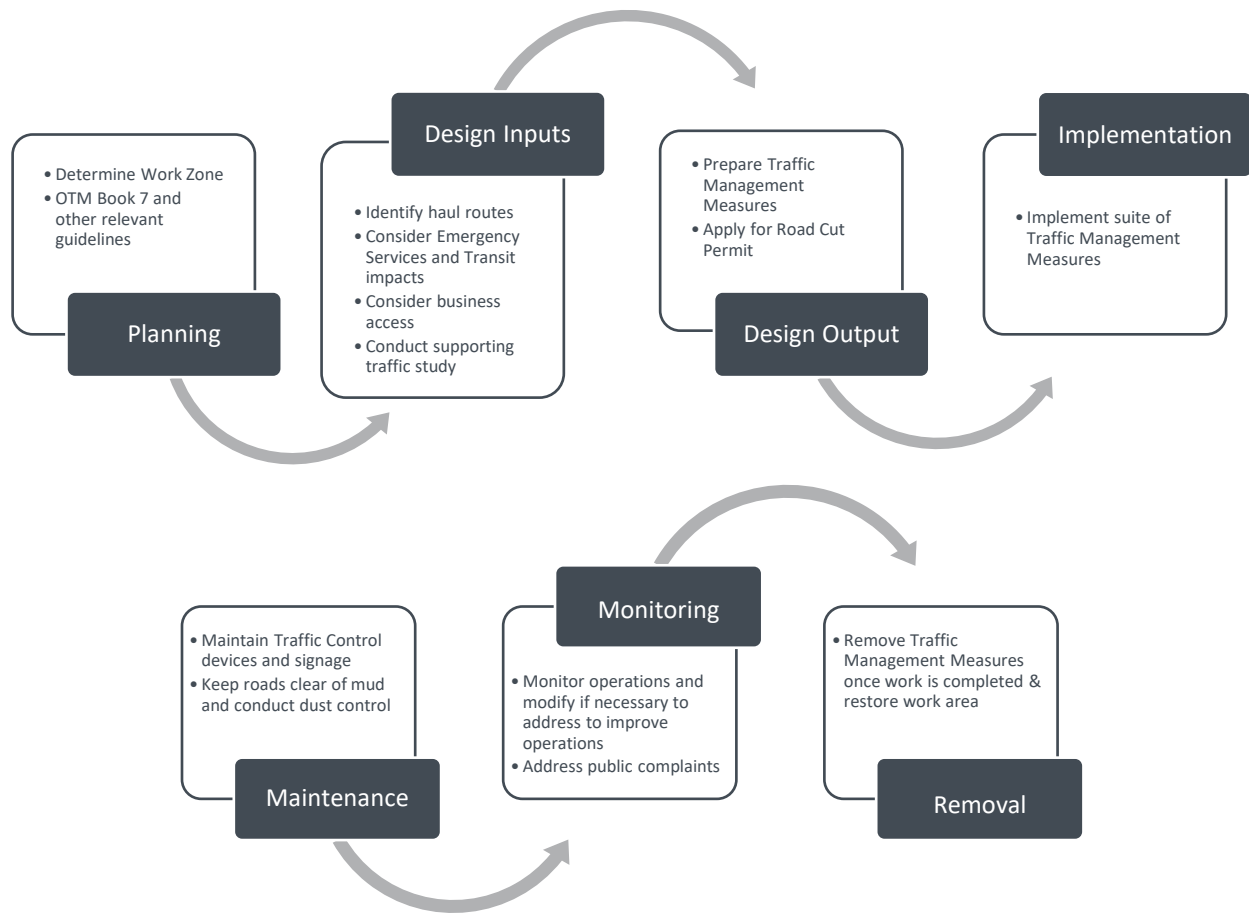


Figure ES-7: Traffic Management Measures Workflow

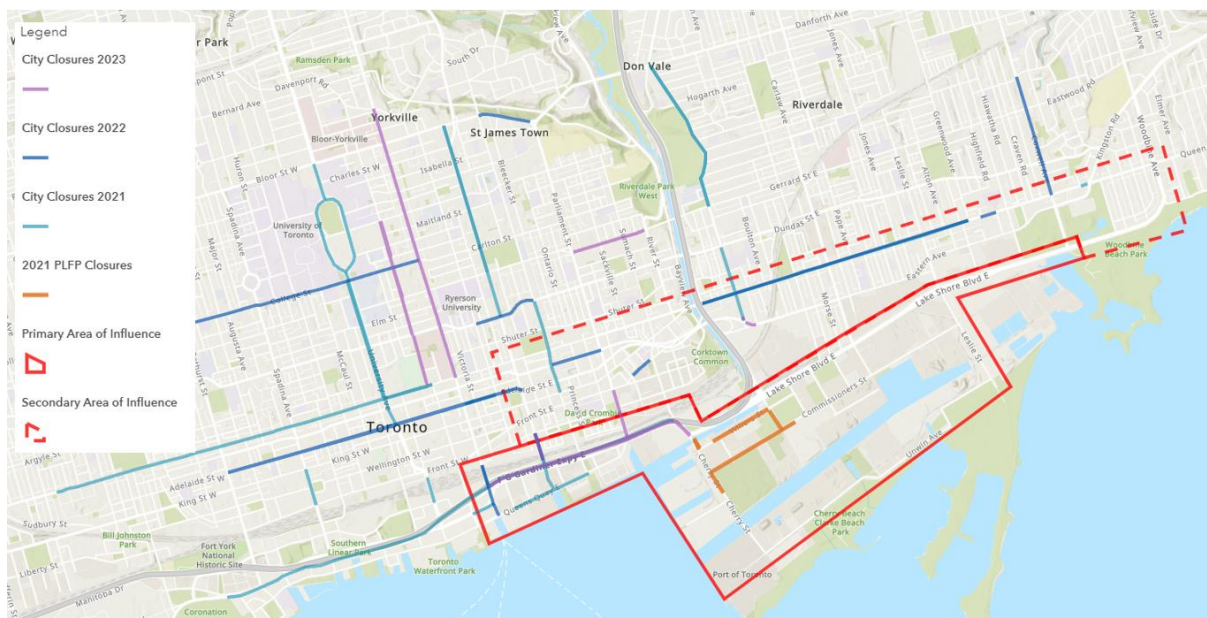


Figure ES-8: Traffic Management Measures Influence Areas

Suite of Traffic Management Measures

A suite of traffic management measures was developed to mitigate impacts to all road users which are tailored for each site-specific closure scenario and parallel City closures. The components making up the suite of traffic management measures considered in this TMP include:

- Traffic Control Plans (TCPs) to facilitate the safe passage for all road users through construction work zones in an efficient manner. The TCPs detail all proposed traffic control devices set up and traffic operational changes to accommodate construction activities and are to follow applicable design standards. A summary for the TCPs developed for the construction work zones within the PLFPEI study limits is provided in **Table ES-4**.

Table ES-4: Summary of PLFPEI Traffic Control Plans

Construction Work Zones	Planned Period		TCP Status
	Start	Finish	
Commissioners Street and Don Roadway Closures	December 2019	August 2022	Implemented
Cherry Street / Polson Street intersection alignment	May 2020	August 2022	Implemented
Logan Ramps: Closure and Demolition	September 2021	October 2021	Work Completed
New Cherry Street connection at Lake Shore Boulevard	October 2021	December 2021	Design Under Development
Lake Shore Bridge and Lake Shore Boulevard public realm works	October 2021	December 2024	Design Completed

- Optimized signal timing plans at warranted intersections within the influence areas which considered changes in travel patterns and traffic demand from the Logan Ramps and Lake Shore Bridge closures, and optimized signal timing plans were developed for the warranted intersections shown in **Figure ES-9**.
- The project limits have two trails; Lower Don River Trail and Martin Goodman Trail which are used by pedestrians/joggers and cyclists. For sections of the trails impacted by construction staging, a detour route providing dedicated cycling facilities and multi-use paths through the Lower Don Lands was designed and implemented with input from the City. The multi-use path connection along the northside of Lake Shore Boulevard between Logan Avenue and Carlaw Avenue will be maintained using a detour north of the current alignment to maintain north south connectivity to the Lower Don Trail and detour route through the Lower Don Lands.

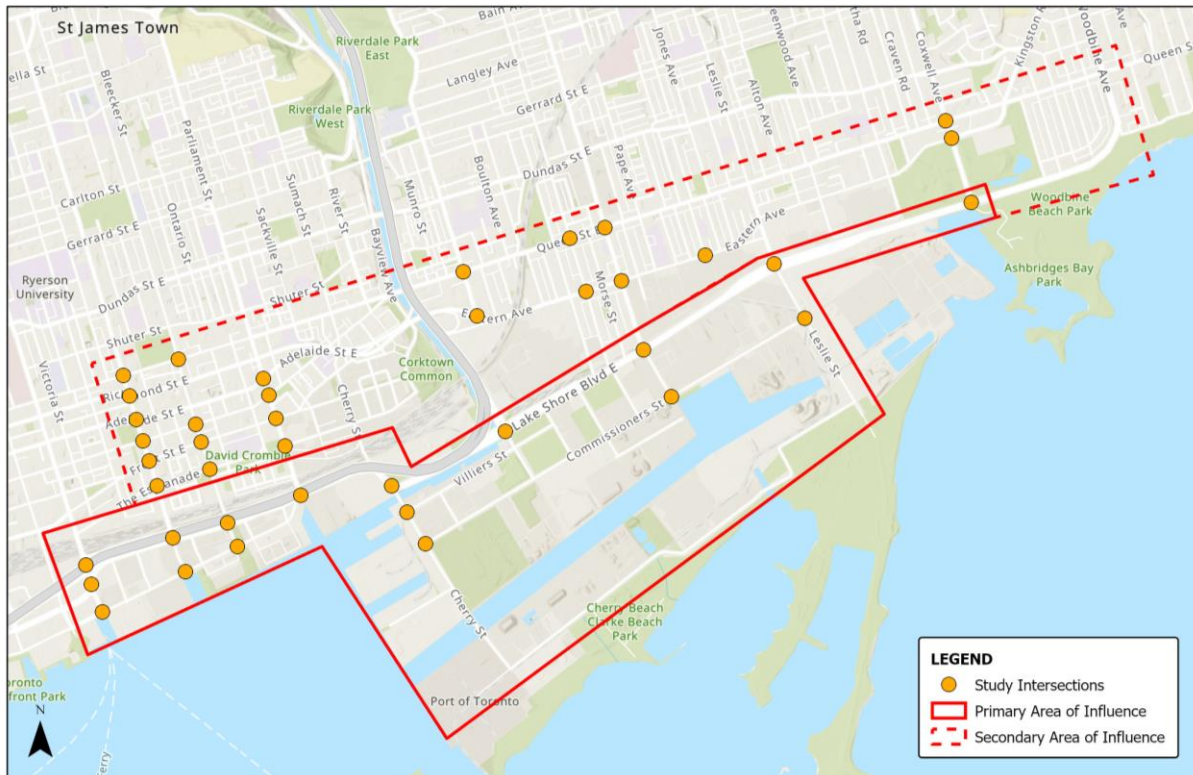


Figure ES-9: Intersections Warranted for Signal Timings Optimization

- Several businesses with truck fleets are in the Lower Don Lands, and the planned lane and road closures will impact fleet operations, especially closure of the northbound access to the Don Valley Parkway at Don Roadway. A detailed truck detour operations analysis was conducted to evaluate the expected impacts and mitigation measures identified including potential trucks detours.
- Emergency vehicles access through the work zone areas will be maintained on roadways and within the construction work areas. Where full closure is required, detours will be communicated to the emergency services. Access to fire hydrants within construction work areas will also be maintained.
- There are two Toronto Transit Commission (TTC) transit routes which are impacted by the proposed closures in the study limits; Route 72 and Route 121D. Route 72 along Commissioners Street is directly impacted by the proposed closures, and based on coordination with the TTC, Route 72 was diverted to Villiers Street.
- Road closures will require detours and supporting signage plan to provide guidance to drivers, cyclists, and pedestrians to navigate around the closures. Detour plans developed are submitted to the City for review and approval before implementation. Signage plans consist of static signs and portable variable message signs (PVMS).
- Construction staging will be designed to maintain access to businesses. Business owners are part of the Construction Liaison Committee (CLC) which meets every second month, and this forum is used to inform business owners of any potential impact to their access and possible mitigation measures. Input from the CLC is taken into consideration during the development of site-specific traffic management measures.

Lessons Learned from Logan Ramps Closures

A summary of the lessons learned from observations of operations with the Logan Ramps closures and traffic management measures implemented is provided in **Table ES-5**. This includes feedback from the public and businesses and modifications/additions made to the Logan Ramps site specific traffic management measures to address operations and safety concerns. The lessons learned from the Logan Ramps closure will be applied to other site-specific traffic management measures as the PLFPEI progresses.

Table ES-5: Summary of Lessons Learned from Logan Ramps Closure

Observations from Logan Ramps Closure	Source	Actions / Lessons Learned
Traffic infiltration and speeding on local streets north of Lake Shore Boulevard during first few weeks of closures	Public	<ul style="list-style-type: none"> Implemented turn restrictions at impacted streets to minimize cut through traffic Worked with City's Work Zone Coordination Group to request additional enforcement
Increased travel times and congestion due to removal of ramps and difficulty accessing WB Jarvis On-Ramp to the Gardiner	Public / Businesses / Project Team	<ul style="list-style-type: none"> Traffic Agents at critical locations including Jarvis Street / Lake Shore Boulevard intersection during critical PM peak period Need to pre-empt key locations where Traffic Agents and/or Paid Duty Officers should be deployed during first week of new staging closures
Increased travel times and congestion due to removal of ramps and key arterials on alternative routes have lane closures due to construction	Public / Businesses / Project Team	<ul style="list-style-type: none"> Need to continue working with City to ensure parallel City closures are minimized
Delays at key intersections (Jarvis, Lower Sherbourne, Parliament) along Lake Shore Boulevard	Public / Businesses / Project Team	<ul style="list-style-type: none"> Site visit conducted to observe operations issues at intersections and make signal timings adjustments to help reduce delays Continue to monitor these intersections
Short notice for parking restrictions and changes on local side streets	Public	<ul style="list-style-type: none"> Distributed flyers every weekend to ensure residents were aware of changes Earlier notice will be provided for future closures and changes

Observations from Logan Ramps Closure	Source	Actions / Lessons Learned
Bike detours were not ready in time for closures	Public	<ul style="list-style-type: none"> • Installation of bike detours signs, pavement markings and barriers completed • Ensure bike detours as per approved design are in place before future closures
Despite bike signage and wayfinding, some parts of bike detour were confusing	Public	<ul style="list-style-type: none"> • Enhance signs and wayfinding along detour route • Use enhanced signs for future detours
Parallel City lane closures not recommended in the transportation assessment with the Logan Ramps closed resulted in significant impacts at several locations	Project Team	<ul style="list-style-type: none"> • Need to consider impacts from unplanned parallel City lane closures which were not recommended or considered in the transportation assessment

Implementation of Site-Specific Traffic Management Measures

The Construction Manager will have overall responsibility for the implementation of site-specific traffic management measures. For each site, the Construction Manager will delegate the responsibility to implement the site-specific traffic management measures to the subcontractor as required. The delegate, either a superintendent or field engineer from the subcontractor, will function as the Traffic Control Supervisor (TCS) for the assigned site in addition to their other duties. The TCS will be supported by site staff, Traffic Coordinators, as required to implement the site-specific traffic management measures.

Communications Plan

There is ongoing communication with local businesses and community groups and the TMP implementation approach will build on this framework and relationship to communicate road closures and detours to the public and businesses.

- **Construction Liaison Committee (CLC) Meetings** – the notification list for these meetings include over 100 local businesses and area residents, as well as special interest groups, and are held every second month.
- **Construction Notice** – Digital traffic notices have been circulated regularly to a list of subscribers and to CLC members.
- **Print Flyers** – In advance of major road closures, digital notices will be supplemented by print flyers circulated to businesses within the immediate area. In advance of the closure on Commissioners, flyers were mailed by EllisDon to businesses as far east as Coxwell Avenue and south of Lake Shore Boulevard in the area shown in.
- **Signage** – Banners adjacent to the **Figure ES-10** construction site include project details and contact information for the construction manager.
- **Stakeholder Engagement** – In addition to CLC meetings, EllisDon and Waterfront Toronto have reached out to local road users individually, either face-to-face, by telephone and/or email to flag upcoming closures, gather input and address concerns. A map of the geographic distribution of stakeholders contacted and their level of engagement by response is provided in **Figure ES-11**.

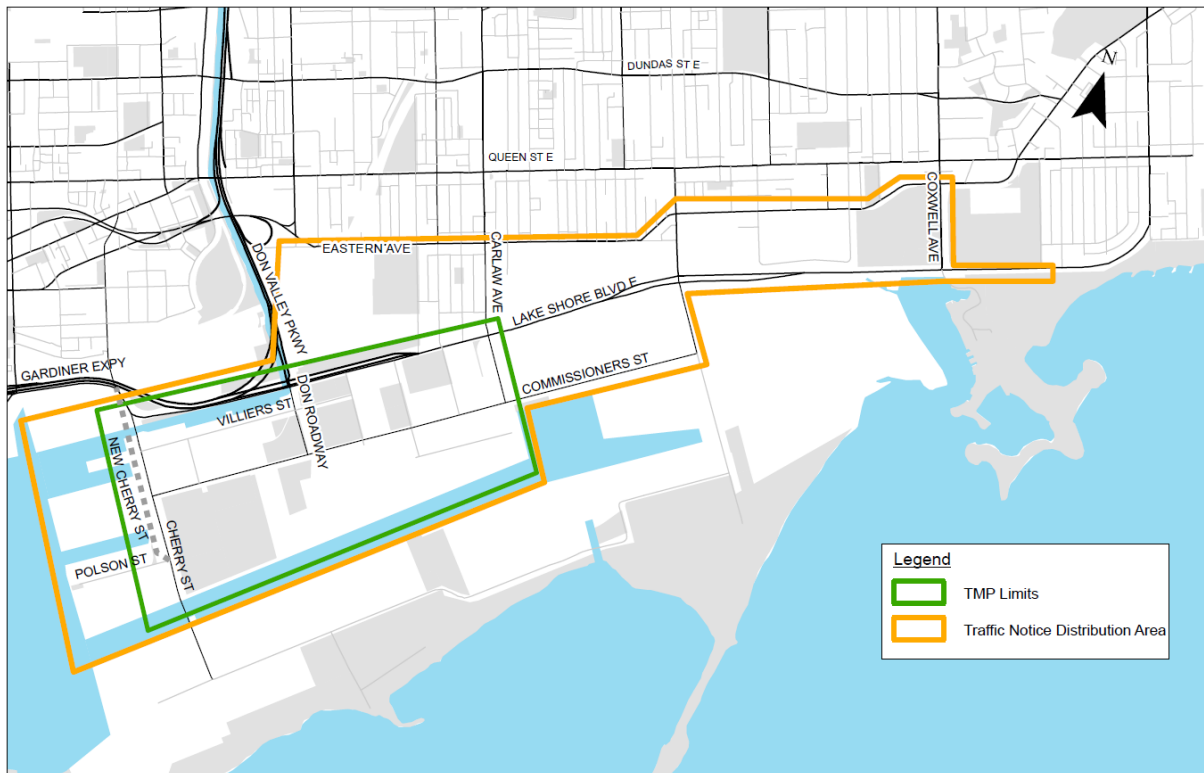


Figure ES-10: Traffic Notice Distribution Area

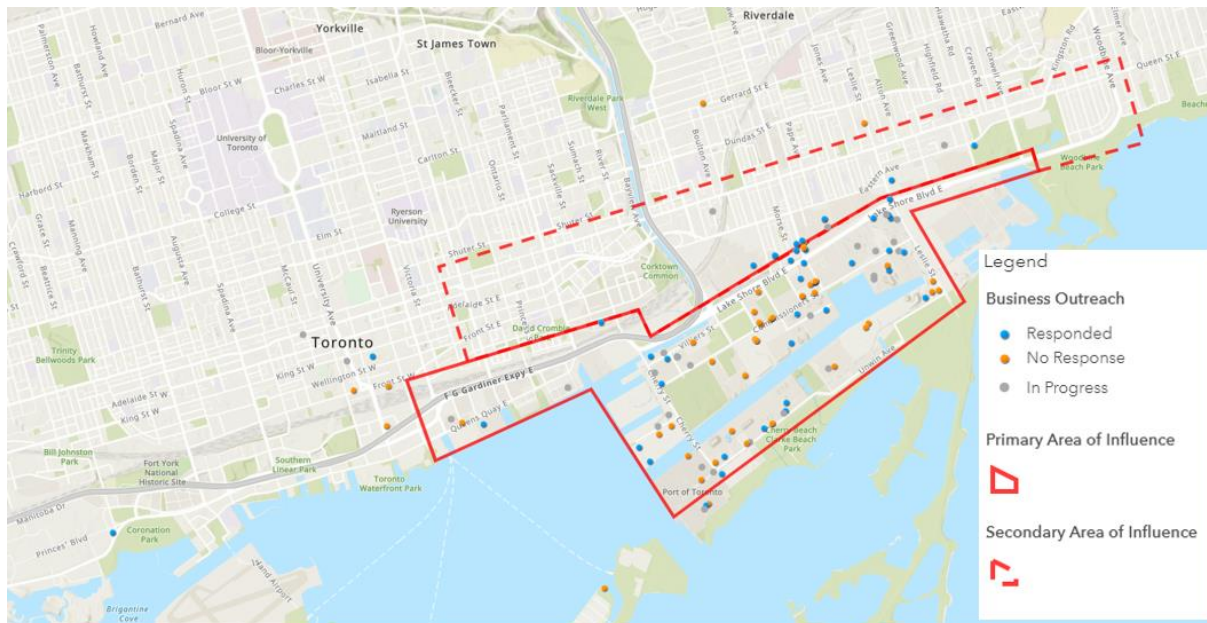


Figure ES-11: Stakeholder Engagement Response

Public Complaints

The process to monitor and respond to public complaints is the use of the dedicated project website and social media platform which is also currently used to disseminate construction notices. Public complaints received during the project will be handled by EllisDon's Communication Manager.

Questions and/or issues by the public can be done via:

- Dedicated phone number: 416-464-3583
- Dedicated email: plfp@EllisDon.com
- Online form to submit complaints or feedback: <https://bit.ly/PLFPform>