LANGSTAFF ROAD MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (EA)
WESTON ROAD TO HIGHWAY 7

YORK REGION

APPENDIX C: CONSULTATION RECORD

PART 10: City of Vaughan Meeting Minutes

TABLE OF CONTENTS

TABLE OF CONTENTS

LANGSTAFF ROAD MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (EA)
WESTON ROAD TO HIGHWAY 7

YORK REGION

CITY OF VAUGHAN MEETING MINUTES

MEETING MINUTES

Date:	December 12, 2017 2:00 p.m. to 4:00 p.m.	**Project Number:**	16M-01457-01
Location:	City of Vaughan 2141 Major Mackenzie Drive 2nd Flr Public Works Boardroom	**Project:**	Langstaff Road EA – Weston Road to Highway 7
Purpose:	City of Vaughan Meeting #1		

Attendees:	**Agency**
Marta Roias	City of Vaughan
Gino Martino	City of Vaughan
Dorothy Kowpak	City of Vaughan
Mark Antoine	City of Vaughan
Brian Wolf	York Region – Capital Planning and Delivery
Tim Kwan	York Region – Capital Planning and Delivery
Neil Ahmed	WSP
Katherine Jim	WSP
Jian Guan	WSP

Item	Details	Action By
ITEM 1 –	**INTRODUCTION**	
1.1	Those at the meeting were introduced. B. Wolf noted that the purpose of the meeting is to provide an update on project progress, review key issues and challenges and present the preliminary design alternatives for the proposed improvements on Langstaff Road.	
ITEM 2 –	**LANGSTAFF ROAD EA STUDY STATUS**	
2.1	A presentation package was distributed. N. Ahmed, WSP, provided a brief study overview and background information, noting that the EA study includes the following key components: • Langstaff Road widening from Weston Road to Highway 7; • Langstaff Road interchange improvement at Highway 400; • Langstaff Road extension across CN MacMillan Yard; and • Langstaff Road grade separation with GO Transit Barrie Line.	
2.2	York Region noted that City of Vaughan had previously requested to include the Langstaff Road and Stan Gate intersection as part of the study. City staff will follow up internally with their traffic group to provide clarification on the potential improvement required at the	City of Vaughan

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	intersection and through that section of Langstaff Road.	
2.3	N. Ahmed noted that the Recommended Alternative Planning Solution (i.e. improvements on Langstaff Road) was previously identified and presented at Open House #1 on June 14, 2017. City of Vaughan staff attended Open House #1. The preliminary design for the improvements on Langstaff Road will be presented at Open House #2.	
ITEM 3 –	**NEED AND JUSTIFICATION**	
3.1	N. Ahmed noted that Langstaff Road is identified as a primary arterial goods movement corridor between Highway 400 and Dufferin Street, strategically located within an intensifying employment area, and in close proximity to primary growth areas including Vaughan Metropolitan Centre, Vaughan Mills Centre and Concord GO Centre. The improvements to Langstaff Road will accommodate long term travel demands, support key growth policies (Provincial and Municipal levels), maximize the potential of employment areas and support the goods movement network.	
3.2	As part of the Recommended Planning Solution, the improvements on Langstaff Road include: • Langstaff Road widening to 6 GPLs, not precluding converting 2 curb lanes to 2 HOV lanes in the future; • Construction of Langstaff Road connection across the CN MacMillan Yard; • Conversion of Highway 400 / Langstaff Road interchange to a full-move interchange; • Construction of grade separation at GO Transit Barrie Line; • Intersection improvements; and • Accommodation for alternative modes of transportation improvements including provision of or improvements to transit system and pedestrian and cycling facilities.	
3.3	City of Vaughan to provide input on any additional design considerations that the City would like to be included in the study.	City of Vaughan
ITEM 4 –	**LANGSTAFF ROAD WIDENING**	
4.1	B. Wolf noted that the typical cross-section in the Region's *Towards Great Regional Streets* was developed for a roadway with a 43 m right-of-way; whereas, Langstaff Road has a 36 m right-of-	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	way (per Official Plan) and roadway improvements will be limited within the 36 m right-of-way. An internal workshop with various Regional Staff was held to develop the typical cross-section for Langstaff Road (i.e. including representatives from different departments). The typical 6-lane Langstaff Road cross-section includes: • Four 3.3 m through lanes (two in each direction); • Two 3.5 m curb lanes (one in each direction); • One 2.8 m median with landscape features (no trees); • Two 1.0 m edge zones (one in each direction); and • One 1.5 m Cycle Trak and a 1.5 m sidewalk separated by a 2.0 m planting zone on either side of the roadway.	
4.2	City of Vaughan to provide comments on the proposed Langstaff Road typical cross-section.	City of Vaughan
ITEM 5 –	**LANGSTAFF ROAD / METROLINX GO BARRIE LINE GRADE SEPARATION**	
5.1	The GO Transit Barrie line crossing Langstaff Road is currently at grade (2 tracks). An overpass option and an underpass option were developed for the Langstaff Road / GO Transit Barrie line grade separation. Based on the Regional Express Rail (RER) program, the grade separation is required to protect for three tracks at the crossing location.	
5.2	N. Ahmed noted that the soccer field located on the south side of Langstaff Road just west of the GO line crossing is potentially impacted by the future grading of the grade separation. The entrance to the parking area will likely be relocated, for example, to be aligned with Planchet Road. City of Vaughan to confirm the feasibility of shifting the soccer field further south and also whether easterly limit of the park may be used as a staging area for construction. The City advised that the park will continued to be used as a soccer park. The City noted that there is a trail located south of the park and the trail crosses Langstaff Road and continues along the West Don River. There are plans to continue the trail northerly in the future.	City of Vaughan
5.3	N. Ahmed noted that the first access to the property on the south side of Langstaff Road immediately east of the GO Transit crossing is likely required to be closed due to the grading impact for the overpass option; however, the property has two other	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	alternative accesses. The Project Team will contact the property owner to discuss the issues associated with closure of the access after meeting with Metrolinx and selecting the preferred GO Transit grade separation alternative..	
ITEM 6 –	**LANGSTAFF ROAD / CN YARD CROSSING**	
6.1	N. Ahmed noted that the Project Team held numerous meetings with CN to discuss the potential Langstaff Road connection across the CN MacMillan Yard. Three crossing alignments were presented to CN including a north alignment, straight-through alignment and a south alignment. CN was not in favour of the north alignment and the overpass option along the straight-through alignment as there crossing locations will be through key operation areas of the rail yard. As a result, the following alternatives will be evaluated: • Underpass (tunnel) along the straight-through alignment; • Steel Beam I Girder structure along the south alignment; • Extradosed structure along the south alignment; and • Segmental Concrete structure along the south alignment.	
6.2	It is likely that the south alignment will result in some property impacts on the east side of the yard. The Project Team asked the City to advise if there are any development application on the west side of Keele Street.	Vaughan
6.3	The Project Team noted that CN continues to express concern about all of the proposed alternatives. It would be beneficial to demonstrate the improvements to goods movement with the new link across CN yard and how that may also be an overall benefit to CN operations. The City of Vaughan will try to reach out to the business community regarding trucking use.	Vaughan
ITEM 7 –	**LANGSTAFF ROAD INTERCHANGE AT HIGHWAY 400**	
7.1	A travel demand analysis (screenline analysis) was carried out to select the preferred Langstaff Road widening alternative. Based on the travel demand analysis results, the alternative of widening Langstaff Road to 6 GPLs, constructing the missing link across CN MacMillan Yard, and converting the existing Highway 400 interchange at Langstaff Road to a full-move interchange, yields the most overall benefits in improving traffic operation for all road users.	
7.2	City of Vaughan asked if the Highway 400/Langstaff Road interchange improvement is still warranted if the connection at CN MacMillan Yard is cannot be implemented. The City would like to	WSP

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	see the justification of each component of the design individually (i.e. interchange improvement, connection across CN yard and GO rail grade separation).	
7.3	B. Wolf noted that MTO did not accept the Highway 400/Langstaff Road interchange configuration included in the *Vaughan Metropolitan Centre and Surrounding Areas Transportation Study (2013)* and a number of additional interchange improvement concepts were developed as part of the EA Study. Through a series of meetings with MTO, the ministry agreed to consider the following alternatives: • **Option 1 – "Ramp-Off-A-Ramp" Configuration**: Under this Option, a ramp-off-a-ramp is developed along the tangent section of the Rutherford Road N-E/W ramp to provide the southbound exit movement to Langstaff Road. The ramp-off-a-ramp goes under Rutherford Road and Rutherford Road W-S ramp, continues southerly along Highway 400, crossing over Bass Pro Mills Drive, and terminates at Langstaff Road. An E/W-N loop ramp is proposed to provide access to Highway 400 northbound from Langstaff Road. • **Option 2 – Re-route of Bass Pro Mills Drive E-S Ramp:** Under this Option, the existing Bass Pro Mills Drive E-S ramp is re-routed to connect to Rutherford Road. Vehicles from Bass Pro Mills Drive will use the Rutherford Road W-S ramp to access Highway 400 southbound. An E-N ramp and a W-N ramp are proposed to provide access to Highway 400 northbound from Langstaff Road. Due to the introduction of the E-N ramp, the Bass Pro Mills Drive S-E/W ramp is required to be reconfigured to avoid the potential weaving issues between these two ramps. As a result, a Langstaff Road S-E/W ramp extension is proposed to maintain the access to Vaughan Mills from Highway 400 in the northbound direction. The ramp extension will connect to the existing Four Valley Drive and eventually connect to the existing Bass Pro Mills Drive S-E/W ramp terminal. • **Option 3 – Hybrid Option:** This option has the same E/W-N ramp configuration under Option 1 and the same E-S ramp configuration under Option 2.	
7.4	Traffic microsimulation model has been prepared for all three scenarios. Overall, there is no significant impact to the operations on Highway 400 under all three scenarios (future 2041 conditions, both AM and PM peak periods).	
7.5	The Project Team will be carrying out evaluation of the interchange	WSP

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	alternatives. City of Vaughan would like to review this information when available.	
7.6	B. Wolf noted that, in terms of cost and property impact, Option 3 is the most favourable option; however, Highway 400 southbound on-ramp from Bass Pro Mills Drive is required to be re-routed to connect to Rutherford Road. The connection from Bass Pro Mills Drive to Rutherford Road will make use of the roadway previously planned as part of the Vaughan Mills Secondary Plan. The Region would like to have the City's assistance and support to reach out to representatives of Ivanhoe Cambridge II Inc., owner of Vaughan Mills Mall.	
7.7	City of Vaughan to provide the Vaughan Mills contact information from the Vaughan Mills Secondary Plan OMB Hearing. The Project Team would like to schedule a meeting with Vaughan Mills representatives in early 2018. City staff who are engaged in the Vaughan Mills Secondary Plan OMB hearing should also attend.	City of Vaughan York Region
ITEM 8 –	**NEXT STEPS / OTHER BUSINESS**	
8.1	The next steps of the study include: • Refine design alternatives per input from technical agencies; • Carry out alternative evaluation process; • Identify the Preferred Alternative; and • Present the Preferred Alternative at Open House #2.	
8.2	City of Vaughan to follow up with the local business group to explore opportunities to have local business support for the study.	City of Vaughan
8.3	WSP provided the City with the roll plans of the Highway 400/Langstaff Road interchange improvement concepts at the end of the meeting.	
8.4	City of Vaughan noted that there is a future plan to connect the trail south of Langstaff Road with the trail on the north side of the road between Keele Street and GO Line crossing.	
8.5	City of Vaughan noted that improvement to the existing culvert located at the park just west of GO line crossing is required.	
8.6	City of Vaughan will review the information presented at the meeting and will provide input to the Project Team by January 22, 2018	City of Vaughan

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Langstaff Road
Class Environmental Assessment Study
Weston Road to Highway 7

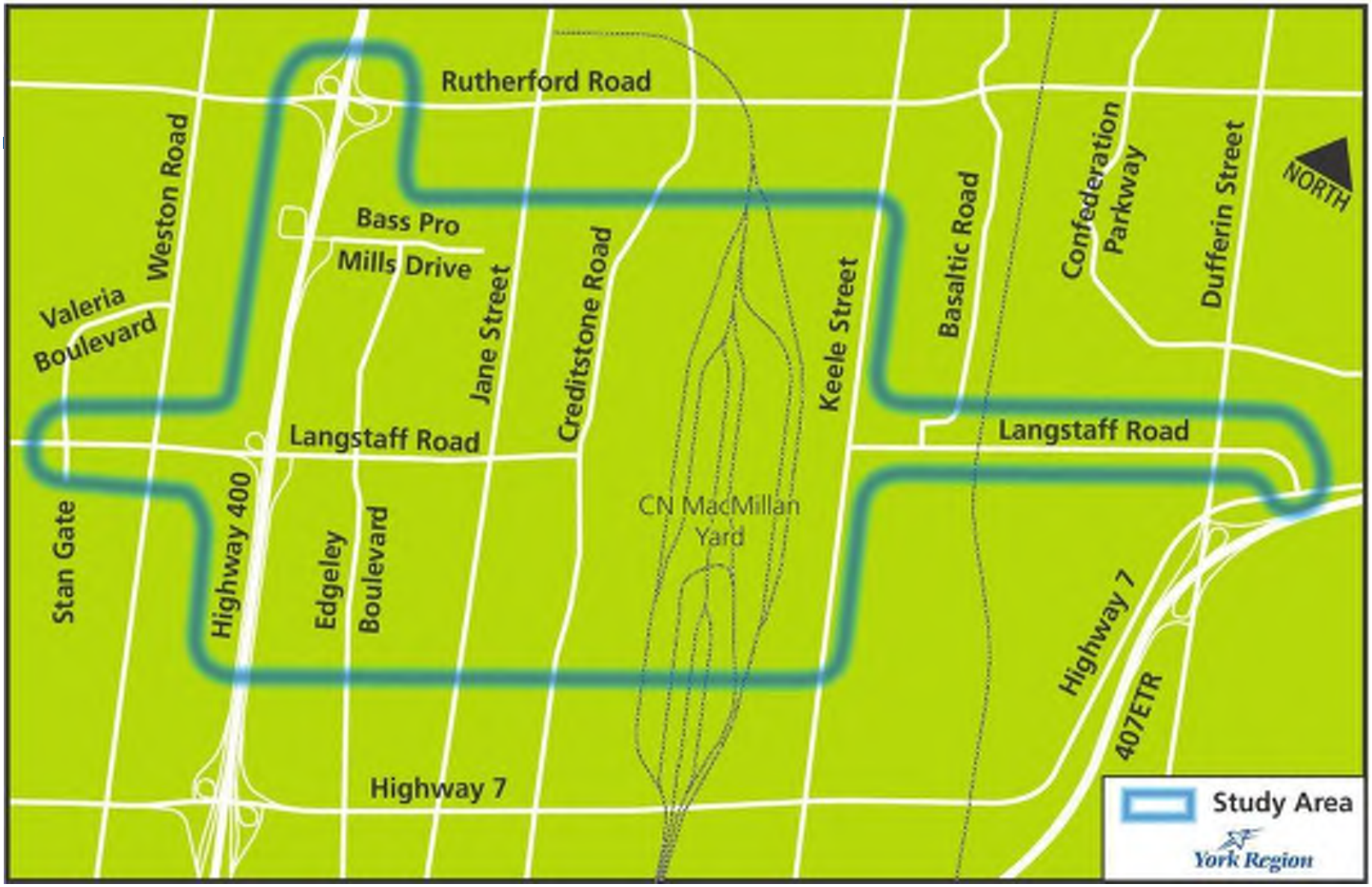
City of Vaughan Meeting 1
December 12, 2017


GREAT | STREETS
Building Roads that Build Community

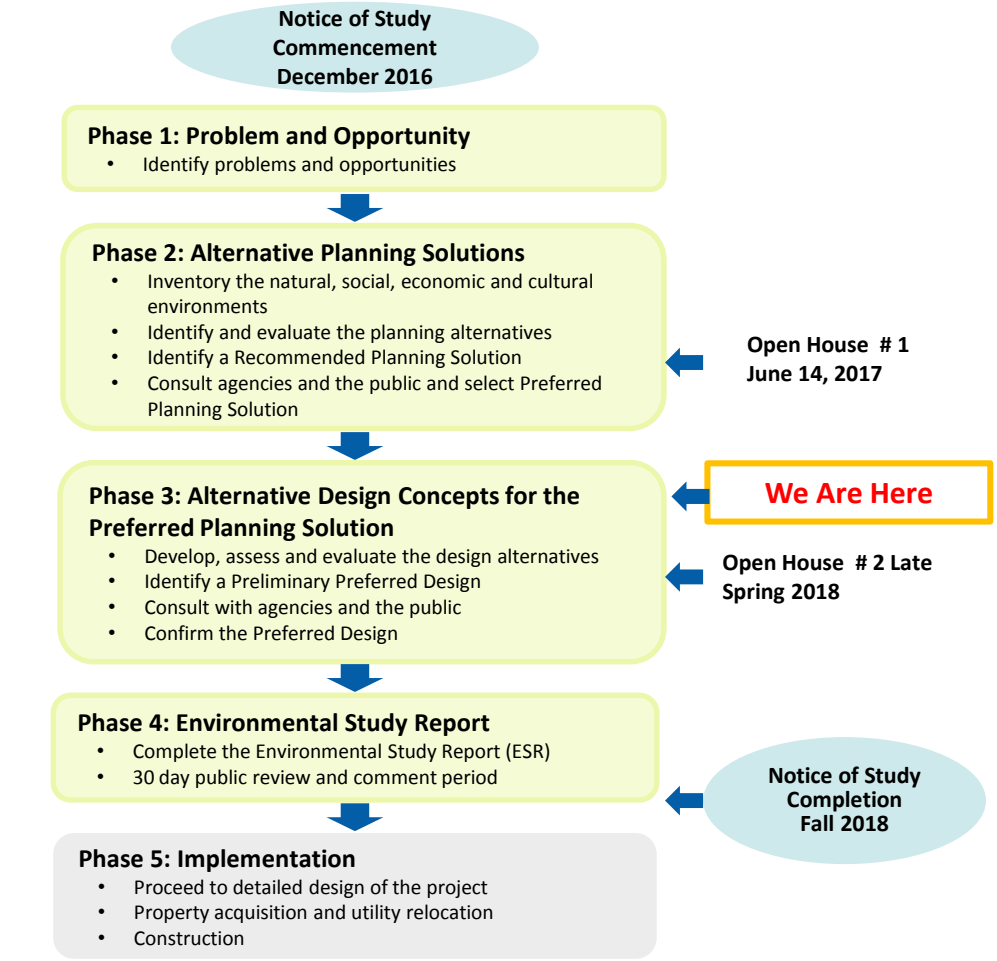
York Region

Agenda

- EA Study Status
- Need and Justification
- Langstaff Road Proposed Improvements
- Langstaff Road Widening
- Langstaff Road Grade Separation
- Langstaff Road / CN Crossing
- Langstaff Road / Hwy 400 Interchange
- Next Steps


Rutherford Road
Weston Road
Bass Pro
Mills Drive
Valeria
Boulevard
Jane Street
Creditstone Road
Keele Street
Basaltic Road
Confederation
Parkway
Dufferin Street
NORTH
Langstaff Road
Langstaff Road
Stan Gate
Highway 400
Edgeley
Boulevard
CN MacMillan
Yard
Highway 7
407ETR
Highway 7
Study Area
York Region

Environmental Assessment Study Process

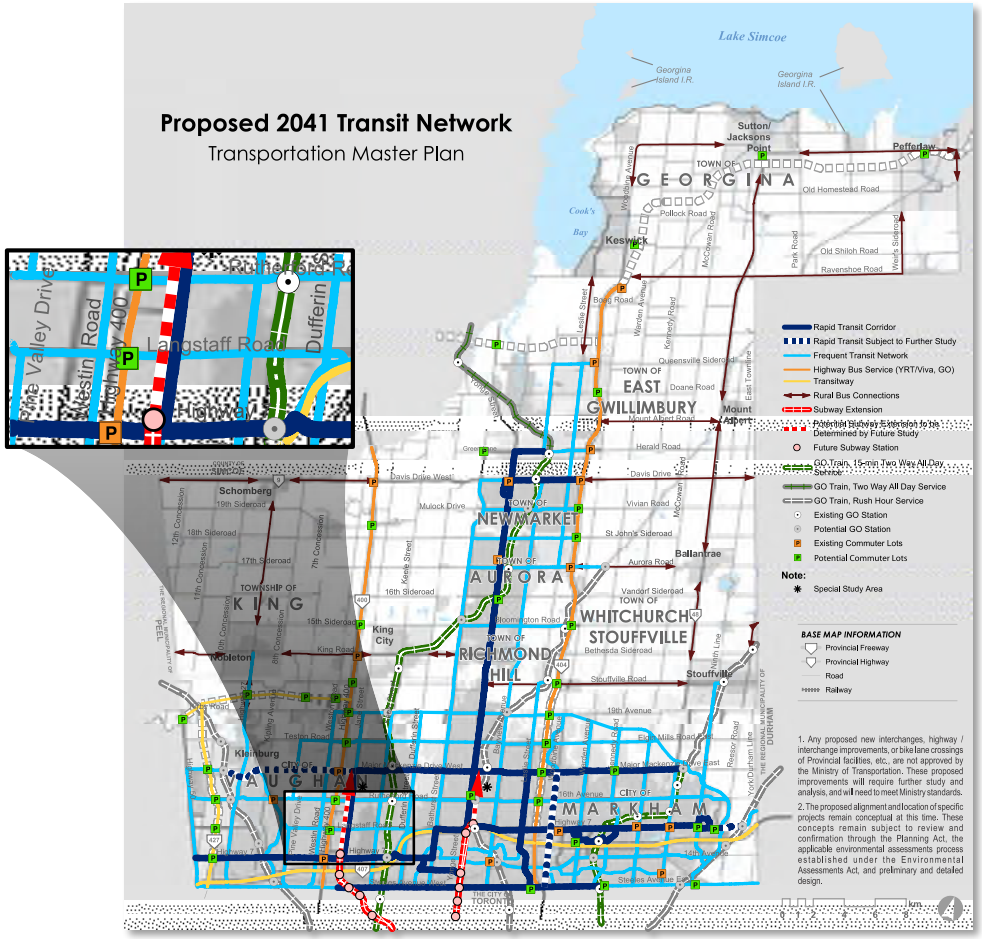


Connecting the Transit Network

The Region's transit network includes the following key components:

- **Rapid transit corridors:** Major Mackenzie Drive, Highway 7, Steeles Avenue, Jane Street, Yonge Street, and Leslie Street.
- **Regional Express Rail:** Metrolinx improvements.
- **Frequent Transit Network:** operate at frequencies of 15 minutes or less.

Langstaff Road is identified as part of the Frequent Transit Network

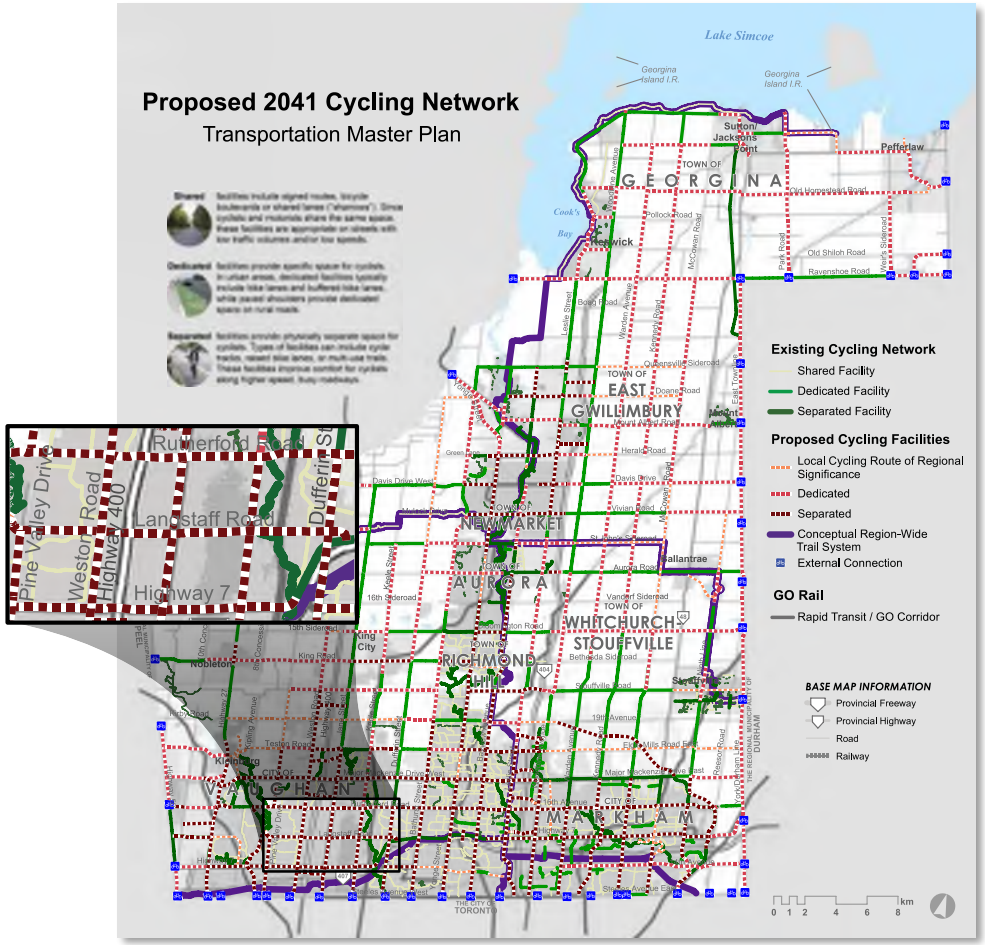


Growing Cycling Network

The Region will grow the cycling network by integrating active transportation in urban areas:

- **Strategic Cycling Network**: Linking existing and future planned facilities
- **Address Sidewalk Gaps:** to improve connections to transit stations and destinations.
- **New Design Approaches**: To improve safety, comfort and convenience of cyclists a

Langstaff Road is identified for a separated facilities for cycling (i.e. multi-use trail or bike lanes)

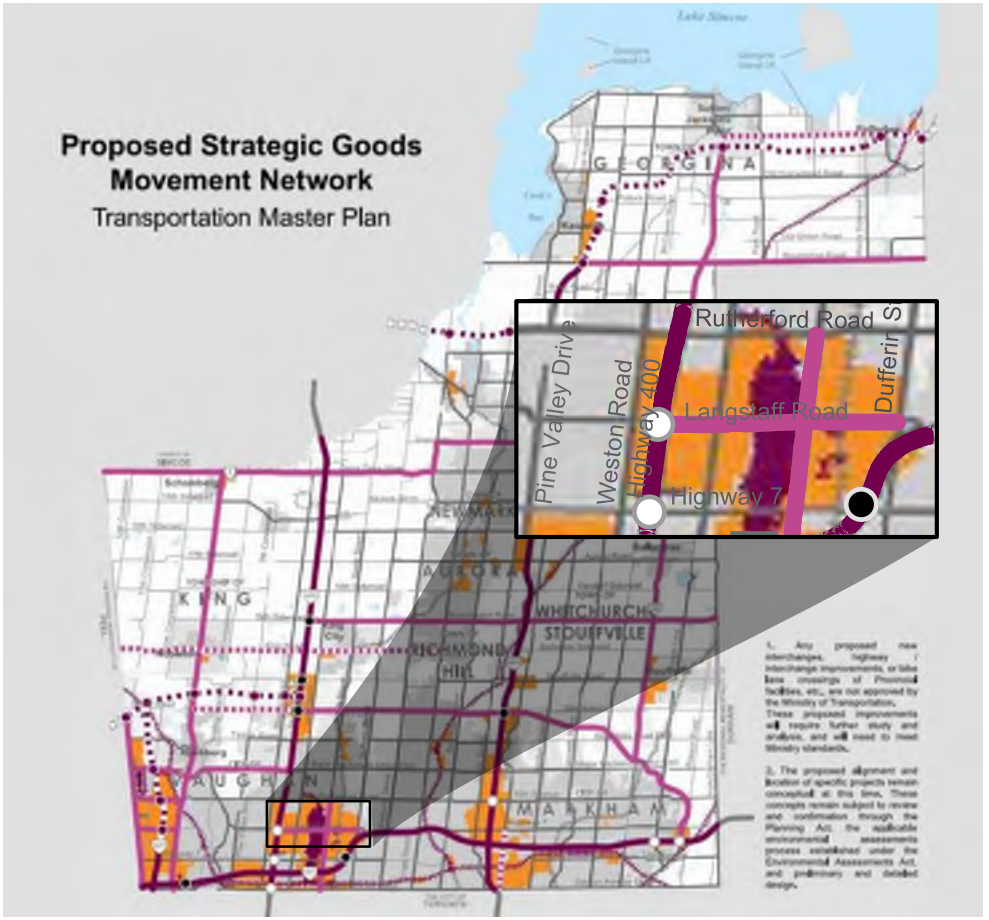


Supporting Goods Movement

Regional Strategic Goods Movement Network tiers:

1. Highway goods movement corridor
2. Primary arterial goods movement corridor
3. Secondary goods movement corridor

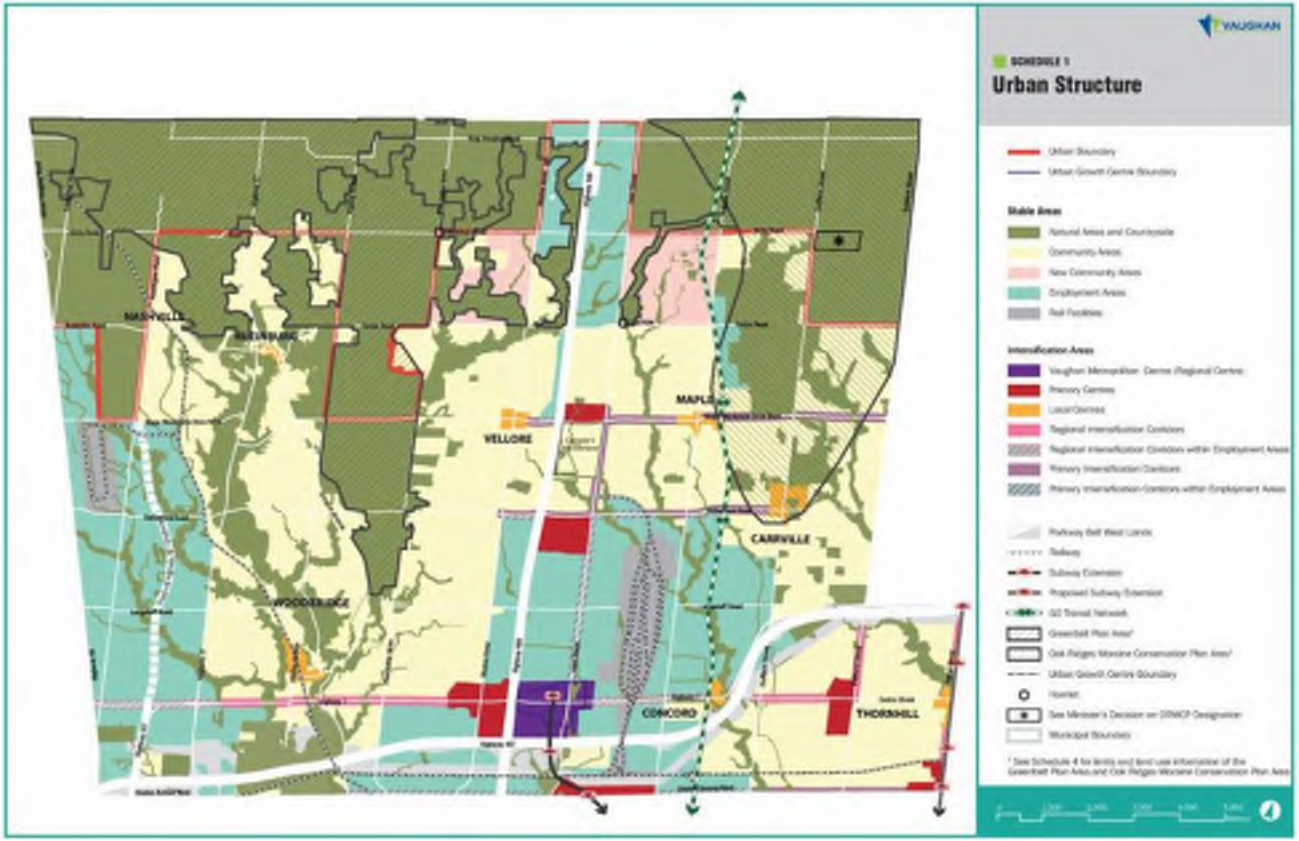
Langstaff Road is identified as a **Primary Arterial Goods Movement Corridor** between Highway 400 and Dufferin Street and is surrounded by employment areas



Growth in the City of Vaughan

A number of **growth centres** in close proximity to the study area:

- Vaughan Metropolitan Centre
- Vaughan Mills Centre
- Concord GO Centre
- Weston Road / Highway 7
- Carrville Centre



Growth in the City of Vaughan

Vaughan Metropolitan Centre

- 179 hectare site
- Adjacent to Highway 400 and Highway 407
- 1.5 million square feet of new retail space
- 12,000 residences
- Vaughan Metropolitan Centre mobility hub

Vaughan Mills Centre

- 146.4 hectare site
- Between Rutherford Road and Bass Pro Mills Drive adjacent to Highway 400
- Potential for a complete, walkable and mixed-use community.
- 10,900 employment
- 4,300 residences

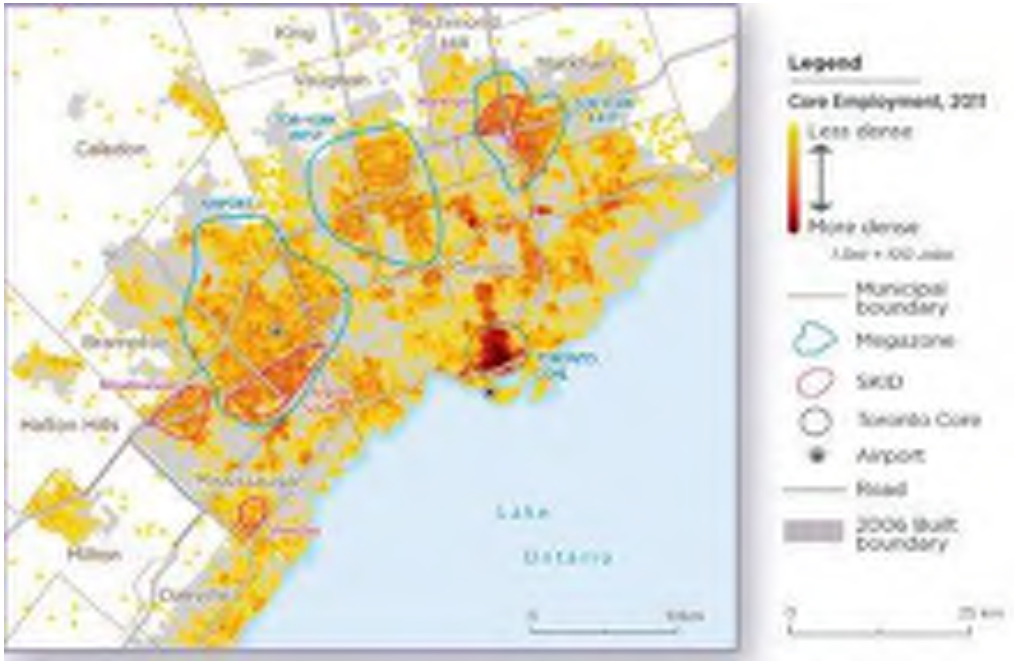
Concord GO Centre

- 162 hectare site
- Adjacent to Highway 7 and Highway 407
- Plans for mixed-use, higher density developments
- Supports Inter-Urban transit land use
- Accommodates 4000 -8000 population and 8000 – 10,000 jobs

Road Network Needs and Justification

Growth in Vaughan:

- One of the “megazone” in the GTA for employment
- Dense employment areas along Hwy 400, Hwy 7 and within the study area



Source: Neptis Foundation Report – Planning for Prosperity , Map 9

Needs and Justification

The problems and opportunities identified for Langstaff Road are summarized here:

Recommended Planning Solution

- **Add New Lanes:** Widen Langstaff Road
- **Langstaff Road Connection:** Construct Langstaff Road link across the CN MacMillan Yard.
- **Highway 400 Interchange Improvements:** Convert Highway 400/Langstaff Road Interchange to a full-move interchange
- **Grade Separation:** Construct grade separation at Langstaff Road / Barrie GO Line
- **Intersection Improvements:** Turning lanes, traffic signal timing optimization, etc.
- **Alternative Modes of Transportation**: Provision of or improvements to pedestrian and cycling facilities. Improvements to transit system (e.g. improved transit amenities)






Design Considerations

A number of key constraints and design elements will be considered:

- Impacts to adjacent properties and access
- Existing and future land uses
- Road design and intersection requirements
- Highway 400 / Langstaff Road Interchange design requirements
- CN MacMillan Yard crossing options
- Railway crossing options (overpass vs. underpass) at Barrie GO Line
- Impacts to natural features
- Drainage of roadside areas
- Major utilities within the study area
- Streetscaping
- Type of active transportation facilities to be provided

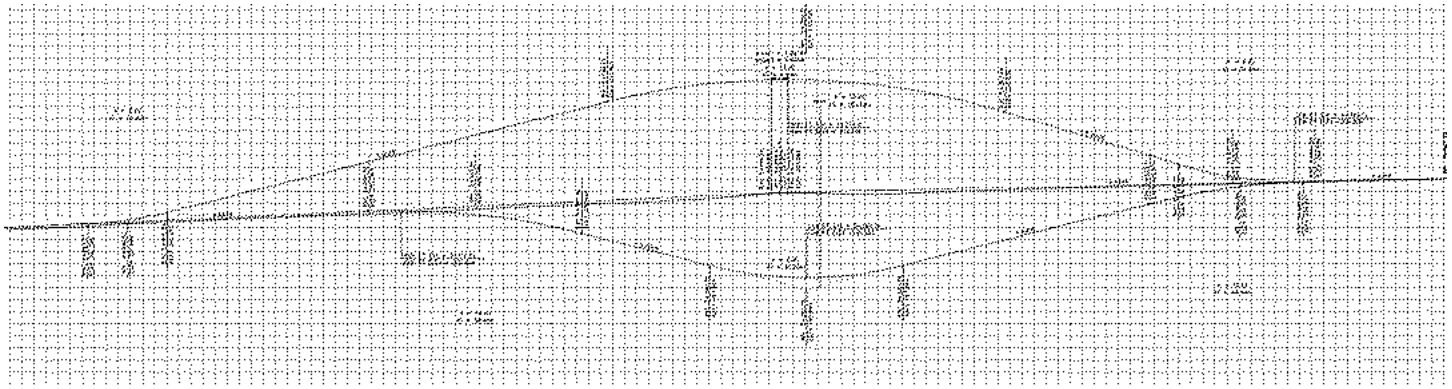
Langstaff Road Widening

- Widening Langstaff Road from 2 to 6 lanes between Weston Road and Dufferin Street based on best-fit alignment to minimize property impacts.

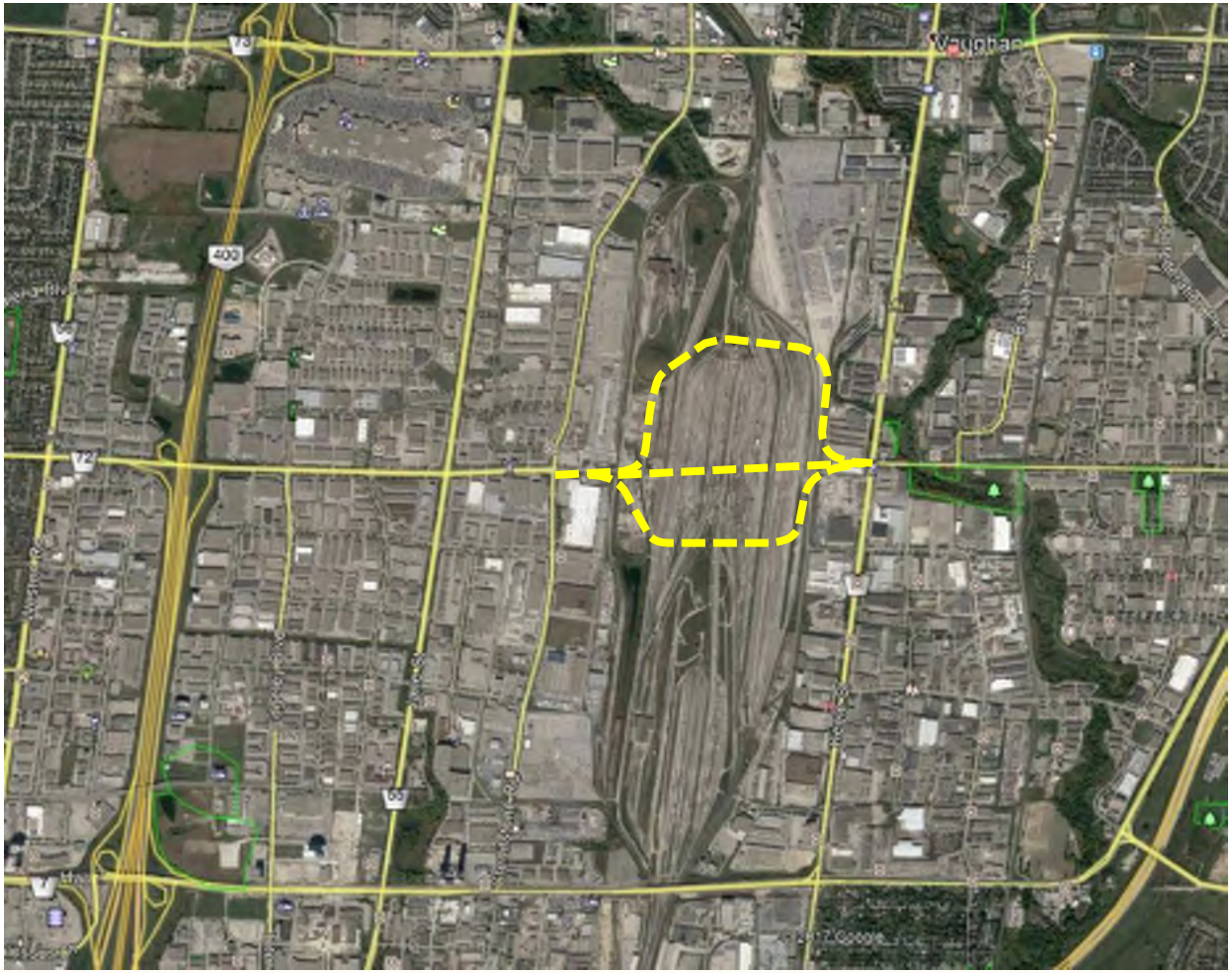
Langstaff Road EA – Weston Road to Highway 7 – Finalized Proposed Cross Section

Langstaff Road / Barrie GO Grade Separation

- Overpass vs. underpass options being considered for the Langstaff Road / Barrie GO grade separation

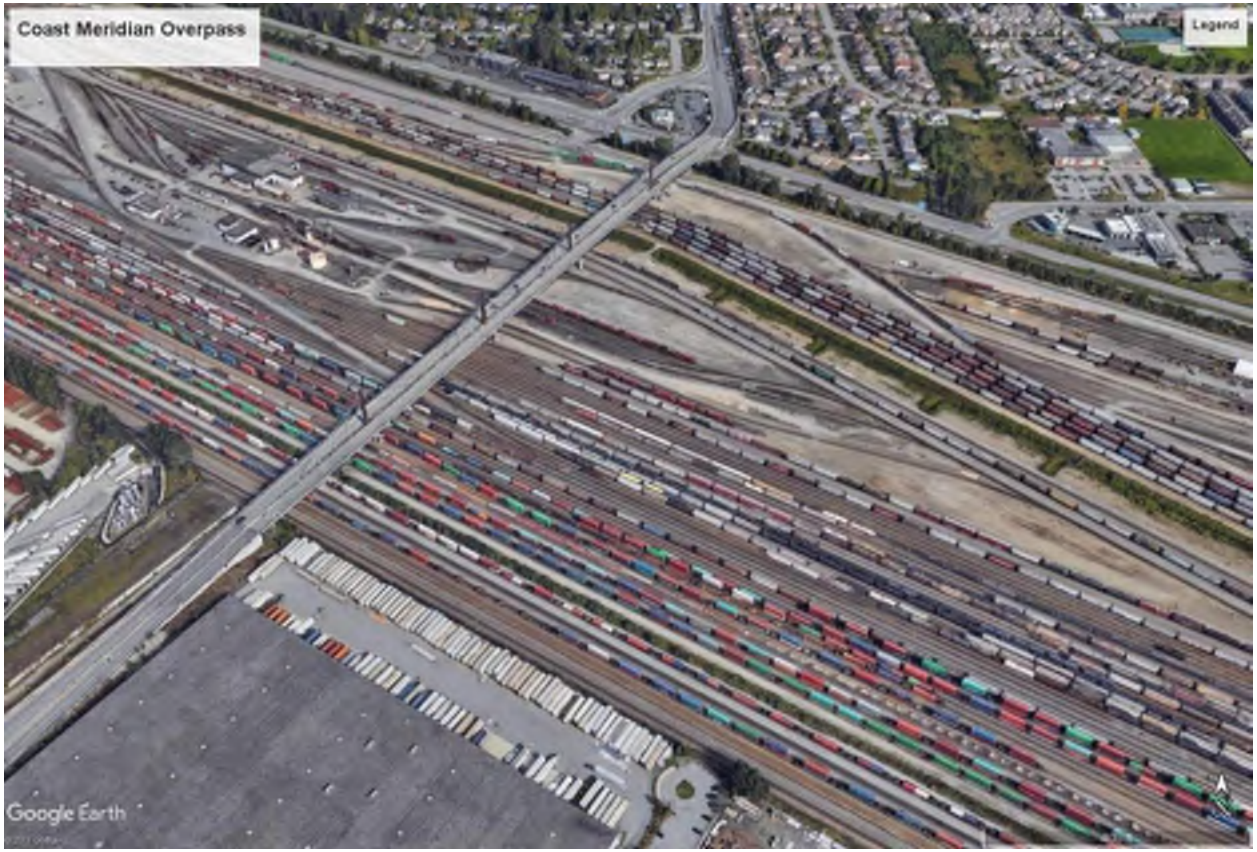


Langstaff Road / CN Crossing Options



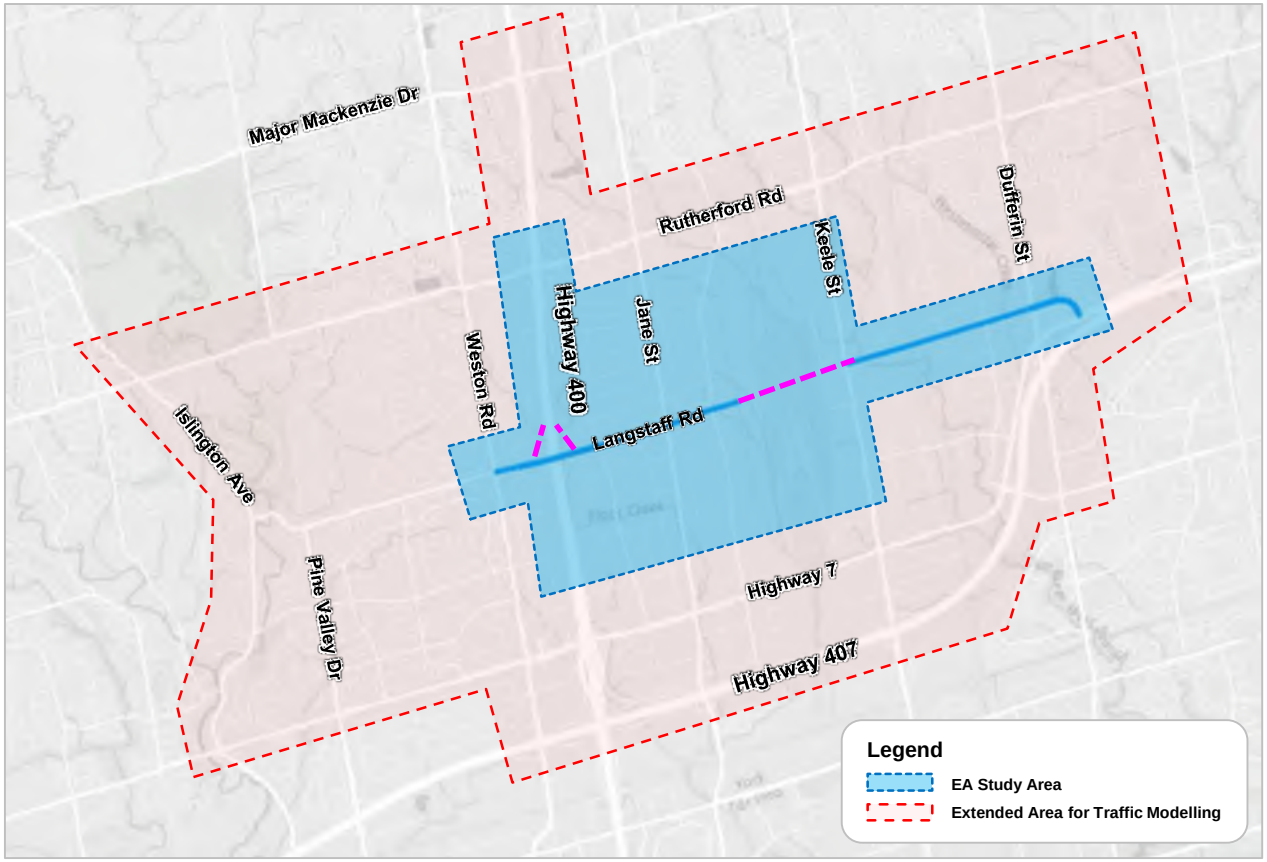
Examples of Rail Yard Crossings

- Port Coquitlam CP Yard – Coast Meridian Overpass



Langstaff Road and Hwy 400 Interchange

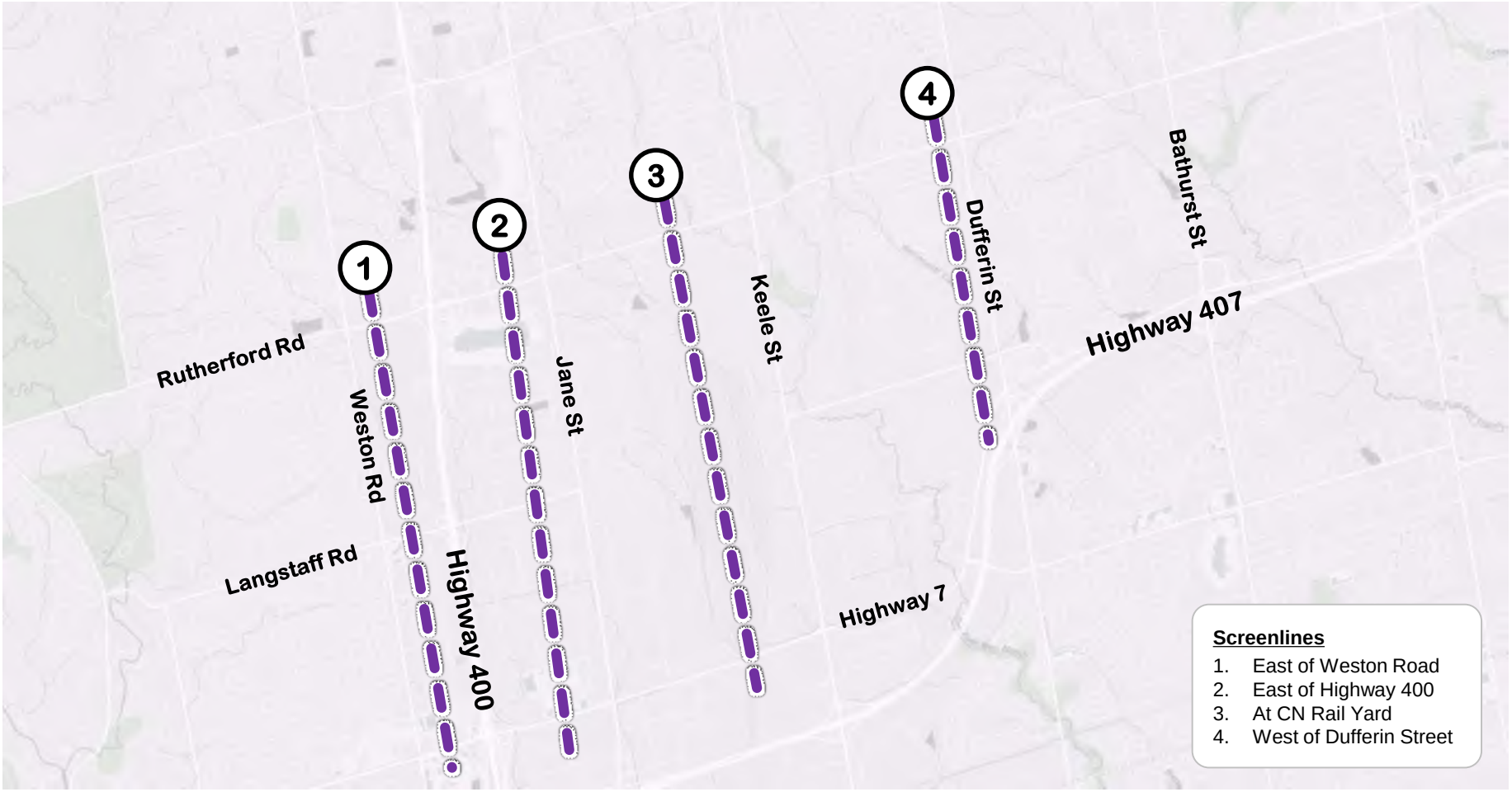
Travel Demand Analysis Study Area



Travel Demand Analysis

- Based on York Region's Travel Demand Forecasting (YRTDF) model
- Assessed the Future (2041) Planning Horizon Year, AM Auto Peak Hour
- Total auto trip demand split into SOV, HOV2, HOV2+ using carpool data derived from the 2011 Transportation Tomorrow Survey (TTS)

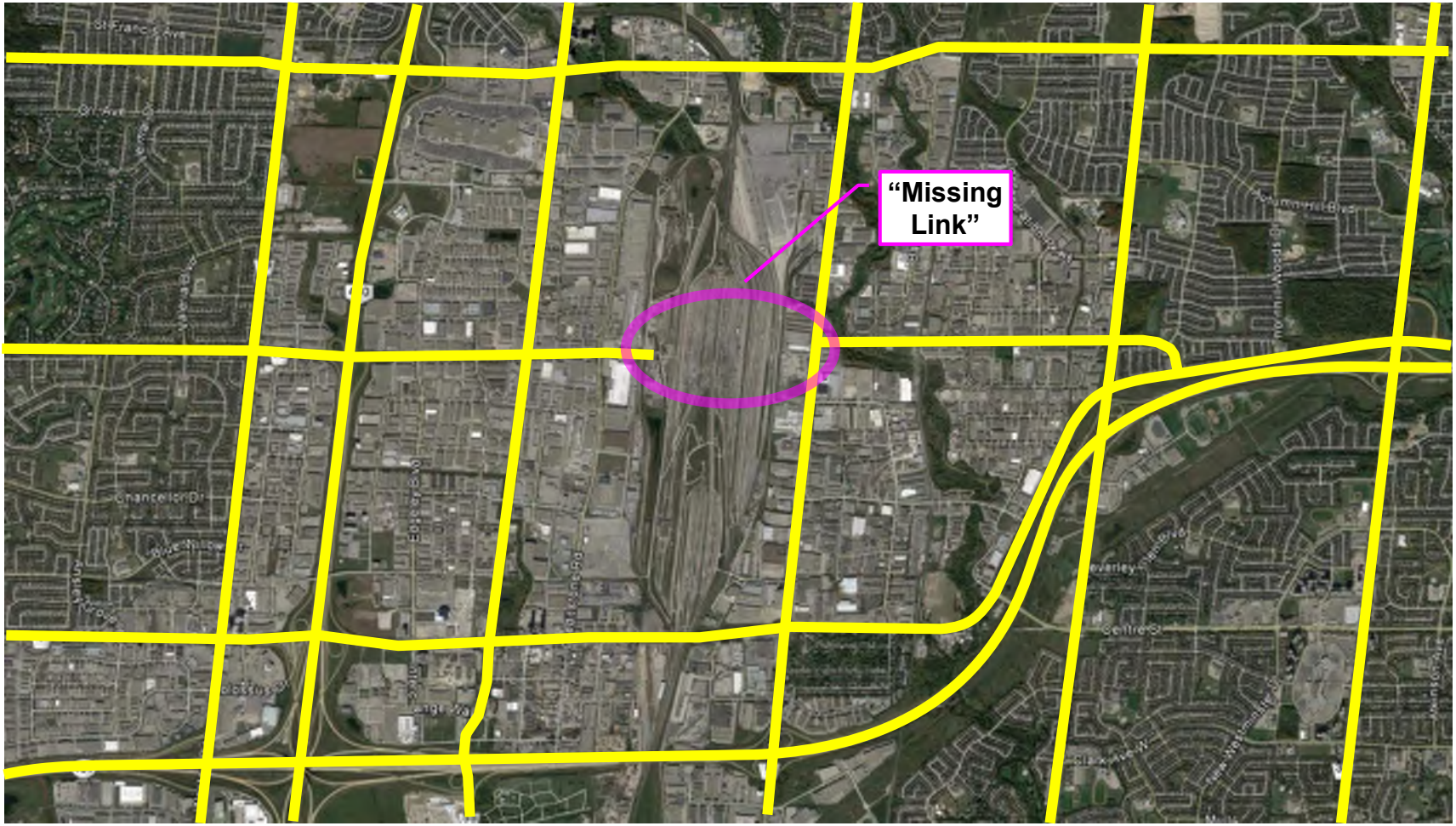
Screenline Locations



Screenline Capacity Analysis Results

	Existing (2016)	Future (2041) Conditions				
		Scenario 1 (Base Case)	**Scenario 2** (Widen East Segment of 4GPL)	**Scenario 3** (Widen to 4GPL+2HOV)	**Scenario 4** (Scenario 3 + Hwy 400 IC Improvements)	**Scenario 5** (Widen to 6GPL + Hwy 400 IC Improvements)
N-S Screenline V/C						
1.East of Weston Rd	0.98	1.08	1.08	1.05	1.07	1.05
2. East of Hwy 400	1.03	1.10	1.10	1.10	1.10	1.08
3. At CN Rail Yard	1.06	**1.15**	**1.16**	1.01	1.01	0.98
4. West of Dufferin St	0.95	1.04	0.98	1.01	1.01	0.99
Link V/C @ CN Yard						
Rutherford Rd	**1.25**	**1.22**	**1.27**	1.07	1.07	1.06
Langstaff Rd	-	-	-	1.00	1.00	0.95
Highway 7	0.94	1.09	1.08	0.97	0.97	0.95

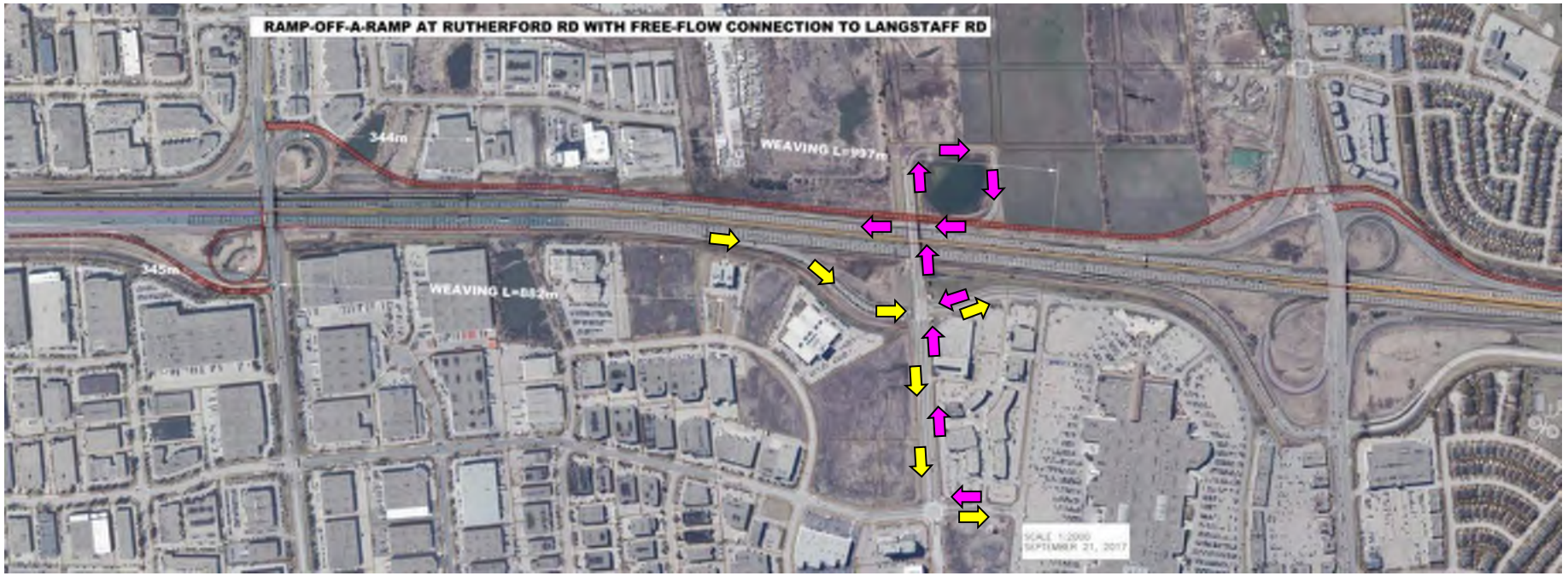
Transportation Network



Option 1: “Ramp-Off-Ramp” Configuration

Option 1: Access to/from Vaughan Mills

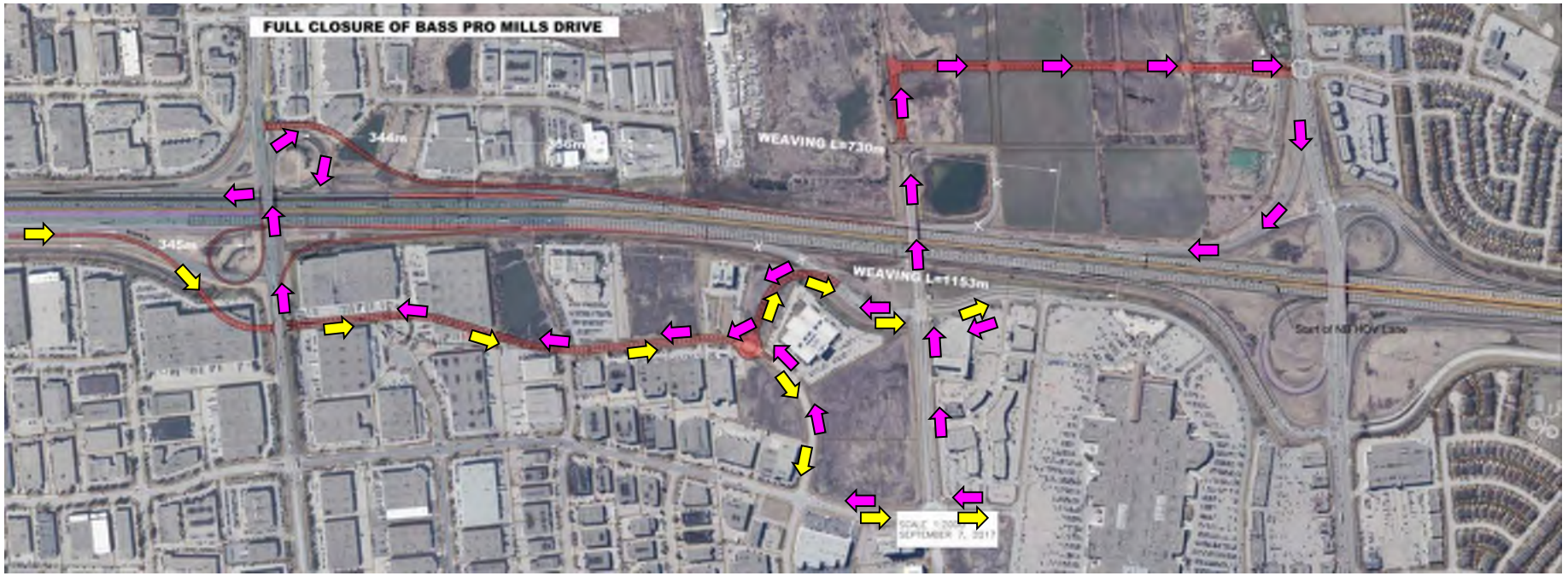
No change to existing access to/from Vaughan Mills



To Vaughan Mills
From Vaughan Mills

Option 2: Re-Route of Bass Pro Mills Ramps

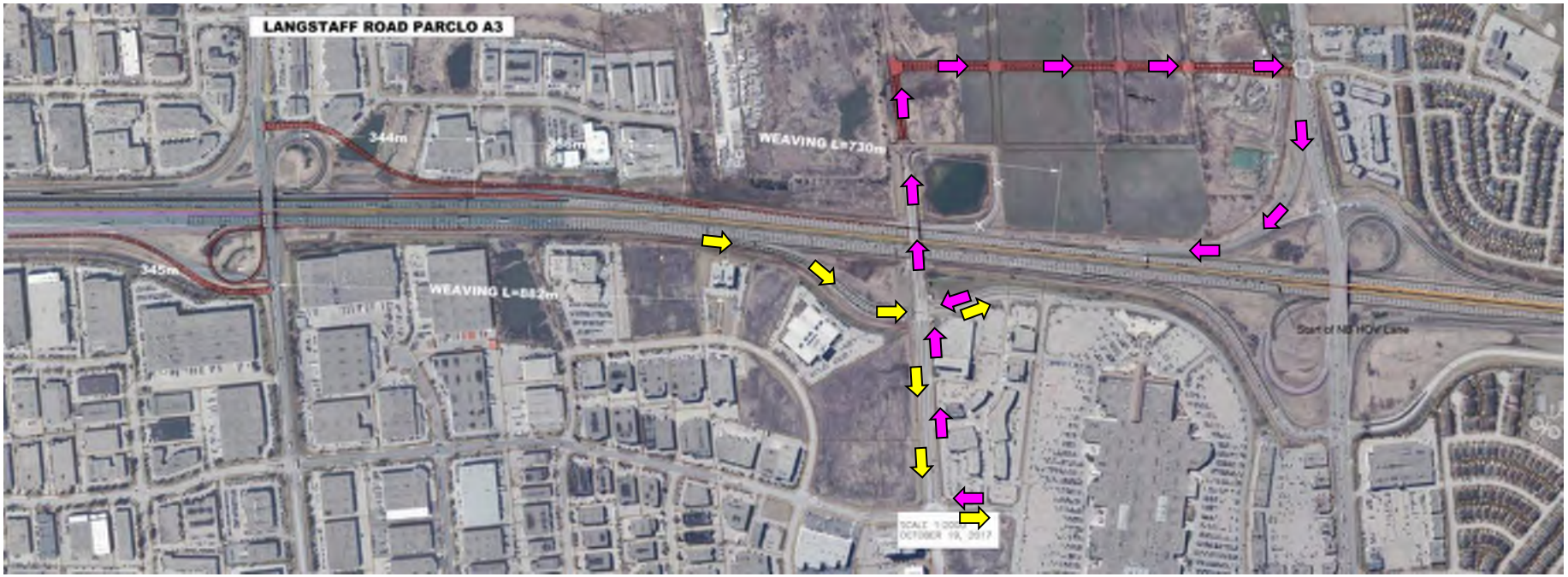
Option 2: Access to/from Vaughan Mills



To Vaughan Mills
From Vaughan Mills

Option 3: Hybrid Interchange Configuration

Option 3: Access to/from Vaughan Mills



To Vaughan Mills
From Vaughan Mills

Preliminary Traffic Analysis Findings

Future 2041 Highway Operations

AM Peak

- Traffic demand reduction and redistribution in the options relative to No-Build in southbound direction
- Minor travel time savings between 1 to 2.5 minutes in the southbound direction (peak); negligible difference in northbound direction (off-peak)

PM Peak

- Increase in demand in northbound direction
- Minor travel time increases between 1 to 1.5 minutes in the northbound direction (peak); negligible difference in southbound direction (off-peak)

Summary

Widening Langstaff Road to six lanes and provision of the connection across the CN Yard

- Improves access to nearby highways and reduces truck traffic on all surrounding arterial roads
- Provides additional east-west capacity in the overall transportation network
- Reduces congestion on adjacent east-west corridors (Rutherford Road and Highway 7)

Summary

Highway 400 Interchange Improvements

- Reduces traffic congestion within the overall transportation network
- Minor peak direction travel time reduction in AM; Minor increase in PM
- Minor improvement in traffic operations at the adjacent Highway 400 interchanges
- Supports Regional and Provincial Goods Movement strategies

Next Steps…

- Refine design alternatives per input from technical agencies
- Conduct evaluation of:
  - interchange alternatives
  - grade separation alternatives
  - CN crossing alternatives
- Identify ‘preferred’ alternative for Langstaff Road corridor including Hwy 400 interchange
- Open House 2

REFERENCE SLIDES

2016 Regional Transportation Master Plan

Proposed improvements around Study Area:

- Weston Road:
  - Transit/HOV lanes from Steeles Ave to Major Mackenzie Dr
- Jane Street:
  - Rapid Transit Corridor from Highway 7 to Major Mackenzie Dr
- Keele Street:
  - Transit/HOV lanes from Highway 7 to Rutherford Rd
- Dufferin Street:
  - Transit/HOV lanes from Langstaff Road to Rutherford Rd
- Rutherford Road-Carville Road-16th Avenue:
  - Transit/HOV lanes from Jane Street to McCowan Road
  - Barrie GO Rail Grade Separation east of Keele St

Land Use Projections

	2016		2031		2041	
	Population	Employment	Population	Employment	Population	Employment
Total within Extended Study Area	135,698	132,969	163,771	147,317	183,388	154,521
Increase from 2016	-	-	28,074	14,348	47,691	21,552
Average Annual Growth Rate (from 2016)	**-**	**-**	**1.4%**	**0.7%**	**1.4%**	**0.6%**

Note: Based on the staff preferred growth scenario presents 45% intensification, presented in November 2015 as part of the Region's municipal

Travel Demand Analysis Scenarios

Scenario	Existing Langstaff Road	Langstaff Connection over CN Yard	Highway 400 Interchange
1: Base Case (No-Build)	No Change	No Link	No Change
2: Langstaff East Improvements	4GPL (between Keele & Dufferin)	No Link	No Change
3: Build Langstaff Connection	4GPL+2HOV	4GPL+2HOV	No Change
4: Build Langstaff Connection and Interchange Improvement	4GPL+2HOV	4GPL+2HOV	Convert to Full IC
5. Build Langstaff Connection and Interchange Improvement	6 GPL	6 GPL	Convert to Full IC

Traffic Analysis Progress Update

Since previous meetings with MTO:

- Future (2041) conditions for both AM & PM Conditions were assessed using *Aimsun* based micro-simulation model
- Submitted memos documenting Model Calibration and summary of proposed modelling approach
- Three Langstaff Road Interchange improvement options considered (inclusive of the 6-GPL connection and planned HOV lanes on Highway 400):
  - Option 1 - “Ramp-Off-Ramp” Configuration
  - Option 2 - Re-route of Bass Pro Mills Ramps
  - Option 3 - Hybrid Interchange Configuration

Micro-simulation Assumptions

- Incorporated demand from the YRTDF model
  - Provides traffic demand for AM peak hour only
  - Does not differentiate traffic demands for HOVs
- For the analysis of Langstaff Road EA Study:
  - PM peak hour traffic demand was estimated using traffic counts and matrix adjustments
  - HOV demand estimated using Transportation Tomorrow Survey (TTS) data
  - Commercial vehicle demand added and was assumed as 7% (AM) and 5% (PM) of total auto demand

Preliminary Traffic Analysis Findings

Future 2041 AM Travel Times

Scenario	AM Peak Hour (mm:ss)		Remarks
	Northbound	Southbound	
No-Build	8:47	16:15	
Option 1: Ramp-Off-Ramp	8:56	13:50 (▼ 2:25 vs No Build)	**NB:** negligible increase in travel time **SB:** reduce travel time, mainline demand reduced (vs No Build) due to ramp extension off the Rutherford Road exit
Option 2: Re-Route of Bass Pro Mills Ramps	8:48	14:46 (▼ 1:29 vs No Build)	**NB:** negligible increase in travel time **SB:** reduce travel time, mainline demand reduced (vs No Build) due to proposed east service road
Option 3: Hybrid	8:50	15:24 (▼ 0:50 vs No Build)	**NB:** negligible increase in travel time **SB:** negligible decrease in travel time. Mainline operation slightly improves (vs No Build) due to traffic redistribution

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

Future 2041 AM Average Speeds

Scenario	AM Peak Hour (km/h)		Remarks
	Northbound	Southbound	
No-Build	86.5	48.3	
Option 1: Ramp-Off-Ramp	85.2	56.7 (▲ 8.5 km/h vs No Build)	**NB:** negligible change in speed **SB:** Increase in speed. Mainline demand reduced (vs No Build) due to ramp extension off the Rutherford Road exit
Option 2: Re-Route of Bass Pro Mills Ramps	86.6	53.1 (▲ 4.8 km/h vs No Build)	**NB:** negligible increase in speed **SB:** Increase in speed. Mainline demand reduced (vs No Build) due to proposed east service road
Option 3: Hybrid	86.1	50.8 (▲ 2.6 km/h vs No-Build)	**NB:** negligible decrease in speed **SB:** negligible increase in speed. Mainline operation slightly improves (vs No Build) due to traffic redistribution

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

Future 2041 PM Travel Times

Scenario	PM Peak Hour (mm:ss)		Remarks
	Northbound	Southbound	
No-Build	12:00	9:13	
Option 1: Ramp-Off-Ramp	13:11 (▲ 1:10 vs No-Build)	9:07	**NB:** minor increase in travel time. Additional mainline demand from proposed Langstaff Road loop on-ramp **SB:** negligible decrease in travel time
Option 2: Re-Route of Bass Pro Mills Ramps	13:25 (▲ 1:24 vs No-Build)	8:58	**NB:** increase in travel time. Additional mainline demand from proposed Langstaff Road direct & loop on-ramps **SB:** negligible decrease in travel time
Option 3: Hybrid	13:06 (▲ 1:05 vs No-Build)	9:01	**NB:** minor increase in travel time. Additional mainline demand from proposed Langstaff Road loop on-ramp **SB:** negligible decrease in travel time

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

Future 2041 PM Average Speeds

Scenario	PM Peak Hour (km/h)		Remarks
	Northbound	Southbound	
No-Build	63.4	85.1	
Option 1: Ramp-Off-Ramp	57.7 (▼ 5.7 km/h vs No-Build)	86.0	**NB:** decrease in speed. Additional mainline demand from proposed Langstaff Road loop on-ramp **SB:** negligible increase in speed
Option 2: Re-Route of Bass Pro Mills Ramps	56.8 (▼ 6.6 km/h vs No-Build)	87.3	**NB:** decrease in speed. Additional mainline demand from proposed Langstaff Road direct & loop on-ramps **SB:** negligible increase in speed
Option 3: Hybrid	58.1 (▼ 5.3 km/h vs No-Build)	86.9	**NB:** minor speed decrease. Additional mainline demand from proposed Langstaff Road loop on-ramp **SB:** negligible increase in speed

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Highway 400 Interchange at Langstaff Road

East Ramp Terminal

Overall Future (2041) Intersection Performance:

	AM Peak Hour		PM Peak Hour	
	Loop Only	Loop + Direct	Loop Only	Loop + Direct
Delay	15-20 s	~30	30-45 s	~40 s
LOS	B	C	C-D	D

Forecasted WBL Performance (Loop Only Option):

	AM Peak Hour	PM Peak Hour
Delay	40-50 s	90-100 s
LOS	D	F
95th Percentile Queue	90-100 m	200-300 m

Highway 400 Interchanges Near Study Area

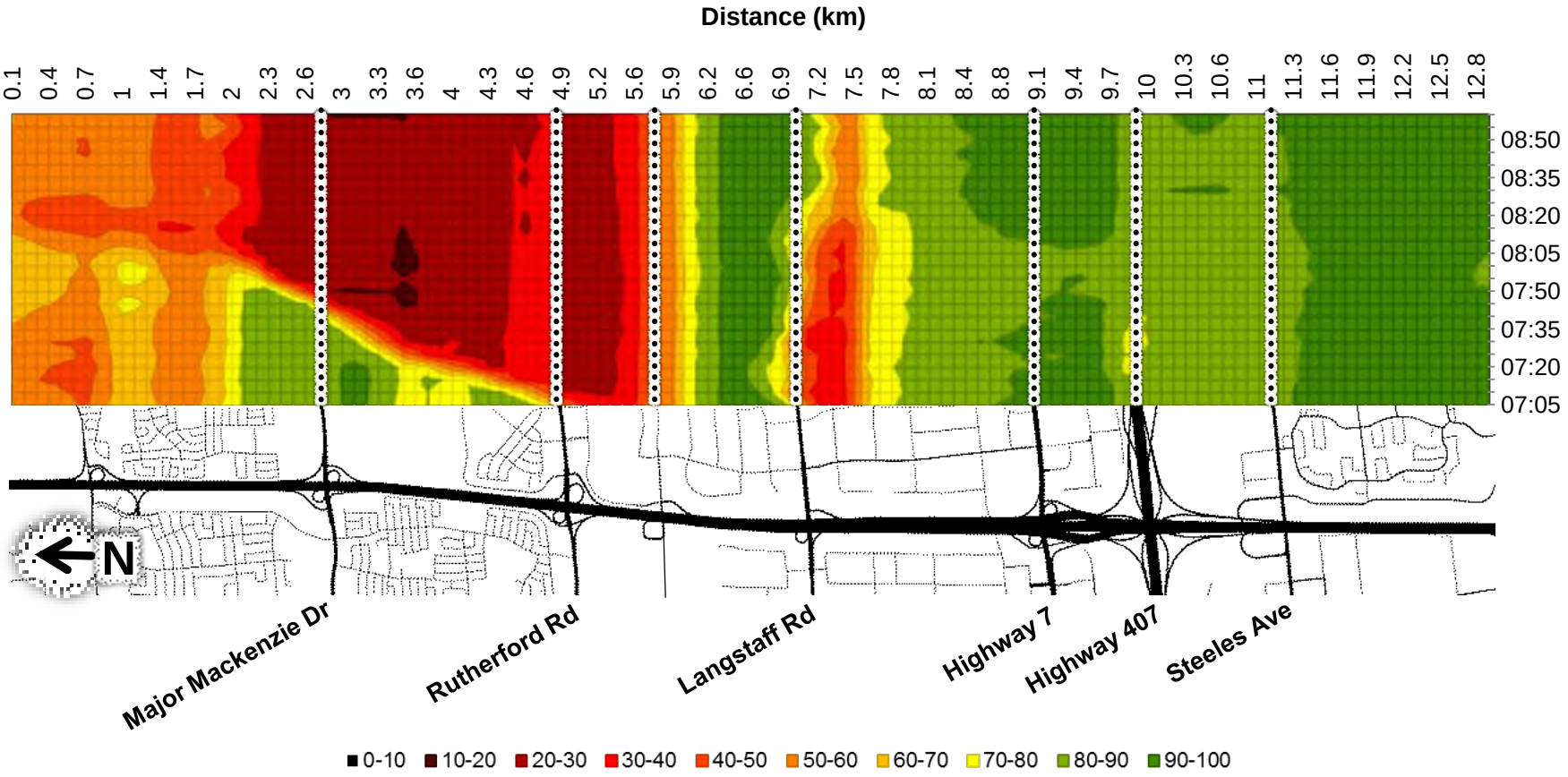
Ramp Terminal Intersection Operations

Overall Intersection Delays:

Interchange	Ramp Terminal	AM Peak Hour				PM Peak Hour			
		No Build	Option 1	Option 2	Option 3	No Build	Option 1	Option 2	Option 3
Highway 400 at Major Mackenzie Dr	West	46	43	51	44	13	13	14	14
	East	71	20	20	20	22	25	23	25
Highway 400 at Rutherford Rd	West	16	11	21	16	23	20	18	17
	East	37	33	40	36	44	44	41	34
Highway 400 at Highway 7	West	26	23	24	24	35	32	28	29
	East	19	21	21	21	26	19	22	20

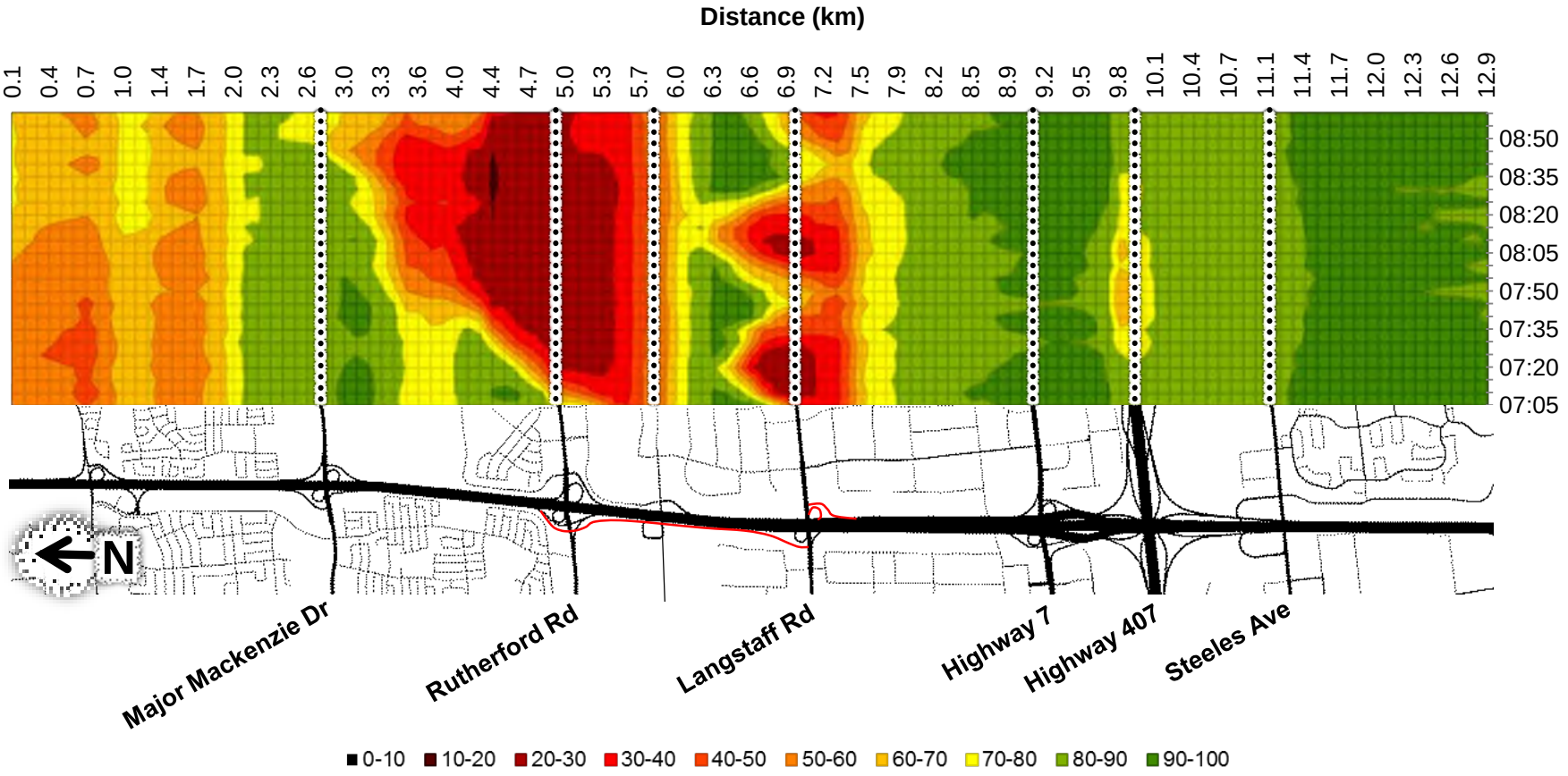
Future 2041 Speed Contour Plots

No-Build AM – SB Direction



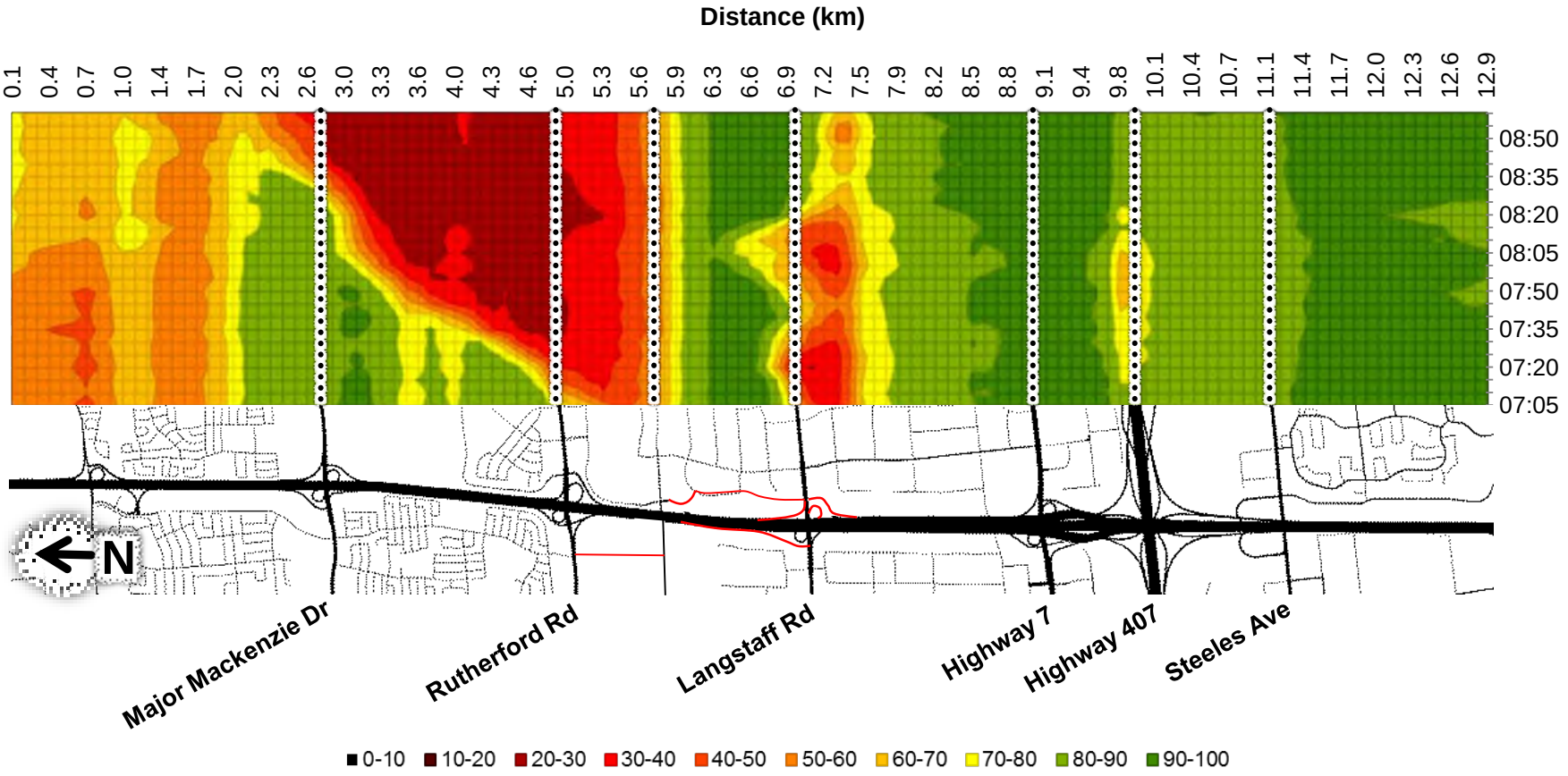
Future 2041 Speed Contour Plots

Interchange Option 1 (Ramp-off-Ramp) AM – SB Direction



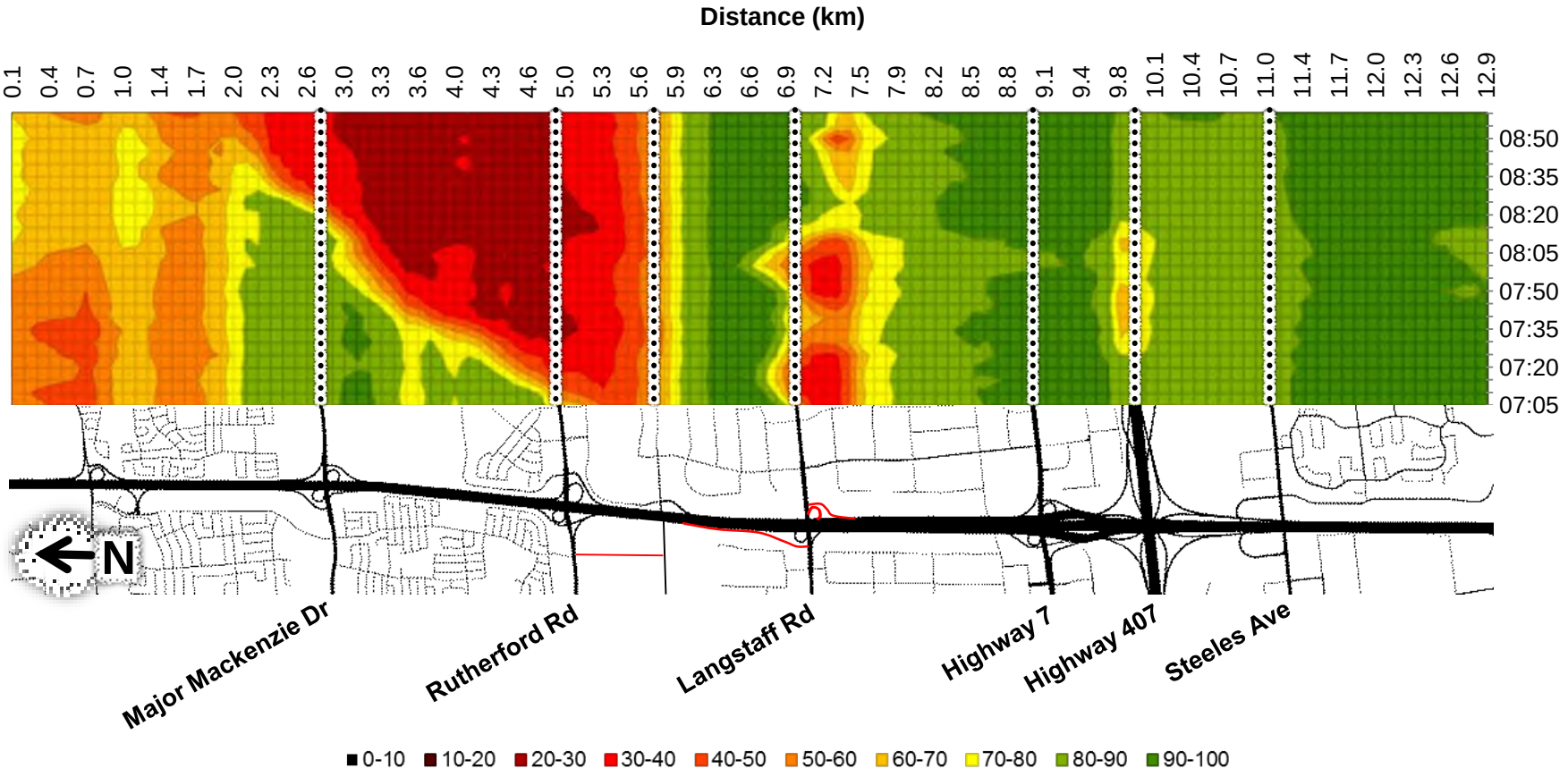
Future 2041 Speed Contour Plots

Interchange Option 2 (Re-route Bass Pro Mills) AM – SB Direction



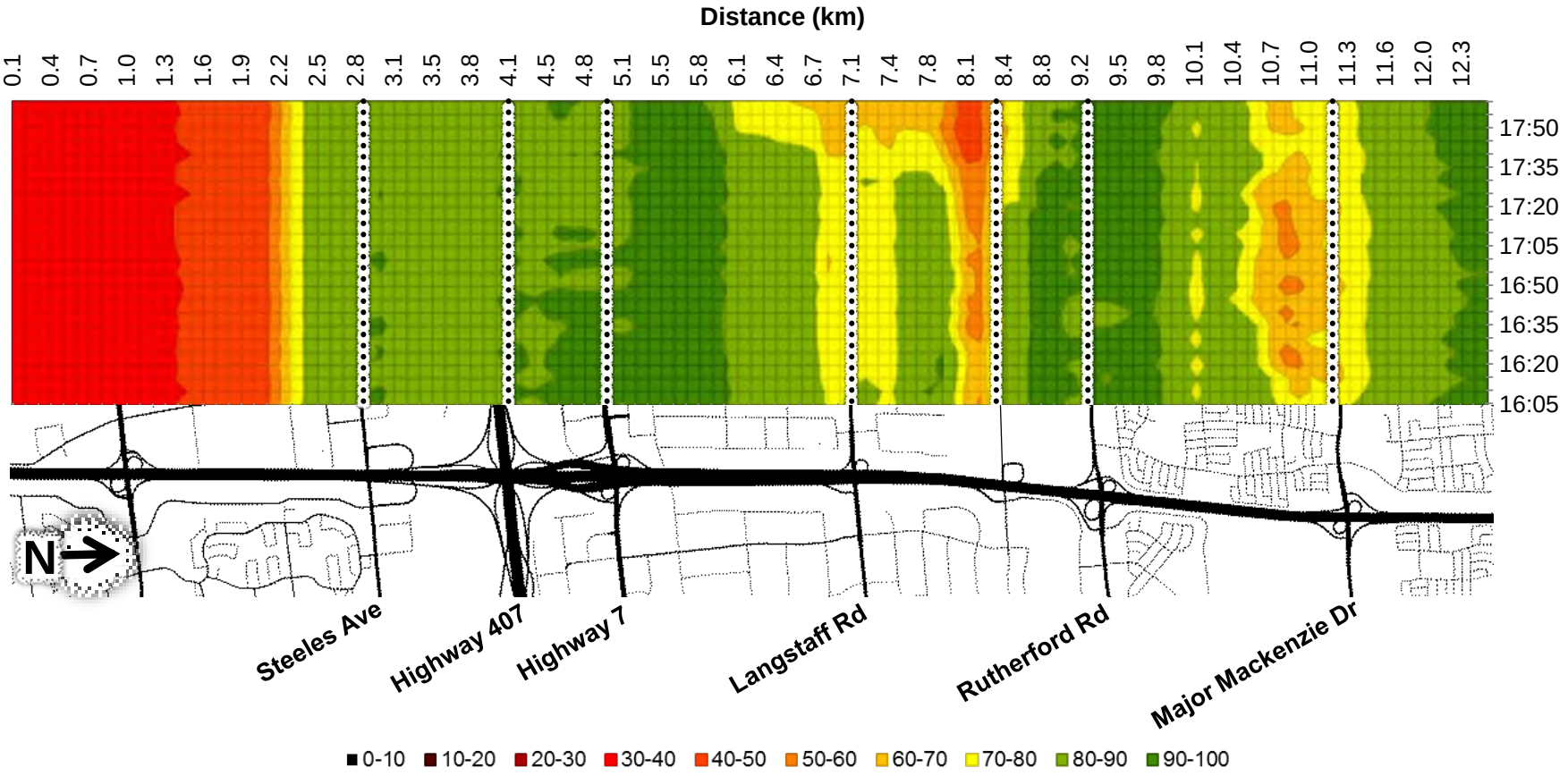
Future 2041 Speed Contour Plots

Interchange Option 3 (Hybrid) AM – SB Direction



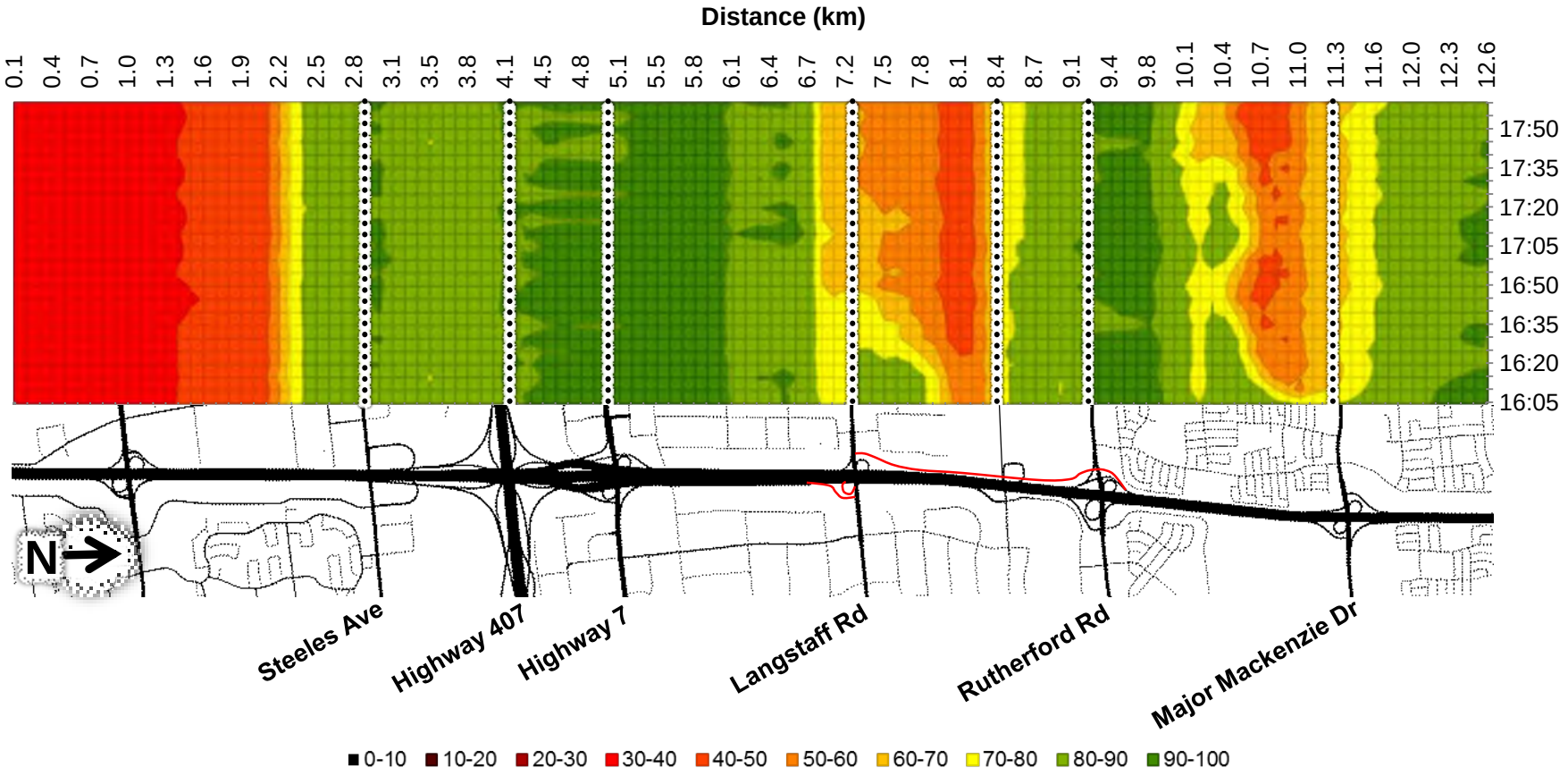
Future 2041 Speed Contour Plots

No-Build PM – NB Direction



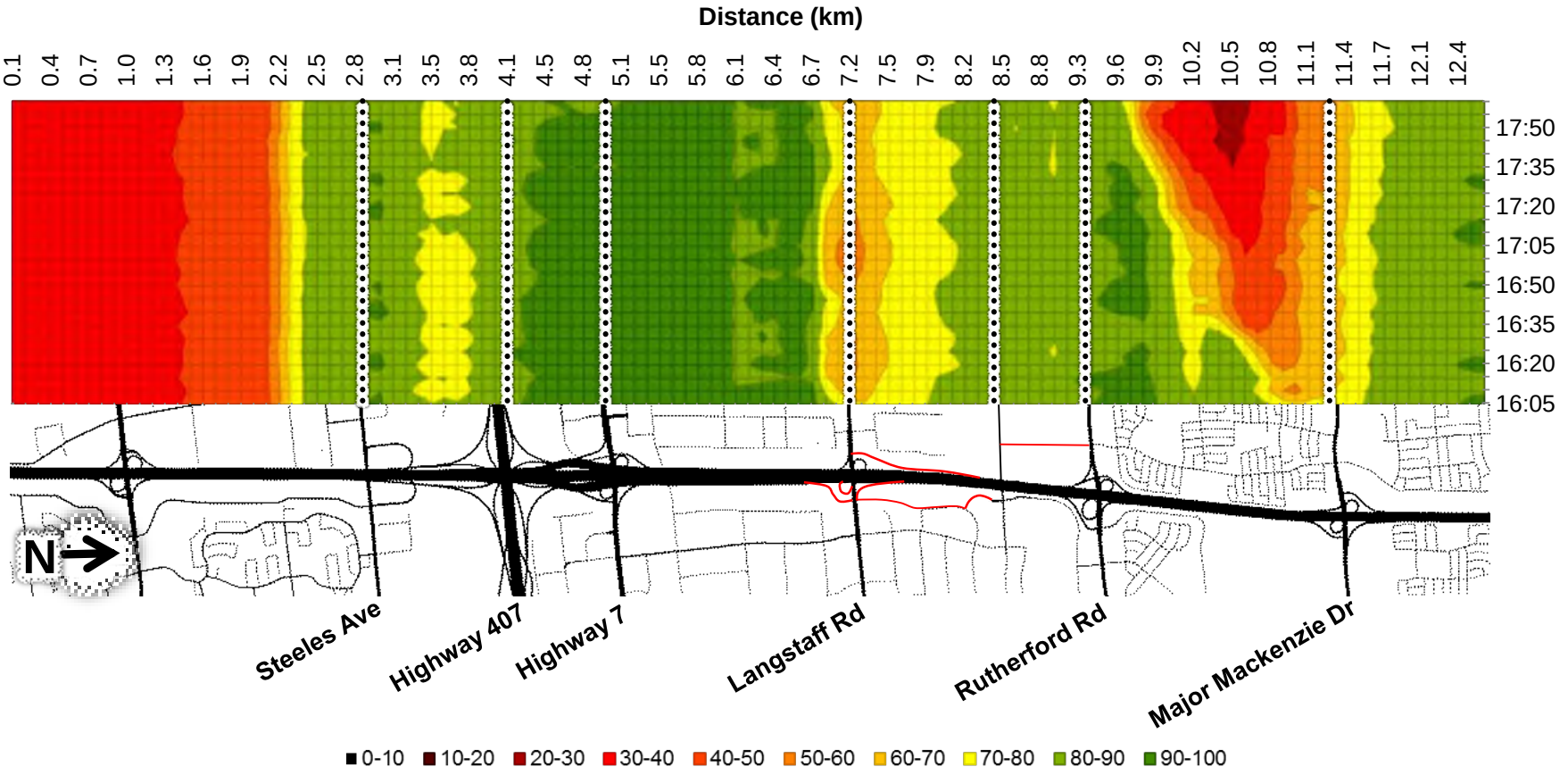
Future 2041 Speed Contour Plots

Interchange Option 1 (Ramp-off-Ramp) PM – NB Direction



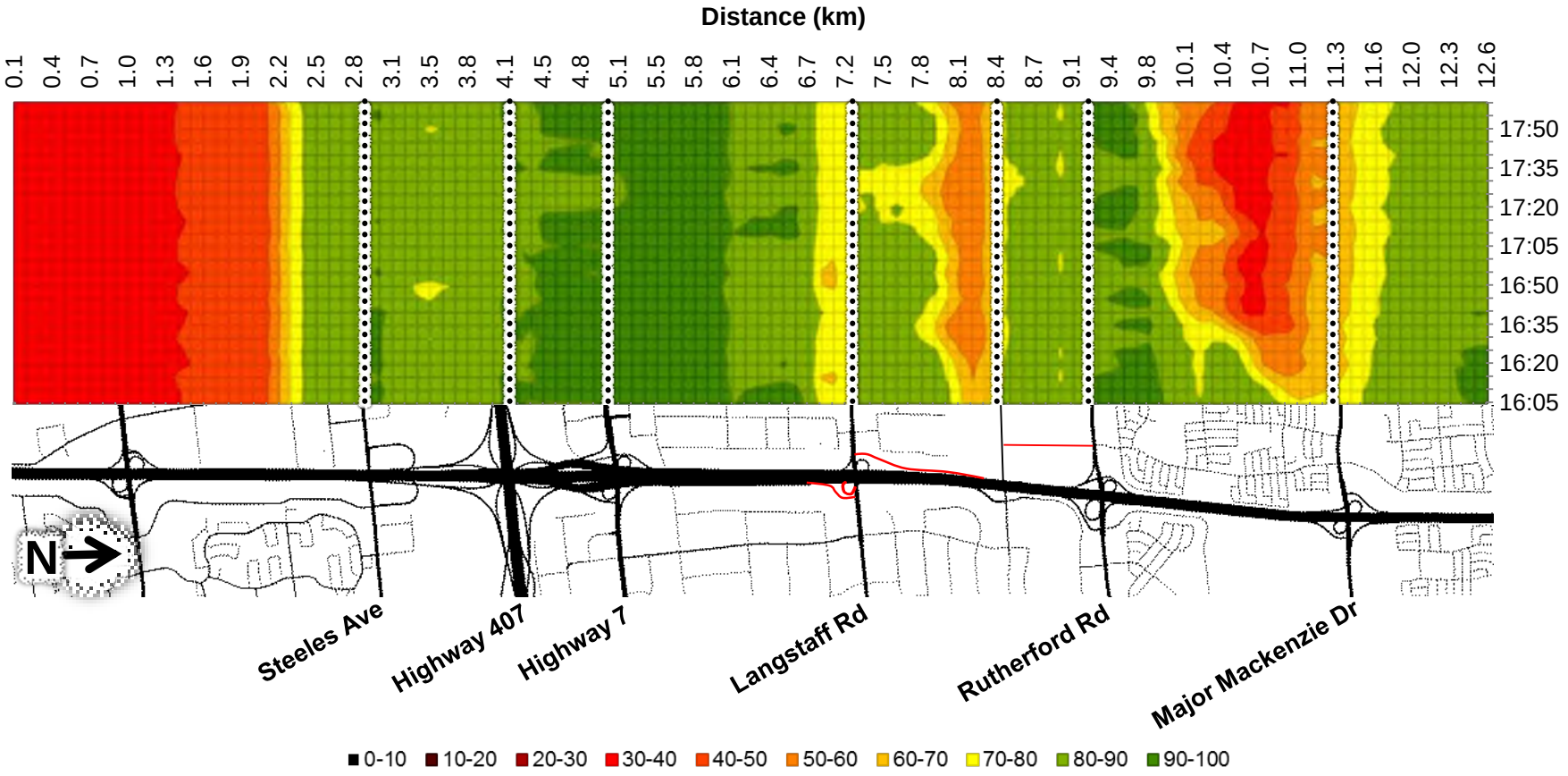
Future 2041 Speed Contour Plots

Interchange Option 2 (Re-route Bass Pro Mills) PM – NB Direction



Future 2041 Speed Contour Plots

Interchange Option 3 (Hybrid) PM – NB Direction

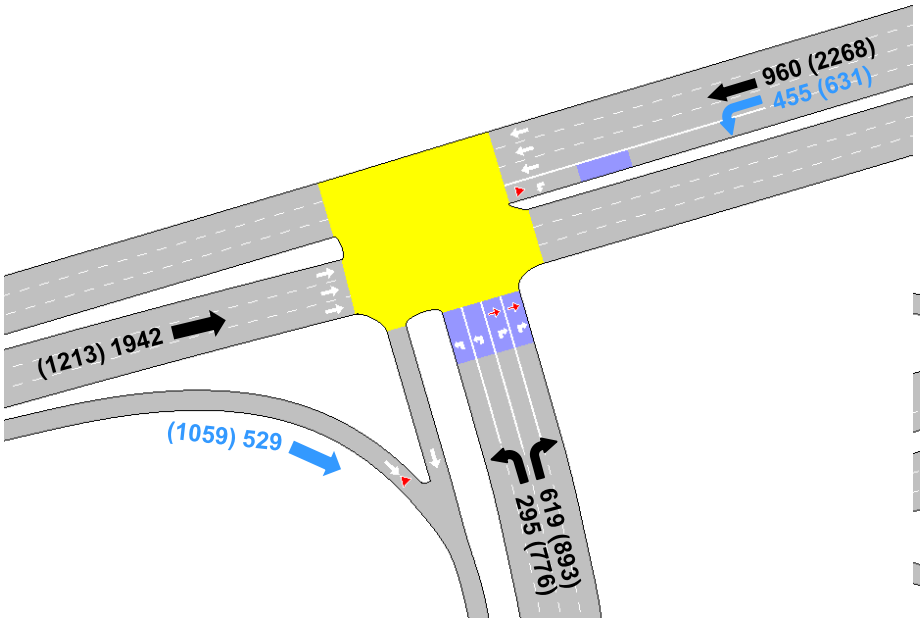


Highway 400 Interchange at Langstaff Road

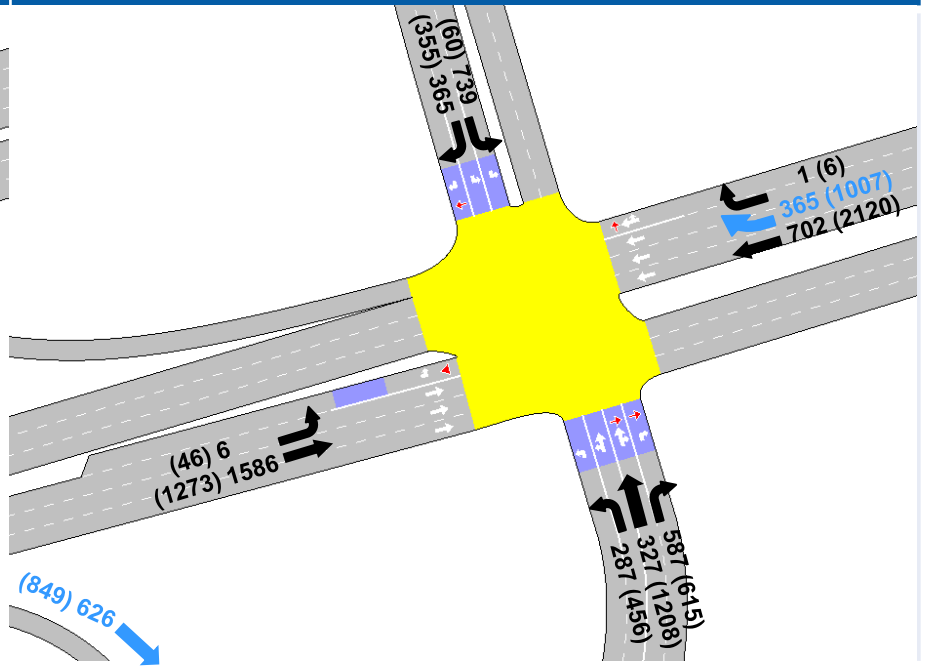
East Ramp Terminal

Proposed access to Highway 400 NB from Langstaff Road expected to be heavily used

Loop Ramp Only (Options 1 & 3)

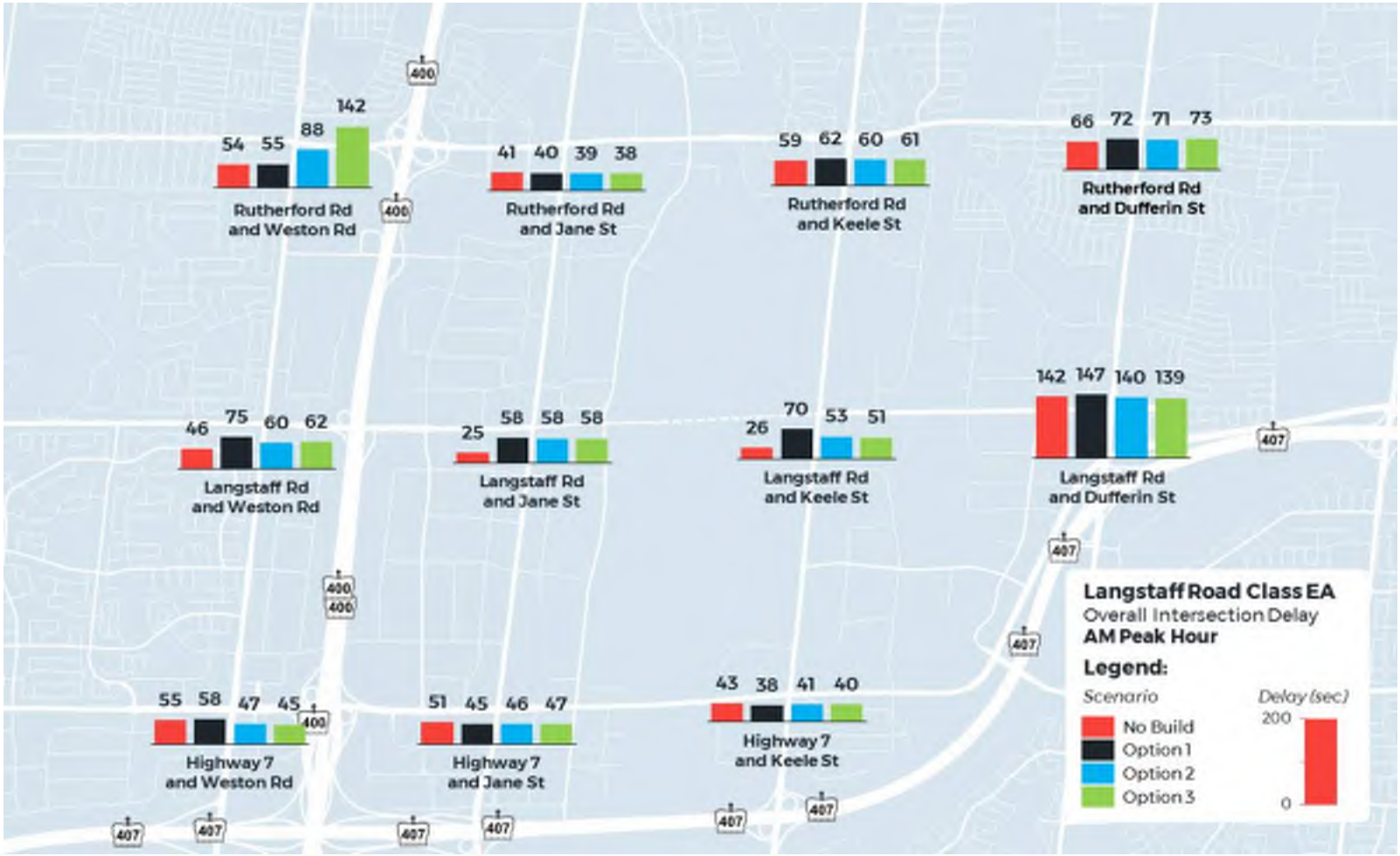


Loop + Direct Ramps (Option 2)



Surrounding Arterial Road Intersections

AM Peak Hour



Surrounding Arterial Road Intersections

PM Peak Hour

MEETING MINUTES

Date:	September 18, 2018 2:00 p.m. to 4:30 p.m.	**Project Number:**	16M-01457-01
Location:	City of Vaughan 2141 Major Mackenzie Drive 2nd Flr Committee Room 249	**Project:**	Langstaff Road EA – Weston Road to Highway 7
Purpose:	City of Vaughan Meeting #2		

Attendees:	**Agency**
Marta Roias	City of Vaughan
Frank Marzo	City of Vaughan
Hilda Esedebe	City of Vaughan
Gino Martino	City of Vaughan
Melissa Rossi	City of Vaughan
Michael Habib	City of Vaughan
Brian Wolf	York Region
Tim Kwan	York Region
Neil Ahmed	WSP
Katherine Jim	WSP
Jian Guan	WSP

Item	Details	Action By
ITEM 1 –	**INTRODUCTION**	
1.1	Those at the meeting were introduced. B. Wolf noted that the purpose of the meeting is to provide a status update on the project progress and recent activities, review comments received from City of Vaughan on February 6th, 2018 and invite City of Vaughan to a Highway 400 interchange improvement design workshop with MTO.	
ITEM 2 –	**EA STUDY STATUS AND RECENT ACTIVITIES**	
2.1	A presentation package was distributed. K. Jim, WSP, provided a status update on the study progress and recent activities and noted the following: • Open House #1 was held on June 14, 2017 to present the preferred planning solution. • City of Vaughan Meeting #1 was held on December 12th, 2017 to review the preferred planning solution and seek City's input to the alternative design concepts for the Preferred Planning Solution. • Since the City of Vaughan Meeting #1, the Project Team has	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	developed design concepts for the Highway 400 interchange improvements, Grade Separation at Barrie GO Line crossing, CN MacMillan Yard connection, Langstaff Road widening and Langstaff Road intersection improvements. Traffic operational analysis was carried out for various design concepts, supplemented by vehicle classification counts for Highway 400 ramps within the study area and updated travel time data (2016) provided by MTO. • The Project Team has had extensive consultations with various agencies and stakeholders including Metrolinx, MTO, CN Rail and TRCA with regards to the development and evaluation of the design alternatives. • Open House #2 is tentatively scheduled for late 2018 to present the preliminary preferred design for the improvements on Langstaff Road. [*Post Meeting Note: Open House #2 was held on November 28, 2018.*]	
ITEM 3 –	**COMMENTS FROM CITY OF VAUGHAN**	
3.1	K. Jim noted that City of Vaughan had provided comments on the materials presented at the City of Vaughan Meeting #1 (December 2017) and highlighted the key comments and responses, summarized as follows: • Comment: The improvements should incorporate City of Vaughan's planning policies. Response: The City of Vaughan's planning policies were reviewed as part of the background information review. It is noted that the Project Team is familiar with planning policies and does not believe the proposed improvements altered the current plan. • Comment: The Vaughan Mills Centre Secondary Plan to be considered as part of the study. Response: The York Region travel demand model already accounts for the future growth / full build-out in the Vaughan Mills area. • Comment: City of Vaughan has concerns with regards to potential impacts to Langstaff Public Park and Bartley Smith Greenway/Super Trail connection. Response: Impacts to Langstaff Public Park will be minimized and general mitigation measures will be developed later in the study. A detailed landscaping plan will be developed in detailed design. The Planchet Road intersection will be reconstructed as	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	part of Langstaff Road widening including the Bartley Smith Greenway/Super Trail connection. • Comment: York Region to review the Weston Downs Comprehensive Traffic Study report to confirm the intersection improvement requirements at Langstaff Road and Valeria Boulevard/Stan Gate intersection. Response: York Region is reviewing the findings from the Weston Downs Comprehensive Traffic Report. [*Post Meeting Note: The Weston Downs Comprehensive Traffic Study report attached to the City of Vaughan's Council Meeting Minutes of November 15, 2016, was reviewed and intersection improvement at Langstaff Road and Valeria Boulevard/Stan Gate was not recommended. Therefore, improvement to this intersection will not be recommended as part of the current study.*] • Comment: York Region to consider separate cycling and pedestrian facilities, recognizing role of Langstaff Road as Primary Arterial Goods Movement Corridor truck/goods movements. Cross sections are to include separate City pedestrian sidewalks. Response: The proposed cross-section for future Langstaff Road was developed collaboratively with staff from the York Region Transportation Planning/Design, Streetscape/Urban Design, Active Transportation and Operation/Maintenance departments. It is noted that the curb lane HOV lanes are not proposed as Langstaff Road is identified as a primary arterial goods movement corridor as part of the Region's *2016 Transportation Master Plan (TMP)*. [*Post Meeting Note: Dedicated right-turn lanes are proposed at intersections where there is an existing or future bus stops to allow bus to bypass the general traffic as requested by York Region Transit*.] CycleTrack and sidewalk are separated by 2.0 m wide planting zone (boulevard) in the proposed typical section. • Comment: City of Vaughan provided comments on the preliminary Langstaff Road interchange improvement concepts and the key concerns include the impacts to adjust development properties, operational performance at ramp terminals and ramp storage capacity. Response: Preliminary evaluation of interchange improvement alternatives was completed and the preliminary preferred alternative was selected. A design workshop is proposed to the City and MTO to address comments from both stakeholders.	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
ITEM 4 –	**HIGHWAY 400 INTERCHANGE WORK / CONSULTATION WITH MTO TO DATE**	
4.1	K. Jim noted that MTO staff presented the three current Highway 400 interchange improvement alternative concepts, which are the same concepts presented to the City in February 2018, to its senior management in January 2018. Formal comments were provided by MTO in February 2018, including: • Simulation model does not reflect expected future conditions. • Proposed improvement should not have negative impact to the Highway 400 mainline operation. • Altering the start of the northbound Highway 400 HOV lane is not acceptable. • Existing deficiencies/operational concerns should be addressed as part of the study.	
4.2	B. Wolf noted that senior management from York Region had subsequently held a meeting with MTO senior management in March 2018 regarding the proposed Highway 400 interchange improvement concepts. At this current juncture of the study, MTO does not endorse any of the proposed concepts. It is noted that the *Vaughan Metropolitan Centre (VMC) and Surrounding Areas Transportation Study (2013)* recognizes the importance of a full-move interchange at Highway 400; however, MTO has previously sent formal letters noting the proposed interchange improvement design as part of the *VMC and Surrounding Areas Transportation Study (2019)* was not acceptable.	
4.3	K. Jim noted that a preliminary evaluation of the current three interchange improvement alternatives was carried out and Alternative #3 – Hybrid Option was identified as the preliminary preferred alternative.	
4.4	K. Jim noted that Alternative #3, along with No-Build scenario and Langstaff Road Improvements Only (without Highway 400 interchange improvement) scenario, were modelled to assess the future operational performance for Highway 400 in 2041. The traffic micro-simulation results indicated that there are some operational improvements in the southbound direction during the AM peak for both scenarios compared to the No-Build Scenario, where Alternative #3 showed a slightly better result than the Langstaff Road Improvements Only scenario. In the northbound direction during the PM peak, the results indicated negligible changes in travel time and travel speed for both options compared	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	to the No-Build Scenario.	
ITEM 5 –	**VMC AND BASS PRO MILLS AREA INFRASTRUCTURE / DEVELOPMENT STATUS**	
5.1	City of Vaughan provided an overview of the infrastructure and development status of the VMC and Bass Pro Mills area and noted the following: • The extension of Bass Pro Mills Drive to Jane Street is scheduled to be under construction in 2019. • An Environmental Assessment (EA) for Bass Pro Mills Drive extension to Weston Road is currently being planned. • The EA for near-term improvement (2021) for the Portage Parkway extension to Creditstone Road is completed. • The improvements to Creditstone Road are not currently programmed. • The Highway 7 to Highway 400 ramp improvement will likely start once the rapid transit work is completed on Highway 7. • For the Colossus Drive crossing of Highway 400, the area east of Highway 400 is being policy protected. West of Highway 400, it is included in the Weston Road and Highway 7 Secondary Plan. • The Local Planning Appeal Tribunal (LPAT, formerly know as Ontario Municipal Board) is currently reviewing the potential re-designation of the development land, west of Highway 400 between Rutherford Road and Bass Pro Mills Drive, from employment use to residential use.	
5.2	City of Vaughan to provide the LPAT agreements within the study area, specifically for the area within the VMC Secondary plan west of Highway 400.	City of Vaughan
5.3	City of Vaughan to provide legal agreement with the Vaughan Mills Shopping Mall related to the Bass Pro Mills Drive interchange.	City of Vaughan
ITEM 6 –	**HIGHWAY 400 INTERCHANGE DESIGN WORKSHOP**	
6.1	K. Jim invited City of Vaughan to attend a design workshop with MTO to develop additional conceptual Highway 400 interchange improvement alternative(s) to address comments from the City and MTO. City of Vaughan agreed to attend the workshop. [*Post Meeting Note: The Design Workshop was held on October 4, 2018.]*	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
ITEM 7 –	**NEXT STEPS**	
7.1	K. Jim noted that, following the Design Workshop, the Project Team will develop the functional design and carry out the traffic operational analysis of the preferred interchange improvement alternative. The findings of the traffic operational analysis will be reviewed with the City and MTO and the preliminary preferred design will be presented at Open House #2. [*Post Meeting Note: The recommended Highway 400 interchange improvement design was not presented at Open House #2 and it was noted that further consultation with MTO and the City is required to confirm the preferred interchange improvement design.*]	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Langstaff Road
Class Environmental Assessment Study
Weston Road to Highway 7

City of Vaughan Meeting 2
September 18, 2018

GREAT STREETS
Building Roads that Build Community

York Region

Agenda

- EA Study Status and Recent Activities
- Comments from City of Vaughan (Feb 2018)
- Hwy 400 Interchange Work / Consultation with MTO to Date
- VMC and Bass Pro Mills area Infrastructure / Development Status
- Hwy 400 Interchange Workshop
- Next Steps

Growth in York Region

- Growth in York Region, including:
  - Vaughan Metropolitan Centre, Vaughan Mills Centre, and Concord GO Centre

Population

1.1 million 2014 to 1.8 million 2041

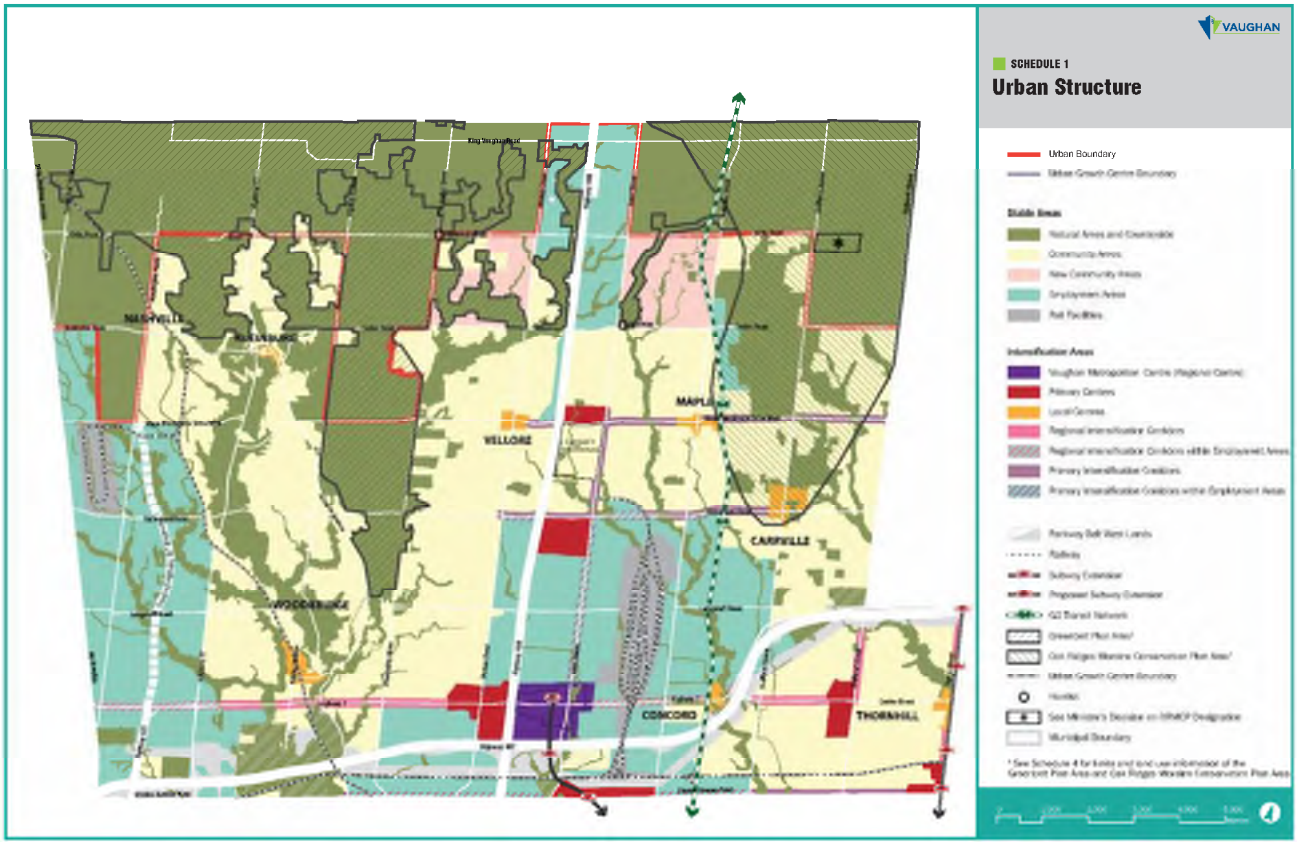
Employment

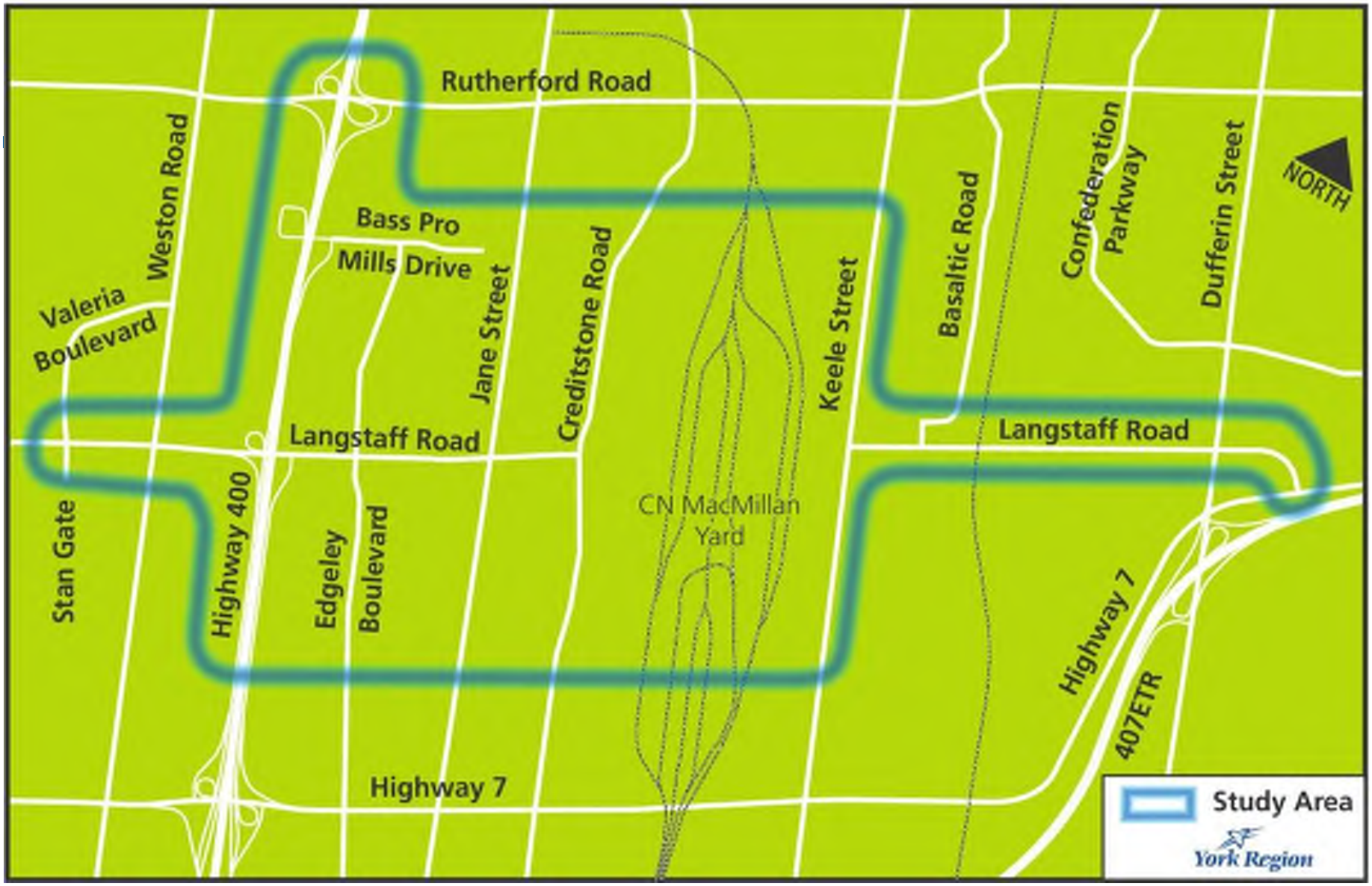
565 thousand 2014 to 900 thousand 2041

Growth in the City of Vaughan

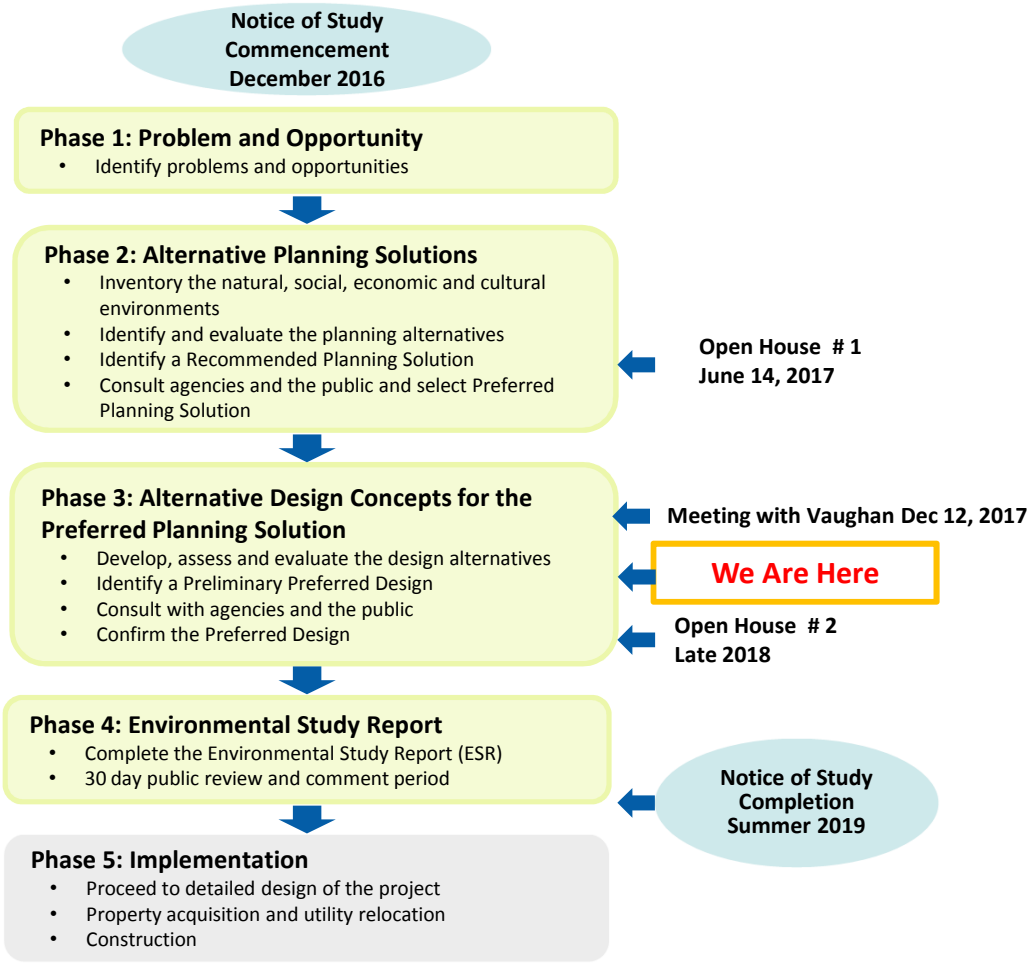
A number of **growth centres** in close proximity to the study area:

- Vaughan Metropolitan Centre
- Vaughan Mills Centre
- Concord GO Centre
- Weston Road / Highway 7
- Carrville Centre




Rutherford Road
Weston Road
Bass Pro
Mills Drive
Valeria
Boulevard
Jane Street
Creditstone Road
Keele Street
Basaltic Road
Confederation
Parkway
Dufferin Street
NORTH
Langstaff Road
Langstaff Road
Stan Gate
Highway 400
Edgeley
Boulevard
CN MacMillan
Yard
Highway 7
407ETR
Highway 7
Study Area
York Region

Environmental Assessment Study Process



Recommended Planning Solution

- **Add New Lanes:** Widen Langstaff Road
- **Langstaff Road Connection:** Construct Langstaff Road link across the CN MacMillan Yard.
- **Highway 400 Interchange Improvements:** Convert Highway 400/Langstaff Road Interchange to a full-move interchange
- **Grade Separation:** Construct grade separation at Langstaff Road / Barrie GO Line
- **Intersection Improvements:** Turning lanes, traffic signal timing optimization, etc.
- **Alternative Modes of Transportation**: Provision of or improvements to pedestrian and cycling facilities. Improvements to transit system (e.g. improved transit amenities)






Design Considerations

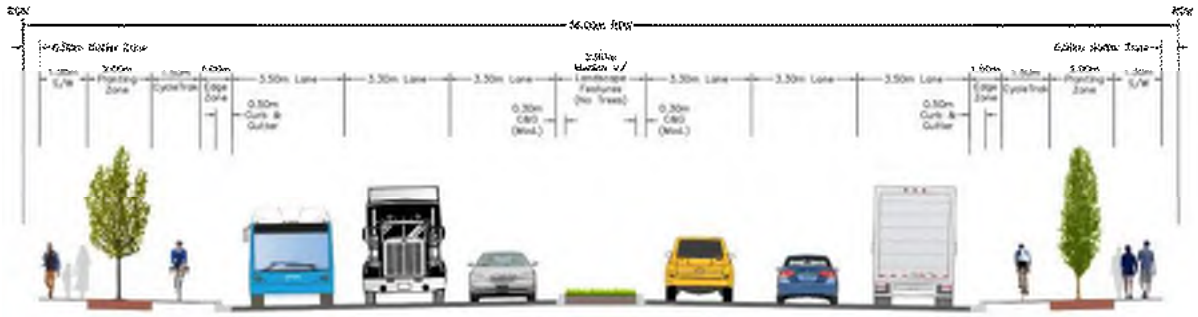
A number of key constraints and design elements will be considered:

- Adjacent properties and access
- Existing and future land uses
- Road design and intersection requirements
- Highway 400 / Langstaff Road Interchange design requirements
- CN MacMillan Yard operations and security
- Railway crossing options (overpass vs. underpass) at Barrie GO Line
- Natural features and watercourses
- Drainage of roadside areas
- Major utilities within the study area
- Streetscaping
- Active transportation facilities to be provided
- Goods movement features

Langstaff Road Widening

- Widening Langstaff Road from 2 to 6 lanes between Weston Road and Dufferin Street based on best-fit alignment to minimize property impacts.

Langstaff Road EA – Weston Road to Highway 7 – Finalized Proposed Cross Section



Activities Since Dec 2017 Vaughan Meeting

- **Jan 2018:** Meeting with Metrolinx
- **Jan 2018:** MTO staff presented interchange alternatives to senior management
- **Feb 2018:** formal comments from MTO and City of Vaughan re: interchange alternatives, including:
  - Simulation model does not reflect expected conditions
  - Concerns with Hwy 400 Design Options 1, 2, 3; modification should have no negative impact on Hwy 400
  - Altering start of northbound HOV lane not acceptable
  - Existing deficiencies/operational concerns to be addressed
  - Consistent with planning policies (e.g. secondary plans)
- **Mar 2018:** MTO Senior Management Meeting

Activities Since Dec 2017 Vaughan Meeting

- **Apr 2018:** Meeting with TRCA
- **May 2018:** CN Meeting re: yard crossing alternatives
- **May / Jun / Jul 2018:**
  - Vehicle Classification Counts for Highway 400 ramps
  - Updated travel time data for 2016 from MTO
  - Aimsum model recalibration / validation
- **Aug 2018:** MTO Meeting to present updated calibration results
  - Hwy 400 interchange design comments remain outstanding. MTO is open to the idea of a design workshop.

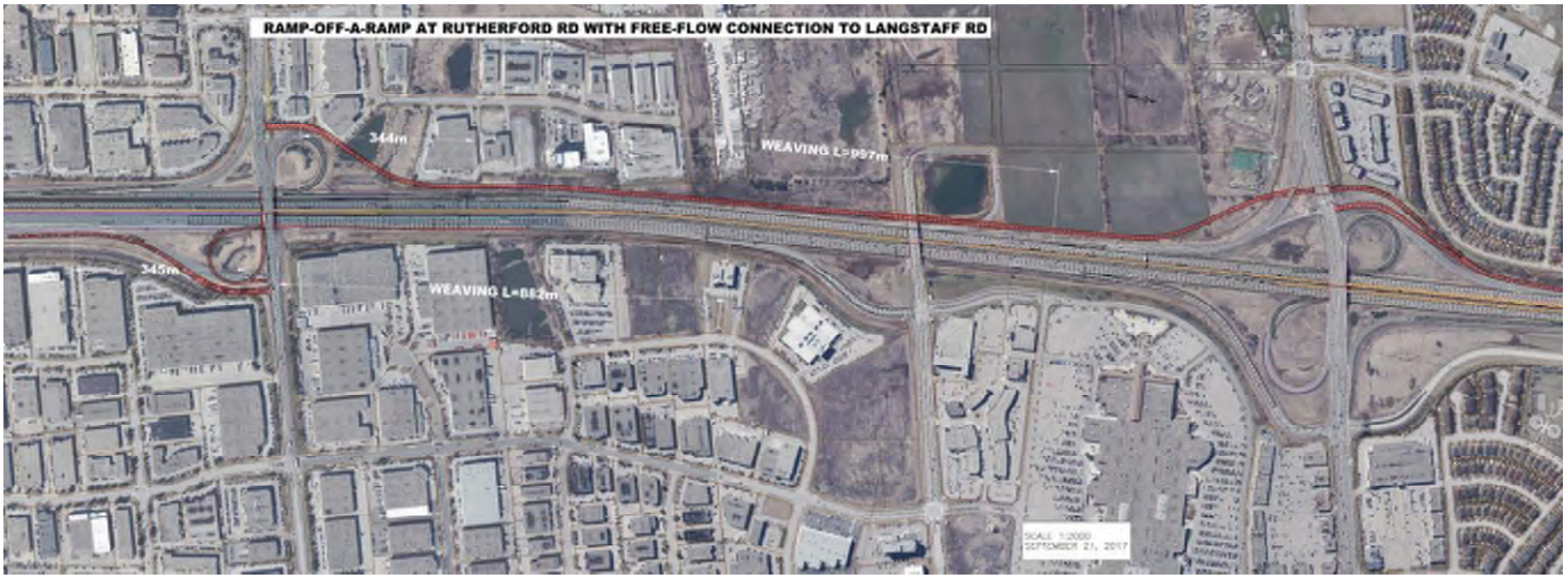
City of Vaughan February 2018 Comments

City of Vaughan Comments	Draft Response
Incorporate Vaughan planning policies	• Planning policies reviewed as part of the background information review.
Update study contact lists	• Completed
Consider Vaughan Mills Centre Secondary Plan	• York Region travel demand model already accounts for the future growth / full build-out in the Vaughan Mills area
Comments re: interchange alternatives	• Preliminary evaluation of ~~the~~ three alternatives completed. Option 3 (hybrid) is preliminary preferred. Upcoming workshop intended to address comments.

City of Vaughan February 2018 Comments

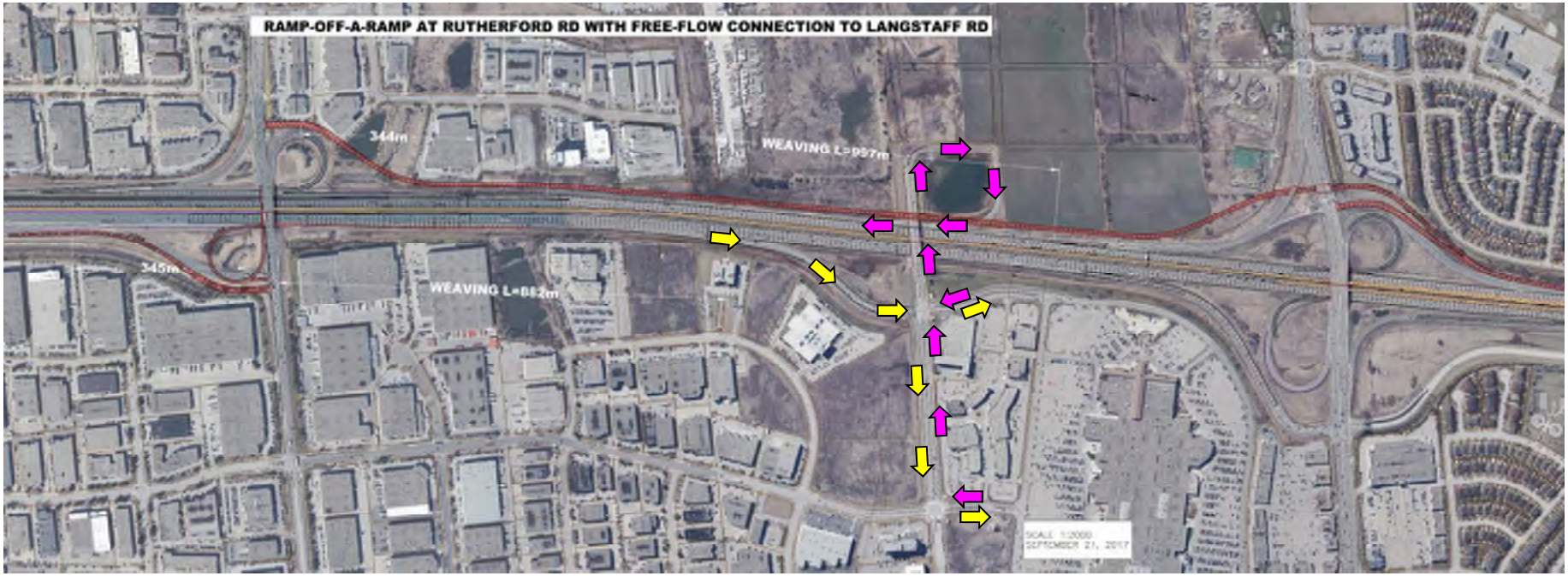
City of Vaughan Comments	Draft Response
Impact to parks	• Impacts to parks will be minimized through use of retaining walls. • General mitigation will be developed later in the study. • A detailed landscaping plan will be developed in detailed design.
Connection to trail	• The Planchet Road intersection will be reconstructed as part of the widening including trail connection.
Langstaff Road / Stan Gate intersection	• York Region is reviewing findings from the Weston Downs Traffic Study report. • A noise assessment will be completed as part of the EA Study.
Typical cross section	• Cross section is per York Region standards

Option 1: “Ramp-Off-Ramp” Configuration



Option 1: Access to/from Vaughan Mills

No change to existing access to/from Vaughan Mills

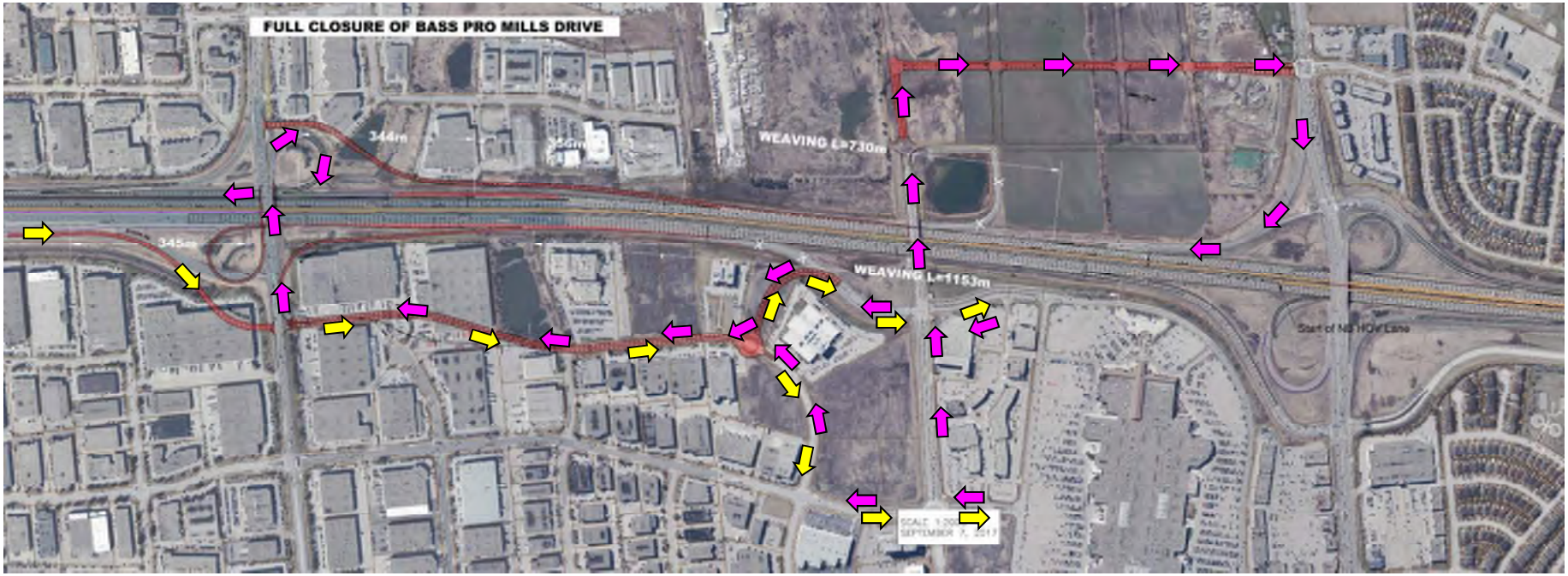


To Vaughan Mills
From Vaughan Mills

Option 2: Re-Route of Bass Pro Mills Ramps

Option 2: Access to/from Vaughan Mills

Access to/from Vaughan Mills changed to access via potential City's collector road network

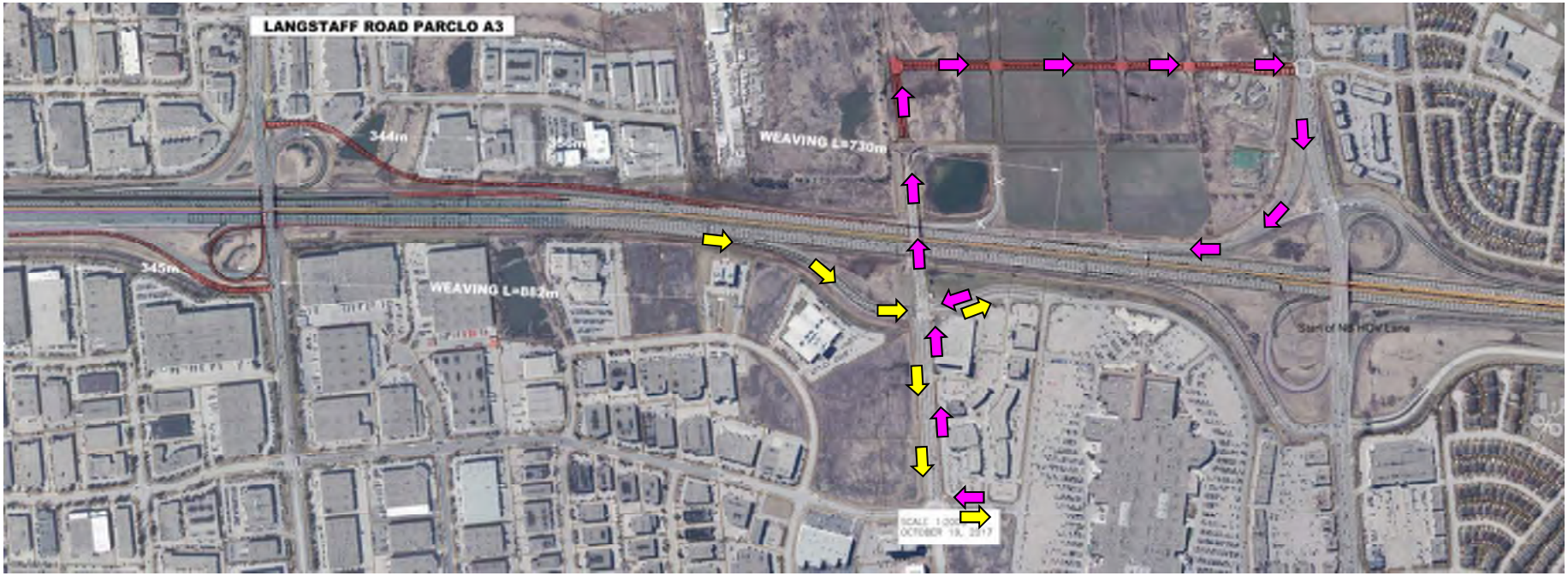


To Vaughan Mills
From Vaughan Mills

Option 3: Hybrid Interchange Configuration

Option 3: Access to/from Vaughan Mills

Only access from Vaughan Mills changed to City's collector road network



To Vaughan Mills
From Vaughan Mills

Preliminary Analysis and Evaluation of Interchange Alternatives

Factor/Criteria	Alternative # 1: Ramp-Off-Ramp	Alternative # 2: Re-Route of Bass Pro Mills Drive Ramps	Alternative # 3: Hybrid
1.0 SOCIO-ECONOMIC ENVIRONMENT			
Socio-Economic Environment Summary	• Highest impact to the commercial/industrial properties and future land use. • Highest noise and air quality impact to the adjacent resident, specifically the residents located in the northwest quadrant of Rutherford Road interchange where the proposed ramp-off-ramp will be in closer proximity to their properties.	• Less impact to the commercial/industrial properties and future land use compared to alternative 1. • No noise and air quality impact are expected.	• Least impact to the commercial/industrial properties and future land use compared to alternative 1. • No noise and air quality impact are expected.
Preference			
2.0 CULTURAL ENVIRONMENT			
Cultural Environment Summary	• All alternatives result in similar potential impacts to the area with the area with archaeological potential west of Highway 400. • Displacement or disruption to any listed built heritage resources are not expected.		
Preference			
3.0 NATURAL ENVIRONMENT			
Natural Environment Summary	• Highest impact to highway drainage. • Lowest impact to the potential contaminated sites.	• Less impact to highway drainage compared to Alternative 1 • Highest impact to the potential contaminated sites.	• Least impact to highway drainage. • Highest impact to the potential contaminated sites.
	• All interchange alternatives will have similar ability to provide adequate stormwater management. • All interchange alternatives will have similar effect to fish and fish habitat. • All interchange alternatives will have similar impact to terrestrial ecosystems and designated natural features.		
Preference			
4.0 TECHNICAL CONSIDERATIONS			
Transportation Consideration Summary	• Delay at the east ramp terminal and Langstaff Road/ Edgeley Boulevard is expected. • Potential increase in accidents at the east ramp terminal. • The proposed ramp-off-ramp may limit the future expansion of Highway 400.	• No significant queueing issues are expected at the ramp terminal and adjacent intersections. • All interchange alternatives have similar ability to accommodate the existing and proposed Active Transportation network. • Additional potential impact to YRT bus-route on Four Valley Drive.	• Delay at the east ramp terminal and Langstaff Road/ Edgeley Boulevard is expected. • Potential increase in accidents at the east ramp terminal.
	• All interchange alternatives have similar operation impact to mainline Highway 400 • All interchange alternatives have similar ability to accommodate the existing and proposed Active Transportation network. • All interchange alternatives have similar impact to the YRT bus-route on Langstaff Road.		
Preference			
Engineering Summary	• Highest number of new structures are required. • The most complex staging and challenging constructability. • No impact to the existing mainline. • All interchange ramp geometries meet MTO standards. • Most desirable weaving distances. • Access to-and-from Bass Pro Mills Drive (Vaughan Mills Shopping Centre) to the Highway 400 will be maintained. • Least potential utility impact.	• Lowest number of new structures are required. • The least complex staging and challenging constructability. • The start of southbound Express-Collector system is required to be shifted further south. • All interchange ramp geometries meet MTO standards. • Less desirable weaving distances compared to Alternative 1. • All existing Bass Pro Mills Drive interchange ramps (to and from Vaughan Mills Shopping Centre) are re-routed via local streets. • Highest utility impact.	• Lowest number of new structures are required. • The least complex staging and challenging constructability. • The start of southbound Express-Collector system is required to be shifted further south. • All interchange ramp geometries meet MTO standards. • Least desirable weaving distances. • The Bass Pro Mills Drive interchange southbound on-ramp (from Vaughan Mills Shopping Centre) is re-routed to future planned local roads and will access Highway 400 via Rutherford Road. • Least potential utility impact.
Preference			
Cost Summary	Highest	Less	Least
Preference			
Overall Preference			 **Preliminary Preferred**

Recent Traffic Analysis Work – Highway 400

- Updated calibration results being reviewed by MTO
- Modelled existing conditions generally match existing operating conditions
- Speed plots are prepared to capture operations in the morning and afternoon peak periods

Future (2041) Scenarios

Three scenarios used to assess the future (2041) conditions with and without Langstaff Road Interchange modifications:

1. No-Build
   - Existing configuration on Hwy 400 and Langstaff Road
2. Only with Langstaff Road Improvements
   - Langstaff Road widening and connection across CN Yard
   - Existing configuration on Hwy 400 and Langstaff ramps
3. Scenario 3 – Hybrid Interchange Configuration
   - Langstaff Road improvements
   - Hwy 400 and Langstaff interchange modifications

Preliminary Traffic Analysis Findings

Future 2041 AM Travel Times

Scenario	AM Peak Hour		Remarks
	Northbound	Southbound	
No-Build	8 min 18 sec	14 min 18 sec	
Only Langstaff Road Improvements (i.e. without Hwy 400 Interchange Improvements)	8 min 10 sec	12 min 35 sec (▼ 1:43 vs No Build)	**NB:** negligible change in travel time **SB:** reduced travel time. Mainline operation improves (vs No Build) due to traffic redistribution
Option 3: Hybrid	8 min 14 sec	10 min 22 sec (▼ 3:56 vs No Build)	**NB:** negligible change in travel time **SB:** reduced travel time. Mainline operation improves (vs No Build and Langstaff Road improvements) due to traffic redistribution

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

Future 2041 AM Average Speeds

Scenario	AM Peak Hour		Remarks
	Northbound	Southbound	
No-Build	91.7 kph	54.8 kph	
Only Langstaff Road Improvements (i.e. without Hwy 400 Interchange Improvements)	93.1 kph	62.2 kph (▲ 7.4 vs No-Build)	**NB:** negligible change in speed **SB:** increased speed. Mainline operation improves (vs No Build) due to traffic redistribution
Option 3: Hybrid	92.4 kph	75.4 kph (▲ 20.6 vs No-Build)	**NB:** negligible change in speed **SB:** increased speed. Mainline operation improves (vs No Build and Langstaff Road improvements) due to traffic redistribution

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

Future 2041 PM Travel Times

Scenario	PM Peak Hour		Remarks
	Northbound	Southbound	
No-Build	23 min 28 sec	9 min 10 sec	
Only Langstaff Road Improvements (i.e. without Hwy 400 Interchange Improvements)	22 min 56 sec (▼ 0:32 vs No Build)	9 min 22 sec	**NB:** decreased travel time. Lower mainline demand from existing interchange ramps due to traffic redistribution **SB:** negligible change in travel time
Option 3: Hybrid	25 min 53 sec (▲ 2:25 vs No-Build)	9 min 24 sec	**NB:** increased travel time. Additional demand from existing ramps and proposed Langstaff Road direct & loop on-ramps **SB:** negligible change in travel time

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

Future 2041 PM Average Speeds

Scenario	PM Peak Hour		Remarks
	Northbound	Southbound	
No-Build	32.4 kph	85.5 kph	
Only Langstaff Road Improvements (i.e. without Hwy 400 Interchange Improvements)	33.2 kph (▲ 0.8 vs No-Build)	83.6 kph	**NB:** increased speed. Lower mainline demand from existing interchange ramps due to traffic redistribution **SB:** negligible change in speed
Option 3: Hybrid	29.4 kph (▼ 3.0 vs No Build)	83.3 kph	**NB:** reduced speed. Additional mainline demand from existing ramps and proposed Langstaff Road direct & loop on-ramps **SB:** negligible change in speed

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Status of Growth in the City of Vaughan?

- Vaughan Metropolitan Centre
- Vaughan Mills Centre
- Concord GO Centre


Source: http://urbantoronto.ca


Source: http://www.vaughanmetrocentre.ca


Source: http://jrstudio.ca/


Source: http://tmgun.com/1eAJady

Status of Growth in the City of Vaughan?

Next Steps…

Design Workshop

- In collaboration with MTO and City of Vaughan, develop additional conceptual Highway 400 Interchange design alternative(s) addressing MTO comments

- Draft Agenda:
  - Purpose of the workshop
  - Review of interchange alternatives developed to date
  - Review draft preliminary analysis and evaluation
  - Preliminary preferred alternative (i.e. Option 3: Hybrid)
  - Comments received to date re: interchange alternatives
  - Discussion / brainstorm modification to interchange alternative

Next Steps…

Design Workshop

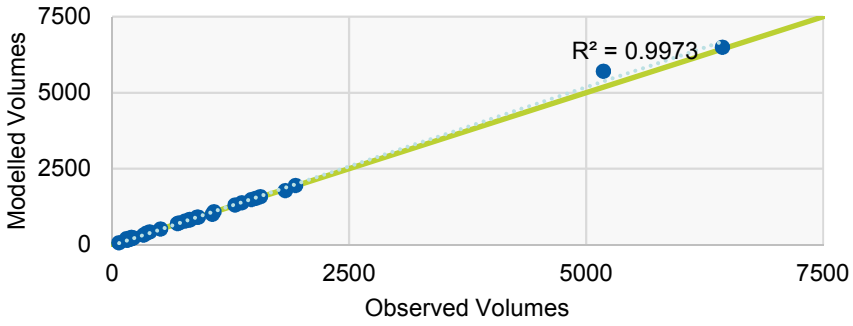
- Following the workshop, prepare functional design of the Interchange
- Conduct Traffic Operational Analysis for the new design alternative (i.e. microsimulation)
- Review findings with MTO and City of Vaughan
- Open House 2

REFERENCE SLIDES

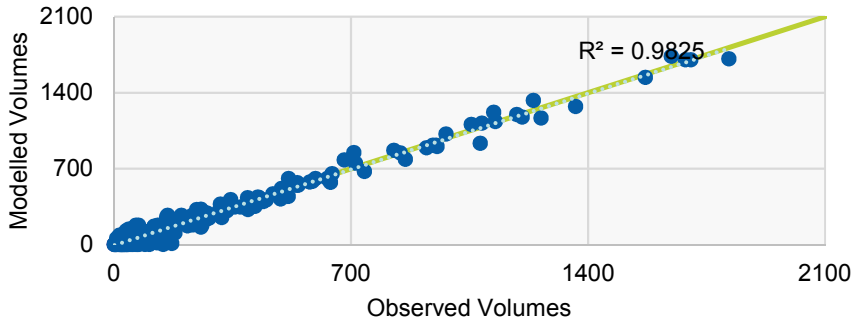
Updated Model Calibration

Observed vs Simulated Volumes (AM Peak Hour)

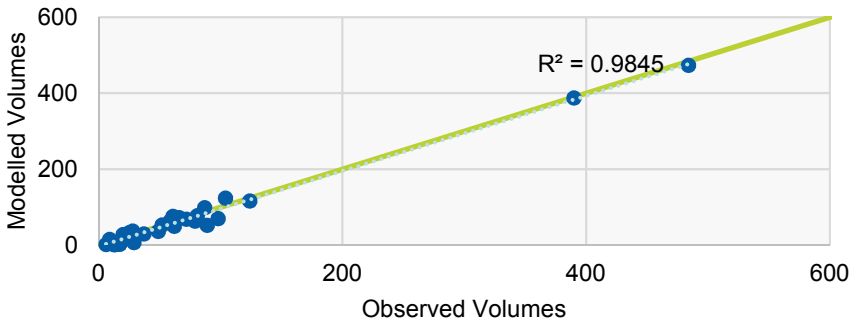
Highway 8:00-9:00 (Car)



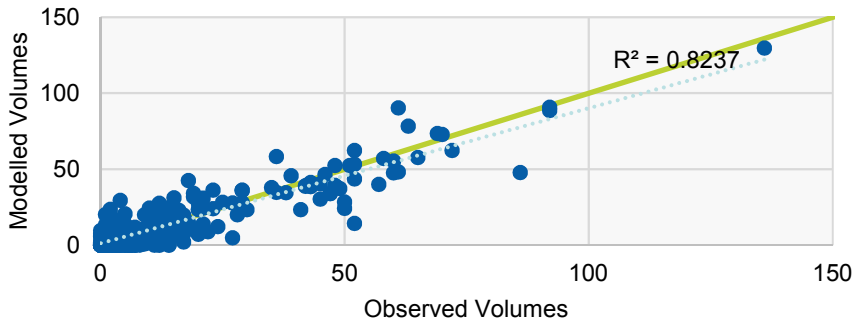
Turns 8:00-9:00 (Car)



Highway 8:00-9:00 (Truck)



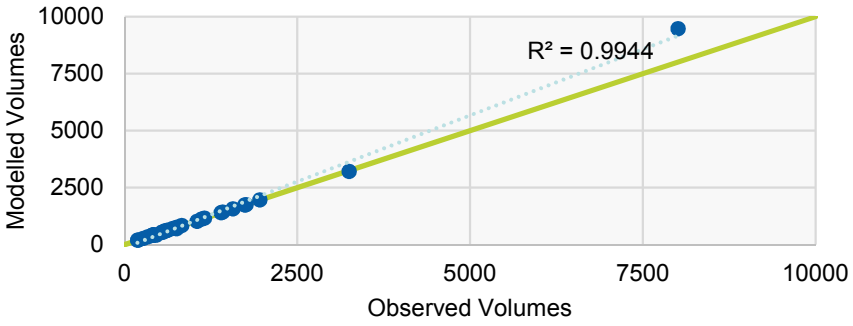
Turns 8:00-9:00 (Truck)



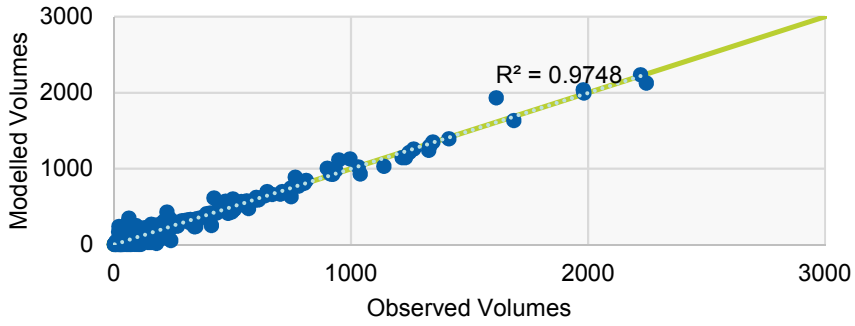
Updated Model Calibration

Observed vs Simulated Volumes (PM Peak Hour)

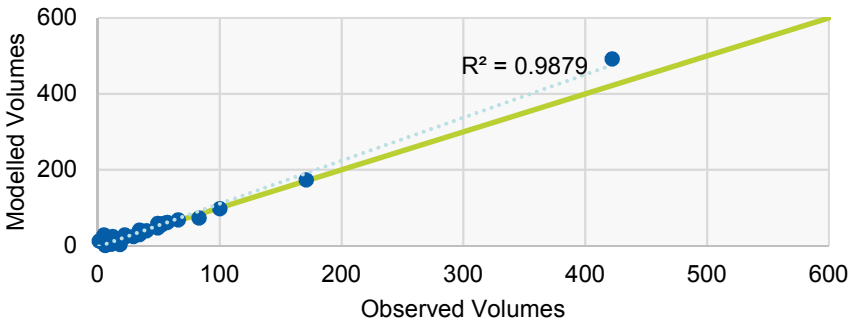
Highway 17:00-18:00 (Car)



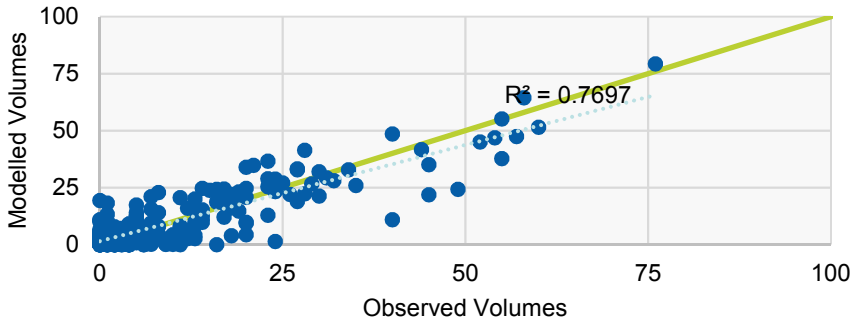
Turns 17:00-18:00 (Car)



Highway 17:00-18:00 (Truck)

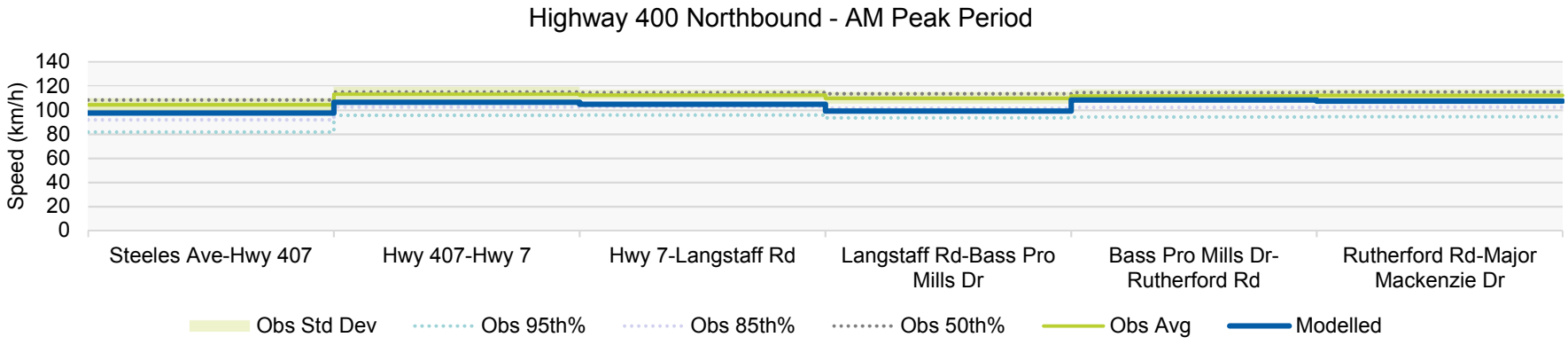


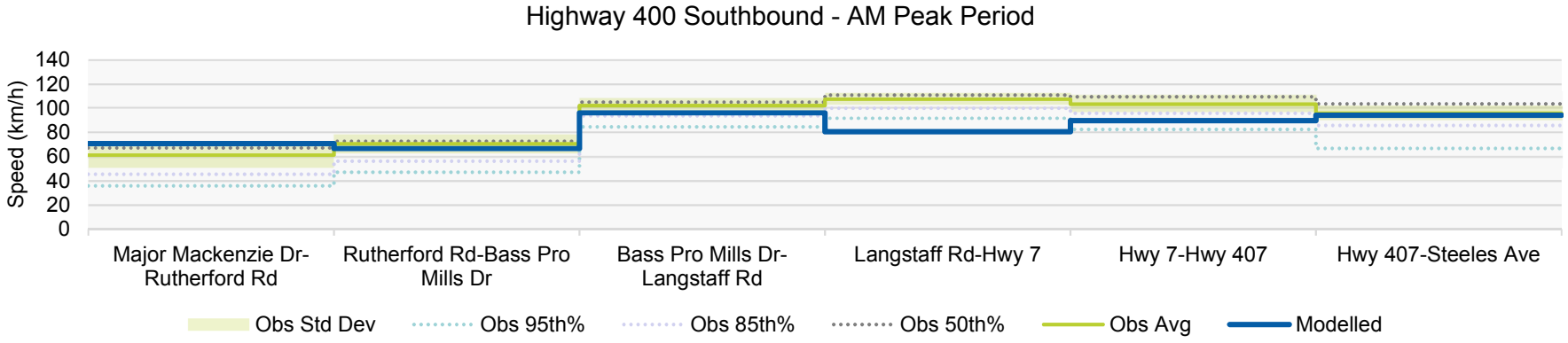
Turns 17:00-18:00 (Truck)



Updated Model Validation

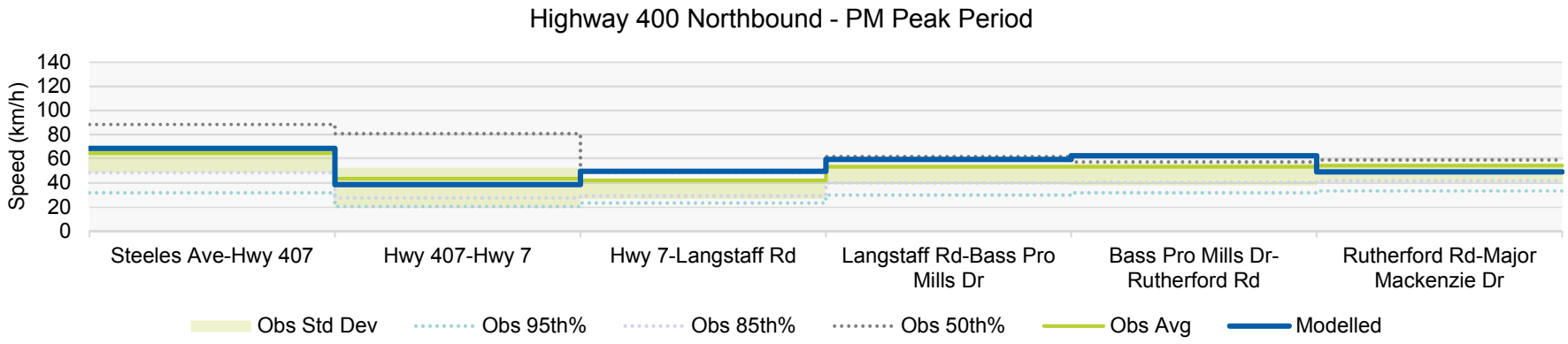
Observed vs Simulated Highway 400 Speed Profiles

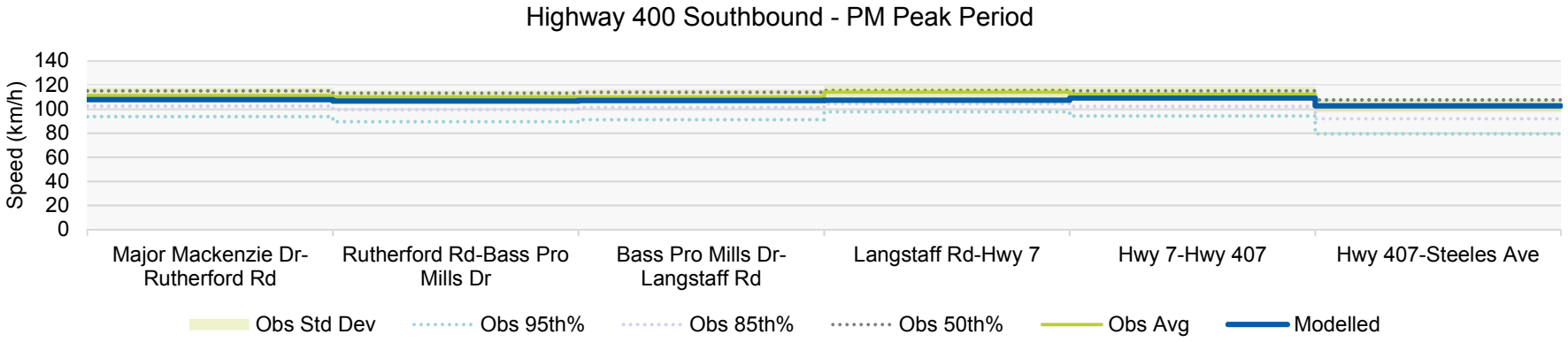




Updated Model Validation

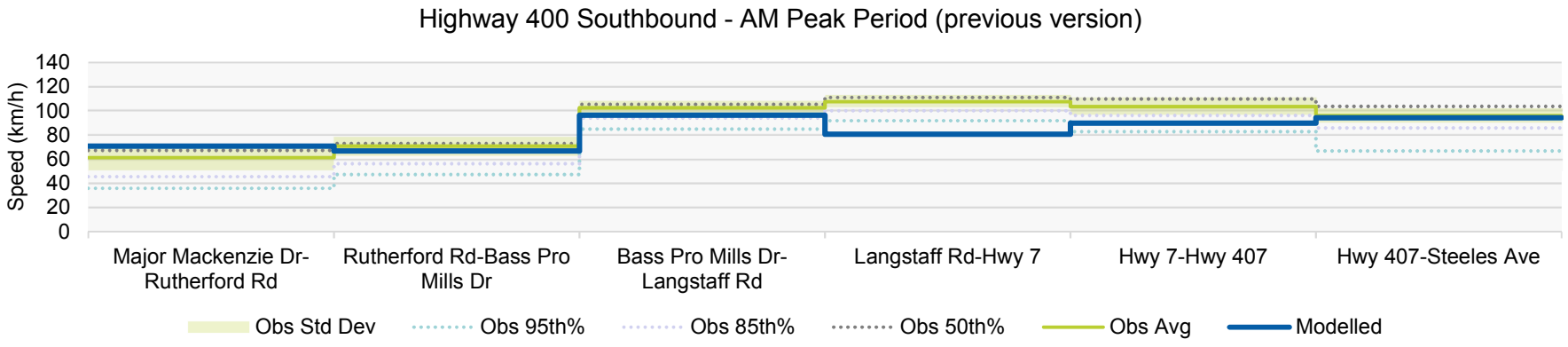
Observed vs Simulated Highway 400 Speed Profiles

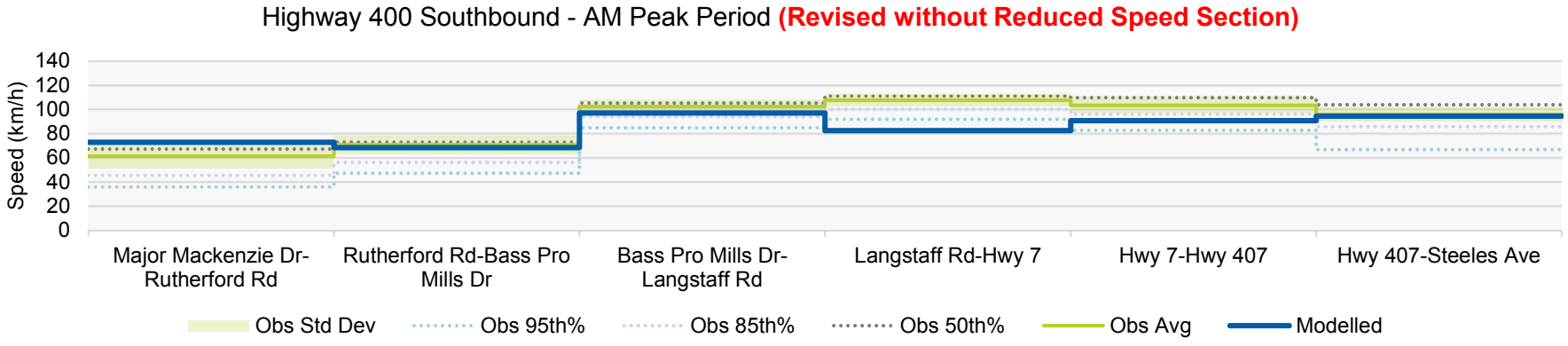




Updated Model Validation

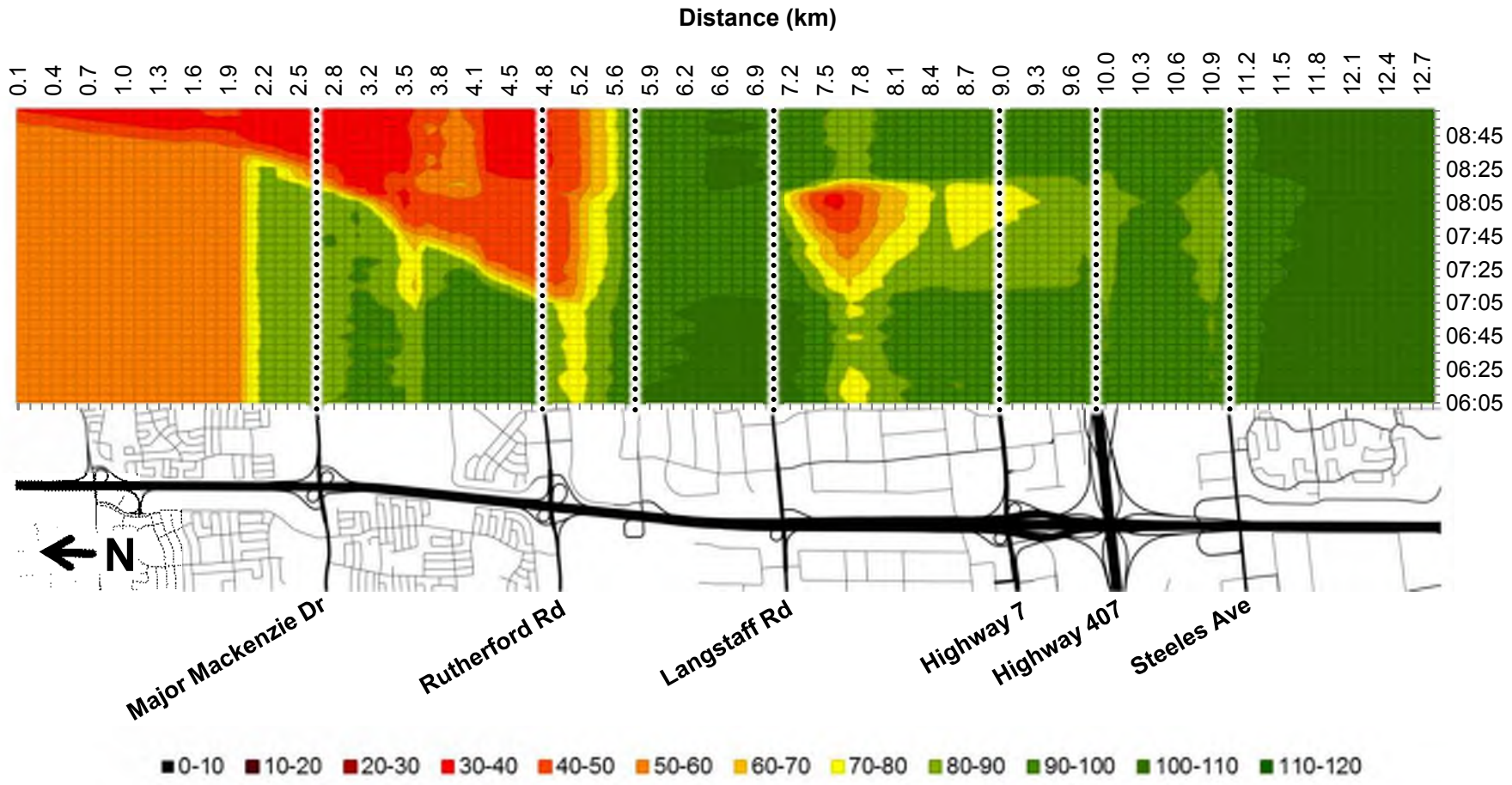
Observed vs Simulated Highway 400 Speed Profiles





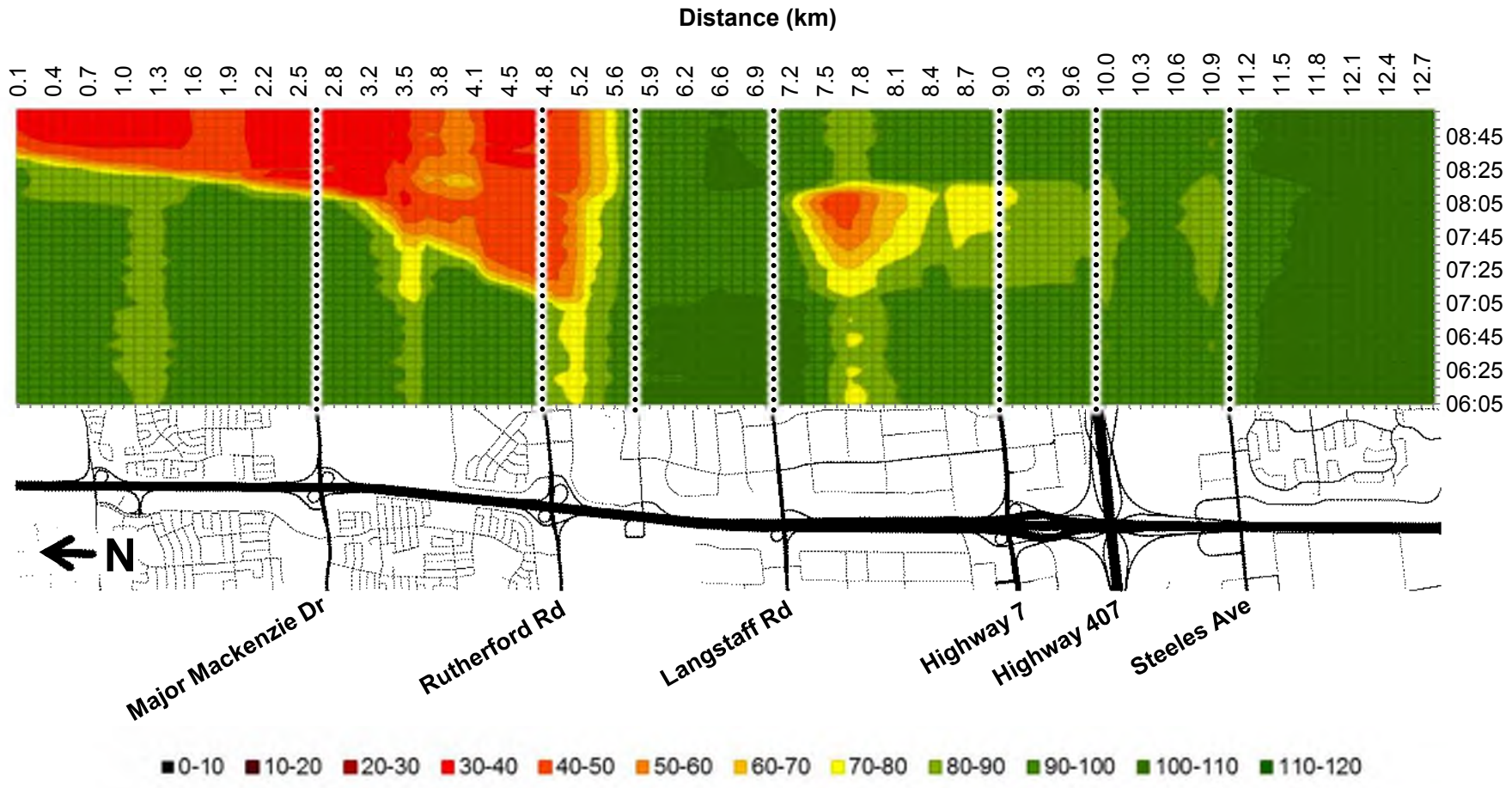
Existing Speed Contour Plots

AM – SB Direction



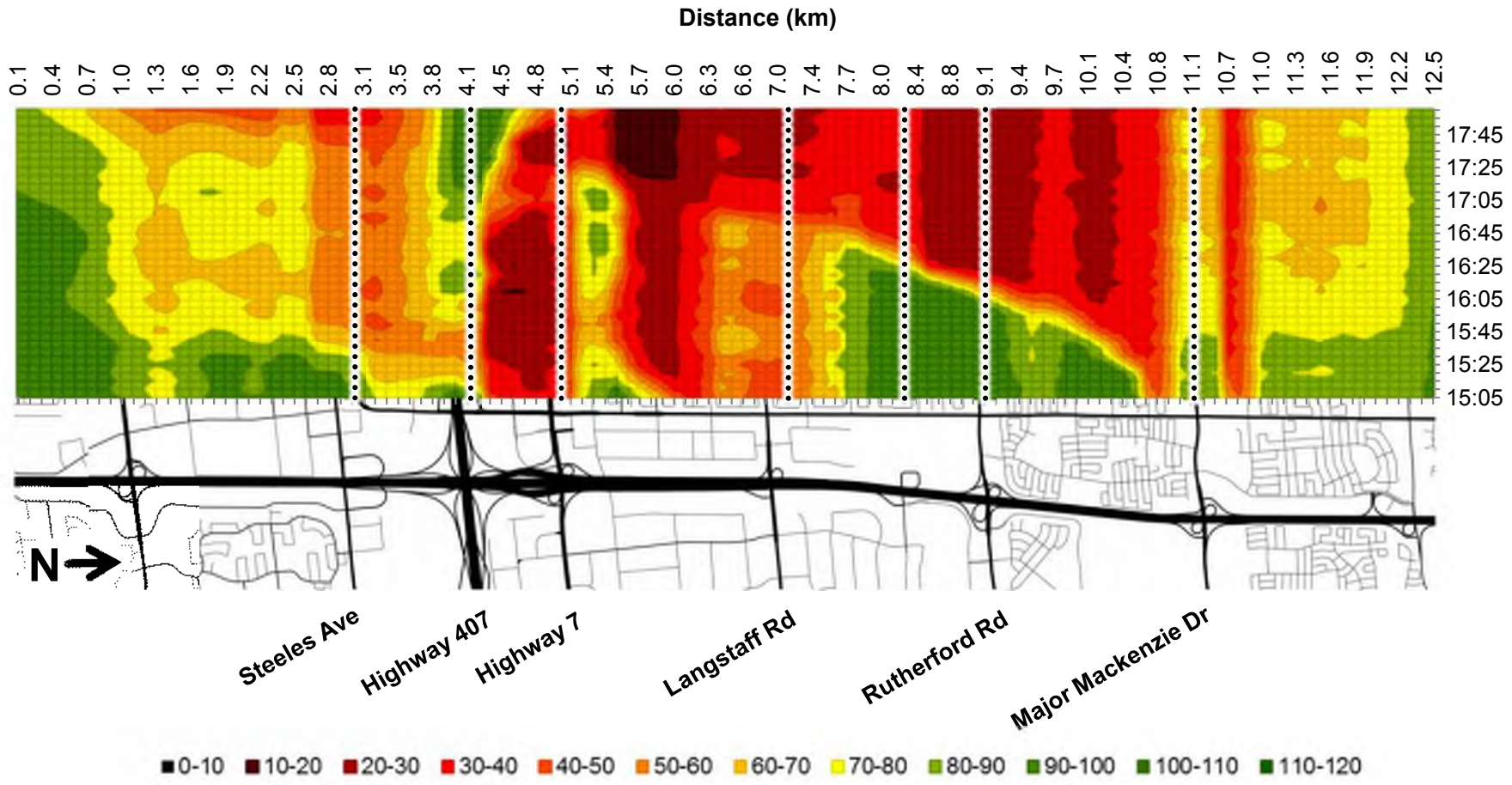
Existing Speed Contour Plots

AM – SB Direction (Revised without Reduced Speed Section)



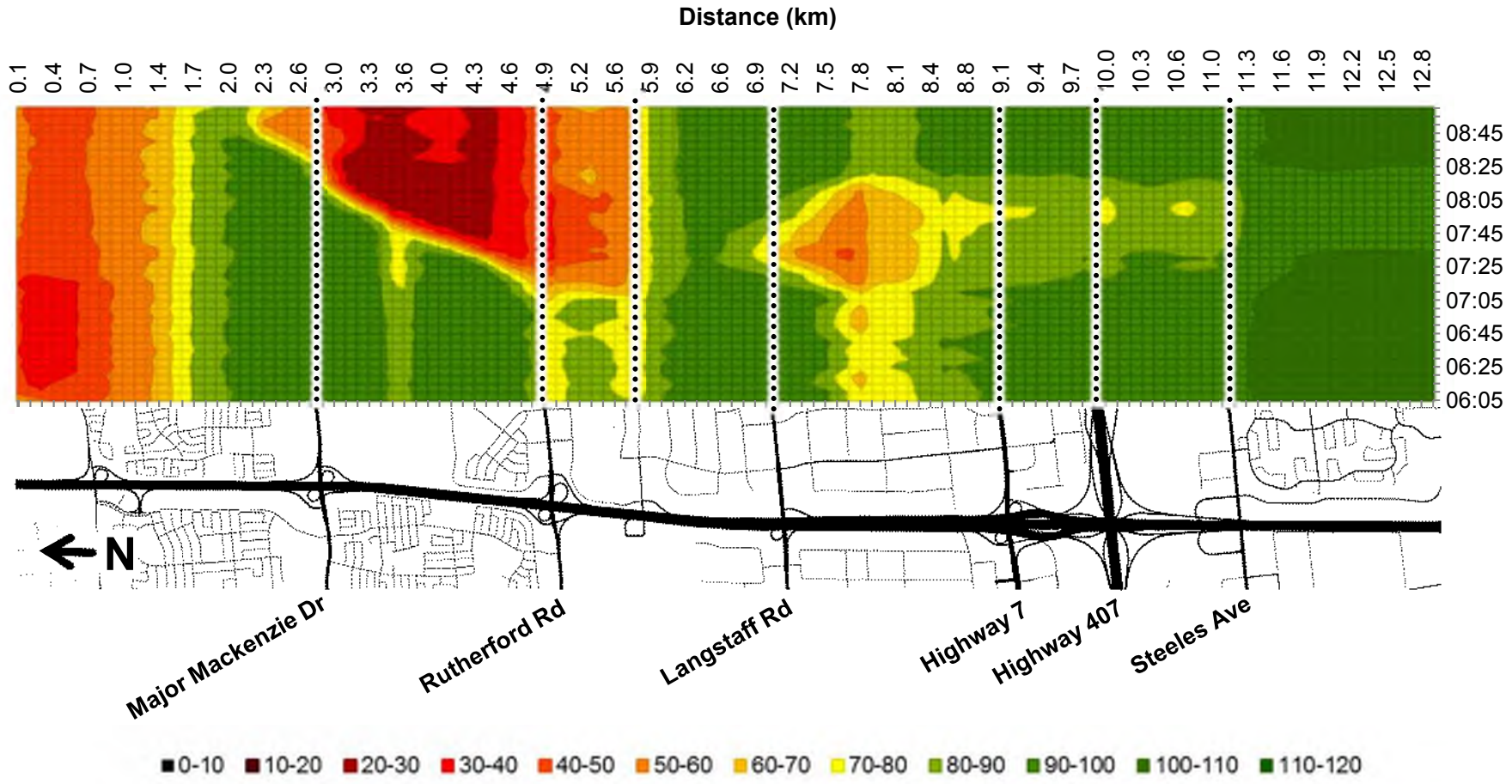
Existing Speed Contour Plots

PM – NB Direction



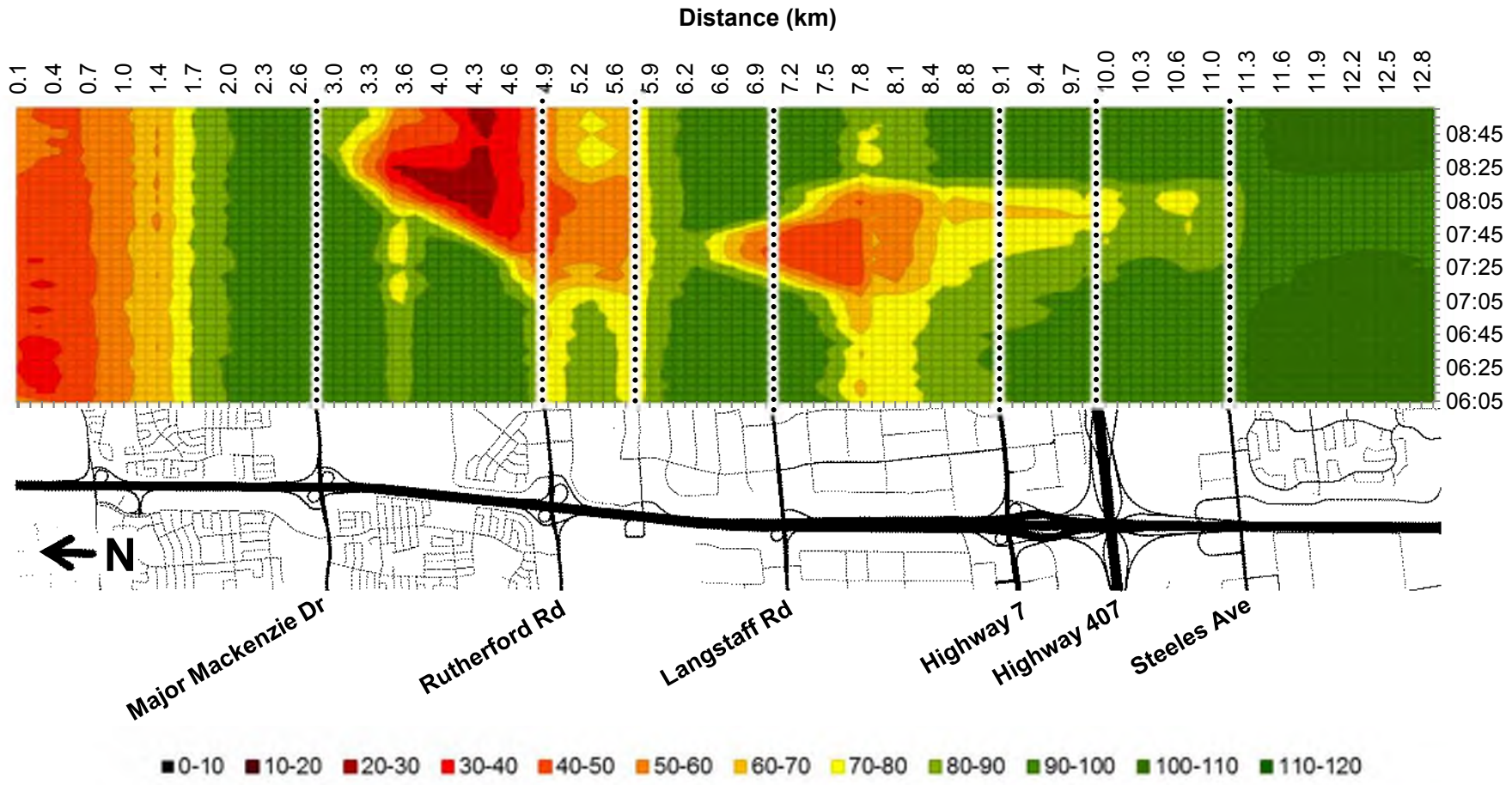
Future 2041 Speed Contour Plots

No-Build AM – SB Direction



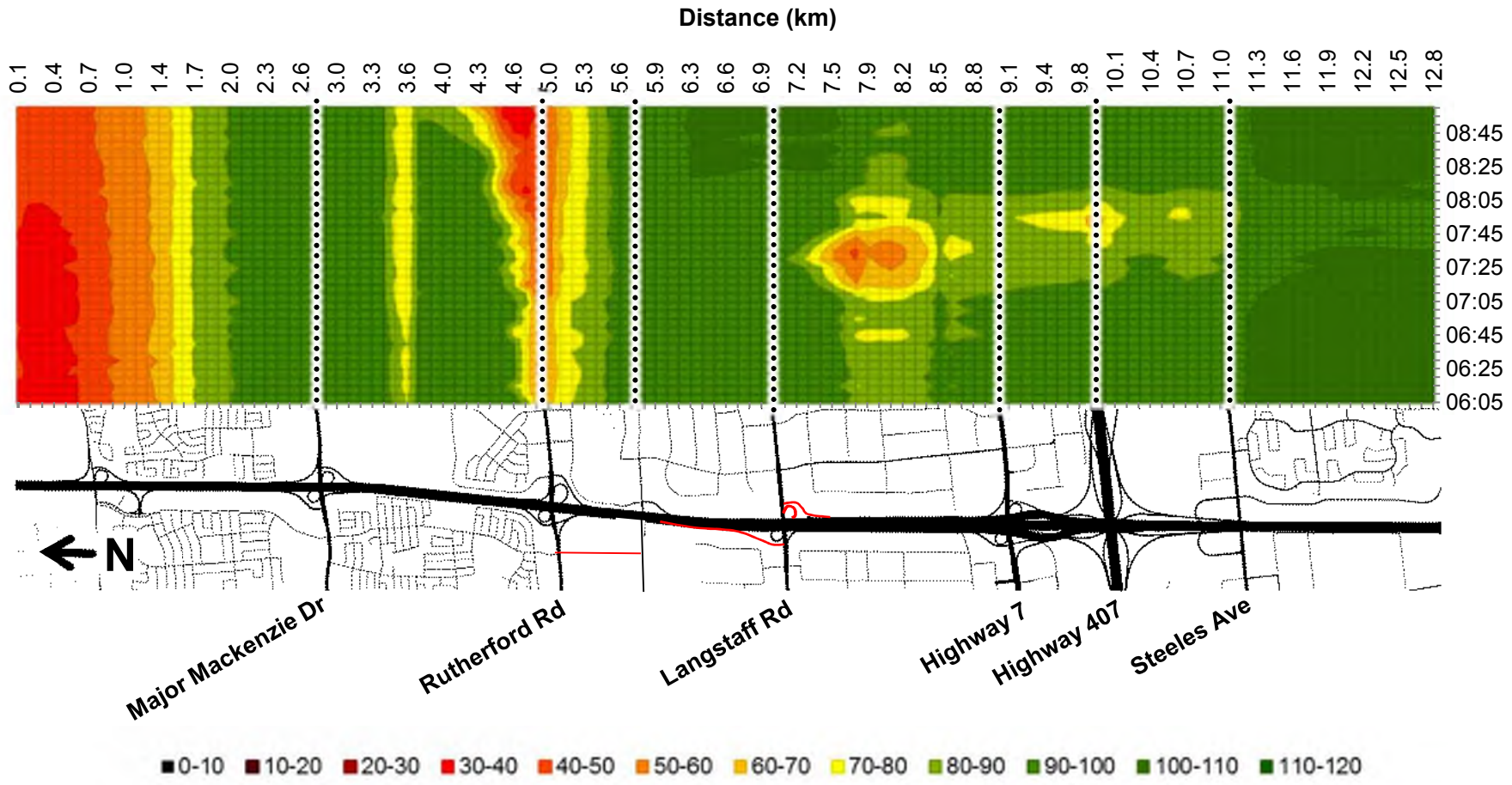
Future 2041 Speed Contour Plots

Only Langstaff Road Improvements AM – SB Direction



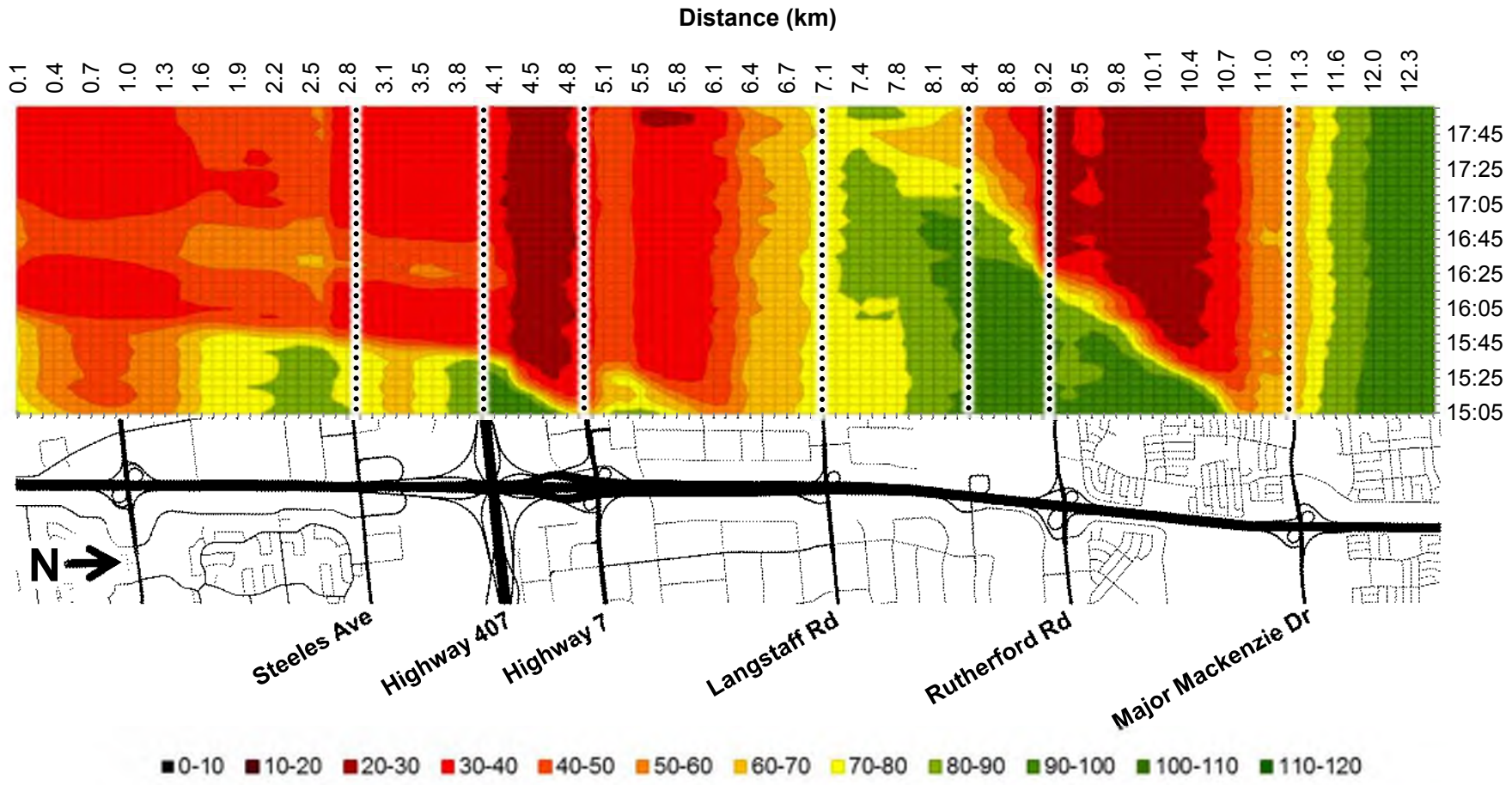
Future 2041 Speed Contour Plots

Interchange Option 3 (Hybrid) AM – SB Direction



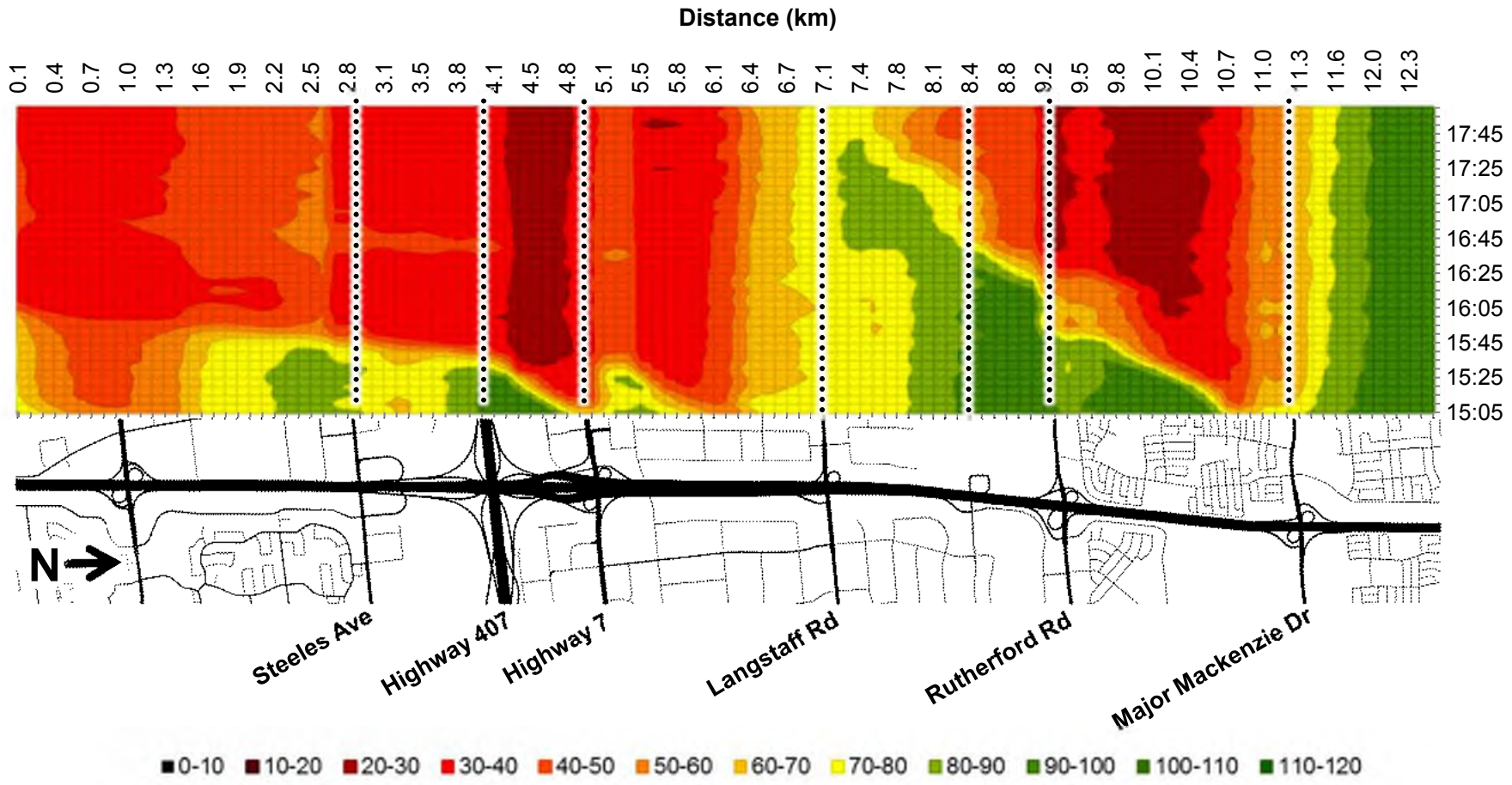
Future 2041 Speed Contour Plots

No-Build PM – NB Direction



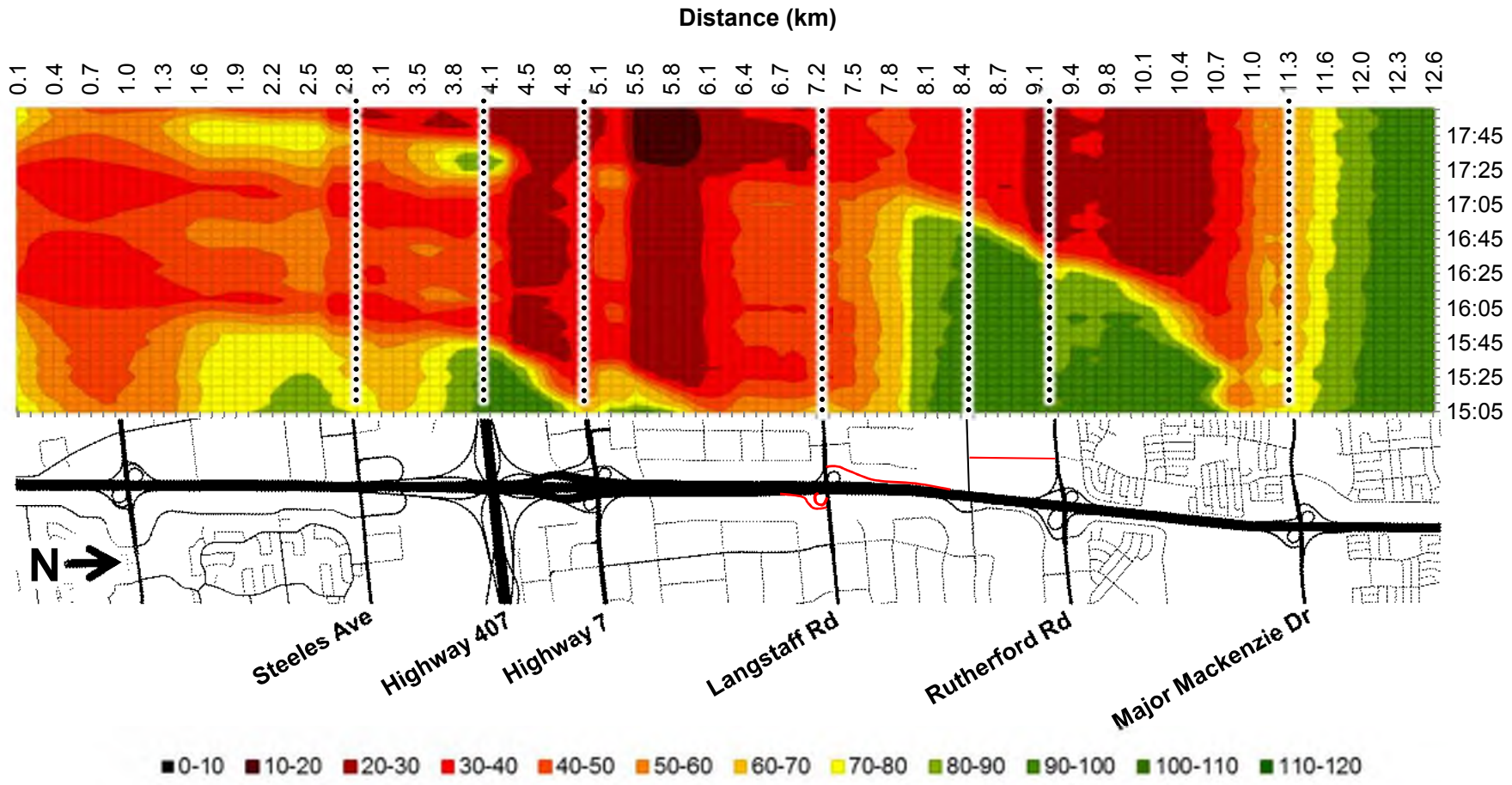
Future 2041 Speed Contour Plots

Only Langstaff Road Improvements PM – NB Direction



Future 2041 Speed Contour Plots

Interchange Option 3 (Hybrid) PM – NB Direction



MEETING MINUTES

Date:	July 15, 2021 1:30 p.m. to 3:30 p.m.	**Project Number:**	16M-01457-01
Location:	Teleconference (MS Teams)	**Project:**	Langstaff Road Class EA – Weston Road to Highway 7

Purpose: City of Vaughan Meeting #3

Attendees:	**Agency**
Marta Roias	City of Vaughan
Armine Hassakourians	City of Vaughan
Ben Nagarajah	City of Vaughan
Christopher Tam	City of Vaughan
Dorothy Kowpak	City of Vaughan
Hilda Esedebe	City of Vaughan
Michael Habib	City of Vaughan
Selma Hubjer	City of Vaughan
Colin Wong	York Region
Tim Kwan	York Region
Katherine Jim	CIMA+
Jian Guan	WSP
Nadia Dabagh	WSP
Brian Cheung	WSP

Item	Details	Action By
ITEM 1 –	**INTRODUCTIONS**	
1.1	Those at the meeting were introduced. K. Jim noted that the purpose of the meeting is to provide a status update on the project progress and recent activities, and review comments received from City of Vaughan provided in January 2019, following Open House #2 which was held in November 2018.	
ITEM 2 –	**PROJECT OVERVIEW AND EA STUDY STATUS UPDATE**	
2.1	K. Jim provided a status update on the study progress and recent activities and noted the following: • The need for improvements on Langstaff Road between Weston Road and Dufferin Street was presented at Open House #1 in June 2017. • Design Workshop with MTO and City of Vaughan was held in October 2018 to present and review potential improvement concepts at the Highway 400 / Langstaff Road interchange.	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	• Open House #2 was held in November 28, 2018 to present the preliminary preferred design for the improvements on Langstaff Road (not including the Highway 400 / Langstaff Road interchange area as that was subject to ongoing consultation with MTO). • Consultation with various stakeholders post Open House #2 were held including: MTO (August 2019 and March 2021); CN (December 2020); and property owners who are directly impacted by the proposed improvements on Langstaff Road. • An overview of the proposed improvements on Langstaff Road.	
ITEM 3 –	**COMMENTS FROM CITY OF VAUGHAN (JANUARY 2019)**	
3.1	J. Guan noted that City of Vaughan had provided comments on the Preferred Plan (as presented at Open House #2) in January 2019 and reviewed the key comments, as well as Project Team responses as outlined in the attached presentation slide deck (Slides 6-8). The City provided additional comments via email dated July 15, 2021 (i.e. prior to the meeting); many of which are similar and supplementary to the comments provided in January 2019. Further discussion on key comments are outlined below.	
3.1.1	• Comment: Separation of cycling facility: placing the cycling facility away from the travel lane; or reduce median width to increase the buffer behind C&G. Response: The proposed right-of-way (ROW) on Langstaff Road is limited to 36 m. It is challenging to accommodate all the needs within the ROW. By shifting the planting zone next to the curb, it causes concerns with salt from the roadway harming the trees and soil (not preferred by York Region Forestry department). The proposed 2.0 m median is reduced to the minimum width to accommodate all the needs within the ROW. D. Kowpak noted that there is some guidance to provide Active Transportation (AT) facilities along side the sidewalk and have the planter closest to the roadway in the Great Street Guideline and suggested that the placement of the sidewalk/planter be re-considered referencing recent examples from the Dufferin Street EA. City of Vaughan noted issues of cyclists safety vs. salt splash on trees and the potential of planting salt-resistant tree species. York Region responded that the typical cross section was developed based on internal discussion and agreement from various departments including forestry and operation/maintenance. The Project Team noted that placement of cross sectional elements (e.g. active transportation facilities	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	and landscape features) may be modified in detailed design within the proposed ROW subject to the most up-to-date guidelines at that time. This will be referenced in the ESR.	
3.1.2	• Comment: Bartley Smith Greenway Trail Connection: north-south connection at West Don River crossing and trail connection crossing Metrolinx GO Transit rail tracks. Response: The proposed Bowes Bridge (West Don River crossing) replacement does not preclude the planning of a future north-south trail connection by the City of Vaughan. The trail connection downstream is being accommodated at the new Metrolinx GO Transit rail bridge at West Don River crossing south of Langstaff Road. M. Habib asked if the Project Team has confirmed with TRCA that the 50 year regional storm levels and having a trail under the bridge is acceptable. While this has not been confirmed TRCA as part of the EA Study, the future planning of the trail will be subject to TRCA review. M. Habib asked if there was an opportunity to connect the trail beside the Metrolinx railway. As part of the EA Study, the proposed grade separation at the Metrolinx overpass has been developed to protected for the existing and future rail tracks (Metrolinx has noted to protect for an additional future track). The overpass structure would have to be extended to accommodate a trail. If a trail were to be located adjacent to in the Metrolinx corridor, that would be subject to consultation and approval by Metrolinx, as a buffer would likely be required. M. Habib remarked that the City of Vaughan would like to fill in of the gaps in the Bartley Train in the future, including the gap at Planchet Road. The City is currently undergoing a planning study for the Bartley Smith Greenway Trail between McNaughton Road and Major Mackenzie Drive.	
ITEM 4 –	**HIGHWAY 400 INTERCHANGE WORK / CONSULTATION WITH MTO**	
4.1	J. Guan provided an overview on the Highway 400 / Langstaff Road interchange work following the October 2018 workshop and an update on the consultation activities with MTO to date. M. Roias asked if the Project Team could share the concept with the City of Vaughan. The Project Team is still in discussion with MTO and will not be able to share the concept at this time. The Diverging Diamond Interchange (DDI) concept was developed subsequent to the October 2018 workshop. It would provide full	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	move at the interchange but would include replacement of structures and reconfiguration of ramps. C. Tam asked if the DDI concept was proposed to avoid property impacts and if there are other examples of DDI in Ontario. J. The DDI concept was proposed to minimize property impacts where feasible. Examples of DDI include the Glendale Avenue interchange at Niagara on the Lake, and Mapleview Drive on the Highway 400 close to Barrie, Ontario.	
4.2	H. Esedebe noted that the City of Vaughan is currently carrying out the EA for the extension of Bass Pro Mills Drive from Highway 400 to Weston Road and asked how soon the Project Team will be able to provide information on the proposed Highway 400 / Langstaff Road interchange improvement as it relates to the recommendations of the Bass Pro Mills Drive EA. The Project Team noted that the improvements of the Highway 400 / Langstaff Road are beyond the scope of the MCEA as the extent of improvement would be extensive and would be subject to a future corridor study for a more comprehensive review. York Region noted that Project Team is still in consultation with MTO regarding how the consideration of Highway 400 / Langstaff Road interchange maybe documented as part of the Langstaff Road EA Study since the planning of the interchange improvement will be subject to a future corridor study. The Project Team noted that since the improvements of Highway 400 / Langstaff Road interchange will not be included as part of the current EA Study, the Bass Pro Mills Drive EA should assume the conditions based on approved planning documents. C. Tam asked how the interchange will be documented in the ESR. The Project Team noted that the ESR would include findings of the traffic analysis (which included a scenario with proposed improvement at the interchange), as well as record of the all consultation activities with technical agencies and Open House information. Per above, the Project Team is in on ongoing consultation with MTO. C. Tam asked if there was any investigation on including continuous AT facilities on the DDI concept. The Project Team noted that continuity of AT facilities was considered on a high level.	
4.3	M. Roias requested that the Project Team provide the draft ESR and the Stage 1 Archaeological Assessment for review before filing. City of Vaughan will be provided with the draft ESR for review. City	WSP

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	confirmed they will required about 3 weeks for review of the draft ESR.	
ITEM 5 –	**PREFERRED PLAN**	
5.1	J. Guan provided an overview of the proposed improvements on Langstaff Road. York Region is proceeding with the planning for the interim widening of Langstaff Road to four-lane from Keele Street to Dufferin Street.	
5.2	With regard to CN, comments from the agency following Open House #2 is still pending. M. Roias asked what the nature of the CN discussion has been. The Project Team noted that CN has hired a consultant to review the recommended plan over CN MacMillan Rail Yard. In general, CN's preference is to not have a structure over the CN MacMillan Rail Yard as that would have a direct impact on their potential for future expansion. However, CN representatives have been in ongoing discussion with the Project Team over the course of the EA Study and was aware of the proposed CN structure crossing presented at Open House #2; CN provided input into one of the Open House displays noted CN concerns and how it was addressed as part of the EA Study.	
5.3	J. Guan presented the potential impacts to City of Vaughan properties, including additional property requirements for the easements which will impact the soccer field at Langstaff Park. M. Habib asked if the Project Team would complete a Park Facility Fit Plan to understand the impact to Langstaff park. York Region noted that the Park Facility Fit Plan is beyond the current scope of the Langstaff Road EA. M. Habib asked if these proposed improvements to Langstaff Road have any impacts on the setback for the soccer field and added that there are three soccer fields in a north-south orientation at the Langstaff Park. The Project Team noted, any reconfiguration of the soccer fields and associated setback requirements will be further reviewed during detailed design. M. Habib noted that the Project Team should acknowledge these potential impacts to the park setbacks in the ESR.	
ITEM 6 –	**NEXT STEPS / OTHER BUSINESS**	
6.1	The Langstaff Road ESR is tentatively scheduled to be filed Fall 2021 and interim widening of Langstaff Road from two lanes to four lanes, from Keele Street to Dufferin Street, is anticipated to start in 2026, subject to Municipal Class Environmental Assessment (MCEA) approval.	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Item	Details	Action By
	City of Vaughan be provided with the draft ESR for review; potentially later this summer. M. Roias noted that the City of Vaughan would require at least three weeks to review the draft ESR. M. Habib asked if the Langstaff Road EA improvements were included in the Region's 10-year plan. York Region confirmed that it is not currently part of the Region's 10-year Capital Plan. The capital program is subject to annual Council review. The Project Team will provide responses to the City of Vaughan comments per email dated July 15, 2021.	

610 Chartwell Road, Suite 300, Oakville, ON Canada L6J 4A5 | t: 905.823.8500 | f: 905.823.8503 | w: www.wsp.com

Langstaff Road
Class Environmental Assessment Study
Weston Road to Highway 7

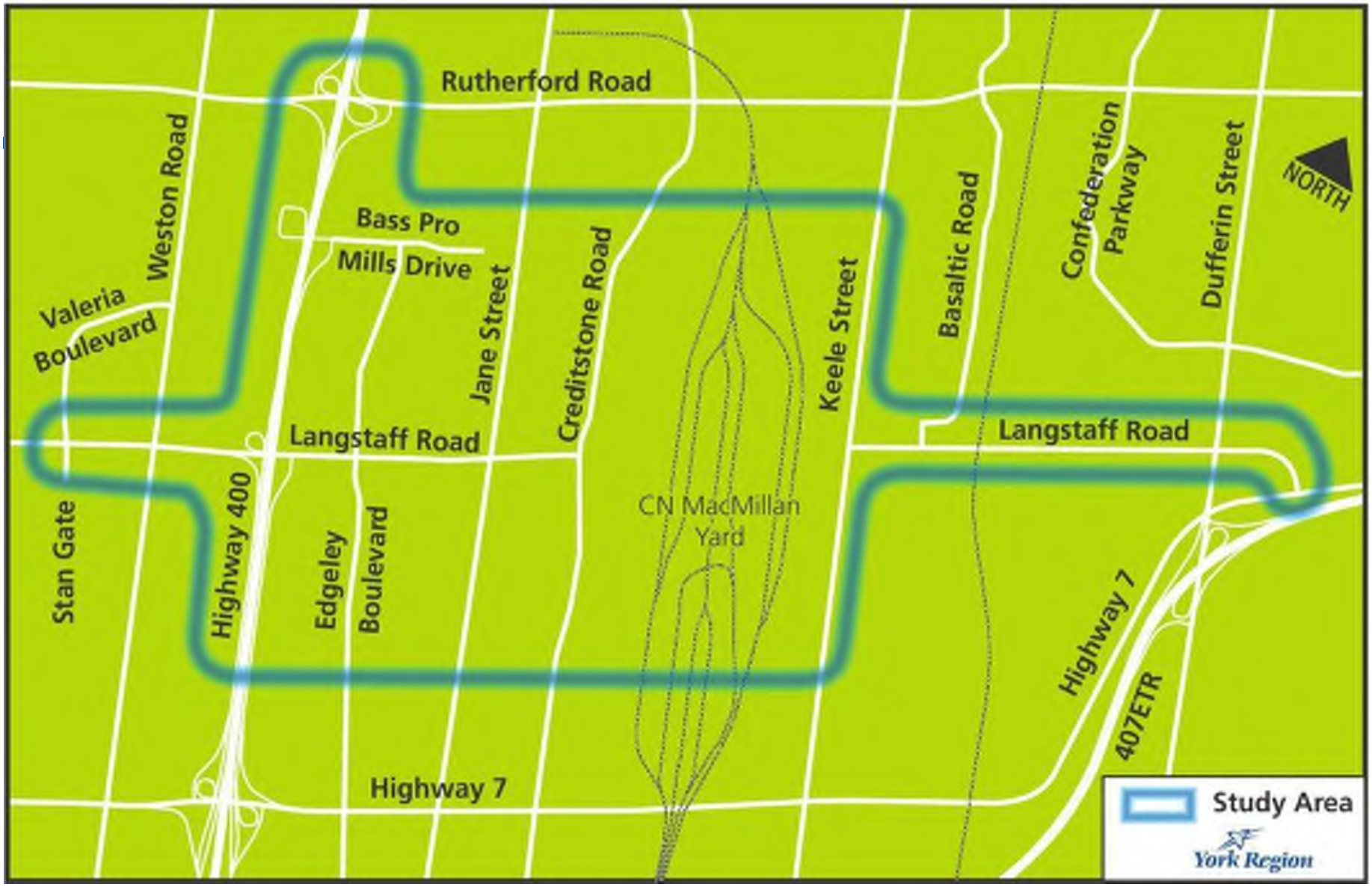
City of Vaughan Meeting 3
July 15, 2021


GREAT|STREETS
Building Roads that Build Community

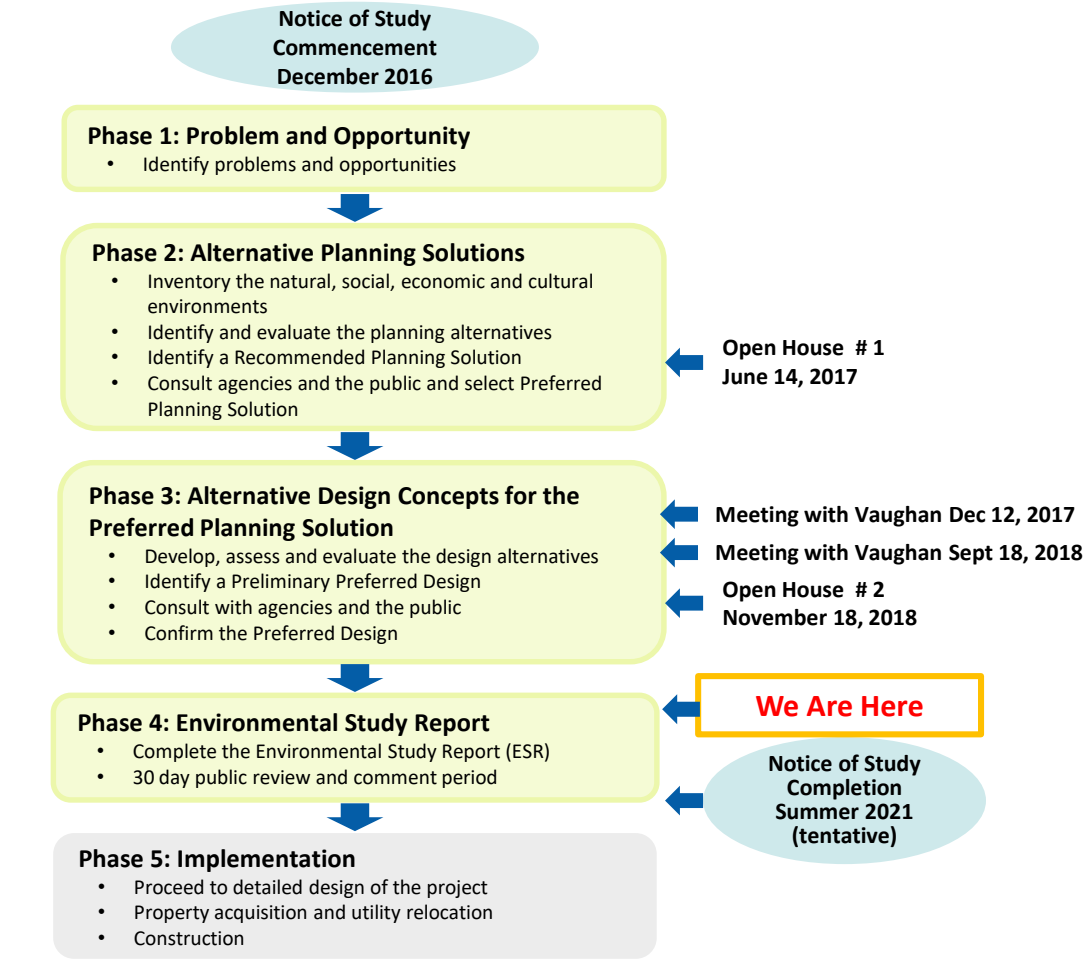
York Region

Agenda

- Introductions
- Project Overview and EA Study Status Update
- Comments from City of Vaughan (January 2019)
- Highway 400 Interchange Work / Consultation with MTO
- Preferred Plan
- Next Steps


Rutherford Road
Weston Road
Bass Pro
Mills Drive
Valeria
Boulevard
Jane Street
Creditstone Road
Keele Street
Basaltic Road
Confederation
Parkway
Dufferin Street
NORTH
Langstaff Road
Langstaff Road
Stan Gate
Highway 400
Edgeley
Boulevard
CN MacMillan
Yard
Highway 7
407ETR
Highway 7
Study Area
York Region

Environmental Assessment Study Process



Activities Since Last Meeting (Sep 2018)

- **Design Workshop with MTO and Vaughan** (October 2018)
- **Open House #2** (November 2018)
- **Consultation with various stakeholders post Open House #2 including:**
  - MTO (August 2019 and March 2021)
  - CN (December 2020)
  - Impacted Property Owners
- **Preliminary Design of the Preferred Plan**

City of Vaughan January 2019 Comments

City of Vaughan Comments	Response (provided to Vaughan May 28, 2021)
Highway 400 interchange alternatives	• The Project Team proceeded with DDI concept developed based on the inputs received at the October 2018 design workshop. The Project Team is in consultation with MTO on the DDI concept, as well as associated next steps in the context of current and future planning process. (further discussed on Slide 10 to Slide 13).
Configuration of the north-south crossing road subject to the local road improvement	• The north-south crossing roads improvement requirements will be documented in the ESR. The implementation of the project will tie-in to existing conditions of north-south roads.
Separation for cycling facility • Placing the cycling facility away from the travel lane; Or • Reduce median width to increase the buffer behind C&G	• The proposed ROW on Langstaff Road is limited to 36 m. It is challenging to accommodate all the needs within the ROW. By shifting the planting zone next to the curb, it causes concerns with salt from the roadway harming the trees and soil (not preferred by York Region Forestry department). • The proposed 2.0 m median is reduced to the minimum width to accommodate all the needs within the ROW.

City of Vaughan January 2019 Comments

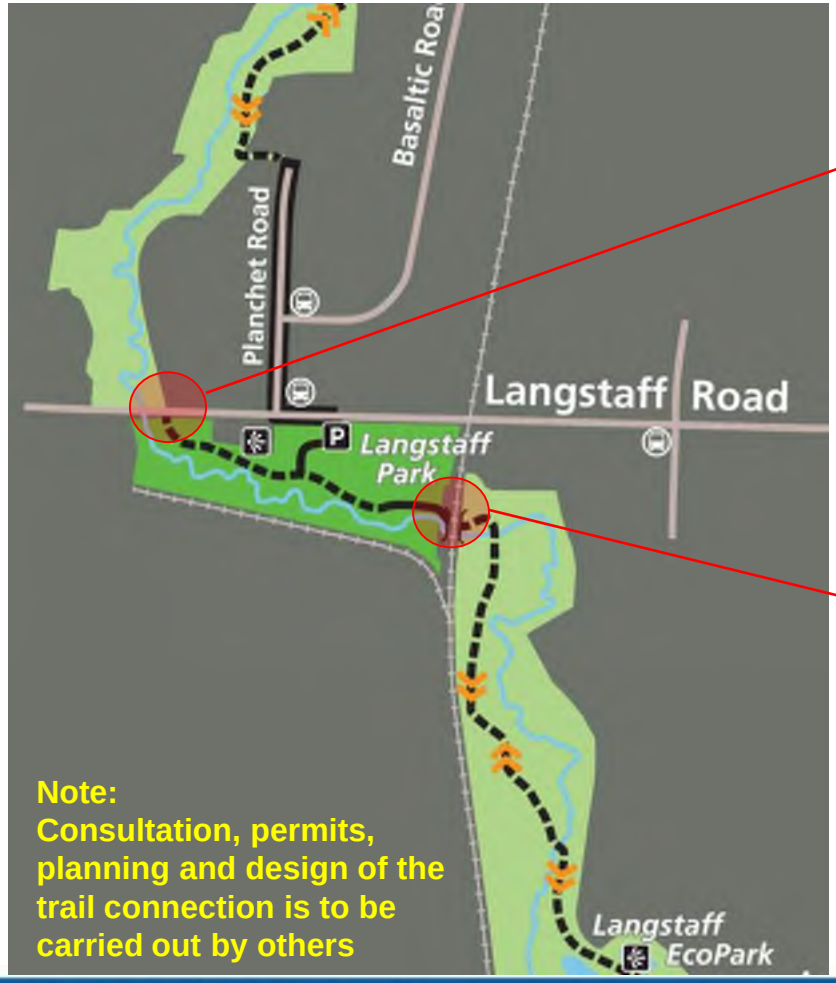
City of Vaughan Comments	Response (provided to Vaughan May 28, 2021)
Bartley Smith Greenway Trail Connection • North-South Connection at West Don River Crossing • Trail Connection crossing Metrolinx GO Transit Rail Tracks	• The proposed Bowes Bridge (West Don River crossing) replacement does not preclude the planning of a north-south trail connection. • The trail connection is being protected at the new Metrolinx GO Transit Rail bridge at West Don River crossing proposed by Metrolinx. (Further discussed on Slide 9).

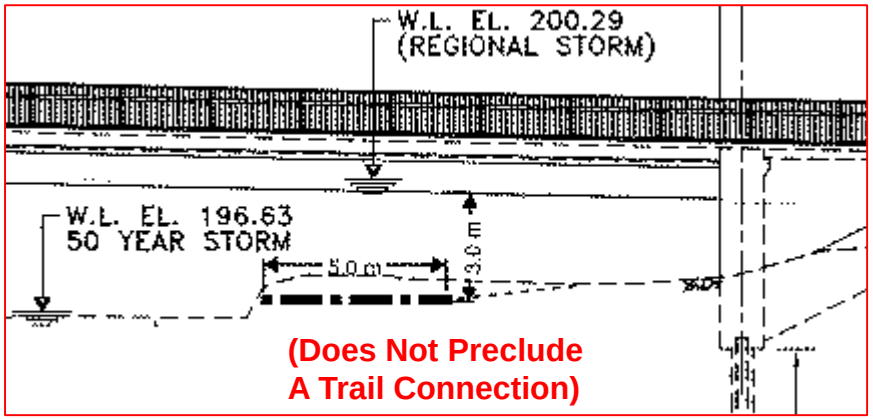
Impacts to parks (Langstaff Park, LeParc Park)	• Langstaff Park:
	  • Minor impact to the parking lot and the soccer field.
	  • Existing parking access will be realigned to Planchet Road.
	• LeParc Park:
	  • Existing access located on Connie Crescent. There is no impact to the park access as part of the current study.
	  • Minor property impact; however, direct impacts to the park facilities is not expected.

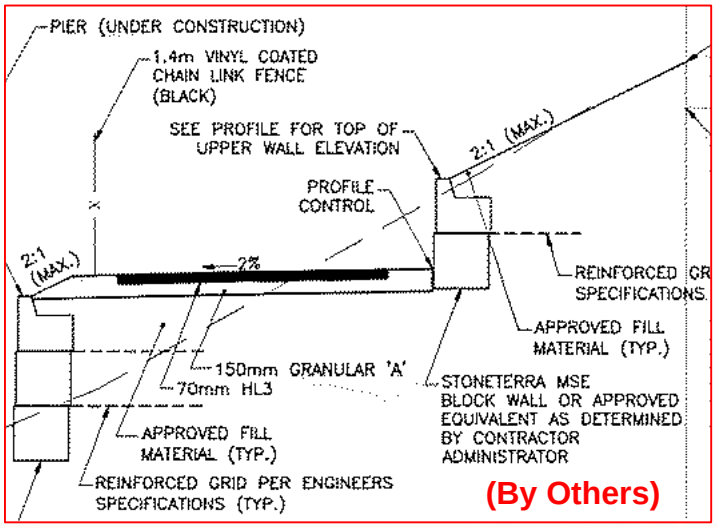
City of Vaughan January 2019 Comments

City of Vaughan Comments	Response (provided to Vaughan May 28, 2021)
Impact to Cemetery / Cultural Heritage	• Langstaff Road Cemetery was identified in the Stage 1 Archaeology Report and City of Vaughan is the owner of the cemetery. • The Preferred Plan does not preclude the realignment of the access to the newly proposed entrance driveway to Langstaff Park.
Transportation Analysis • The impact of the Langstaff Road missing link connection on adjacent E-W and N-S roadways is not pronounced.	• The screenline analysis was conducted using a high-level travel demand model outputs, which is a strategic model assigning traffic on the transportation network, distributing traffic evenly on all corridors Therefore, with the connection of Langstaff Road over the CN Yard and additional capacity on Langstaff Road, traffic from parallel corridors are reassigned on Langstaff Road hence the V/C ratio for Langstaff Road connection across CN yard is near capacity with only small changes on adjacent roads.

Bartley Smith Greenway Trail







Hwy 400 Interchange Work / Consultation with MTO

- Last meeting with Vaughan (September 2018): three (3) initial IC alternatives were presented. MTO and Vaughan expressed concerns with the associated traffic operations impacts and property impacts.
- Design Workshop was held with MTO and Vaughan (October 4, 2018): Additional interchange design alternatives were developed.
- A Diverging Diamond IC (DDI) was considered subsequent to the workshop.
- MTO comments (March 19, 2019 email): Additional comments on DDI concept and agreed with carrying out traffic analysis of the DDI alternative (March 19, 2019)
- MTO Meeting #7 (August 13, 2019): Presented traffic analysis for the DDI concept.
- MTO Meeting #8 (March 26, 2021): Followed up with MTO on the status of their review.
- MTO comments (June 23, 2021): Requested the Project Team to carry out human factor and highway safety review of the DDI concept.

Diverging Diamond Interchange Configuration

Example of Collector Widening/Extension

Example of Diverging Diamond Interchange

Diverging Diamond Interchange Configuration

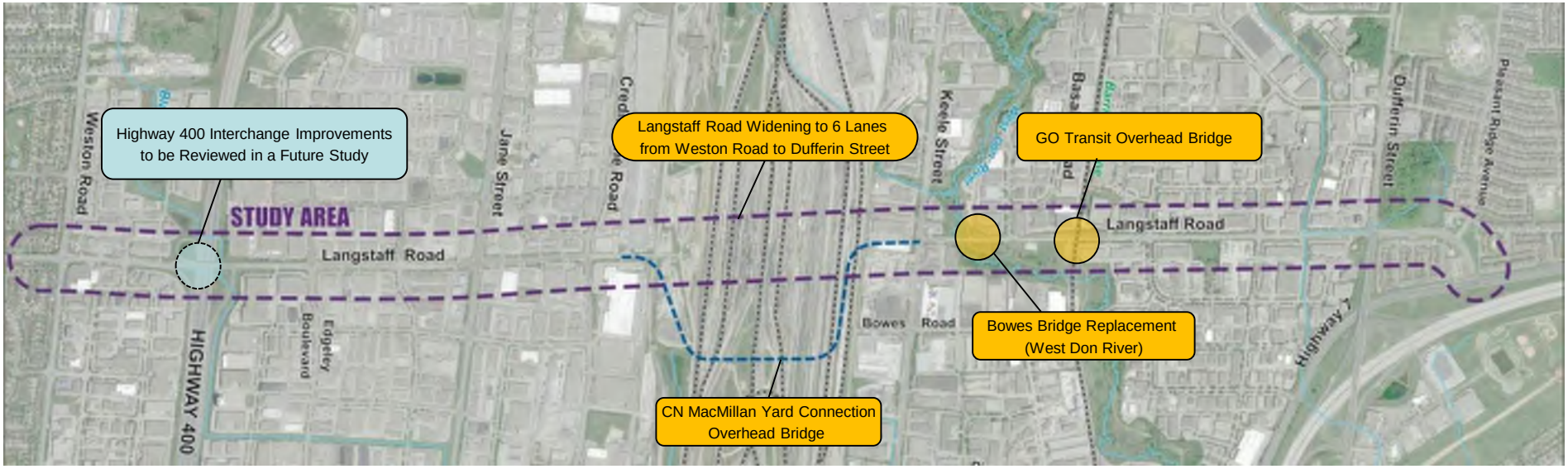
- The key advantages of DDI configuration:
  - Maintain all existing movements to-and-from adjacent interchanges.
  - No impact to the development land identified as part of Vaughan Mills Centre Secondary Plan.
  - Improved ramp terminal traffic operations vs. previously developed interchange design options.
  - Meet weaving distance requirements.
  - Providing additional capacity between Langstaff Road and Rutherford Road.

- Traffic Analysis
  - During the AM Peak, travel time savings in both NB and SB directions.
  - During the PM Peak, travel time increase during peak hour in NB direction with an overall travel time reduction during the AM Peak hours. Negligible difference in the SB direction.
  - Congestion observed on the collector extension.
  - With MTO planned long-term widening (ultimate 10-lane cross-section), significant reduction in travel time in the NB direction.

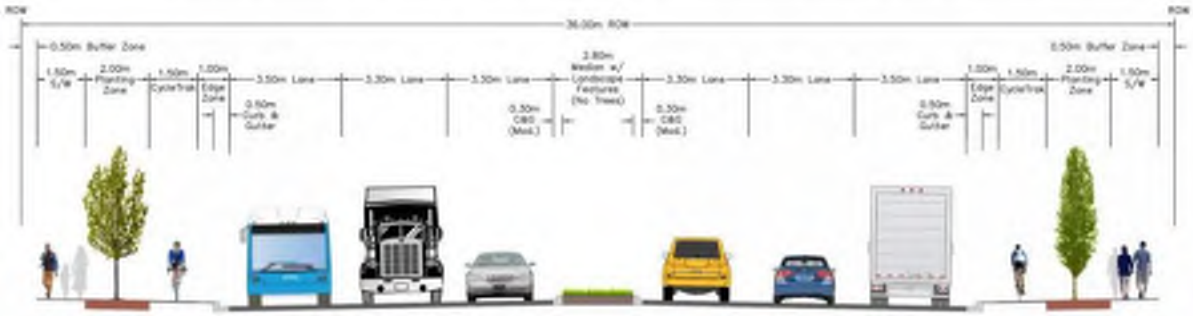
Next Steps re: Highway 400 Interchange Improvements

- Highway 400 / Langstaff Road interchange improvement will not be included in the current MCEA Study due to complexity of the design and the extend of the improvements along the Highway 400 corridor.
- Given the extended scope of interchange, further analysis is warranted, which is beyond the scope of the current study.
- The Project Team is currently working with MTO to determine how to document the technical work.

Preferred Plan



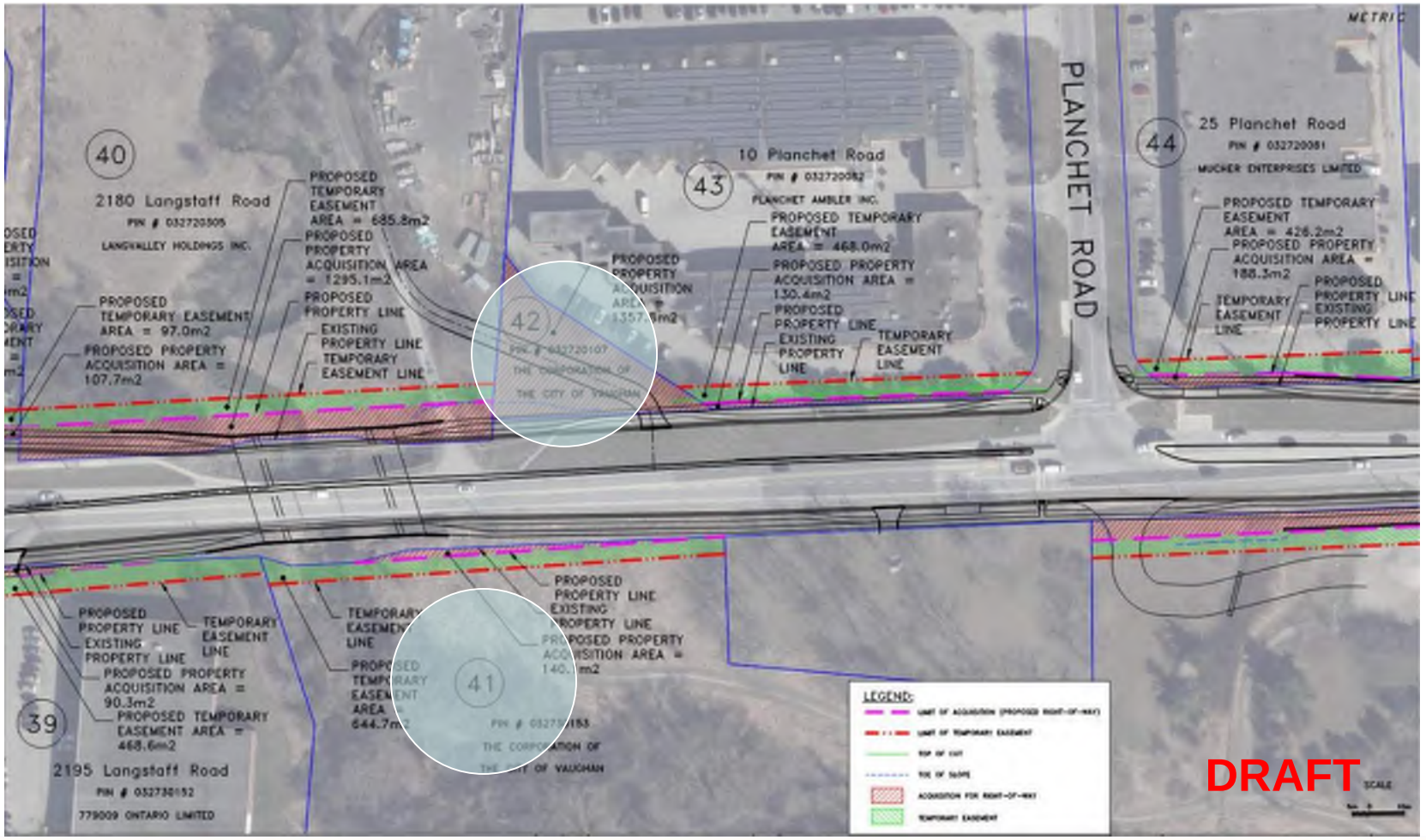
Langstaff Road EA – Weston Road to Highway 7 – Finalized Proposed Cross Section



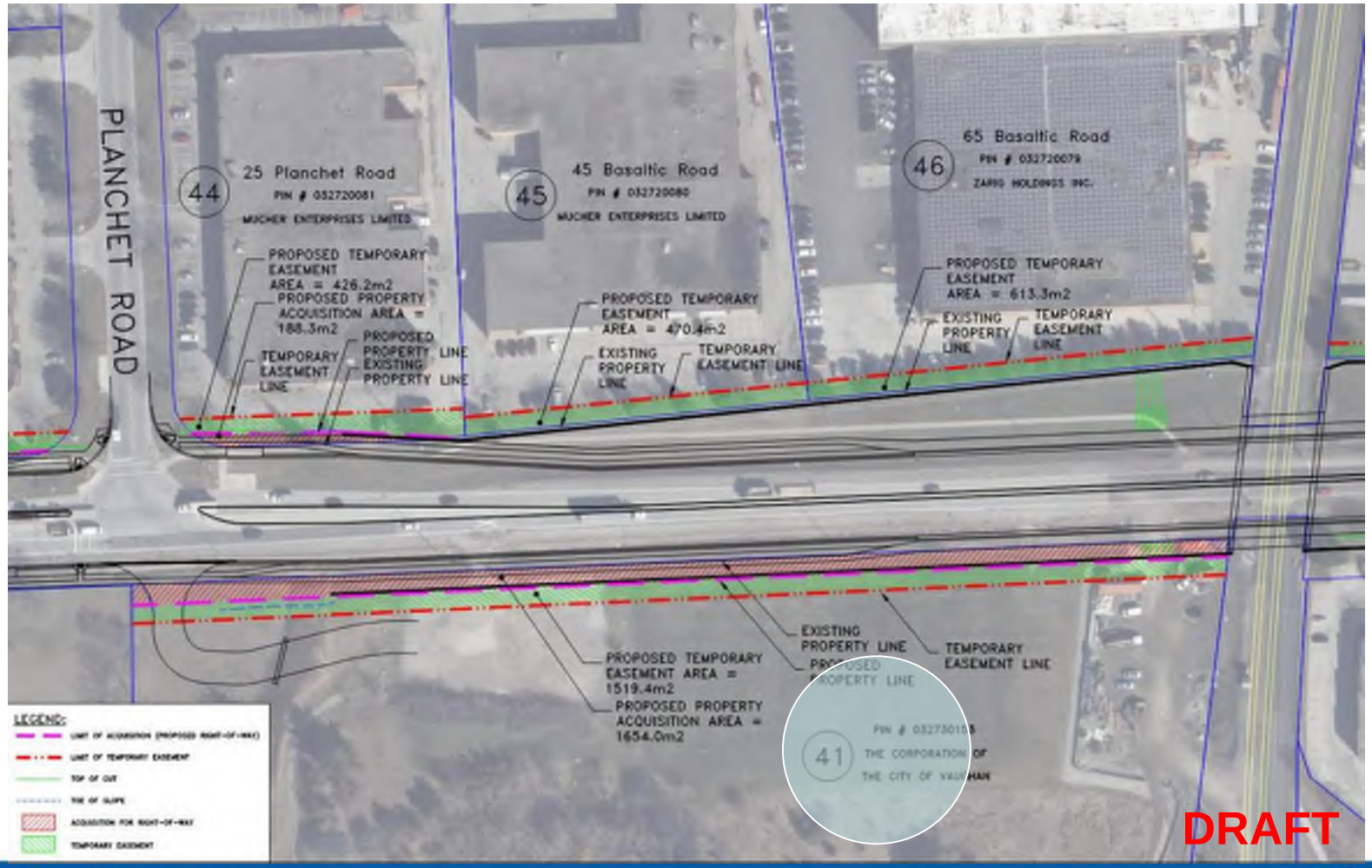
Preferred Plan

- The Preferred Plan will be shown on screen

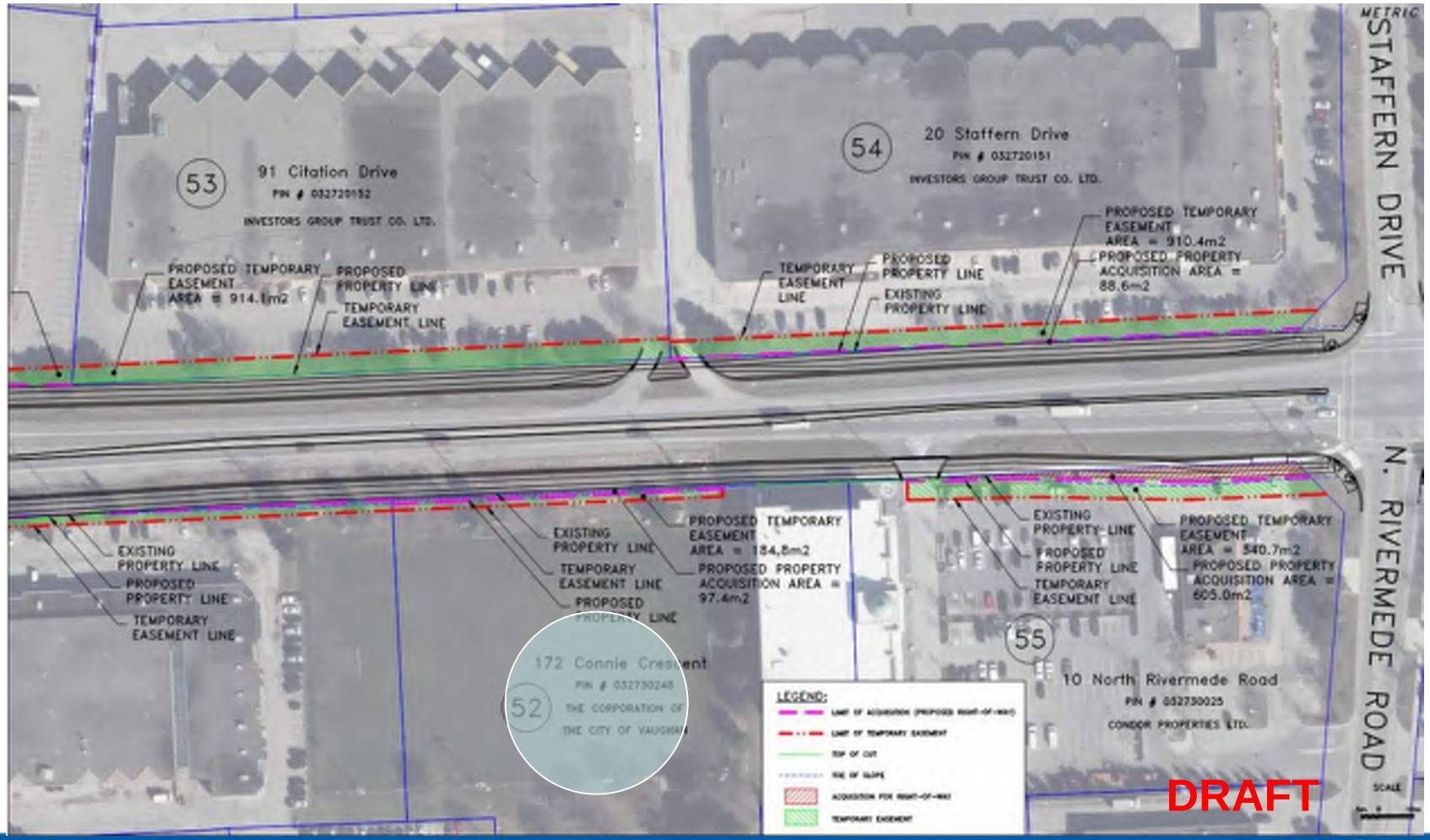
Impacts to City of Vaughan Properties



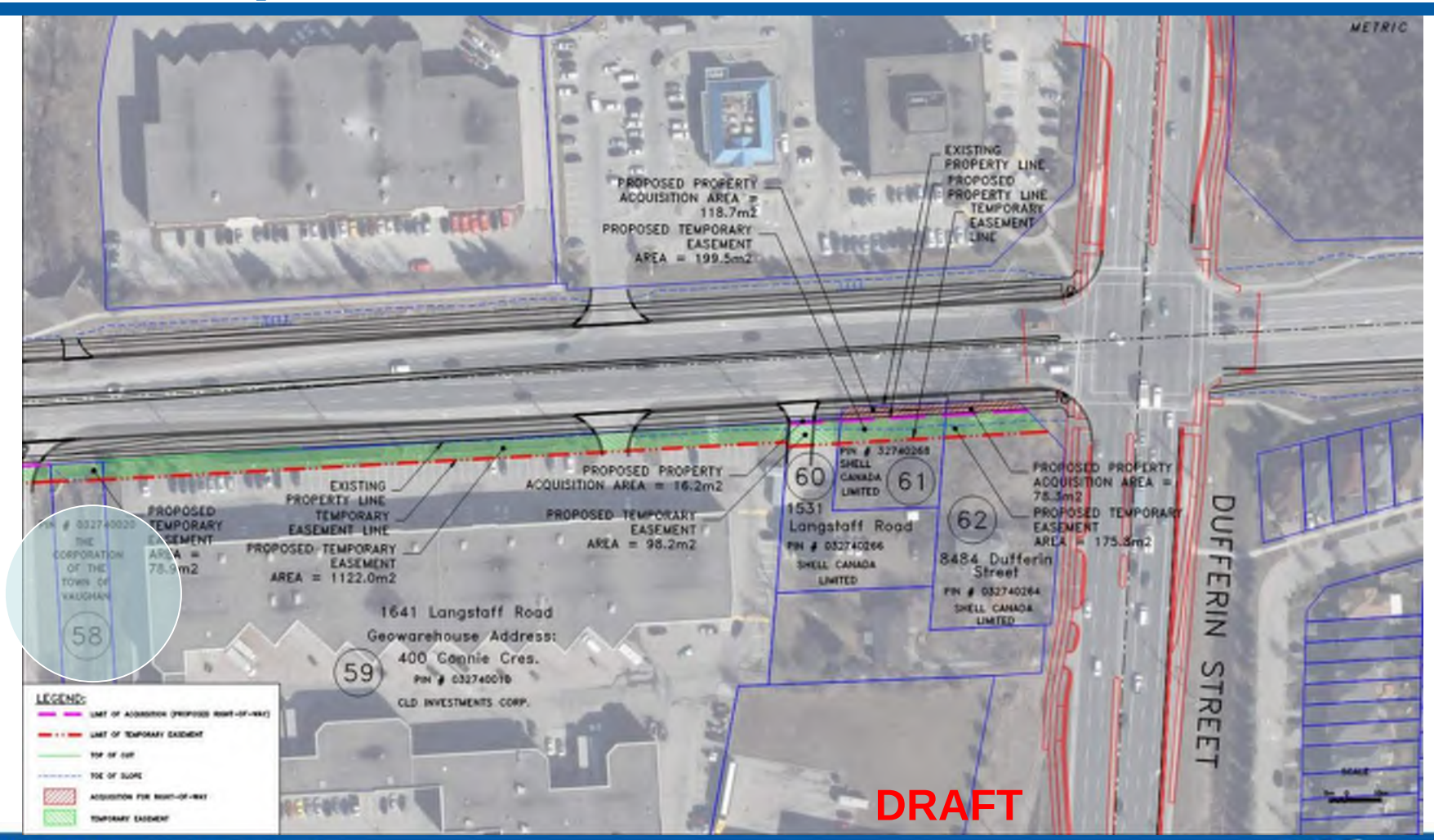
Impacts to City of Vaughan Infrastructure and Properties



Impacts to City of Vaughan Properties



Impacts to City of Vaughan Infrastructure and Properties



Next Steps…

- Environmental Study Report (ESR) to be filed Summer 2021 (tentative)
- Interim widening of Langstaff Road from two lanes to four lanes, from Keele Street to Dufferin Street, is anticipated to start in 2026, subject to MCEA approval.

REFERENCE SLIDES

Recommended Planning Solution

- **Add New Lanes:** Widen Langstaff Road
- **Langstaff Road Connection:** Construct Langstaff Road link across the CN MacMillan Yard.
- **Highway 400 Interchange Improvements:** Convert Highway 400/Langstaff Road Interchange to a full-move interchange
- **Grade Separation:** Construct grade separation at Langstaff Road / Barrie GO Line
- **Intersection Improvements:** Turning lanes, traffic signal timing optimization, etc.
- **Alternative Modes of Transportation**: Provision of or improvements to pedestrian and cycling facilities. Improvements to transit system (e.g. improved transit amenities)






Diverging Diamond Interchange Configuration

- MTO provided comments on the DDI interchange via email on March 19, 2019. Key comments and response are summarized in table below:

MTO Comments	WSP Response
Confirm the options developed at the workshop reviewed	An alternatives screening table was developed shared with MTO on July 31, 2019
A traffic micro-simulation to be carried out the DDI design	The traffic micro-simulation results are presented on the following slides.
Confirm the angle being used at the cross-over intersections	43° was used at the west cross-over intersection and 30° was used at the east cross-over intersection.
Confirm the truck type used for the design. DDI design should accommodate LCVs.	WB 20 was used for the design. To accommodate LCVs, significant property impact is expected.
Confirm overhead signing locations	Overhead signing locations will be reviewed once MTO is satisfied with the traffic micro-simulation results.
A parallel lane should be provided for the Rutherford Road E-N ramp.	A speed-change lane was added.
The southbound on-ramps spacing from Rutherford Road and Bass Pro Mills are not ideal. Traffic modeling to confirm the operational performance.	The traffic micro-simulation results are presented on the following slides.
Concerns with the capacity for the two lane collector.	The traffic micro-simulation results are presented on the following slides.

Future (2041) Scenarios

Three scenarios were assessed under the future (2041) conditions with and without Highway 400 and Langstaff Road Interchange modifications:

1. No-Build (i.e. existing configuration on Hwy 400 and Langstaff Road)
2. Langstaff Road Improvements Only (i.e. Langstaff Road widening and connection across CN Yard, and existing configurations on Hwy 400)
3. Diverging Diamond Interchange Configuration (includes Langstaff Road improvements and Hwy 400 Interchange modification to provide connection to/from the North)

Preliminary Traffic Analysis Findings

Future 2041 AM Travel Times

Scenario	6am to 7am		7am to 8am		8am to 9am	
	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
No-Build	8 min 9 sec	10 min 4 sec	8 min 35 sec	12 min 9 sec	8 min 18 sec	14 min 18 sec
Langstaff Road Improvements Only (i.e. without Hwy 400 Interchange Improvements)	8 min 4 sec (▼ 0:05 vs No Build)	10 min 7 sec (▲ 0:03 vs No Build)	8 min 26 sec (▼ 0:09 vs No Build)	11 min 59 sec (▼ 0:10 vs No Build)	8 min 10 sec (▼ 0:08 vs No Build)	12 min 35 sec (▼ 1:43 vs No Build)
Diverging Diamond Interchange	8 min (▼ 0:09 vs No Build) (▼ 0:04 vs Langstaff Road Improvements)	9 min 59 sec (▼ 0:05 vs No Build) (▼ 0:08 vs Langstaff Road Improvements)	8 min 13 sec (▼ 0:22 vs No Build) (▼ 0:13 vs Langstaff Road Improvements)	11 min 23 sec (▼ 0:46 vs No Build) (▼ 0:36 vs Langstaff Road Improvements)	8 min 04 sec (▼ 0:14 vs No Build) (▼ 0:06 vs Langstaff Road Improvements)	12 min 41 sec (▼ 1:37 vs No Build) (▲ 0.06 vs Langstaff Road Improvements)

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

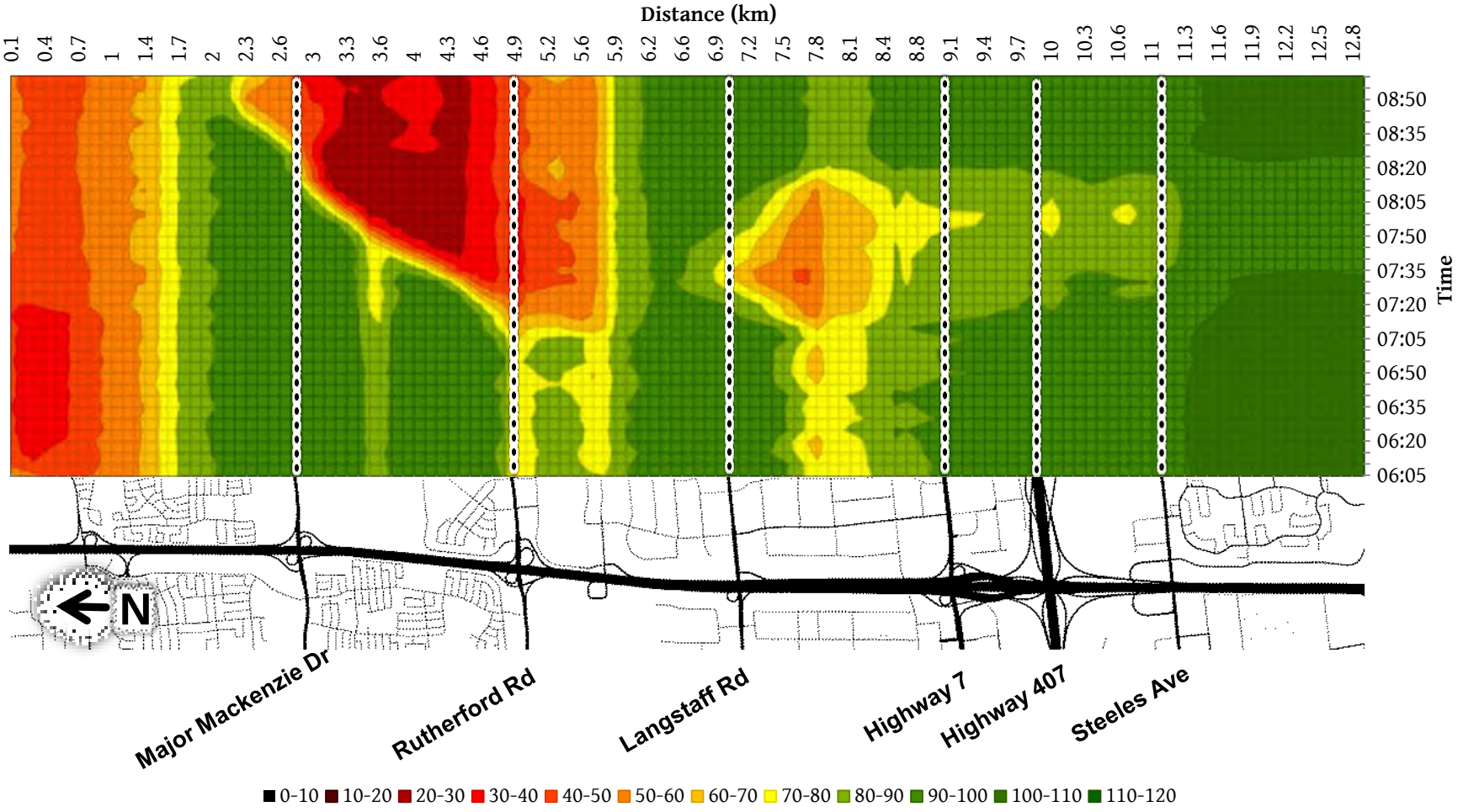
Future 2041 AM Average Speeds

Scenario	6am to 7am		7am to 8am		8am to 9am	
	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
No-Build	87.4 km/h	77.8 km/h	88.6 km/h	64.4 km/h	91.7 km/h	54.8 km/h
Langstaff Road Improvements Only (i.e. without Hwy 400 Interchange Improvements)	94.3 km/h (▲ 6.9 vs No Build)	77.5 km/h (▼ 0.3 vs No Build)	90.3 km/h (▲ 1.7 vs No Build)	65.4 km/h (▲ 1.0 vs No Build)	93.1 km/h (▲ 1.4 vs No Build)	62.2 km/h (▲ 7.4 vs No Build)
Diverging Diamond Interchange	95.3 km/h (▲ 7.9 vs No Build) (▲ 1.0 vs Langstaff Road Improvements)	78.4 km/h (▲ 0.6 vs No Build) (▲ 0.9 vs Langstaff Road Improvements)	92.7 km/h (▲ 4.1 vs No Build) (▲ 2.4 vs Langstaff Road Improvements)	68.8 km/h (▲ 4.4 vs No Build) (▲ 3.4 vs Langstaff Road Improvements)	94.5 km/h (▲ 2.8 vs No Build) (▲ 1.4 vs Langstaff Road Improvements)	61.7 km/h (▲ 6.9 vs No Build) (▼ 0.5 vs Langstaff Road Improvements)

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

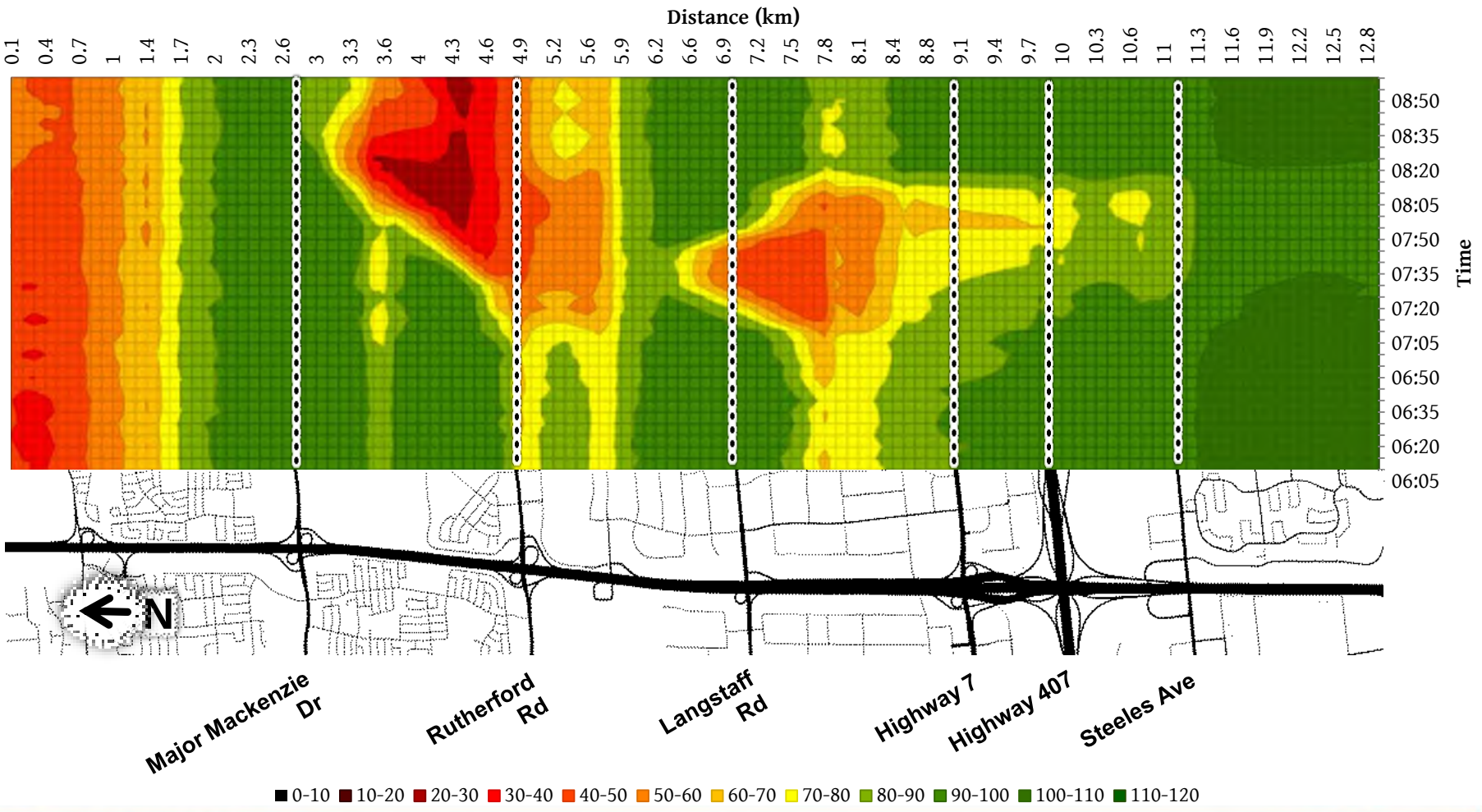
Future 2041 Speed Contour Plots

No-Build AM – SB Direction



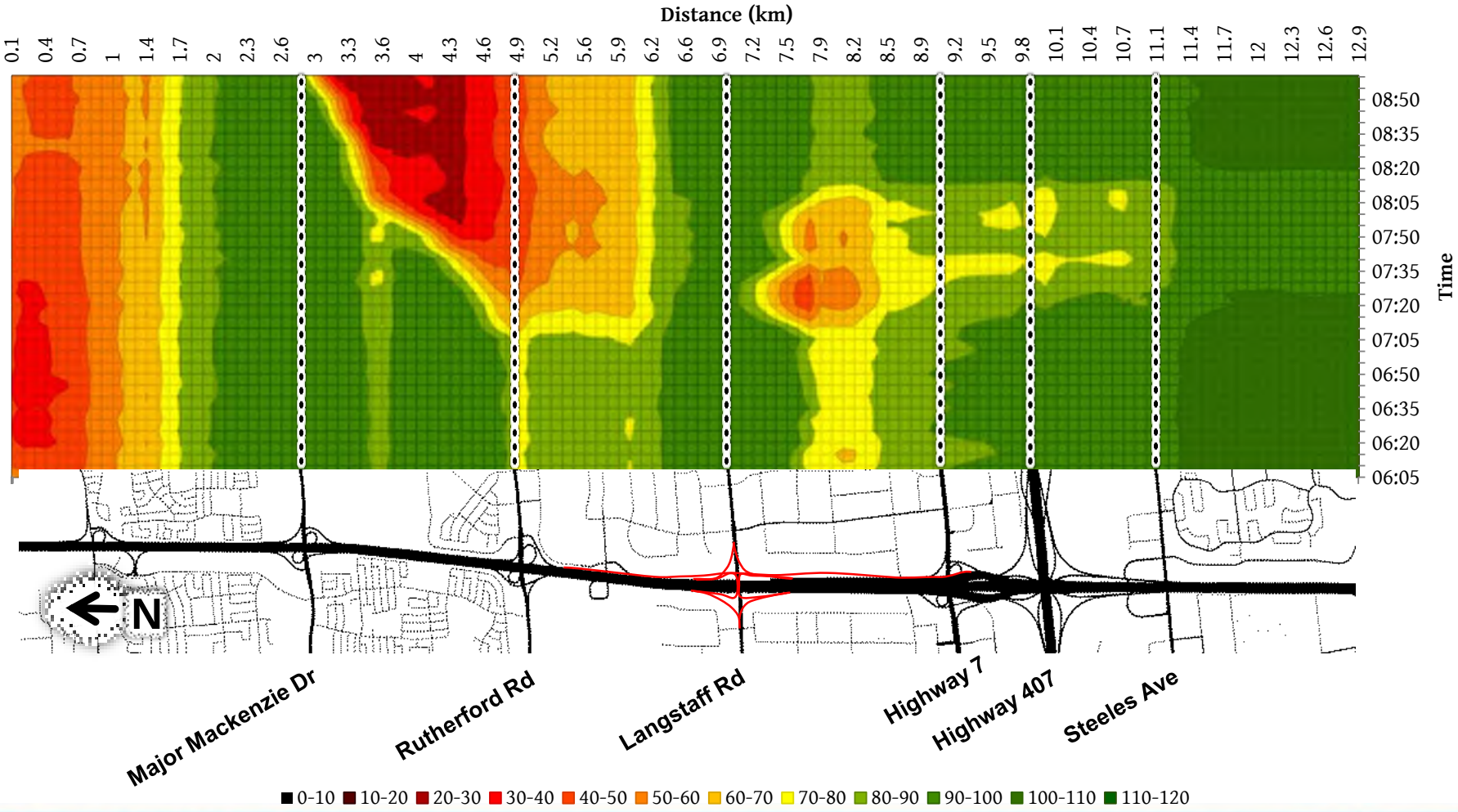
Future 2041 Speed Contour Plots

Langstaff Road Improvements Only AM – SB Direction



Future 2041 Speed Contour Plots

Diverging Diamond Interchange Option AM – SB Direction



Preliminary Traffic Analysis Findings

Future 2041 PM Travel Times

Scenario	3pm to 4pm		4pm to 5pm		5pm to 6pm	
	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
No-Build	14 min 59 sec	9 min 8 sec	20 min 49 sec	9 min 12 sec	23 min 28 sec	9 min 10 sec
Langstaff Road Improvements Only (i.e. without Hwy 400 Interchange Improvements)	15 min 2 sec (▲ 0:03 vs No Build)	9 min 3 sec (▼ 0:05 vs No Build)	21 min 31 sec (▲ 0:42 vs No Build)	9 min 12 sec (▼ 0:00 vs No Build)	23 min 07 sec (▼ 0:21 vs No Build)	9 min 23 sec (▲ 0:13 vs No Build)
Diverging Diamond Interchange	12 min 58 sec (▼ 2:01 vs No Build) (▼ 2:04 vs Langstaff Road Improvements)	8 min 52 sec (▼ 0:16 vs No Build) (▼ 0:11 vs Langstaff Road Improvements)	19 min 38 sec (▼ 1:11 vs No Build) (▼ 1:53 vs Langstaff Road Improvements)	9 min 3 sec (▼ 0:09 vs No Build) (▼ 0:09 vs Langstaff Road Improvements)	26 min 21 sec (▲ 2:53 vs No Build) (▲ 3:14 vs Langstaff Road Improvements)	9 min 19 sec (▲ 0:09 vs No Build) (▼ 0:04 vs Langstaff Road Improvements)

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

Preliminary Traffic Analysis Findings

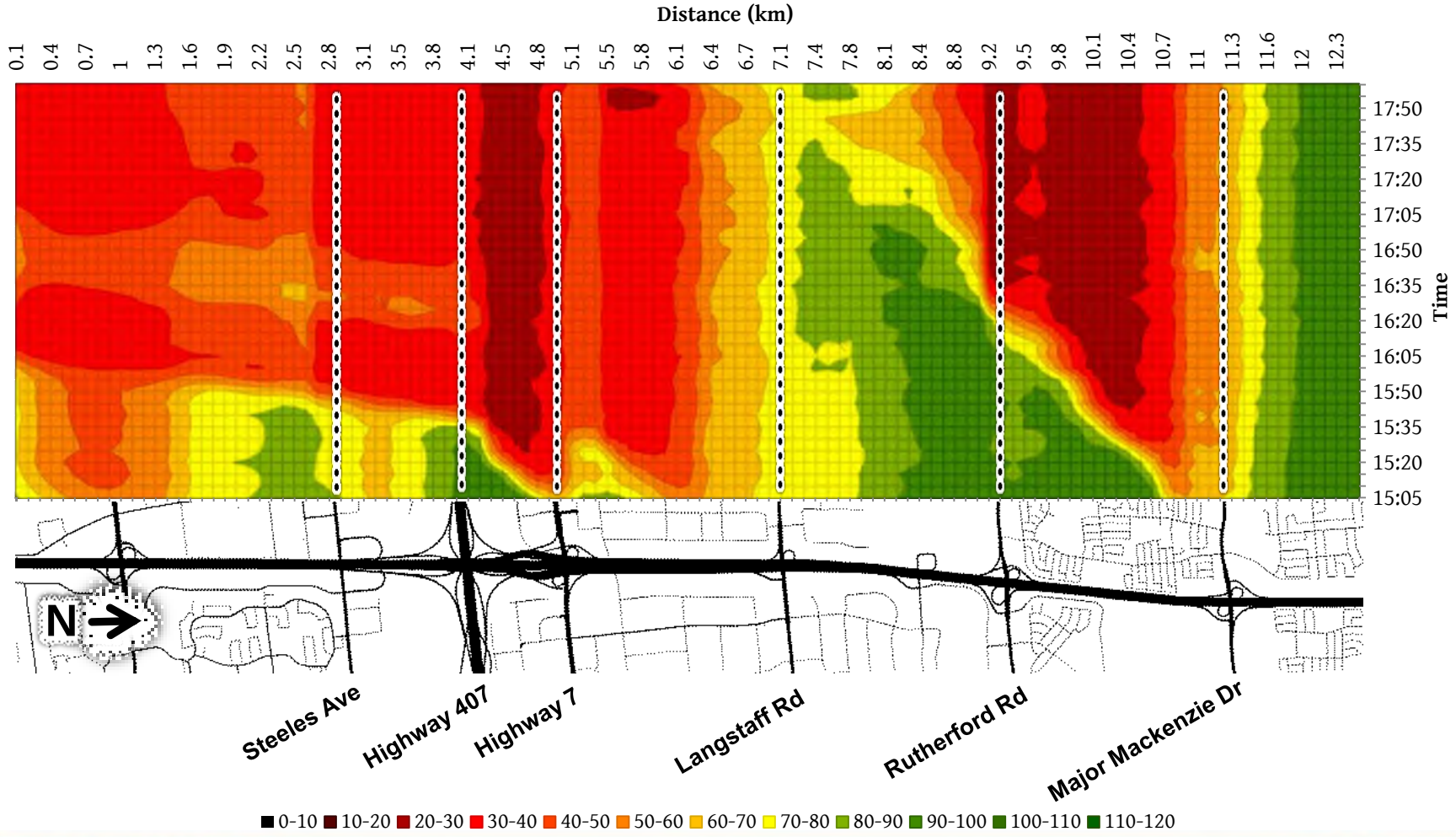
Future 2041 PM Average Speeds

Scenario	3pm to 4pm		4pm to 5pm		5pm to 6pm	
	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
No-Build	50. 8 km/h	85.8 km/h	37.0 km/h	85.2 km/h	32.4 km/h	85.5 km/h
Langstaff Road Improvements Only (i.e. without Hwy 400 Interchange Improvements)	50.6 km/h (▼ 0.2 v No Build)	86.6 km/h (▲ 0.8 v No Build)	35.3 km/h (▼ 1.7 vs No Build)	85.1 km/h (▼ 0.1 vs No Build)	32.9 km/h (▲ 0.5 vs No Build)	83.5 km/h (▼ 2.0 vs No Build)
Diverging Diamond Interchange	58.8 km/h (▲ 8.0 vs No Build) (▲ 8.2 vs Langstaff Road Improvements)	88.2 km/h (▲ 2.4 vs No Build) (▲ 1.6 vs Langstaff Road Improvements)	38.8 km/h (▲ 1.8 vs No Build) (▲ 3.5 vs Langstaff Road Improvements)	86.5 km/h (▲ 1.3 vs No Build) (▲ 1.4 vs Langstaff Road Improvements)	28.9 km/h (▼ 3.5 vs No Build) (▼ 4.0 vs Langstaff Road Improvements)	84.1 km/h (▼ 1.4 vs No Build) (▲ 0.6 vs Langstaff Road Improvements)

Note: Future 2041 simulated travel times measured for Highway 400 from south of Steeles Ave to north of Major Mackenzie Dr

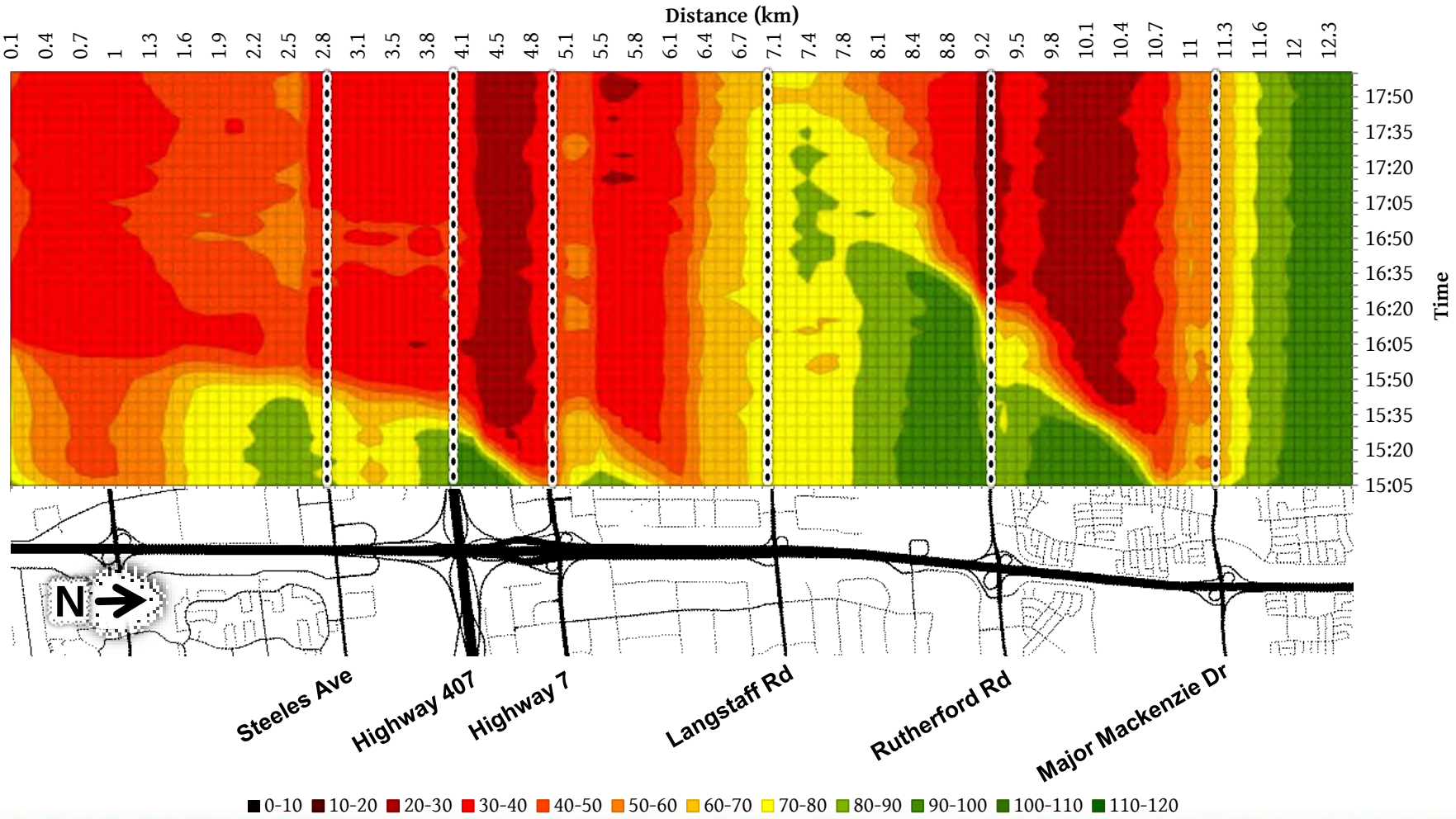
Future 2041 Speed Contour Plots

No-Build PM – NB Direction



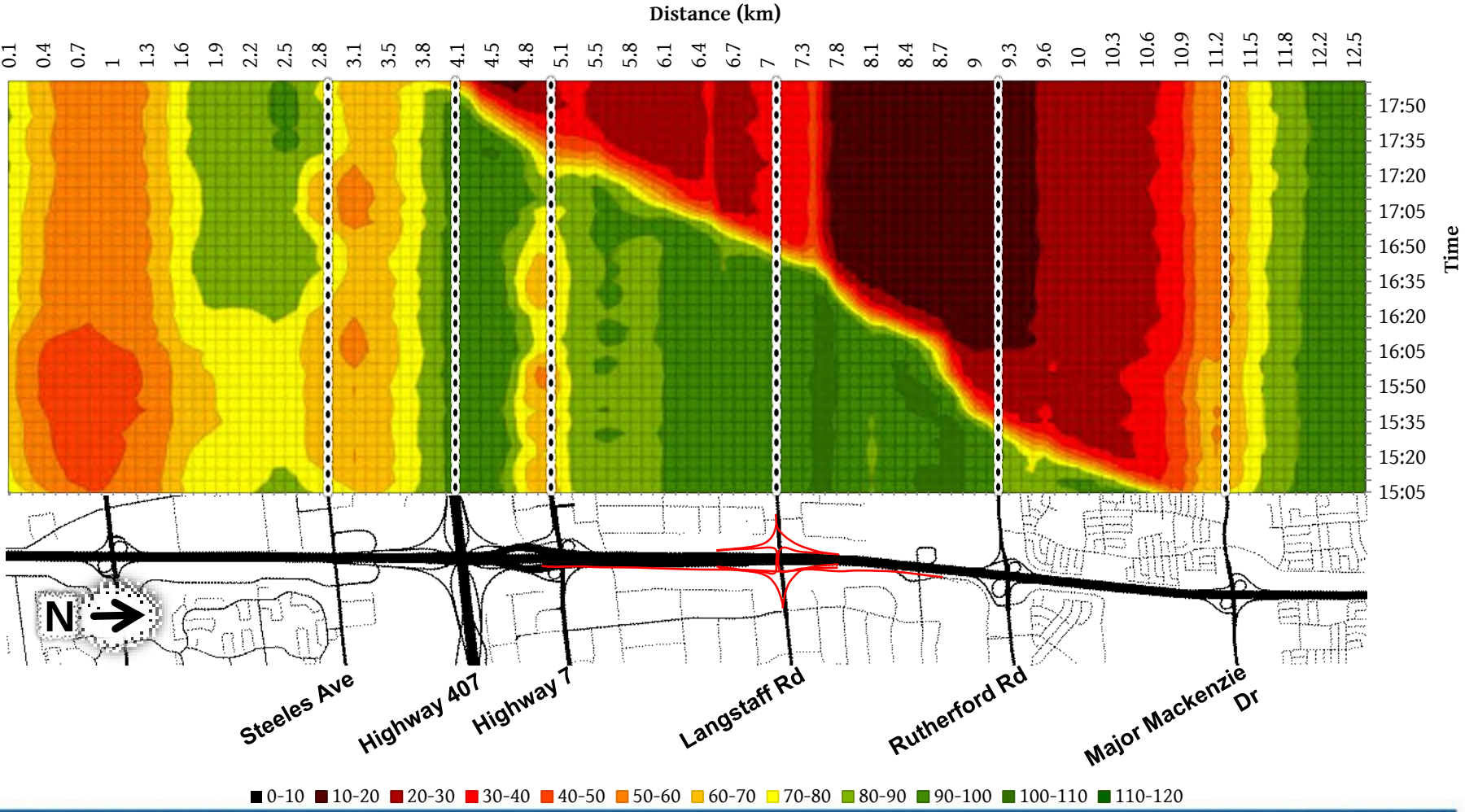
Future 2041 Speed Contour Plots

Langstaff Road Improvements Only PM – NB Direction



Future 2041 Speed Contour Plots

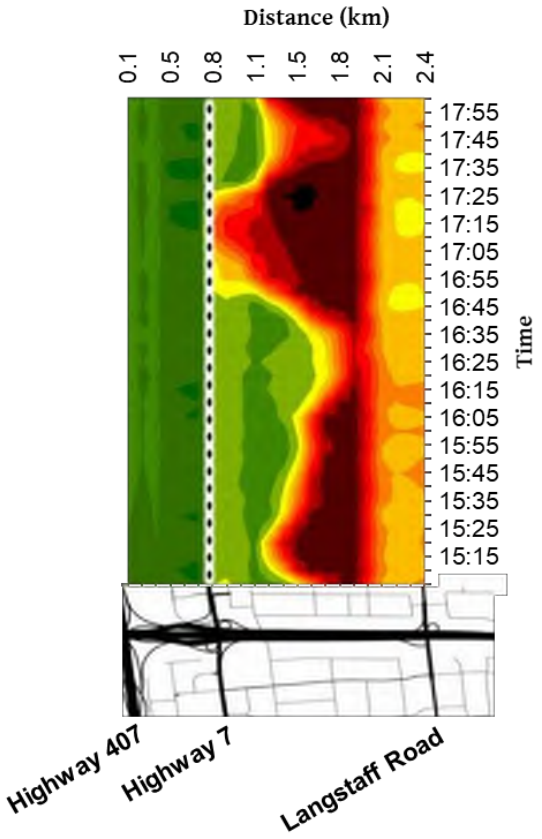
Diverging Diamond Interchange PM – NB Direction



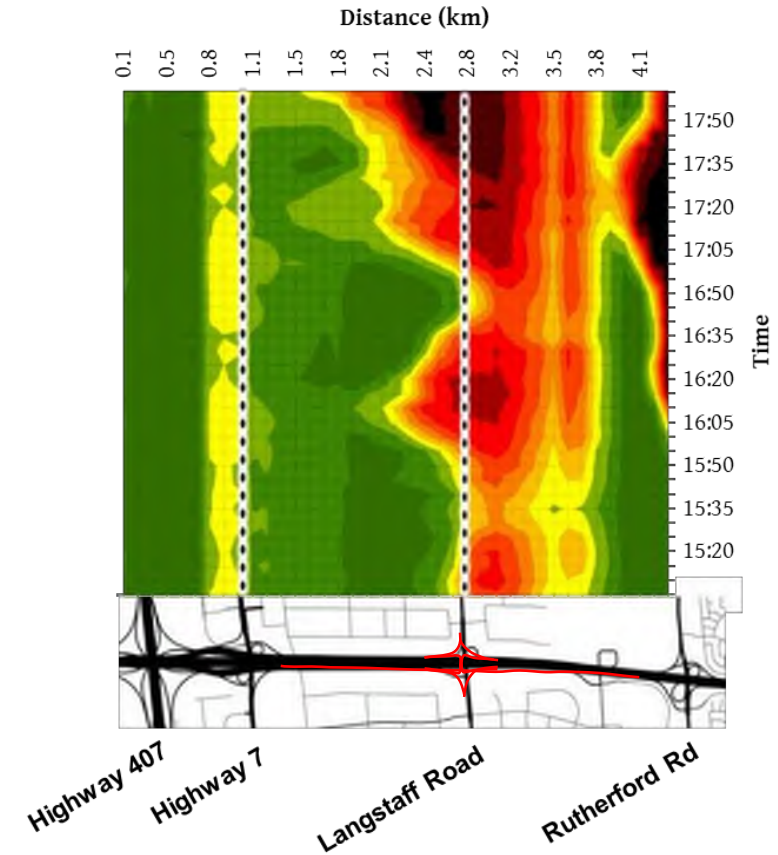
Future 2041 Speed Contour Plots

PM Peak – NB Collector

Langstaff Improvements Only Option



Diverging Diamond Configuration Option



0-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100 100-110 110-120

Highway 400 Interchange at Langstaff Road

Overall Future (2041) Intersection Performance

East Ramp Terminal:

	AM Peak Hour		PM Peak Hour	
	Langstaff Improvements only	Diverging Diamond	Langstaff Improvements only	Diverging Diamond
Delay	75-80 s	~30 s	10-15 s	~30 s
LOS	E	C	B	C

West Ramp Terminal:

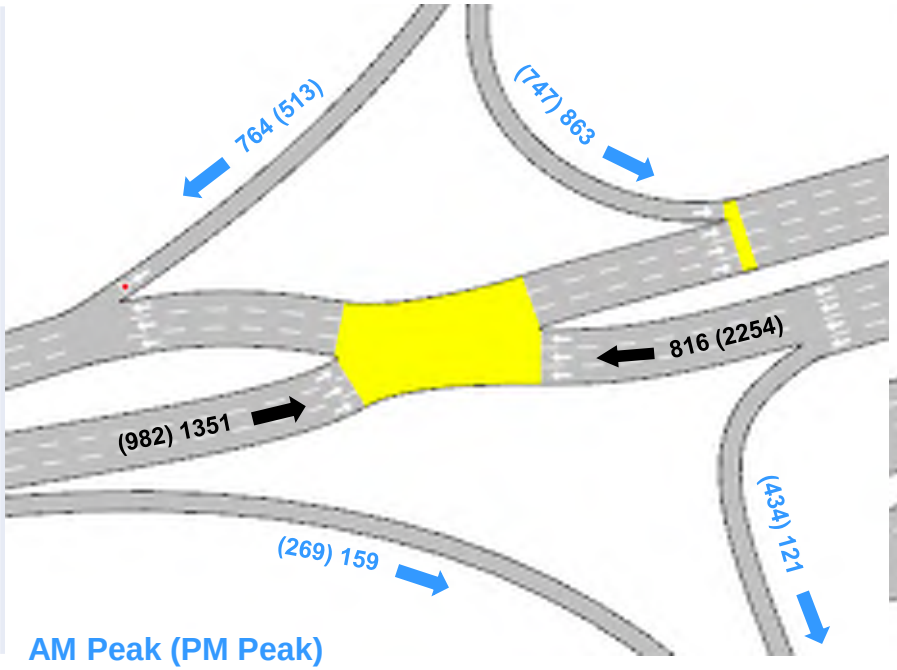
	AM Peak Hour		PM Peak Hour	
	Langstaff Improvements only	Diverging Diamond	Langstaff Improvements only	Diverging Diamond
Delay	NA	~35 s	NA	~25 s
LOS	NA	C	NA	C

Highway 400 Interchange at Langstaff Road

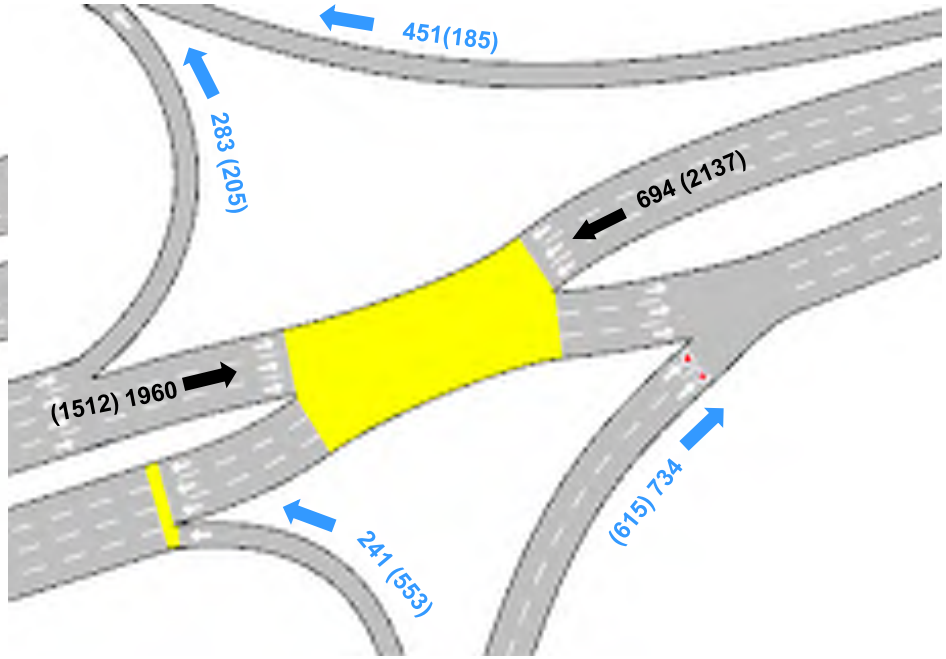
Ramp Terminal Traffic Volumes

Proposed access to and from Highway 400 from Langstaff Road is expected to be heavily used

West Ramp Terminal



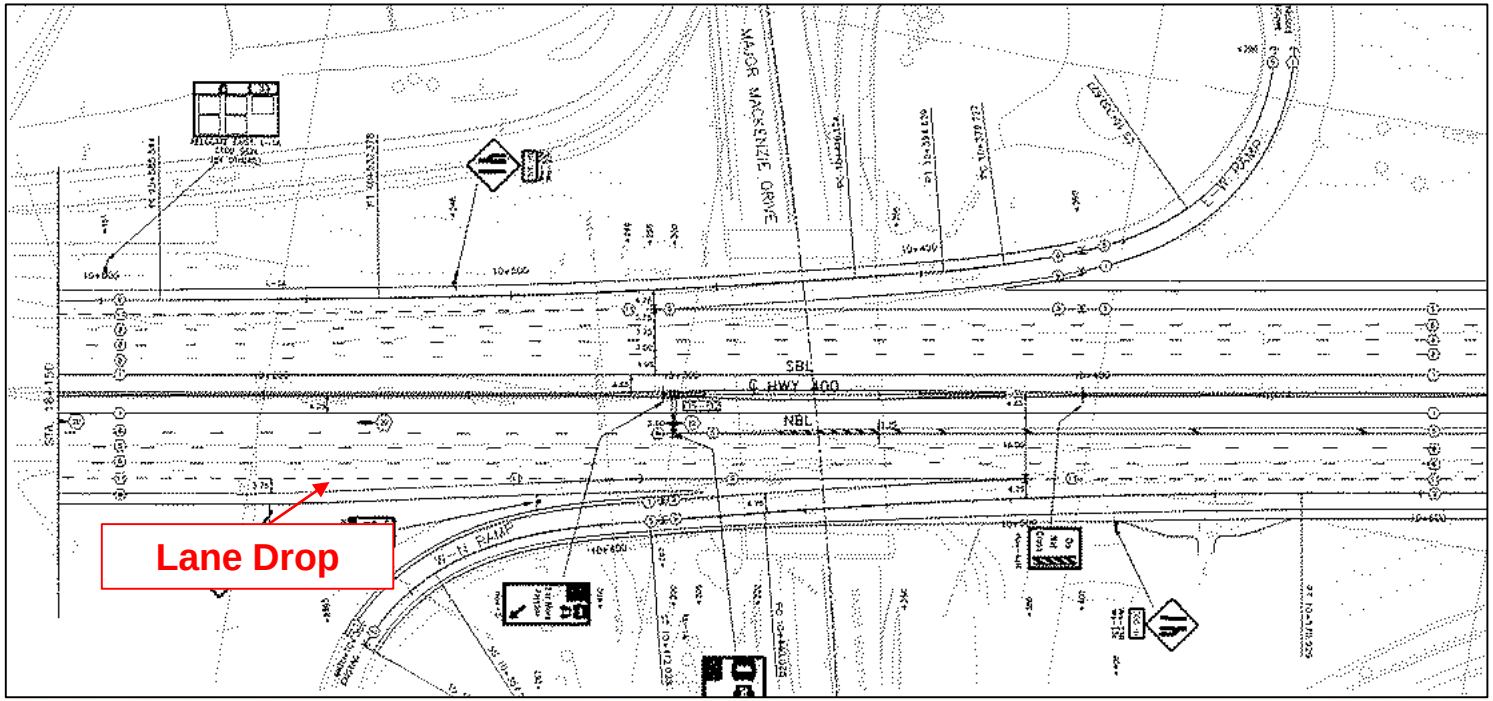
East Ramp Terminal



AM Peak (PM Peak)

Analysis of Highway 400 Ultimate Widening

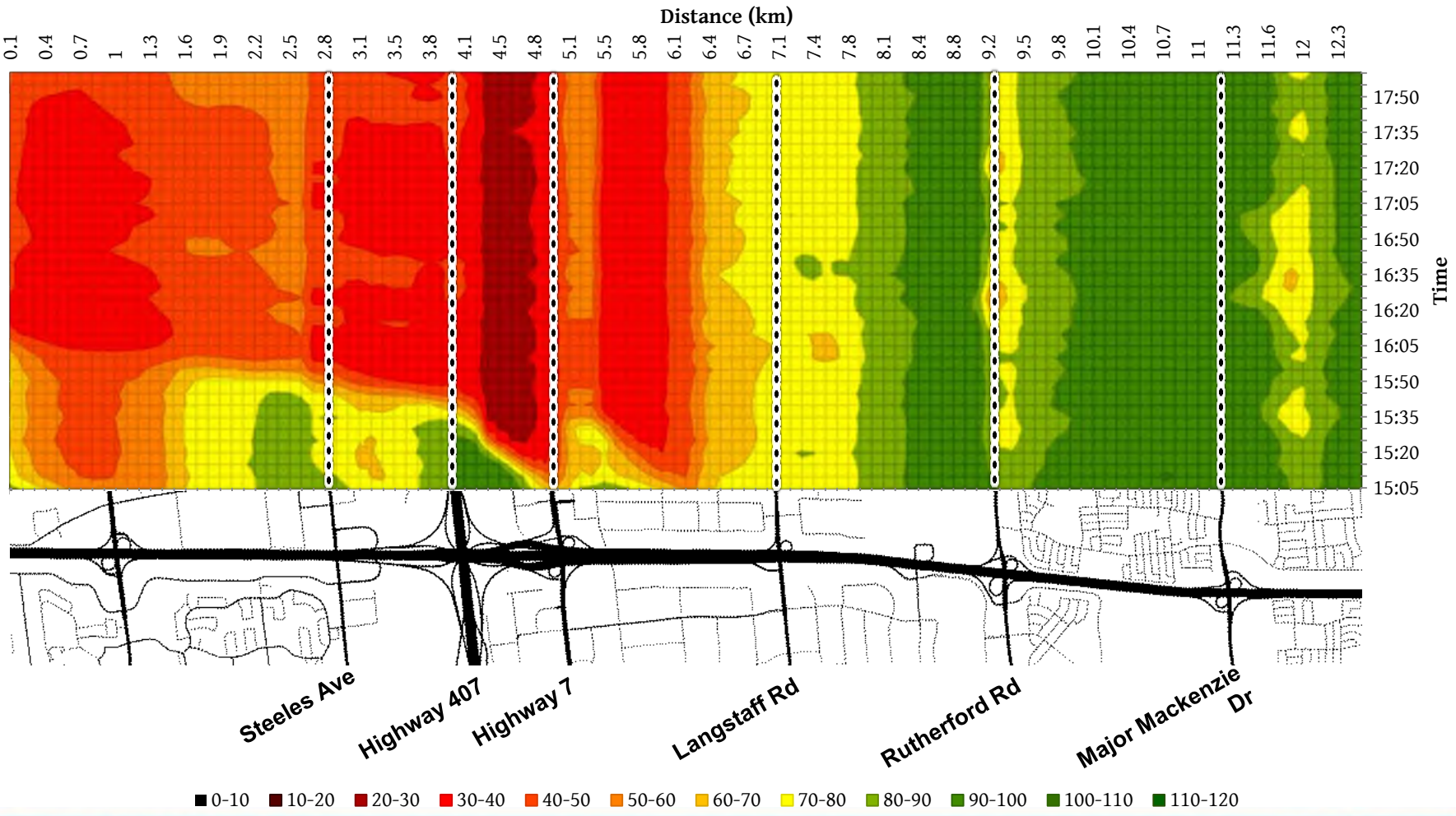
- The Highway 400 EA Study (2003) from north of Major Mackenzie Drive to north of South Canal Bridge recommended widening from the existing 6-lane cross-section to an interim 8-lane cross-section and ultimately a 10-lane cross-section.
- Highway 400 is currently being widened from 6 lanes to 8 lanes from Major Mackenzie Drive to King Road. The NB outside GPL is being dropped just south of Major Mackenzie Drive. It is anticipated that this outside GPL will be extended when Highway 400 is ultimately widened to 10 lanes.



Future 2041 Speed Contour Plots

Langstaff Improvements Only + Widening at Major Mackenzie Interchange

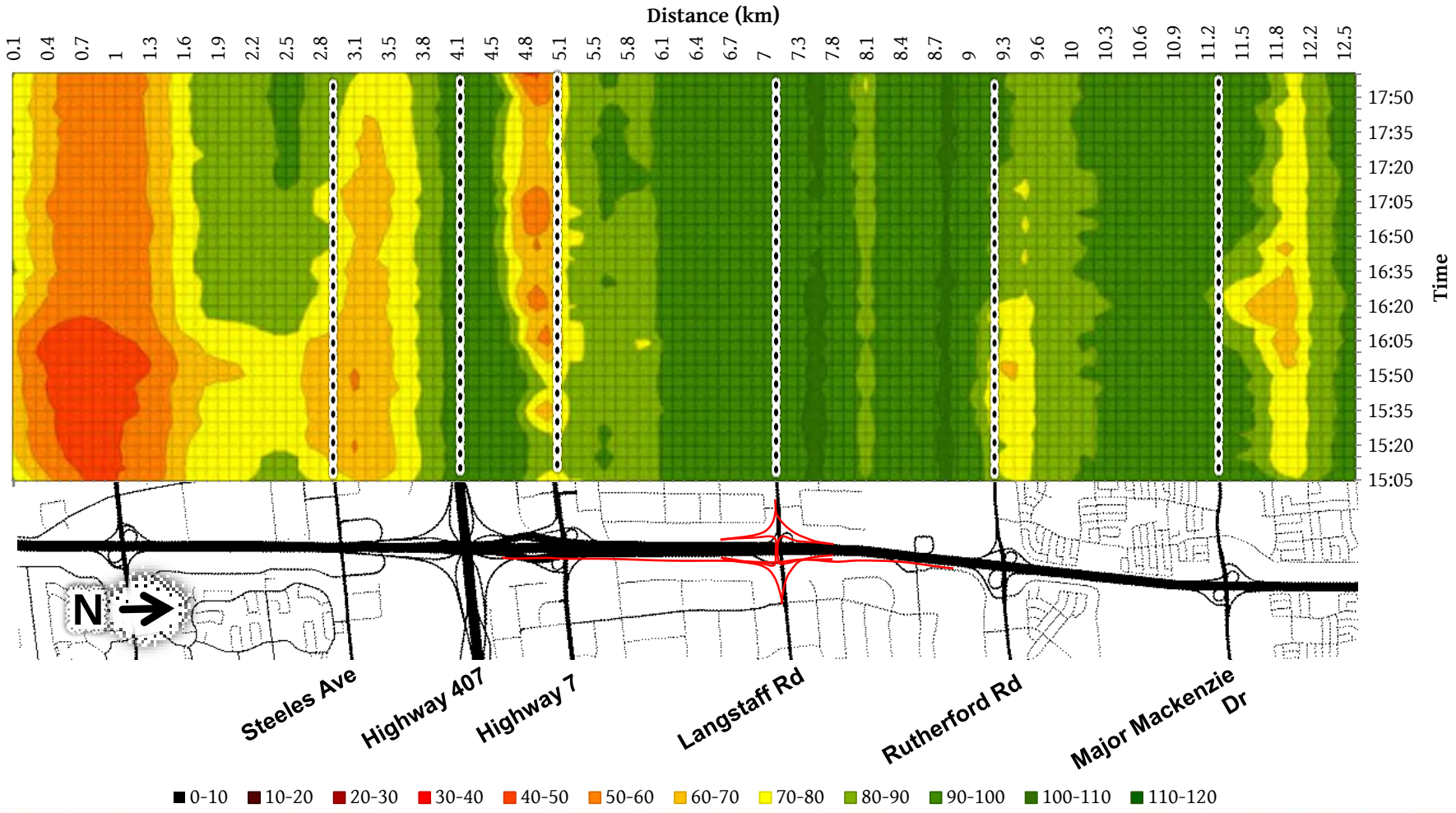
PM – NB Direction



Future 2041 Speed Contour Plots

Diverging Diamond Interchange + Widening at Major Mackenzie Interchange

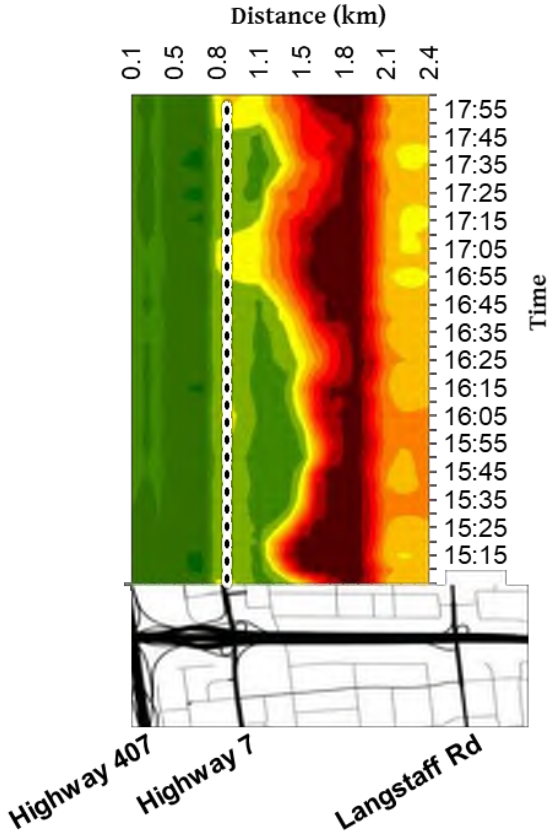
PM – NB Direction



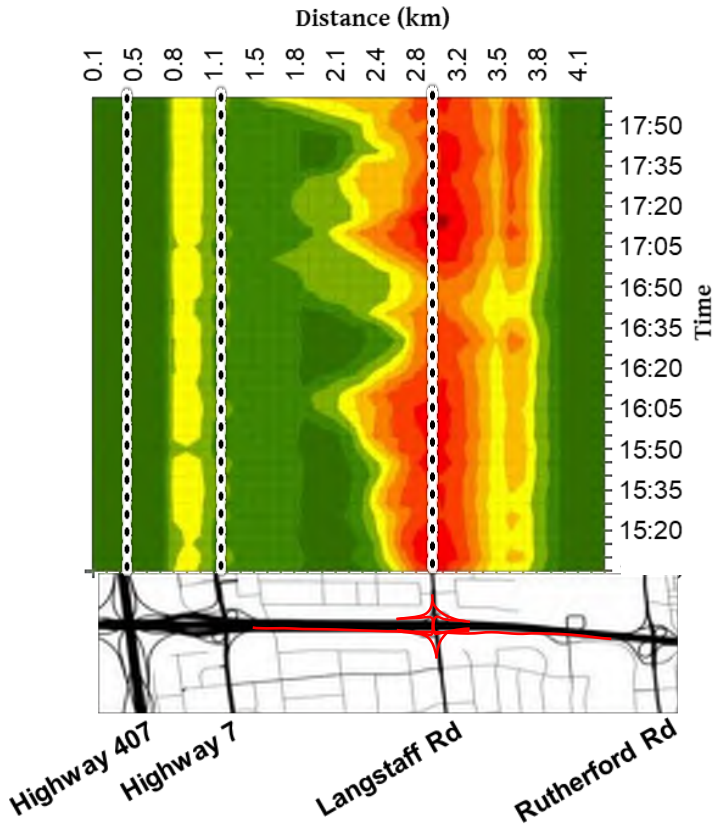
Future 2041 Speed Contour Plots

Widening at Major Mackenzie Interchange PM Peak – NB Collector

Langstaff Improvements Only Option



Diverging Diamond Configuration Option



0-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100 100-110 110-120

Benefits of Highway 400 Interchange Improvements

- Supports Regional and Provincial Goods Movement strategies
- Reduces traffic congestion within the overall transportation network
- Expected to provide an overall travel time benefit for both the northbound and southbound trips
- Minor improvement in traffic operations at the adjacent Highway 400 interchanges

Preliminary Traffic Analysis Findings

Future 2041 Highway Operations

AM Peak

- Travel time savings in both northbound and southbound directions.

PM Peak

- Overall travel time reduction in the northbound direction with a travel time increase of approximately **3 minutes** (peak hour only).
- Travel time difference is negligible for in the southbound direction.
- Congestion is observed on the collector extension between Langstaff Road to Rutherford Road.

The Hwy 400 northbound outside lane is currently being dropped south Major Mackenzie Drive, creating a bottle neck. Further analysis was carried out to understand the mainline traffic operations with the DDI and the planned Hwy 400 widening:

- The general-purpose lane extension at the Major Mackenzie Interchange could significantly improve the mainline traffic operations in the northbound direction.