

Highway 400 Improvements from 1 km South of Highway  
89 to the Junction of Highway 11

## **Appendix E - Copies of PIC Displays**

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**Public Information Centre #1**  
**November 2014**

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**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
Class Environmental Assessment and Preliminary Design Study Update

**Highway 400 Improvements from  
1 km South of Highway 89 to the Junction at Highway 11**  
City of Barrie, Town of Innisfil, Township of Springwater  
County of Simcoe

**Class Environmental Assessment & Preliminary Design Study Update**  
W.O. #06-20016

November 25, 2014

**Welcome to  
Public Information Centre #1**

*Please Sign In*

Members of the Project Team are available to discuss any questions that you may have regarding this project.

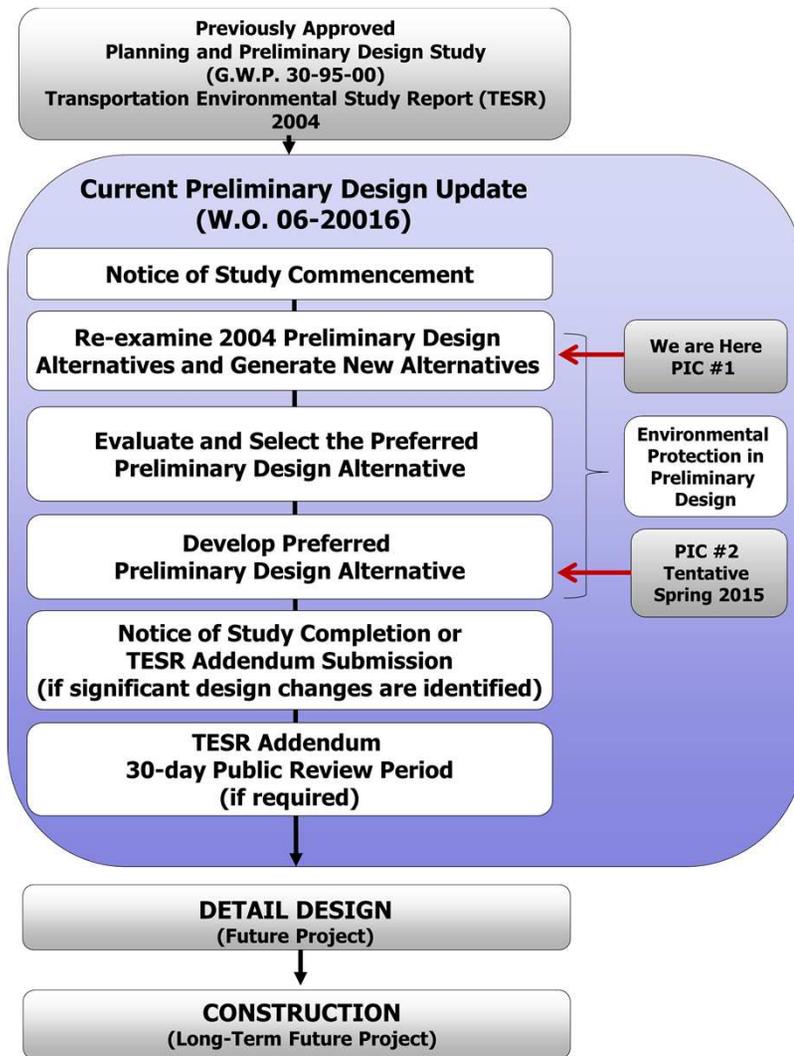
Visit us at: <http://highway400improvements89to11.ca>



## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

# Study Process and Purpose of this Public Information Centre



- The purpose of this study is to confirm the long-term capacity and operational needs so that rehabilitation investments are made with knowledge of the long-term vision for the corridor.
- The purpose of this Public Information Centre is to present and receive input on the following:
  - Study process
  - Background
  - Need for Highway Improvements
  - Alternatives Evaluation Process and Criteria
  - Highway and Interchange Alternatives
  - Existing Conditions
- Members of the Project Team are available to discuss any questions that you may have regarding this project.
- We also encourage you to complete a comment sheet, take one with you to send in later, or email us at [projectteam@highway400improvements89to11.com](mailto:projectteam@highway400improvements89to11.com). We would greatly appreciate receiving your comments by **December 31, 2014.**



## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

# Background, Study Area & Scope

## Background

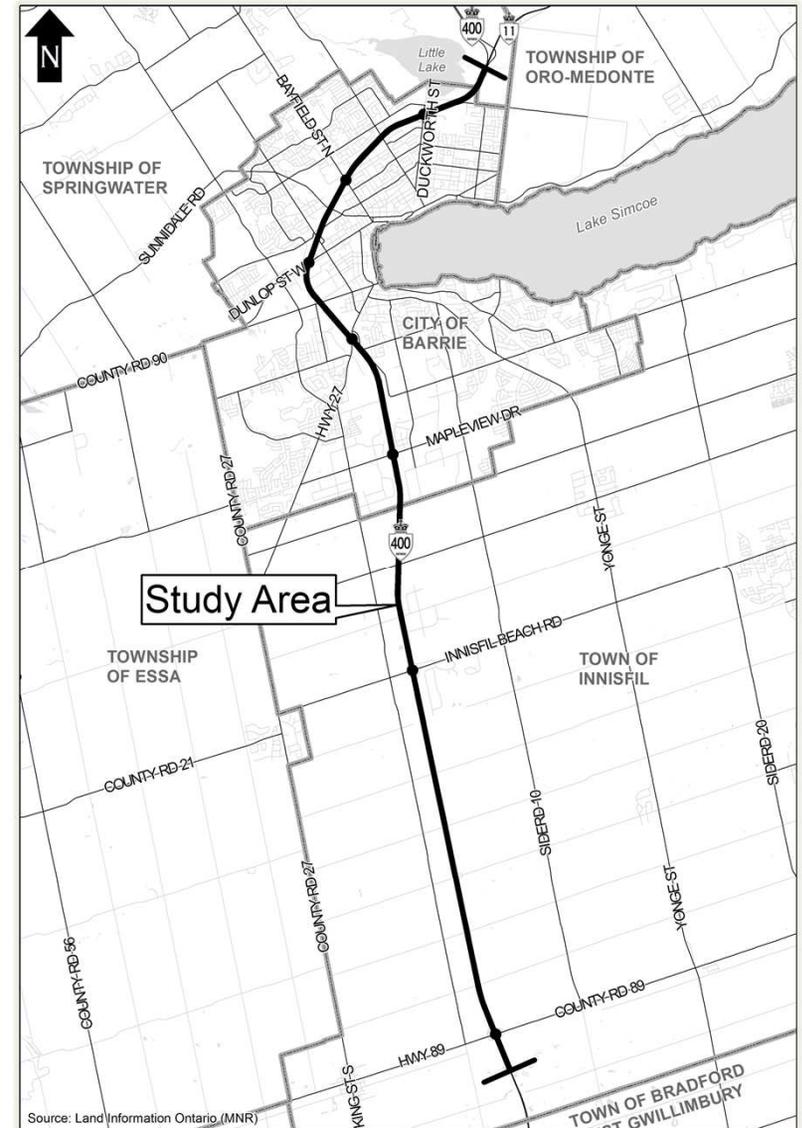
- In 2001 the Ministry of Transportation (MTO) undertook a Planning and Preliminary Design Study to identify required improvements and widening requirements along 30 km of *Highway 400 from 1 km south of Highway 89 to the Junction at Highway 11.*

## Study Area

- The study limits are located within the Town of Innisfil, City of Barrie, Township of Springwater, in the County of Simcoe.

## Scope

- This 2014 update study will revisit the approved plan outlined in the 2004 Transportation Environmental Study Report (TESR) and update it accordingly to address future (2031) traffic projections, capacity and safety needs.
- The Project Team will confirm the long-term capacity and operational needs so that rehabilitation investments are made with knowledge of the long-term vision for the corridor.





**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Study Timeline

TASKS	2014				2015					
	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	
Study Commencement Notification										
Site Visits / Field Investigations	[Green bar]									
Examine Highway 400 Corridor Needs		[Green bar]								
Re-examine 2004 Recommendations, Generate & Assess Alternative(s)			[Green bar]							
Evaluate Alternatives & Select a Preferred Alternative(s)			[Green bar]							
Public Information Center #1										
Develop Preferred Alternative(s)					[Green bar]					
Develop Mitigation Strategies						[Green bar]				
Public Information Center #2										
Prepare TESR Addendum (if required)					[Green bar]					
30-Day TESR Addendum Public Review (if required)										

**We Are Here**





# Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

## Class Environmental Assessment and Preliminary Design Study Update

# Existing & Future Traffic Conditions: Need for Highway Improvements

## Previous 2004 Traffic Analysis

- The previous 2004 TESR documented the Highway 400 capacity and operational requirements to address traffic demands for the **2011** planning horizon.
- Based on the previous traffic analysis for this corridor, Highway 400 mainline segments mostly operated at acceptable levels of service (LOS) except for the sections of Highway 400 from Essa Road to Dunlop Street and from Dunlop Street to Bayfield Street.

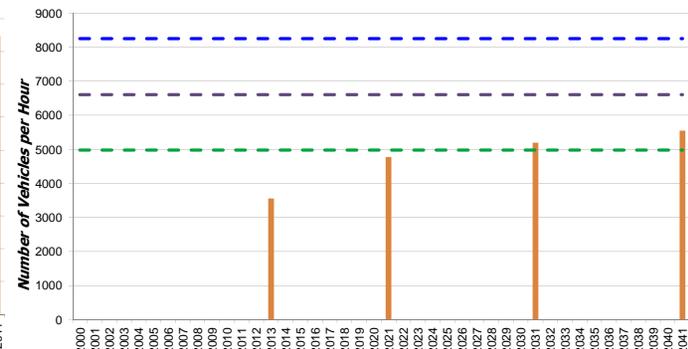
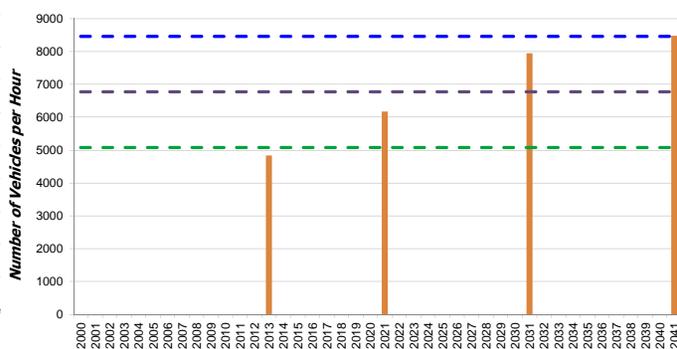
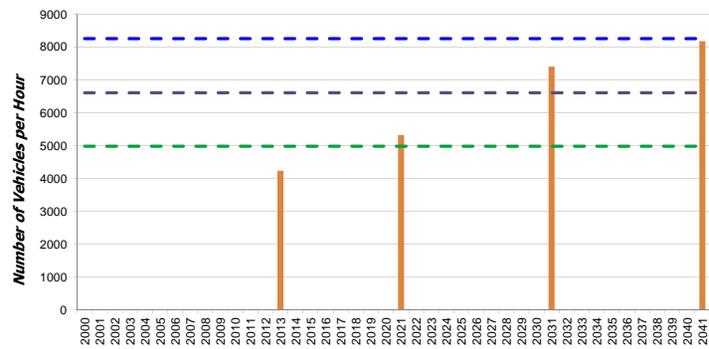
## Current Traffic Analysis

- For the current study, the planning horizon for addressing Highway 400 widening and operational improvements is **2031**.
- Since 2004 there have been changes in provincial legislation (i.e. Growth Plan for the Greater Golden Horseshoe, 2006 / 2013) and additional development constructed (and proposed) along the Highway 400 corridor.
- The current traffic projections indicate that the Highway 400 corridor needs to be widened to 10 lanes throughout the majority of the study limits by 2031.

**Highway 89 to Mapleview Drive  
Capacity 6/8/10-Lane Cross-Section**

**Mapleview Drive to Duckworth Street  
Capacity 6/8/10-Lane Cross-Section**

**Duckworth Street to Highway 11  
Capacity 6/8/10-Lane Cross-Section**



■ Peak Hour   
 — 6 Lane   
 — 8 Lane   
 — 10 Lane

■ Peak Hour   
 — 6 Lane   
 — 8 Lane   
 — 10 Lane

■ Peak Hour   
 — 6 Lane   
 — 8 Lane   
 — 10 Lane



**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

## Alternatives Evaluation Process & Criteria

➤ Alternatives have been developed and will be evaluated for the highway widening as well as the following interchanges:

- Highway 89
- Innisfil Beach Road
- Mapleview Drive
- Essa Road
- Dunlop Street
- Bayfield Street

\* Note: Improvements to the Duckworth Street Interchange are part of a separate project that is being undertaken by the City of Barrie (currently under construction)

➤ A Reasoned Argument (trade-off) method of evaluation will be used to identify the advantages and disadvantages in order to select a preferred alternative(s).

➤ The criteria outlined in the table will be used to evaluate alternatives.



Evaluation Component	Criteria
<b>Natural Environment</b>	<ul style="list-style-type: none"> <li>▪ Terrestrial Ecosystems (vegetation, wildlife etc.)</li> <li>▪ Fish and Fish Habitat</li> <li>▪ Wetlands</li> <li>▪ Designated Natural Areas</li> <li>▪ Groundwater</li> <li>▪ Species at Risk</li> </ul>
<b>Socio-Economic Environment</b>	<ul style="list-style-type: none"> <li>▪ Community Effects (residential, commercial, institutional property impacts etc.)</li> <li>▪ Noise</li> <li>▪ Agricultural</li> <li>▪ Contamination and Waste</li> <li>▪ Future Planned Land Use</li> <li>▪ Aesthetics</li> <li>▪ Snowdrift Assessment / Prevention</li> </ul>
<b>Cultural Environment</b>	<ul style="list-style-type: none"> <li>▪ Archeological Resources</li> <li>▪ Built Heritage and Cultural Landscapes</li> </ul>
<b>Transportation &amp; Engineering</b>	<ul style="list-style-type: none"> <li>▪ Traffic Operations &amp; Safety</li> <li>▪ Operations &amp; Maintenance</li> <li>▪ Drainage</li> <li>▪ Staging</li> <li>▪ Cost</li> </ul>

***Please provide your suggestions regarding the criteria that should be considered in the evaluation process!***



**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

## Overview – Highway 400 Approved Plan (TESR 2004)

The study area in the 2004 approved study was divided into the following three sections for the purpose of evaluating highway widening alternatives:

Section of the Highway 400 Study Area	2004 Approved Plan
<b>Highway 89 to Essa Road</b>	<ul style="list-style-type: none"> <li>• Widen to the west from 6 to 8 lanes (with property protection for 10 lanes and HOV lanes).</li> <li>• Alignment shift to the west.</li> </ul>
<b>Essa Road to Bayfield Street</b>	<ul style="list-style-type: none"> <li>• Widen about the centreline from 6 to 10 lanes.</li> </ul>
<b>Bayfield Street to the Junction at Highway 11</b>	<ul style="list-style-type: none"> <li>• Widen about the existing centreline from 6 to 8 lanes.</li> </ul>



*The sections of Highway 400 have been modified slightly for the present study to consider and accommodate for the amount of new development through the City of Barrie since the 2004 approved plan and the current traffic projections.*

***The following display outlines the alternatives being considered as part of this current study.***



## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

# Overview – Current Highway 400 Widening Alternatives

The study area is divided into the following three sections for the purpose of evaluating highway widening alternatives:

Section of the Highway 400 Study Area	Examination of Alternatives in this Study	
<b>A</b> Highway 89 to Mapleview Drive	<p><b>Widening about the Centreline:</b> ❌</p> <ul style="list-style-type: none"> <li>Additional lanes would be constructed to the outside on both sides of the highway.</li> <li>This alternative would require the realignment of service roads on the east side of Highway 400.</li> <li>The median barrier will be upgraded to MTO standards.</li> </ul> <p><b>Widening to the West:</b> ✅</p> <ul style="list-style-type: none"> <li>The centerline would be shifted to the west; therefore, the additional lanes would be constructed to the outside on the west side of Highway 400. As with <i>Widening about the Centreline</i>, the median barrier will be upgraded to MTO standards.</li> <li>In several areas along this section of Highway 400 MTO owns property to accommodate some of the widening to the west without requiring additional property.</li> </ul> <p><b>Widening to the East:</b> ❌</p> <ul style="list-style-type: none"> <li>This alternative was screened out from further consideration due to significant impacts to properties on the east side of Highway 400.</li> </ul> <p>Based on the existing conditions and the evaluation of alternatives previously undertaken, it has been determined that this section of the Highway 400 corridor has not changed substantially on the west side of Highway 400 since 2004. The rationale for the selection of <i>Widening to the West</i> is still valid for this section of Highway 400 as outlined in the 2004 TESR.</p> <p style="text-align: center;"><b><i>Widening to the West is the preferred alternative for Highway 89 to Mapleview Drive.</i></b></p>	Same recommendation as 2004 approved plan
<b>B</b> Mapleview Drive to Duckworth Street	<p>Alternatives to be carried forward for further assessment from Mapleview Drive to Duckworth Street include:</p> <ul style="list-style-type: none"> <li>Widen about the centreline from six lanes to 10 lanes (5 General Purpose Lanes (GPLs) in each direction)</li> <li>Widen about the centreline from six lanes to 10 lanes (4 General Purpose Lanes (GPLs) with 1 HOV lane in each direction)</li> <li>Widen about the centreline from six lanes to 10 lanes (2 Express Lanes and 3 Collector Lanes in each direction)</li> </ul> <p style="text-align: center;"><b><i>Details can be found on the following display.</i></b></p>	New alternatives being considered
<b>C</b> Duckworth Street to the Junction at Highway 11	<p>The preferred alternative for this section of the Highway 400 corridor will be identified once the Recommended Plan for <b>Section B</b> is determined. The design of this section will connect the Section B recommended design to the Junction at Highway 11 at the north end.</p>	New alternatives being considered

***Details of the evaluation of alternatives and selection of the Preferred Alternatives will be presented at PIC #2***



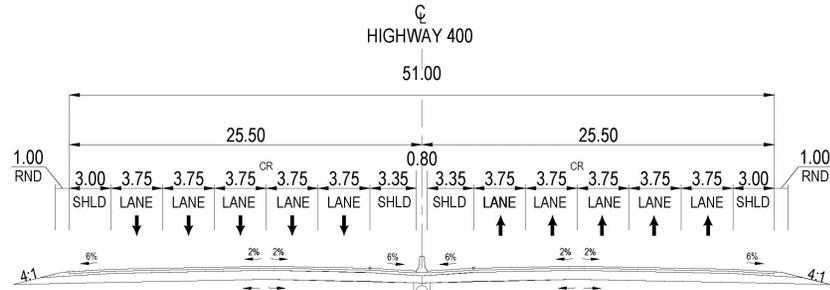
**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Widening Alternatives

## Section B: Maplevue Drive to Duckworth Street

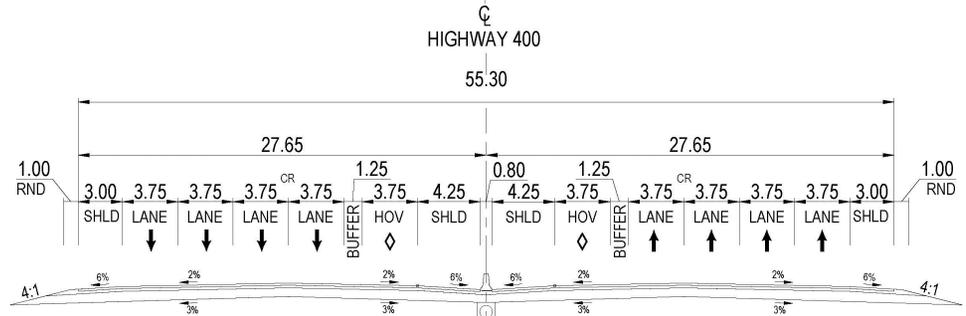
### Alternative 1

Widen about the centreline from 6 to 10 lanes (5 General Purpose Lanes (GPLs) in each direction)



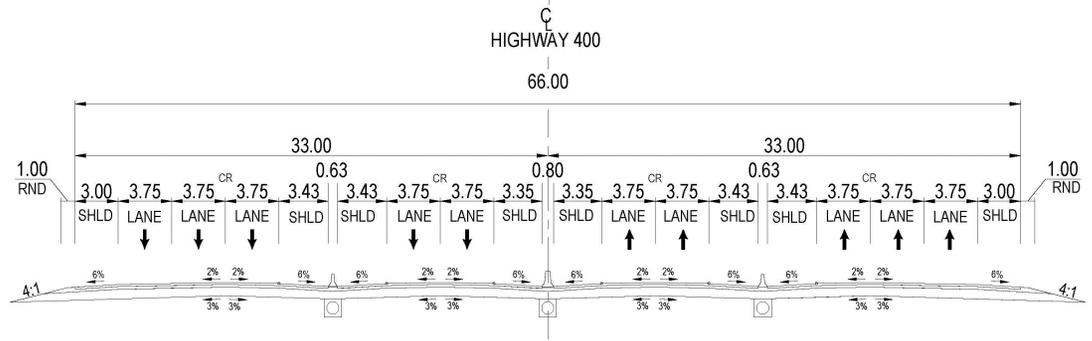
### Alternative 2

Widen about the centreline from 6 to 10 lanes (4 General Purpose Lanes (GPLs) with 1 HOV lane in each direction)



### Alternative 3

Widen about the centreline from 6 lanes to 10 lanes (2 Express Lanes and 3 Collector Lanes in each direction)



Please see the Roll Plan for details of the alternatives under consideration

Details of the evaluation of alternatives and selection of the Preferred Alternatives will be presented at PIC #2



## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

# Overview of Interchange Alternatives

The TESR (2004) identified the following improvements to this section of the Highway 400 corridor:

### Highway 400 Interchange Alternatives:

- Highway 89 – Parclo A Interchange **(Maintain the 2004 study recommendations)**
- Innisfil Beach Road – Parclo A Interchange **(Maintain the 2004 study recommendations)**
- Molson Park Drive (now Mapleview Drive) – Operational Improvements **(2 alternatives are being considered)**
- Essa Road – Parclo A Interchange **(2 alternatives are being considered)**
- Dunlop Street – Parclo B Interchange **(2 alternatives are being considered)**
- Bayfield Street – Parclo A (SB) / Diamond (NB) Interchange **(3 alternatives are being considered)**

*Please note that improvements to the Duckworth Street Interchange are part of a separate project that is being undertaken by the City of Barrie (currently in construction)*

### Commuter Parking Lots:

- Commuter parking lot improvements were proposed in the 2004 study at the Highway 89 interchange and the Essa Road interchange.
- Configurations of commuter parking lots will be determined once a preferred alternative is selected. Recommendations will be presented at PIC #2.

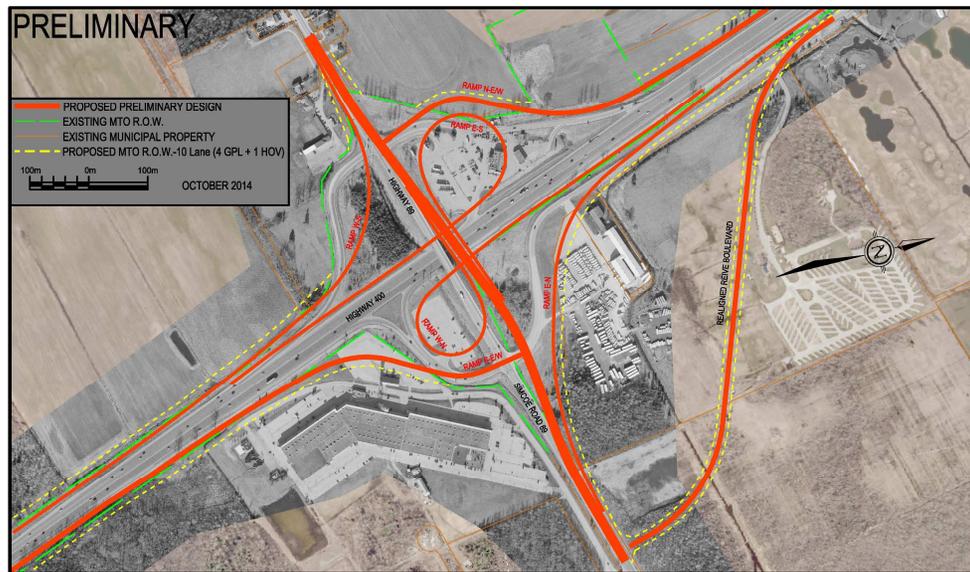


**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvements

## Highway 89 Interchange

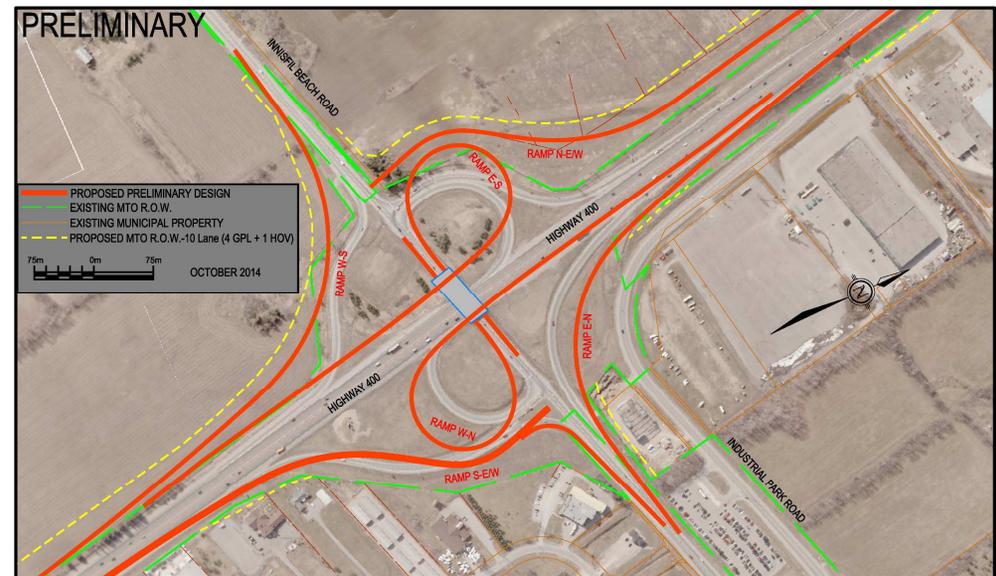
### Parcel A4



*Maintain the Highway 89 Interchange and the Innisfil Beach Road Interchange from the 2004 Approved Plan*

## Innisfil Beach Road Interchange

### Parcel A4



*Refinements to the realignment of Reive Blvd. are being examined to minimize property impacts*

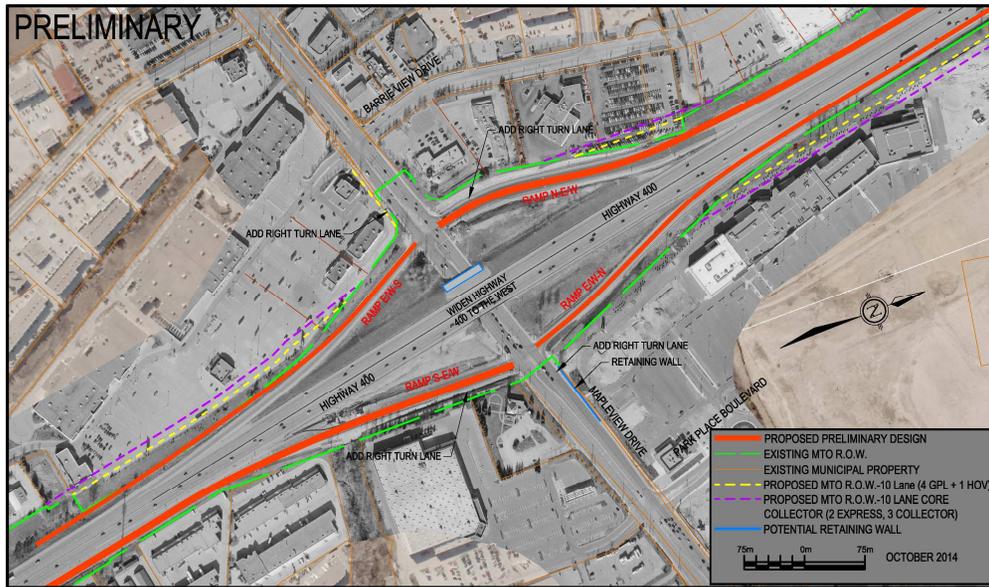


**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvement Alternatives

The following two alternatives are being considered for the **Mapleview Drive Interchange**:

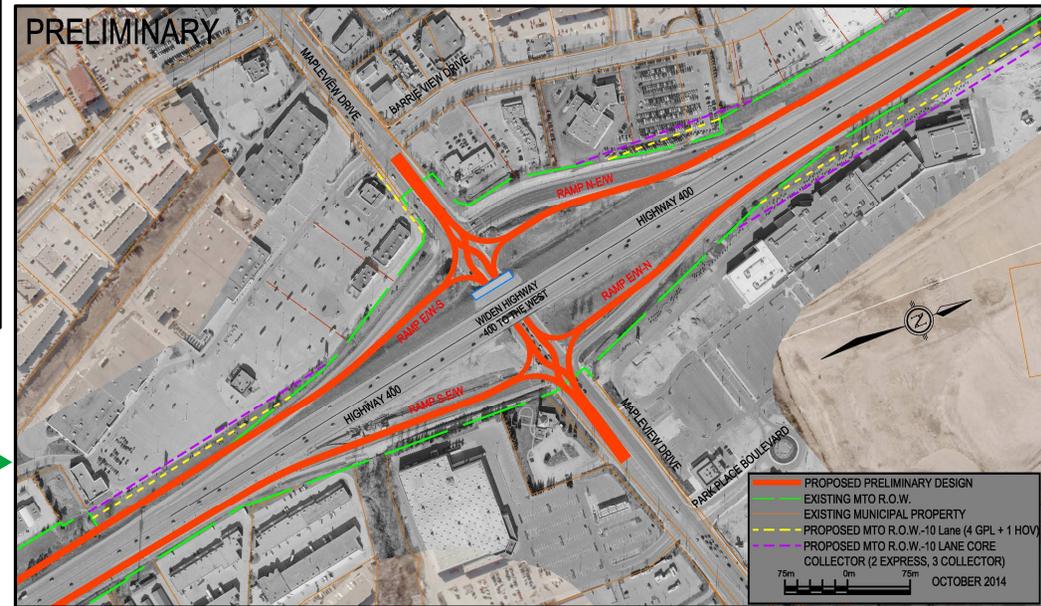
## Alternative 1 Diamond



*Maintains existing configuration and minimizes property impacts*



## Alternative 2 Diverging Diamond



*Minimizes property impacts and has potential for improvements to operational safety by minimizing left-turns*

A Diverging Diamond Interchange is being considered in various projects across the province and it is being evaluated for its potential for improvement to operational safety. These interchanges have a small property footprint compared to parclo interchanges.



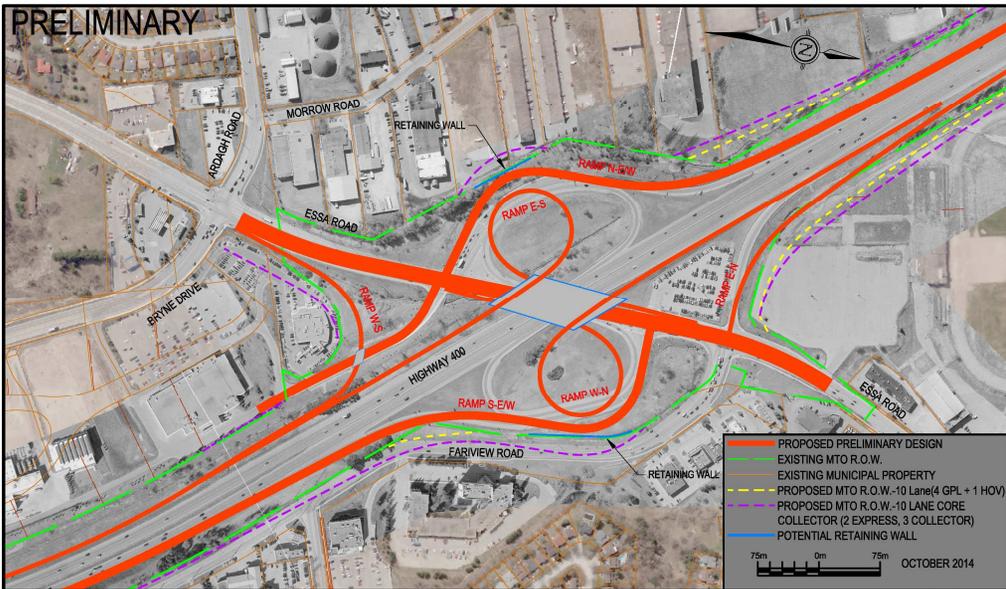
**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvement Alternatives

The following two alternatives are being considered for the **Essa Road Interchange**:

## Alternative 1

*Parclo A4*

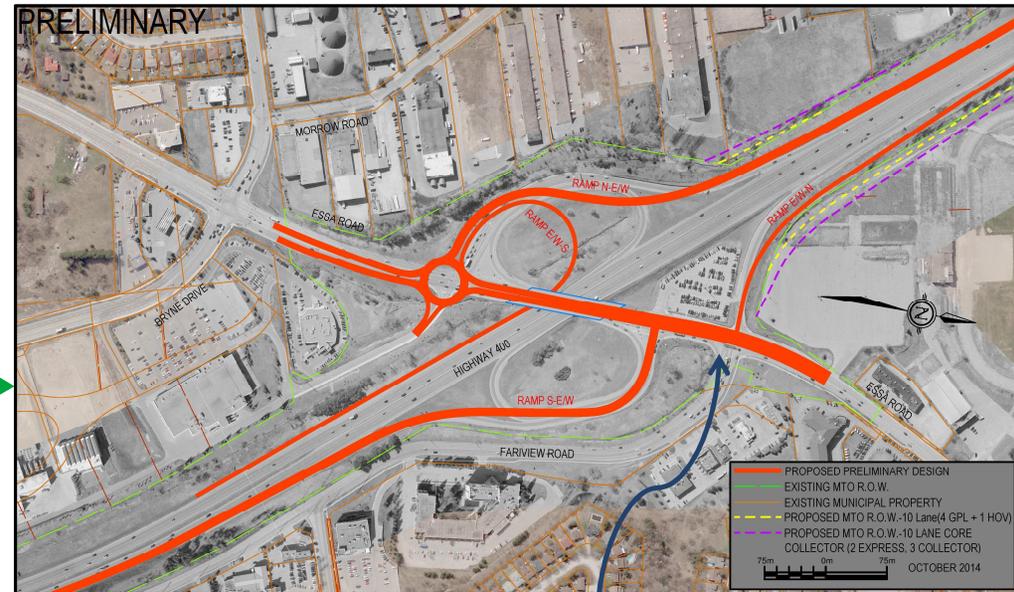


*Improves capacity and operations of the interchange with ramp geometric improvements*



## Alternative 2

*Parclo A / Diamond with Roundabouts*



*Roundabouts may improve operational safety of the interchange*

A number of studies on the safety benefits of roundabouts have been undertaken, and in general roundabouts can significantly reduce the frequency and severity of collisions. The Project Team is investigating the feasibility of roundabouts at some locations throughout the study area. Roundabouts are subject to further analysis.

*Roundabout alternatives may be considered at this location*



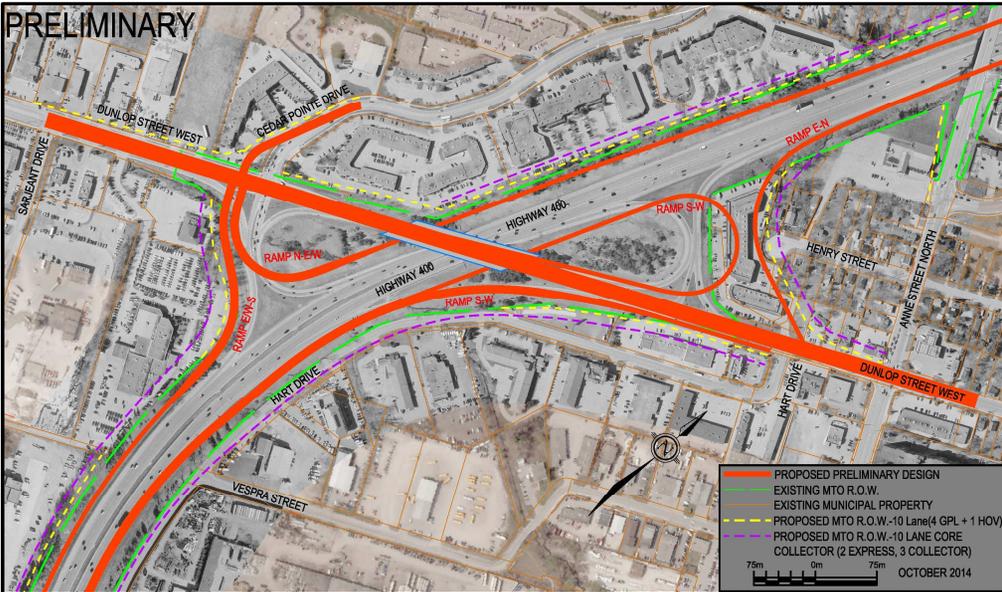
**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvement Alternatives

The following two alternatives are being considered for the **Dunlop Street Interchange**:

## Alternative 1

*Parclo B3*

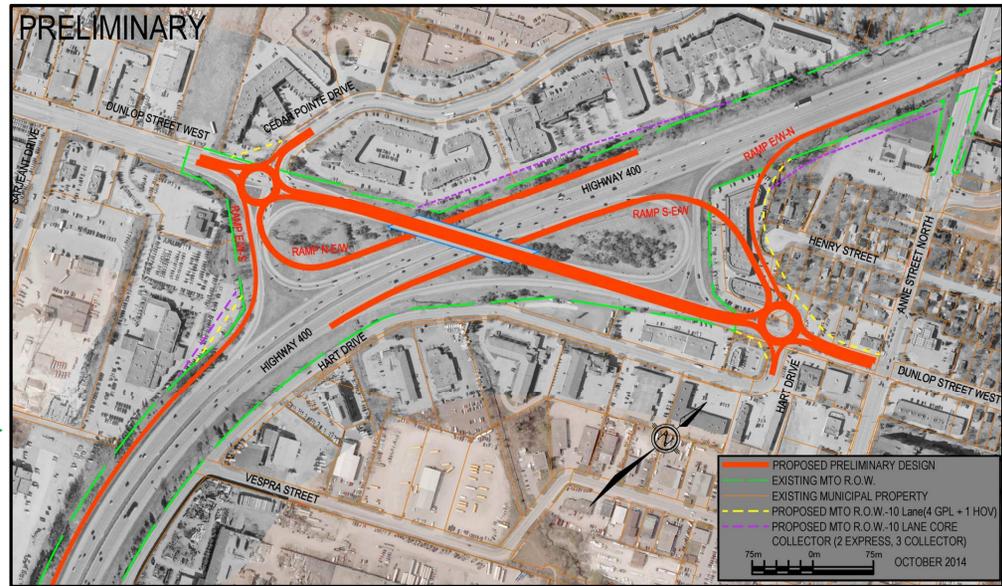


*Similar to the existing configuration with improvements*



## Alternative 2

*Parclo B with Roundabout Ramp Terminals*



*Roundabouts may improve operational safety of the interchange*

A number of studies on the safety benefits of roundabouts have been undertaken, and in general roundabouts can significantly reduce the frequency and severity of collisions. The Project Team is investigating the feasibility of roundabouts at some locations throughout the study area. Roundabouts are subject to further analysis.



**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

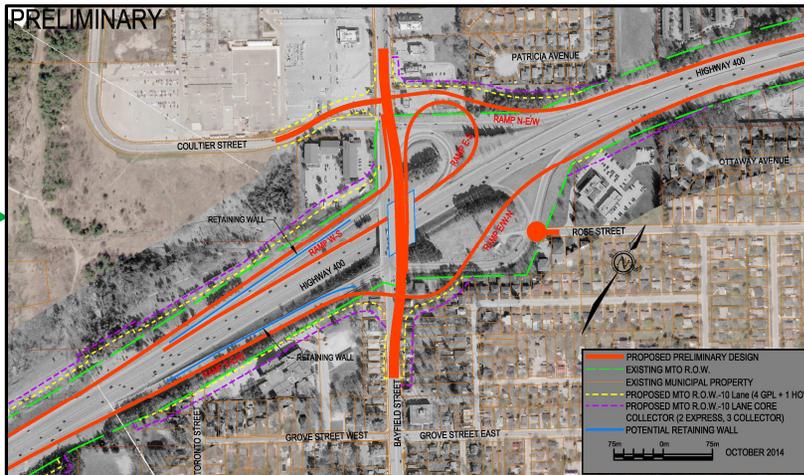
# Highway 400 Interchange Improvement Alternatives

The following three alternatives will be considered for the **Bayfield Street Interchange** improvements:



## Alternative 1

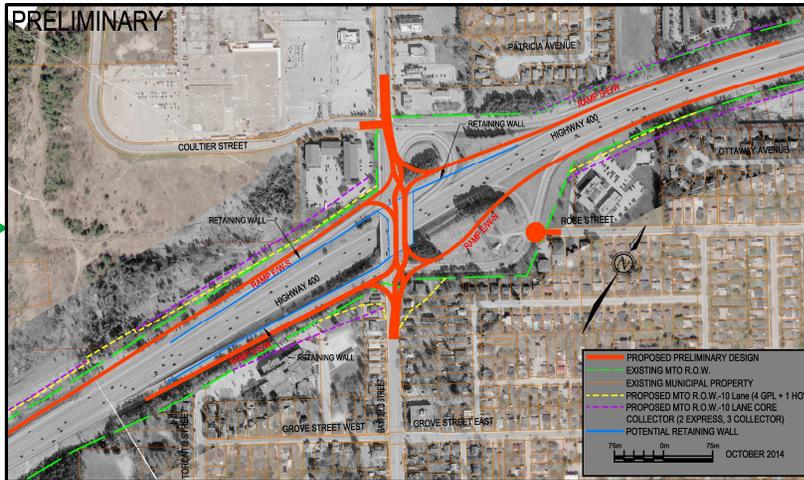
Parclo A / Diamond



*Similar to the existing configuration with improvements*

## Alternative 3

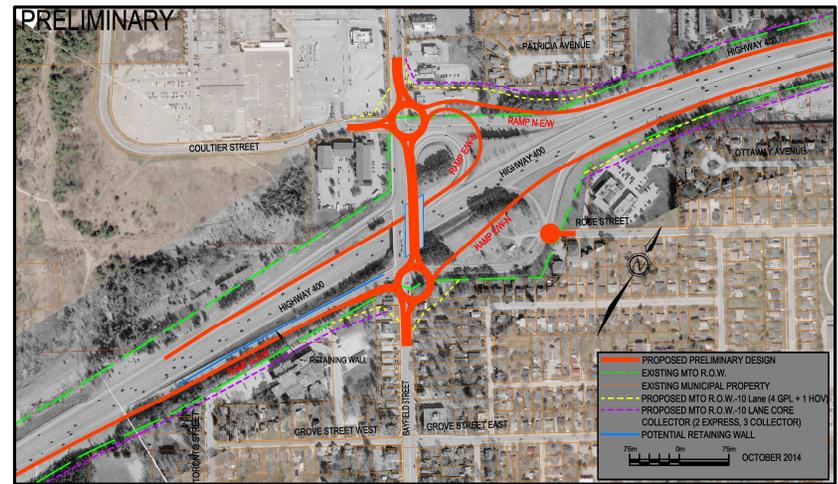
Diverging Diamond



*Minimizes property impacts and may improve operational safety*

## Alternative 2

Parclo / Diamond with Roundabouts



*Roundabouts may improve operational safety of the interchange*

A Diverging Diamond Interchange is being considered in various projects across the province and it is being evaluated for its potential for improvement to operational safety. These interchanges have a small property footprint compared to parclo interchanges.

A number of studies on the safety benefits of roundabouts have been undertaken, and in general roundabouts can significantly reduce the frequency and severity of collisions. The Project Team is investigating the feasibility of roundabouts at some locations throughout the study area. Roundabouts are subject to further analysis.







## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

# Natural Heritage – Overview of Existing Conditions

## Fish & Fish Habitat

- There are four main watersheds within the study area: Innisfil Creek, Lovers Creek, Tributaries of Kempenfelt Bay and Willow Creek.
- Portions of Innisfil Creek and Lovers Creek are sensitive coldwater fish habitat.
- There are a total of 47 watercrossings of Highway 400 within the study area (23 are not fish habitat, 16 are warmwater fish habitat and 8 are coldwater fish habitat).
- One water crossing, a tributary of Innisfil Creek, approximately 2.9km north of Highway 89 at 3<sup>rd</sup> Line, is considered high quality sensitive coldwater fish habitat.

## Terrestrial Ecosystems

- Forested vegetation communities include deciduous, coniferous and mixed-wood communities with very few large forested blocks.
- There are four Provincially Significant Wetlands (PSW's) within the study area: Cookstown Hollows Swamp, Lovers Creek Swamp, Bear Creek Wetland and Willow Creek/Little Lake Wetland. Three straddle the Highway 400 corridor, and one is located just west of Highway 400.
- A total of 31 Species at Risk (SAR) were screened for the study area including: 15 endangered species and 16 threatened species. Three (3) species have been confirmed and an additional 13 have potential for the study area.

**Cookstown Hollows Swamp**



**Typical Sensitive Coldwater Habitat**



**Typical Warmwater Habitat**





## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

### Noise - Overview

- To update the previous noise analysis that was undertaken in 2004, a new noise analysis will be conducted as part of this study based on 2031 traffic scenarios:
  - Future Do Nothing
  - Future with 10 Lane or Core Collector
  - Future 10 Lane or Core Collector with Mitigation (Noise Barriers)

The updated noise analysis will be based on the MTO's *Environmental Guide for Noise (2006)*.

- Approximate locations of previously proposed noise barriers (TESR 2004):
  - The northeast quadrant of the Dunlop Street Interchange from Dunlop Street to Anne Street.
  - On the east side of the Highway 400 corridor, southeast of the Bayfield Street interchange and adjacent to Toronto Street.
  - The northeast quadrant of the Bayfield Street interchange from Bayfield Street extending approximately 600 metres north.
  - The northwest quadrant of the Bayfield Street interchange from the beginning of the southbound off-ramp extending approximately 400 metres north.
  - On the northwest side of the Highway 400 near the Duckworth Street interchange.
- The full noise analysis and recommendations for noise barrier locations will be presented at the next Public Information Centre (PIC #2) and will also be posted on the project website.



## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

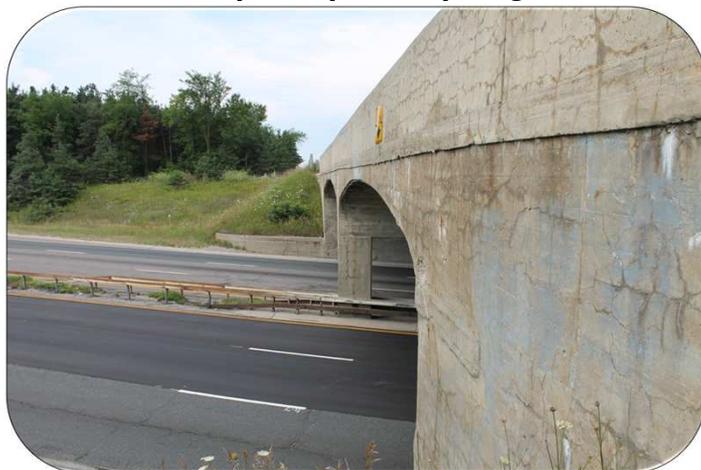
### Related Projects

- MTO is undertaking the Preliminary Design for the advanced replacement of the following structures along this section of the Highway 400 corridor:
  - **Coulson Road (Line 11) – (located to the south of these project limits in the Town of Bradford West Gwillimbury)**
  - **Churchill Sideroad (4<sup>th</sup> Line)**
  - **6<sup>th</sup> Line**
  - **Barrie Collingwood Railway**
  - **McKay Road (10<sup>th</sup> Line)**

These structures will be advanced as part of a separate study and designed to incorporate the recommendations of this Highway 400 update. Construction of these bridges is anticipated in the next few years.

- The City of Barrie is undertaking improvements to the Duckworth Street Interchange. These improvements are part of a separate study and are currently under construction.

*McKay Road (10<sup>th</sup> Line) Bridge*



*Churchill Sideroad (4<sup>th</sup> Line) Bridge*





## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

### Next Steps

The following activities will be undertaken following this PIC:

- Respond to comments received at this PIC.
- Assessment and evaluation of interchange and highway alternatives to select the Preferred Alternative leading to the overall Recommended Plan.
- Present the Recommended Plan at PIC #2.
- If required, prepare a TESR Addendum to address changes to the 2004 Recommended Plan. The TESR Addendum would be made available for a 30-day public and agency review period. Notification and timing of the TESR Addendum will be published in local newspapers, on the project website, and those on the contact list will be notified.
- If no significant changes occur, a Notice of Study Completion will be published to document the Recommended Plan for this section of the Highway 400 corridor.

### Consultation Throughout

(with all stakeholders – members of the public, municipalities, interest groups, agencies, Aboriginal Communities)



**Thank you for attending**

**Please feel free to ask questions and fill out a comment sheet before you leave.**

**Visit our website at <http://highway400improvements89to11.ca>**



## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

# Freedom Of Information & Protection Of Privacy Act

- Comments and information regarding this study are being collected to assist MTO and URS in meeting the requirements of the Ontario *Environmental Assessment Act*. This material will be maintained on file for the use of this study and may be included in study documentation.
- Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

**We encourage you to contact members of the Project Team if you have any questions or concerns regarding the above information**



**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
Class Environmental Assessment and Preliminary Design Study Update

# **BACKGROUND INFORMATION**

## **Preliminary Design & Class Environmental Assessment Study**

**G.W.P. 30-95-00**

The following information was included in the Transportation Environmental Study Report (TESR) that was prepared for public and agency review in April 2004 and the identified improvements received environmental clearance in 2005



## Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

Class Environmental Assessment and Preliminary Design Study Update

# Approved Plan from the 2004 *Planning & Preliminary Design Study*

The April 2004 Transportation Environmental Study Report identified the following improvements for the Highway 400 corridor:

### Highway 400

- From one kilometre south of Highway 89 to Essa Road – Widen to the west from 6 lanes to 8 lanes with property protection for 10 lanes, with concrete median barrier
- From Essa Road to Bayfield Street – Widen about the centreline from 6 lanes to 10 lanes, with concrete median barrier
- From Bayfield Street to Junction at Highway 11 – Widen about the existing centreline from 6 lanes to 8 lanes, with concrete median barrier



Photo: Highway 400 looking southbound



**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Approved Plan from the 2004 *Planning & Preliminary Design Study*

## ➤ Highway 89 Interchange

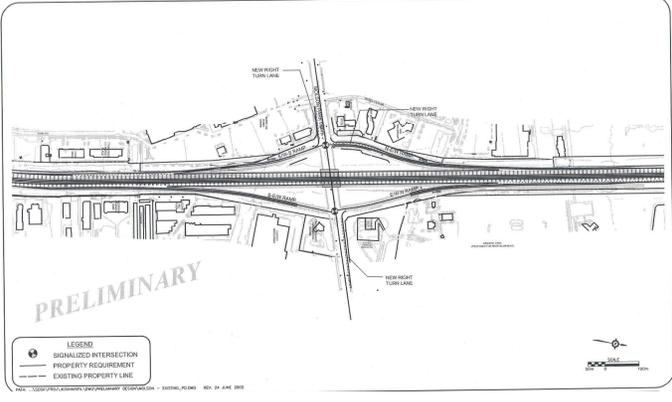
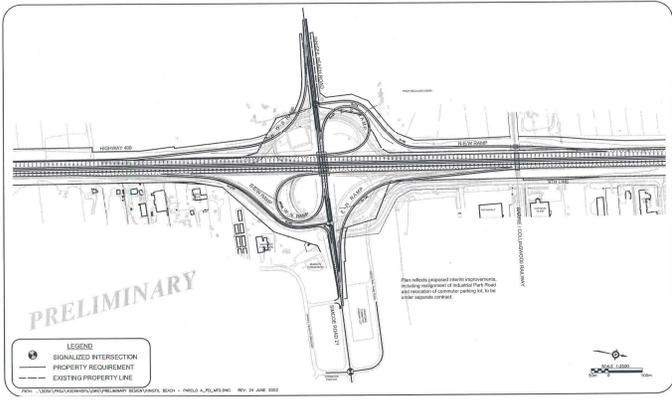
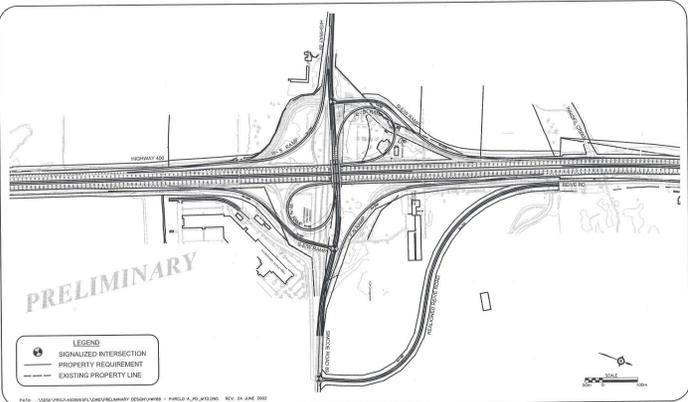
A Parclo 'A' interchange configuration was preferred because it avoids businesses in the northeast quadrant, had more favourable traffic operations (no need for left-turn lanes on the structure), and had a similar cost to other alternatives considered.

## ➤ Innisfil Beach Road Interchange

A Parclo 'A' interchange configuration was preferred because it provided best traffic operations, although it was a higher cost than a Diamond / Parclo 'A' configuration. Parclo 'A' was also best suited to meeting long-term transportation needs at this interchange with acceptable impacts to adjacent lands.

## ➤ Molson Park Drive Interchange (Mapleview Drive)

Operational improvements were identified at the Mapleview Drive interchange because it provided improvements to traffic operations and could be implemented with relatively low construction costs.



Note: the term "Parclo" refers to a "Partial Cloverleaf" style interchange configuration



# Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11

## Class Environmental Assessment and Preliminary Design Study Update

### Approved Plan from the 2004 *Planning & Preliminary Design Study*

#### ➤ **Essa Road Interchange**

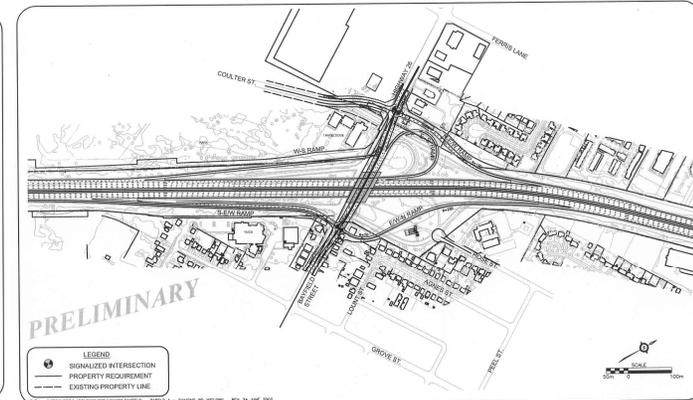
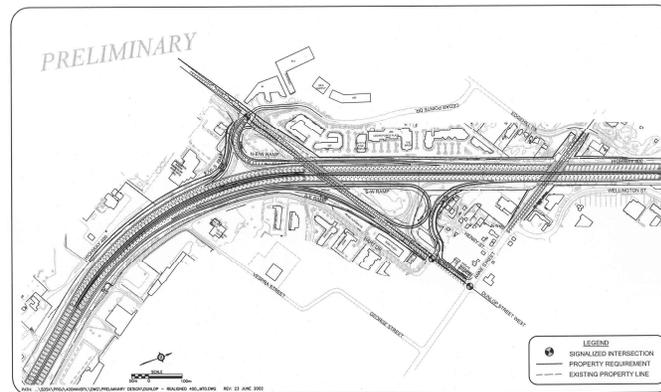
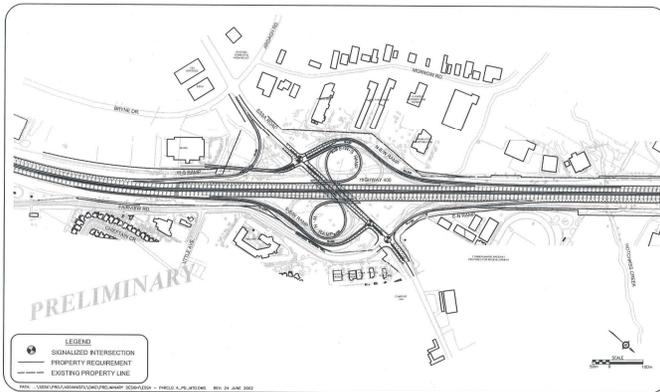
A Parclo 'A' interchange configuration was preferred because although it carried similar impacts and costs as other alternatives considered it avoided the need for a left turn lane on Essa Road, improving the capacity and operations of the interchange.

#### ➤ **Dunlop Street Interchange**

Two alternatives were evaluated and both alternatives had significant impacts to adjacent commercial properties. A Parclo 'B' configuration was selected as the preferred alternative because it resulted in lower overall impacts, lower costs, and offered greater transportation benefits.

#### ➤ **Bayfield Street Interchange**

A Diamond / Parclo 'A' configuration was selected as the preferred alternative because it better addressed the operational needs of the interchange and resulted in fewer impacts than a full Diamond Configuration or Parclo configuration.



Note: the term "Parclo" refers to a "Partial Cloverleaf" style interchange configuration

Please note that improvements to the Duckworth Street Interchange are part of a separate project that is being undertaken by the City of Barrie (currently in construction)



**Highway 400 – 1 km South of Hwy 89 to the Junction of Hwy 11**  
 Class Environmental Assessment and Preliminary Design Study Update

## ***Potential Impacts and Mitigation Identified in the 2004 Study***

The following outlines the key environmental issues and mitigation strategies associated with the 2004 approved plan:

<b>Groundwater:</b>	Potential impacts to be addressed through stormwater management, maintaining groundwater discharge areas, and conducting pre-construction well surveys.
<b>Fish and Fish Habitat:</b>	Impacts to fish habitat due to culvert extensions to be addressed through standard mitigation measures and time constraints for in-water works.
<b>Terrestrial Ecosystems:</b>	Impacts to vegetation along edges of forests and vegetation communities will be addressed through standard mitigation measures including selective vegetation removals and replacement of Black Walnut Trees. Additional investigations to address wetland impacts and mitigation requirements in subsequent studies.
<b>Stormwater Management:</b>	Standard sediment and erosion control measures, flat bottom grassed swales / enhanced ditches. Working with the City of Barrie to address drainage management issues between watersheds.
<b>Property Impacts:</b>	The acquisition of commercial, residential and agricultural lands as well as temporary property impacts is required to accommodate the recommended plan. Compensation to be provided at fair market value.
<b>Changes to Local Roads:</b>	Reive Blvd. is proposed to be realigned and Rose Street is proposed to be closed. These changes will be addressed through signage and further consultation with municipalities and emergency services.
<b>Air quality:</b>	Standard measures to address air quality concerns during construction.
<b>Impacts to Future Development Lands:</b>	Opportunities to minimize impacts will be explored during detail design.
<b>Built Heritage:</b>	Sympathetic design treatments for heritage structures will be incorporated.
<b>Archaeology:</b>	Undertaking Stage 2 archaeological assessment in areas of archaeological potential.

***Potential environmental impacts and mitigation measures will be confirmed and updated as required as part of this study to reflect any design changes, regulatory requirements and best management practices.***

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**Public Information Centre #2**  
**April 2017**

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**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
Class Environmental Assessment and Preliminary Design Study Update

## **Highway 400 Improvements from 1 km South of Highway 89 to the Junction at Highway 11**

City of Barrie, Town of Innisfil, Township of Springwater  
County of Simcoe

**Class Environmental Assessment & Preliminary Design Study Update**  
W.O. #06-20016

**April 25, 2017**

### **Welcome to Public Information Centre #2**

***Please Sign In***

Members of the Project Team are available to discuss any questions that you may have regarding this project.

**Visit us at: <http://highway400improvements89to11.ca>**

If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members.



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
 Class Environmental Assessment and Preliminary Design Study Update

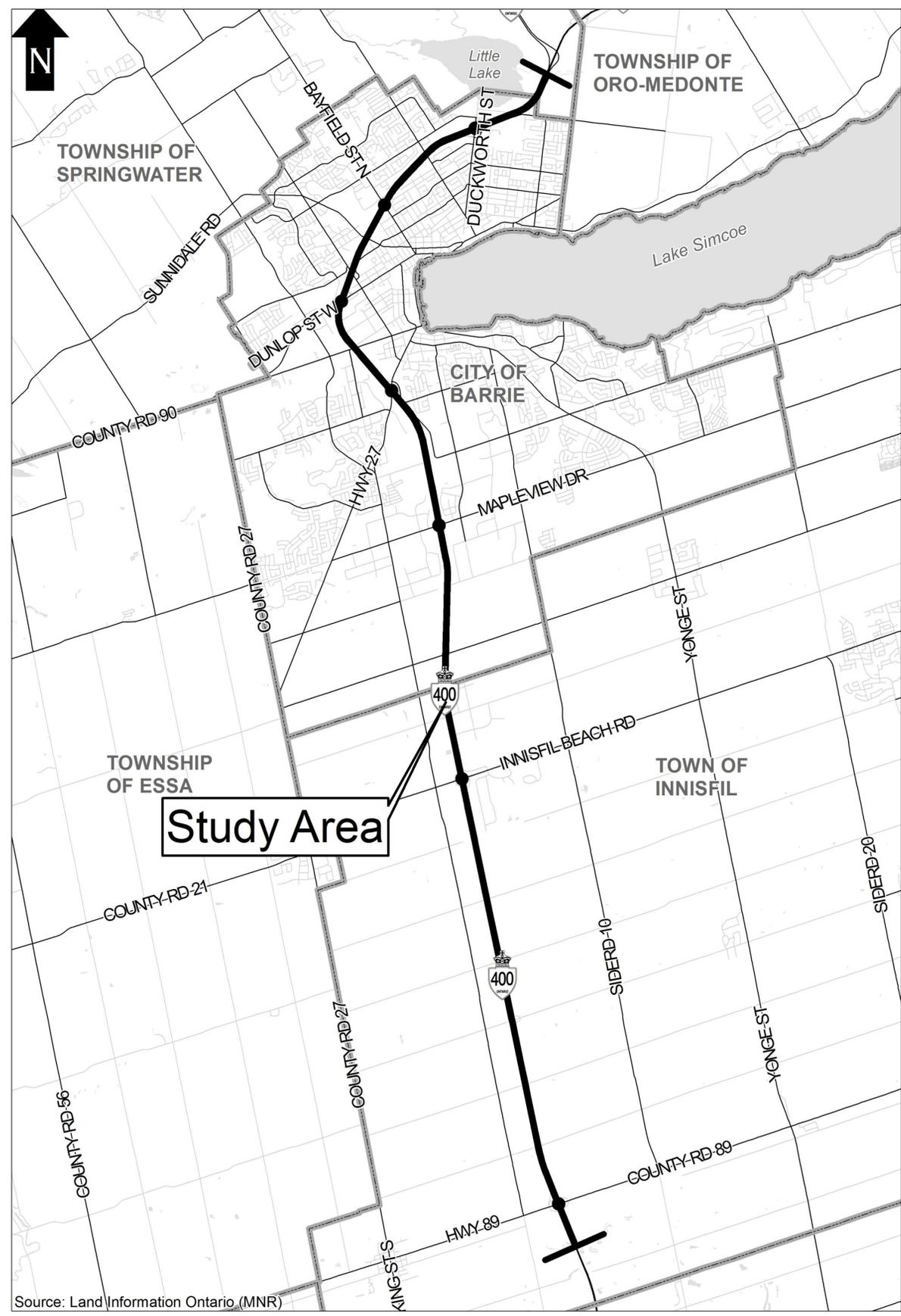
# Background, Study Area & Scope

## Background

- In 2001 the Ministry of Transportation (MTO) undertook a Planning and Preliminary Design Study to identify required improvements and widening requirements along 30 km of *Highway 400 from 1 km south of Highway 89 to the Junction at Highway 11.*
- The 2004 Transportation Environmental Study Report (TESR) (G.W.P. 30-95-00) received environmental clearance for improvements to this section of Highway 400.

## Scope

- This update study is revisiting the approved plan outlined in the 2004 Transportation Environmental Study Report (TESR) to address future (2031) traffic projections, and associated capacity, operational and safety needs.
- The Project Team will confirm the long-term needs for this section of the Highway 400 corridor so that near-term rehabilitation investments are made with an understanding of the long-term vision for the corridor and property can be protected for the future improvements.





**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

## **Purpose of this Public Information Centre**

The purpose of this Public Information Centre (PIC) is to present the following:

- Study Process (Transportation Environmental Study Report (TESR) Addendum to address modifications to the Approved Plan identified in the 2004 Study);
- Summary of Public Information Centre #1;
- Assessment and Evaluation of Highway 400 Widening and Interchange Improvement Alternatives;
- Technically Preferred Alternatives;
- Potential Mitigation Strategies to Minimize Environmental / Community Impacts; and,
- Proposed Modifications to the Approved Plan identified in the 2004 TERS.

**The Project Team would like your input on the proposed modifications to the Approved Plan identified in the 2004 TERS. Look for the yellow star on the displays where we are looking for your comments.**

Members of the Project Team are available to discuss any questions that you may have regarding this project.

We also encourage you to complete a comment sheet, take one with you to send in later, or email us at **[projectteam@highway400improvements89to11.com](mailto:projectteam@highway400improvements89to11.com)**.

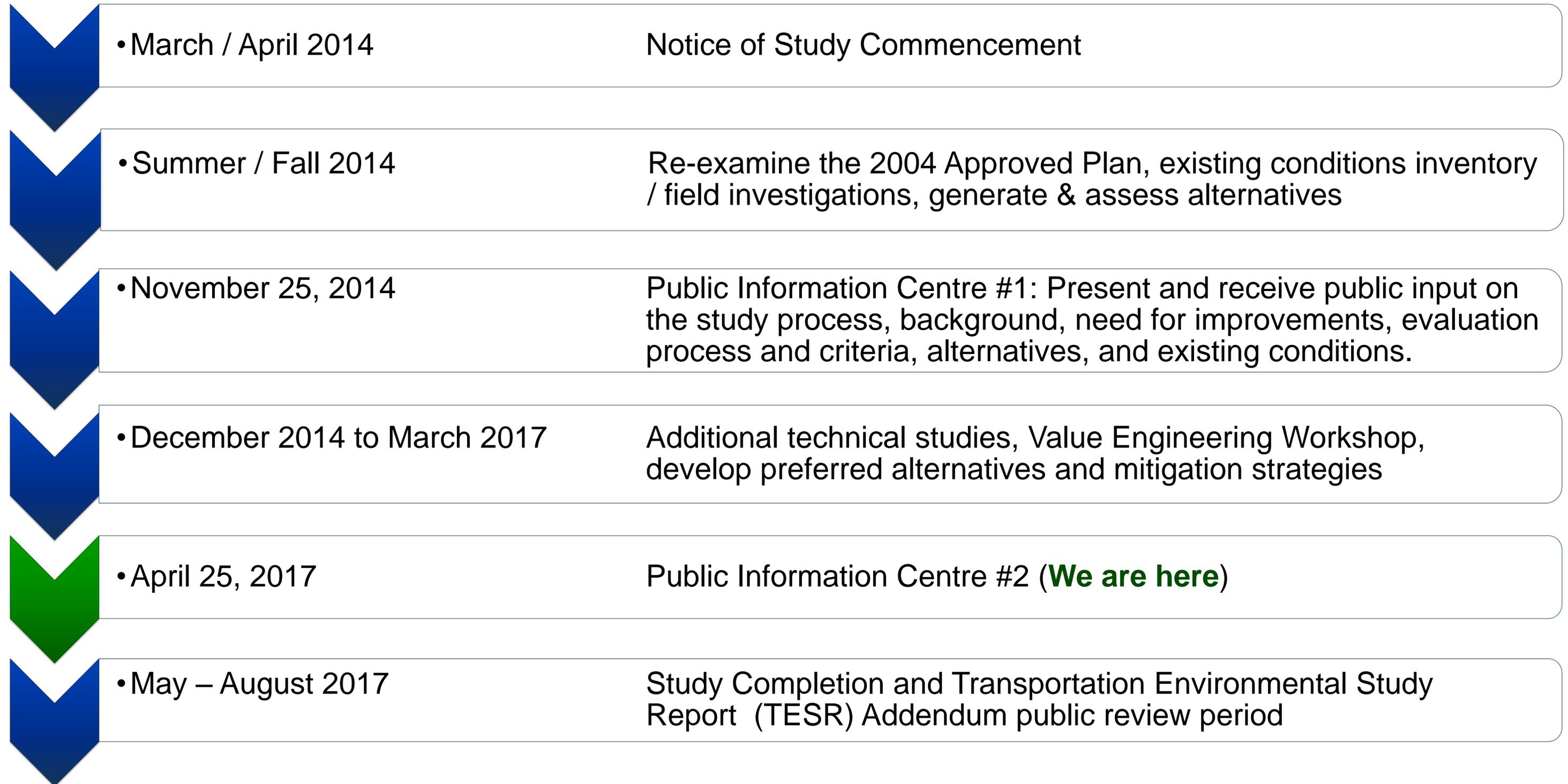
Please provide any comments by **May 24, 2017**.





Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
Class Environmental Assessment and Preliminary Design Study Update

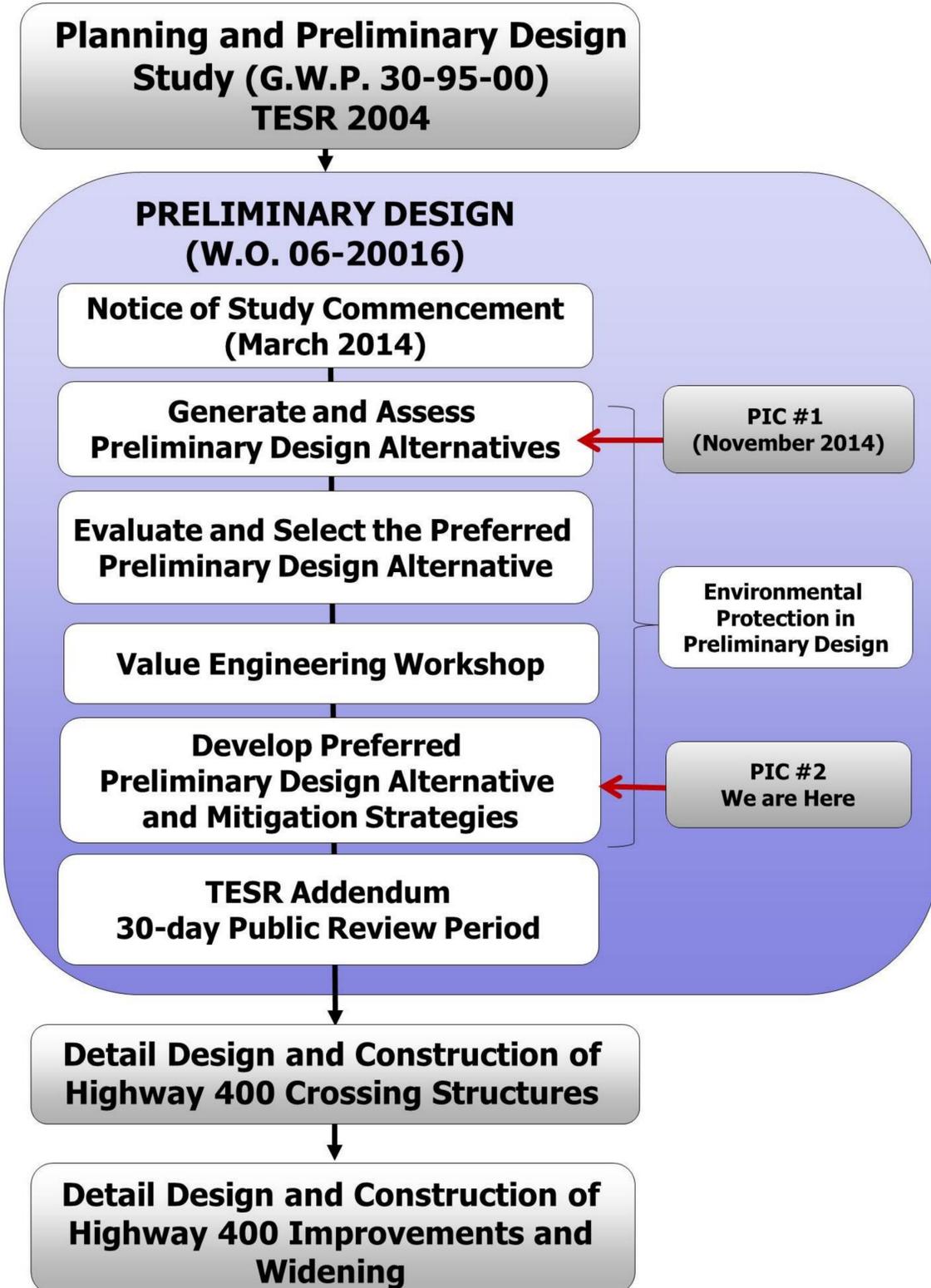
## Study Timeline





**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Study Process



The following activities will be undertaken following this Public Information Centre (PIC):

- Respond to comments received at this PIC;
- Finalize the preliminary design of the Technically Preferred Alternatives for the widening and interchange alternatives;
- Prepare the Transportation Environmental Study Report (TESR) Addendum to address changes to the 2004 Approved Plan;
- Advertise the 30-day public and agency review period of the TESR Addendum; and,
- Detail Design for the structures and overall improvements.

## Consultation Throughout

(with all stakeholders – members of the public, municipalities, interest groups, agencies, First Nation and Métis Communities)



**During the Detail Design Stage:** Further design will be undertaken to confirm property impacts. Retaining walls and grading refinements will be investigated and additional consultation will be undertaken with affected property owners and the public.

The timing for undertaking detail design and construction of the ultimate Highway 400 widening through this section of the corridor has yet to be determined; however, aging elements of the existing infrastructure may be subject to interim improvements. Structures in need of replacement will be replaced to accommodate the ultimate Highway 400 widening recommended as part of this study.



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Study Process - Transportation Environmental Study Report Addendum

- *The Ministry of Transportation (MTO) Class Environmental Assessment for Provincial Transportation Facilities (2000) requires that a Transportation Environmental Study Report (TESR) Addendum be prepared if significant design changes are identified compared to the approved plan included in the Preliminary Design TESR.*
- **A TESR Addendum will document the changes to the recommended plan relative to that outlined in the TESR (April 2004) for the Highway 400 Planning and Preliminary Design Study from 1 km South of Highway 89 Northerly 30 km to the Junction at Highway 11 (G.W.P. 30-95-00).**
- The TESR Addendum will be made available to the public, other interested parties and external agencies for a 30-day public review period at public review locations in close proximity to the study area. A notice of the TESR Addendum review opportunity will be provided.
- Once made available, interested persons are encouraged to review the TESR Addendum and provide written comments to the MTO during the 30-day review period.
- If after consulting with MTO and Consultant staff, you still have unresolved concerns, you have the right to request the Ministry of Environment and Climate Change (MOECC) to issue a Part II Order (i.e. “bump-up”) for the proposed changes to the 2004 TESR. A Part II Order may lead to the preparation of an individual Environmental Assessment. A copy of the Part II Order request that is sent directly to the Minister of Environment and Climate Change should also be forwarded to the Ministry of Transportation and Consultant Staff.
- **If there are no outstanding concerns at the end of the 30-day review period the project will be considered to have met the requirements of the Class Environmental Assessment.**






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**HIGHWAY 400**  
**PLANNING AND PRELIMINARY DESIGN STUDY**

From 1 km South of Highway 89 Northerly  
 30 Km to the Junction at Highway 11

G.W.P. 30-95-00

Town of Bradford West Gwillimbury, Town of Innisfil,  
 City of Barrie, Township of Springwater,  
 County of Simcoe

CLASS ENVIRONMENTAL ASSESSMENT (GROUP 'B')

TRANSPORTATION ENVIRONMENTAL STUDY REPORT

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April 2004



## Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11 Class Environmental Assessment and Preliminary Design Study Update

### Overview of Public Information Centre (PIC) #1

- PIC #1 was held at the Holiday Inn Hotel and Conference Centre in Barrie on November 25, 2014.
- PIC #1 presented and sought input on the following:
  - Study process;
  - Background;
  - Need for highway improvements;
  - Alternatives evaluation process and criteria;
  - Highway and interchange alternatives; and,
  - Existing conditions.
- Feedback received at and after PIC #1 (including over 100 written comments & 181 stakeholders in attendance):
  - Questions or comments regarding specific improvement alternatives;
  - Questions regarding property impacts / requirements;
  - Questions or comments regarding noise impacts and mitigation;
  - Inquires regarding the schedule (property impacts, study completion and construction);
  - Support and concern for the addition of roundabouts;
  - Inquiries regarding related studies; and
  - Requests for PIC displays.

For more information regarding the study background, information presented at PIC #1, existing conditions in the study area and recommendations that have not changed since the Approved Plan in the 2004 TESR please refer to the **Study Background Section of this PIC.**



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
Class Environmental Assessment and Preliminary Design Study Update

## Overview of the Recommended Plan

Maintain the 2004 preferred alternative for the Highway 400 widening with minor changes:

- **From 1 km South of Highway 89 to North of Maplevue Drive:** Widen to the west from 6 to 10 lanes **with one High Occupancy Vehicle (HOV) lane in each direction;**
- **From North of Maplevue Drive to Duckworth Street:** Widen about the centreline from 6 to 10 lanes **with one High Occupancy Vehicle (HOV) lane in each direction;** and,
- **From Duckworth Street to the Junction of Highway 11:** Widen about the centreline and transition to the existing 6 lanes at the Junction at Highway 11.

The following are the recommended interchange designs:

- **Highway 89 – Parclo A4 Interchange (Maintain the 2004 study recommendations with minor changes);**
- **Innisfil Beach Road – Parclo A4 Interchange (Maintain the 2004 study recommendations with minor changes – refer to the *Roll Plan*);**
- **Maplevue Drive – Diverging Diamond Interchange (New interchange type, no changes to the property requirements from the 2004 study recommendations);**
- **Essa Road – Parclo A4 Interchange (Maintain the 2004 study recommendation, no changes to the property requirements from the 2004 recommendations);**
- **Dunlop Street – Parclo B3 Interchange (Maintain the 2004 study recommendations with modifications);** and,
- **Bayfield Street – Parclo A / Diamond Interchange (Maintain the 2004 study recommendations with modifications).**

Refer to the *Roll Plan* for further details on the Recommended Plan and where there are changes to the Approved Plan from the 2004 TESR.



**There are changes to the Approved Plan from the 2004 TESR. Look for the stars and orange lettering to see these changes.**



Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
Class Environmental Assessment and Preliminary Design Study Update

## Additional Details of the Recommended Plan

- The following are the recommended locations for the addition of **commuter parking lots** as part of this study:
  - The northeast quadrant at Highway 400 and Highway 89 (for the ultimate widening);
  - **The southwest quadrant at Highway 400 and Highway 89;**
  - Expansion of the existing lot in the northeast quadrant at Innisfil Beach Road and Highway 400; and,
  - Maintain the existing lots in the northeast and northwest quadrants at the Essa Road Interchange.
- **Drainage** improvements include:
  - Replacement of sections of the median stormsewer;
  - **Property required for previously recommended stormwater management ponds and stormwater management facilities (i.e. ditches)**, refer to the *Roll Plan* for the locations; and,
  - Rehabilitation or replacement of various Highway 400 culverts along the corridor;
- **Illumination** along the Highway 400 corridor and at the Highway 400 interchanges is recommended.
- Addition of **Intelligent Traffic Systems (ITS)** in various locations along the corridor.



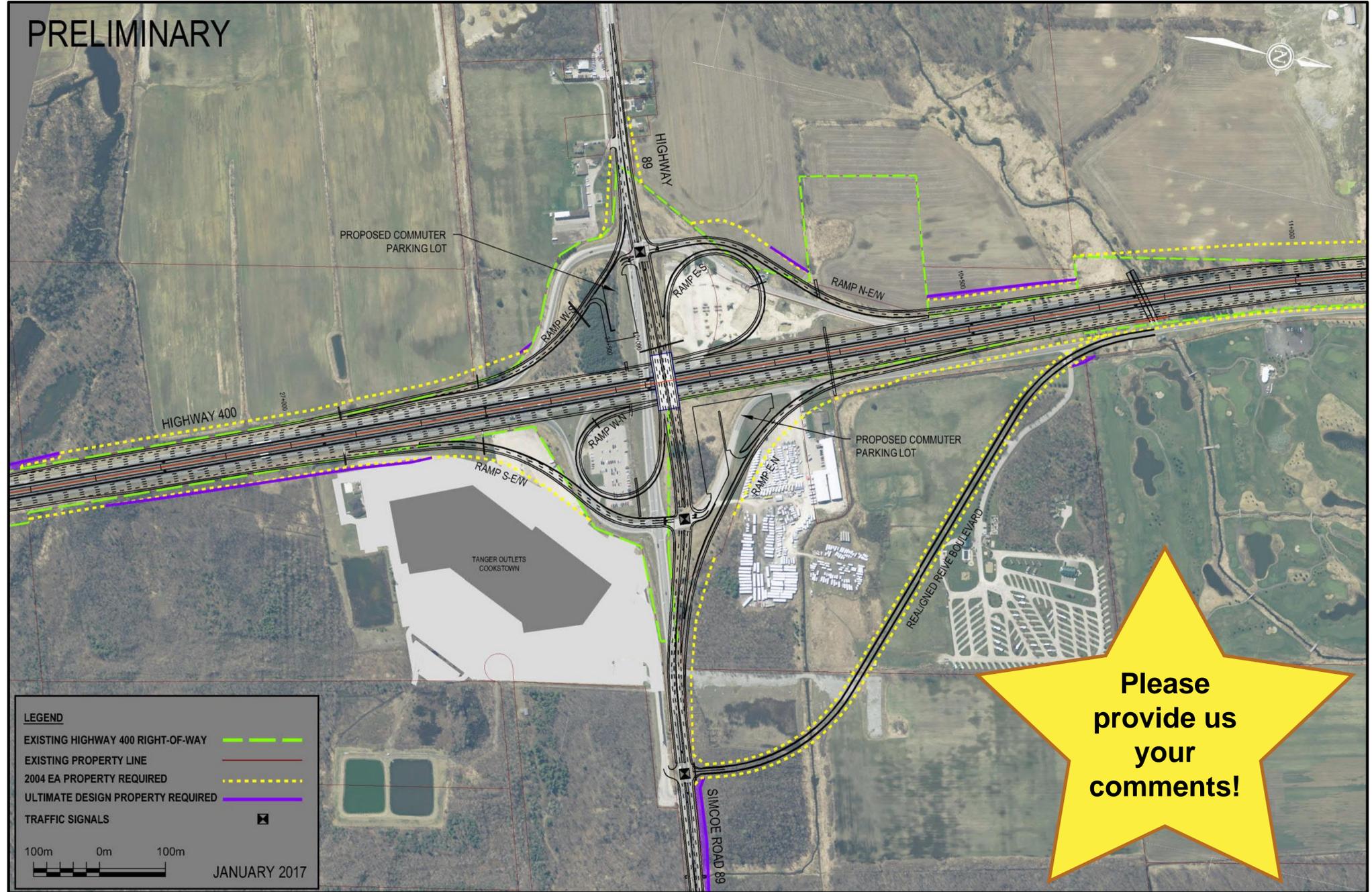
**There are changes to the Approved Plan from the 2004 TESR.**



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Highway 400 Interchange Improvements Highway 89 Interchange – Ultimate Plan

- The TESR (2004) recommended a Parclo A4 interchange at Highway 89 with the realignment of Reive Blvd to align with the existing mall access along Highway 89.
- The current study revisited the approved plan to address future 2031 traffic operations, and associated operational and safety needs and recommends a Parclo A4 interchange at Highway 89 with minor refinements to the design:
  - Upgrade the single lane exit-ramps from Highway 400 to Highway 89 to two-lane exit ramps;
  - Geometric improvements of the Highway 400 on-ramps and exit-ramps; and,
  - Proposal of a second commuter parking lot in the southwest quadrant (in addition to the one in the northeast quadrant) to provide additional parking capacity.



**Ultimate Highway 400 / Highway 89 Interchange Recommendation  
 Parclo A4 Configuration**

**This design has changes to the Approved Plan from the 2004 TESR.**



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Highway 400 Interchange Improvements

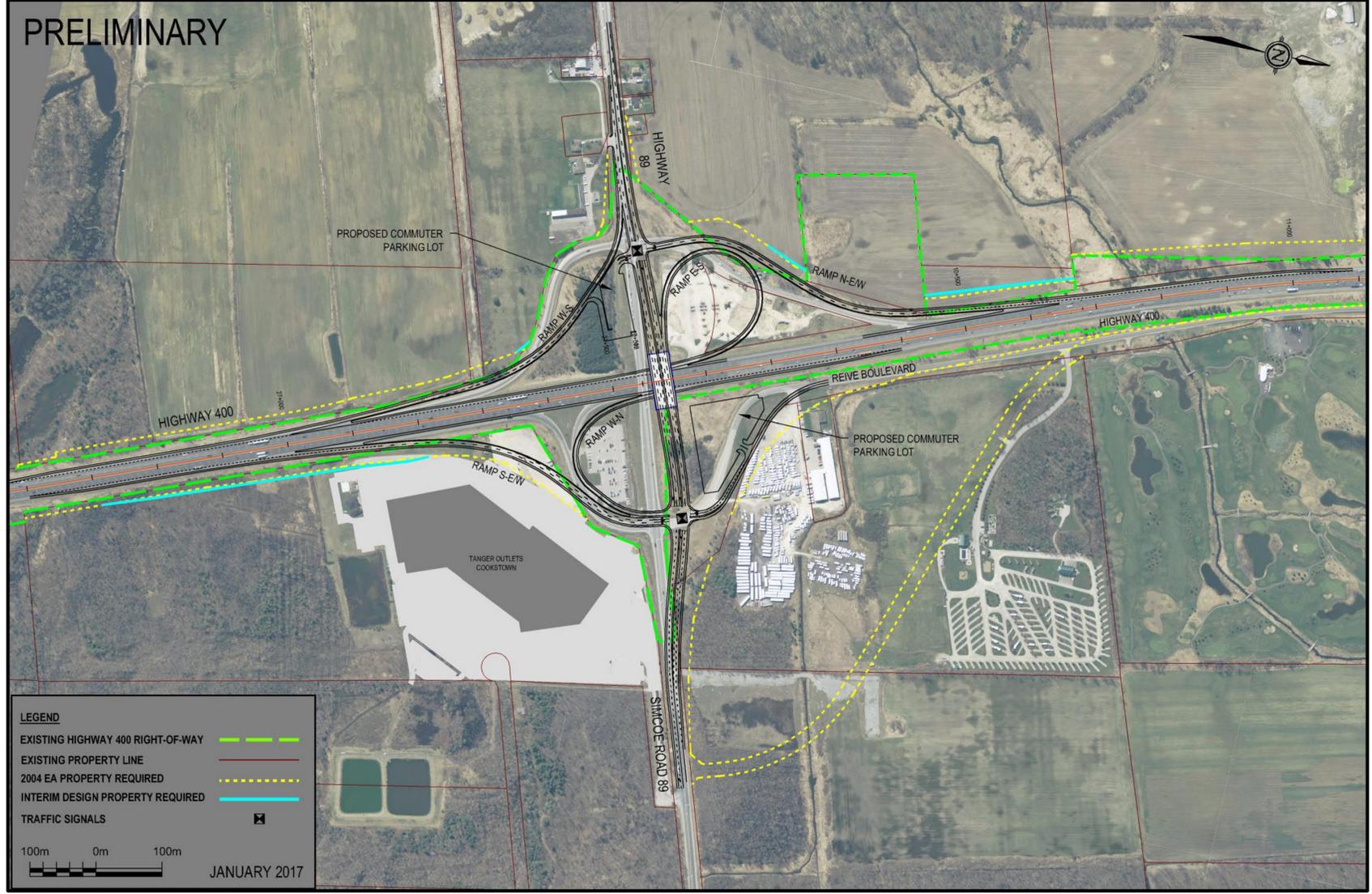
## Highway 89 Interchange – Interim Plan

- The timing for undertaking detail design and construction of the ultimate Highway 400 widening through this section of the corridor has yet to be determined; however, aging elements of the existing infrastructure may be subject to interim improvements. Structures in need of replacement will be replaced to accommodate the ultimate Highway 400 widening recommended as part of this study.
- The existing Highway 400 / Highway 89 structure will not accommodate the future Highway 400 widening, which means that the bridge will eventually need to be replaced as identified in the TESR (2004). The existing Highway 89 bridge over Highway 400 is 66 years old (constructed in 1959) and is designated for replacement in the next 5 years. As such, the replacement is proceeding with an interim strategy for improvements to the Highway 400 / Highway 89 interchange.

**Key features of the interim improvements that differ from the TESR (2004) design include the following:**

- Replacement of the Highway 89 Bridge and reconstruction of the interchange to a Parclo A-3 configuration (reinstate the ramp in the northwest quadrant of the interchange to Highway 400 southbound);
- Minor realignment of Reive Blvd and relocation of the commuter parking lot to the northeast quadrant; and;
- Upgrade the single lane exit ramps from Highway 400 to Highway 89 to two-lane exit ramps.
- A traffic analysis conducted on the Highway 400 / Highway 89 interchange confirmed that this interim configuration would operate acceptably within the 2031 planning horizon.

**These interim recommendations were addressed through a separate TESR Addendum (March 2017). Please speak with a Project Team member for further information.**



**Interim Highway 400 / Highway 89 Interchange Recommendation**

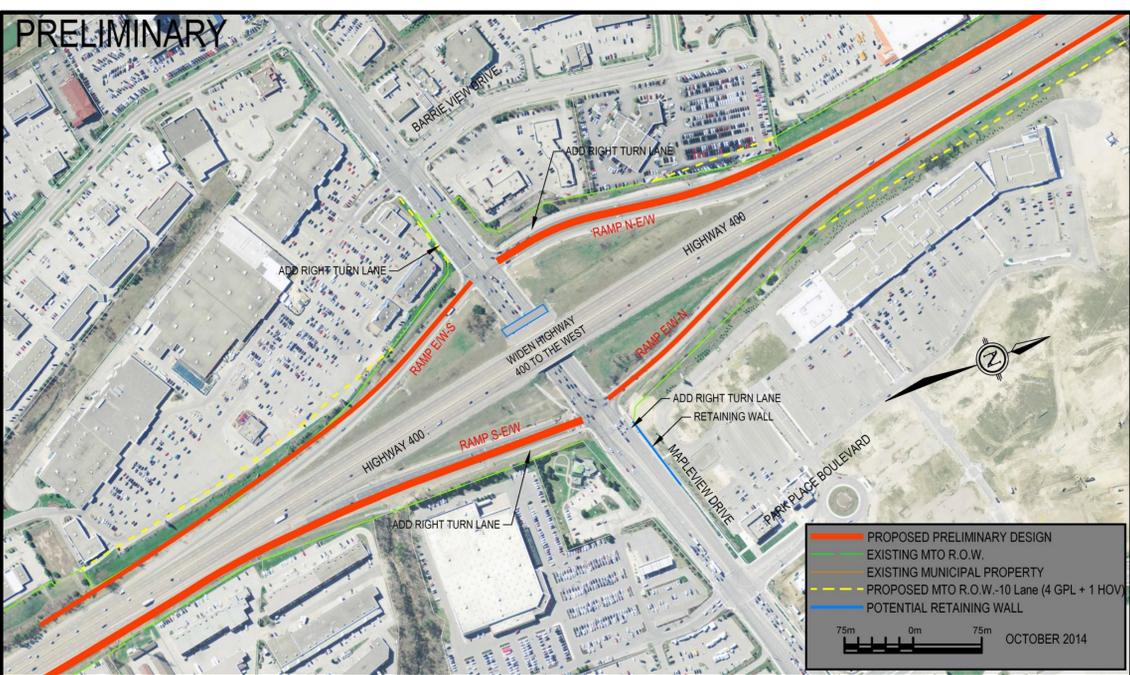
**Parclo A3 Configuration**



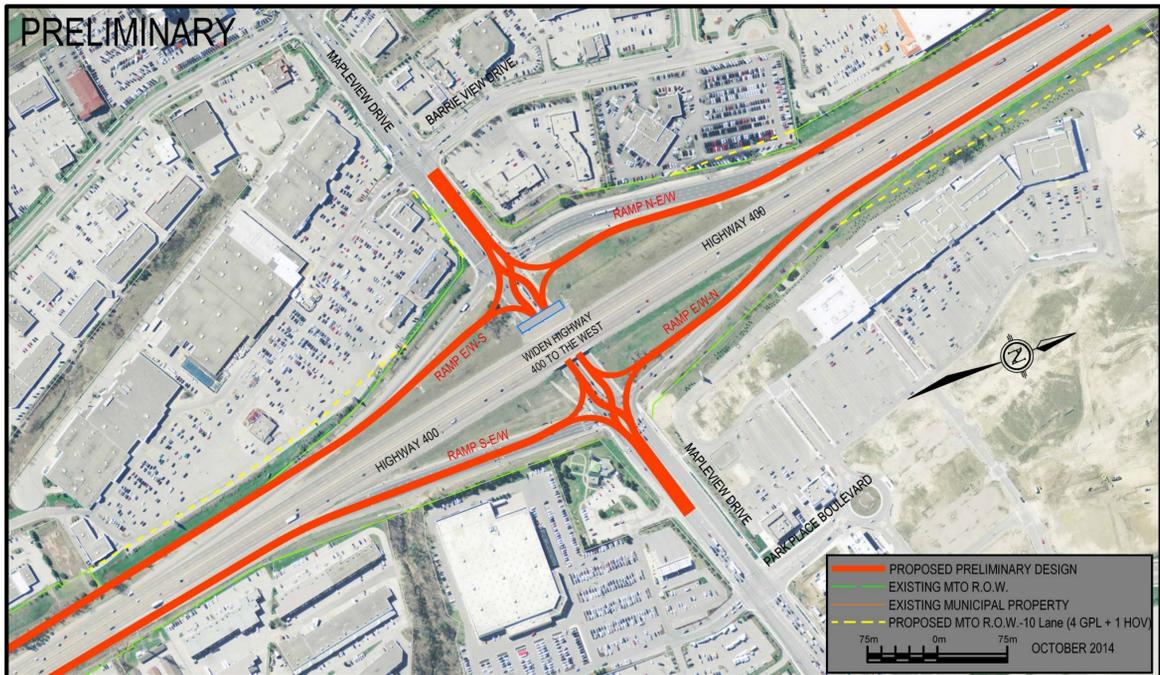
Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvements Mapleview Drive - Alternatives

**Alternative 1**   
 Diamond (existing configuration) – Approved Plan in the 2004 TESR



**Alternative 2**  **Preferred**  
 Diverging Diamond



Factor	Alternative 1 - Diamond	Alternative 2 - Diverging Diamond
Transportation and Engineering / Traffic Operations	◐	●
Natural Environment	●	●
Socio-Economic and Cultural Environments	◐	●
Cost	●	◐

**Evaluation Summary:**

- Both alternatives result in slightly similar impacts to the natural, socio-economic, and cultural environments.
- Although Alternative 2 is a more expensive alternative to construct, Alternative 2 operates at a high level of service and results in a significant improvement in traffic operations and safety at the ramp terminals. As such, Alternative 2 is the overall preferred alternative for the interchange improvements at Mapleview Drive.
- Although this interchange configuration is a change from the Approved Plan from the 2004 TESR, no additional property beyond the footprint of the 2004 Approved Plan is required.

 **Alternative 2 is preferred.**



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Highway 400 Interchange Improvements

## Mapleview Drive - Diverging Diamond Interchange

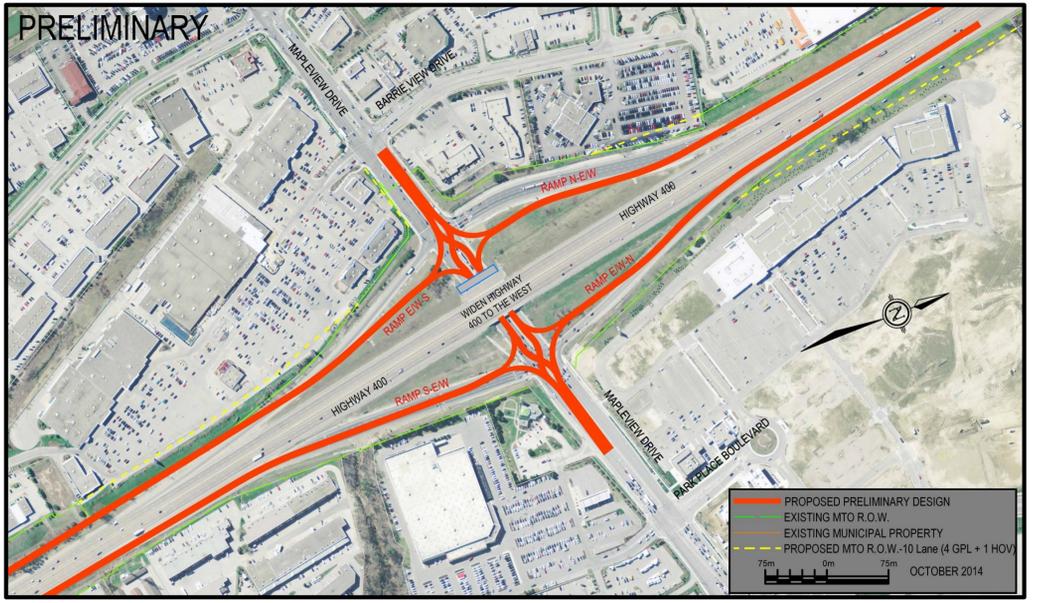
- Diverging Diamond Interchanges are an innovative type of interchange where the two directions of traffic on the secondary road (Mapleview Drive) cross to the opposite side of the road, on both sides under the bridge, to enter or exit the Highway above. They require traffic to briefly drive on the opposite side of the road.
- Diverging Diamond Interchanges although relatively new in Canada are being considered in various projects across the province and have been designed and constructed all over the United States.
- They are often desirable interchanges especially in tight urban areas with high volumes of traffic (similar to the Highway 400 / Mapleview Drive Interchange) for the following reasons:
  - They require less property and impacts to the surrounding area than most other types of interchanges;
  - They can significantly improve traffic from Diamond Interchanges as they offer free-flow movements at on-ramps;
  - They improve operational safety throughout the interchanges as they minimize conflict points (left-turn movements); and,
  - They can provide pedestrian access throughout the interchange.

**For more information on diverging diamond interchanges and how they operate please review the [video](#) presented at today’s PIC and feel free to take a copy of the [Diverging Diamond Fact Sheet](#) available at the reference table.**

**Further details on the Highway 400 / Mapleview Drive Interchange evaluation are available in the [Study Background](#) section.**



**This design has changes to the Approved Plan from the 2004 TESR.**



**Mapleview Drive Recommended Diverging Diamond Interchange**

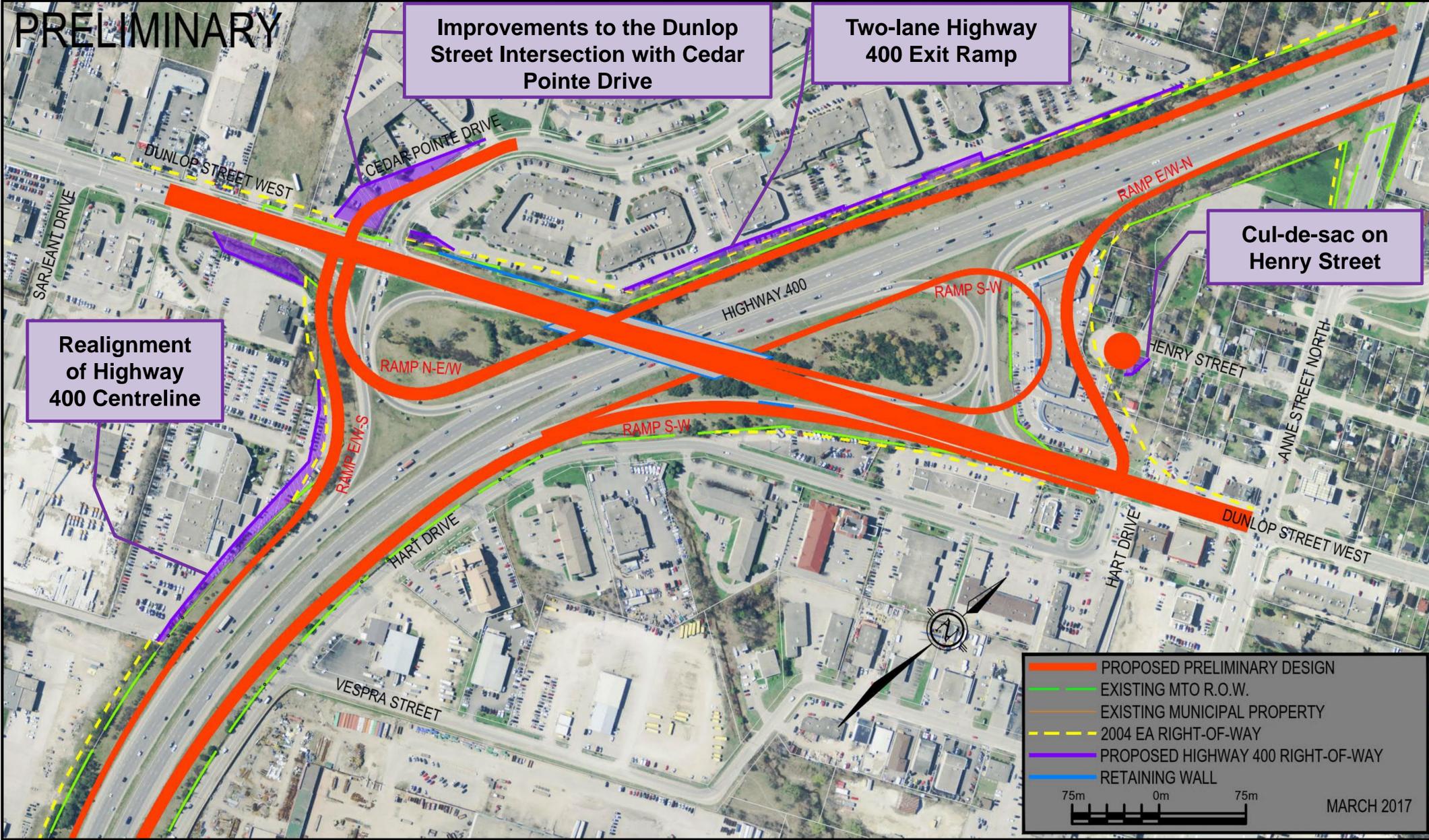


**Example of Diverging Diamond Interchange: Pleasant Hill Road over I-85 Diverging Diamond Interchange Gwinnett County, Georgia**



Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvements Dunlop Street – Parclo B3



This Preferred Alternative has changes to the Approved Plan from the 2004 TESR.

Changes to the 2004 TESR Approved Plan for this alternative include the following:

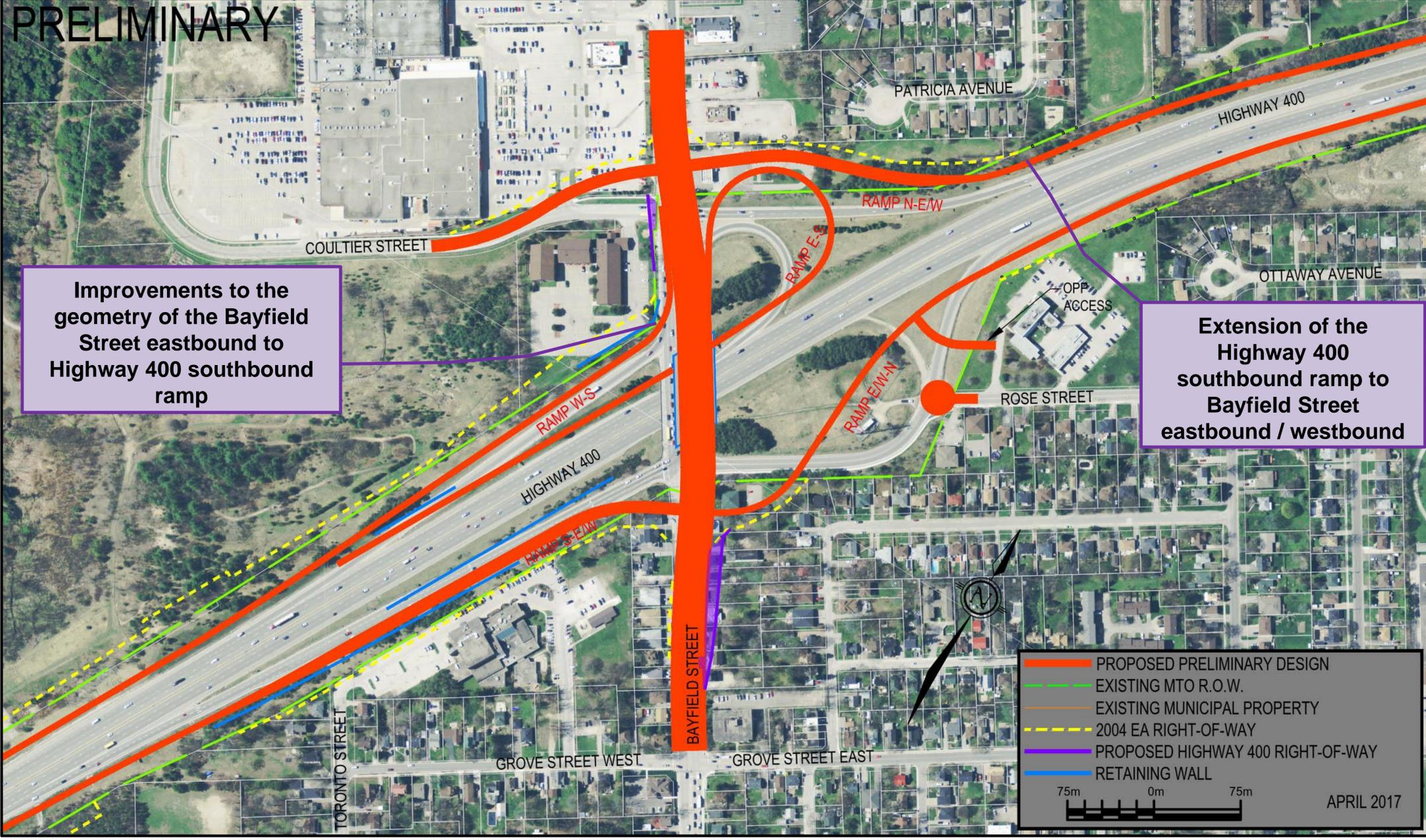
- Realignment of the Highway 400 centreline to match the existing centreline at Dunlop Street. **This realignment will allow Dunlop Street to remain open during construction of the new bridge**
- The Highway 400 southbound exit ramp to Dunlop Street eastbound / westbound has been upgraded to a two-lane exit
- Improvements to the Dunlop Street intersection with Cedar Pointe Drive
- Modification to the cul-de-sac on Henry Street in the northeast quadrant

Refer to the **Study Background** section of this PIC for further details on the evaluation of alternatives and the **Roll Plan** for property requirements.



Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvements Bayfield Street – Parclo A / Diamond Interchange



Improvements to the geometry of the Bayfield Street eastbound to Highway 400 southbound ramp

Extension of the Highway 400 southbound ramp to Bayfield Street eastbound / westbound



This Preferred Alternative has changes to the Approved Plan from the 2004 TESR.

Changes to the 2004 TESR Approved Plan for this alternative include the following:

- Improvements to the geometry of the Bayfield Street eastbound to Highway 400 southbound ramp including a larger radius near the Bayfield Street bullnose.
- The Highway 400 southbound ramp to Bayfield Street eastbound / westbound was extended with the bullnose relocated further north to improve sight distance.
- The property footprint along Bayfield Street is based on the City of Barrie's plans for a future 6-lanes.

Refer to the **Study Background** section of this PIC for further details on the evaluation of alternatives and the **Roll Plan** for property requirements.



## Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11 Class Environmental Assessment and Preliminary Design Study Update

### Potential Noise Impacts and Mitigation Measures

- Noise impacts are determined by comparing future ambient noise levels without the project and future noise levels with the project using an MTO-approved traffic noise model.
- Noise levels must be compared for both future conditions (with and without the Highway 400 improvements) 10 years from the projected completion of construction.
- Noise impacts occur when the future noise level with the project exceeds the future noise level without the project by 5 decibels (dBA) or greater, or when the future with the project noise levels are equal to or greater than 65 dBA.
- Noise barriers are being recommended at 7 locations throughout the corridor. All 6 previously recommended noise barriers are still being recommended. **One new noise barrier location relative to the Approved Plan from the 2004 TESR is located in the southwest quadrant of Highway 400 and Anne Street.**

Refer to the following displays and the **Roll Plan** for conceptual locations of the recommended noise barriers. Please note that the height and length of the noise barriers is to be determined during future design stages.

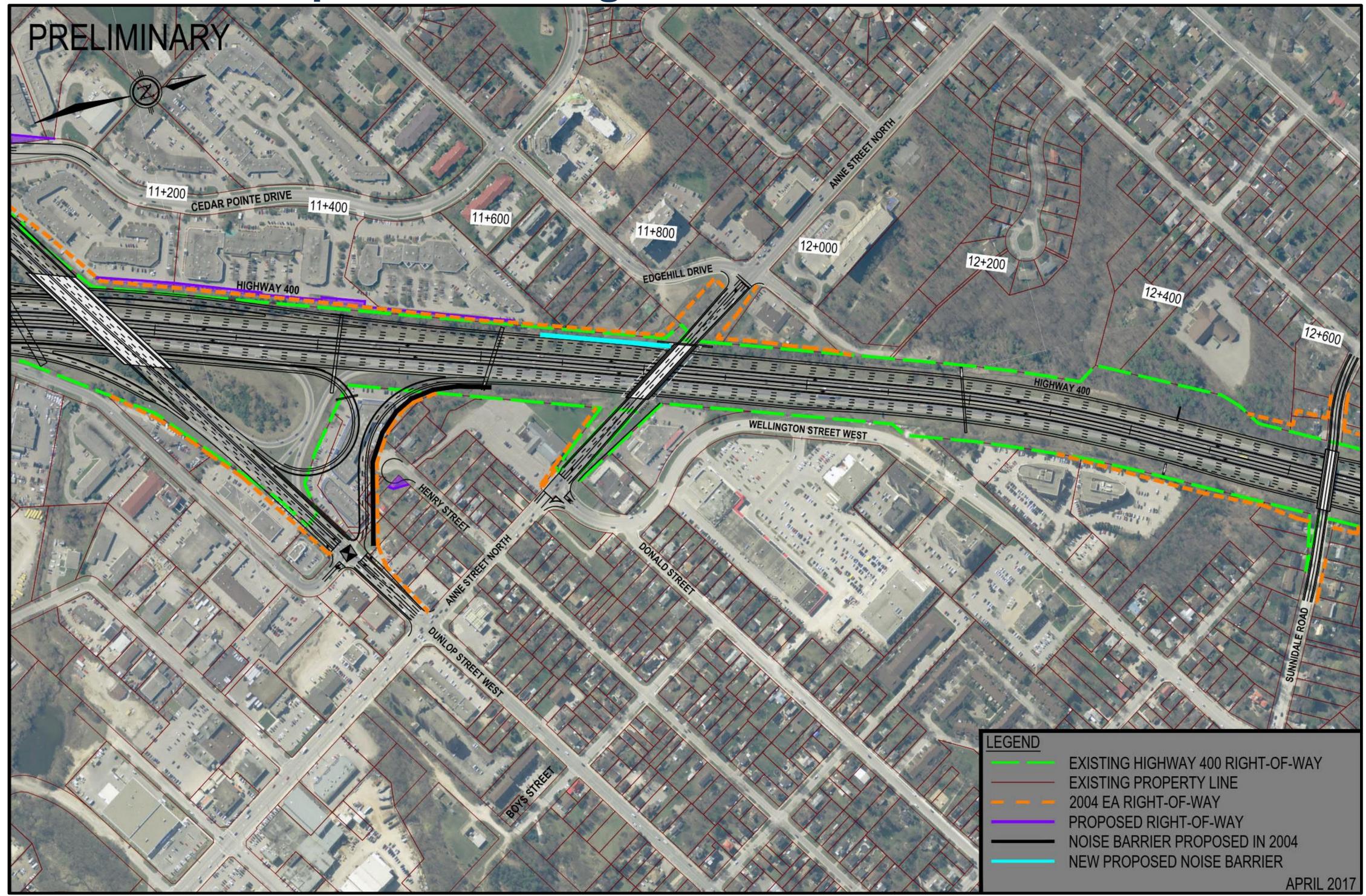


**There is a new noise barriers proposed from the Approved Plan from the 2004 TESR.**



Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
 Class Environmental Assessment and Preliminary Design Study Update

# Potential Noise Impacts and Mitigation Measures



**Please  
 Provide us  
 Your  
 Comments!**

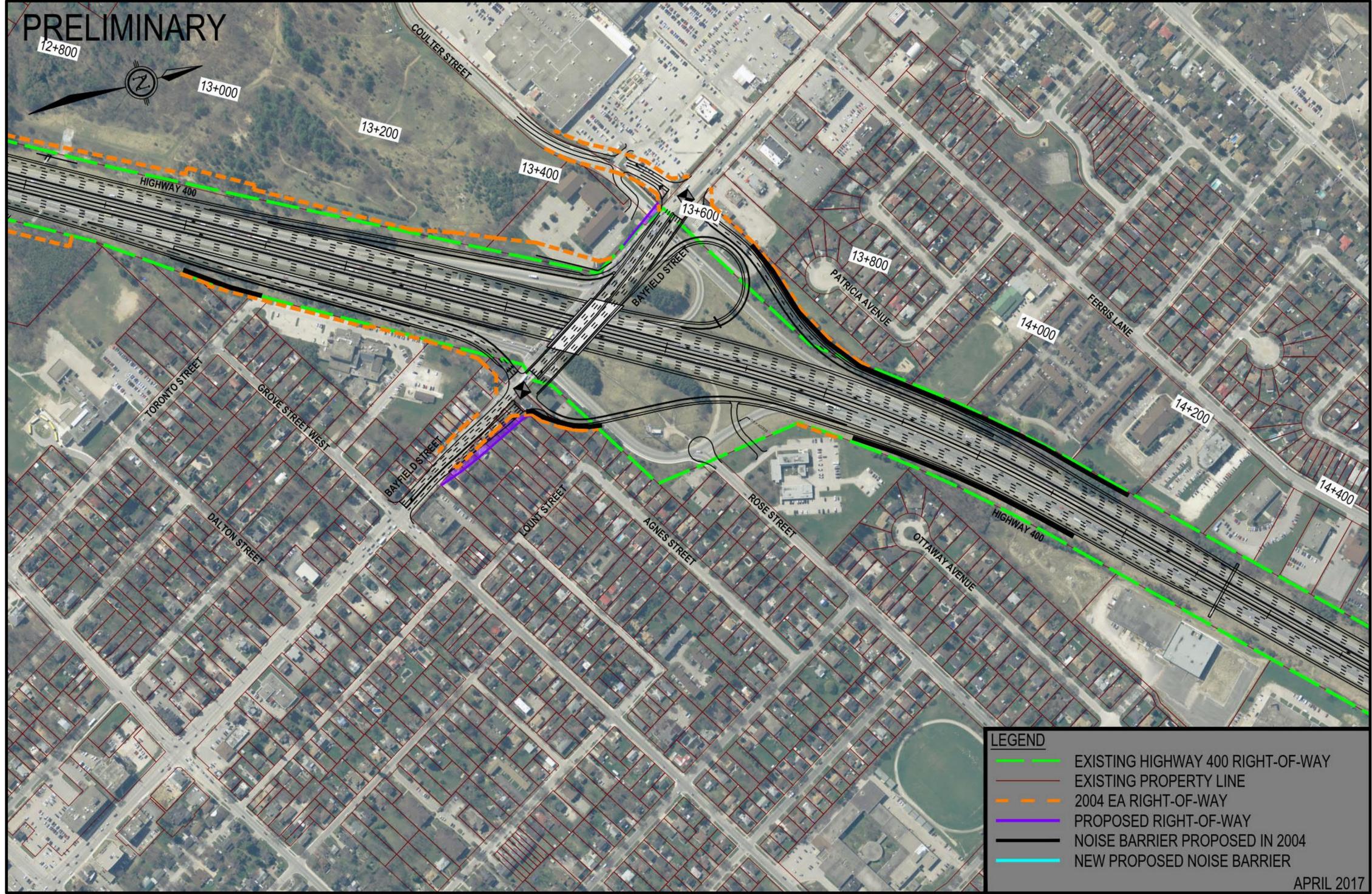
**There is a new  
 noise barriers  
 proposed from the  
 Approved Plan  
 from the 2004  
 TESR.**

Please note that the height and length of the walls is to be determined during future design stages.



Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
 Class Environmental Assessment and Preliminary Design Study Update

# Potential Noise Impacts and Mitigation Measures

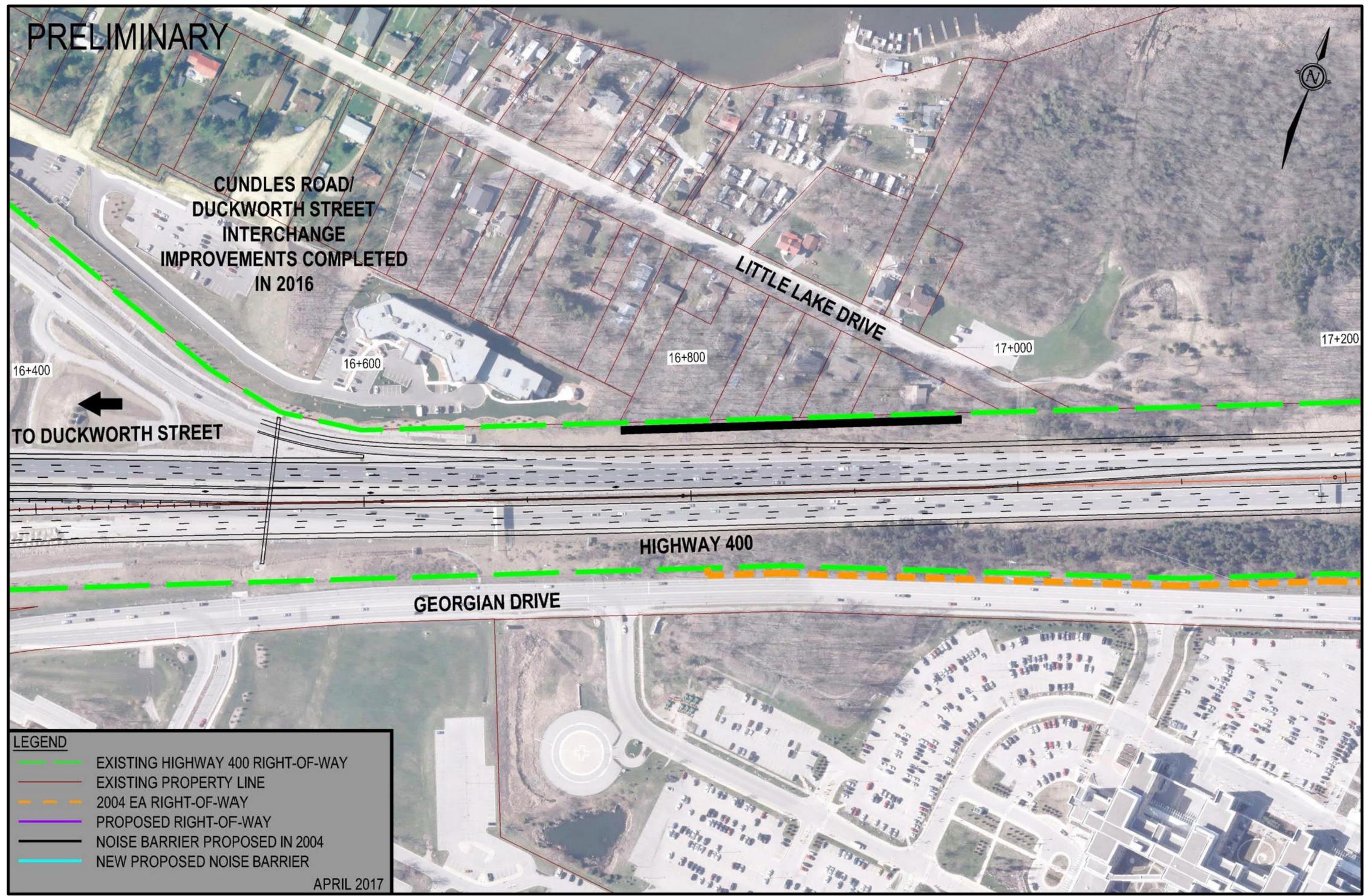


Please note that the height and length of the walls is to be determined during future design stages.



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Potential Noise Impacts and Mitigation Measures



Please note that the height and length of the walls is to be determined during future design stages.



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
Class Environmental Assessment and Preliminary Design Study Update

## **Freedom Of Information & Protection Of Privacy Act**

- Comments and information regarding this study are being collected to assist MTO and AECOM in meeting the requirements of the Ontario *Environmental Assessment Act*. This material will be maintained on file for the use of this study and may be included in study documentation.
- Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

**We encourage you to contact members of the Project Team if you have any questions or concerns regarding the above information.**





**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# STUDY BACKGROUND

This section of the PIC includes background information about the study including the details of the Recommended Plan that have not changed since the Approved Plan from the 2004 TESR.



**Sunnidale Road over Highway 400 looking north  
towards Bayfield Street**



## Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11

### Class Environmental Assessment and Preliminary Design Study Update

## Study Background

The following details are presented in this section:

- Overview of Existing Environmental Conditions
- Evaluation of Alternatives
- Overview of Development of Highway 400 Widening Alternatives
- Highway 400 Widening Maplevue Drive to Duckworth Street Long List of Alternatives
- Highway 400 Interchange Improvement Alternatives
- Overview of Mitigation Measures and Commitments to Future Work
- Proposed Heritage and Landscape Treatments
- Other Ongoing Projects and Construction

**If you have any questions about the information presented in this Section or would like additional details please ask one of our Project Team members circulating the PIC.**



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
Class Environmental Assessment and Preliminary Design Study Update

## Overview of Existing Environmental Conditions

### Fish & Fish Habitat:

- There are four main watersheds within the study area: Innisfil Creek, Lovers Creek, Tributaries of Kempenfelt Bay and Willow Creek.
- There are a total of 47 watercrossings of Highway 400 within the study area (23 are not fish habitat, 15 are warmwater fish habitat, 1 is coolwater / warmwater, and 8 are coldwater fish habitat (Lover's Creek & Innisfil Creek)).

### Terrestrial Ecosystems:

- Forested vegetation communities include deciduous, coniferous and mixed-wood communities with very few large forested blocks.
- There are four Provincially Significant Wetlands (PSW's) within the study area: Cookstown Hollows Swamp, Lovers Creek Swamp, Bear Creek Wetland and Willow Creek/Little Lake Wetland.
- 3 Species At Risk were observed in the study area.

### Archaeology:

- Stage 2 Archaeological Assessments have been undertaken along the corridor.

### Heritage:

- The following Highway 400 bridges have heritage value and are subject to heritage treatments:
  - Highway 89
  - Anne Street
  - Sunnidale Road
  - Bayfield Street

### Contamination

- Contamination studies and assessments have been completed as part of this update study.

### Noise & Air Quality

- Noise and Air Quality assessments have been conducted based on the recommended plan.



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

## Evaluation of Alternatives

- The project team completed a screening of the Highway 400 Widening alternatives and determined that:
  - The 2004 Approved Plan for the section from Highway 89 to Maplevue Drive is still valid and was carried forward;
  - The section from Maplevue Drive to Duckworth Street was revisited; and,
  - The recommendation for Highway 400 from south of Duckworth Street will be carried north and the number of lanes would be reduced to eventually match the existing configuration at the junction at Highway 11.
- At PIC #1, November 2014, the Project Team presented the Highway 400 Widening and Highway 400 Interchange Alternatives that would undergo further evaluation.
- A long list of Highway 400 Widening alternatives was subjected to a screening-level assessment. This screening led to the identification of a short list of alternatives which were evaluated based on the criteria in the table to the right using a Reasoned Argument (trade-off) method of evaluation.
- Once the Technically Preferred Alternative for the Highway 400 was determined, the assessment and evaluation of the interchange configuration alternatives was conducted. This involved evaluating the interchange alternatives based on the criteria in the table to the right using a Reasoned Argument (trade-off) method of evaluation.

Evaluation Component	Criteria
<b>Transportation and Engineering</b>	<ul style="list-style-type: none"> <li>Traffic Operations &amp; Safety</li> <li>Operations &amp; Maintenance</li> <li>Drainage</li> <li>Staging</li> <li>Cost</li> </ul>
<b>Natural Environment</b>	<ul style="list-style-type: none"> <li>Terrestrial Ecosystems (vegetation, wildlife etc.)</li> <li>Fish and Fish Habitat</li> <li>Wetlands</li> <li>Designated Natural Areas</li> <li>Groundwater</li> <li>Species at Risk</li> </ul>
<b>Socio-Economic Environment</b>	<ul style="list-style-type: none"> <li>Community Effects (residential, commercial, institutional property impacts etc.)</li> <li>Noise</li> <li>Agricultural</li> <li>Contamination and Waste</li> <li>Future Planned Land Use</li> <li>Aesthetics</li> <li>Snowdrift Assessment / Prevention</li> </ul>
<b>Cultural Environment</b>	<ul style="list-style-type: none"> <li>Archeological Resources</li> <li>Built Heritage and Cultural Landscapes</li> </ul>



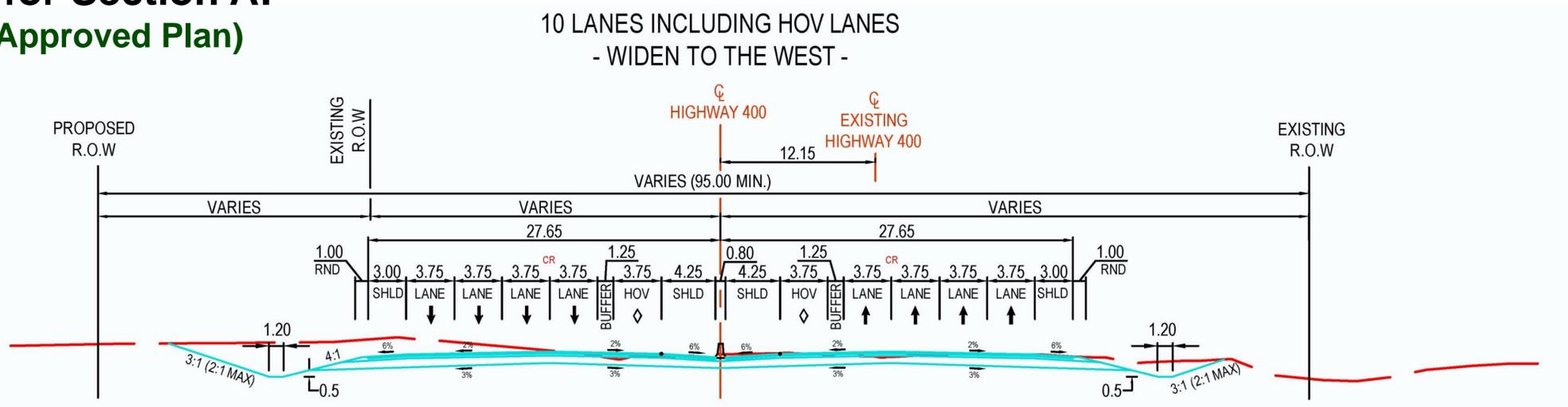
**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Overview of Development of Highway 400 Widening Alternatives

The Approved Plan identified in 2004 has been carried forward with minor refinements including the following:

Section of the Highway 400 Study Area	Alternatives
<b>Highway 89 to Mapleview Drive</b> <i>Section A</i>	Based on the existing conditions and the evaluation of alternatives previously undertaken, it has been determined that this section of the Highway 400 corridor has not changed substantially on the west side of Highway 400 since 2004. The rationale for the selection of <i>Widening to the West</i> is still valid for this section of Highway 400 as outlined in the 2004 TESR.
<b>Mapleview Drive to Duckworth Street</b> <i>Section B</i>	Three alternatives were carried forward for further assessment from Mapleview Drive to Duckworth Street: <ul style="list-style-type: none"> <li>• Widen about the centreline from six lanes to 10 lanes (5 General Purpose Lanes (GPLs) in each direction)</li> <li>• Widen about the centreline from six lanes to 10 lanes (4 General Purpose Lanes (GPLs) with 1 HOV lane in each direction)</li> <li>• Widen about the centreline from six lanes to 10 lanes (2 Express Lanes and 3 Collector Lanes in each direction)</li> </ul>
<b>Duckworth Street to the Junction at Highway 11</b> <i>Section C</i>	The recommendation for Highway 400 from south of Duckworth Street ( <b>Section B</b> ) will be carried north and the number of lanes would be reduced to eventually match the existing configuration at the junction at Highway 11.

**Recommended Plan for Section A:**  
 (No changes to the 2004 Approved Plan)





## Highway 400 Widening Mapleview Drive to Duckworth Street Long List of Alternatives

### Alternative 1

Widen about the centreline from 6 lanes to 10 lanes  
(5 General Purpose Lanes (GPLs) in each direction)



***Screened out because it did not include provision for future High Occupancy Vehicle (HOV) lanes***

### Alternative 2

Widen about the centreline from 6 lanes to 10 lanes  
(4 General Purpose Lanes (GPLs) with 1 High Occupancy Vehicle (HOV) lane in each direction)



***Carried Forward for further evaluation***

### Alternative 3

Widen about the centreline from 6 lanes to 10 lanes  
(2 Express Lanes and 3 Collector Lanes in each direction)



***Carried Forward for further evaluation***



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Highway 400 Widening Mapleview Drive to Duckworth Street

## Short list of Alternatives

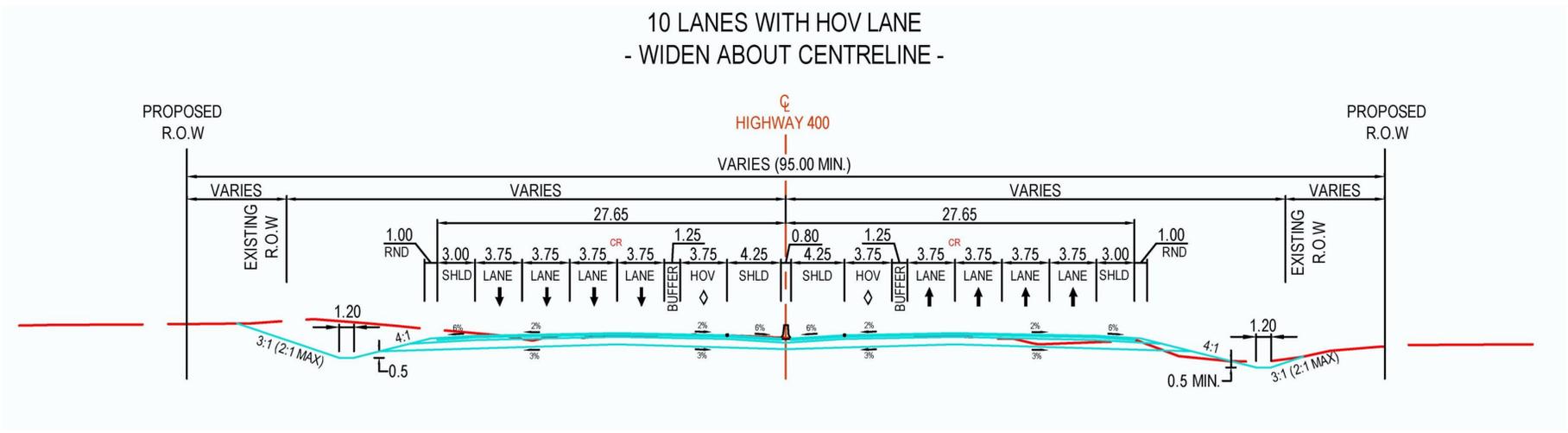
Factor	Alternative 2 - Four General Purpose Lanes & One HOV Lane	Alternative 3- Two Express / Three Collector
Transportation and Engineering / Traffic Operations	●	◐
Natural Environment	●	◐
Socio-Economic and Cultural Environments	●	◐
Cost	●	◐

- Alternative 3 results in slightly greater potential impacts to the natural & cultural environments than Alternative 2, however, these impacts can be minimized through mitigation measures.
- In terms of impacts to the socio-economic environment, the core-collector alternative (Alternative 3) requires a greater footprint which results in greater impacts relative to the 10-lane widening with HOV lanes (Alternative 2).
- Both alternatives will accommodate acceptable traffic operations to the horizon year of 2031; and each alternative has advantages and disadvantages to the highway operations.
- Alternative 3 is approximately 20% more expensive to construct than Alternative 2 and requires approximately 60% more property than Alternative 2.
- Alternative 3 will also have a slightly higher cost to maintain due to the additional highway infrastructure.

**Most preferred ● → ○ Least preferred**



**Alternative 2 is preferred.**  
**Maintain the Approved Plan from the 2004 TESR.**





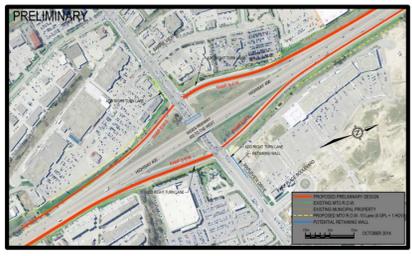
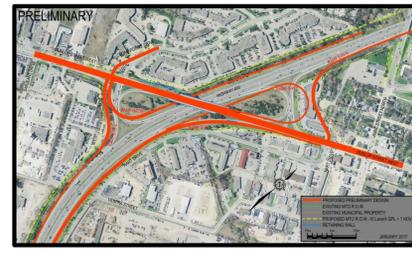
**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Highway 400 Interchange Improvement Alternatives

The TESR (2004) identified the following improvements to Highway 89 and Innisfil Beach Road which were carried forward as part of the Study Update:

- Highway 89 – Parclo A4 Interchange **(Maintain the 2004 study recommendations with minor changes)**
- Innisfil Beach Road – Parclo A4 Interchange **(Maintain the 2004 study recommendations with minor changes)**

The TESR (2004) identified improvements to four interchanges which have been re-evaluated as part of this study. The following was considered:

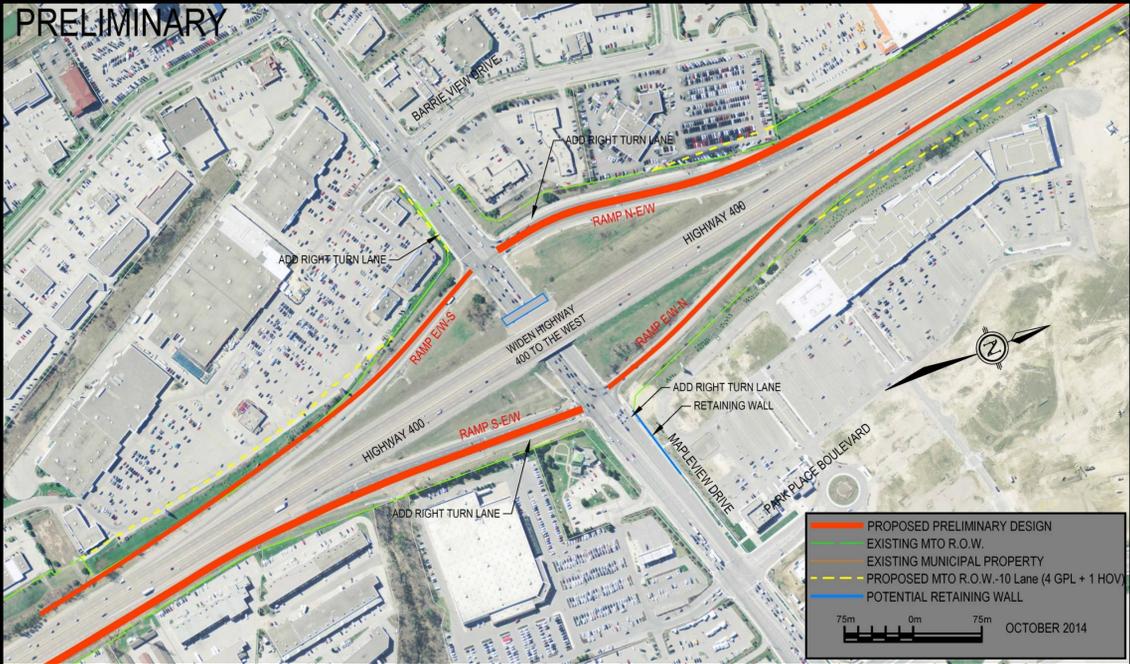
<b>Mapleview Drive</b>	2 alternatives were evaluated	Diamond		Diverging Diamond			
<b>Essa Road</b>	2 alternatives were evaluated	Parclo A4		Parclo A / Diamond with Roundabouts			
<b>Dunlop Street</b>	2 alternatives were evaluated	Parclo B3		Parclo B with Roundabout Ramp Terminals			
<b>Bayfield Street</b>	3 alternatives were evaluated	Parclo A / Diamond		Parclo / Diamond with Roundabouts		Diverging Diamond	



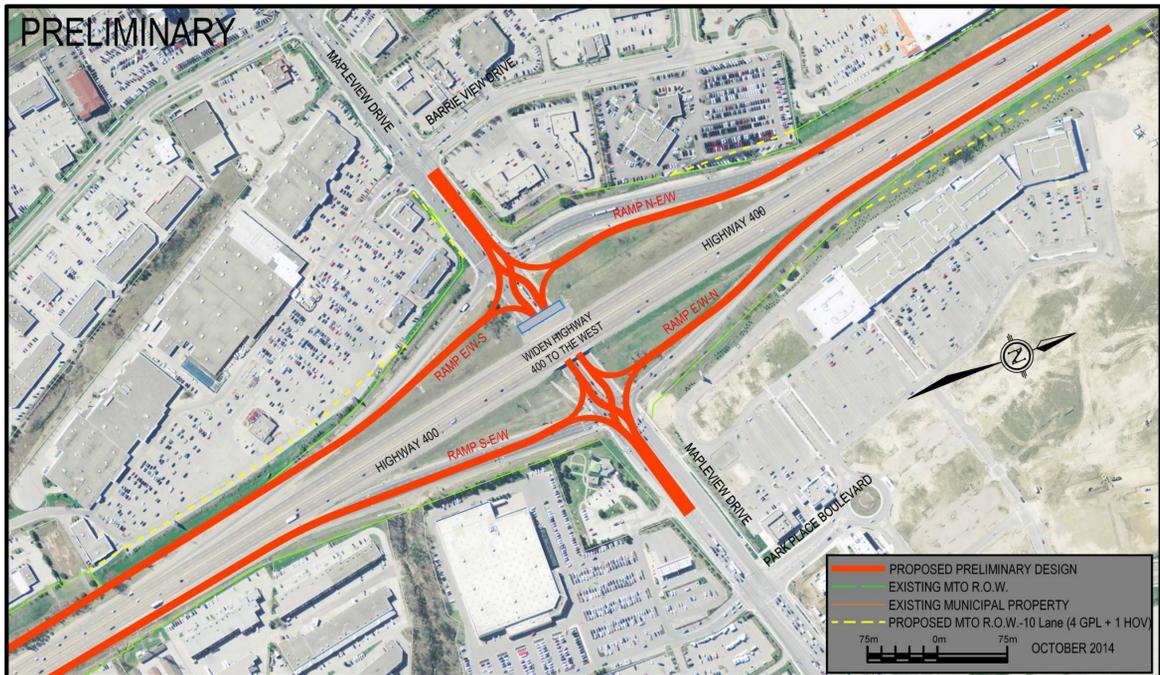
**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvements Mapleview Drive - Alternatives

**Alternative 1** ✘  
*Diamond (existing configuration) – Approved Plan in 2004*



**Alternative 2** ✔ **Preferred**  
*Diverging Diamond*



Factor	Alternative 1 - Diamond	Alternative 2 - Diverging Diamond
Transportation and Engineering / Traffic Operations	◐	●
Natural Environment	●	●
Socio-Economic and Cultural Environments	◐	●
Cost	●	◐

**Evaluation Summary:**

- Both alternatives result in slightly similar impacts to the natural, socio-economic, and cultural environments.
- Although Alternative 2 is a more expensive alternative to construct, Alternative 2 operates at a high level of service and results in a significant improvement in traffic operations and safety at the ramp terminals. As such, Alternative 2 is the overall preferred alternative for the interchange improvements at Mapleview Drive.
- Although this configuration is a change from the Approved Plan from the 2004 TESR, no additional property beyond the footprint of the Approved Plan is required.

✔ **Alternative 2 is preferred.**



Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvements

## Essa Road - Alternatives

### Alternative 1

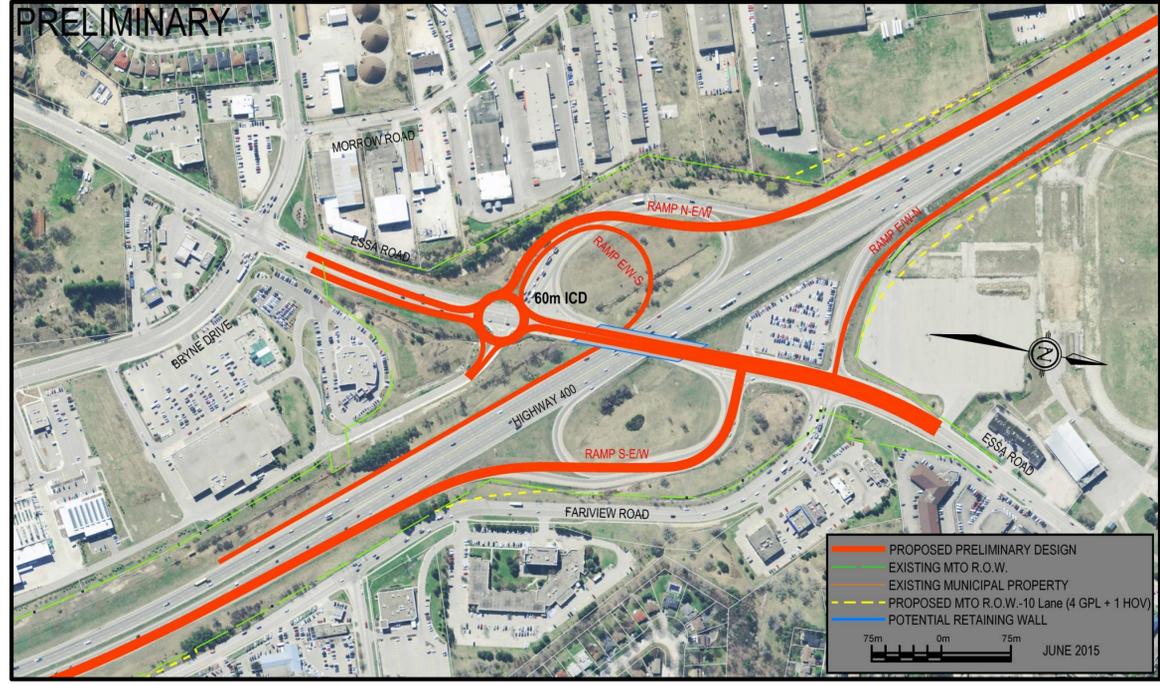
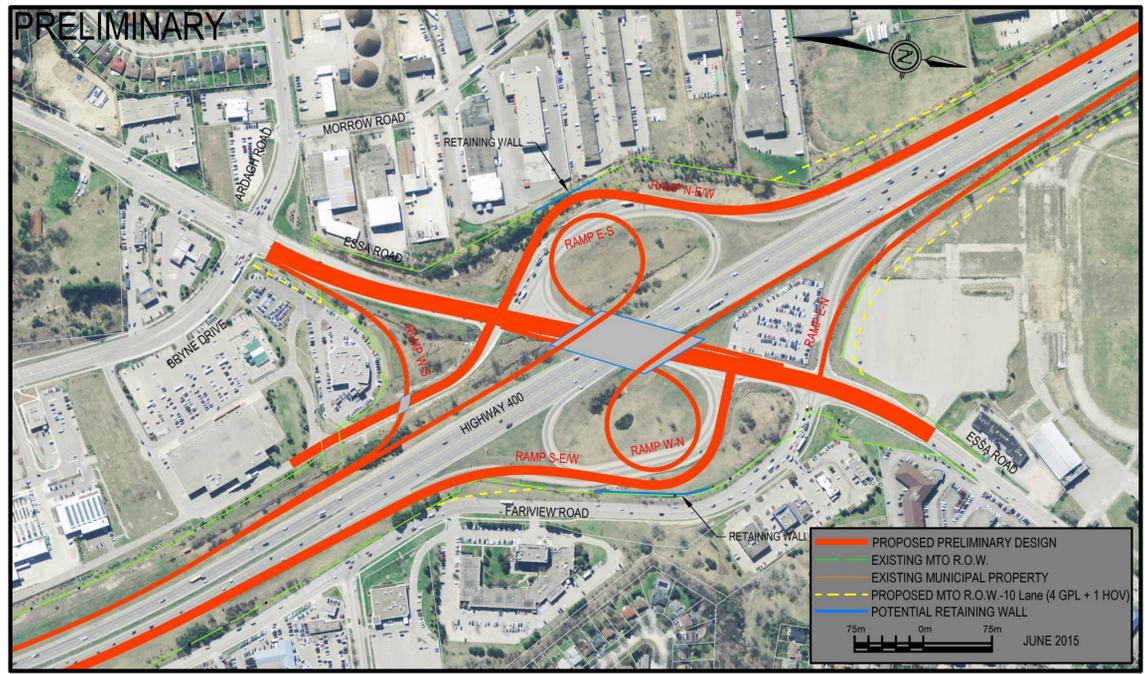


Parclo A4

### Alternative 2



Parclo A / Diamond with Roundabouts



Factor	Alternative 1 - Parclo A4	Alternative 2 - Parclo A / Diamond with Roundabouts
Transportation and Engineering / Traffic Operations	●	○
Natural Environment	●	●
Socio-Economic and Cultural Environments	◐	●
Cost	◐	●

### Evaluation Summary:

- Alternative 2 will operate at a very low level of service because a **two-lane roundabout is not sufficient to accommodate future traffic volumes at the west ramp terminal resulting in unacceptable traffic operations.**
- The area around the Essa Road interchange is urban in nature and therefore both alternatives result in similar minor potential impacts to the natural environment. Although Alternative 1 results in slightly greater impacts to future development lands and impacts to commercial property than Alternative 2, the difference between these impacts is relatively minor and can be addressed through mitigation.
- The superior traffic operations of Alternative 1 outweigh the lower costs, constructability advantages, and reduced footprint impacts associated with Alternative 2.

**Alternative 1 is preferred**



Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11  
 Class Environmental Assessment and Preliminary Design Study Update

# Highway 400 Interchange Improvements Dunlop Street - Alternatives

## Alternative 1

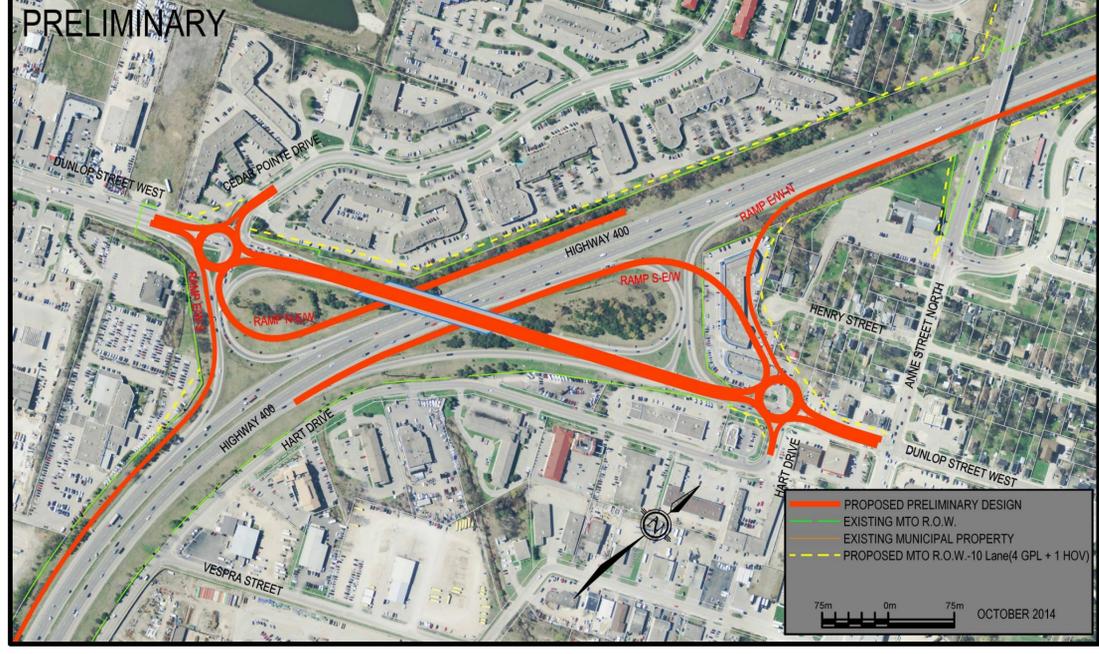
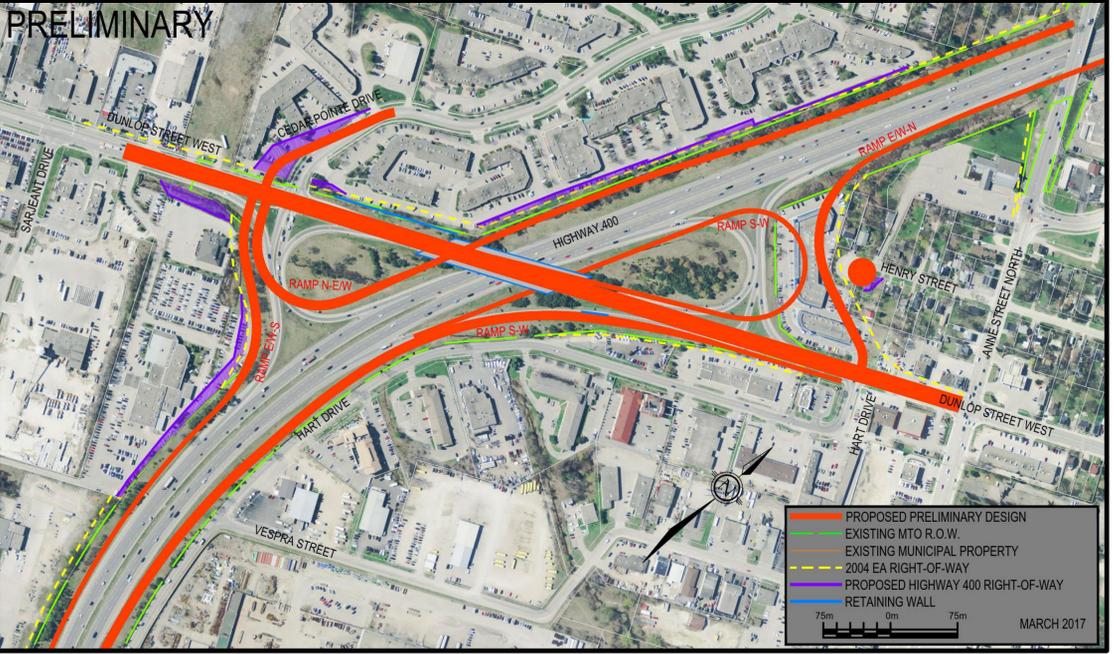


Parclo B3

## Alternative 2



Parclo B with Roundabout Ramp Terminals



Factor	Alternative 1 - Parclo B3	Alternative 2 - Parclo B with Roundabout Ramp Terminals
Transportation and Engineering / Traffic Operations	●	○
Natural Environment	●	●
Socio-Economic and Cultural Environments	○	●
Cost	○	●

### Evaluation Summary:

- Alternative 2 has a slightly smaller property footprint than Alternative 1 resulting in slightly less property impacts than Alternative 1.
- Alternative 2 is less expensive to construct and has lower maintenance and property costs than Alternative 1.
- Although Alternative 2 is more desirable in terms of minimizing impacts to adjacent properties and is less costly to implement, these advantages are outweighed by the significant disadvantages of Alternative 2 from a transportation and engineering perspective.
  - Alternative 2, with two-lane ramp terminals **will not be sufficient to accommodate future traffic volumes at the Dunlop Street interchange and fails to improve traffic flow and congestion.** A three lane roundabout is not preferable from a traffic perspective.
- Given that incremental impacts with Alternative 1 can be addressed through mitigation, the cost difference is not significant between the two alternatives, and Alternative 1 can provide enhanced operations relative to the existing interchange configuration, Alternative 1 is preferred.



# Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11

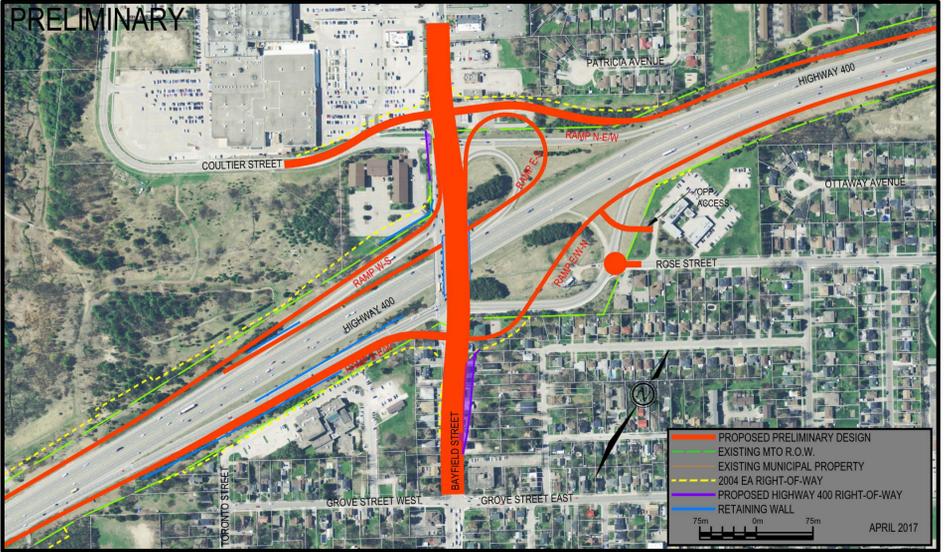
Class Environmental Assessment and Preliminary Design Study Update

## Highway 400 Interchange Improvements Bayfield Street - Evaluation

**Alternative 1**  
Parclo A / Diamond  **Preferred**

**Alternative 2**   
Parclo / Diamond with Roundabouts

**Alternative 3**   
Diverging Diamond



Factor	Alternative 1 - Parclo A / Diamond	Alternative 2 - Parclo / Diamond with Roundabouts	Alternative 3 - Diverging Diamond
Transportation and Engineering / Operations	●	◐	◑
Natural Environment	●	●	●
Socio-Economic and Cultural Environments	◐	◐	◑
Cost	◐	●	◑

### Evaluation Summary:

- Although Alternative 2 has a small footprint which minimizes impacts to adjacent commercial, residential, institutional land uses and natural features, and is the least costly alternative to implement (approximately 25% less), this alternative provides unacceptable levels of traffic operations as roundabouts **are not sufficient to address the 2031 traffic volumes.**
- Although Alternative 1 results in greater property impacts (residential and commercial / industrial property), **Alternative 1 is consistent with the long-term planning throughout the corridor as it was part of the Approved Plan from the 2004 TESR.**
- Both Alternatives 1 and 3 result in acceptable traffic operations for the 2031 horizon year, and although Alternative 3 operates slightly better at the Bayfield Street interchange ramp terminals, when considered within the context of traffic conditions beyond the interchange along Bayfield Street, the benefit to traffic operations is negligible.
- Given that **Alternative 1 is a conventional interchange configuration** that is projected to operate well at a **relatively lower construction cost**, and mitigation strategies can be considered to reduce property impacts wherever possible, Alternative 1 is the preferred alternative for interchange improvements at Bayfield Street.

Most preferred ● → ○ Least preferred

 **Alternative 1 is preferred**



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

# Overview of Recommended Mitigation Measures and Commitments to Future Work

Factor	Recommended Mitigation & Commitment to Future Work
<b>Terrestrial Environment</b>	<ul style="list-style-type: none"> <li>• Retain significant trees and shrubs where possible</li> <li>• Restore any disturbed areas with landscaping</li> <li>• Additional species at risk surveys will be undertaken in detail design prior to construction</li> <li>• Examine potential for wildlife crossings at culvert replacements during detail design</li> <li>• Invasive species management</li> </ul>
<b>Fish and Fish Habitat</b>	<ul style="list-style-type: none"> <li>• Watercrossing work will respect the appropriate in-water timing restrictions for the various thermal regimes</li> <li>• Erosion and sediment control measures will be implemented</li> <li>• Natural channel designs</li> </ul>
<b>Construction Noise</b>	<ul style="list-style-type: none"> <li>• Employ standard mitigation measures (i.e. mufflers, engine maintenance, etc.)) and utilize municipal noise control by-law requirements during construction</li> </ul>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>• Employ standard mitigation measures and best management practices during construction (i.e. dust suppression, maintenance, etc.)</li> </ul>
<b>Groundwater</b>	<ul style="list-style-type: none"> <li>• Pre-construction well monitoring adjacent to proposed construction areas to be conducted. Addition monitoring to be determined where appropriate.</li> </ul>
<b>Stormwater</b>	<ul style="list-style-type: none"> <li>• Finalize stormwater management plan</li> </ul>
<b>Erosion &amp; Sedimentation</b>	<ul style="list-style-type: none"> <li>• Employ standard mitigation measures and best management practices (i.e. seeding, erosion control blankets, location of stockpiling materials etc.)</li> <li>• Sod and composted topsoil</li> <li>• Planting of slopes with shrubs for long term stability</li> </ul>
<b>Archaeological Resources</b>	<ul style="list-style-type: none"> <li>• Clear land of archaeological potential before construction</li> </ul>
<b>Heritage Resources</b>	<ul style="list-style-type: none"> <li>• Use recommended heritage treatments on designated bridges</li> </ul>
<b>Snow Drift</b>	<ul style="list-style-type: none"> <li>• A Snow Drift Analysis was completed as part of this Preliminary Design Study Update to identify areas of high potential for snow drift and snow fencing and plantings are currently being implemented at various locations through the corridor. Additional snow drift modelling should be undertaken during detail design to investigate opportunities for site specific snow drift mitigation measures in areas with high snow drift potential.</li> </ul>



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
Class Environmental Assessment and Preliminary Design Study Update

## Proposed Heritage and Landscape Treatments

### Heritage Treatments

The following treatments are proposed for the replacement of the heritage structures in the corridor:

- The MTO Coat of Arms
- Decorative Railing
- Curved Soffit

These treatments were recommended as part of the *Highway 400 Major Mackenzie Drive to Highway 11 Heritage Bridge Replacement Design Concept Study (SNC Lavalin, 2009)* to provide visual unity through the Highway 400 corridor.

### Landscape Treatments

A Landscape Opportunities Plan is being completed as part of this proposed improvements update study. Detailed landscape plans will be prepared as this study moves into further stages of design.



**The MTO Coat of Arms on the Highway 400 / Line 11 Underpass Replacement (2016)**



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
Class Environmental Assessment and Preliminary Design Study Update

## Other Ongoing Projects and Construction

The following structures are currently scheduled for design and construction or are currently under construction within this section of the Highway 400 corridor:

- Replacement of the Highway 400 / 4th Line Underpass (Design Build Ready – construction in 2017)
- Replacement of the Highway 400 / Highway 89 Underpass (Detail Design in 2017)
- Replacement of the Highway 400 / 10<sup>th</sup> Line Underpass (Design Build Ready – construction ongoing 2016/2017)
- Replacement of the Highway 400 / Tiffin Street Underpass (construction ongoing 2016-2018)
- Cundles Road – Duckworth Street / Highway 400 Interchange Improvements (construction ongoing)



**4<sup>th</sup> Line Bridge over Highway 400, looking east.**



## Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11 Class Environmental Assessment and Preliminary Design Study Update

### Ongoing and Completed Municipal Studies

The ongoing and completed studies for improvements along the Highway 400 corridor being undertaken by the municipalities include:

- Highway 400 / 6<sup>th</sup> Line Interchange (*Town of Innisfil*)
- County Road 21 (Innisfil Beach Road) Improvements – County Road 27 to County Road 39 (*Simcoe County*)
- McKay Rd East (10th Line) / Highway 400 Interchange (*City of Barrie*)
- McKay Rd East Widening to 4 lanes (*City of Barrie*)
- Lockhart Road / Salem Road Highway 400 4 Lane Crossing (*City of Barrie*)
- Harvie Road / Big Bay Point Road Highway 400 4 Lane Crossing (*City of Barrie*)
- Widening of Essa Road to 6 lanes (*City of Barrie*)
- Widening of Tiffin Street to 4 Lanes (*City of Barrie*)
- Widening of Dunlop Street to 6 Lanes (*City of Barrie*)
- Widening of Anne Street to 4 Lanes (*City of Barrie*)
- Widening of Bayfield Street to 6 lanes (*City of Barrie*)
- Widening of St. Vincent Street to 4 Lanes (*City of Barrie*)

The Project Team has been working with the municipalities to not preclude future municipal plans, including active modes of transportation (e.g. bike lanes, sidewalks, etc.).

Municipal studies that affect Highway 400 are subject to Ministry of Transportation (MTO) approval for both technical engineering design standards and traffic impacts to the highway network, prior to the commencement of construction. The municipal studies listed above follow a Municipal Class Environmental Assessment process with consultation that is conducted by the municipality. MTO participates in these studies either through a technical review, as part of an external project team with other stakeholders (i.e. the County or other municipalities), or through a joint project with the municipality.



**Highway 400 – 1 km South of Highway 89 to the Junction of Highway 11**  
**Class Environmental Assessment and Preliminary Design Study Update**

## Next Steps

The following activities will be undertaken following this Public Information Centre (PIC):

- Respond to comments received at this PIC;
- Finalize the preliminary design of the Technically Preferred Alternatives for the widening and interchange alternatives;
- Prepare the Transportation Environmental Study Report (TESR) Addendum to address changes to the 2004 Approved Plan;
- Advertise the 30-day public and agency review period of the TESR Addendum; and,
- Detail Design Study for the structures and overall improvements.

**Thank you for attending**

**Please feel free to ask questions and fill out a comment sheet before you leave.**

**Visit our website at <http://highway400improvements89to11.ca>.**

If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members.