

# Gardiner East EA & Integrated Urban Design Study

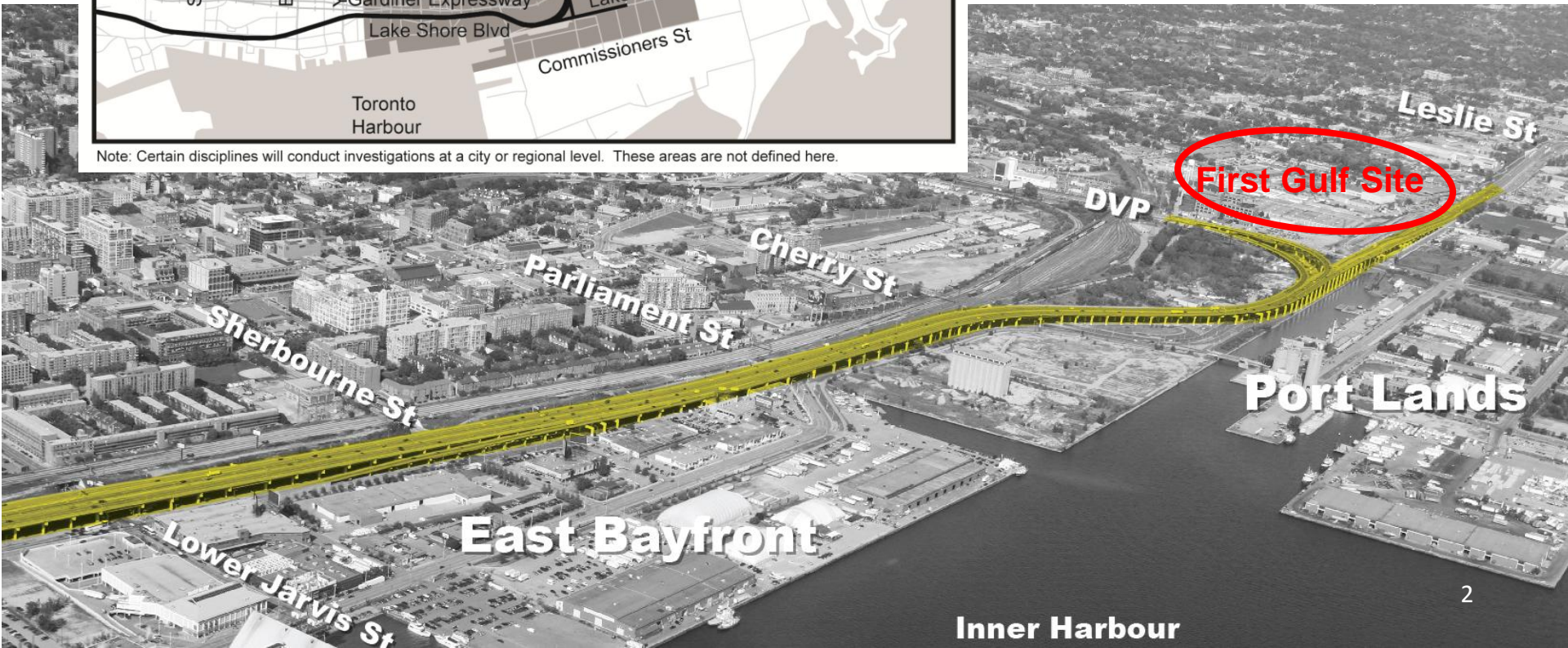
May 13, 2015 PWIC



# What Are We Studying?



Note: Certain disciplines will conduct investigations at a city or regional level. These areas are not defined here.



# A Timely Decision is Needed

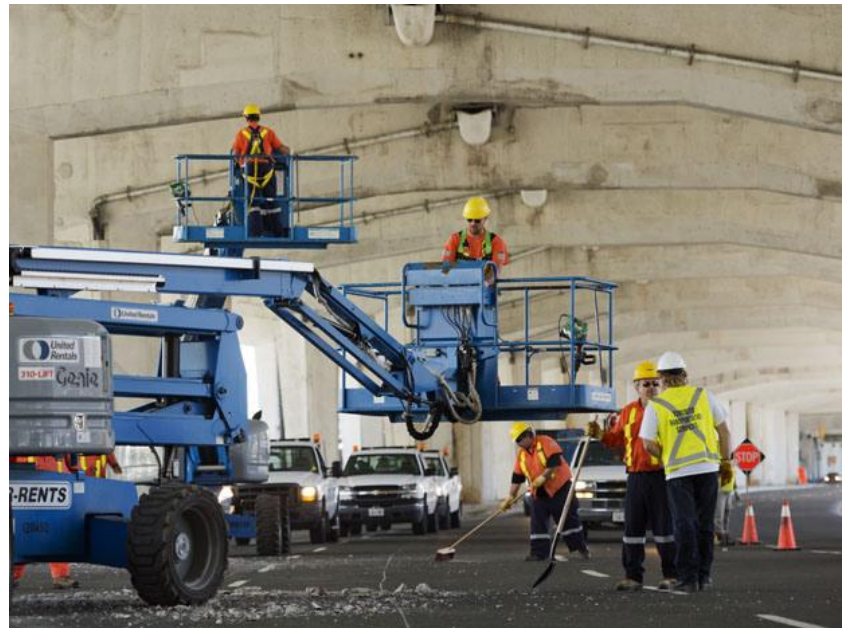
- Decision on future of Gardiner East is needed
- Gardiner East is more than 50-60 years old
- Deck and concrete barriers in very poor condition
- Full reconstruction of Gardiner East deferred to 2020, pending completion of EA
- East Deck interim repairs have extended service life to 2020

## Deck Shoring (Timber Bracing)



At Cherry Street

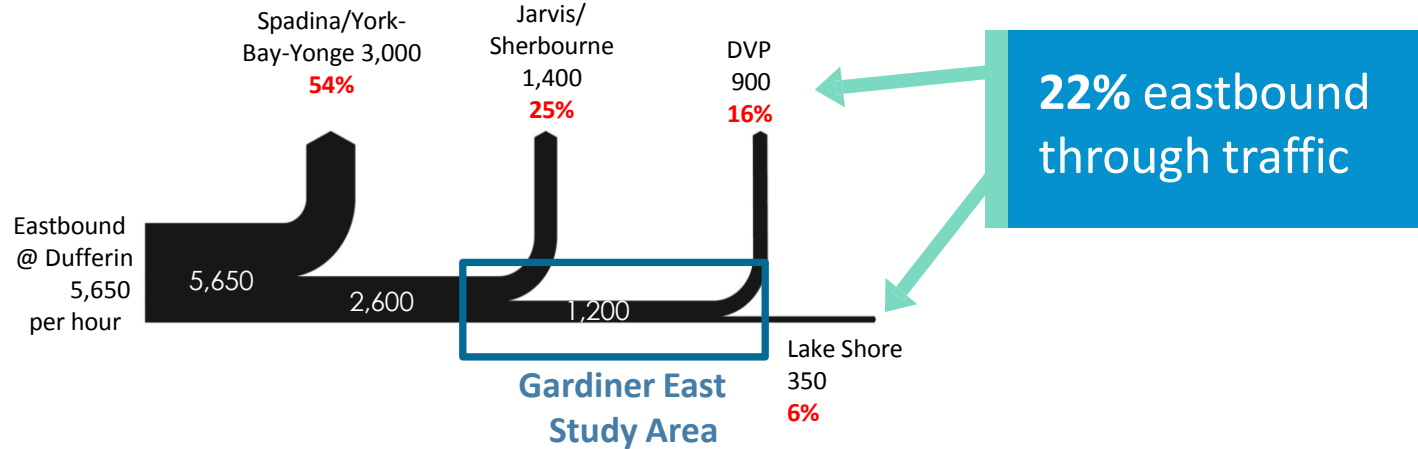
## Controlled Chipping Work



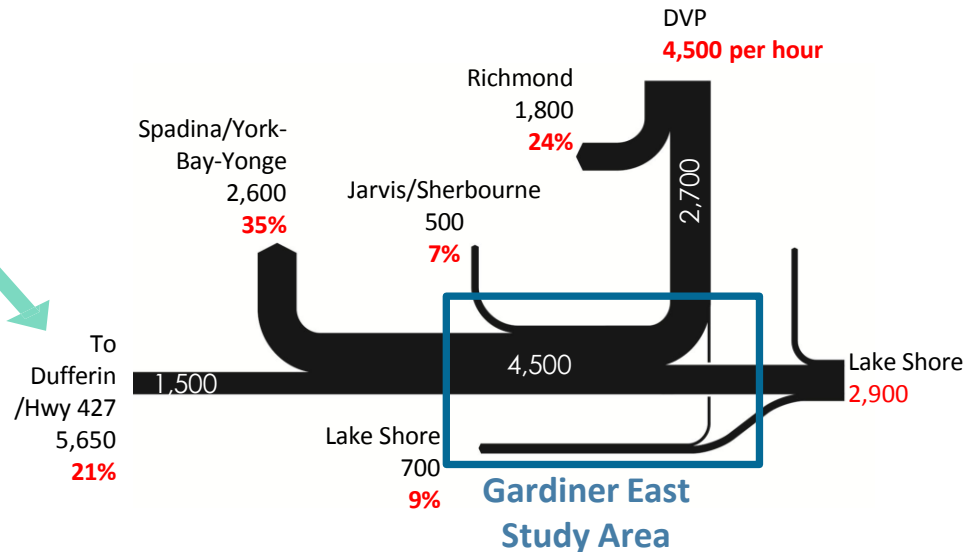
# Gardiner East Role & Function Today

Origin / Destination Study: Downtown vs. Through Traffic in AM Peak

**Eastbound**



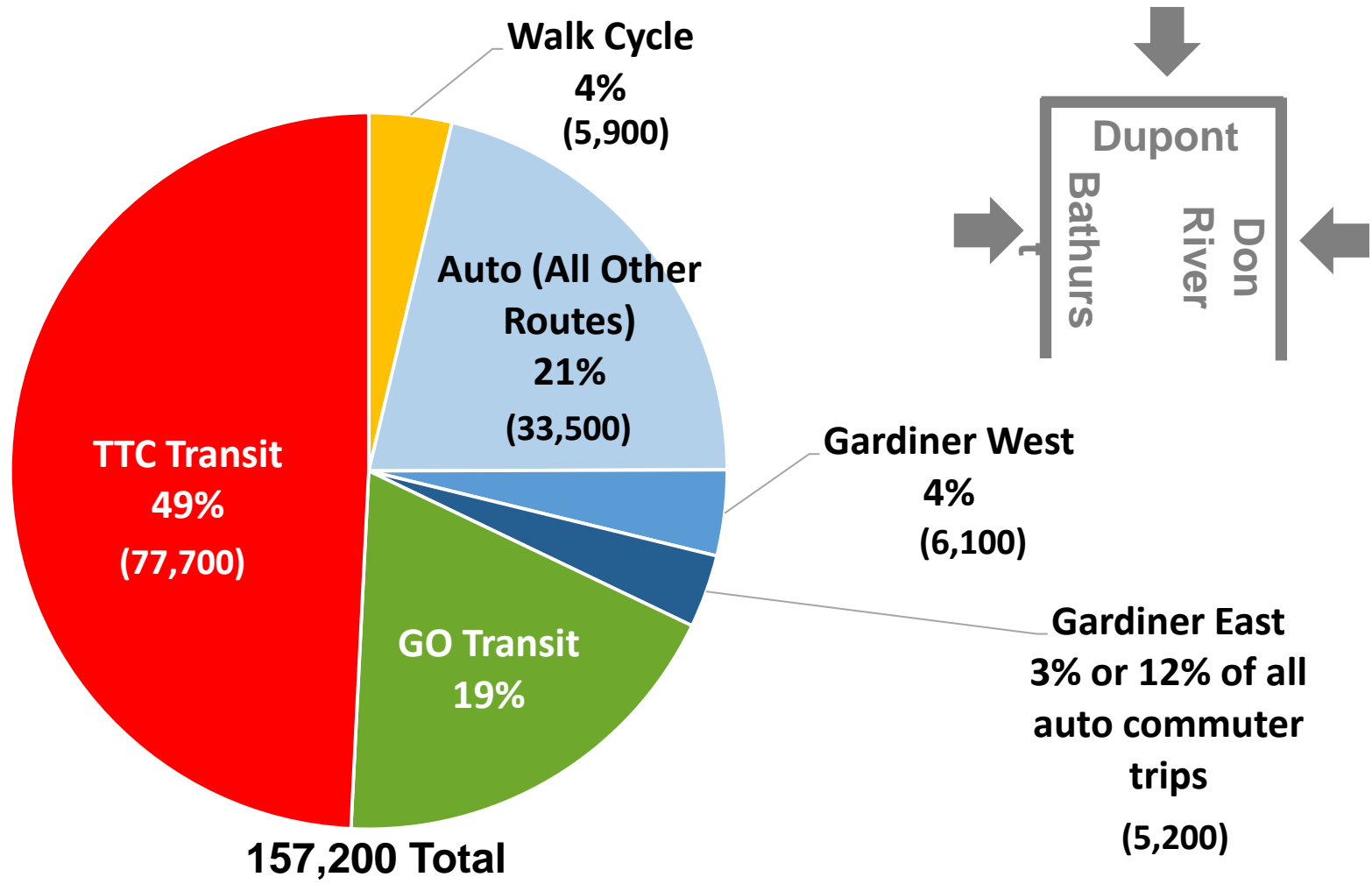
**21% westbound through traffic**



**Westbound**

# How Commuters Get Downtown

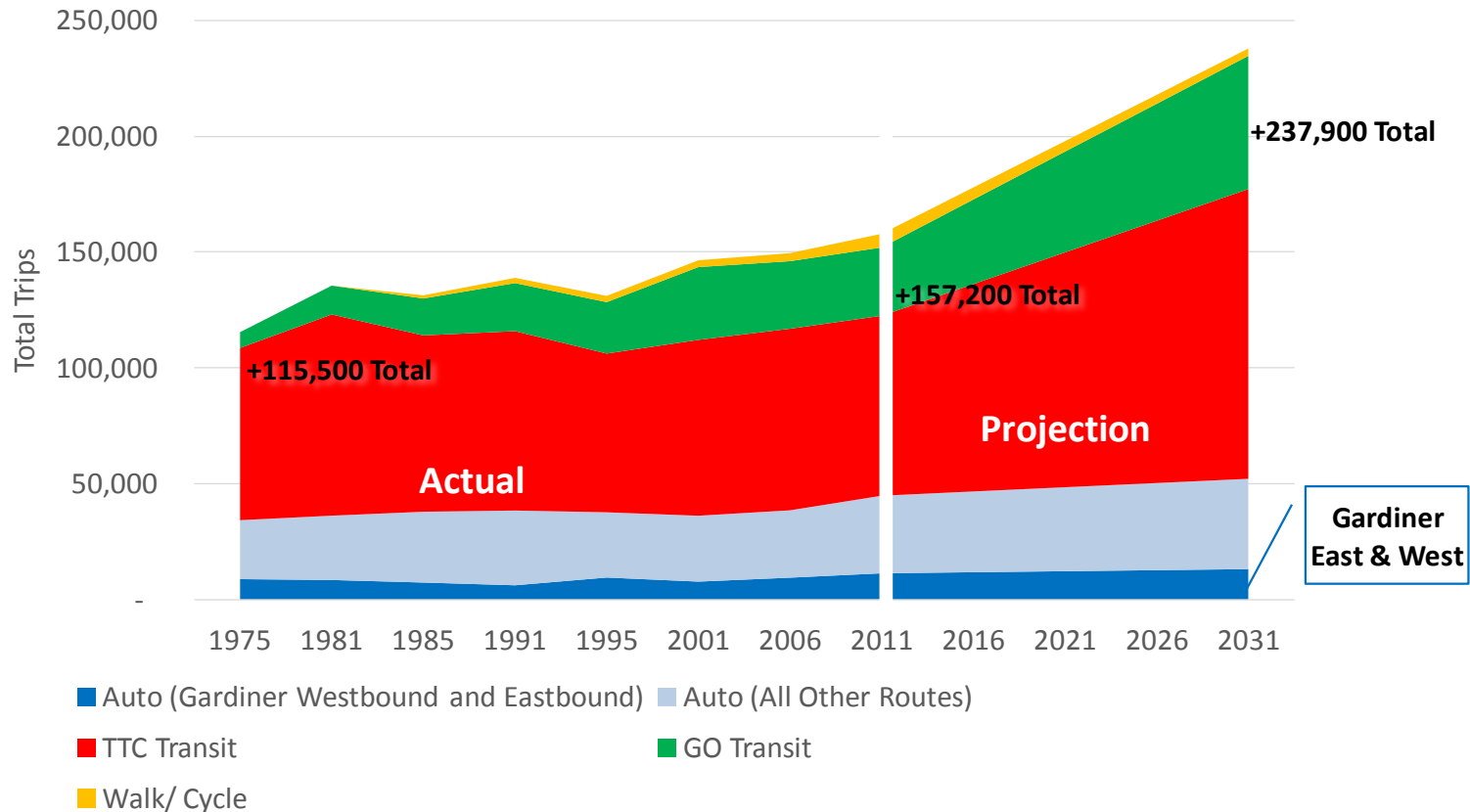
(AM Peak Hour 2011)



Source: AM Peak Hour Inbound to Downtown: Transportation City Cordon Count (2011)  
 Downtown: Defined as Bathurst to Don River and Waterfront to the rail corridor north of Bloor

# Transportation Demand Growth

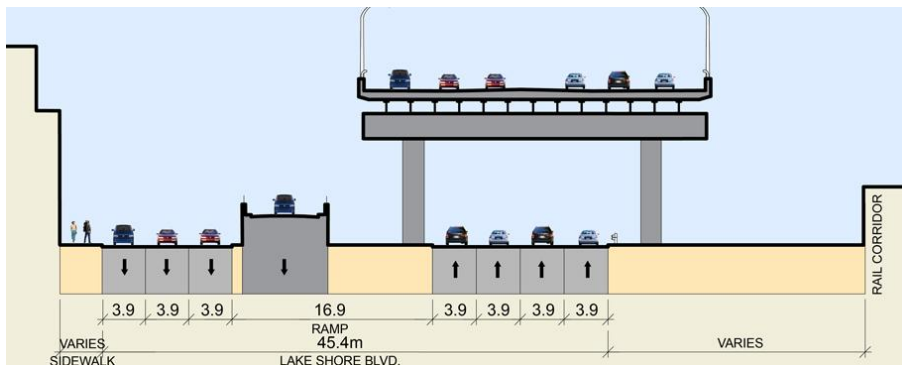
(Morning Peak Hour Inbound to Downtown)



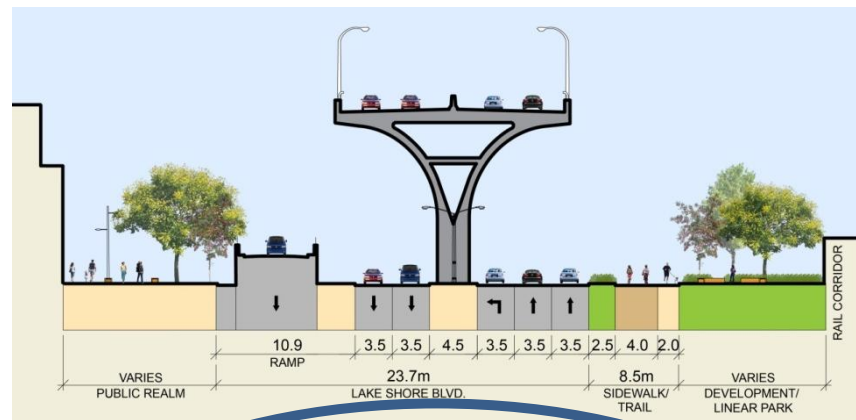
Source: AM Peak Hour Inbound to Downtown: 1) Transportation City Cordon Count (1975-2011); 2) Transportation Model EMME2 Forecast (2011-2031); 3) 2006 Transportation Tomorrow Survey (TTS) for Walk/Cycle Mode and Other Data  
Downtown: Defined as Bathurst to Don River and Waterfront to the rail corridor north of Bloor



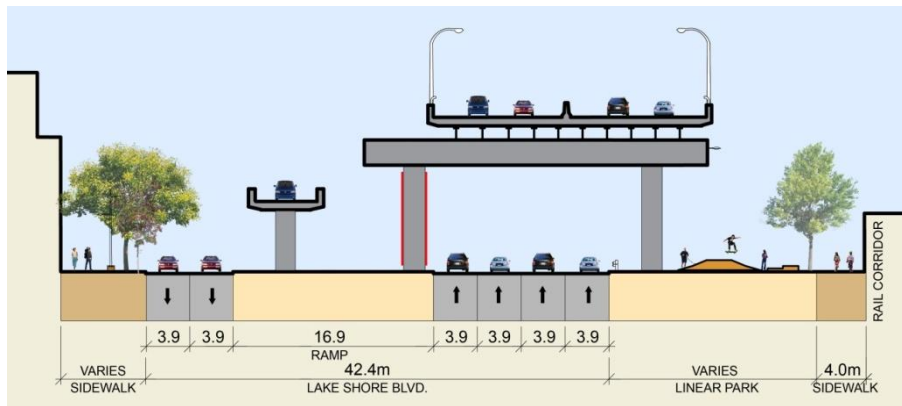
## Maintain



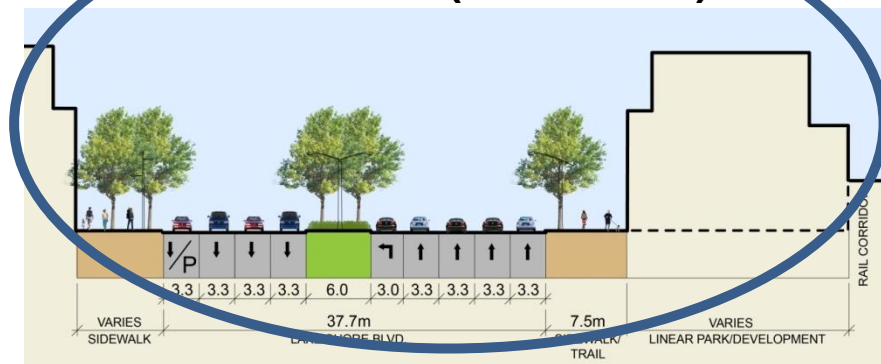
## Replace



## Improve



## Remove (Boulevard)



Previously Recommended Alternative

1. Work with WT and community stakeholders to review the recommended option [Remove] under the EA process to mitigate congestion concerns
2. Prepare an additional option that combines the maintain and replace components to preserve expressway linkage and functionality between the GE and the DVP, and evaluate it against the EA criteria and the following:
  - Transportation functionality
  - Impacts on key economic sectors
  - Cost benefit
  - Future land use considerations
  - Public transit components
  - Environmental impacts
  - Neighbourhood growth and compatibility
3. Report back in 2015

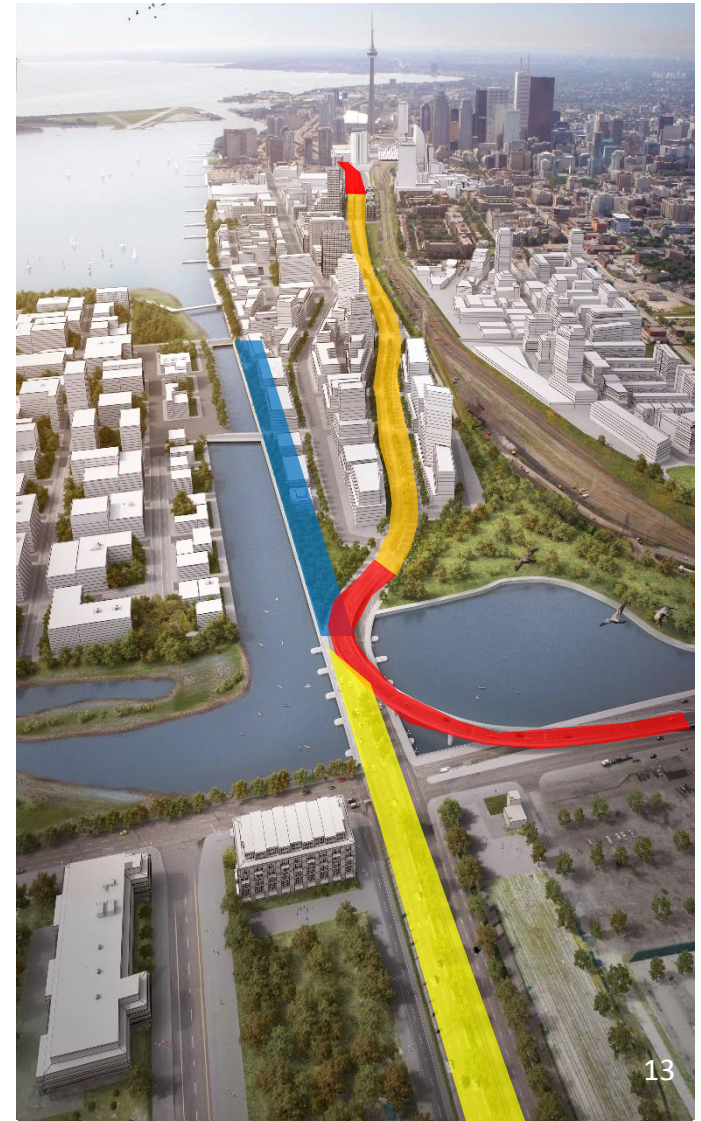
- The evaluation is now focused on Remove & Hybrid as:
  - PWIC directed the team to investigate Remove (Boulevard) and Hybrid
  - The other alternatives were not recommended previously
  - Maintain remains the base case
- The evaluation is considering:
  - Input received from public, stakeholders, & PWIC deputations
  - New employment lands development opportunity (e.g., First Gulf)
  - Goods Movement and Economic Competitiveness Studies
  - EA Terms of Reference

# Remove (Boulevard)

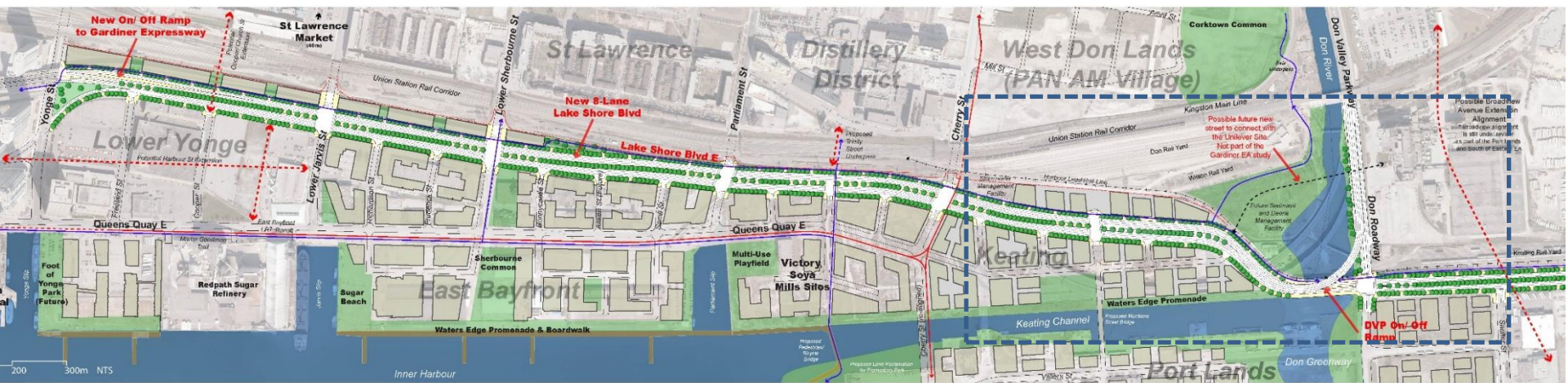


# Remove Description

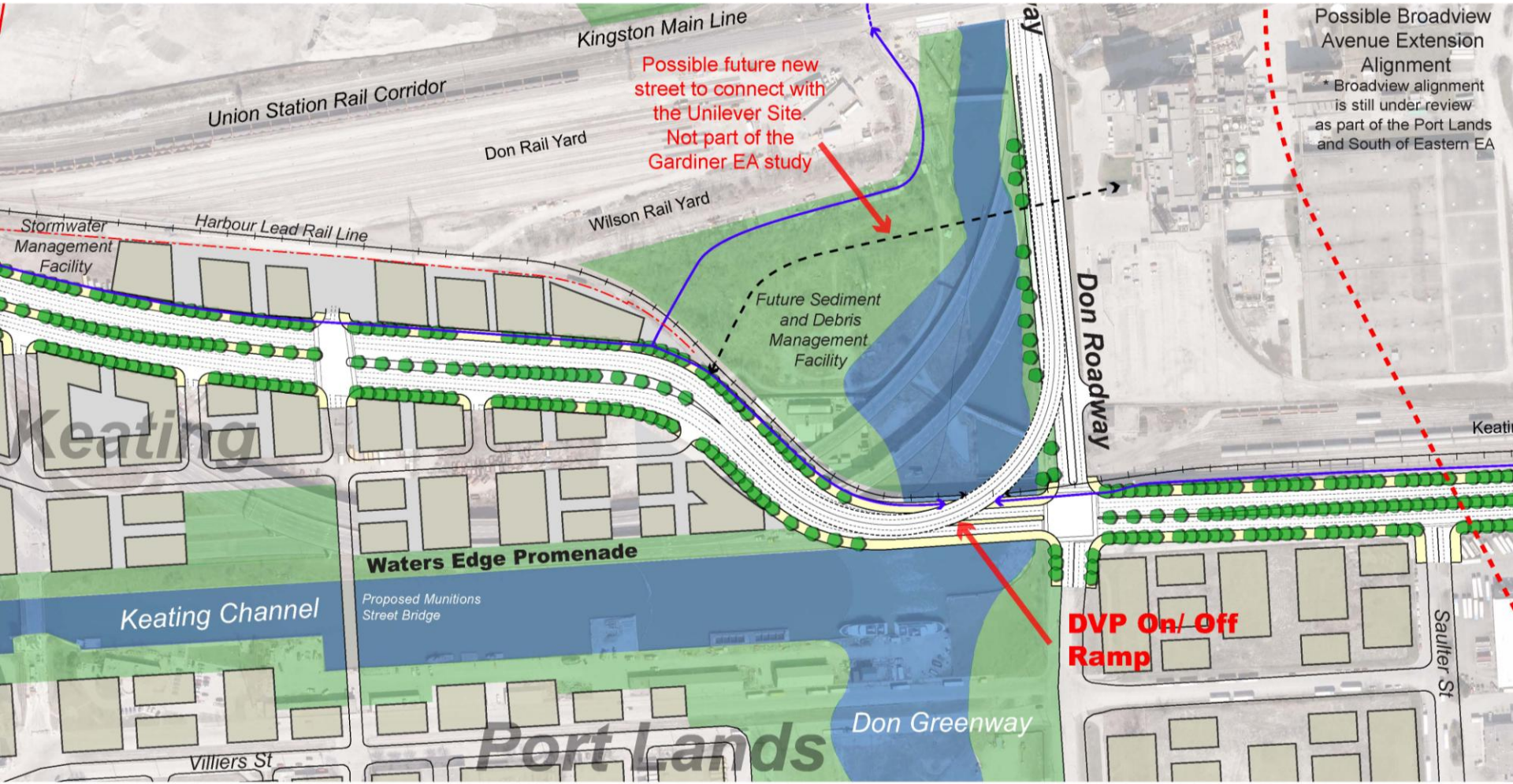
- Removes 1.7 kilometres of elevated expressway and replace with an at-grade, 8-lane tree lined Lake Shore Boulevard
- Removal of about 750 metres (EB lanes) and 850 metres (WB lanes) of the existing Logan on/off ramps
- Removal of all road infrastructure along Keating Channel
- New DVP ramp connection
- New ramps at Jarvis Street



# Remove (Boulevard)



# New LSB – DVP Link: Remove



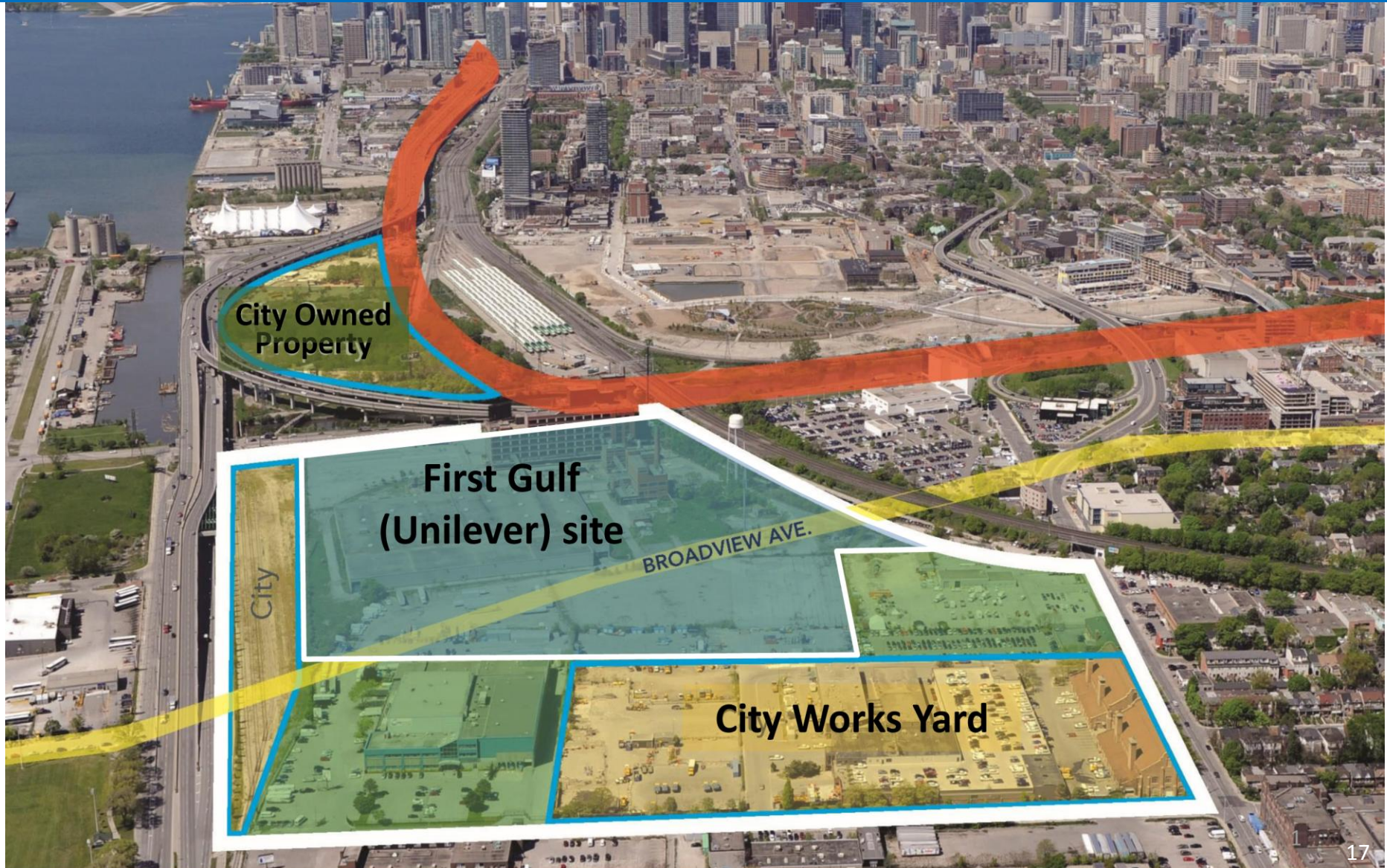
# Reducing Travel Time: Remove

- Remove optimization involved:
  - Adjustments to traffic signal operations/phasing
  - Modifications to Lake Shore Boulevard intersection configurations (e.g., Jarvis SB lane under rail pass becomes a right-turn lane; LSB WB right-turn lane added)
- The optimized Remove alternative reduces the additional travel time to 3-5 minutes from the previously presented 5-10 minutes (AM peak hour)





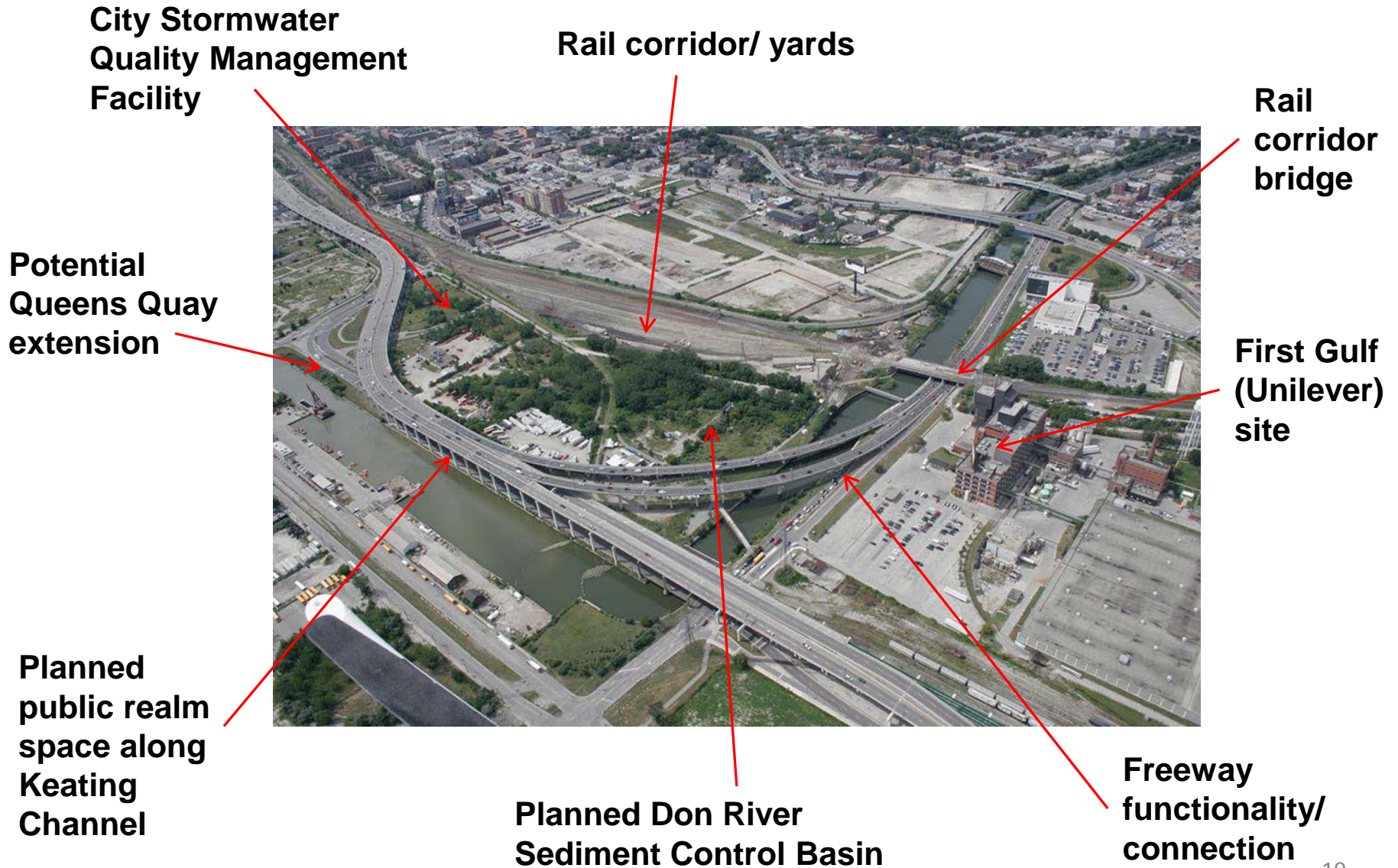
# First Gulf Hybrid Alternative



# Proposed First Gulf Development

- Proposed large-scale office and retail development
- Development area includes land under control of First Gulf (29 acres), as well as City works yards (20 acres) and private land parcels
- Potential employment centre and economic catalyst
- Strategic location close to rail, roads, future LRT and trails
- Opportunity to connect site to Port Lands and South of Eastern

# Study Area Considerations



# Hybrid Evolution

- A new DVP to Gardiner ramp alignment close to rail tracks is not feasible due to:
  - Safe ramp design speed
  - Need to protect for planned projects, such as City Stormwater Management Facility and Sediment Management Area
- It was determined that the current alignment of the Gardiner/DVP ramps best satisfies the above
- Not cost effective to remove and rebuild a new ramp in the same location, so using existing ramps

# Hybrid



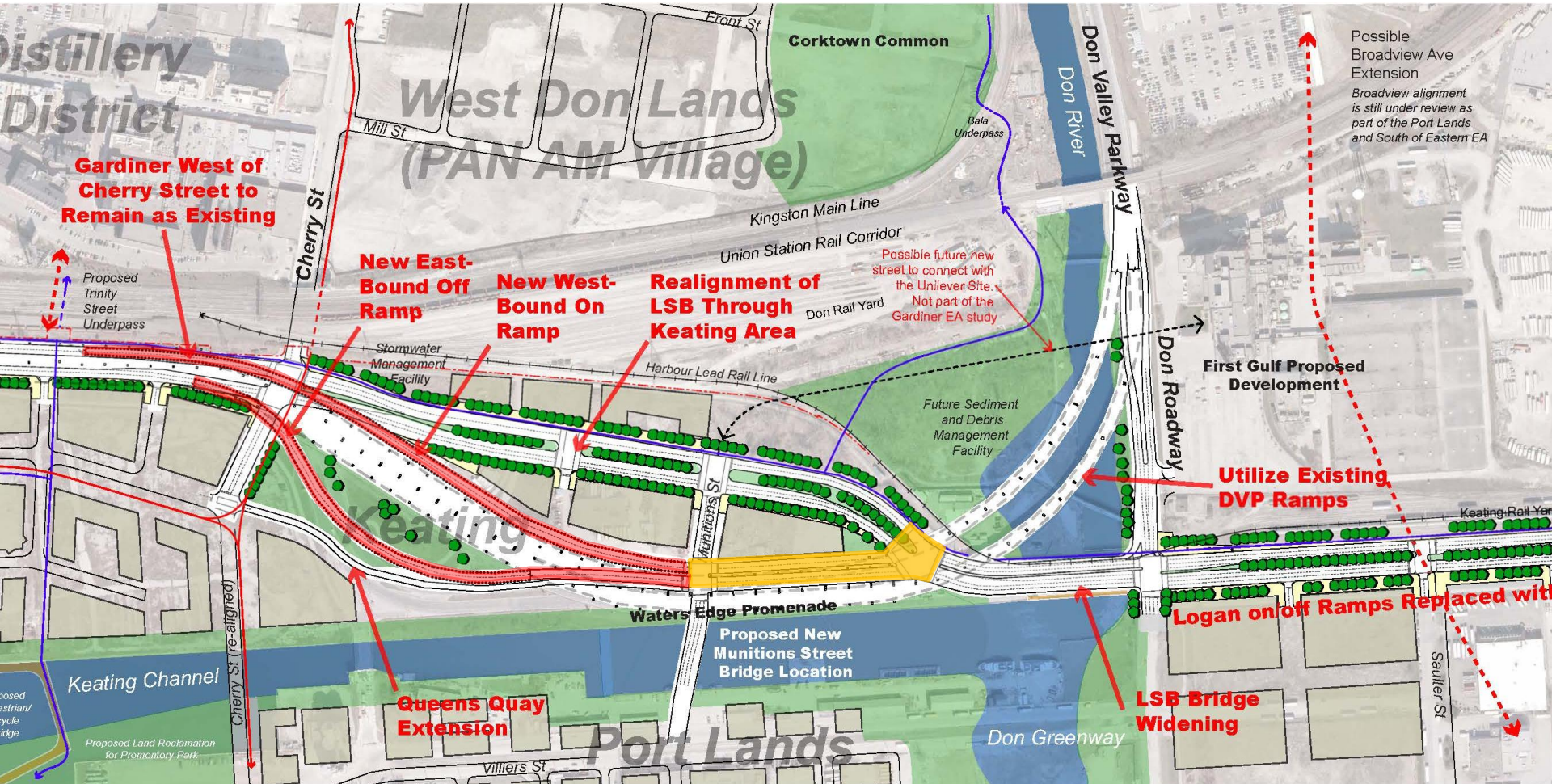
# Hybrid Description

- Re-decks existing Gardiner structure and retains DVP ramps
- Removes about 750 metres (EB lanes) and 850 metres (WB lanes) of the existing Logan on/off ramps
- Adds 2 new ramps (2 lanes each) in the Keating Precinct:
  - about 470 metres new WB on-ramp and
  - about 425 metres new EB off-ramp
- Includes new multi-use pathway & some intersection improvements





# New On/Off Ramps in Keating: Hybrid





# Alternatives Evaluation

Birdseye view looking west over Keating Channel

**Existing**



**Remove**

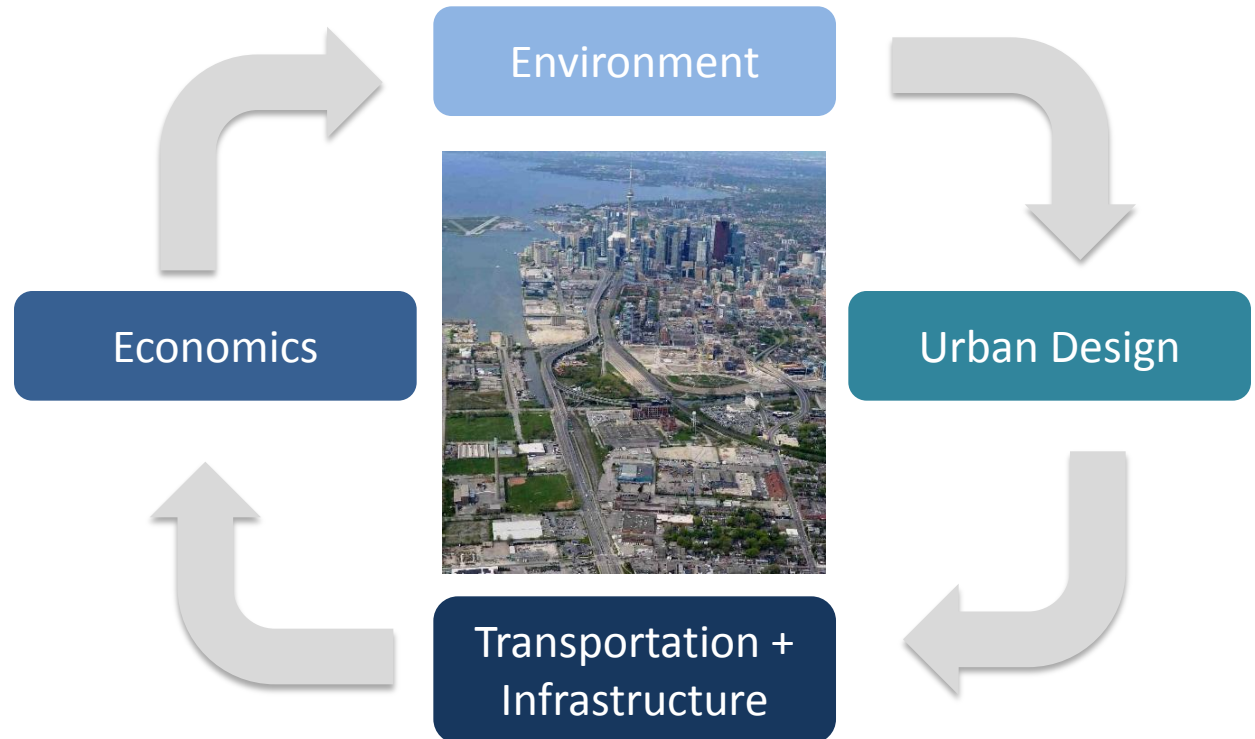


**Hybrid**



# Evaluation Approach

- 4 Study Lenses
  - 16 Criteria Groups (60 Measures)
- Comparison of relative advantages & disadvantages for each criteria group



- All alternatives require new transit to support planned development in study area
- Transportation modeling assumes same new transit for all alternatives
- SmartTrack, currently under study, would provide transit benefit



**Waterfront LRT Extension**



**Relief Line**



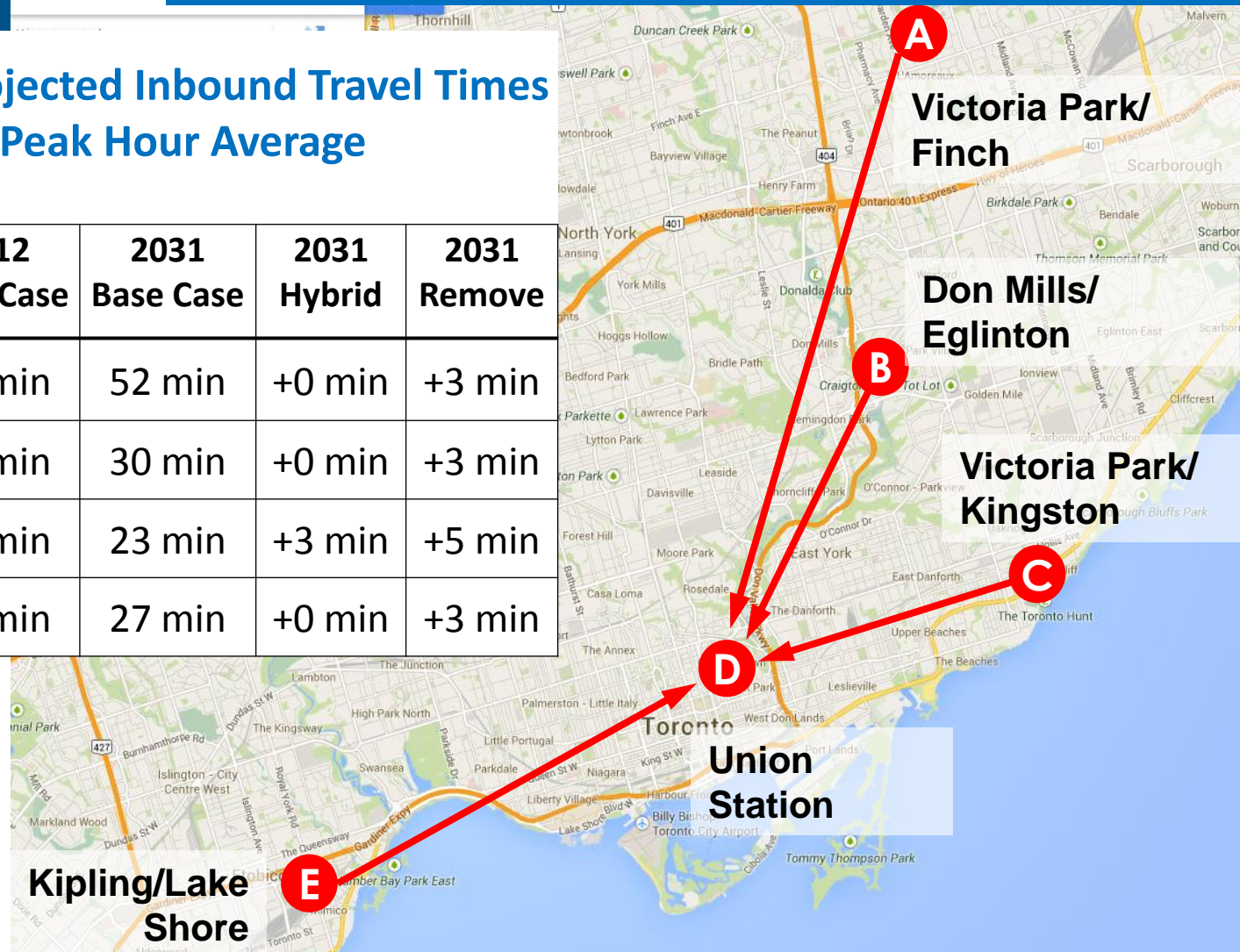
**Broadview LRT Extension**



**GO Service Improvements**

## Current & Projected Inbound Travel Times AM Peak Hour Average

	2012 Base Case	2031 Base Case	2031 Hybrid	2031 Remove
<b>A to D</b>	44 min	52 min	+0 min	+3 min
<b>B to D</b>	24 min	30 min	+0 min	+3 min
<b>C to D</b>	20 min	23 min	+3 min	+5 min
<b>E to D</b>	27 min	27 min	+0 min	+3 min



2031 base case includes an average travel time increase of about five minutes for all alternatives due to growth in traffic volumes

## Concerns of Industrial and Manufacturing, Retail, Courier & Logistics Companies:

- **Road Capacity & Travel Time** – Trucks bear greater cost and impact of increased travel times
- **Reliability** – Concern that a greater travel time buffer will be required
- **Alternate Routes** – More cars on other city roads will impact deliveries
- **Impact of Construction** – Concerns of significant congestion during construction
- **Safety** – More trucks on city streets will mean more accidents

## Study Summary:

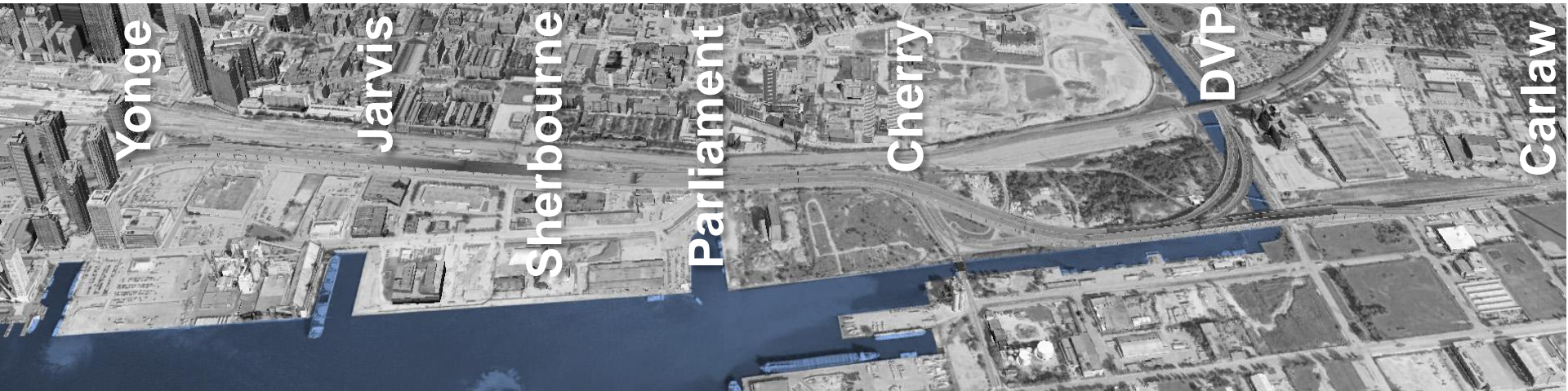
- DVP-Gardiner link viewed by stakeholders as critical for movement of goods in-out of downtown area
- The Port Lands generate a high number of trucks in the City
- Peak AM period is heavy truck travel time – approx. 500 trucks/hour on Gardiner
- 80% of truck trips on Gardiner East either stop or start in the local area
- The nature and extent of impact ultimately depends on the type of goods shipped

## Remove: up to 4 years of road detours

- Pre-build on/off ramps and realign Lake Shore (Cherry and DVP)
- Close and demolish eastbound then westbound Gardiner travel lanes in 2 stages, detour traffic, demolish DVP ramps and Logan ramps
- Prebuild new eastbound/westbound Boulevard lanes and DVP off-ramp
- Reroute traffic and complete Boulevard

## Hybrid: up to 1.5 years of road detours

- Realign Lake Shore as per Keating
- Close 2 Gardiner travel lanes at a time for re-decking activities and LSB at times
- Build new Keating on/off ramps
- Detour LSB traffic east of Don and demolish Logan ramps
- Reroute traffic back
- Complete new Boulevard east of Cherry



# Direct User Costs of Delay: VHT

- Remove is \$37 million higher in annual costs to users vs. Hybrid
- Based on additional vehicle hours travelled (VHT) in the transportation study area during the peak period in 2031
- Does not include off-peak hours

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

## Remove (Boulevard)

- The entire corridor is opened up creating a new attractive streetscape with new public realm
- Significant public realm added
- Consistent corridor character frees up space for ground-floor retail
- Visual barriers largely removed



## Hybrid

- East of Don River, creates new open Boulevard with new public realm
- West of Cherry St. minimal improvements to the attractiveness of the corridor
- For additional cost, aesthetic enhancements could be made under the structures of the elevated expressway





# Compatibility with Neighbourhood Plans

## View Looking North Don River & Keating Channel (Don Mouth Naturalization)



# Keating Channel Impacts





## Environment

### Remove (Boulevard)

- Complements Don Mouth Naturalization
- Greater opportunity for aquatic habitat enhancement in Keating Channel
- Similar noise and regional air emissions
- 12% less greenhouse gas emissions
- Lower traffic volume expected to result in better local air quality
- Higher impact on known archaeological features

### Hybrid

- Complements Don Mouth Naturalization
- Similar noise and regional air emissions
- Higher greenhouse gas emissions
- Slightly higher concentration of local air emissions expected
- Less impact on known archaeological features

- Concerns of Think Tanks, Employers, Building Owners/Managers:
  - Regional transit service is critical
  - Increasing employee reliance on transit, cycling & walking
  - Frustration with travel time and reliability when travelling places within Downtown and the region
  - Length and nature of road construction disruption is a major concern
  - Potential for impact on Downtown competitiveness given the highway accessibility of other GTHA submarkets and their increasing amenities
  - Increased travel times of the Remove alternative might decrease the regional attractiveness of Downtown

## Study Findings:

### 1. **Global Competitiveness:**

- Toronto is ranked as one of the world's most competitive cities; a standing that is unlikely to be affected by either alternative
- There are several criteria considered by third party competitiveness studies – accessibility is an important criterion, particularly access by public transit

### 2. **Regional Economics:**

- To remain competitive, Toronto needs to have a strong transportation network that links the city, including the downtown core, with neighbouring regions
- The increase in vehicle travel time with Remove may impact regional competitiveness.
- Removal of expressways in some other downtowns appears not to have harmed their economic performance

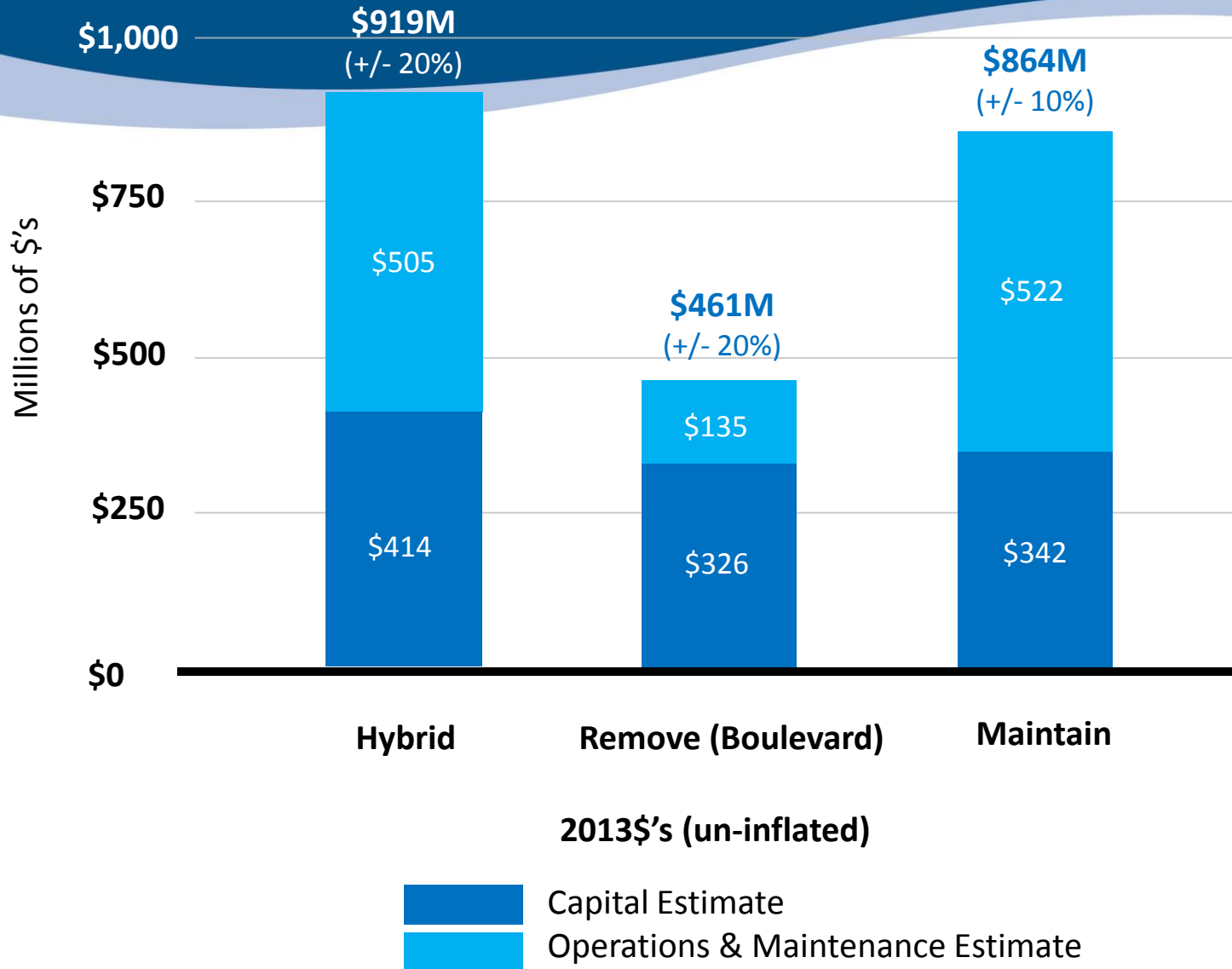
### 3. **Local Economics:**

- Both alternatives complement development plans for Port Lands and South of Eastern developments
- Increased development opportunities in Remove along Lake Shore represents a positive economic impact
- Removing the expressway connection could affect attractiveness of the Port Lands for certain industries

### **Regarding Construction:**

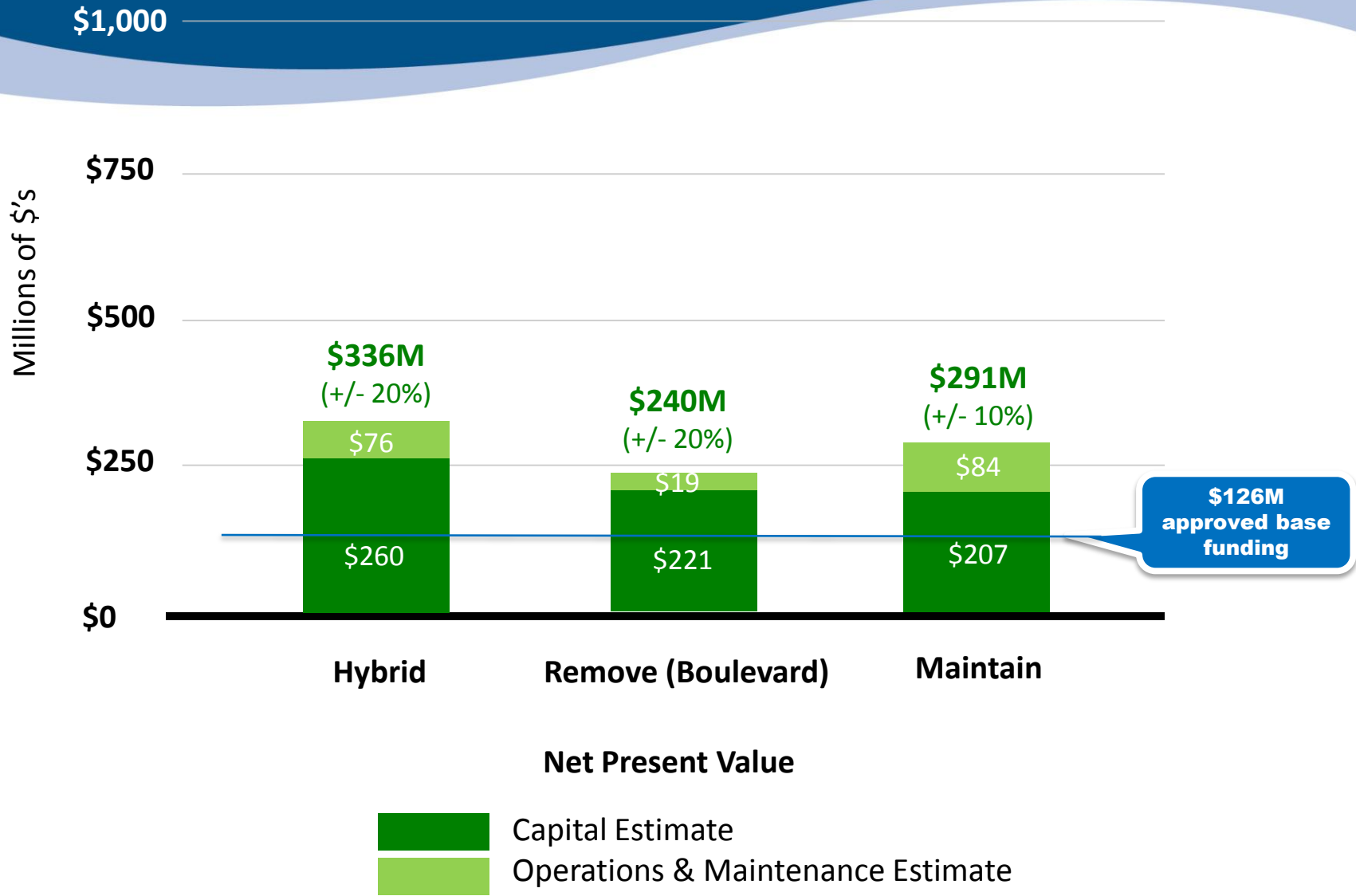
- Construction period for both options is up to six years – this will likely impact commerce
- The Remove alternative will have three to four years of road detours and the Hybrid alternative will have one-and-a-half years of road detours

# Costs<sup>1</sup> (100 Year Lifecycle)



<sup>1</sup> All costs are high level order of magnitude prepared for comparative purposes only.

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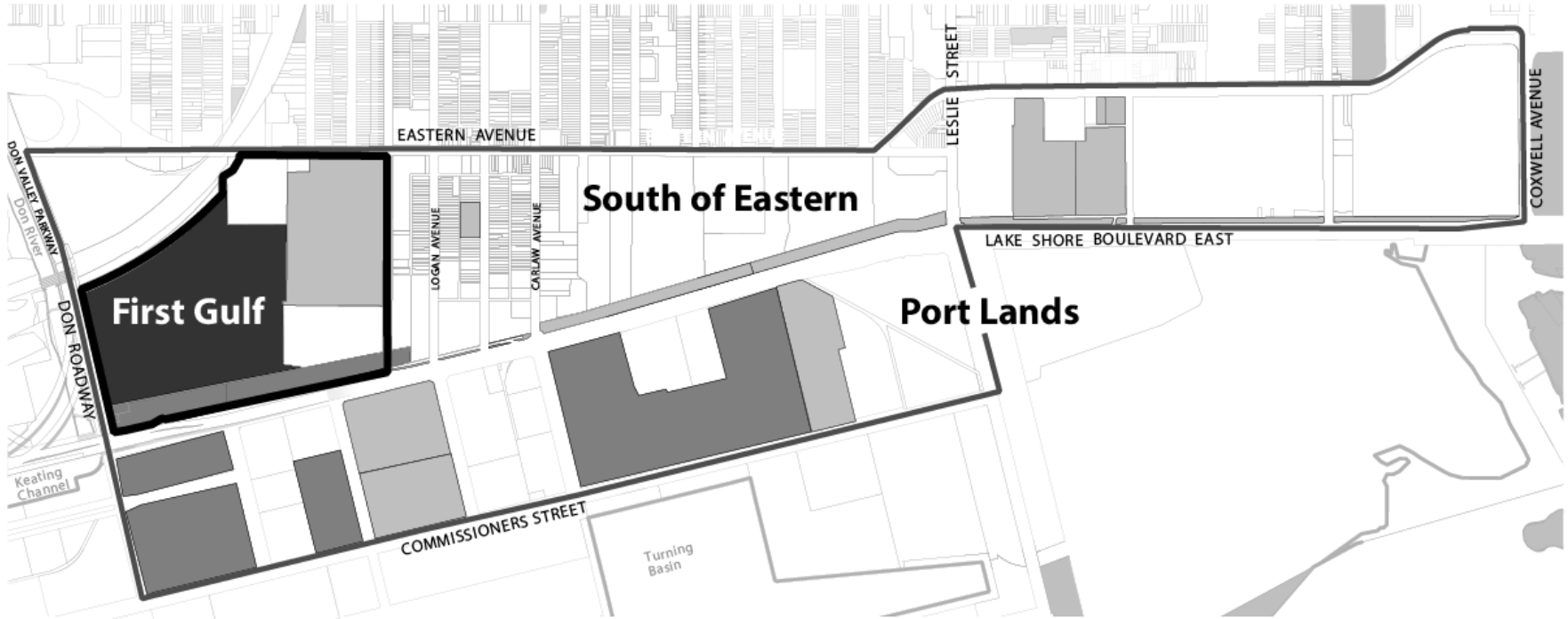
<sup>1</sup> All costs are high level order of magnitude prepared for comparative purposes only.



- Remove would make 12 more acres than Hybrid available for development and job creation west of the Don River – which could generate a potential for \$39M (Hybrid) to \$176M (Remove) of additional public land sales revenue (\$2013)
- East of Don River, additional value uplift for City holdings of an estimated \$100 to \$200M (2013\$), including:
  - First Gulf site (20 acres)
  - Southeast corner of Don Roadway/Lake Shore Boulevard (14 acres)



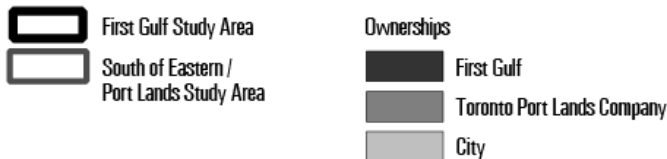
# Value Uplift City Lands



**TORONTO**  
Key Ownership Map

Gardiner Expressway / Lake Shore Boulevard  
East of Don Roadway

File # PWI\_15002



↑  
Not to Scale  
05/05/2015


- Base budget for EA options = approved City budget allocation of \$232M inflated to year of construction (\$126M NPV) to rehabilitate Gardiner East (Jarvis Street to DVP)
- Under Maintain, the bulk of \$164M costs above the current approved 10-year Gardiner East budget are for future needs as follows:
  - Future rehabilitation works in east-west transitional areas between Yonge and Jarvis, and at DVP and Logan ramps
  - Costs for realignment of Lake Shore Boulevard and replacement of Don River Bridge as per Council-approved Keating Channel and Lower Don Lands Plans
- Remove and Hybrid options reflect costs higher than the current budget for rehabilitating the easterly section of the Gardiner
- Initial additional upfront capital cost differential from Maintain base case is \$21M for Remove and \$128M for Hybrid

- However, both Remove and Hybrid will have a net impact substantially less than \$21M or \$128M respectively as this initial investment will generate additional revenue from public land value creation
- In addition, Remove provides lifecycle cost savings of \$51M NPV over Maintain and \$96M NPV over Hybrid over 100 years
- Non-debt funding sources to be examined and reported through 2016 Budget process include:
  - Proceeds from future land sales
  - Proceeds from potential development agreements from benefitting lands
  - Eligible DC funding for growth components included in current background study
  - Potential increased taxable assessment revenue
  - Lifecycle cost savings

# Summary of Key Differences

Study Lens	Hybrid	Remove (Boulevard)
Transportation & Infrastructure	<ul style="list-style-type: none"> <li>• Shorter auto/goods movement travel time in peak hour</li> <li>• Maintains DVP-Gardiner continuous expressway connection</li> <li>• Less construction impact on traffic (approximately 1.5 years of detours)</li> </ul>	<ul style="list-style-type: none"> <li>• Longer auto/goods movement travel time in peak hour</li> <li>• Creates new LSB-DVP ramp connection</li> <li>• Greater construction impact on traffic (approximately 3-4 yrs of detours)</li> </ul>
Urban Design	<ul style="list-style-type: none"> <li>• Complements Port Lands &amp; South of Eastern development plans (First Gulf)</li> <li>• Consumes land for Keating Precinct Plan</li> <li>• Less public realm space created and less quality of place along Lake Shore Blvd.</li> <li>• West of Cherry Street, active street frontage along the corridor is unlikely</li> </ul>	<ul style="list-style-type: none"> <li>• Complements Port Lands &amp; South of Eastern development plans (First Gulf)</li> <li>• More public realm space created and more quality of place along Lake Shore Boulevard</li> <li>• More opportunity for new development in corridor – more development in Keating</li> <li>• Allows for the creation of more active street frontage along the corridor</li> </ul>
Environment	<ul style="list-style-type: none"> <li>• Complements Don Mouth Naturalization</li> <li>• Similar noise and regional air emissions</li> <li>• Slightly higher concentration of local air emissions expected</li> <li>• Higher greenhouse gas emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Complements Don Mouth Naturalization</li> <li>• Similar noise and regional air emissions</li> <li>• 12% less greenhouse gas emissions</li> <li>• Lower traffic volume expected to result in better local air quality</li> </ul>
Economics	<ul style="list-style-type: none"> <li>• No impacts on City global or regional economic competitiveness</li> <li>• Less opportunity for economic development in corridor</li> <li>• \$336 M (2013 NPV)</li> </ul>	<ul style="list-style-type: none"> <li>• No impact on City global competitiveness but could result in regional impacts</li> <li>• More opportunity for economic development in corridor</li> <li>• \$240 M (2013 NPV)</li> </ul>

# Next Steps



**You are  
here**

- City staff report & Consultant's EA Evaluation Addendum
- May 13 PWIC and June 10 City Council
- Design options for preferred alternative by 2015 year-end:
  - Public realm and functional aspects
  - Detailed construction implementation
- Mitigation opportunities for preferred alternative:
  - Intelligent Transportation Systems (ITS)
  - Corridor design improvements
  - Off-site improvements
  - Opportunities to accelerate construction and reduce user impacts
- Submit EA report to MOECC by winter 2016
- EA approval decision by MOECC by year-end 2016
- Detailed design early 2018; tendering end of 2018
- Earliest start of implementation 2019

# Report Recommendations

1. Select a Gardiner East EA preferred EA alternative:
  - Remove on basis of greater emphasis on urban design, environment and economics
  - Hybrid on basis of greater emphasis on transportation & infrastructure
2. Report to TEY Community Council on Keating Precinct Plan
3. Report to Executive Committee on incorporating preferred EA alternative into Strategic Rehabilitation Plan
4. Evaluate alternative designs for preferred EA solution, including further mitigation opportunities and consultation
5. Complete Gardiner East EA and submit to MOECC
6. Report through 2016 Budget on implementation funding for preferred EA solution, with preferred design and refined costs
7. Adjust Waterfront Revitalization Initiative budget (Transportation Initiatives sub-project) in 2015 to increase EA budget for design by \$780,000, with \$0 net change to 2015 Capital Budget