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

YORK REGION

APPENDIX C: CONSULTATION RECORD

PART 11: TRCA Meeting Minutes

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

YORK REGION

TORONTO AND REGION CONSERVATION AUTHORITY (TRCA) MEETING MINUTES

MEETING MINUTES

Date:	February 16, 2017 10:00 a.m. to 11:00 a.m.	**Project Number:**	3216079
Location:	TRCA Offices, Humber Room 101 Exchange Avenue, City of Vaughan	**Project:**	Langstaff Road EA – Weston Road to Highway 7
Purpose:	Meeting #1 with Toronto and Region Conservation Authority (TRCA)		

Attendees:	**Agency**
Harsimrat Pruthi	TRCA
Yalda Motadelron	TRCA
Kristina Anderson	TRCA
Eric Wang	TRCA
Tim Kwan	York Region
Neil Ahmed	MMM
Valerie Stevenson	MMM
Jian Guan	MMM

FINAL

Item	Details	Action By
ITEM 1 –	**INTRODUCTIONS**	
1.1	Those at the meeting were introduced. T. Kwan advised B. Wolf from York Region had intended to attend but was unable. A presentation package was distributed. N. Ahmed, MMM, provided a brief study overview and background information, noting that the purpose of the meeting is to provide an introduction of the project, review key issues and natural heritage features that are of interest to TRCA.	
1.2	This Class EA study is a multi-disciplinary project with MMM Group as the lead consultant. The MMM Rail group will participate in the study along with various other disciplines and sub-consultants as presented.	
1.3	N. Ahmed noted that it is anticipated there will be significant population and employment growth in York Region. The population is projected to increase from 1.1 million in 2014 to 1.8 million in 2041. The employment number is projected to increase from 565K in 2014 to 900K in 2041. This will necessitate the need for additional capacity within the transportation network.	
ITEM 2 –	**PROJECT OVERVIEW AND BACKGROUND**	
2.1	Background Information	

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Item	Details	Action By

	• N. Ahmed noted that the study horizon year is 2041. It is anticipated that there will be significant population and employment growth in York Region by that time.
	• There are a number of urban growth centres adjacent to the study area including Vaughan Metropolitan Centre, Vaughan Mills Centre and Concord GO Centre.
	• The potential Langstaff Road extension may serve to accommodate the regional traffic growth by:
	  ○ Reducing traffic demands on Highway7 and Rutherford Road.
	  ○ Providing an efficient route for truck traffic.
	  ○ Improving access to the industries surrounding CN Yard.
	  ○ Improving Regional travel linkages from Keele Street and Weston Road.	

2.2	Recent Studies and Planning	
	• The improvements to Langstaff Road were identified as part of the *Highway 7 Corridor Traffic Engineering Study (2012).* • The Langstaff Road Extension was considered as part of the *VMC and Surrounding Areas Transportation Study (2012).* • The *Langstaff Road Extension Cost-Benefit Analysis* was completed in 2015. • The *improvements* to Langstaff Road were also identified as in the *City of Vaughan TMP (2012)* and *York Region TMP Update (2016).*	
2.3	Key components of EA	
	Improvements to Langstaff Road	
	i. **Improvements to Langstaff Road** - The need to widen Langstaff Road from 4 to 6 lanes between Weston Road and Highway 7, including the “missing link” over the CN yard was identified in the York Region’s Transportation Master Plan (TMP) Update (2016). ii. **Langstaff Road Interchange at Highway 400** - Langstaff Road currently has a partial interchange with Highway 400 to and from the south. The potential implementation of a full	

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Item	Details	Action By
	interchange is a key component of the study and it is very important component to the overall transportation planning of York Region. **iii.** **Langstaff Road grade separation with GO Transit Barrie Line** - The warrant for a grade separation at the GO Transit crossing / Langstaff Road, east of Keele Street will be determined as part of the EA Study. **iv.** **Langstaff Road extension at CN MacMillan Yard** - Various Langstaff Road crossing alternatives at the CN Rail MacMillan Yard were developed as part of the *Vaughan Metropolitan Centre (VMC) and Surrounding Areas Transportation Study*. The current study will take into consideration the previously developed conceptual alternatives and develop alignment alternatives for analysis and evaluation. A preferred crossing alignment will be identified through the EA Study.	
ITEM 3 –	**Natural Environment and Drainage Overview**	
3.1	Key Natural Heritage Features:	

	• V. Stevenson presented on natural features, scope of work and issues.
	• **Watercourses** – A number of watercourse crossings were identified:
	  ○ Black Creek;
	  ○ Tributary of Upper West Don River;
	  ○ Westminster Creek;
	  ○ Tributary of Westminster Creek; and
	  ○ Potential minor drainage feature(s) within the Rail Yard
	• **Woodland** – 2 woodland feature were identified:
	  ○ large mature woodland at Langstaff and Dufferin
	  ○ within the Upper West Don Tributary valley (Regional NHS)
	• **Wildlife** – There are limited natural areas for wildlife within the study area as it is most industrial and residential. Surveys will be undertaken in the spring / summer of 2017.
	• The fish species identified are all warmwater baitfish.	

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Item	Details	Action By
	• No known SAR species were identified. No ANSI's or PSW were identified.	
3.2	Ecological Scope of Work	

	• Desktop study of available information (in-progress)
	• Field surveys:
	  ○ Fall reconnaissance surveys (done)
	  ○ Aquatic habit characterization and fish community sampling (spring 2017)
	  ○ Breeding bird surveys (2), general wildlife survey and screening for Species at Risk (SAR) and Significant Wildlife Habitats (SWH) (spring / summer 2017)
	  ○ Vegetation survey (1) ELC and vascular plant inventory (summer 2017)
	• Identification of natural heritage constraints	

3.3	Natural Heritage Issues	
	• Potential realignment of Black Creek to accommodate interchange at HWY 400 (currently runs parallel to HWY 400) • Potential realignment / enclosure of the Westminster Creek Tributary (currently runs parallel to Langstaff Rd) • Limiting encroachment within adjacent natural features (woodland / valley areas)	
ITEM 4 –	**TRCA Key Issues**	
4.1	TRCA noted that there are ditches running along Langstaff Road that connect to Westminister Creek, which may be considered to be watercourses. MMM to confirm.	MMM
4.2	TRCA noted that there is a trail system running along the Upper Don River and there is a potential trail improvement by the City of Vaughan. MMM to confirm.	MMM
4.3	TRCA to check if there is any mapping of drainage features and contamination management reports that can be provided within the CN MacMillan Yard.	TRCA
4.4	TRCA noted that various environmental reports should be reviewed prior to the submission of the draft Environmental Study Report	

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Item	Details	Action By
	(ESR) in keeping with the agreement between the Region and TRCA.	
4.5	TRCA will provide formal written response to the Notice of Study Commencement.	TRCA
4.6	MMM to request the York Peel Durham (YPD) data that shows the hydrology data and modelling layers. The main contact will be K. Anderson from TRCA.	MMM/TRCA
4.7	TRCA noted that water quality testing is important based on the adjacent Rutherford Road Expansion project.	
ITEM 5 –	**Study Schedule / Next Steps**	
5.1	N. Ahmed summarized TRCA's involvement throughout the study as follows: • Spring 2017: Collect background info • Spring 2017: Identify problems and opportunities • Fall/Winter 2017: Consult in regards to the analysis and evaluation of alternatives ○ Potential impacts to natural features • 2018: Select the preferred alternative • Spring 2018: Discuss stormwater management strategies and mitigation measures.	

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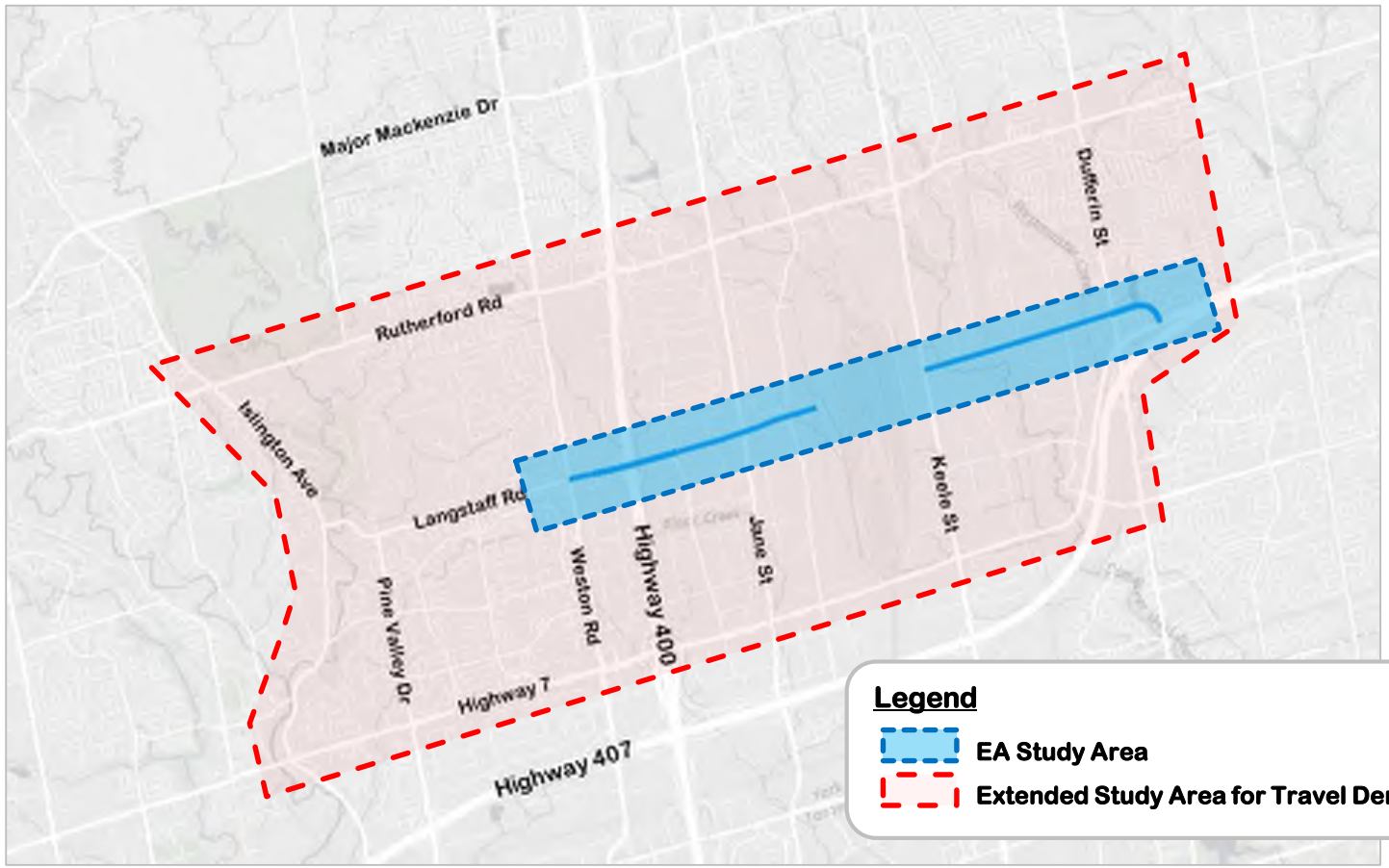
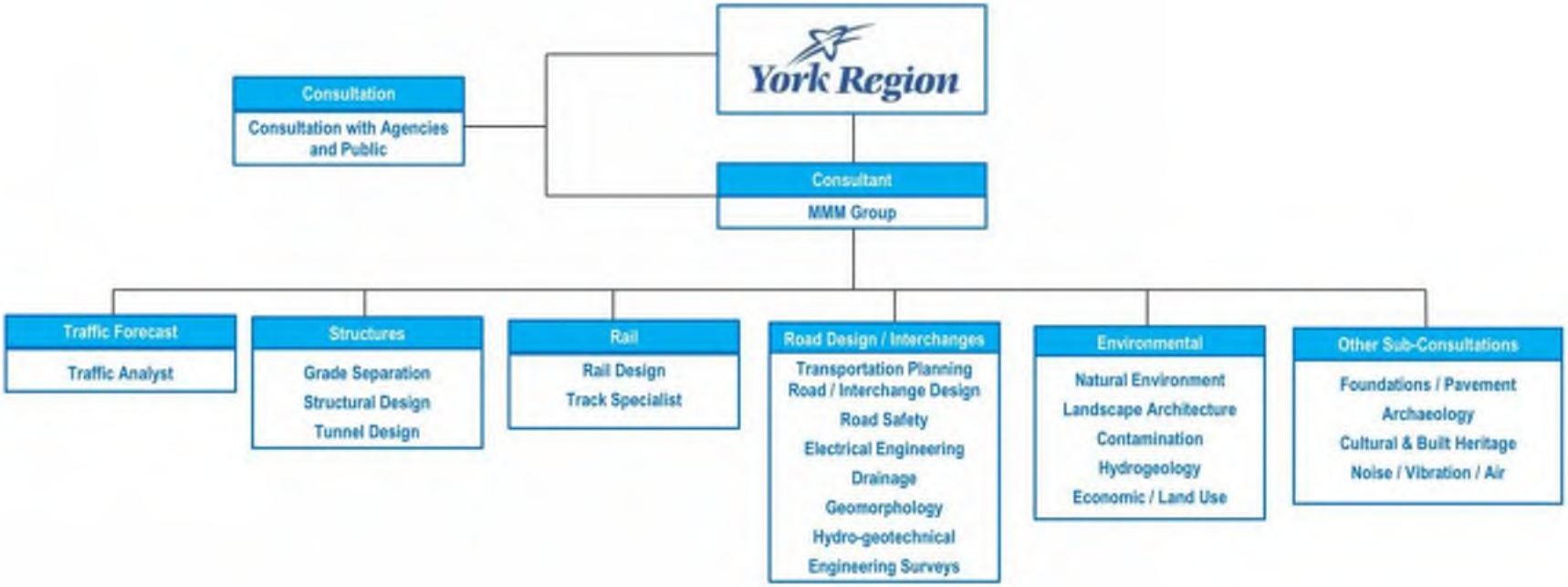
Langstaff Road
Class Environmental Assessment
Weston Road to Highway 7

TRCA Meeting – February 16, 2017

Study Area


Major Mackenzie Dr
Rutherford Rd
Dufferin St
Islington Ave
Langstaff Rd
Keele St
Jane St
Highway 400
Weston Rd
Pine Valley Dr
Highway 7
Highway 407
Legend
EA Study Area
Extended Study Area for Travel Demand Analysis

Project Organization



Project Overview and Background

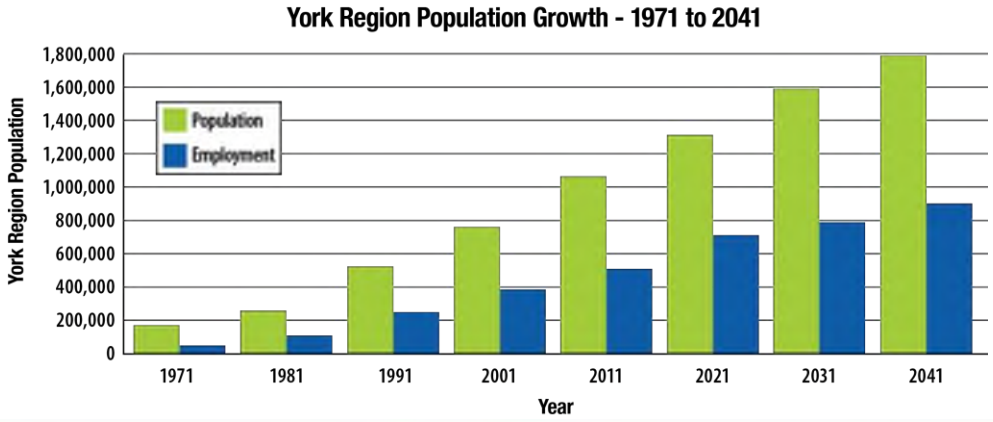
- Growth in York Region, including:
  - Vaughan Metropolitan Centre, Vaughan Mills Centre, and Concord GO Centre

Population

1.1 million 2014 to 1.8 million 2041

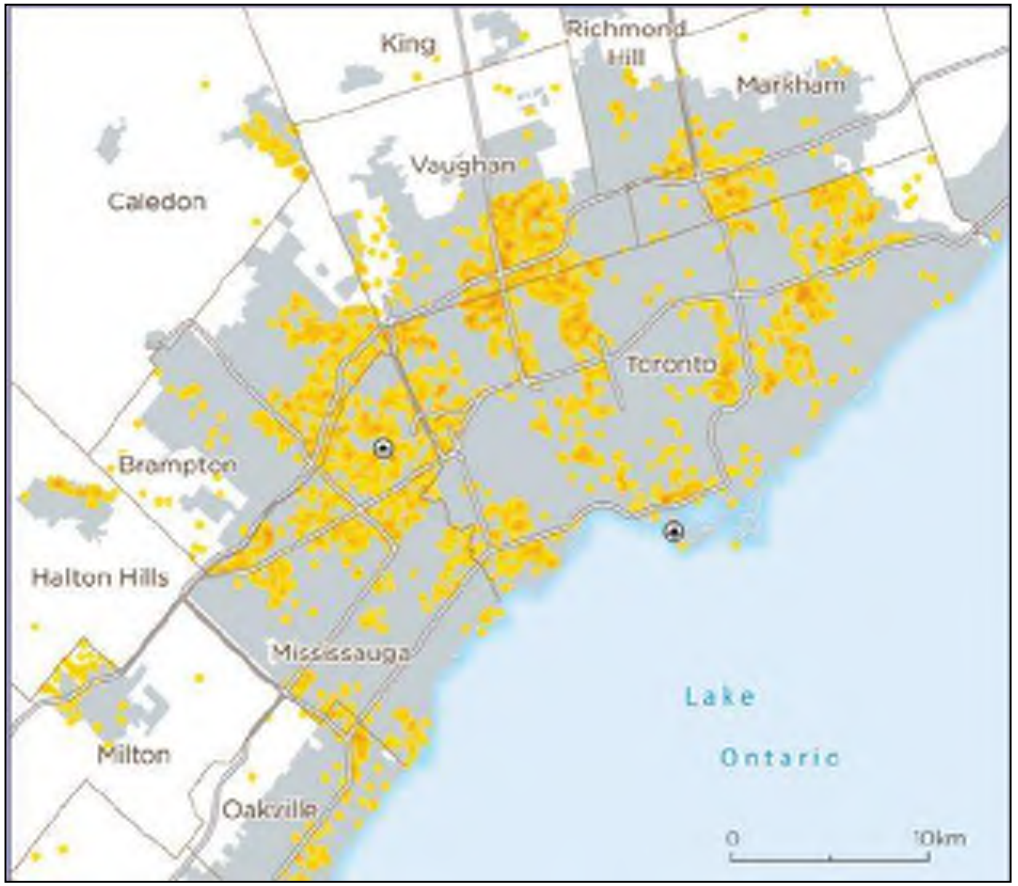
Employment

565 thousand 2014 to 900 thousand 2041



Accommodating Traffic Growth

- Reduce traffic volumes on Highway7 and Rutherford Road
- Provide an alternative route for truck traffic
- Improve access to the industries located west of CN Yard
- Improve Regional travel linkages from Keele Street and Weston Road

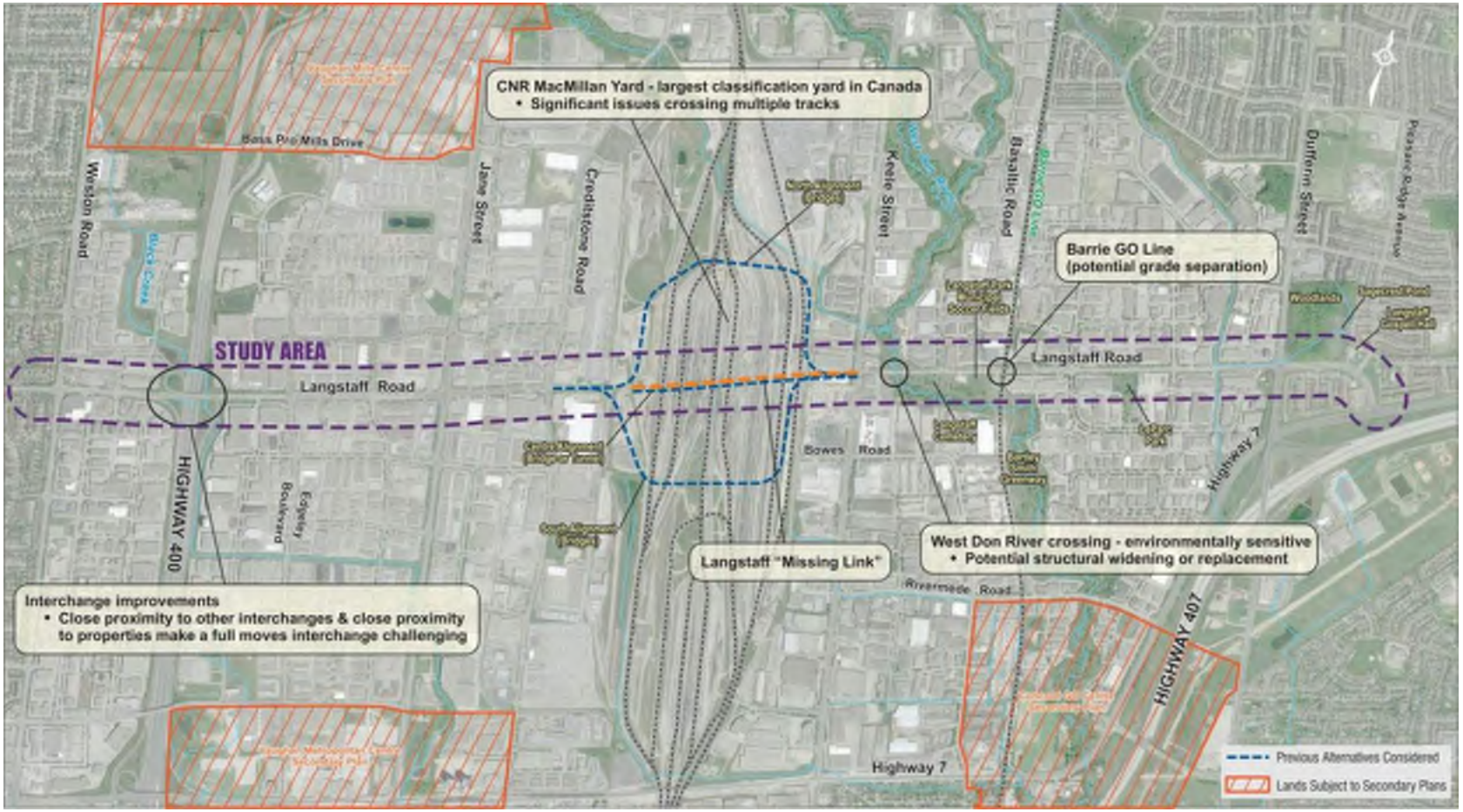


Source: Planning for Prosperity (2015), Map 5, ***Employment in Manufacturing 2011,*** *Neptis Foundation*

Project Overview and Background

- Several recent studies identify potential improvement:
  - Transportation Master Plans
    - York Region TMP Update (2016)
    - Vaughan TMP (2012)
  - Related Studies and Reports:
    - Highway 7 Corridor Traffic Engineering Study (2012)
    - VMC and Surrounding Areas Transportation Study (2012)
    - Langstaff Road Extension Cost-Benefit Analysis (2015)
  - Highway 400 interchange north-oriented ramps also to be considered

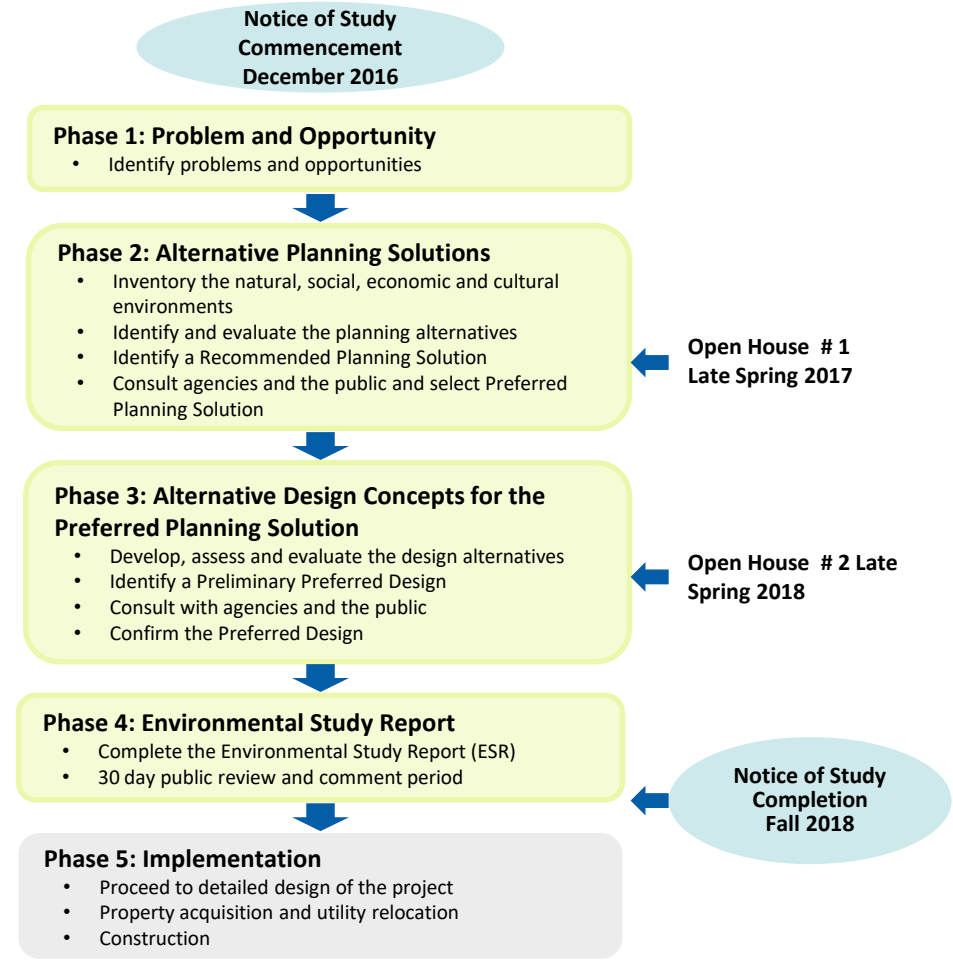
Study Area and Key Issues



TRCA Key Issues

- Humber and Don River Watersheds
- Black Creek Tributary
- Don River Tributaries
- Westminster Creek and Tributary
- Regional Greenlands System

EA Study Process



Involvement of TRCA

- **Spring 2017:** Collect background info
- **Spring 2017:** Identify problems and opportunities
- **Fall/Winter 2017:** Consult in regards to the analysis and evaluation of alternatives
    - Potential impacts to natural features
- **Spring 2018:** Select the preferred alternative
- **Spring 2018:** Discuss stormwater management strategies and mitigation measures

MEETING MINUTES

Date: April 5, 2018
9:00 a.m. to 10:30 a.m.

Location: TRCA Office, Don Room
101 Exchange Avenue
Concord

Project Number: 16M-01457-01

Project: Langstaff Road EA – Weston Road to Highway 7

Purpose: Meeting #2 with Toronto and Region Conservation Authority (TRCA)

Attendees:	**Agency**
Harsimrat Pruthi	TRCA
Gretel Green	TRCA
Brian Wolf	York Region
Tim Kwan	York Region
Katherine Jim	WSP
Alden Drost	WSP
Jian Guan	WSP

Item	Details	Action By
ITEM 1 –	**INTRODUCTIONS**	
1.1	Those at the meeting were introduced and a presentation package was distributed. K. Jim, WSP, noted that the purposed of the meeting is to provide a status update on the Langstaff Road Class EA Study, to discuss any comments TRCA may have on the draft Phase 1 & 2 report submitted on March 8, 2018 and the draft Natural Environment Repot submitted on February 27, 2018 as per the service agreement between York Region and TRCA, and to provide a overview of the drainage assessment methodology.	
ITEM 2 –	**STUDY STATUS**	
2.1	WSP noted the overall study area accommodates the possible improvements at Highway 400 and Langstaff Road interchange and CN MacMillan Yard crossing alignments.	
2.2	WSP provided a status update on the study and noted the following: • The first meeting with TRCA was held on February 16, 2017. • The Recommended Alternative Planning Solution (i.e. improvements on Langstaff Road) was identified and presented at Open House #1 on June 14, 2017. • The Project Team is currently developing the Alternative Design Concepts for the Preferred Planning Solution. The preliminary	

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Item	Details	Action By
	design for the improvements on Langstaff Road will be presented at Open House #2, tentatively scheduled for fall 2018. • The natural environment field work was completed and the existing conditions were documented in the draft Natural Environment Report. • The stormwater management existing conditions assessment was carried out. • Consultation with CN Rail and MTO regarding the CN MacMillan Yard crossing and the Highway 400 / Langstaff Road interchange improvement alternatives is on-going.	
2.3	TRCA asked if the widening of Langstaff Road is still warranted without the connection across the CN MacMillan Yard. K. Jim noted that the Project Team assessed the potential improvements in the transportation network based on incremental improvements on Langstaff Road (as documented in Section 3.5 of the Phase 1 and 2 Report). Scenario 2 includes the widening of Langstaff Road to the east of the CN Yard only without the CN yard crossing. Scenarios that include the CN yard crossing and improvements to Langstaff Road is expected to better serve future transportation needs.	
2.4	A. Drost, WSP, provided a summary of the key existing natural features within the study area. The key points are summarized as follows and the detailed summary is attached to the meeting minutes. • Watercourses within the study area (West Branch of the Don River, Black Creek and Westminster Creek) are warmwater and support common, tolerant species in presently disturbed areas. • Vegetation communities common to Southern Ontario, 58% native with a total of 12 species considered regionally significant by TRCA and Varga et al. (2000). • Common and tolerant birds and mammals recorded in the study area.	
2.5	A. Drost noted that WSP forwarded a letter to MNRF, indicating that based on findings to date, there are no SAR issues in the study area and that no further review under the ESA is required. MNRF noted via email on March 20, 2018 that the report (letter) was accepted with no further comments; i.e. no further meeting / consultation with MNRF is expected.	
2.6	K. Jim provided a summary of the existing conditions of the drainage and stormwater management assessment and noted the following:	

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Item	Details	Action By
	• There are two major culvert crossings (Black Creek and Westminster Creek); one structure (Don River) and three culverts for drainage. • HEC-RAS models for Don River, Westminster Creek and Black Creek were provided by TRCA to estimate water surface elevations of the culverts. • Design criteria from MOECC, York Region and MTO will be used. • The study area was divided into sub-catchment areas adjacent to Langstaff Road (Visual OTTHYMO model). • Drainage outlets along the study area were assumed to be at the low points of the road. • Hydraulic performance of existing road culverts are being analysed.	
ITEM 3 –	**TRCA COMMENTS**	
3.1	TRCA asked when the stormwater assessment is expected to be submitted. K. Jim noted that a technical memo regarding existing conditions is being reviewed internally and will be provided to TRCA when ready.	
3.2	TRCA requested the Project Team to demonstrate the selected preferred alternative will have the least environmental impact. K. Jim noted that Langstaff Road widening will be mostly accommodated within the existing right-of-way. The environmental impact assessment will be included in the Phase 3 report. Mitigation measures will be developed as part of the EA Study.	
3.3	TRCA asked how the project will be phased, i.e. if the Langstaff Road widening will be constructed first before the CN MacMillan Yard crossing. B. Wolf, York Region, noted that the implementation and phasing of the project will be based on Region's financial plan. Currently, Langstaff Road improvements is not included in the Region's current 10 year construction plan.	
3.4	TRCA reviewed the Ecological Land Classification mapping the general area adjacent to Highway 400 between Langstaff Road and Rutherford Road at the meeting and noted that there are no concerns in that area. WSP will update the study area included in the draft Natural Environment report to cover the expanded the area along Highway 400 and Langstaff Road. [*Post Meeting Note: The study area was updated and the updated report was provided to TRCA via email on April 18, 2018.*]	

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Item	Details	Action By
3.5	H. Pruthi noted that TRCA, is satisfied with the draft reports in principle and a formal response letter will be provided to the Project Team.	TRCA
ITEM 4 –	**STUDY SCHEDULE / NEXT STEPS**	
4.1	K. Jim provided a brief overview of the next steps that will involve TRCA, summarized as follows: • **Summer 2018**: Consult in regards to the analysis and evaluation of alternatives (potential impacts to natural features_ • **Late Summer 2018**: Select the preferred alternative • **Fall 2018**: Open House 2 • **Fall 2018**: Discuss stormwater management strategies and mitigation measures • **Fall 2018/ Spring 2019:** Phase 3 Report and Draft ESR	

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EXISTING CONDITIONS – LANGSTAFF ROAD EA FROM WESTON ROAD TO HIGHWAY 7

Natural Environment Summary

Policy Designated Areas

- Within the study area, the Region of York Region Official Plan (2010) identifies the West Branch of the Don River as a "Regional Greenlands System". The City of Vaughan Official Plan (2010) identifies the West Branch of the Don River as a "Core Area".
- TRCA identifies the West Branch of the Don River as a "Natural Heritage System" as well as several smaller riparian areas around Black Creek and the Significant Woodland.
- Greenbelt Plan – although the study area falls within a Settlement Area outside of the Greenbelt, it contains an external linkage or "Urban River Valley" along the West Branch of the Don River that links the Greenbelt to Lake Ontario.
- The main watercourses and floodplains that cross Langstaff Road (West Branch of the Don River, Black Creek, and Westminster Creek) are all regulated by the Toronto and Region Conservation Authority (TRCA) under Reg. 162/06.
- There are no PSW's, ANSI's or ESA's within the study area.

Existing and Key Natural Features

- The West Branch of the Don River and its riparian area is the most prominent natural feature within the study area. The west branch is a warmwater, permanent system. Heavy bank erosion was observed upstream of the bridge. A variety of cool and warm water baitfish and panfish species (Blacknose Dace, Common Shiner, Creek Chub, and Pumpkinseed) were captured by WSP the vicinity of the Langstaff Road crossing during 2017 surveys.
- Black Creek is a warmwater, permanent watercourse that has been modified (realigned/straightened) in the past. Recent beaver damming activity was observed in the reach upstream of Highway 400. Brook Stickleback and Bluegill were captured downstream of Langstaff Road by WSP during 2017 surveys.
- Westminster Creek is also a warmwater, permanent watercourse that has been modified (realigned/straightened) in the past. No fish were captured during the 2017 WSP surveys. However, fish were found in the Unnamed Tributary (see below) that flows into Westminster Creek, therefore the watercourse likely does provide direct fish habitat.
- Unnamed Tributary of Westminster Creek is a small modified watercourse that flows along the north ditchline of Langstaff Road for approximately 270 m, before it outlets to the main creek via a vertical drop structure (barrier to fish movement upstream from Westminster Creek). The tributary appears to receive some flow from a swale through the forest feature found in the NE quadrant of Langstaff Road and Dufferin Street (dry at time of survey upstream of Dufferin Street culvert), but also appears to receive flow from an underground storm drain and likely the storm water management pond (SWMP) found further east (good flow recorded downstream of Dufferin Street culvert at time of survey). Largemouth Bass and Brown Bullhead were captured in the reach along the ditchline by WSP during 2017 surveys. These species likely originated in the SWMP.

- There are also three unnamed TRCA regulated watercourses that are found within the CN MacMillan Rail Yard and are mainly south of the study area (one feature extends north toward to Langstaff Road).
- There is a relatively large mature Sugar Maple – Hickory Deciduous forest feature found in the NE quadrant of Langstaff Road and Dufferin Street. Based on the criteria (mainly size) from the York Region Official Plan, this feature would be considered a 'Significant Woodland'. LIO data also identifies a small unevaluated wetland within the feature and as noted, TRCA identifies this feature part of the "Natural Heritage System".
- The remaining habitat along the Langstaff Road Right-of-Way (ROW) is dominated by commercial and residential areas with manicured lawn and planted landscape trees along with cultural vegetation.

Species at Risk (SAR)

A SAR screening exercise was completed by WSP. SAR with potential to occur within the study area (based on habitat characteristics) include:

- Eastern Wood-pewee (Special Concern, COSEWIC and COSSARO)
- Wood Thrush (Special Concern COSSARO and Threatened COSEWIC)
- Barn Swallow (Threatened, COSEWIC and COSSARO)
- Four Bat Species including Little Brown Bat, Small-footed Myotis, Northern Long-eared Bat and Tri-coloured Bat – Endangered, COSEWIC and COSSARO):
- Butternut (Endangered, COSEWIC and COSSARO

SAR that were recorded within the study area:

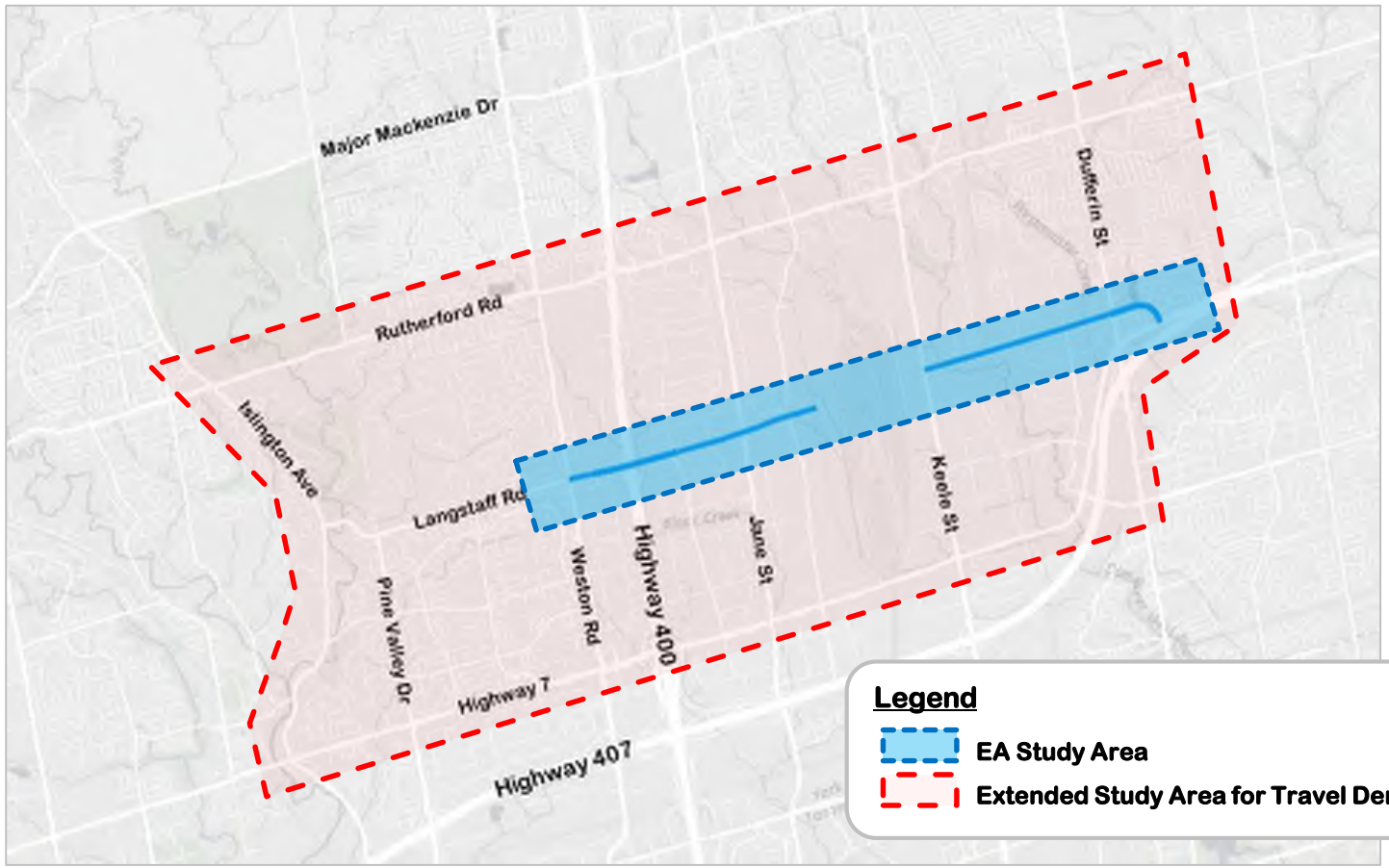
- Monarch (Special Concern, COSEWIC and COSSARO): Four individuals were observed in Unit 2 (West Branch of Don River) along with a patch of milkweed located approximately 50 m south of the roadway. The milkweed is a Candidate for "Significant Wildlife Habitat" as categorized by MNRF.

WSP provided MNRF with a memo outlining the SAR surveys and findings and MNRF has accepted (on March 16, 2018) and agreed with the findings.

Langstaff Road
Class Environmental Assessment
Weston Road to Highway 7

TRCA Meeting #2 – April 5, 2018

Study Area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Keele St
Jane St
Highway 400
Weston Rd
Pine Valley Dr
Highway 7
Highway 407
Legend
EA Study Area
Extended Study Area for Travel Demand Analysis

EA Study Process

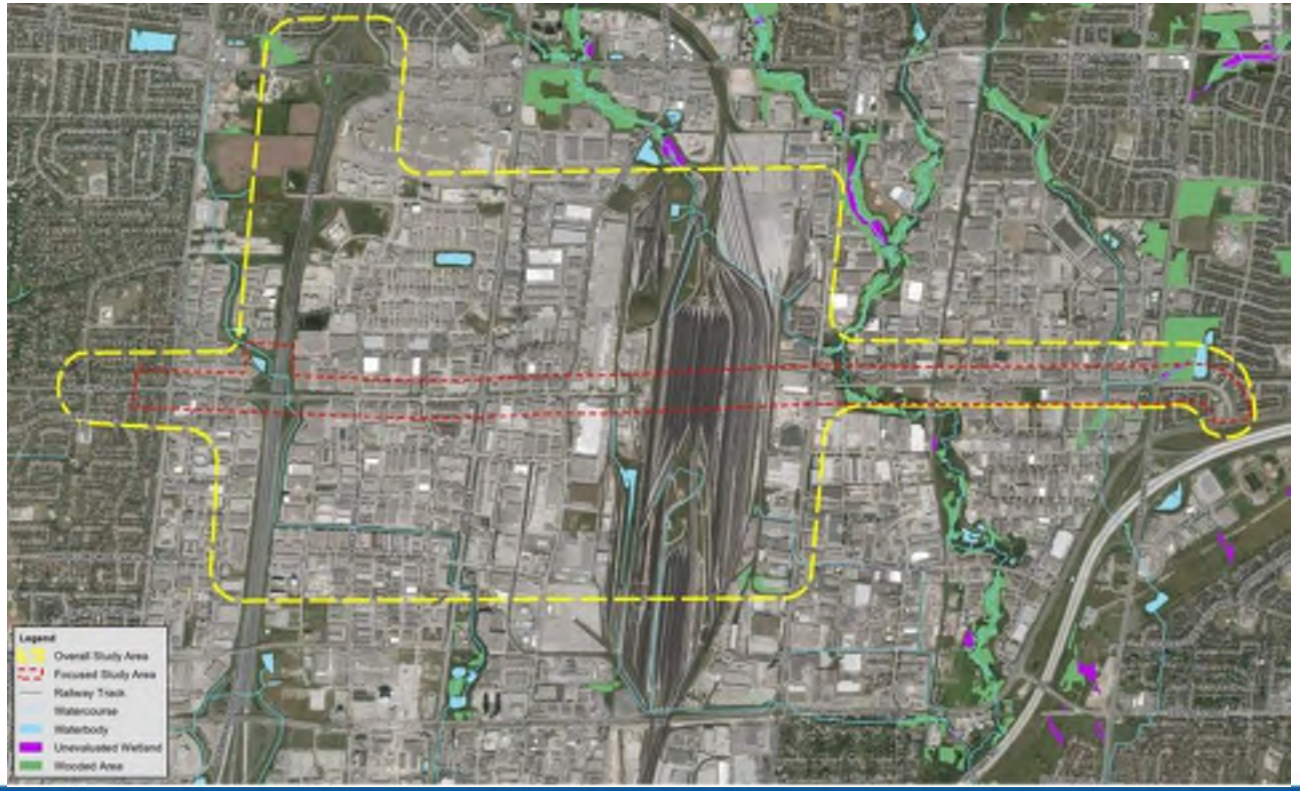
Proposed Improvements

Study Status

- Open House 1 – June 2017
- Completed environmental field work and documented existing conditions
- Carried out SWM existing conditions assessment
- Coordination with MTO re: Hwy 400 improvements
- Coordination with CN re: extension of Langstaff Road across CN yard
- Technical Report provided to TRCA:
  - Phases 1 and 2 Report
  - Draft Natural Environment Existing Conditions

Natural Environment

- Natural features largely located at: Black Creek, Don River West Branch, Westminister Creek and a significant woodland
- Portions designated as Regional Greenlands System (Don River West Branch)



Natural Environment

- Site reconnaissance through the study area in November 2016
- Detailed field surveys for aquatic and terrestrial resources in 2017:
  - Aquatic habitat mapping and fish community sampling: Black Creek, Don River West Branch, Westminster Creek and Tributary of Westminster Creek
  - Breeding Bird Surveys
  - Ecological Land Classification (3-season)
  - General wildlife
  - Species at Risk habitat assessment

Natural Environment

- Watercourses are warmwater and support common, tolerant species in presently disturbed areas
- Vegetation communities common to Southern Ontario, 58% native with a total of 12 species considered regionally significant by TRCA and Varga et al. (2000)
- Common and tolerant birds and mammals recorded in the study area

Drainage and Stormwater Management

- Existing conditions:
  - Two major culvert crossings (Black Creek and Westminster Creek); one structure (Don River), three culverts for drainage
  - HEC-RAS models for Don River, Westminster Creek and Black Creek were provided by TRCA to estimate water surface elevations of the culverts
  - Design criteria: MOECC, York Region, MTO
  - The study area was divided into sub-catchment areas adjacent to Langstaff Road (Visual OTTHYMO model).
  - Drainage outlets along the study area were assumed to be at the low points of the road.
  - Hydraulic performance of existing road culverts are being analysed.
- Next steps:
  - Stormwater management strategy based on proposed roadway improvements

Next Step – Involvement of TRCA

- **Summer 2018:** Consult in regards to the analysis and evaluation of alternatives
    - Potential impacts to natural features
- **Late Summer 2018:** Select the preferred alternative
- **Fall 2018:** Open House 2
- **Fall 2018:** Discuss stormwater management strategies and mitigation measures
- Phase 3 Report and Draft ESR

Natural Environment

- Natural features largely located at: Black Creek, Don River West Branch, Westminister Creek and a significant woodlot
- Portions designated as Regional Greenlands System (Don River West Branch)

Natural Environment

- Site reconnaissance through the study area on November 1, 2016
- Detailed field surveys for aquatic and terrestrial resources in 2017:
  - Aquatic habitat mapping and fish community sampling: Black Creek, Don River West Branch, Westminster Creek and Tributary of Westminster Creek
  - Breeding Bird Surveys
  - Ecological Land Classification (3-season)
  - General wildlife
  - Species at Risk habitat assessment

Natural Environment

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- Common and tolerant birds and mammals recorded in the study area

YORK REGION

CLASS ENVIRONMENTAL ASSESSMENT STUDY FOR IMPROVEMENTS TO LANGSTAFF ROAD FROM WESTON ROAD TO HIGHWAY 7

NATURAL ENVIRONMENT REPORT

DRAFT

DECEMBER 21, 2017

wsp

CLASS ENVIRONMENTAL ASSESSMENT STUDY FOR IMPROVEMENTS TO LANGSTAFF ROAD FROM WESTON ROAD TO HIGHWAY 7

NATURAL ENVIRONMENT REPORT

YORK REGION

DRAFT

PROJECT NO.: OUR REF. NO. 16M-01457-01
DATE: DECEMBER 2017

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TABLES

APPENDICES

1 INTRODUCTION

1.1 OVERVIEW

The Regional Municipality of York (York Region) is completing a Class Environmental Assessment (Class EA) study for improvements to Langstaff Road (York Road 72) from Weston Road (Y.R. 56) to Highway 7 (Y.R. 7), within the City of Vaughan.

The Class EA study is being carried out in accordance with Schedule 'C' of the Municipal Class Environmental Assessment (MCEA) document (October, 2000, amended 2007, 2011, and 2015). This document outlines the process whereby municipalities can comply with the requirements of the Ontario Environmental Assessment Act. An Environmental Study Report (ESR) will be prepared to document the decision making process carried our during the Class EA study.

The purpose of the study is to identify the improvements required to address existing and future transportation problems and opportunities in the Langstaff Road corridor. The preferred solution identified in Phase 2 of the Municipal Class EA Study includes: a new Langstaff Road connection across the Canadian National Railway (CN) MacMillan Rail Yard; Highway 400 Interchange improvements to facilitate full access / movement at the interchange; a grade separation at the Barrie GO Rail Line; and widening Langstaff Road to 6 lanes. These improvements are being considered in order to: manage existing and future traffic congestion on other east-west arterial roads; support growth of the Vaughan Metropolitan Centre and other primary growth centres nearby; improve access to employment lands; and support an efficient goods movement system.

The Class EA study area is depicted on Figure 1a, Appendix A and Figure 1b depicted the focus area for the natural environment review (here after referred to as the "study area"). Within the study area, the length of Langstaff Road is approximately 6.5 km, from Weston Road in the west, to Highway 7 in the east (currently terminates on either side of the CN MacMillan Rail Yard). A partial interchange at Highway 400 currently provides access to southbound Highway 400 from Langstaff Road, and from northbound Highway 400 to Langstaff Road.

The CN MacMillan Rail Yard is one of the most prominent features in the study area. The yard, located at the junction of the CN York Subdivision and CN Halton Subdivision, is the 2nd largest rail classification yard in Canada, measuring approximately 5 km in length and 1.2 km in width with a north-south orientation. The property is bordered by four main roads: Highway 7 (Y.R. 7) to the south, Keele Street to the east, Rutherford Road to the north, and Creditstone Road to the west.

The purpose of this Langstaff Road Class EA Natural Environment Report is to identify and document the existing natural environmental features within the study area to determine constraints, identify mitigation measures and any potential permitting requirements. Specific details on WSP survey methodologies and coverage completed in 2016 and 2017 are described in **Section 1.2**.

1.2 BACKGROUND INFORMATION AND SURVEY APPROACH

Background information sources were reviewed to develop an understanding of the general character of the natural features in the study area, identify potential constraints and sensitivities, and assess the general connectivity of natural features in the study area to features within the surrounding landscape.

Background natural environment information collection included the following sources:

- Topographic mapping and Google satellite mapping (over the timeframe of 2002 to 2016);
- Liaison with the Aurora District Ministry of Natural Resources and Forestry (MNRF) and Toronto Region Conservation Authority (TRCA) staff to gather and confirm existing natural environment information in

the vicinity of the study area, including information concerning Species at Risk (SAR) and Species of Conservation Concern (SCC) presence / potential;

- MNRF's Natural Heritage Information Centre (NHIC) database;
- MNRF Regional SAR lists (MNRF website, 2017);
- Ontario Breeding Bird Atlas (OBBA, Bird Studies Canada Website 2016; two 10 km-square areas within study area: No. 17PJ22, 17PJ20 and 17PJ17);
- Ontario Reptile and Amphibian Atlas (ORAA, Ontario Nature 2016; two 10 km-square areas within study area: No. 17PJ20, 17PJ21, and 17PJ22);
- Ontario Mammal Atlas (Dobbyn, 1994); and,
- Fisheries and Oceans Canada (DFO) Distribution of Fish SAR mapping (2017 mapping).

1.2.1 *AQUATIC SURVEY APPROACH*

A reconnaissance visit was undertaken by WSP, as property access permitted, on November 1, 2016 for watercourse crossing locations within the study area. Detailed aquatic surveys including fish community sampling was undertaken on October 4 and 5, 2017 at watercourse crossings within the study area to further refine habitat characteristics. A review of background resources indicated the presence of three TRCA-regulated watercourse features within the CN MacMillan Rail Yard; however, access was not granted within this area. Furthermore, only one of these unnamed watercourses fell within the study area limits of this report (**Figure 2-3**).

Habitat surveys were conducted along Langstaff Road, as well as approximately 50 m upstream and downstream of the crossings respectively, where access permitted. Information collected included the following aquatic habitat parameters:

- Aquatic habitat mapping;
- Channel dimensions, general gradient and profile, bank character (e.g. height and erosion);
- General flow characteristics (permanent, intermittent, dry, pooling) including evidence of groundwater discharge;
- General morphology (flats, pools, riffles);
- Substrates;
- Instream / overhead cover opportunities (e.g. woody debris, undercut banks, boulders, vegetation);
- Riparian vegetation;
- Physical barriers to fish movement;
- Identification of potential critical or specialized habitat areas or features (e.g. potential spawning areas, nursery cover);
- Observations of habitat alterations / land use (e.g. channel modification, potential pollutant point sources); and,
- Potential habitat enhancement opportunities.

1.2.2 *VEGETATION SURVEY APPROACH*

A three-season botanical inventory and vegetation assessment was conducted by WSP within the study area, as property access permitted, on October 17, 2016 and June 9 and July 26, 2017. These surveys documented the characteristics of the natural and culturally influenced vegetation communities, with a focus on the natural features along and adjacent to the road corridor. Street trees and planted landscape features

were not assessed by WSP specifically during these field visits. A tree inventory along the Langstaff Road corridor has been prepared; see report under separate cover.

Vegetation field work and associated data assessment involved:

- Botanical inventory and analysis, including preparation of a vascular plant species list (**Appendix B**);
- Classifying, mapping and evaluating vegetation communities along the road corridor. Vegetation communities were classified using the *Ecological Land Classification for Southern Ontario* (ELC) (Lee et al, 1998) and *ELC Ecosystem Catalogue: 2008 Version* (Lee, 2008), where applicable (**Figures 2-1 to 2-6**, **Appendix A**);
- Vegetation community significance was evaluated using *Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario* (Bakowsky, 1996; NHIC website);
- Evaluating the sensitivity and significance of vegetation species using the MNRF's NHIC database and SAR websites (updated periodically), the TRCA L-Ranks (TRCA, 2003; TRCA, 2010), and the York Region rare species list from *The Distribution and Status of the Vascular Plants of the Greater Toronto Area* (Varga et al, 2000);
- Analysis of floristics of all inventoried plant species to determine their Coefficient of Conservatism (CC) [1] and Coefficient of Wetness (CW) [2];
- Evaluating habitat potential for vegetation SCC, and in particular, SAR known or thought to exist in the general vicinity of the study area; and,
- Noting general vegetation characteristics including age, general habitat features, drainage conditions, as well as any anthropogenic disturbance.

All terrestrial natural areas were documented and photographs were taken, refer to Appendix F.

1.2.3 *WILDLIFE SURVEY APPROACH*

Wildlife surveys were conducted by WSP within the study area, as property access permitted, on October 17, 2016 and June 9, June 23 and July 26, 2017. The field surveys completed in June 2017 were focused specifically on breeding birds, while the other surveys dates consisted of a more generalized wildlife assessment. The 2016 / 2017 assessment surveys involved:

- Breeding bird surveys conducted according to standard protocols established in the OBBA (Cadman et al, 2007). The two survey visits were completed during appropriate timing (early morning during the breeding bird season) and suitable weather conditions (low wind and no precipitation). Breeding bird surveys were conducted by qualified, experienced staff and involved wandering transects through and adjacent to natural features with frequent listening/ observation stops at random locations. Species, abundance and level of breeding evidence were recorded for all avifauna observations;
- SAR wildlife habitat assessment for species with potential to occur in the study area according to MNRF guidance and other background review;

[1] Coefficient of Conservatism: Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters (Oldham et al., 1995).

2 Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.

- Recording all direct wildlife observations and wildlife signs (including browse, track / trails, animal scat, bird nesting activity, tree cavities, burrows, excavated holes and vocalizations) and identifying potential wildlife usage and habitat functions associated with vegetation communities.

For areas with no Permission-to-Enter (PTE), surveys were completed from the roadside and supplemented through air photo review. For the purposes of this report, wildlife species and habitat feature observations have been grouped into the ELC units identified through the vegetation surveys (see **Figures 2-1 to 2-6**, **Appendix A**):

Wildlife field investigations also included assessing the various habitats present in relation to their potential to support SAR and/or SCC, as discussed further in **Section 2.6**.

The breeding bird and wildlife survey results are presented in **Appendix C**.

2 EXISTING CONDITIONS

2.1 OVERVIEW

The following sections describe the existing natural environmental features. Designated areas and other broader policy designations are shown on **Figures 3-1 to 3-6** (**Appendix A**) and natural environmental features (both aquatic and terrestrial) are shown on **Figures 2-1 to 2-6** (**Appendix A**).

2.2 ENVIRONMENTAL DESIGNATIONS

There are several environmentally designated areas within the study area, and several associated environmental policy designations (**Figure 3-1 to 3-6**, **Appendix A**). The majority of these natural features are primarily associated with the Don River West Branch and the forest northeast of Langstaff Road and Dufferin Street. The study area is predominantly a commercial landscape mixed with residential communities on either ends of the study area adjacent to Langstaff Road. A brief summary of identified designations is provided below:

- **Natural Heritage System** – The York Region Official Plan and the City of Vaughan Official Plan classify several features within the study area as part of a Natural Heritage System (NHS) and the Greenlands System. These features are comprised of components including the key natural heritage features and key hydrologic features. The municipal policies require that their form and functions be protected, and where possible, enhanced. The key natural heritage features within the study area are: significant habitat of endangered species, threatened species and special concern species; fish habitat; wetlands; significant woodlands; significant wildlife habitat (SWH); and permanent and intermittent streams. The purpose of the Greenlands System policies are to maintain and enhance an interconnected system of natural open space, agricultural lands and enhancement areas and linkages that will preserve these areas of significant ecological value. In turn, these policies provide opportunities to improve biodiversity and connectivity of natural features as well as ecological function.
- **Greenbelt Plan (2017)** The Greenbelt Plan was established under Section 2 of the Greenbelt Act, 2005, to take effect on December 16, 2004. The plan generally identifies where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape. The Natural Heritage System identified within the Greenbelt Plan is connected to local, regional and provincial scale natural heritage, water resource and agricultural systems beyond the boundaries of the Greenbelt to include External Linkages. Although the study area falls within a Settlement Area outside of the Greenbelt, it contains an external linkage area along the Don River West Branch (just east of Keele Street). This external linkage that runs through existing or approved urban areas and connects the Greenbelt to inland lakes and the Great Lakes is considered a key component of the long-term health of the Natural Heritage System. The Greenbelt Plan builds upon the existing policy framework established in the Provincial Policy Statement (PPS), issued under section 3 of the *Planning Act*, and its implementation through municipal official plan policies and maps.
- ***Conservation Authorities Act* (1990)** – Portions of the lands in the study area are regulated by the TRCA under Ontario Regulation 166/06 – *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. Generally, the regulation applies to the watercourses present within the study area. To ensure that development has regard for natural hazard features and the natural environment, while conforming to watershed development policies, the TRCA is authorized under Section 28 of the *Conservation Authorities Act* to implement and enforce their own regulation. Under the regulation, no person shall undertake development or permit another person to undertake development in, or on, the areas within the jurisdiction of a Conservation Authority. A permit to

undertake development within the regulated area may be granted by the governing Conservation Authority.

- ***Fisheries Act* (Fisheries and Oceans Canada, 1985) –** The focus of the *Fisheries Act* is to protect the productivity of recreational, commercial and Aboriginal fisheries by focusing protection on real and significant threats to the fisheries and the habitat that supports them. The *Act* sets clear standards and guidelines for routine projects. This applies to work being conducted in or near waterbodies that support fish that are part of, or that support, a commercial, recreational or Aboriginal fishery. All work proposed in or near watercourses in the study area should be reviewed in relation to the requirements of the *Fisheries Act*.
- ***Endangered Species Act* (Ontario Ministry of Natural Resources and Forestry, 2007)** – SAR definitions are discussed in **Section 2.6** below. All species listed as SAR under the *ESA* (2007) have protection from being killed, harmed, or harassed. Species listed as Endangered or Threatened also have habitat protection. This habitat protection is either regulated or general and is determined by COSSARO on a species by species basis and is published by the MNRF on their website and in regulations tied to the *ESA*. The study are has potential to support a variety of SAR, which are discussed further in **Section 2.6.2**.

2.3 FISHERIES AND AQUATIC HABITAT

The study area along Langstaff Road contains seven watercourses, four of which were assessed by WSP ecologists in November, 2016 (reconnaissance) and October, 2017 (detailed field assessment), and three of which were not granted access by the CN MacMillan Rail Yard. Of the three unnamed TRCA-regulated watercourses within the CN MacMillan Rail Yard, only one fell within the study limits of this report (**Figures 3-1 to 3-6**, **Appendix A**). The assessed watercourses include a Tributary of Westminster Creek, Westminster Creek, the Don River West Branch, and Black Creek. The assessed reaches of these watercourses were generally heavily urbanized, often stabilized by rip rap and gabion baskets. Various warmwater bait and forage fish were found throughout all sites, with the exception of Westminster Creek where no fish were observed. The following provides an in-depth description of the fish and fish habitat observed within each of the watercourses.

BLACK CREEK

Located in the Highway 400 / Langstaff Road area, Black Creek is a north-south flowing watercourse that supports nominal, permanent flow throughout the assessed reach. Its headwaters appear to originate from agricultural runoff to the northwest beyond the study area. As fish were found in this watercourse (**Section 2.3.1**), it is considered to be direct fish habitat.

Upstream of Highway 400

In the upstream reach, north of Highway 400 and south of Creditview Road, Black Creek has been previously realigned (sometime between 1996-1999) as a result of commercial development within the local landscape. Black Creek traverses under Creditview Road via a 4-cell structural culvert. An overflow structure is located at the inlet. At the time of survey, it was filled with duckweed (*Lemnoideae spp.*). At the outlet, no flow was observed but all four cells where filled half way. The water was murky and greater than 1 m in depth with substrates consisting of muck (100%). Approximately 10 m downstream from the outlet, an active beaver dam was present at the time of survey. This has resulted in large outlet pool (approximately 15 m wide by 10 long). Recent beaver activity (chewed tree stumps) were scattered about. Downstream of the beaver dam, the channel was stagnant (with abundant duckweed present) with a mean wetted width of 1.75 m and depth of 0.6 m with substrates consisting of muck (100%). Downstream of Creditview Road to Highway 400, the floodplain vegetation consisted of entirely cultural meadow / wetland species. There were no distinguishable banks of the channel. No fish were observed within this reach.

Upstream of Langstaff Road and South of Highway 400

In the upstream reach, north of Langstaff Road and east of Highway 400, Black Creek outlets from a 3 m wide culvert with little to no flow into a densely choked cattail marsh. Duckweed was observed at the culvert outlet, and no signs of suitable fish habitat were observed. Flow was primarily diffuse through cattails, and substrate consisted of muck (100%). The watercourse continued with little to no flow for approximately 100 m through cattail marsh before opening up at the culvert inlet north of Langstaff Road where three structural culverts each conveyed flow to the downstream reach. Here, the culvert banks were lined with gabion baskets, and the watercourse had a wetted width of 0.9 m and depth of 0.2 m. Bankfull width and depth were each >10 m, and substrate consisted of muck (100%).

Downstream of Langstaff Road

In the downstream reach, south of Langstaff Road and east of Highway 400, the water discharges from the three culverts before converging and subsequently splitting into two, defined, channels. Both defined flow paths continue through dense cattail marsh, each with a wetted width of 0.4 m, depth of <0.1 m, and bankfull width and depth >10 m. Approximately 17 m downstream of the three culvert outlets, a smaller culvert is present on the west bank and discharges into Black Creek, likely conveying stormwater from Highway 400. Riparian vegetation consisted of mainly meadow species and sparse pockets of trees. The two channels converge near the downstream limit of the assessed reach before inletting into three culverts at the Highway 400 off-ramp to Langstaff Road. Here, the channel has a wetted width of 7.5 m, depth of 0.1 m, and bankfull width and depth >10 m. Fish were observed at the inlet of these three culverts, and are discussed in **Section 2.3.1**.

DON RIVER WEST BRANCH

Located east of Keele Street, the Don River West Branch is a north-south flowing watercourse that supports permanent flow throughout the assessed reach. Its headwaters originate in the Oak Ridges Moraine, and flows south for 35 km through agricultural, residential, and commercial lands before discharging into Lake Ontario. As fish were found in the downstream reach of this watercourse (**Section 2.3.1**), it is considered to be direct fish habitat.

Upstream

North of Langstaff Road, the assessed reach of the Don River West Branch originates in an open and wide channel with a wetted width of 5.2 m, depth of 0.5 m, bankfull depth of 1.3 m, and bankfull width of >10 m. Substrate within this section consisted of cobble (80%), sand (10%), and gravel (10%). Banks throughout this upstream reach were eroded, and undercut by a mean depth of 1 m, and riparian vegetation consisted of various riparian shrubs and trees. Morphology was predominantly riffles for 50 m before entering under the Langstaff Road Bridge as a flat.

Downstream

Downstream of the structure, the watercourse had a wetted width of 7.5 m, depth of 0.6 m, bankfull depth of >5 m, and bankfull width of 11 m. Substrate consisted of cobble (80%), sand (10%), gravel (5%), and silt (5%), and banks showed less severe signs of erosion and undercutting compared to upstream. At the outlet, two smaller culverts discharge storm flows from the east and west of Langstaff Road into the watercourse. Riparian vegetation in this area was dominated by cattails, goldenrod (*Solidago spp.*), and various riparian trees. Flow continued downstream as a run, passing through wood debris, and emptying into a large pool. The pool had a wetted width of 6.1 m, depth of 0.8 m, bankfull depth of 1 m, and bankfull width of >10 m. Substrate consisted of silt (50%) and sand (50%). Additionally, a dry fragment of a braided channel was observed east of the main watercourse, originating 2 m upstream of the pool and discharging into it. This channel likely proves flow conveyance during high precipitation events. Fish were observed at this site, and are discussed in **Section 2.3.1**. Water then continues downstream as a run throughout the remainder of the assessed reach.

WESTMINSTER CREEK

Located just west of Dufferin Street, Westminster Creek is a north-south flowing watercourse that supports permanent flow throughout the assessed reach. Its headwaters originate in a woodlot south of Major

Mackenzie Drive West between Keele Street and Dufferin Street, and flows south for 25 km through residential and commercial lands before discharging into Lake Ontario. Although fish were not found within the study area of this watercourse (**Section 2.3.1**), Westminster Creek is likely considered to be direct fish habitat as no physical barriers were observed in the field or through satellite imagery.

Upstream

North of Langstaff Road, the assessed reach of Westminster Creek originates in a densely-forested pool with a wetted width of 2.2 m, depth of 0.4 m, bankfull depth of 0.6 m, and bankfull width of 2.2 m. The channel appears to have been previously modified with channel protection measures along the banks, and substrate within the pool is dominated by rip rap (100%). The watercourse then flows south as a riffle through intermittent tree cover with a mean wetted width of 2.4 m, mean depth of 0.1 m, bankfull depth of >3 m, and bankfull width of >5 m. Substrate consists of rip rap (70%) and sand (30%), and riparian vegetation is sparse, consisting of various willow species (*Salix spp.*), and bank stabilization is predominately provided by gabion baskets. Under Langstaff Road, water inlets into twin box culverts, with the west culvert conveying the majority of the flow, and the east culvert primarily blocked by sediment. This blockage resulted in an observable eddy which redirected most of the water into the west culvert. Each culvert had a height of 1.8 m and width of 3.6 m, substrate was dominated by silt (100%); the enclosed portion of the watercourse is approximately 50 m.

Downstream

Water outlets as a run into a more naturalized channel than that observed upstream, with a mean wetted width of 2.6 m, depth of 0.1 m, bankfull depth of 0.6 m, and bankfull width of 7.5 m. Bank composition at the edge of the watercourse is natural, however, gabion baskets are positioned approximately 5 m back from the water's edge. Substrate consisted of sand (50%), gravel (45%), and cobble (5%), and channel banks were lined with various riparian trees, shrubs, and cattails. Similar to the upstream culvert inlet, the east culvert was partially blocked by substrate build-up and subsequent growing vegetation. However, a trickle of flow was observed to be flowing form this culvert outlet at the time of survey. Further downstream, channel width narrowed slightly but maintained a similar morphology to that seen at the downstream outlet. Undercut banks and erosion were noted in the furthest downstream reaches.

TRIBUTARY OF WESTMINSTER CREEK

The Tributary of Westminster Creek is an east-west watercourse that supports intermittent flow in its upstream reach in the northeast corner of Langstaff Road and Dufferin Street, and permanent flow throughout the downstream reach, in the northwest corner of Langstaff Road and Dufferin Street. Its headwaters appear to originate from a stormwater management (SWM) pond east of a woodlot north of Langstaff Road (east of Dufferin Street), and is likely pumped underground to the downstream reach. The watercourse then flows within a ditch for approximately 270 m prior to discharging into Westminster Creek through a vertical box culvert. As fish were found in the downstream reach of this watercourse, the Tributary of Westminster Creek is considered to be direct fish habitat.

Upstream

In the woodlot northeast of Langstaff Road and Dufferin Street, a dry, defined channel meanders southwest through woody debris within a forest consisting of White Spruce (*Picea glauca*), basswood (*Tilia spp.*), Manitoba Maple (*Acer negundo*), and buckthorn (*Rhamnus spp.*). The dry channel has a width of 1.5 m, a bankfull depth of 0.3 m, and bankfull width of >10 m. Substrate consists of silt (60%), sand (25%), gravel (10%), and cobble (5%), and riparian vegetation is sparse and consists mainly of riparian trees. The channel loses definition near its exit from the woodlot into an area comprised of Common Reed (*Phragmites australis*) and Reed Canary Grass (*Phalaris arundinacea*). Approximately 20 m from the edge of the woodlot, a 300 mm corrugated steel pipe (CSP) culvert, dry at the time of observation, crosses under Dufferin Street and outlets from a 1000 mm CSP downstream into a ditch running along the north side of Langstaff Road.

Downstream

In the downstream reach, the channel becomes defined (within the Langstaff Road ditch) and flows west through a series of tight meanders and aquatic vegetation consisting of curly Leaf Pondweed (*Potamogeton crispus*) and Canada Waterweed (*Elodea canadensis*), and is flanked by manicured lawn. Fish were observed in this reach, and are discussed in **Section 2.3.1**. The channel has a mean wetted width of 0.7 m, a mean depth of 0.1 m, a mean bankfull depth of 0.4 m, and mean bankfull width of >5 m. Substrate consists of silt (50%), sand (45%), and cobble (5%), and riparian vegetation is non-existent; as a result, some erosion was observed. The watercourse exhibits a low-gradient channel with flows consisting of riffles (50%), runs (30%), and pools (20%). Approximately 115 m downstream, the tributary passes through twin 750 mm CSP culverts for 20 m, and continues for another 135 m before outletting into a vertical box culvert, and ultimately, into Westminster Creek. The vertical culvert acts as a permanent barrier to fish movement upstream.

2.3.1 *FISH COMMUNITY*

BLACK CREEK

Fish community was assessed within the study limits of Black Creek, and the fish species identified is associated with warmwater thermal regimes and habitat comprising of silt-dominated substrate.

Table 2-1: Fish Species Identified in Black Creek within the Study Area

COMMON NAME	SPECIES NAME
Brook Stickleback	*Culaea inconstans*

The 16 Brook Stickleback observed at the inlet of the three culverts likely originate from a SWM pond north of the study area, and were carried downstream during high precipitation events, as the densely choked watercourse normally acts as a barrier to fish passage. No exceptional spawning, rearing, or feeding habitat was noted in the assessed reaches; however, the habitat quality was such that it likely supports a small, permanent population.

DON RIVER WEST BRANCH

Fish community was assessed within the study limits of the Don River West Branch, and the fish species identified are associated with warmwater thermal regimes and habitat comprising of weedy or muddy water. TRCA also provided a list of sample sites and fish species observed within the Don River West Branch.

Table 2-2: Fish Species Identified in the Don River West Branch within the Study Area

COMMON NAME	SPECIES NAME
Blacknose Dace*	*Rhinichthys atratulus*
Bluntnose Minnow†	*Pimephales notatus*
Catostomidae†	*Catostomus sp.*
Catostomus sp.†	*Catostomus sp.*
Common Shiner*	*Luxilus cornutus*

Creek Chub*	*Semotilus atromaculatus*
Fathead Minnow†	*Pimephales promelas*
Johnny Darter†	*Etheostoma nigrum*
Pumpkinseed*	*Lepomis gibbosus*
White Sucker†	*Catostomus commersonii*

* Species observed by WSP ecologists in October, 2017
† Species list provided by TRCA

The fish species observed by WSP ecologists and provided by TRCA likely originate in the assessed study site, and are able to spawn, rear, and feed within the same area.

TRIBUTARY OF WESTMINSTER CREEK

Fish community was assessed within the study limits of the Tributary of Westminster Creek, and the fish species identified are associated with warmwater thermal regimes and habitat comprising of weedy or muddy water.

Table 2-3: Fish Species Identified in the Tributary of Westminster Creek within the Study Area

COMMON NAME	SPECIES NAME
Largemouth Bass	*Micropterus salmoides*
Brown Bullhead	*Ameiurus nebulosus*

The one Largemouth Bass and one Brown Bullhead observed near the downstream culvert outlet likely originate from the SWM pond east of the woodlot, north of Langstaff Road (east of Dufferin Street). It is possible that the fish were carried downstream at a time the SWM pond overflowed. As there was no water in the upstream at the time of both the reconnaissance visits in 2016 and the detail field investigations in 2017, they likely travelled through the piped section from the SWM pond and into the culvert crossing under Dufferin Street. No exceptional spawning, rearing, or feeding habitat was noted in the inlet area. Due to the low number of individuals seen, and the overall size of the watercourse, this reach likely does not support a permanent fish population.

2.4 VEGETATION AND FLORA

The landscape along Langstaff Road is dominated by manicured commercial and residential areas and associated sidewalks / roadsides, with mown grass and planted landscape trees. Natural areas are limited to three discrete locations along Langstaff Road; a SWM pond (shown on **Figure 2-6**, **Appendix A**) with surrounding naturalized vegetation, including a large (9.3 ha) woodlot, a corridor of floodplain vegetation surrounding the Don River West Branch, and the cultural ROW vegetation associated with the Highway 400 interchange in the western end of the study area. Details of the vegetation species and communities in the study area are presented in the following sections, and detailed in **Appendix B**.

2.4.1 *FLORA OVERVIEW*

A total of 101 vascular plants were identified during the field surveys, all but two of which were identified to species level. Of the species recorded by WSP, 58 (57%) are native, and 43 (43%) are non-native. Of the 58 native species recorded for which CC values are provided, CC values range from 0 to 8, with the majority between 3 and 5. All native species have a provincial ranking of S4 or S5 [apparently secure (S4) or secure (S5) in Ontario], and are not listed under the *ESA* (2007).

A total of 12 species are considered regionally significant by the TRCA and Varga et al. (2000). The location and abundance of these species are listed and locations are described in **Section 2.6.2**.

2.4.2 *VEGETATION COMMUNITIES OVERVIEW*

Seven vegetation community types as classified by the ELC system were delineated within the study area, as shown in **Figures 2-1 to 2-6**, **Appendix A**. All of these communities are considered common in southern Ontario (Bakowsky, 1996/NHIC).

The TRCA (2010) ranks all of the ELC communities as either L5 (generally secure throughout the jurisdiction, including the urban matrix), L4 (generally secure in the rural matrix, of concern in urban matrix), or L+ (Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic). The seven community types delineated in the study area are described below and delineated on **Figures 2-1 to 2-6** (**Appendix A)** with representative photos provided in **Appendix F**.

- Dry-Moist Old Field Meadow (CUM1-1; Unit 2, 7; L+): Though these units are different in character despite a shared classification, Unit 7 supports a dense layer of herbaceous ground vegetation, consisting of a wide range of common early successional, upland, disturbance-tolerant species including Kentucky Bluegrass (*Poa pratensis* ssp. *pratensis*), Awnless Brome (*Bromus inermis* ssp *inermis*), Tall Goldenrod (*Solidago altissima*), Creeping Thistle (Canada Thistle) (*Cirsium arvense*), White Clover (*Trifolium repens*), Colt's Foot (*Tussilago farfara*), Tufted Vetch (*Vicia cracca*), Meadow Goat's-beard (*Tragopogon dubius*), Self-heal (*Prunella vulgaris* ssp. *lanceolata*), and Garden Bird's-foot-trefoil (*Lotus corniculatus)*. Additionally, patches of wetland species such as Reed Canary Grass, Narrow-leaved Cattail (*Typha angustifolia*) were interspersed within the drainage ditches and depressions.

  Unit 2 is poorly drained compared to Unit 1, given its location in a low lying floodplain, and supports a lower diversity of species, with a greater percentage of wetland species. These include abundant Reed Canary Grass, European Swallow-wort (*Cynanchum rossicum*), Wild Mock-cucumber (*Echinocystis lobata*), Stinging Nettle (*Urtica dioica* ssp. *dioica*), and frequent Common Milkweed (*Asclepias syriaca*), Creeping Thistle, Field Bindweed (*Convolvulus arvensis*), Tall Goldenrod, Sweet Joe-pye-weed (*Eupatorium purpureum* var *purpureum*). These units are regularly subject to anthropogenic disturbance, maintenance and pollution from the roads and highways (particularly adjacent to Highway 400). A high proportion of invasive species and low botanical quality provide evidence of such disturbance.

- Mineral Sumac Cultural Thicket (CUT1-1; Unit 6; L5): This unit forms a mosaic with Unit 2 (described above), north of Langstaff Road. It supports a dense shrub layer consisting of dominant Staghorn Sumac (*Rhus typhina*), with abundant Sandbar Willow (*Salix interior*), and Heart-leaved Willow (*Salix eriocephala*). Occasional White Willows (*Salix alba*), are present in the sparse canopy layer. The ground cover is the same as described above for Unit 2.

- Mineral Cultural Savannah (CUS1; Unit 3; L+): This unit is a manicured park area, with a memorial. The canopy is somewhat sparse, and contains mature Bur Oak (*Quercus macrocarpa* var. *macrocarpa*), Black Walnut (*Juglans nigra*), Wild Black Cherry (*Prunus serotina*), and American Basswood (*Tilia americana*). The shrub layer contains rare Buckthorn (*Rhamnus cathartica*) and is extremely sparse. The ground cover consists of mowed grass (Kentucky Bluegrass, Self-heal, Black

Medic [*Medicago lupulina*], violet species [*Viola* sp.]) and garden escapes (European Lily-of-the-valley [*Convallaria majalis*]) on the outskirts of the unit where it is un-mowed.

- Mineral Cultural Woodland Ecosite (CUW1; Unit 5; L+): This unit is a very small young wooded area directly adjacent to Langstaff Road. The sparse canopy layer contains American Basswood (*Tilia americana*), Black Walnut (*Juglans nigra*), Bur Oak (*Quercus macrocarpa* var. *macrocarpa*), and Common Apple (*Malus pumila*). The shrub layer is dense and supports primarily non-native species including Tartarian Honeysuckle (*Lonicera tatarica*), Buckthorn, Riverbank Grape (*Vitis riparia*), and Staghorn Sumac. The ground layer is sparse and contains an odd assortment of species such as Tall Goldenrod, European Swallow-wort, Common Viper's-bugloss (*Echium vulgare*), Oxeye Daisy (*Leucanthemum vulgare*), Garden Bird's-foot-trefoil, and Kentucky Bluegrass. This unit is heavily disturbed by the close proximity to Langstaff Road and the presence of invasive species.
- Dry-Fresh Sugar Maple – Hickory Deciduous Forest (FOD5-5; Unit 4; L4): This unit is a large mature woodlot located adjacent to the SWM pond. The canopy contains a variety of native species including abundant Sugar Maple (*Acer saccharum* var. *saccharum*), Bitternut Hickory (*Carya cordiformis*), and Northern Red Oak (*Quercus rubra*), frequent Black Maple (*Acer nigrum*), American Basswood, White Ash (*Fraxinus americana*), Eastern Hop-hornbeam (*Ostrya virginiana*), and occasional Eastern White Pine (*Pinus strobus*), and Black Walnut. There is also a small inclusion of Coniferous forest (FOC), with species such as Balsam Fir (*Abies balsamea*), Tamarack (*Larix laricina*), and Black Spruce (*Picea mariana*). The shrub layer contains native and non-native species such as Common Raspberry (*Rubus idaeus* ssp. *strigosus*), Northern Poison Oak (*Toxicodendron rydbergii*), English Hawthorn (*Crataegus monogyna*), Choke Cherry (*Prunus virginiana* var. *virginiana*), Dotted Hawthorn (*Crataegus punctata*), Prickly Gooseberry (*Ribes cynosbati*), Buckthorn American Fly-honeysuckle (*Lonicera canadensis*), and Guelder-rose Viburnum (*Viburnum opulus*). The ground layer is sparse, and included species such as Garlic Mustard (*Alliaria petiolata*), sedge (*Carex* sp.), Herb-robert (*Geranium robertianum*), Enchanter's Nightshade (*Circaea lutetiana* ssp *canadensis*), Jack-in-the-pulpit (*Arisaema triphyllum* ssp *triphyllum*), Virginia Stickseed (*Hackelia virginiana*), Two-leaf Bishop's-cap (*Mitella diphylla*), Bittersweet Nightshade (*Solanum dulcamara*), Heart-leaved Aster (*Symphyotrichum cordifolium*), and Virginia Waterleaf (*Hydrophyllum virginianum*).The edges of this woodlot are disturbed by the proximity to Langstaff Road and Dufferin Street and the presence of invasive species, however the interior is relatively undisturbed.
- Fresh Moist Willow Lowland Deciduous Forest (FOD7-3; Unit 1; L5): This unit is mid-aged and is associated with the Don River West Branch, and located south of Langstaff Road. The canopy is sparse, and dominated by Crack Willow (*Salix fragilis*) with frequent American Elm (*Ulmus americana*), Black Walnut, Manitoba Maple and rare Norway Maple (*Acer platanoides*). The shrub layer contains Wild Red Raspberry Riverbank Grape (*Vitis riparia*), Staghorn Sumac and Tartarian Honeysuckle. The ground cover sparse in the interior of the unit, and denser near the edges. Species include upland and wetland plants, such as Common Milkweed, Common Reed, European Swallow-wort, Enchanter's Nightshade, Wild Mock-cucumber, Dame's Rocket (*Hesperis matronalis*), Purple Loosestrife (*Lythrum salicaria*), Hog-peanut (*Amphicarpaea bracteata*), Rough Avens (*Geum laciniatum*), Fringed Loosestrife (*Lysimachia ciliata*), and Stinging Nettle (*Urtica dioica* ssp. *Dioica*). This unit is likely a result of disturbance. This unit contains a number of snags that may provide wildlife habitat.

There is one SWM pond within the study area identified in **Figures 2-1 to 2-6** in **Appendix A**. Associated vegetation consists of planted shrubs and trees that have naturalized and filled in overtime. As it is not a natural community, it is not discussed further within this report.

2.5 WILDLIFE

Habitat features present within the study area and broader landscape include urban environments, semi-natural features (e.g., cultural meadows, SWM ponds, planted trees, thickets and hedgerows) and natural vegetation features (e.g., riparian corridor and forest). Habitats within the study area show varying levels of previous disturbance. With the exception of one SAR (Monarch [*Danaus plexippus*]), the suite of wildlife species found was common and expected of cultural and open field habitats and small natural forest patches. During the 2017 field investigations, a total of 23 avifauna, four mammal and five insect species (total of 51 wildlife species) were recorded within the study area. Lists of breeding birds and incidental wildlife observed within the study area are presented in **Appendix C.**

No confirmed SWH features were identified by MNRF or identified in the field; however, one candidate SWH feature is discussed in **Section 2.7**.

2.5.1 *BIRDS*

During the 2016 and 2017 field investigations, a total of 23 avifauna were recorded within the study area; and of these, 22 species were recorded with breeding evidence (possible, probable or confirmed according to OBBA protocol). Turkey Vulture was the only species with no breeding evidence.

Most of the bird species recorded in the study area are common throughout southern Ontario and expected given the types of habitat available (forest, forest edge, cultural meadow and urban / semi-urban environments). High numbers of urban tolerant bird species were recorded, such as American Robin (*Turdus migratorius*), Black-capped Chickadee (*Poecile atricapillus*), American Goldfinch (*Spinus tristis*), European Starling (*Sturnus vulgaris*) and Song Sparrow (*Melospiza melodia*). Species associated with deciduous forest habitats (ELC Unit 4) were recorded including, American Redstart (*Setophaga ruticilla*), Red-eyed Vireo (*Vireo olivaceus*) and Downy Woodpecker (*Picoides pubescens*); in addition to species associated with riparian forest / floodplain habitats (Unit 1), including Common Yellowthroat (*Geothlypis trichas*), Red-winged Blackbird (*Agelaius phoeniceus*) and Warbling Vireo (*Vireo gilvus*).

No SAR birds, nor provincially significant species (S-Rank S1-S3) were recorded within the study area in 2016 or 2017. The study area has some potential for supporting a number of other SAR birds; potential for SAR is assessed further in the habitat screening as discussed in **Section 2.6.3**.

2.5.2 *MAMMALS*

Observations and/or signs of four mammal species were recorded within the study area during the field surveys; Eastern Chipmunk (*Tamias striatus*), White-tailed Deer (*Odocoileus virginianus*), Grey Squirrel (*Sciurus carolinensis*) and Coyote (*Canis latrans*). However, the general area likely supports a range of other mammals often found in similar habitats, including: Groundhog (*Marmota monax*), Raccoon (*Procyon lotor*), Eastern Cottontail (*Sylvilagus floridanus*), Red Squirrel (*Tamiasciurus hudsonicus*), Striped Skunk (*Mephitis mephitis*), Red Fox (*Vulpes vulpes*), and a number of small mammals that often go undetected such as Meadow Vole (*Microtus pennsylvanicus*), White-footed Mouse (*Peromyscus leucopus*) and Woodland Jumping Mouse (*Napaeozapus insignis*) (Dobbyn, 1994).

None of the recorded mammal species are SAR or SCC and all have a provincial S-Rank of 5 (Secure). Forested habitats within the study area exhibit potential to support SAR mammals, specifically Small-footed Bat (*Myotis leibii*), Little Brown Bat (*Myotis lucifugus*), Tri-colored Bat (*Perimyotis subflavus*) and Northern Long-eared Bat (*Myotis septentrionalis*), and are discussed further in **Section 2.6.3**.

2.5.3 HERPETILES

No herpetofauna (e.g., amphibian and reptile) species, including SAR, were observed during the 2016 and 2017 field surveys; however, the general area contains habitat for, and may support, several herpetofauna species found in similar habitats, including: American Toad (*Anaxyrus americanus*), Dekay's Brownsnake (*Storeria dekayi dekayi*), and Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) (Ontario Nature, 2017). No specialized habitat features (e.g. amphibian breeding, or reptile overwintering habitat) were observed or are likely to occur in the study area.

2.6 SPECIES OF CONSERVATION CONCERN

For the purposes of this report, the term SAR refers to those species listed as Endangered, Threatened and Special Concern, under the *Species at Risk Act* (*SARA*) and/or listed on the Species At Risk in Ontario (SARO) List (Ontario Regulation 230/08) and protected under Ontario's *Endangered Species Act*, 2007 (*ESA*, 2007). The term SCC encompasses: both SAR and additional species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and/or species designated by the Committee on the Status of Species at Risk in Ontario (COSSARO), as well as provincially rare species (MNRF S-Rank of S1 to S3), MNRF "Area Sensitive" species (SWH Criteria Schedules; MNRF, 2015) and locally / regionally significant species (TRCA rank of L1 to L3 and MNRF R-ranked species). Specific targeted surveys for SCC were not undertaken as part of the project scope.

Prior to field surveys, a list of SCC with potential to be present within the study area was generated by compiling a 'long list' of SCC known to be present in the general vicinity based on background resources (e.g., NHIC records, MNRF Regional SAR species lists and MNRF / TRCA consultation). This long list was then screened in relation to the habitats present in the study area to exclude those species with no potential to be present. This screening exercise is presented in **Appendix D**. Observations by WSP during 2016 and 2017 either confirmed presence of these SCC and/or augmented the list.

All SCC found during the field surveys were recorded and are listed below.

2.6.1 WILDLIFE SCC CONFIRMED IN THE STUDY AREA

Field surveys in 2016 and 2017, confirmed the presence of one wildlife SCC within the study area:

- **Monarch** (*Danaus plexippus*) – Listed as Endangered by COSEWIC and Special Concern by COSSARO, and listed under *SARA* (2002) and *ESA* (2007). In 2017, four individual were observed foraging south of Langstaff Road, and two were observed foraging north of Langstaff Road, both in ELC Unit 2. This species is common within the broader landscape and likely to forage in a variety of cultural meadow habitats found throughout the study area; however, a patch of moderately concentrated Milkweed plants was identified in Unit 2 along the edge of Unit 1, approximately 50 m south of Langstaff Road.

2.6.2 VEGETATION SCC CONFIRMED IN THE STUDY AREA

A number of vegetation SCC were confirmed within the study area including four species with an S-Rank of S4, meaning is it Apparently Secure (uncommon but not rare, but with some cause for long-term concern) in the province, and 13 Regionally Significant species (L1-L3 or R) designated as such by the TRCA (2003)[3], or City of Toronto (Varga, 2000)[4], as follows:

Table 2-4: Provincially and Regionally Significant Plant Species in the Study Area.

COMMON NAME	ACCEPTED NAME	S-RANK	TRCA RANK	CITY OF TORONTO RANK	ELC UNIT LOCATION	LIKELY A LANDSCAPED SPECIES
Broad Waterweed	*Elodea canadensis*	S5	L3	-	Unit 1	
Sweet Joe-pye-weed	*Eupatorium purpureum* var *purpureum*	S4	L3	R	Unit 2	✓
Smooth Oxeye	*Heliopsis helianthoides*	S5	L2	R	Unit 2	✓
Rough Avens	*Geum laciniatum*	S4	L3	-	Unit 1	
White Heath Aster	*Symphyotrichum pilosum* var *pilosum*	S5	L3	R	Unit 7	
Balsam Fir	*Abies balsamea*	S5	L3	-	Unit 4	
Eastern Ninebark	*Physocarpus opulifolius*	S5	L3	R	Unit 7	✓
American Fly-honeysuckle	*Lonicera canadensis*	S5	L3	-	Unit 4	

[3] Codes are defined as follows:

L1: Of concern regionally; almost certainly rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.

L2: Of concern regionally; probably rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.

L3: Of concern regionally; generally secure in natural matrix; able to withstand minor disturbance.

L4: Of concern in urban matrix; generally secure in rural matrix; able to withstand some disturbance.

L5: Not of concern; generally secure throughout jurisdiction, including urban matrix; able to withstand high levels of disturbance.

LX: Extirpated from the TRCA region with remote chance of rediscovery. Presumably highly sensitive. Not scored.

L+: Exotic. Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic. Not scored.

[4] Codes are defined as follows:

U: Uncommon native species

R: Rare native species

+ or I: Introduced species

X+: Introduced in municipality

COMMON NAME	ACCEPTED NAME	S-RANK	TRCA RANK	CITY OF TORONTO RANK	ELC UNIT LOCATION	LIKELY A LANDSCAPED SPECIES
White Spruce	*Picea glauca*	S5	L3	-	Unit 7	✓
Arrow-leaved Aster	*Symphyotrichum urophyllum*	S4	L3	R	Unit 1	
Tamarack	*Larix laricina*	S5	L3	-	Unit 4	
Smooth Blue Aster	*Symphyotrichum laeve* var *laeve*	S5	L3	R	Unit 7	
Black Spruce	*Picea mariana*	S5	L2	R	Unit 4	
Black Walnut	*Juglans nigra*	S4	L5	-	Units 1, 3, 4, 5	

Provincially, regionally and/or locally rare species are not protected under national / provincial legislation, however opportunities to protect and retain regionally significant species are considered where possible.

2.6.3 SAR WITH POTENTIAL TO OCCUR WITHIN THE STUDY AREA

A review of background information sources (OBBA, NHIC and MNRF Regional SAR Lists) in combination with the assessment of the available habitat indicated there is some potential for 11 SAR to occur within the study area or in the vicinity of the study area. Only one of these species (Monarch) was recorded in the study area during field surveys. However, given the habitat characteristics present in the study area in combination with occurrences of these species in the broader landscape, the following eight wildlife and one plant SAR have moderate - high potential of occurring within the study area:

- Eastern Wood-pewee (*Contopus virens* - Special Concern, COSEWIC and COSSARO): This species is relatively common, and suitable breeding habitat is present in Unit 4. If present, this species is unlikely to nest within the edges of the forest or to move into the study area to forage or defend territory.
- Wood Thrush (*Hylocichla mustelina*- Special Concern, COSEWIC and COSSARO): Wood Thrush is relatively common, and suitable breeding habitat is present in Unit 4. If present, this species is unlikely to nest within the edges of the forest or to move into the study area to forage or defend territory.
- Barn Swallow (*Hirundo rustica* - Threatened, COSEWIC and COSSARO): This species is widespread, and foraging habitat is present over all natural areas, including the SWM pond, within the study area. There is a possibility for this species to occur as a foraging visitant throughout the study area. However, nesting habitat is limited within the study area.
- Four Bat Species (Little Brown Bat [*Myotis lucifugus*], Small-footed Myotis [*Myotis leibii]*, Northern Long-eared Bat [*Myotis septentrionalis]* and Tri-coloured Bat [*Perimyotis subflavus]* – Endangered, COSEWIC and COSSARO): Little Brown Bat and Northern Myotis have a some potential of occurring within the study area, while the other two species have a minimal likelihood (Small-footed Myotis typically uses rocky areas / talus slopes, which are not present in the study area, and Tri-coloured are generally less common in the Region). These species have not been confirmed during field surveys; and, targeted acoustic monitoring / exit surveys were not part of the project scope. Suitable foraging habitat is present over all natural areas and there is limited potential for day roosting within natural areas of the study area. Some potential maternity colony habitat may be present in standing snags with cavities observed in Unit 1, and potentially in Unit 4 see **Figure 2-4 (Appendix A)**. Consultation with MNRF and assessment of potential impacts on SAR bats should be completed during future stages of the project.

- Butternut (*Juglans cinerea* – Endangered, COSEWIC and COSSARO): This species is widespread, and known to occur in the broader landscape, and suitable habitat is present within the study are, specifically in unit 1. However, no Butternuts were observed during field investigations.

2.7 SIGNIFICANT WILDLIFE HABITAT

"Significant Wildlife Habitat" (SWH) is identified by MNRF. As outlined in their Significant Wildlife Habitat Technical Guide (OMNR 2000), SWH is broadly categorized as:

- Seasonal concentration areas (i.e., conifer forests for deer wintering);
- Rare vegetation communities or specialized habitats for wildlife;
- Habitats of species of conservation concern, excluding the habitats of endangered and threatened species;
- Animal movement corridors.

One type of Candidate SWH was identified during field investigations within the study area; Special Concern and Rare Wildlife Species habitat for Monarch. Individuals were observed in Unit 2, as was suitable breeding (Milkweed) and foraging (variety of flowering plants) habitat refer to **Figure 2-4 (Appendix A)**.

3 NATURAL ENVIRONMENTAL EFFECTS

[to be completed at a later date once preliminary plan for the Langstaff Road improvements has been prepared]

3.1 FISHERIES AND AQUATIC HABITAT

[to be completed at a later date]

3.2 VEGETATION RESOURCES

[to be completed at a later date]

3.3 WILDLIFE RESOURCES

[to be completed at a later date]

3.4 SPECIES OF CONSERVATION CONCERN

[to be completed at a later date]

3.4.1 *VEGETATION*

[to be completed at a later date]

3.4.2 *WILDLIFE*

[to be completed at a later date]

4 NATURAL ENVIRONMENTAL MITIGATION

4.1 FISHERIES AND AQUATIC RESOURCES

[to be completed at a later date]

4.2 VEGETATION

[to be completed at a later date]

4.3 WILDLIFE

[to be completed at a later date]

4.4 SPECIES OF CONSERVATION CONCERN

[to be completed at a later date]

5 COMMITMENTS TO FUTURE WORK

[to be completed at a later date]

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APPENDIX

A FIGURES

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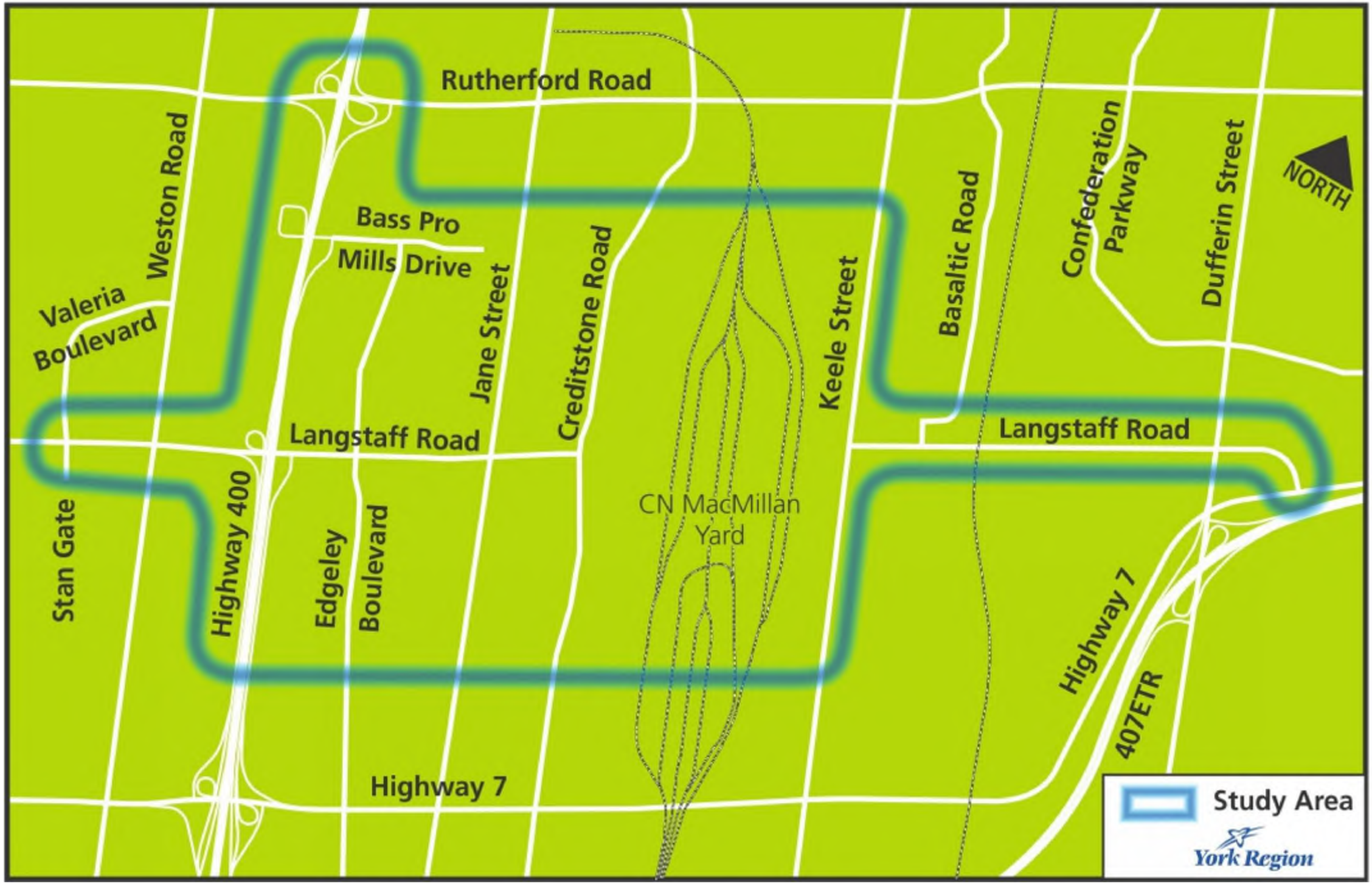

WSP	LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT **Study Area**		Date: December 2017 Project No: 16M-01457-01 Figure No: 1a

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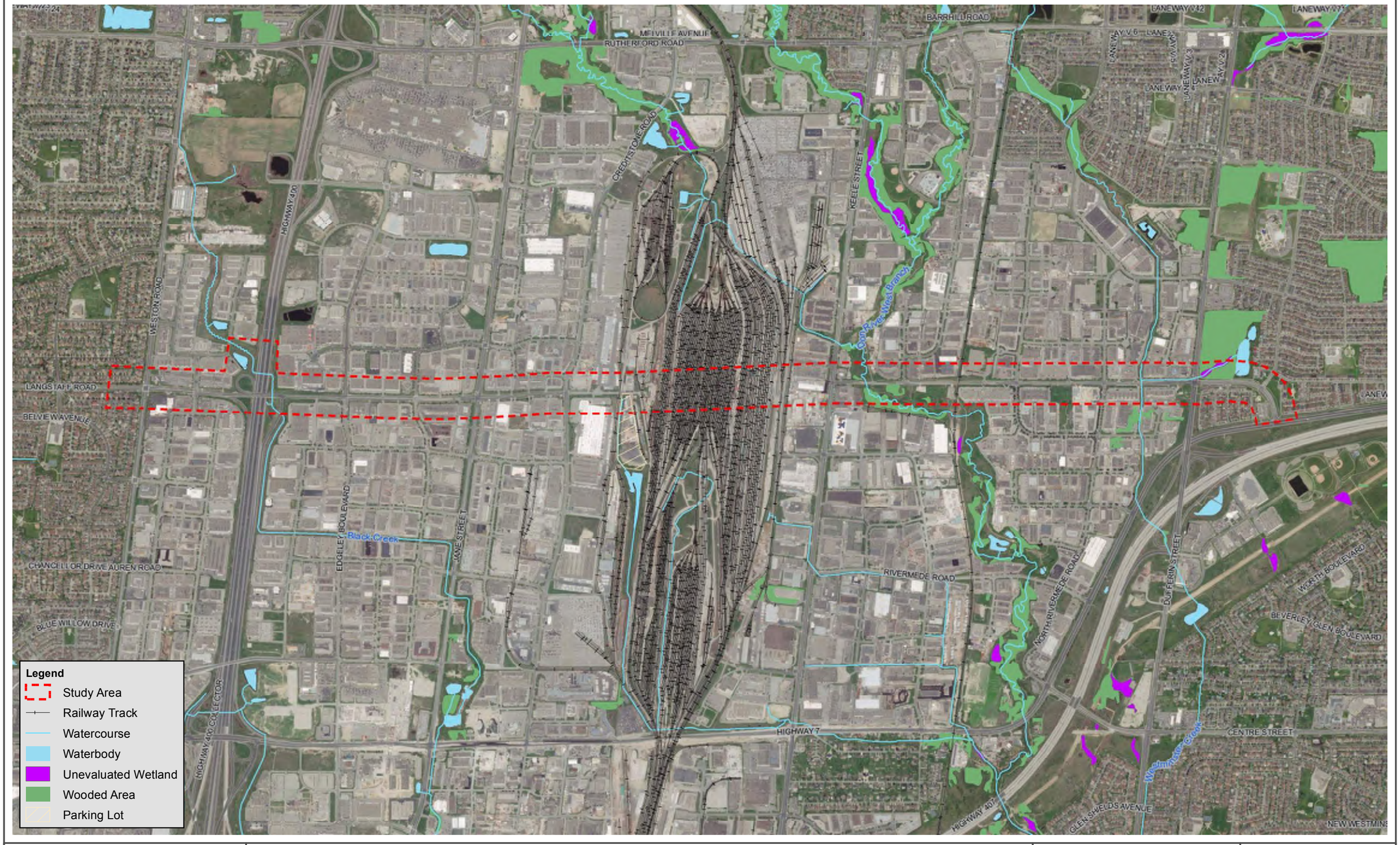

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Heritage Features

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Date: December 2017

Project No: 16M-01457-01

Figure No: 1b

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STORMWATER MANAGEMENT POND

Black Creek

LANGSTAFF ROAD

WESTON ROAD

HIGHWAY 400 COLLECTOR

HIGHWAY 400

Unit 7 CUM1-1

Unit 7 CUM1-1

Unit 7 CUM1-1

Unit 7 CUM1-1

Unit 7 CUM1-1

Unit 7 CUM1-1

Legend

- Direct Fish Habitat
- Flow Direction

Aquatic Features

- Culvert
- Permanent Watercourse
- Study Area

Terrestrial Features

- Vegetation Community

ELC - Description

CUM1-1: Dry – Moist Old-Field Cultural Meadow

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Environment Features

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Metres
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Date: December 2017

Project No: 16M-01457-01

Figure No: 2 – 1

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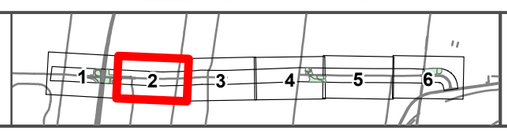
LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features



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Project No: 16M-01457-01
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LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features

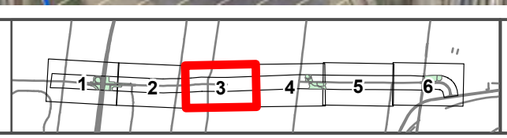

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Figure No: 2 – 3

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Legend

- Study

Aquatic Features

- Culvert
- Permanent Watercourse
- Direct Fish Habitat

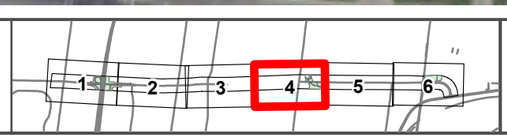
Terrestrial Features

- Vegetation Community
- Cavity Tree
- Monarch

ELC - Description

- CUM1-1: Dry – Moist Old-Field Cultural Meadow
- CUS1: Mineral Cultural Savannah
- CUT1-1: Mineral Sumac Cultural Thicket
- CUW1: Mineral Cultural Woodland
- FOD7-3: Fresh Moist Willow Lowland Deciduous Forest
- ASCLSYR: Common Milkweed (Asclepias syriaca)

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features



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Date: December 2017
Project No: 16M-01457-01
Figure No: 2 – 4

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LANGSTAFF ROAD

NORTH RIVERMEDE ROAD

Unit 3
CUS1

Unit 2
CUM1-1

Unit 1
FOD7-3

Legend

Study

Terrestrial Features

Vegetation Community

ELC - Description

CUM1-1: Dry – Moist Old-Field Cultural Meadow

CUS1: Mineral Cultural Savannah

FOD7-3: Fresh Moist Willow Lowland Deciduous Forest

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features

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Date: December 2017

Project No: 16M-01457-01

Figure No: 2 – 5

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Legend

- Study Area

Aquatic Features

- Culvert
- Intermittent Watercourse
- Permanent Watercourse
- Direct Fish Habitat
- Vertical Box Culvert

Terrestrial Features

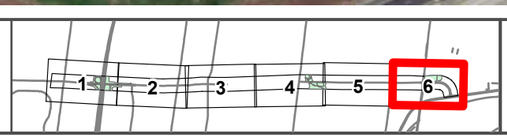
- Vegetation Community

ELC - Description

FOD5-5: Dry-Fresh Sugar Maple – Hickory deciduous Forest

OAO: Open Aquatic

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT
Natural Environment Features



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Date: December 2017
Project No: 16M-01457-01
Figure No: 2 – 6

APPENDIX

B VASCULAR PLANT LIST

Table B-1: Incidental wildlife observed within the study area.

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc [1]	cw [1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[7]	Toronto Region Conservation Rank (2003)[8]	native status
Box Elder	*Acer negundo*	0	-2	X	G5	S5			X	L+ ?	N
Common Milkweed	*Asclepias syriaca*	0	5		G5	S5			X	L5	N
Reed Canary Grass	*Phalaris arundinacea*	0	-4	X	G5	S5			X	L+ ?	N
Norway Maple	*Acer platanoides*	*	5		GNR	SNA			X	L+	I
Common Reed	*Phragmites australis*	0	-4		G5	S4?			X	L+ ?	N
Common Yarrow	*Achillea millefolium ssp millefolium*	*	3		G5T5 ?	SNA			X	L+	I
Garlic Mustard	*Alliaria petiolata*	*	0		GNR	SNA			X	L+	I
Wild Red Raspberry	*Rubus idaeus ssp. strigosus*	0	-2		G5T5	S5			X	L5	N
Lesser Burdock	*Arctium minus*	*	5		GNR	SNA			X	L+	I
Common Raspberry	*Rubus idaeus ssp. strigosus*	0	-2		G5T5	S5			X	L5	N
Northern Poison Oak	*Toxicodendron rydbergii*	0	0		G5	S5			X	L5	N
Awnless Brome	*Bromus inermis ssp inermis*	*	5		GNR	SNA			X	L+	I
Sedge Species	*Carex sp.*										N
Riverbank Grape	*Vitis riparia*	0	-2		G5	S5			X	L5	N
Staghorn Sumac	*Rhus typhina*	1	5		G5	S5			X	L5	N
Creeping Thistle (Canada Thistle)	*Cirsium arvense*	*	3		GNR	SNA			X	L+	I
European Lily-of-the-valley	*Convallaria majalis*	*	5		G5	SNA			X	L+	I
Field Bindweed	*Convolvulus arvensis*	*	5		GNR	SNA			X	L+	I

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc [1]	cw [1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[7]	Toronto Region Conservation Rank (2003)[8]	native status
English Hawthorn	*Crataegus monogyna*	*	5		G5	SNA			X	L+	I
Tall Goldenrod	*Solidago altissima*	1	3		G5	S5			X	L5	N
European Swallow-wort	*Cynanchum rossicum*	*	5		GNR	SNA			X	L+	I
Queen Anne's Lace	*Daucus carota*	*	5		GNR	SNA			X	L+	I
Barnyard Grass	*Echinochloa crus-galli*	*	-3	X	GNR	SNA			X	L+	I
Canada Goldenrod	*Solidago canadensis*	1	3		G5	SNR			X	L5	N
Common Viper's-bugloss	*Echium vulgare*	*	5		GNR	SNA			X	L+	I
Broad Waterweed	*Elodea canadensis*	4	-5	X	G5	S5			X?	L3	N
Winged Spindle-tree	*Euonymus alata*	*	5		GNR	SNA			X	L+	I
Sweet Joe-pye-weed	*Eupatorium purpureum var purpureum*	8			G5T5?	S4			R	L3	N
Choke Cherry	*Prunus virginiana var. virginiana*	2	1		G5T5	S5			X	L5	N
Herb-robert	*Geranium robertianum*	*	5		G5	SNA			X	L+?	I
New England Aster	*Symphyotrichum novae-angliae*	2	-3		G5	S5			X	L5	N
Enchanter's Nightshade	*Circaea lutetiana ssp canadensis*	3	3		G5T5	S5			X	L5	N
Wild Mock-cucumber	*Echinocystis lobata*	3	-2	X	G5	S5			X	L5	N
Dame's Rocket	*Hesperis matronalis*	*	5		G4G5	SNA			X	L+	I
Meadow Hawkweed	*Hieracium caespitosum*	*	5		GNR	SNA			X	L+	I
Smooth Oxeye	*Heliopsis helianthoides*	3	5		G5	S5			R	L2	N
St. John's-wort	*Hypericum perforatum*	*	5		GNR	SNA			X	L+	I
Wild Black Cherry	*Prunus serotina*	3	3		G5	S5			X	L5	N
Sandbar Willow	*Salix interior*	3	-5	X	G5	S5			X	L5	N
Oxeye Daisy	*Leucanthemum vulgare*	*	5		GNR	SNA			X	L+	I

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	Accepted Name (Nature Serve Explorer - June 2013)	cc [1]	cw [1]	OWES Wetland Plant List	Grank[2]	Srank[3]	COSEWIC[4]	MNR[5]	Greater Toronto Area (Varga et al. 2000)[7]	Toronto Region Conservation Rank (2003)[8]	native status
Calico Aster	*Symphyotrichum lateriflorum var. lateriflorum*	3	-2	X	G5T5	SNR				L5	N
Tartarian Honeysuckle	*Lonicera tatarica*	*	3		GNR	SNA			X	L+	I
Garden Bird's-foot-trefoil	*Lotus corniculatus*	*			GNR	SNA			X	L+	I
Narrow-leaved Cattail	*Typha angustifolia*	3	-5	X	G5	SNA			X	L+	I
Purple Loosestrife	*Lythrum salicaria*	*	-5	X	G5	SNA			X	L+	I
Common Apple	*Malus pumila*	*	5		G5	SNA			X	L+	I
Black Medic	*Medicago lupulina*	*	1		GNR	SNA			X	L+	I
Broad-leaf Cattail	*Typha latifolia*	3	-5	X	G5	S5			X	L4	N
Blue Cattail	*Typha x glauca*	3	-5	X	GNA	SNA			X	L+	N
American Elm	*Ulmus americana*	3	-2	X	G5?	S5			X	L5	N
Sugar Maple	*Acer saccharum var. saccharum*	4	3		G5T5	S5			X	L5	N
Hog-peanut	*Amphicarpaea bracteata*	4	0	X	G5	S5			X	L5	N
Dotted Hawthorn	*Crataegus punctata*	4	5		G5	S5			X	L5	N
Norway Spruce	*Picea abies*	*	5		G5	SNA			X	L+	I
White Ash	*Fraxinus americana*	4	3		G5	S5			X	L5	N
Rough Avens	*Geum laciniatum*	4	-3	X	G5	S4			X	L3	N
Fringed Loosestrife	*Lysimachia ciliata*	4	-3	X	G5	S5			X	L5	N
Kentucky Bluegrass	*Poa pratensis ssp. pratensis*	*	1		G5T5	S5			X	L+	N
Curly Pondweed	*Potamogeton crispus*	*	-5	X	G5	SNA			X	L+	I
Eastern Hop-hornbeam	*Ostrya virginiana*	4	4		G5	S5			X	L5	N
Eastern White Pine	*Pinus strobus*	4	3	X	G5	S5			X	L4	N
Prickly Gooseberry	*Ribes cynosbati*	4	5		G5	S5			X	L5	N
Heart-leaved Willow	*Salix eriocephala*	4	-3	X	G5	S5			X	L5	N
White Heath Aster	*Symphyotrichum pilosum var. pilosum*	4	2		G5T5	S5			R	L3	N

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	**Accepted Name (Nature Serve Explorer - June 2013)**	**cc** [1]	**cw** [1]	**OWES Wetland Plant List**	**Grank**[2]	**Srank**[3]	**COSEWIC**[4]	**MNR**[5]	**Greater Toronto Area** (Varga et al. 2000)[7]	**Toronto Region Conservation Rank** (2003)[8]	**native statu s**
Buckthorn	*Rhamnus cathartica*	*	3	X	GNR	SNA			X	L+	I
American Basswood	*Tilia americana*	4	3		G5	S5			X	L5	N
Balsam Fir	*Abies balsamea*	5	-3	X	G5	S5			X	L3	N
Red Raspberry	*Rubus idaeus ssp. Idaeus*		0		G5T5	SNA			X		I
Jack-in-the-pulpit	*Arisaema triphyllum ssp triphyllum*	5	-2	X	G5T5	S5			X	L4	N
Virginia Stickseed	*Hackelia virginiana*	5	1		G5	S5			X?	L5	N
White Willow	*Salix alba*	*	-3	X	G5	SNA			X	L+	I
Black Walnut	*Juglans nigra*	5	3		G5	S4			X	L5	N
Crack Willow	*Salix fragilis*	*	-1		GNR	SNA				L+	I
Two-leaf Bishop's-cap	*Mitella diphylla*	5	2	X	G5	S5			X	L4	N
Bouncing-bet	*Saponaria officinalis*	*	3		GNR	SNA			X	L+	I
Bittersweet Nightshade	*Solanum dulcamara*	*	0	X	GNR	SNA			X	L+	I
Eastern Ninebark	*Physocarpus opulifolius*	5	-2	X	G5	S5			R	L3	N
Self-heal	*Prunella vulgaris ssp. lanceolata*	5	5	X	G5T5	S5			X	L+ ?	N
Bur Oak	*Quercus macrocarpa var. macrocarpa*	5	1	X	G5T5	SN R			X	L4	N
Heart-leaved Aster	*Symphyotrichum cordifolium*	5	5		G5	S5			X	L5	N
Bitternut Hickory	*Carya cordiformis*	6	0		G5	S5			X	L4	N
Virginia Waterleaf	*Hydrophyllum virginianum*	6	-2		G5	S5			X	L5	N
American Fly-honeysuckle	*Lonicera canadensis*	6	3		G5	S5			X	L3	N
Virginia Creeper	*Parthenocissus quinquefolia*	6	1		G5	S4?			X	L5	N
Common Lilac	*Syringa vulgaris*	*	5		GNR	SNA			X	L+	I
Common Dandelion	*Taraxacum officinale*	*	3		G5	SNA			X	L+	I
White Spruce	*Picea glauca*	6	3	X	G5	S5			X	L3	N

Common Name (Nature Serve Explorer - June 2013 or VASCAN 2015) (MNRF name if different - for SAR and select common species, 2015)	**Accepted Name (Nature Serve Explorer - June 2013)**	**cc** [1]	**cw** [1]	**OWES Wetland Plant List**	**Grank**[2]	**Srank**[3]	**COSEWIC**[4]	**MNR**[5]	**Greater Toronto Area** (Varga et al. 2000)[7]	**Toronto Region Conservation Rank** (2003)[8]	**native statu s**
Northern Red Oak	*Quercus rubra*	6	3		G5	S5			X	L4	N
Meadow Goat's-beard	*Tragopogon dubius*	*	5		GNR	SNA			X	L+	I
Red Clover	*Trifolium pratense*	*	2		GNR	SNA			X	L+	I
White Clover	*Trifolium repens*	*	2		GNR	SNA			X	L+	I
Colt's Foot	*Tussilago farfara*	*	3	X	GNR	SNA			X	L+	I
Arrow-leaved Aster	*Symphyotrichum urophyllum*	6	5		G4	S4			R	L3	N
Black Maple	*Acer nigrum*	7	3		G5	S4?			X	L4	N
Tamarack	*Larix laricina*	7	-3	X	G5	S5			X	L3	N
Smooth Blue Aster	*Symphyotrichum laeve var. laeve*	7	5		G5T5	S5			R	L3	N
Stinging Nettle	*Urtica dioica ssp. dioica*	*	-1		G5T5 ?	SNA			X	L+	I
Guelder-rose Viburnum	*Viburnum opulus*	*	0		G5	SNA			X	L+	I
Tufted Vetch	*Vicia cracca*	*	5		GNR	SNA			X	L+	I
Violet Species	*Viola sp.*										N
Black Spruce	*Picea mariana*	8	-3	X	G5	S5			R	L2	N

Plant List Legend

Accepted Name and Author
Accepted Name and Author were updated primarily using NatureServe Explorer (Updated June 2013), in combination with the Integrated Taxonomic Information System (ITIS), United States Department of Agriculture (USDA) Plants Database, and the New York Flora Atlas.

NatureServe Explorer: http://www.natureserve.org/explorer/index.htm
ITIS: http://www.itis.gov/
USDA Plants: http://plants.usda.gov/java/
New York Flora Atlas: http://newyork.plantatlas.usf.edu/Default.aspx

[1]Coefficient of Conservatism and Coefficient of Wetness

CC: Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.
CW: Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.

[2]G-Rank (Global)
(Global Status from MNR Biodiversity Explorer September 2012)

Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

Global (G) Conservation Status Ranks
G1: Extremely rare – usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2: Very rare – usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3: Rare to uncommon – usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4: Common – usually more than 100 occurrences; usually not susceptible to immediate threats.
G5: Very common – demonstrably secure under present conditions.

Variant Ranks
G#G#: Range Rank – A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
GU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range

of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.

GNR: Unranked – Global rank not yet assessed

GNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Rank Qualifiers

?: Inexact Numeric Rank – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.

Q: Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower priority (numerically higher) conservation status rank. The "Q" modifier is only used at a global level and not at a national or subnational level.

C: Captive or Cultivated Only – Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The "C" modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to "Extinct" in the Wild (EW) in IUCN's Red List terminology (IUCN 2001).

[3]S-Ranks (Provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.
(Provincial Status from MNR Biodiversity Explorer September 2012)

S1: Critically Imperiled – Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2: Imperiled – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3: Vulnerable – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4: Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: Secure – Common, widespread, and abundant in the nation or state/province.

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SX: Presumed Extirpated – Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SH: Possibly Extirpated (Historical) – Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SE: Species is considered exotic in Ontario

SNR: Unranked – Nation of state/province conservation status not yet assessed.

SU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.[1]

[4]COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
(federal status from COSEWIC November 2012)

EXT: Extinct – A species that no longer exists.

EXP: Extirpated – A species no longer existing in the wild in Canada, but occurring elsewhere.

END: Endangered – A species facing imminent extirpation or extinction.

THR: Threatened – A species likely to become endangered if limiting factors are not reversed.

SC: Special Concern (formerly vulnerable) – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

NAR: Not At Risk – A species that has been evaluated and found to be not at risk of extinction given the current circumstances.

DD: Data Deficient (formerly Indeterminate) – Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

Implied COSEWIC Status Notations (Status Due to Taxonomic Relationships)[2]

value (Flagged Value) – The taxon itself is not named in the Canadian Species at Risk list, however, it does have status as a result of its taxonomic relationship to a named entity. For example, if a species has a COSEWIC status of "threatened", then by default, all of its recognized subspecies that occur in Canada also have a threatened status. The subspecies in this example would have the value "$T_{(2)}$" under COSEWIC. Likewise, if all of a species' infraspecific taxa occurring in Canada have the same COSEWIC status, then that status appears in the entry for the "full" species as well. In this case, if the species name is not mentioned in the Canadian Species at Risk list, the status appears with a flag $_{(2)}$ in NatureServe Explorer.

value, value: (Combination values with flags) – The taxon itself is not named in the Canadian Species at Risk list, however, all of its infraspecific taxa occurring in Canada do have status but two or more of the taxa do not have the same status. In this case, a combination of statuses shown with a flag $_{(7)}$ indicates the statuses that apply to infraspecific taxa or populations within this taxon.

[1] Added on June 4, 2013 from http://nhic.mnr.gov.on.ca/glossary/srank.cfm
[2] Added on June 5, 2013 from http://www.natureserve.org/explorer/statusca.htm

PS: Indicates “partial status” – in only a portion of the species’ range in Canada. Typically indicated for a “full’ species where at least one but not all of a species’ infraspecific taxa or populations has COSEWIC status.

PS*value*: Indicates “partial status” – status in only a portion of the species’ range. The value of that status appears because the entity with status (usually a population defined by geopolitical boundaries within Canada) does not have an individual entry in NatureServe Explorer. Information about the entity with status can be found in reports for the associated species.

[5]MNRF (Ministry of Natural Resources and Forestry)

(*Provincial status from MNRF)*
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

EXT: Extinct – A species that no longer exists anywhere.
EXP: Extirpated – A species that no longer exists in the wild in Ontario but still occurs elsewhere.
END: Endangered – A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA).
THR: Threatened – A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC: Special Concern (formerly Vulnerable) – A species with characteristics that make it sensitive to human activities or natural events.
NAR: Not at Risk – A species that has been evaluated and found to be not at risk.
DD: Data Deficient (formerly Indeterminate) – A species for which there is insufficient information for a provincial status recommendation.

[6] SARA (Species at Risk Act) Status and Schedule

The Act establishes Schedule 1, as the official list of species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed species are implemented.

EXT: Extinct – A species that no longer exists.
EXP: Extirpated – A species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END: Endangered – A species that is facing imminent extirpation or extinction.
THR: Threatened – A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC: Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Species at Risk.

Government of Canada. Species at Risk Public Registry. Website: [http://www.sararegistry.gc.ca/default_e.cfm September 27, 2012]

Glossary: http://www.sararegistry.gc.ca/about/glossary/default_e.cfm#e
Species Index A-Z: http://www.sararegistry.gc.ca/sar/index/default_e.cfm
Species Listing by Schedule: http://www.sararegistry.gc.ca/sar/listing/default_e.cfm

[7] Halton, Peel, Toronto, York, Durham, GTA, 6E7, 7E4
The Distribution and Status of the Vascular Plants of the Greater Toronto Area (Varga et. al. 2000).

"Plant rarity is based on the number of locations for a native plant species" and also takes into account native species restricted to specialized rare habitats. For the Greater Toronto Area column, "A species is considered rare in the Greater Toronto Area if it is rare or uncommon in a least four of... Halton, Peel, Toronto, York, and Durham".

Codes are defined as follows:
X: Present
U: Uncommon native species
R: Rare native species
R#: Number of stations for a rare native species
E: Extirpated native species
+ or I: Introduced species
X+: Introduced in municipality
SR: Sight record
LR: Literature record

[8]Toronto and Region Conservation Authority:
From: (TRCA 2003)

L rank (Local Rank) – A rank assigned by TRCA to a species, vegetation community, or habitat patch which describes its rank and level of conservation concern in the TRCA Region. Species of concern, according to the TRCA methodology are any species with a local rank of L1 to L3, and some particularly sensitive species with a rank of L4. They are generally species which are disappearing in the landscape, primarily as a result of land use changes. For flora the ranks are defined as follows (TRCA 2007).

Codes are defined as follows:
L1: Of concern regionally; almost certainly rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.

L2: Of concern regionally; probably rare in TRCA jurisdiction; generally occur in high-quality natural areas, in natural matrix; unable to withstand disturbance.
L3: Of concern regionally; generally secure in natural matrix; able to withstand minor disturbance.
L4: Of concern in urban matrix; generally secure in rural matrix; able to withstand some disturbance.
L5: Not of concern; generally secure throughout jurisdiction, including urban matrix; able to withstand high levels of disturbance.
LX: Extirpated from the TRCA region with remote chance of rediscovery. Presumably highly sensitive. Not scored.
LH: Hybrid between two native species. Usually not scored unless highly stable and behaves like a species.
L+: Exotic. Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic. Not scored.
L+?: Origin uncertain or disputed (i.e., may or may not be native). Not scored.

Native Status

N = Native to Ontario
I = Introduced to Ontario

APPENDIX

C WILDLIFE SURVEY RESULTS

Table C-1: Breeding bird species observed within the study area and their breeding status.

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNR[4]	SARA Status [5]	Schedule [5]	TRCA rank (2008)[6]	Area Sensitive Birds - Ecoregion 7E[7]	Site Visit Details					
										9-Jun-17		23-Jun-17		Overall	
										Number	Highest BE	Number	Highest BE	Highest Breeding Status	Highest Abundance
American Crow	*Corvus brachyrhynchos*	G5	S5B					L5				1	H	POSS	1
American Goldfinch	*Spinus tristis*	G5	S5B					L5		20	S/H	14	S/H	POSS	20
American Redstart	*Setophaga ruticilla*	G5	S5B					L3		1	S/H			POSS	1
American Robin	*Turdus migratorius*	G5	S5B					L5		3	S/H	4	S/H	POSS	4
Baltimore Oriole	*Icterus galbula*	G5	S4B					L5		2	S/H			POSS	2
Black-capped Chickadee	*Poecile atricapillus*	G5	S5					L5		3	S/H	2	S/H	POSS	3
Brown-headed Cowbird	*Molothrus ater*	G5	S4B					L5		2	P			PROB	2
Blue Jay	*Cyanocitta cristata*	G5	S5					L5		2	H			POSS	2
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B					L5		9	H			POSS	9
Common Grackle	*Quiscalus quiscula*	G5	S5B					L5		1	CF	2	S/H	CONF	2
Downy Woodpecker	*Picoides pubescens*	G5	S5					L5		1	H	1	S/H	POSS	1
European Starling	*Sturnus vulgaris*	G5	SNA					L+		8	H	11	H	POSS	11
Hairy Woodpecker	*Picoides villosus*	G5	S5					L4		1	S/H			POSS	1
Northern Cardinal	*Cardinalis cardinalis*	G5	S5					L5		1	H	2	p	PROB	2
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	G5	S4B					L4		3	H			POSS	3
Ring-billed Gull	*Larus delawarensis*	G5	S5B,SZN					L4		1	H	15	H	POSS	15
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B					L4		1	S/H	1	S/H	POSS	1
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4					L5		13	S/H		CF	CONF	13
Song Sparrow	*Melospiza melodia*	G5	S5B					L5		4	S/H	5	S/H	POSS	5
Tree Swallow	*Tachycineta bicolor*	G5	S4B					L4				6	H	POSS	6
Turkey Vulture	*Cathartes aura*	G5	S5B					L4				1	X	NONE	1
Warbling Vireo	*Vireo gilvus*	G5	S5B					L5		4	S/H			POSS	4
Yellow Warbler	*Setophaga petechia*	G5	S5B					L5		10	P			PROB	10

Table C-2: Incidental wildlife observed within the study area.

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNR[4]	SARA Status [5]	Schedule [5]	TRCA rank (2008)[6]
Insects								
Ebony Jewelwing	*Calopteryx maculata*	G5	S5					
Monarch	*Danaus plexippus*	G5	S2N,S4B	END	SC	SC	1	
Little Wood-Satyr	*Megisto cymela*	G5	S5					
Eastern Tiger Swallowtail	*Papilio glaucus*	G5	S5					
Common Whitetail	*Plathemis lydia*	G5	S5					
Mammals								
Coyote	*Canis latrans*	G5	S5					L5
White-tailed Deer	*Odocoileus virginianus*	G5	S5					L4
Grey Squirrel	*Sciurus carolinensis*	G5	S5					L5
Eastern Chipmunk	*Tamias striatus*	G5	S5					L4

Glossary

[1]G-Rank (global)
Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

- G1 Extremely rare - usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
- G2 Very rare - usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
- G3 Rare to uncommon - usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
- G4 Common - usually more than 100 occurrences; usually not susceptible to immediate threats.
- G5 Very common - demonstrably secure under present conditions.

[2]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

- S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
- S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
- S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 Secure - Common, widespread, and abundant in the nation or state/province.
- S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
- SAN Non-breeding accidental.
- SE Exotic - not believed to be a native component of Ontario's fauna.
- SZN Non-breeding migrants/vagrants.
- SZB Breeding migrants/vagrants.

[3]COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
(federal status from COSEWIC April 2014)

- EXT Extinct - A species that no longer exists.
- EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
- END Endangered - A species facing imminent extirpation or extinction.
- THR Threatened - A species likely to become endangered if limiting factors are not reversed.

SC Special Concern (formerly vulnerable) - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR Not At Risk - A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

[4]OMNRF (Ontario Ministry of Natural Resources and Forestry)

EXT Extinct - A species that no longer exists anywhere in the world.
EXP Extirpated - A species that lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.
END Endangered - A species that is facing imminent extinction or extirpation.
THR Threatened - A species that is likely to become endangered if steps are not taken to address factors threatening to lead to its extinction or extirpation.
SC Special Concern – A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

[5]SARA (Species at Risk Act) Status and Schedule
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

EXT Extinct - A wildlife species that no longer exists.
EXP Extirpated **-** A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END Endangered - A wildlife species that is facing imminent extirpation or extinction.
THR Threatened - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC Special Concern - A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[6] Toronto and Region Conservation Authority ranks
L-rank (Local Rank)-A rank assigned by TRCA to a species, vegetation community, or habitat patch which describes its status in the TRCA Region. Species of conservation concern, according to the

TRCA methodology are any species with a local rank of L1 to L3, and those L4 species found within the Urban (built-up area). Generally species which are disappearing in the regional landscape, primarily as a result of land use changes. L1 – regional concern; L2 – regional concern; L3 – regional concern; L4 – urban concern
(from TRCA, August 2008)

[7] MNR Significant Wildlife Habitat Technical Guide Area Sensitive Species
Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers
From: Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Science Section. 151pp. + appendices.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED
X Species observed in its breeding season (no breeding evidence).

POSSIBLE
H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE
P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED
DD Distraction display or injury feigning.
NU Used nest or egg shells found (occupied or laid within the period of the survey).
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS Adult carrying fecal sac.
CF Adult carrying food for young.
NE Nest containing eggs.
NY Nest with young seen or heard.

APPENDIX

D SAR SCREENING TABLE

Table D-1: Species at Risk Screening Table

Species At Risk Designations	
ENDANGERED	
THREATENED	
SPECIAL CONCERN	
EXTIRPATED	

Species	ESA Status[1] and Regional Occurrence	ESA Protection[2]	Source of Record (Date)	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Birds								
Eastern Wood-pewee (Contopus virens)	SC	N/A	MNRF (2017)	Associated with deciduous and mixed forests. Within mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges (MNRF Guelph - Waterloo List, 2014)	High - Potential to occur in Unit 2, which provides breeding habitat; large deciduous forest habitat with a sparse understory.	Breeding Bird Surveys	No observations	None - no impacts to breeding populations are anticipated as this species is unlikely to nest on the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat.
Wood Thrush (Hylocichla mustelina)	SC	N/A	MNRF (2017)	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments (MNRF Guelph - Waterloo List, 2014)	Moderate - Some potential to occur in Unit 2, which provides large deciduous forest habitat, however understory is more sparse than preference.	Breeding Bird Surveys	No observations	None - no impacts to breeding populations are anticipated as this species is unlikely to nest on the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat.
Barn Swallow (Hirundo rustica)	THR	Species and General Habitat Protection	MNRF (2017)	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc. (MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area. Suitable foraging habitat over all natural areas within the study are, including over SWM pond; minimal potential for nesting habitat in nearby buildings.	Breeding Bird Surveys	No observations	Low - unlikely to be impacted as foraging visitant; no confirmed nesting habitat in nearby buildings and other man-made structures.
Common Nighthawk (Chordeiles minor)	SC	N/A	MNRF (2017)	Generally prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops) (MNRF Guelph - Waterloo List, 2014)	Low - Some potential for nesting habitat on flat gravel-topped buildings found on older buildings. May occur as a foraging visitant over waterbodies and natural areas.	Breeding Bird Surveys	No observations	Low - unlikely to be impacted as foraging visitant; no buildings will be impacted from the proposed works, and confirmed nesting habitat.
Insects								
Monarch (Danaus plexippus)	SC	N/A		Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces (MNRF Guelph - Waterloo List, 2014)	High - likely to pass through and / or forage in cultural ecosites or other open natural areas throughout the broader landscape; some potential for breeding wherever Milkweed or other wildflowers are present in study area.	Incidental wildlife and general habitat surveys	A total of six Monarchs were observed in Unit 2	Low - Impacts include incremental removal of habitat. Impacts to breeding and foraging habitat are anticipated to be minor, or temporary, and abundant habitat is present in the broader landscape.

Table D-1: Species at Risk Screening Table

Species At Risk Designations	
ENDANGERED	
THREATENED	
SPECIAL CONCERN	
EXTIRPATED	

Species	ESA Status[1] and Regional Occurrence	ESA Protection[2]	Source of Record (Date)	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Mammals								
Small-footed Bat (Myotis leibii)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark (MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.
Little Brown Bat (Little Brown Myotis) (Myotis lucifugus)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh) (MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.
Tri-colored Bat (Perimyotis subflavus)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Manmade structures or tree cavities. Foraging over still water, rivers, or in forest gaps (COSEWIC 2013f)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.
Northern Long-eared Bat (Northern Myotis) (Myotis septentrionalis)	END	Species and General Habitat Protection	MNRF (2017)	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)(MNRF Guelph - Waterloo List, 2014)	Moderate - Possibility to occur as foraging visitant throughout the study area (limited suitable foraging habitat over SWM ponds); Moderate potential for maternity roost habitat in Unit 4.	Incidental wildlife and general habitat surveys	No observations	Minimal - No impacts to potential maternity roosts are anticipated as this species is unlikely to be present in the outskirts of the forest, and the proposed works fall outside of the core forested unit, retaining all interior habitat. No high quality maternity roost trees observed during fieldwork.
Plants								
Butternut (Juglans Cinerea)	END	Species and General Habitat Protection	MNRF (2017)	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows (MNRF Guelph - Waterloo List, 2014).	High - Some suitable habitat is present along the Don River West branch, and species is known to occur in the broader landscape.	Three-season botanical inventory and ELC	No observations	None - Suitable habitat present within the study area and no individuals were observed.

Table D-1: Species at Risk Screening Table

Species At Risk Designations	
ENDANGERED	
THREATENED	
SPECIAL CONCERN	
EXTIRPATED	

Species	ESA Status[1] and Regional Occurrence	ESA Protection[2]	Source of Record (Date)	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Reptiles								
Blanding's Turtle (Emydoidea blandingii)	THR	Species and General Habitat Protection	MNRF (2017)	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams (MNRF Guelph - Waterloo List, 2014)	Low - limited suitable habitat in the waterbodies present in the study area (Don River West Branch and SWM), however none of these provide quality habitat, or a range of habitat necessary for all life functions (hibernation, breeding, and foraging habitat	Incidental wildlife and general habitat surveys	No observations	Minimal - Suitable habitat is very limited, and no turtles were observed.

APPENDIX

E AGENCY CORRESPONDENCE

Ontario

Aurora MNR
Information Request Form

Name:	Valerie Stevenson
Company Name:	WSP/MMM
Proponent Name:	York Region
Phone Number:	519-743-8777; ext 2283
Email Address:	stevensonv@mmm.ca
Project Name:	Langstaff Road EA - Weston Rd to HWY 7
Property Location:	Langstaff Road - Weston to HWY 7, York Region
Township:	
Lot & Concession:	

UTM Coordinates: Easting (X) _____ Northing (Y) _____

Brief Description of Undertaking: MMM is completing a natural heritage assessment as part of a Class EA for proposed road improvements

Have you previously contacted someone at MNR for information on this site? ☐ Yes ☒ No

If yes, when and who? _____

Provide a map of accurate scale to illustrate footprint/study area of the proposed activity in relation to the surrounding landscape (e.g. property boundaries, roads, waterbodies, natural features, towns, transmission corridors, and other human landmarks). Use of aerial photography is strongly encouraged. Include scale, north arrow and legend.

ATTACHMENTS - I have attached a:

☐ Picture ☒ Map ☐ Other

REQUEST - I would like to request the following information for the property identified above:
**Requires an appointment and remittance of fees. See Information Request Guideline for details.*

☐ *Fish Dot Information (fish and other aquatic species found in a particular area of a watercourse)

☐ *Wetland evaluation and data record - please provide name of wetland if known _____

☐ *ANSI check- sheet - please provide name of ANSI if known _____

☒ Species at Risk

☒ Other sensitive wildlife habitat; significant features

Please forward the completed form to: esa.aurora@ontario.ca
Or send by mail:
Aurora District, Ministry of Natural Resources
50 Bloomington Rd Aurora, ON L4G 0L8

Ministry of
Natural Resources
and Forestry
Aurora District Office
50 Bloomington Road
Aurora, Ontario L4G 0L8

Ministère des
Richesses naturelles
et des Forets

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

February 17, 2017

Valerie Stevenson
Project Manager/Ecologist
MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3
519-743-8777 ext. 2283
stevensonv@mmm.ca

Re: Langstaff Road, Weston Road to Highway 7, Vaughan

Dear Valerie Stevenson,

In your email dated October 14, 2017 you requested information regarding the above location. Apologies for the delayed response.

Species at risk recorded in the vicinity include Butternut (endangered), Blanding's Turtle (threatened), Barn Swallow (threatened), Common Nighthawk (special concern), Eastern Wood-pewee (special concern) and Wood Thrush (special concern). There is potential for endangered bats (i.e., Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat) in cavities. A significant woodland occurs immediately northeast of Langstaff Road and Dufferin Street.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. Appropriate inventory work is needed depending on the undertakings proposed. Approval from MNRF may be required if work you are proposing could cause harm to any species that receive protection under the *Endangered Species Act 2007*.

Species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific sensitive information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca or Bohdan.Kowalyk@Ontario.ca.

Sincerely,

B. Kowalyk

Bohdan Kowalyk, R.P.F.
Technical Specialist, Aurora District, Ontario Ministry of Natural Resources and Forestry

From: Kowalyk, Bohdan (MNRF) <bohdan.kowalyk@ontario.ca>
Sent: Thursday, April 06, 2017 1:02 PM
To: Stevenson, Valerie
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Hello Valerie,

These would be considered warm-water watercourses. In-water works should occur outside the April 1 – June 30 period.

Regards,

Bohdan Kowalyk, R.P.F.
Technical Specialist
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Stevenson, Valerie [mailto:StevensonV@mmm.ca]
Sent: April-06-17 12:41 PM
To: Kowalyk, Bohdan (MNRF)
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Hi Bohdan,

We were wondering if you could please provide thermal regimes and timing windows for watercourses situated within the study area.

Thanks,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3 Canada
T +1 519-743-8777 #2283
F +1 519-743-8778
stevensonv@mmm.ca

www.mmmgrouplimited.com | www.wspgroup.ca

From: Kowalyk, Bohdan (MNRF) [mailto:bohdan.kowalyk@ontario.ca]
Sent: Friday, February 17, 2017 1:41 PM
To: Stevenson, Valerie <StevensonV@mmm.ca>
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Valerie,

The woodland (technically forest) is significant according to criteria established by this Ministry. It has an area of over 1 ha dominated by representative long-lived native species in a municipality (Vaughan) with 12.8% woodland cover. It is identified as a Core Feature in Vaughan's official plan (Schedule 2 – Natural Heritage Network).

Regards,

Bohdan Kowalyk, R.P.F.
Technical Specialist
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Stevenson, Valerie [mailto:StevensonV@mmm.ca]
Sent: February-17-17 1:16 PM
To: ESA Aurora (MNRF)
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Thank you Bohdan.

Can you please provide additional detail on the statement provided below in terms of what makes the woodland 'significant'?

"A significant woodland occurs immediately northeast of Langstaff Road and Dufferin Street."

Thank you,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3 Canada
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stevensonv@mmm.ca

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From: ESA Aurora (MNRF) [mailto:ESA.Aurora@ontario.ca]
Sent: Friday, February 17, 2017 12:27 PM
To: Stevenson, Valerie <StevensonV@mmm.ca>
Subject: RE: Background Information Request, Langstaff Rd Weston Rd to Hwy 7, Vaughan

Hello,

Attached is a screening for the area. Apologies for the delay.

Regards,

Bohdan Kowalyk, R.P.F.
Technical Specialist
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Stevenson, Valerie [mailto:StevensonV@mmm.ca]
Sent: February-17-17 9:45 AM
To: ESA Aurora (MNRF)
Subject: FW: Background Information Request

Please see below request sent in October.

Thank you,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3 Canada
T +1 519-743-8777 #2283
F +1 519-743-8778
stevensonv@mmm.ca

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From: Stevenson, Valerie
Sent: Friday, October 14, 2016 9:47 AM
To: ESA Aurora (MNRF) (ESA.Aurora@ontario.ca) <ESA.Aurora@ontario.ca>
Subject: Background Information Request

Please see attached background data request for the Langstaff Road EA project.

Regards,
Valerie

Valerie Stevenson
Project Manager/Ecologist
Ecology Department

MMM Group Limited
583 Lancaster Street West
Kitchener, ON N2K 1M3 Canada
T +1 519-743-8777 #2283
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MMM Group Limited
582 Lancaster St. West,
Kitchener, ON, N2K 1M3
T: 519-741-1464; F: 519-743-8778
www.mmm.ca

October 20, 2016

Toronto and Region Conservation Authority,
5 Shoreham Drive
Downsview, ON
M3N 1S4

Dear TRCA Staff,

MMM Group Limited (MMM), a WSP Company has been retained by York Region to undertake a natural heritage assessment as part of a Class Environmental Assessment (EA) for proposed road improvements on Langstaff Road from Weston Road to HWY 7.

Background ecological information is required for the study area (see attached map). As such, we are formally contacting you to request any available natural heritage information pertinent to the study area.

We understand that GIS data layers of natural heritage features are now to be ordered directly from LIO by the consultant. Our intention is to contact you directly for any other pertinent data that cannot be obtained from LIO. Please note that the Ministry of Natural Resources and Forestry (MNRF) have also been contacted for available information.

Information we are seeking includes:

Terrestrial

- Wildlife and vegetation species observation records;
- Sensitive wildlife habitat locations (nesting/breeding/hibernation);
- Sensitive avian nesting sites (heronries, stick nest locations);
- Wildlife road mortality data (if available);
- Updated digital boundary information for designated natural features that may not yet be available in LIO/NRVIS (e.g., recent updated wetland boundaries, ELC communities, Environmentally Sensitive Areas (ESA's), etc.); and
- Natural Areas Inventory (NAI) information and mapping

Aquatic

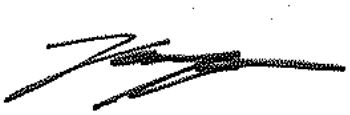
- Fish sampling locations (e.g., fish dot mapping) along with sample dates and species occurrence records for waterbodies that are located within the study area;
- Confirmed or potential spawning/rearing/foraging habitat locations;
- Mapping of thermal and flow regimes of associated watercourses;
- Surface water quality data, flow data, and benthic invertebrate data

Species at Risk (SAR)

- Locations, observation dates and any other relevant information about SAR – if possible, please provide the UTM's/accuracy codes; and
- Locally rare species lists or species records known from the study area.

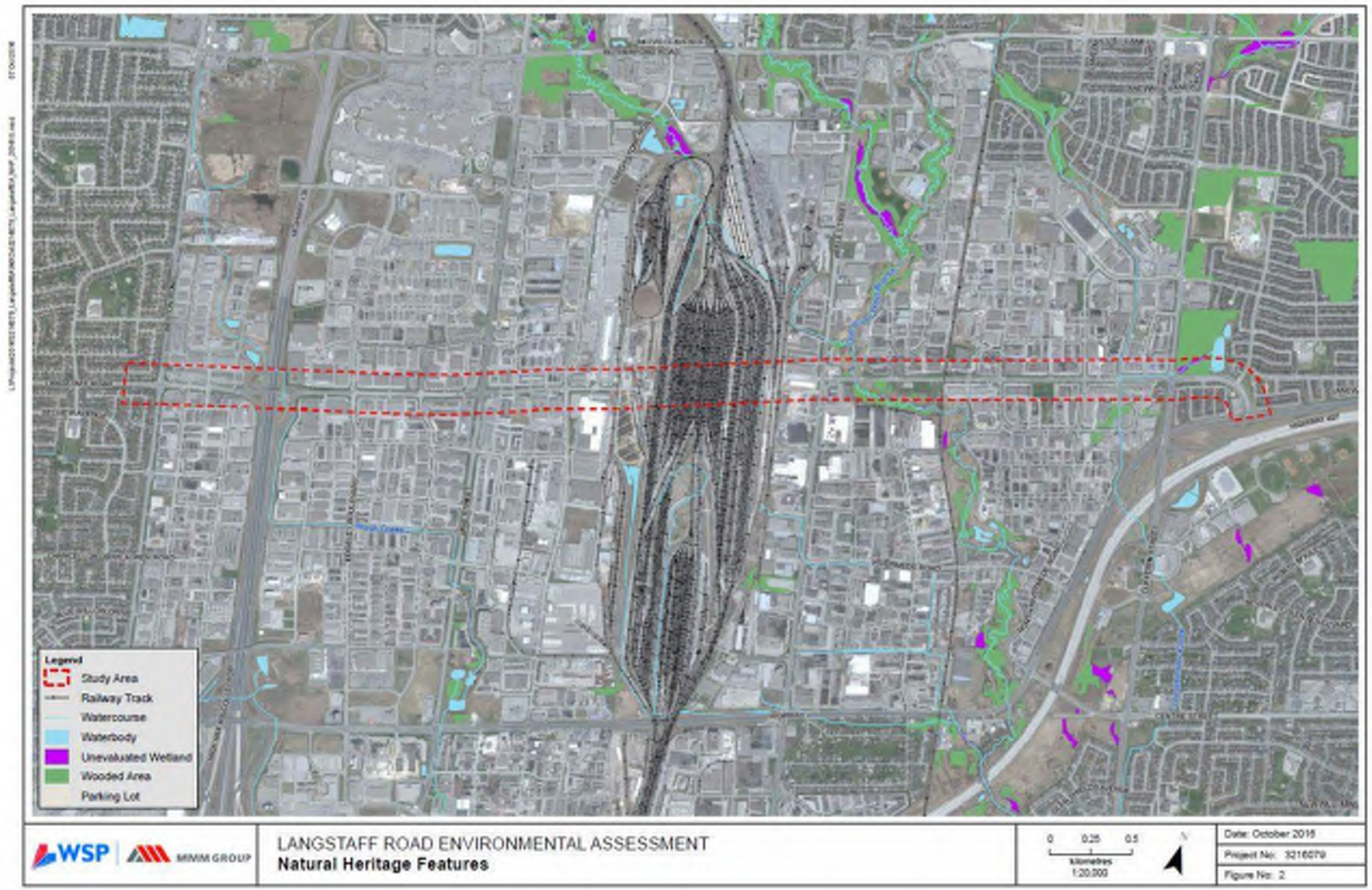
If further information is required please feel free to contact the undersigned at 519-743-8777 ext. 2283 or through email at stevensonv@mmm.ca. Thank-you for your assistance, it is greatly appreciated.

Sincerely,



Valerie Stevenson, Dip Env.
Project Manager/Ecologist
Ecology Department

Study Area – Langstaff Road EA



StationName	StationStatus	Watershed	SubWatershed	UTMNorthing	UTMEasting	UTMDatum	Sample Year	VisitDate	Common_Name	Total Weight	Total Num
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Blacknose Dace	6.1	2
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Bluntnose Minnow	1	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Common Shiner	32	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Creek Chub	63.1	4
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Fathead Minnow	13	6
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	Pumpkinseed	27	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2014	07/14/2014	White Sucker	95.1	6
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Blacknose Dace	10	3
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Catostomus sp.	1.1	11
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Creek Chub	34.5	8
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Fathead Minnow	5	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	Pumpkinseed	22	7
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2008	2/7/2008	White Sucker	529	4
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2002	06/28/2002	Blacknose Dace	4	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2002	06/28/2002	Fathead Minnow	16	4
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Blacknose Dace	319.1	89
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Bluntnose Minnow	1	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Common Shiner	9	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Creek Chub	108	17
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Fathead Minnow	41.4	21
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	Johnny Darter	0.1	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2005	06/21/2005	White Sucker	25.9	114
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	Catostomidae	0.3	3
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	Creek Chub	79	5
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	Pumpkinseed	0	1
DN017WM	Active	Don River	UPPER WEST DON	4852573	621273	17	2011	06/15/2011	White Sucker	379	6

APPENDIX

F

REPRESENTATIVE SITE PHOTOGRAPHS

Photo 1: View of the edge of Unit 1 looking south, showing the sparse willow canopy and adjacent Cultural Meadow Vegetation (Unit 2), June 23, 2017.

Photo 2: View of Unit 2 south of Langstaff Road, with Unit 1 in the background, June 23, 2017.

Photo 3: View of the canopy of Unit 2 north of Langstaff Road with Units 5 and 6 to the left and right, June 23, 2017.

Photo 4: View of Unit 5 and Langstaff Road looking west, June 23, 2017.

Photo 5: View of Unit 3, looking north, June 23, 2017.

Photo 6: View of the Don River West Branch flowing through Unit 1, July 26, 2017.

Photo 7: View of cavity / wildlife trees within Unit 1, July 26, 2017.

Photo 8: View of Unit 4, looking northeast from the corner of Langstaff Road and Dufferin Street, April 3, 2017.

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Photo 1: Stormwater management pond upstream of Black Creek

Photo 2: Overview of the upstream reach facing downstream from Creditview Road

Photo 3: Facing the culvert outlet at Creditview Road

Photo 4: View of the overflow structure near the inlet at Creditview Road

Photo 5: View of the typical channel form and riparian vegetation upstream of Creditview Road

Photo 6: Facing downstream at the beaver dam located downstream of the Creditview Road culvert

Photo 7: View of the typical channel form / morphology and riparian vegetation between Highway 400 and Creditview Road

Photo 8: Overview facing upstream from the culvert inlet at Highway 400

Black Creek

wsp	Langstaff Road EA FISHERIES - REPRESENTATIVE PHOTOGRAPHS	Date: December 2017 Project No: 16M-01457-01 Figure No: Appendix F

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Photo 9: Overview of culvert inlet at Langstaff Road

Photo 10: Facing culvert inlet at Langstaff Road

Photo 11: Looking downstream through the Langstaff Road culvert inlet

Photo 12: Facing culvert outlet at Langstaff Road

Photo 13: Channel and Duckweed downstream of Langstaff Road

Photo 14: View of the culvert inlet at the off-ramp

Photo 15: Looking through the culvert inlet at the off-ramp

Photo 16: Bluegill found in off-ramp culvert inlet

Black Creek

Langstaff Road EA

FISHERIES - REPRESENTATIVE PHOTOGRAPHS

Date: December 2017

Project No: 16M-01457-01

Figure No: Appendix F

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Photo 17: Overview facing upstream from the structure

Photo 18: Downstream view facing the structure

Photo 19: Upstream erosion

Photo 20: Typical upstream channel

Photo 21: Overview facing downstream from the structure

Photo 22: Upstream view facing the structure

Photo 23: Downstream woody barrier

Photo 24: Typical downstream channel

Don River West Branch

wsp	Langstaff Road EA FISHERIES - REPRESENTATIVE PHOTOGRAPHS	Date: December 2017 Project No: 16M-01457-01 Figure No: Appendix F

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Photo 25: Overview facing upstream from the structure

Photo 26: Downstream view facing the structure

Photo 27: Upstream erosion

Photo 28: Typical upstream channel

Photo 29: Overview facing downstream from the structure

Photo 30: Upstream view facing the structure

Photo 31: Downstream woody barrier

Photo 32: Typical downstream channel

Westminster Creek

Langstaff Road EA

FISHERIES - REPRESENTATIVE PHOTOGRAPHS

Date: December 2017

Project No: 16M-01457-01

Figure No: Appendix F

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Photo 33: Overview facing upstream from the culvert inlet at Langstaff Road and Dufferin Street

Photo 34: Facing culvert inlet

Photo 35: Intermittent upstream channel bed in woodlot

Photo 36: Downstream overview at Langstaff Road and Dufferin Street

Photo 37: Facing downstream culvert outlet at Langstaff Road and Dufferin Street

Photo 38: Typical downstream channel

Photo 39: Downstream twin culvert inlet

Photo 40: Downstream vertical culvert acting as a permanent barrier to fish passage upstream

Tributary of Westminster Creek

wsp	Langstaff Road EA FISHERIES - REPRESENTATIVE PHOTOGRAPHS	Date: December 2017 Project No: 16M-01457-01 Figure No: Appendix F

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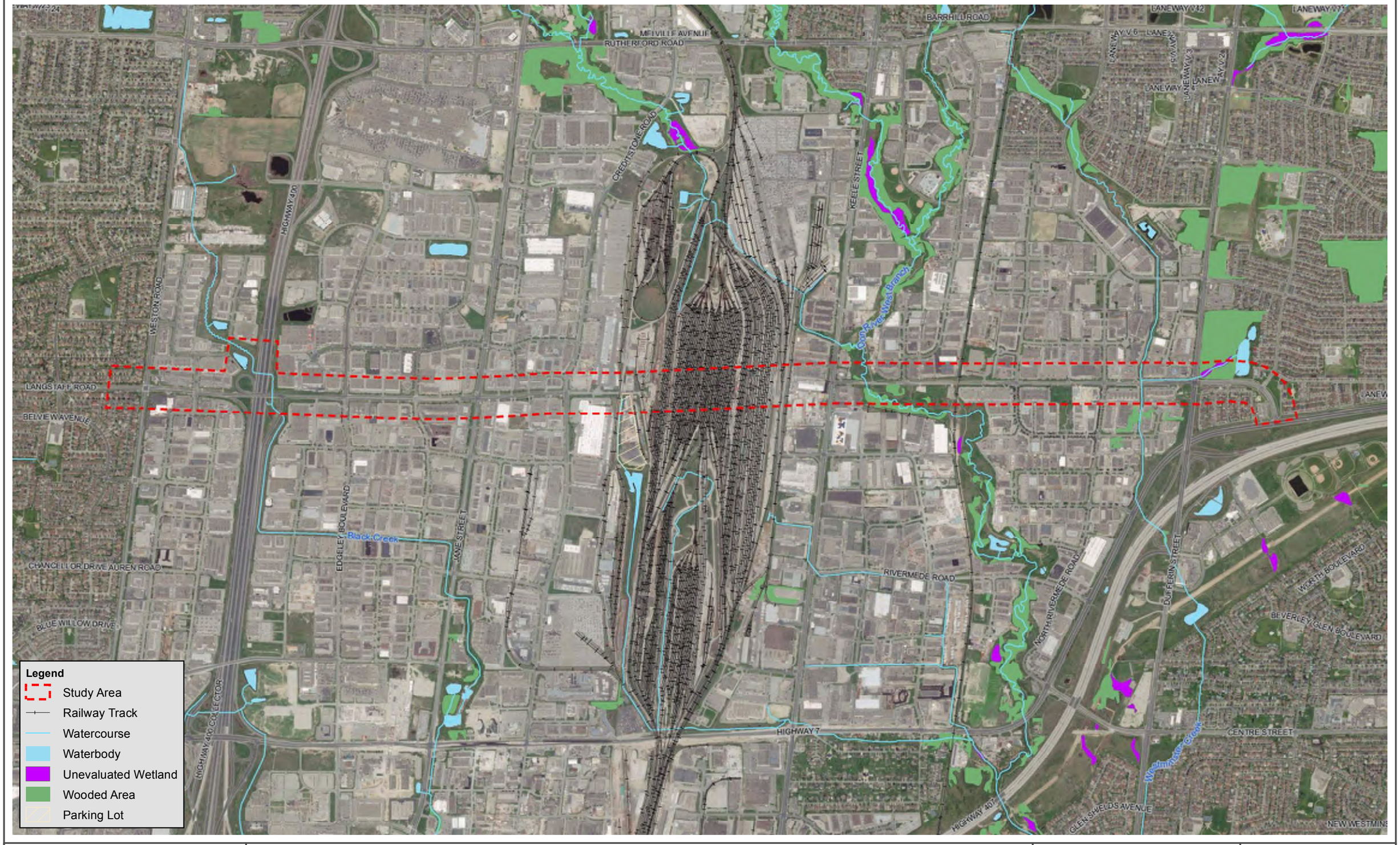

LANGSTAFF ROAD ENVIRONMENTAL ASSESSMENT

Natural Heritage Features

0 0.25 0.5
Kilometres
1:20,000

N

Date: December 2017

Project No: 16M-01457-01

Figure No: 1b

CLASS ENVIRONMENTAL ASSESSMENT STUDY FOR IMPROVEMENTS TO LANGSTAFF ROAD FROM WESTON ROAD TO HIGHWAY 7

PHASE 1 AND 2 REPORT

YORK REGION

DRAFT

PROJECT NO.: 16M-01457-01
DATE: MARCH 2018

WSP
610 CHARTWELL ROAD
SUITE 300
OAKVILLE, ON, CANADA L6J 4A5

TEL.: +1 905-823-8500
FAX: +1 905-823-8503
WSP.COM

QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE (CHAPTERS 1 TO 4)	PHASE 2 (CHAPTERS 5 AND 6)		
Date	June 15, 2017	September 8, 2017		
Prepared by	G. Thompson	G. Thompson		
Checked by	N. Ahmed	N. Ahmed		
York Region Review Team				
Date Region Comments Received				

SIGNATURES

PREPARED BY

Gillian Thompson, B.Sc., MCIP, RPP
Senior Planner

REVIEWED BY

Neil Ahmed, P. Eng.
Project Manager

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1 INTRODUCTION AND STUDY PROCESS

1.1 INTRODUCTION

The Regional Municipality of York (York Region) is completing a Class Environmental Assessment (Class EA) study for improvements to Langstaff Road (York Road 72) from Weston Road (Y.R. 56) to Highway 7 (Y.R. 7), within the City of Vaughan.

The purpose of the study is to identify a preferred solution that addresses existing problems and opportunities in the Langstaff Road corridor including: a new Langstaff Road connection across the CN MacMillan Rail Yard; Highway 400 Interchange improvements to facilitate full access / movement at the interchange; a grade separation at the Barrie GO Rail Line; and widening in certain sections of Langstaff Road. These improvements are being considered in order to: manage existing and future traffic congestion on other east-west arterial roads; support growth the Vaughan Metropolitan Centre and other primary growth centres nearby; improve access to employment lands; and support an efficient goods movement system.

The Class EA Study is being carried out in accordance with Schedule 'C' of the Municipal Class Environmental Assessment (MCEA) document (October 2000, amended 2007, 2011, and 2015). This document outlines the process whereby municipalities can comply with the requirements of the *Ontario Environmental Assessment Act*. The Environmental Study Report (ESR) documents the decision making process carried our during the Class EA study.

The Class EA study area is depicted on **Figure 1-1**. The study area length is approximately 6 km, from Weston Road in the west, to Highway 7 in the east. A partial interchange at Highway 400 currently provides access to southbound Highway 400 and from northbound Highway 400 to Langstaff Road. The study area has been customized to include an area in which alternative infrastructure improvements may be considered both as a Langstaff Road connection and as a Highway 400 access improvement.

The Canadian National Railway (CN) MacMillan Rail Yard is one of the most prominent features in the study area. The yard, located at the junction of the CN York Subdivision and CN Halton Subdivision, is the 2nd largest rail classification yard in Canada, measuring approximately 5 km in length and 1.2 km in width with a north-south orientation. The property is bordered by four main roads: Highway 7 (Y.R. 7) to the south, Keele Street to the east, Rutherford Road to the north, and Creditstone Road to the west.

The yard was developed in the late 1950s as part of CN's redesign of its Toronto track network. At the time of construction, Vaughan was a largely rural community, however, subsequent development on adjacent properties has created an industrial area surrounded by

a variety of industrial consignors, distributors, and suppliers. Some commercial establishments (e.g., restaurants, retail and wholesale outlets) are located along the perimeter of the yard.

Land Use along the Langstaff Road Corridor includes:

- Community Commercial Mixed-Use area in the northeast corner of Langstaff Road and Weston Road;
- Employment Commercial Mixed-Use area in the southeast corner of Langstaff Road and Weston Road;
- Mainly Prestige Employment area located between Highway 400 and Dufferin Street;
- Low-Rise Residential area on the south side of Langstaff Road; and
- Natural Areas on the north side, east of Dufferin Street.

A number of parks are located along Langstaff Road including Langstaff Park, LeParc Park and West Crossroads Park.

Langstaff Cemetery is located on the south side of Langstaff Road, east of Keele Street.

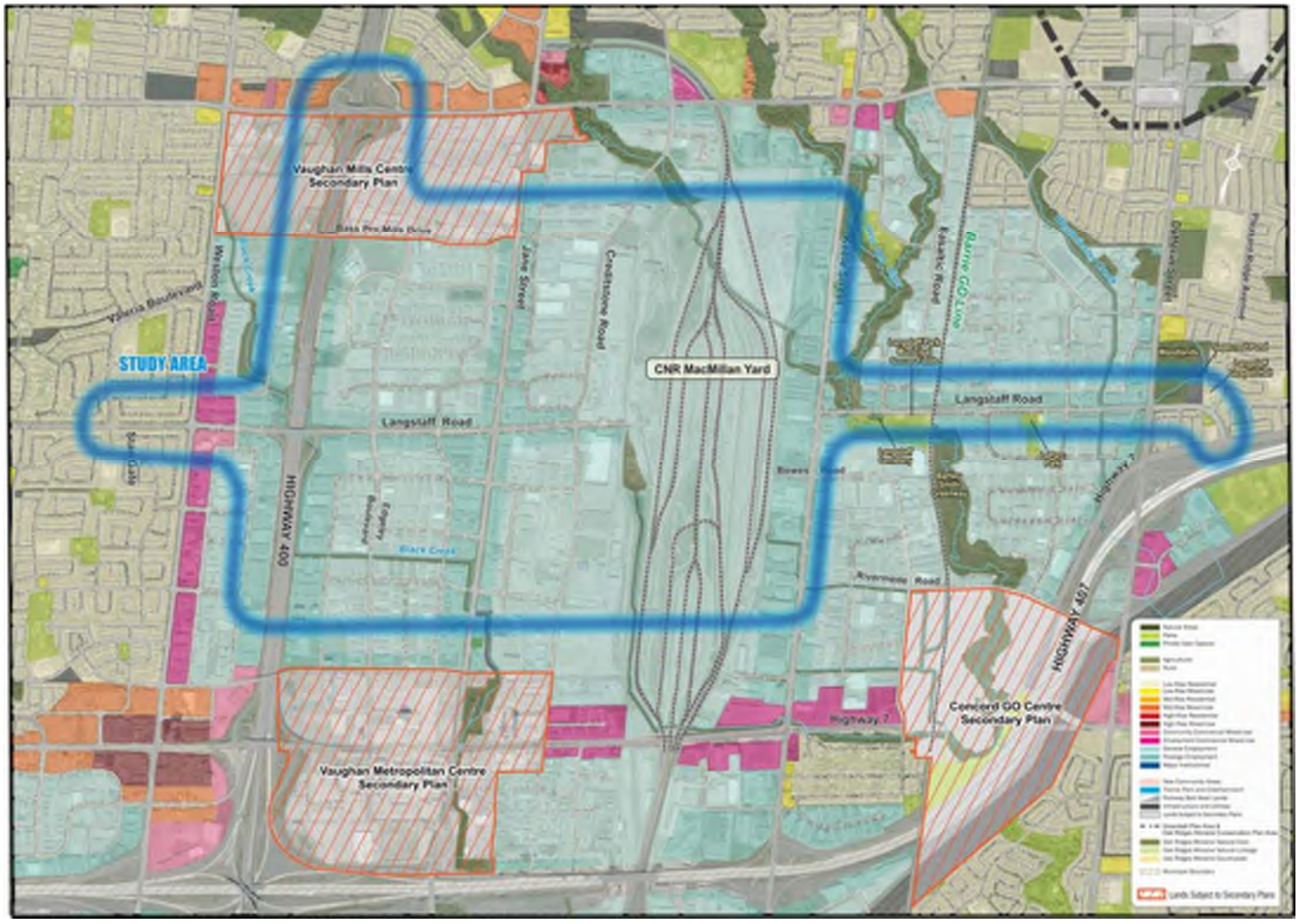
The majority of the land adjacent the Langstaff Road corridor is designated Employment in the York Region and City of Vaughan Official Plans. The strategic location relative to the CN MacMillan Rail Yard and Highways 400 and 407 make this area an important centre to support economic activities associated with a range of industrial, manufacturing, warehousing uses and goods movement.

Langstaff Road is also situated just north of the Vaughan Metropolitan Centre (VMC), a designated Urban Growth Centre in the Province's *Growth Plan* and an Anchor Mobility Hub in Metrolinx's Regional Transportation Plan. This area is the focus of significant investment and redevelopment of residential, cultural / entertainment and employment lands. Other growth centres (Primary and Local Centres) in close proximity to the Langstaff Road Class EA study area include: Vaughan Mills Centre; Concord GO Centre; Weston Road / Highway 7; and Carrville Centre.

The presence of the rail yard creates a break in Langstaff Road between Keele Street and Creditstone Road. The lack of continuity of Langstaff Road puts pressure on other parts of the Regional arterial road network, and specifically on other nearby east-west roads including Rutherford Road and Highway 7.

The purpose of this *Langstaff Road Class EA Phase 1 Report* is to review the land use and environmental planning context, the municipal infrastructure policy framework and the detailed travel demand analysis that form the basis of the Class EA study. This review will be utilized to identify the key study area problems and opportunities and provide the need and justification for the range of Langstaff Road improvements being contemplated. The Phase 1 Report will ultimately form part of the Langstaff Class EA Environmental Study Report.

Figure 1-1. Study Area



1.2 ENVIRONMENTAL ASSESSMENT PROCESS

Municipal infrastructure projects are subject to the *Ontario Environmental Assessment Act* (EA Act). The Class Environmental Assessment (Class EA) is an approved self-assessment process under the EA Act for a specific group or "class" of projects. Projects are considered approved, subject to compliance with an approved Class EA process. The Municipal Class EA (Municipal Engineers Association October 2000, as amended in 2007, 2011 and 2015) applies to municipal infrastructure projects including roads, water and wastewater.

1.2.1 MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

The Municipal Class EA outlines a comprehensive planning process that provides a rational approach to consider the environmental and technical advantages and disadvantages of alternatives in order to determine a preferred alternative for addressing the problem or opportunity, as well as consultation with agencies, directly affected stakeholders, Aboriginal Communities and the general public throughout the process. The key principles of successful environmental assessment planning include:

- Consultation;
- Consideration of a reasonable range of alternatives;
- Consideration of effects on natural, social, cultural, and economic environments and technical components;
- Systematic evaluation;
- Clear documentation; and
- Traceable decision making.

Provided that the Class EA planning process is followed, a proponent does not have to apply for formal approval under the *Ontario Environmental Assessment Act*.

The Municipal Class EA process is shown on **Figure 1-2** and includes:

- Phase 1: identify the problem or opportunity;
- Phase 2: identify alternative solutions;
- Phase 3: examine alternative methods of implementing the preferred solution;
- Phase 4: prepare and file an Environmental Study Report; and
- Phase 5: proceed to detailed design, construction and operation.

The classification of projects and activities under the Municipal Class EA is as follows:

- Schedule A: Includes normal or emergency operational and maintenance activities, which are limited in scale and have minimal adverse environmental effects. These undertakings are pre-approved and the proponent can proceed without further assessment and approval.
- Schedule A+: Introduced in 2007, these projects are also pre-approved. The public is to be advised prior to the implementation of the project.
- Schedule B: Includes projects that have the potential for adverse environmental effects. This includes improvements and minor expansions of existing facilities. These projects are approved subject to a screening process which includes consulting with stakeholders who may be directly affected and relevant review agencies.
- Schedule C: Includes the construction of new facilities and major expansions to existing facilities. These undertakings have the potential for significant environmental effects, and must proceed under the planning and documentation procedures outlined in the Municipal Class EA document.

The Langstaff Road Class EA study has been identified as a Schedule 'C' project under the MCEA (**Figure 1-2**). A more detailed illustration of the Langstaff Class EA study approach relative Phases 1 to 4 of the MCEA is depicted in **Figure 1-3**.

Figure 1-2. Municipal Class EA Process

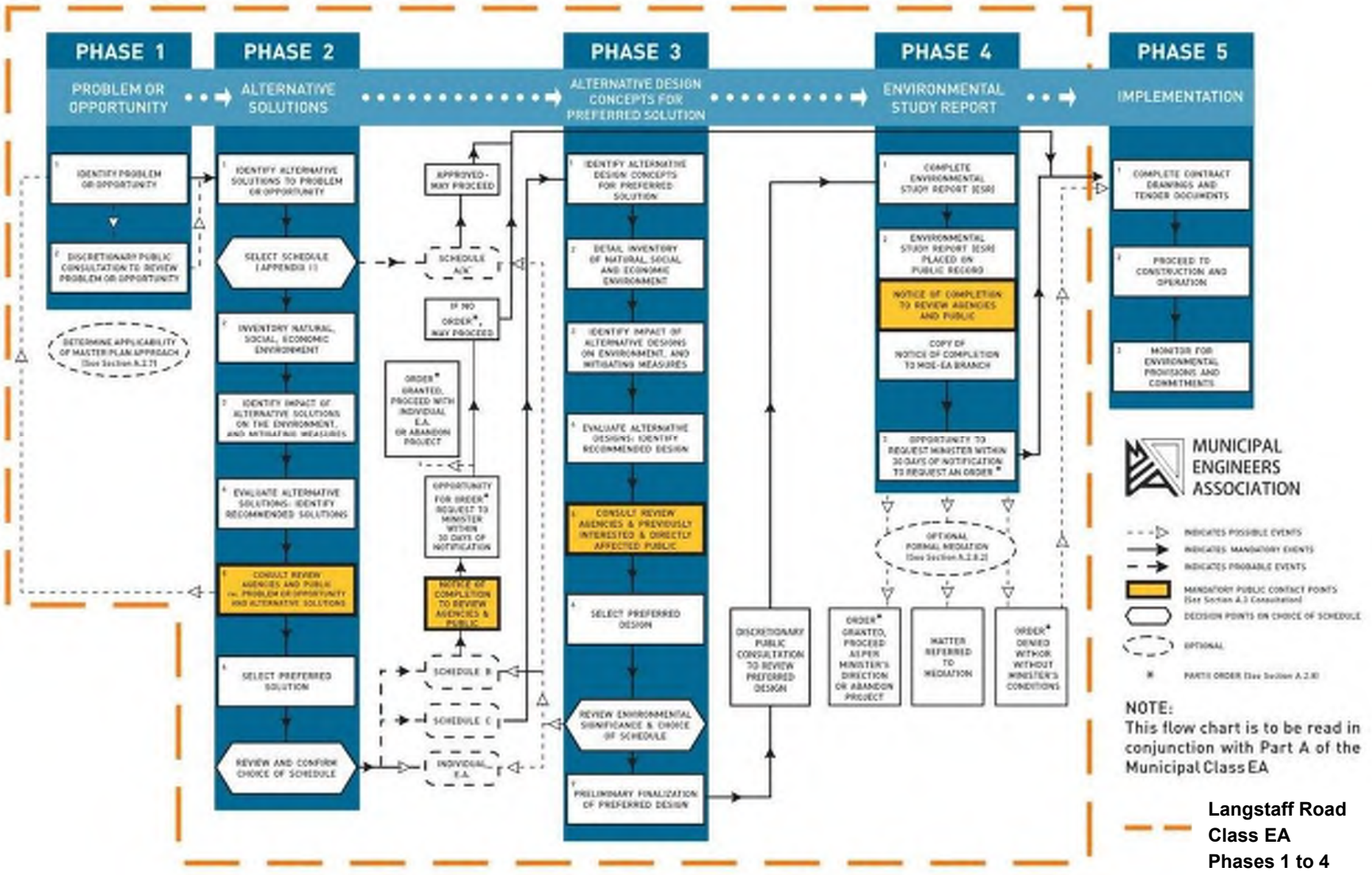
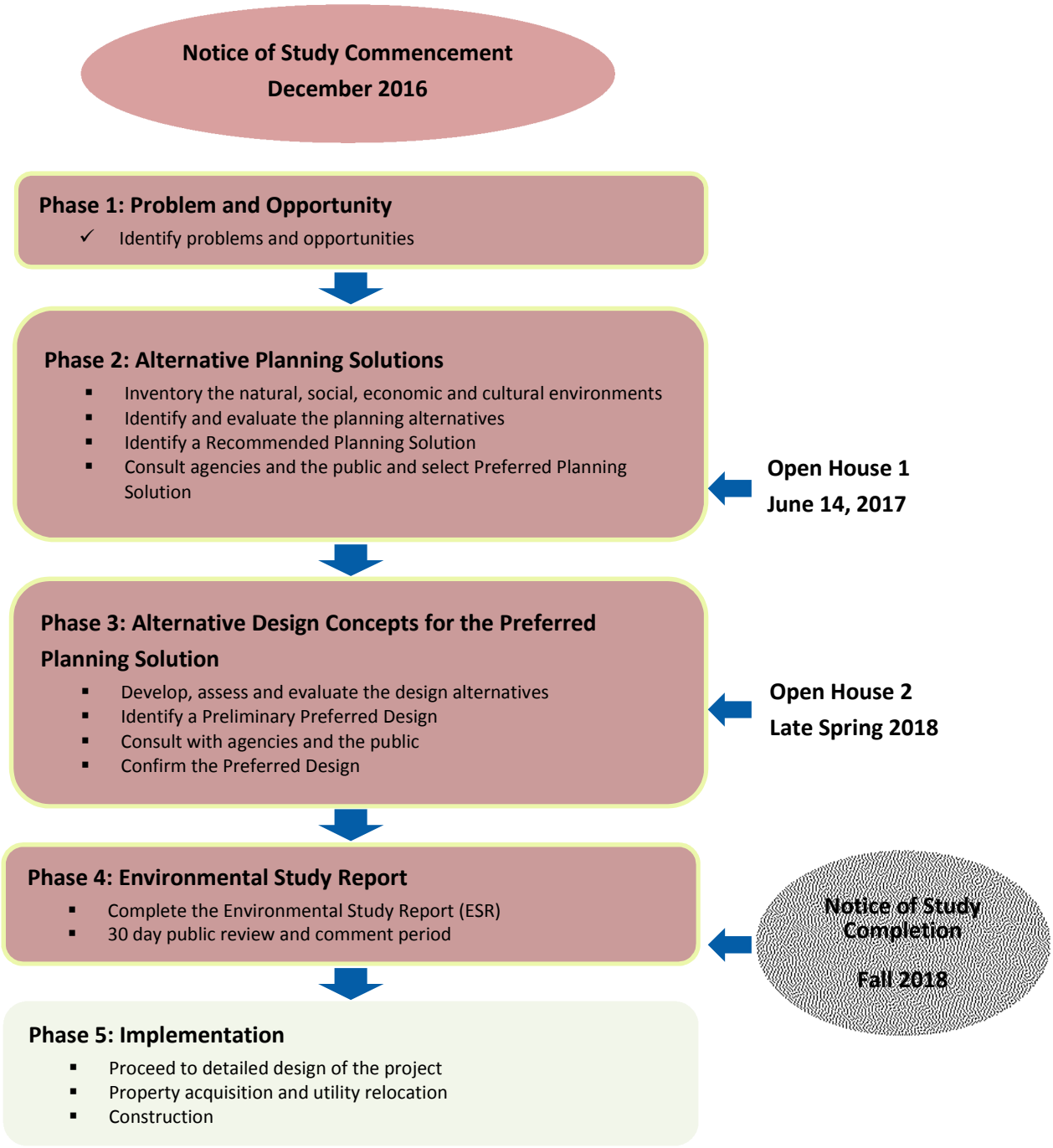


Figure 1-3. Langstaff Class EA Study Approach



1.2.1.1 ENVIRONMENTAL STUDY REPORT

At the end of the Langstaff Road Class EA study, an Environmental Study Report (ESR) will be prepared, as part of this Schedule C Class EA, to document the process followed in determining the recommended undertaking and the environmentally significant aspects of the planning, design and construction of the proposed Langstaff Road improvements. It will describe: the problem being addressed, the existing social, natural and cultural environmental considerations, planning and design alternatives that were considered, a description of the recommended alternative and its environmental effects and proposed mitigation measures, and commitments to further work, consultation, and monitoring associated with the implementation of the project.

For further information on the Municipal Class EA process, readers are referred to the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). The York Region Project Manager for this Class EA Study is also available to discuss this information and can be contacted as follows:

Brian Wolf, Senior Project Manager
The Regional Municipality of York
17250 Yonge Street, Newmarket ON L3Y 6Z1
Phone: 1-877-464-9675 ext. 75543
Fax: 905-895-7735
Email: roads.ea@york.ca

As required by the Municipal Class EA, the ESR will be made available to stakeholders, regulatory agencies, Aboriginal Communities and the general public for a 30 calendar-day review period. A notice of ESR submission will be placed in local newspapers and on the Region's 's website, and letters will be mailed to notify government agencies, Aboriginal Communities, affected property owners and members of the public on the study mailing list. During the review period, parties with outstanding issues will be encouraged to bring their project concerns to the attention of York Region for resolution.

If concerns are raised during the 30 calendar-day review period that cannot be resolved through discussions with the Region, then stakeholders, agencies, Indigenous Communities or members of the public may request the Minister of the Environment and Climate Change to issue a Part II Order (also referred to as a 'bump-up') for the project, thereby requiring an elevated scope of study.

1.2.1.2 PART II ORDER REQUEST

The Municipal Class EA process includes an appeal provision to change the status of a project from being subject to the Municipal Class EA process to being subject to an Individual Environmental Assessment as per Part II of the Ontario Environmental Assessment Act.

A Part II Order request requires submission of a written request to the Minister of the Environment and Climate Change, prior to the end of the 30 calendar-day review period, outlining the unresolved issue and requesting the Minister to review the matter. Part II Order requests are submitted in writing to:

Minister
Ministry of the Environment and Climate Change
77 Wellesley St. West, Floor 11
Toronto ON M7A 2T5
Fax: 416-314-8452

Copies of the request must also be sent to the Director of the Environmental Approvals Branch at the Ministry of the Environment and Climate Change (MOECC) at the address below:

Director, Environmental Approvals Branch
Ministry of the Environment and Climate Change
135 St. Clair Ave West, 1st Floor
Toronto ON M4V 1P5
EAASIBgen@ontario.ca

The decision on whether a Part II Order (bump-up) is appropriate or necessary rests with the Minister of the Environment and Climate Change. If no Part II Order requests are outstanding by the end of the 30 calendar-day review period, the project is considered to have met the requirements of the Class EA, and the Region may proceed to subsequent phases of design and construction subject to meeting any commitments documented in this ESR and obtaining the necessary environmental approvals.

For further information regarding Part II Order requests, including specific submission requirements, please go to: https://www.ontario.ca/environment-and-energy/class-environmental-assessments-part-ii-order

1.2.2 MINISTRY OF INFRASTRUCTURE CLASS ENVIRONMENTAL ASSESSMENT PROCESS

Where lands owned or managed by Infrastructure Ontario (e.g. hydro corridor lands) may be impacted by a municipal project, the Ministry of Infrastructure (MOI) Public Works (MOI) Class Environmental Assessment may apply.

Potential impacts to lands owned or managed by Infrastructure Ontario (IO) will be identified through the course of the Class EA study and IO will be consulted regarding potential MOI Class EA requirements. Typically any MOI Class EA requirements would be met during the detailed design phase, when any application for property / easement is made by York Region.

1.2.3 CANADIAN ENVIRONMENT ASSESSMENT ACT

The Canadian Environmental Assessment Act, 2012 (CEAA 2012) and its regulations identify the physical activities that constitute the "designated projects" that may require an environmental assessment by the Canadian Environmental Assessment Agency.

The scope of the Langstaff Road Class EA Study was reviewed against the federal *Regulations Designating Physical Activities*, and it was determined that the potential range of physical activities contemplated by the study are not “designated” and therefore will not require consideration of a federal environmental assessment. However, given the location of the CN MacMillan Rail Yard relative to Langstaff Road, York Region may still require federal permits / approvals to meet the requirements of other federal legislation (e.g. Transport Canada). Any required federal approvals will be identified during this Class EA and will be obtained during the subsequent design phases.

2 STUDY PLANNING CONTEXT

2.1 PROVINCIAL PLANNING FRAMEWORK

2.1.1 GROWTH PLAN

The *Places to Grow Act*, 2005 provides the legal framework necessary to implement the Province's vision for managing growth within the Greater Golden Horseshoe (GGH). The Act enables the provincial government to plan for population growth, economic expansion and the protection of the environment, agricultural lands and other resources in a coordinated and strategic manner.

The Growth Plan for the Greater Golden Horseshoe (2017) was prepared and approved under the *Places to Grow Act* and replaces the 2006 Plan (as amended, 2013), as of July 1, 2017. Consistent with the intent of the *Places to Grow Act*, the Plan guides provincial, and ultimately municipal, decisions on transportation, infrastructure planning, land-use planning, urban form, housing, natural heritage and resource protection.

Key sections and policies of the updated Growth Plan that are relevant to the Langstaff Road Class EA study are highlighted below:

Population and Employment Forecasts

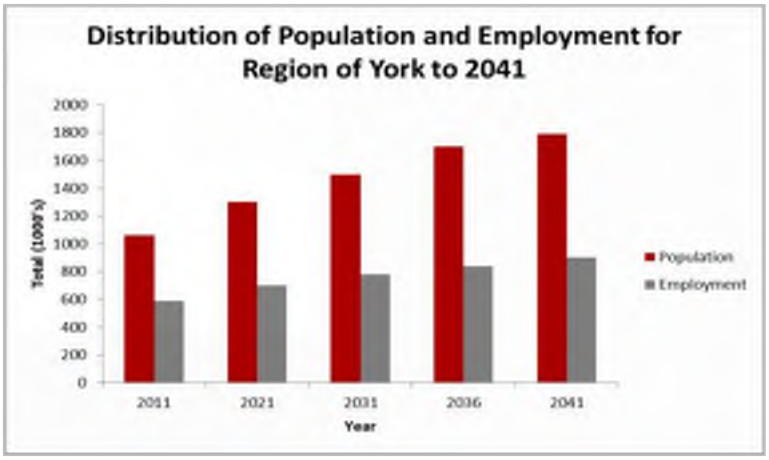
To better co-ordinate planning for growth across the region, the Growth Plan provides population and employment forecasts for all upper- and single-tier municipalities in the Greater Golden Horseshoe (GGH). These growth forecasts are a foundational component of the Plan and are to be reviewed in consultation with municipalities at least every five years.

York Region is the third largest municipality in Ontario and one of the fastest growing regions in Canada. Based on provincial growth targets, the Region expects its population to grow by over 50% from 2015 from 1.2 million to 1.79 million people. Employment is projected to grow by over 55%, from 580,000 to 900,000 by 2041. Future population growth will occur in Richmond Hill, Vaughan, Markham and East Gwillimbury. Employment will be largely concentrated in the south with the majority of growth forecast for Markham, Vaughan and Richmond Hill. York Region is projected to maintain its jobs to worker ratio of 0.50 jobs / resident to 2041.

Figure 2-1 illustrates the growth trend of York Region population and employment.

Maintaining existing employment and attracting new high quality employment is contingent upon a well-functioning transportation system.

Figure 2-1. York Region Population and Employment from 2011 to 2041



Source: Places to Grow, as amended 2013 (Schedule 3); Places to Grow 2017 (Schedule 3)

Urban Growth Centres

The Growth Plan (Section 2.2.3) identifies 25 Urban Growth Centres as strategic focal points for growth and intensification. Specifically, the intent of the Urban Growth Centres will:

- be focal areas for investment in regional public service facilities, as well as commercial, recreational, cultural, and entertainment uses;
- accommodate and support the transit network at the regional scale and provide connection points for inter- and intra-regional transit;
- serve as high-density major employment centres that will attract provincially, nationally, or internationally significant employment uses; and
- accommodate significant population and employment growth.

The Vaughan Metropolitan Centre (VMC), which lies adjacent to the Langstaff Road Class EA study area, is a designated Urban Growth Centre in the Growth Plan. The VMC is discussed in greater detail in **Section 2.3.2** of this report. This area is to achieve a minimum density target of 200 residents and jobs combined per hectare by 2031. It is anticipated that, as the VMC redevelops and intensifies, surrounding employment lands will also be the focus of redevelopment and intensification with increased employment growth. In this context, Langstaff Road will increase in its importance in the transportation network and the improvements recommended by the Region's Transportation Master Plan (discussed in **Section 2.2.4** of this report) will be necessary to ensure the transportation infrastructure can support and maximize employment growth.

Infrastructure to Support Growth

The Growth Plan states that *well planned infrastructure is essential to the viability of Ontario's communities and critical to economic competitiveness, quality of life and the delivery of public services*. The infrastructure framework in the Plan requires that municipalities undertake an integrated approach to land use planning, infrastructure investments and environmental protection to support and accommodate forecasted growth.

In terms of transportation system planning and policies, the Growth Plan states:

1. *Transportation system* planning, land use planning, and transportation investment will be coordinated to implement the Growth Plan.
2. The *transportation system* within the *GGH* will be planned and managed to:
    a. provide connectivity among transportation modes for moving people and for moving goods;
    b. offer a balance of transportation choices that reduces reliance upon the automobile and promotes transit and *active transportation*;
    c. be sustainable and reduce greenhouse gas emissions by encouraging the most financially and environmentally appropriate mode for trip-making and supporting the use of zero- and low-emission vehicles;
    d. offer *multimodal* access to jobs, housing, schools, cultural and recreational opportunities, and goods and services;
    e. accommodate agricultural vehicles and equipment, as appropriate; and
    f. provide for the safety of system users.

Efficient movement of goods is critical to the success of the Growth Plan, as reflected in the following polices:

1. Linking *major goods movement facilities and corridors*, international gateways and *employment areas* to facilitate efficient goods movement will be the first priority of highway investment.
2. The Province and municipalities will work with agencies and transportation service providers to:
    a. co-ordinate, optimize and ensure the long-term viability of *major goods movement facilities and corridors*;
    b. improve corridors for moving goods across the *GGH*;
    c. promote and better integrate *multimodal* goods movement and *freight-supportive* land use and *transportation system* planning.

3. Municipalities will provide for the establishment of priority routes for goods movement, where feasible, to facilitate the movement of goods into and out of *employment areas,* including *prime employment areas,* and other areas of significant commercial activity and to provide alternate routes connecting to the provincial network.

It is the responsibility of the Region to ensure that the transportation network can support planned growth and provide for efficient movement of goods and people both locally, on a community level, and regionally.

The Region's planning of Langstaff Road improvements is consistent with the direction of the Growth Plan in that it specifically considers the following:

- Provides for connectivity among transportation modes for moving people and for moving goods;
- Increases the efficiency (directness) and flexibility of the transportation network, reducing delays for residents and businesses thereby reducing greenhouse gas emissions and relieving / diffusing demands on arterial roads;
- Improves goods movement corridors and links major goods movement facilities and corridors, international gateways and employment areas to facilitate efficient goods movement; and
- Promotes and integrates multimodal goods movement and freight-supportive land use and transportation system planning.

2.1.2 GREENBELT PLAN

Adopted under the *Greenbelt Act* (2005), the Greenbelt Plan (2017) protects environmentally sensitive areas and agricultural lands from urban development and sprawl. The Greenbelt Plan is a cornerstone of the Growth Plan, that identifies where growth should not occur and how new or expanding infrastructure should be designed and constructed to mitigate negative impacts.

The Greenbelt Plan includes lands within, and builds upon the ecological protections provided by, the Niagara Escarpment Plan (NEP, 2017) and the Oak Ridges Moraine Conservation Plan (ORMCP, 2002).

The Langstaff Road Class EA study area is located outside of the Greenbelt Plan area.

2.1.3 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS) (2014) is issued under the Planning Act and supports the planning of land uses across the Province. The PPS provides policy direction for the use and management of land and infrastructure while protecting the environment and resources,

as well as to ensure opportunities for employment and residential development. Sections of the PPS that are applicable to the planning of transportation infrastructure include:

- Part IV Vision for Ontario's Land Use Planning System – The development of land should be optimized to promote efficient use of land, resources and public investment in infrastructure and public service facilities. These land use patterns promote mixed uses including residential, employment, recreation, parks and open space. The supporting transportation infrastructure is to provide choices and promote increased use of active transportation as well as transit before other modes of travel. This is in support of building livable and healthy communities.
- Part V Policies – Specifically, Section 1.6.7 outlines the policies for infrastructure and public service facilities under transportation systems. The policies state that "Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs." A multimodal transportation system is to provide connectivity within and amongst the transportation systems. Improving connections across jurisdictional boundaries should be considered where possible. Land use patterns should be planned to minimize the length and number of vehicle trips, as well as to support existing and future active transportation and transit services.

2.2 YORK REGION PLANNING POLICIES AND RELATED STUDIES

2.2.1 VISION 2051

York Region's Vision 2051 builds on previous long term strategies Vision 2021 and Vision 2026 and reflects the policies and initiatives developed by the Region and the Province that have influenced how the Region does business. In the face of a significant amount of growth, Vision 2051 reflects a greater emphasis on sustainability coupled with an increasing concern with respect to climate change and energy. Pressures on York Region's transportation, waste, water and social infrastructure, an increasingly diverse and aging population, and meeting the housing, human services and safety needs of the Region's residents are continuing challenges that are considered in Vision 2051.

Vision 2051 establishes priorities and actions to guide decision making in York Region and builds on other recently developed strategies, including the Sustainability Strategy, the Regional Official Plan and Infrastructure Master Plans.

The vision for York Region in 2051 is articulated through eight goals and corresponding action areas. Alignment with these goals and actions help ensure that the decisions made by Regional staff and Council achieve the Region's vision of the future. The goals and actions that are particularly relevant for the Langstaff Road Class EA are: *Livable Cities and Complete Communities* and *Interconnected Systems for Mobility* which include the following key aspects:

- Moving our economy:
  - Supporting the efficient movement of goods; and
  - Providing an interconnected network for mobility that links people to jobs.
- A Network of Complete Streets
  - Supporting a road network that has a hierarchy of road types to increase travel choices;
  - Designing streets to prioritize the most vulnerable users; ensuring accessibility for all;
  - Managing congestion and optimizing the road network through intelligent transportation systems; and
  - Designing streets to be context sensitive and complement adjacent land uses and environmental needs.
- A Vibrant City-Region:
  - Focusing intensification in a system of active vibrant Regional City Centres and Corridors that are the hub of commerce, entertainment and culture; and
  - Maintaining economic competitiveness by encouraging major office, institutional, cultural and entertainment facilities to locate within Regional Centres and Corridors with a goal to achieve a balance of employment and residential opportunities.
- An Integrated Urban System
  - Planning for an integrated urban network of communities, human services, jobs, transportation and infrastructure systems that connect people to places, jobs and services; and
  - Achieving better connections between where people live, work, learn and play.

2.2.2 STRATEGIC PLAN (2015 – 2019)

The York Region Strategic Plan identifies areas requiring focus and aligns the current term of Regional Council with guidance to achieving Vision 2051.

The strategic priorities are identified as: *Strengthen the Region's Economy*; *Support Community Health and Well-being*; *Manage Environmental Sustainable Growth*; and *Provide Responsive and Efficient Public Service*.

Strategic objectives related to strengthening the Region's economy and relevant to the Langstaff Road Class EA include focusing on networks and systems that connect people, goods and services. Selected strategic objectives related to managing environmentally sustainable growth and pertinent to the Langstaff Road Class EA are depicted in **Figure 2-2**.

Figure 2-2. Strategic Priority Area: Environmentally Sustainable Growth – Selected Objectives for Regional Council Focus Over The 2015 to 2019 Term

Strategic Objectives	Snapshot of Key Planned Regional Activities	Key Regional Performance Measures
1. Managing traffic congestion	1.1 Complete and implement Transportation Master Plan 1.2 Implement Rapid Transit Network 1.3 Increase capacity of road network	• Increase number of road lane kilometres new and rehabilitated • Increase number of traffic signals reviewed and optimized annually • Increase transit ridership per capita • Increase number of rapidway lane kilometres
3. Encouraging growth along Regional Centres and Corridors	3.1 Review and update Regional Official Plan 3.2 Explore business growth opportunities in Regional Centres and Corridors	• Increase percentage of new development located in Regional Centres and Corridors • Increase percentage of new non-residential development located in Regional Centres and Corridors

The 2015 to 2019 Strategic Plan Year 1 (2015) Progress Report indicates that residents cited transportation (including traffic congestion and public transit) as the most important issue in York Region and across the GTA. Over this term of Council, York Region is committed to focus efforts on managing traffic congestion and improving public transit through the following *Key Planned Regional Activities*:

- Complete and implement a Transportation Master Plan;
- Implement an Active Transportation Network; and
- Implement the Rapid Transit Network.

As discussed below in **Section 2.4**, the Transportation Master Plan (TMP) update was completed in 2016. The TMP provides the critical policy direction with respect to planning and efficient transportation network that supports the Strategic Plan and ultimately Vision 2051.

The Langstaff Road Class EA is consistent with the Strategic Plan in that it: implements the TMP and moves forward with planning infrastructure to connect people, goods and services; manages traffic congestion / increases capacity of the road network; and supports economic growth.

2.2.3 OFFICIAL PLAN

The purpose of the York Region Official Plan (YROP) (2010) is to provide a long-term strategic policy framework for guiding growth and development in York Region while having regard for protecting the environment, and to outline a regional structure that manages this growth within York in the most efficient manner.

Specific York Region Official Plan objectives and policies that guide transportation planning decisions are reflected in Chapters 5 and 7 of the Official Plan. Chapter 5, "*An Urbanizing Region*", includes City building policies and directions related to complete, healthy communities achieved through integrating greenspace, pedestrian and transit network and offering a variety of transportation, housing and employment choices. Chapter 7, "*Servicing Our Population*", is focused on moving people and goods and making efficient use of existing and future transportation infrastructure.

The York Region Official Plan provides a strong policy foundation for the future transportation network by establishing a number of key policies that guide the more detailed policies and recommended actions of the TMP. These include:

- Promote a linked and efficient network for goods movement that minimizes conflicts with sensitive land uses;
- Reduce automobile dependence by enhancing opportunities for residents and workers to cycle, take transit and carpool; and
- Ensure streets support all modes of transportation.

The 2041 proposed transportation network, including roads, transit, goods movement and, active transportation are provided in the Section 2.2.4 of this report – Transportation Master Plan.

Chapter 4 of the Official Plan outlines policies related to the Region's Economic Vitality and include policies around the economic strategy, city building and planning for employment lands. Inherent in these policies is the provision of a transportation network capable of supporting the movement of people and goods among places of residence, employment, retail and cultural /recreational nodes.

Selected Official Plan Schedules are provided in **Figures 2-3**, **2-4 and 2-5** depicting Regional Structure, Street Network and Cycling Network. As depicted, Langstaff Road, within the Class EA study area is:

- A key east-west arterial road within the urban area of central York Region and City of Vaughan;
- An important strategic location within the Region, connecting with Highway 400, the CN MacMillan Rail Yard and Highway 7, and in close proximity to Highway 407;
- Planned for a 36 m right-of-way; and
- Identified for a cycling facility.

For more information, the York Region Official Plan may be accessed at the following link: http://www.york.ca/wps/portal/yorkhome/yorkregion/yr/regionalofficialplan/

Figure 2-3. Official Plan Regional Structure

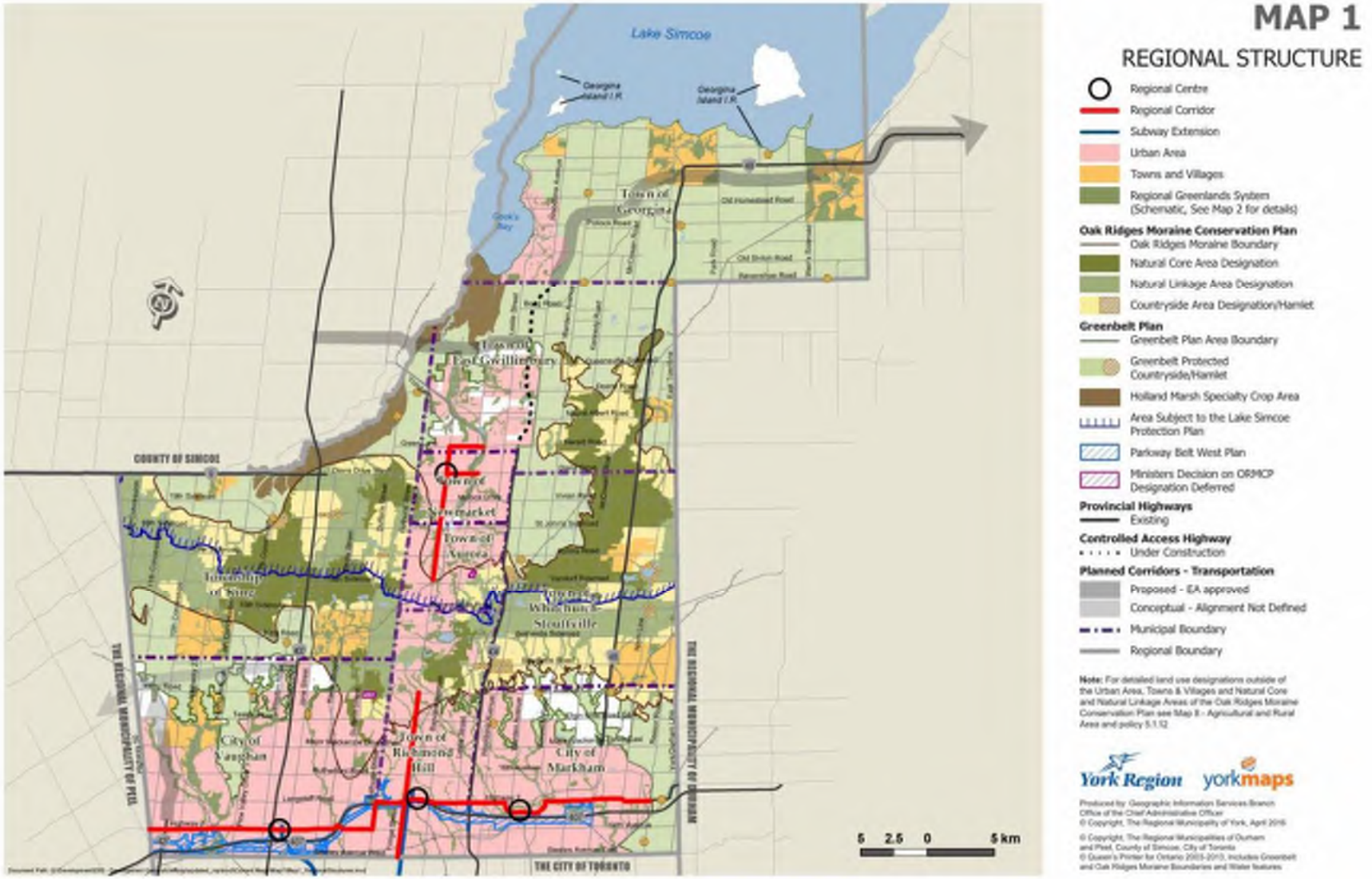


Figure 2-4. Official Plan Street Network

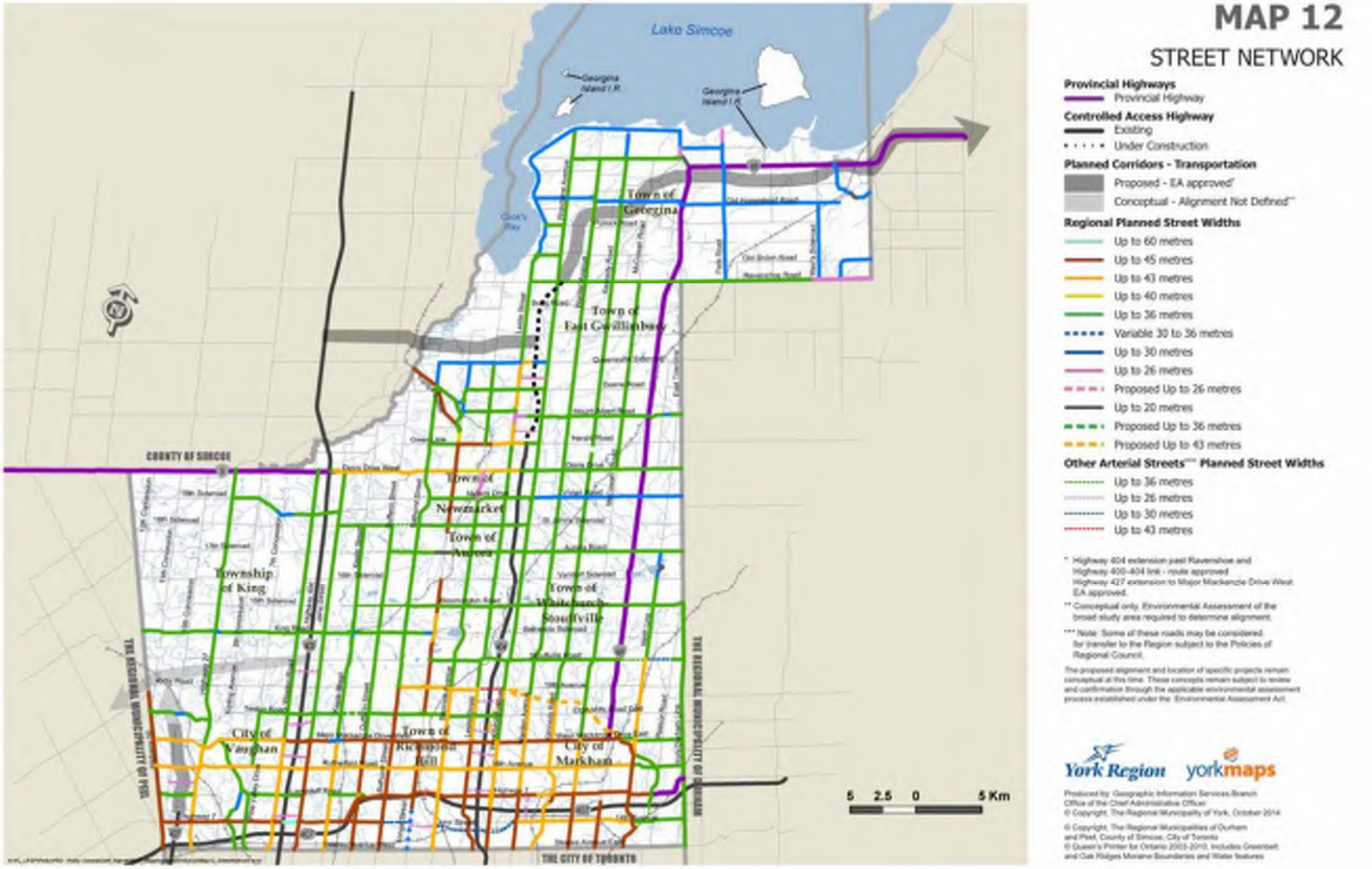
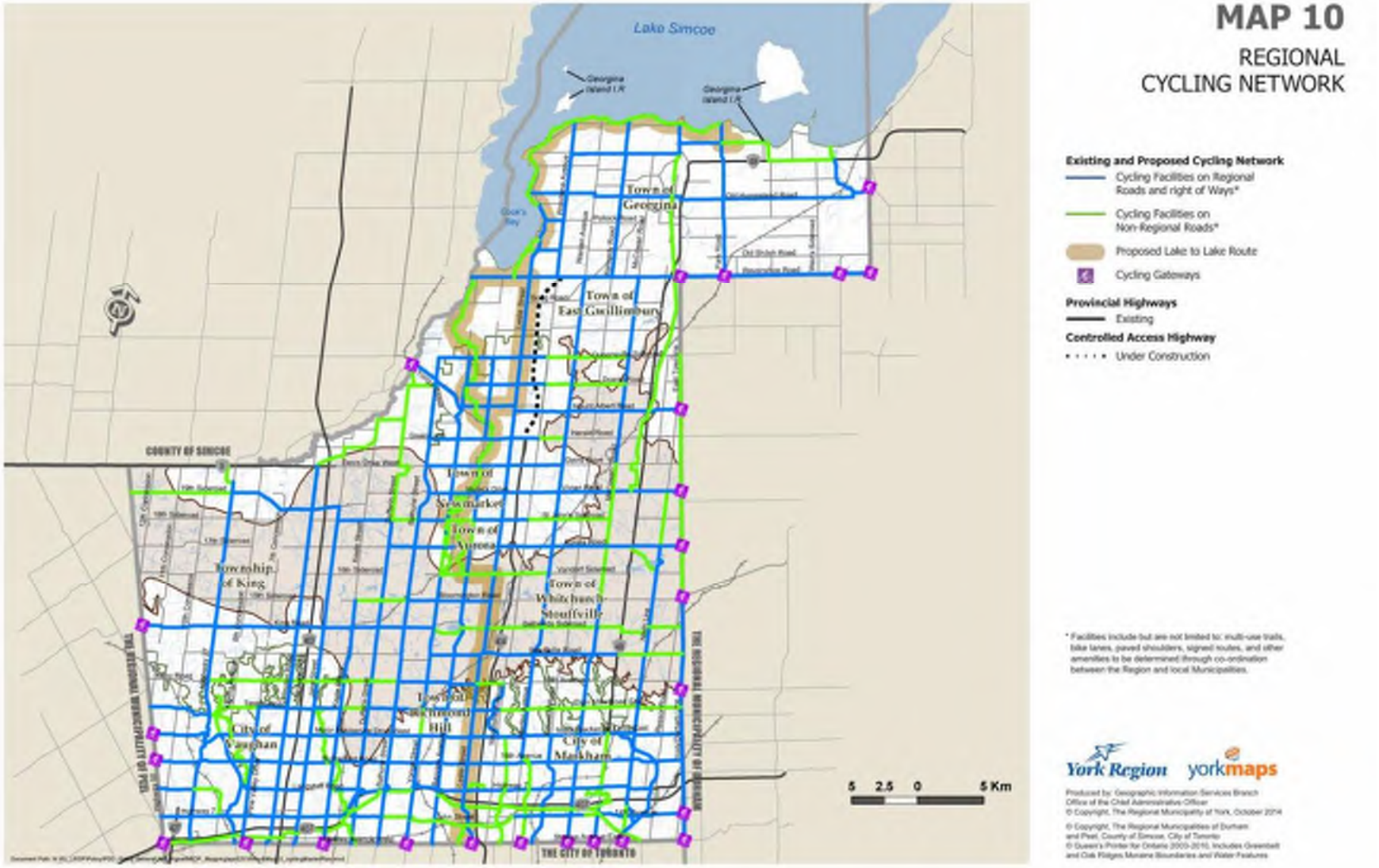


Figure 2-5. Official Plan Cycling Network



2.2.4 TRANSPORTATION MASTER PLAN

The York Region Transportation Master Plan (TMP) builds on the Region's Official Plan and sets out the infrastructure and policy requirements required to build and maintain the transportation system. This includes planning and policies for additional transit infrastructure, roads and a system of sidewalks and trails to facilitate active transportation.

The TMP is a fundamental planning / policy document addressing the capacity of the current transportation network and maintaining the quality of life for Region residents and businesses while accommodating the dramatic growth that is forecast by the Growth Plan.

The TMP is founded on the following principle:

> *An interconnected mobility system that encourages active transportation, and is supported by compact, complete communities is essential to creating a healthy, economically-vibrant, socially-connected and sustainable Region. The delivery of this interconnected system of mobility is supported by the progressive objectives, policies and actions embedded in many of the Region's Council-approved plans and documents, including Vision 2051, the York Region Official Plan (2010), the 2015 to 2019 Strategic Plan, as well as the previous 2002 and 2009 Transportation Master Plans and the 2008 Pedestrian and Cycling Master Plan.*

Traffic congestion continues to be identified as the top issue facing York Region residents, according to an annual survey conducted by an independent third party organization. Furthermore, in that same survey, residents identified traffic as the greatest threat to quality of life in York Region, followed closely by the high rate of development taking place. Nevertheless, there is still a very strong reliance on use of vehicles to meet travel needs and in particular movement of goods. The TMP provides a detailed overview of a number of issues that may affect future travel demand in York Region and also outlines how the Region will address future growth, respond to emerging trends in transportation, improve options for sustainable travel and manage the road network effectively.

The five objectives of the TMP are listed below and some of the specific aspects of each **objective that are directly relevant to the Langstaff Road Class EA study are highlighted in bold tex**t.

- Objective 1 - Create a World Class Transit System
  - Maximize the potential of Regional Express Rail
  - **Improve transit frequency and coverage through implementation of the Frequent Transit Network**
  - Extend the Yonge North Subway to Richmond Hill Centre

- Objective 2 - Develop a Road Network Fit for the Future
  - Utilize technology to improve efficiency of the road network
  - **Expand high occupancy vehicle/transit network**
  - **Develop the finer grid road network**
  - **Build context sensitive multi-modal corridors**
  - **Complete Langstaff Road "Missing Link"**
- Objective 3 - Integrate Active Transportation in Urban Areas
  - **Accelerate active transportation infrastructure that connects communities to transit spines, major destinations and Regional Centres**
  - **Work with MTO to make highway interchanges pedestrian and cycle friendly**
  - Complete gaps in sidewalks
- Objective 4 - Maximize the Potential of Employment Areas
  - **Complete the Langstaff Road Missing Link**
  - **Designate a Strategic Goods Movement Network**
  - **Protect for and implement ramp extensions** and interchange
- Objective 5 - Make the Last Mile Work
  - Provide safe and convenient walking/cycling opportunities to mobility hubs
  - Manage parking supply and demand with innovation, pricing and technology
  - Embrace emerging technologies and the sharing economy to improve convenience and mobility

The improvements contemplated by the Langstaff Road Class EA study directly relate to the many of the objectives and key actions identified in the TMP. These are discussed in more detail below.

2.2.4.1 CREATE A WORLD CLASS TRANSIT SYSTEM

The TMP recognizes distinct levels of transit delivery that must be integrated in order to create an efficient and attractive transit system in York Region. Provincial infrastructure plans include Metrolinx's Regional Express Rail (RER) (GO Transit) service and the future 407 Transitway. York Region initiatives include Rapid Transit (Viva Bus Rapid Transit), support for the Yonge North Subway and Spadina Subway extensions, Frequent Transit Network (FTN) and strategies to integrate Regional Viva/YRT with TTC and GO Transit.

The *Proposed 2041 Transit Network* (**Figure 2-6**) identifies a Frequent Transit Network (FTN) in urban areas of York Region. Located in key corridors, FTN routes will offer reliable services

that are so frequent, customers do not need to use a schedule. The FTN route structure will consider that Viva Network Expansion (VNEP) and future stages of Viva development, as well as the need to connect to TTC subway stations and GO's RER program. FTN routes will operate on shared rights-of-way with arterial roads but will require efficient traffic operations to support service frequency. FTN routes will continue to be complemented by other YRT Local, Express, Shuttle and Community Bus services.

The TMP identifies Langstaff Road as part of the ultimate FTN system.

It is noted that the Vaughan Metropolitan Centre (VMC) is identified as an Anchor Mobility Hub. Mobility Hubs are major transit stations and the surrounding areas that have significant levels of planned transit, high residential and employment development potential. There are currently six Mobility Hubs defined in the Metrolinx Regional Transportation Plan, including the VMC. The function of the VMC as a Mobility Hub underscores the importance of planning an efficient and well connected arterial road system in the surrounding areas, which includes the Langstaff Road Class EA study area. This is discussed further in **Section 2.3.3** of this report.

Figure 2-6. Creating a World Class Transit System

The Region's transit network involves the integration of the following key components:

Regional Express Rail

- Metrolinx is transforming the GO rail network to include electrified GO Trains and two-way all day service.

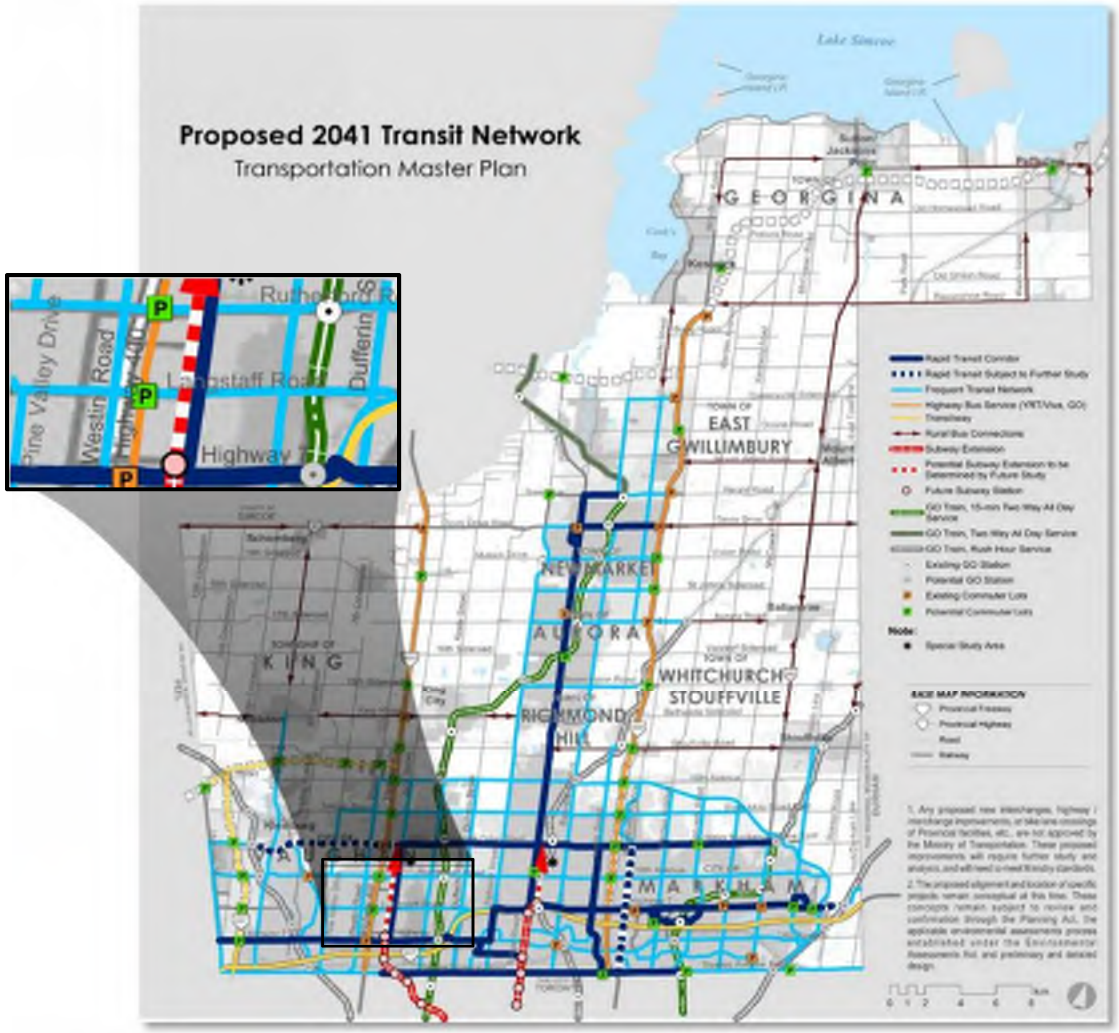
Rapid Transit

- Rapid transit corridors are planned to connect between Regional Centres. Rapid transit corridors are designated on Major Mackenzie Drive, Highway 7, Steeles Avenue, Jane Street, Yonge Street, and Leslie Street.

Frequent Transit Network

- Develop a Frequent Transit Network along major corridors in the urban areas to enhance York Region Transit/ Viva service levels. Frequent Transit Network will operate at frequencies of 15 minutes or less.

Langstaff Road is identified as part of the Frequent Transit Network.



2.2.4.2 DEVELOPING A ROAD NETWORK FIT FOR THE FUTURE

York Region's road network plays a foundational role in mobility. The smooth delivery and operation of York Region's road network is critical to economic health and quality of life. Planning, designing, constructing, operating and maintaining Regional roads in a manner that is consistent with the principles underlying the TMP will be fundamental to achieving its goals.

As noted previously, the TMP states that increasing traffic congestion is a threat to York Region's livability and economic competitiveness. The TMP strategies and policy areas related to the future road network take advantage of technological advancements and adopt new approaches to using public rights-of-way, such as the concept of complete streets which will help the Region encourage alternative modes and managing congestion. Other steps to improve the connectivity of Regional and local collector road networks will also have an important role.

The TMP notes that the future road network will provide York Region residents and businesses with benefits, including:

- Supporting the efficient movement of goods and services through implementation of key corridors;
- Supporting communities and managing congestion by providing new and expanded Regional roads;
- Providing greater travel route choices with a finer grid road network; and
- Connecting missing links in the road network by removing physical barriers and providing grade separations.

The Regional road network is set on a grid with several 'missing links', leading to circuitous routing by users and contributing to more traffic congestion. The TMP strives to complete the grid network by planning for construction of several key Regional road connections including a connection between Jane Street and Keele Street, across the CN MacMillan Rail Yard.

Figure 2-7 depicts the Proposed 2041 Road Network and highlights the proposed improvements for Langstaff Road, in the context of the broader Regional road network.

Figure 2-7. Transportation Master Plan – Developing a Road Network Fit for the Future

The Region's strategy for developing the future road network includes:

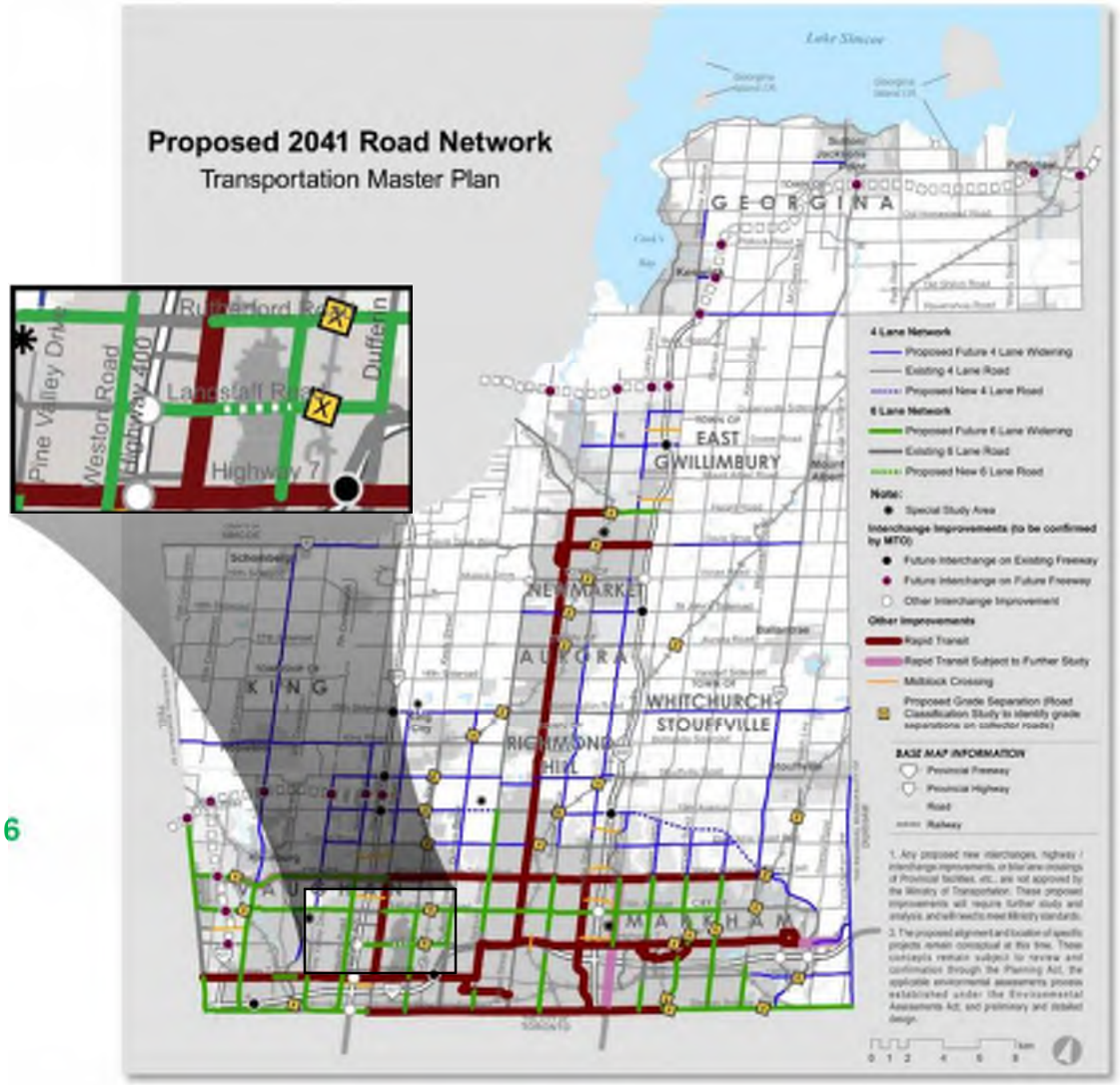
Increase Road Capacity in Strategic Areas

- New and expanded roads will be required to serve planned growth areas.

Developing the Finer Grid Road Network

- Complete the Langstaff Road connection, which also contributes to the TMP objective of *Maximizing Potential of Employment Areas*.

Langstaff Road is proposed to be widened to 6 lanes between Weston Road and Dufferin Street, including a connection crossing the CN MacMillan Yard.



2.2.4.3 INTEGRATE ACTIVE TRANSPORTATION IN URBAN AREAS

Active transportation includes walking, running, cycling, in-line skating and non-mechanized scooters and wheelchairs. Walking and cycling are fundamental to healthy and sustainable communities. The Region is in its infancy in the development of its Active Transportation Network which creates some challenges because pedestrians and cyclists represent the minority of travellers. Nevertheless, without building the infrastructure, it is unlikely that active transportation use will increase in York Region. The TMP aims to make active transportation more comfortable, safe and convenient, to make this a more attractive mobility option. The TMP integrates key elements of the Region's 2008 Pedestrian and Cycling Master Plan (PCMP) and strengthens the Region's role in providing on- and off-road facilities for walking and cycling. It focuses on building regional networks, improving connections within Urban Growth Centres and to major destinations, improving access to public transit services and encouraging consistency among local municipalities in the delivery of active transportation infrastructure.

The TMP notes that integrating active transportation infrastructure in urban areas will provide benefits to York Region residents and businesses including the following:

- Making sustainable travel choices more attractive and viable with a more connective cycling network;
- Improving access to transit by completing missing links in the cycling and sidewalk network;
- Promoting an active and healthy lifestyle by providing safer, walkable routes to schools and other key destinations; and
- Connecting key destinations and urban areas by prioritizing cycling links.

The Region's Pedestrian and Cycling Master Plan, completed in 2008, set out a vision for a Regional-wide active transportation network integrated with local municipal pedestrian and cycling infrastructure and public transit. Since 2008, the Region has made significant strides in advancing active transportation infrastructure. The network has grown by 154 kilometres of multi-use trails, 28 kilometres of bike lanes and 243 kilometres of paved shoulders.

Figure 2-8 depicts the Proposed 2041 Cycling Network and highlights the proposed "separated" cycling facility for Langstaff Road.

Figure 2-8. Transportation Master Plan - Integrating Active Transportation in Urban Areas

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

Strategic Cycling Network

- Linking existing cycling facilities and those planned through road and transit projects to create network connections to Regional Centres, transit stations and adjacent municipalities.

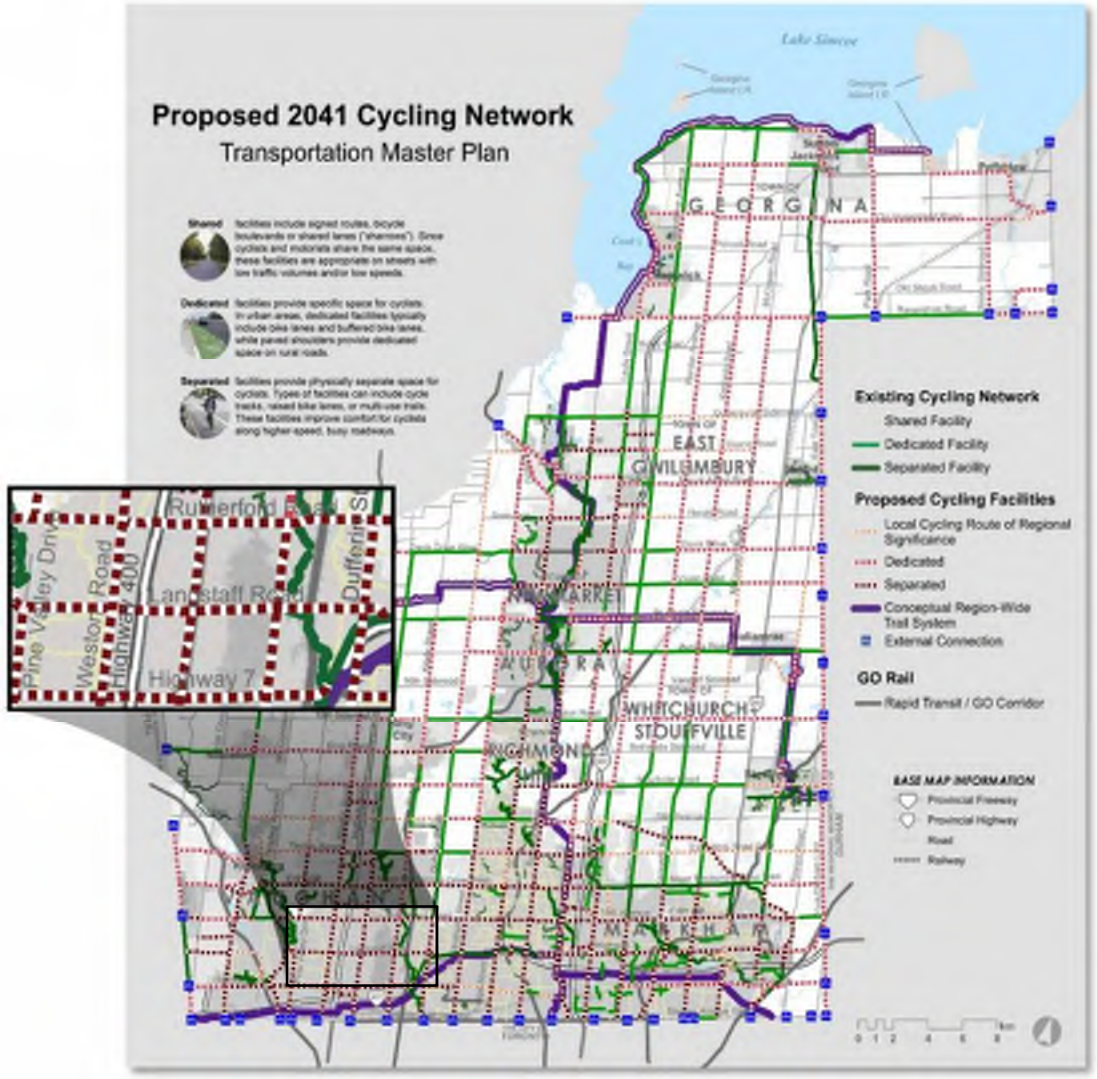
Addressing Sidewalk Gaps

- Address gaps to improve connections to transit stations and destinations.

New Design Approaches

- To improve safety, comfort and convenience of cyclists and to consider the type of cycling facilities based on traffic speeds and volumes.

Langstaff Road is identified for a separated cycling facility.



2.2.4.4 MAXIMIZING POTENTIAL OF EMPLOYMENT AREAS

One of the objectives in the York Region Transportation Master Plan (2016) is to *Maximize the Potential Employment Areas*. The City of Vaughan, in particular, has a significant number of manufacturing and industrial establishments many of which are located within the study area in close proximity to Langstaff Road.

With the growth of York Region's economy and associated freight activities, there are increasing needs for an efficient strategic network to facilitate safe and efficient movement of goods to and from key origins and destinations including:

- Provincial highways;
- intermodal rail yards, and commercial business; and
- industrial employment areas.

Goods movement is already constrained in this area of Vaughan, particularly in the east-west direction, as a result of physical constraints such as the CN MacMillan Rail Yard, the Boyd Conservation Area and other natural features. These constraints result in Highway 7 being reduced to only four lanes west of Islington Avenue, and Langstaff Road being discontinuous between Jane and Keele Streets.

During the development of the TMP, the Region consulted with businesses and developers regarding maximizing the potential of employment areas and facilitating goods movement and improving connectivity to employment areas. The most commonly heard comments were:

- Need to connect Langstaff Road across the CN MacMillan Rail Yard;
- Regional roads are for all traffic, including trucks, and safety for all modes should remain a priority;
- Intermodal hubs (e.g. CN) and communities/corridors with through truck movements are areas of concern in regards to congestion; and
- A Goods Movement Strategy is needed to address the key generators for commercial vehicle traffic.

The TMP indicates that maximizing the potential of employment areas will provide the following benefits:

- An understanding of which corridors give goods movement priority;
- A clear Goods Movement policy and road hierarchy will provide clarity regarding the function and design of Regional roads to support efficient goods movement;
- Increased understanding about the importance of efficient goods movement to York Region's economy, to managing congestion and the environment;

- Ensuring that trucks can easily access 400-series highways and their destinations supporting growth of the York Region's economy;
- Accessibility to employment lands will enable continued growth in York Region; and
- Providing reliable, quality transit service to employment areas will help maximize their potential.

All Regional roads are intended to carry trucks, and are part of the general goods movement network. The identification of a limited number of Regional roads as part of a Strategic Goods Movement Network (SGMN) can promote preferred haul routes, prioritize road investments and highlight corridors that could benefit most from the application of freight-supportive street design standards and land use planning. In general, truck routes are intended to permit and focus the movement of trucks carrying hazardous goods, pick-up and delivery vehicles, and heavy or long combination vehicles.

Figure 2-9 depicts the Proposed Strategic Goods Movement Network as well as the criteria for identifying the three levels of goods movement (Exhibit 7.1 of the TMP).

Langstaff Road is identified as a *Primary Arterial Goods Movement Corridor* between Highway 400 and Dufferin Street. In order to accommodate trucks on Primary Arterial Goods Movement Corridors, the Transportation Master Plan generally considers these roadways to apply freight-supportive street design standards and land use planning policies and are typically future six-lane corridors with inclusion of truck design elements.

The Highway 400 interchange at Langstaff Road is also identified for improvements to support the SGMN.

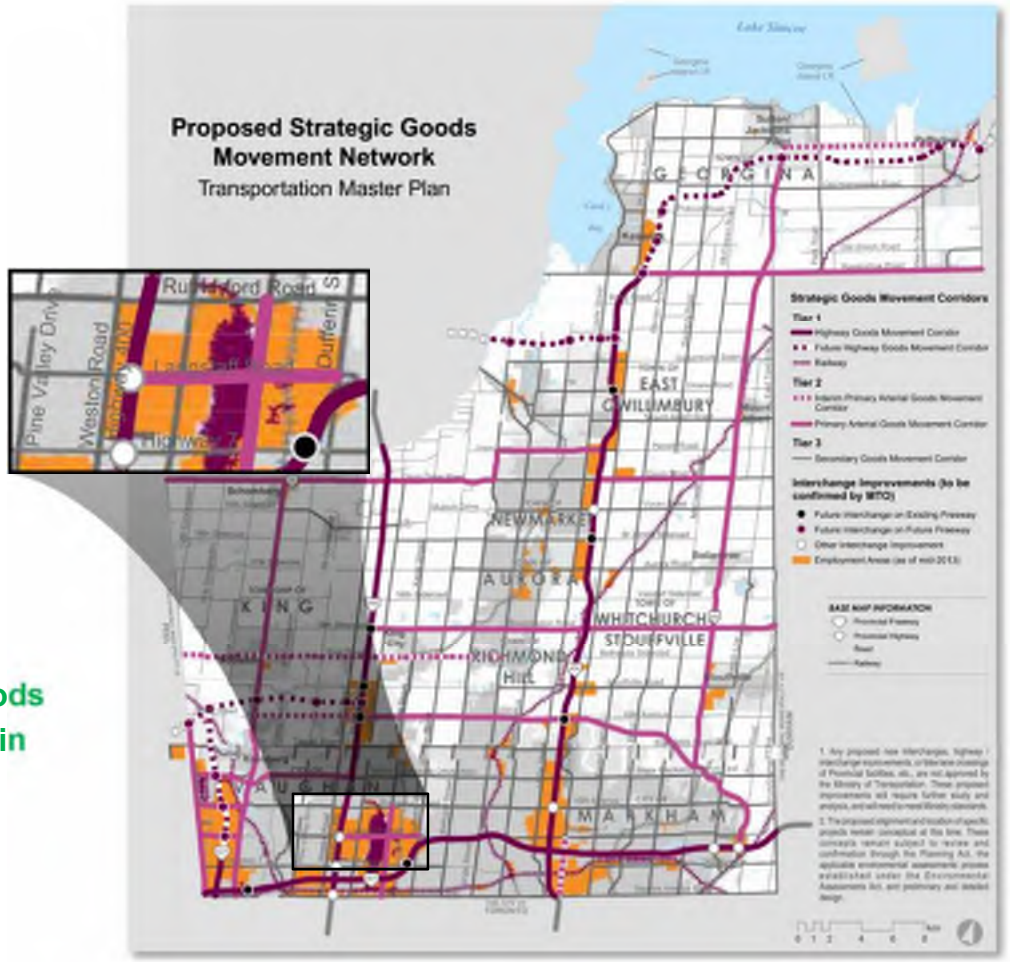
Lastly, the TMP identifies the completion of a connection across the CN MacMillan Rail Yard as being a '*major initiative to support maximizing the potential of employment areas'*.

Figure 2-9. Transportation Master Plan – Maximizing Potential of Employment Areas

The TMP identifies three levels of goods movement based on the criteria presented

CLASSIFICATION AND DESCRIPTION	TYPICAL VOLUMES	ACCOMMODATION OF TRUCKS
Highway goods movement corridors • 400 series freeways and secondary highways	• More than 3,000 trucks per day • More than 5% medium and heavy trucks	• Mixed traffic • May have HOV lanes or shoulder transit lanes
Primary arterial goods movement corridors • Urban arterials serving employment and industrial lands	• More than 2,500 trucks per 8-hour period • More than 10% medium and heavy trucks	• Mixed traffic • Generally future six-lane corridors • Minimal overlap with rapid transit corridors • Consider truck-only design elements in special cases
Secondary arterial goods movement corridors • All other Regional arterial roads	• Fewer than 2,500 trucks per 8-hour period • Fewer than 10% medium and heavy trucks	• Mixed traffic

York Region Transportation Master Plan (2016)



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

The Highway 400 interchange at Langstaff Road is identified for improvements to support the SGMN.

Langstaff Road is proposed to be connected across the CN MacMillan Yard.

2.3 CITY OF VAUGHAN PLANNING POLICIES AND RELATED STUDIES

2.3.1 OFFICIAL PLAN

The City of Vaughan Official Plan (as amended, 2017) is part of an overall Growth Management Strategy, initiated by Council, which will shape the future of the City and guide its continued transformation into a vibrant, beautiful and sustainable City.

The overall Growth Management Strategy consists of three main components:

- Vision 2020 – the City's Strategic Plan;
- Green Directions – the City's Sustainability Master Plan; and
- A Plan for Transformation – the City's new Official Plan.

The main principles of Vaughan's Vision for Transformation and the resultant policies are summarized through eight key themes, identified below. These have become the goals of the Official Plan.

- Strong and Diverse Communities;
- A Robust and Prominent Countryside;
- A Diverse Economy;
- A Vibrant and Thriving Downtown;
- A Green and Sustainable City; and
- Directing Growth to Appropriate Locations.

With respect to the goal of a vibrant and thriving downtown, the Province has identified the Vaughan Metropolitan Centre (VMC) as a provincially designated Urban Growth Centre, recognizing its location along the Highway 7 Viva corridor and at the terminus of the planned Spadina Subway Extension.

The VMC is envisioned to become Vaughan's downtown – the highest density node within the City and a focus for civic activities, business, shopping, entertainment and living. The VMC can accommodate a significant amount of Vaughan's planned residential and employment growth and it is an appropriate location for major Institutional uses. Through planning, design, programming and investment, the VMC *will be the focus of Vaughan's identity*.

There are a number of other growth centres (Primary and Local Centres) in close proximity to the Langstaff Road Class EA study area:

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

Vaughan Mills Centre is a 146.4 hectare site located between Rutherford Road and Bass Pro Mills Drive adjacent to Highway 400 and just north of the Langstaff Road Class EA study area. There is potential for a complete, walkable and mixed-use community with 4,300 residences and 10,900 jobs.

The Concord GO Centre is a 162 hectare site located adjacent to Highway 7 and Highway 407, south of the Langstaff Road Class EA study area. This area is planned for mixed-use, higher density developments and inter-urban transit supportive land use. The area is expected to accommodate 4000 to 8000 residents and 8000 to 10,000 jobs.

Selected Official Plan Schedules are provided in **Figures 2-10, 2-11 and 2-12** and key aspects are summarized below:

- The Vaughan Metropolitan Centre is identified as an intensification area;
- Lands adjacent to Langstaff Road between Weston Road and Dufferin Street are designated for employment;
- Lands west of Dufferin Street are designated residential;
- Langstaff Road is identified as a *Proposed New Road Link* between Keele Street and Jane Street;
- Interchange improvements are identified for the Highway 400 / Langstaff Road Interchange;
- A rail grade separation is identified for the Barrie GO Rail crossing, east of Keele Street;
- Core features of the Natural Heritage System are identified in three locations: within the Highway 400 Interchange; along the valley crossing just east of Keele Street; and at the woodland located in the northeast quadrant of Langstaff Road and Dufferin Street.

For more information, the City of Vaughan Official Plan may be accessed at the following link:

https://www.vaughan.ca/projects/policy_planning_projects/official_planning_2010/Pages/default.aspx

Figure 2-10. City of Vaughan Urban Structure

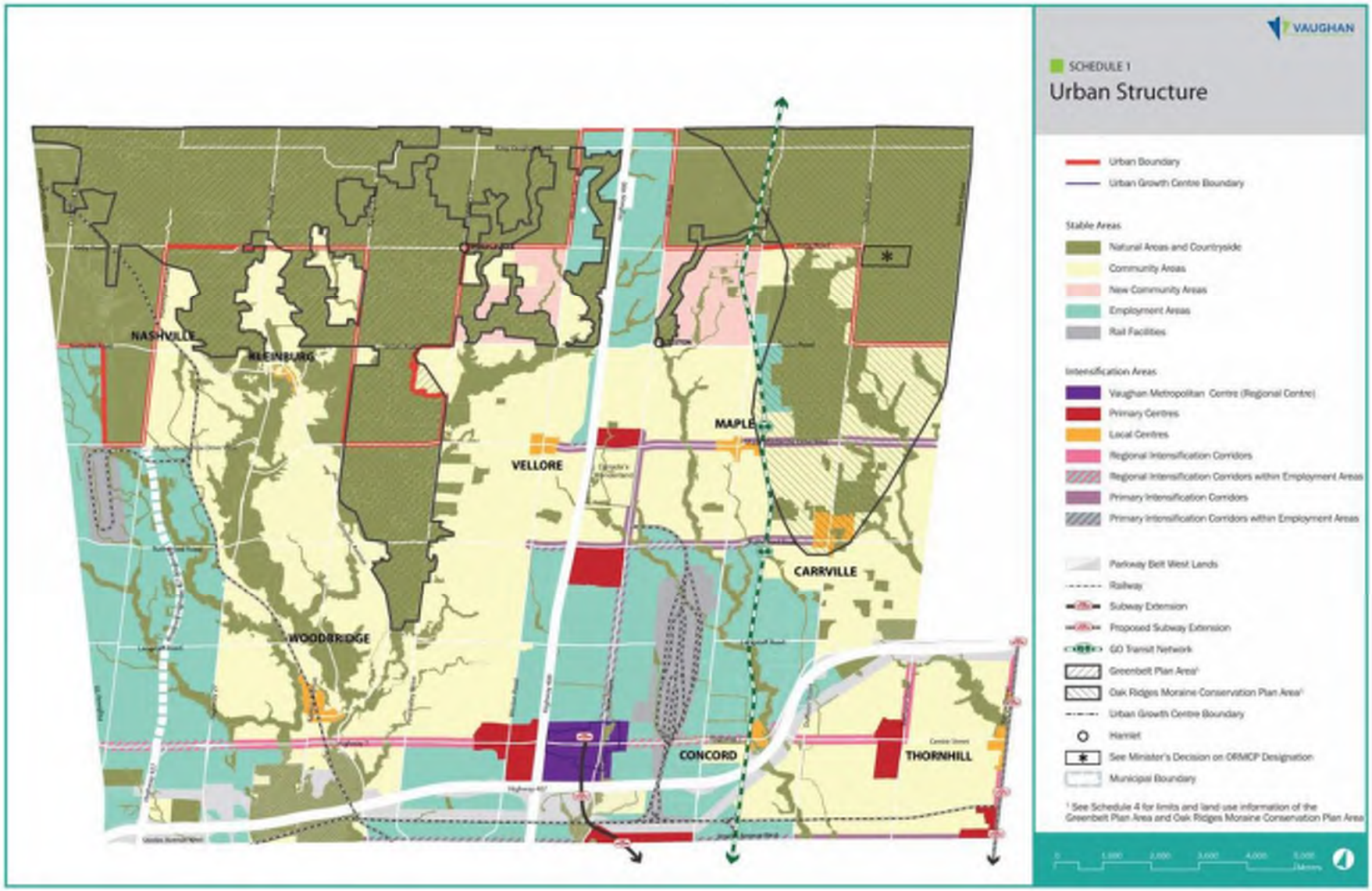


Figure 2-11. City of Vaughan Transportation System

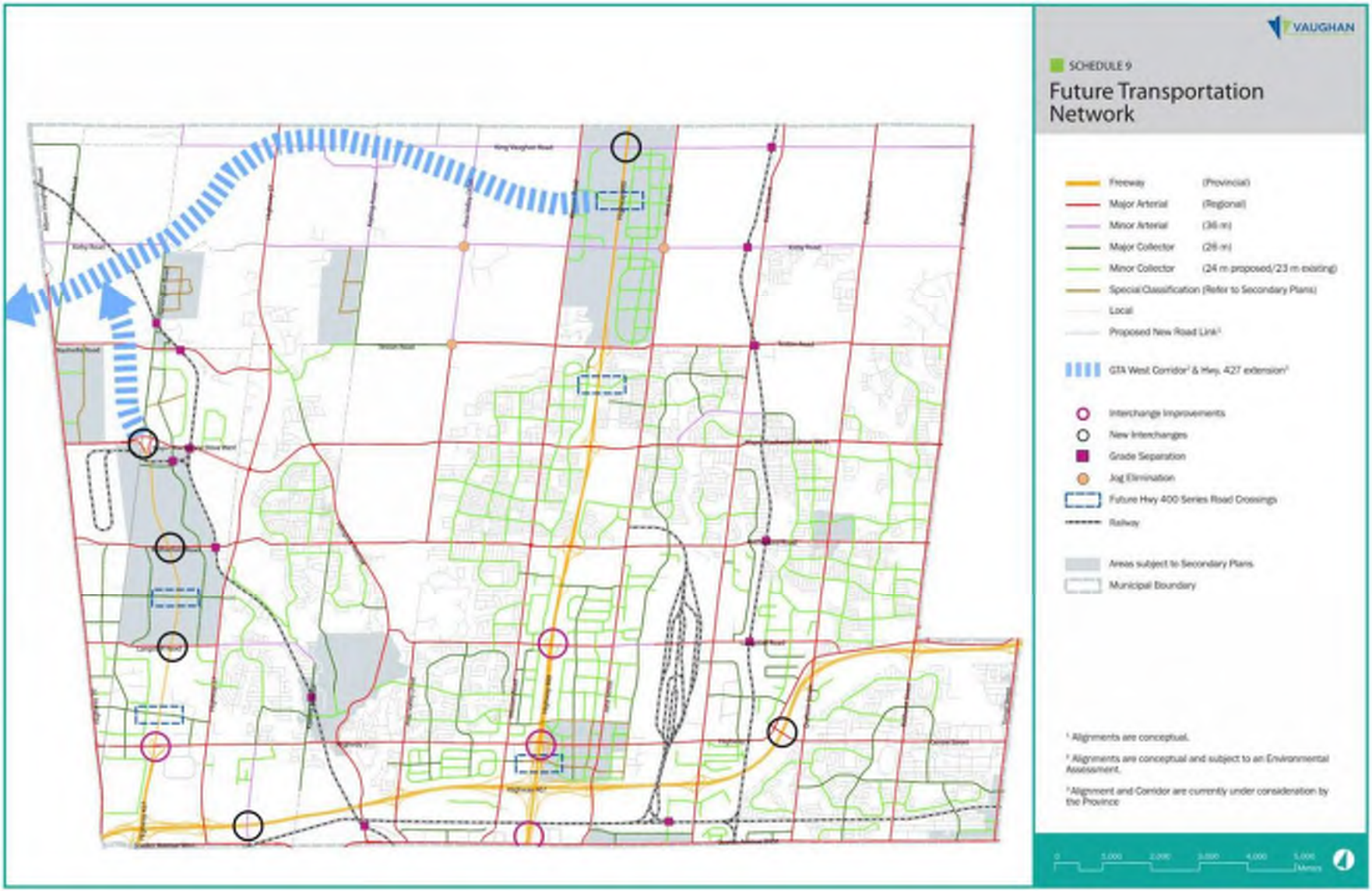
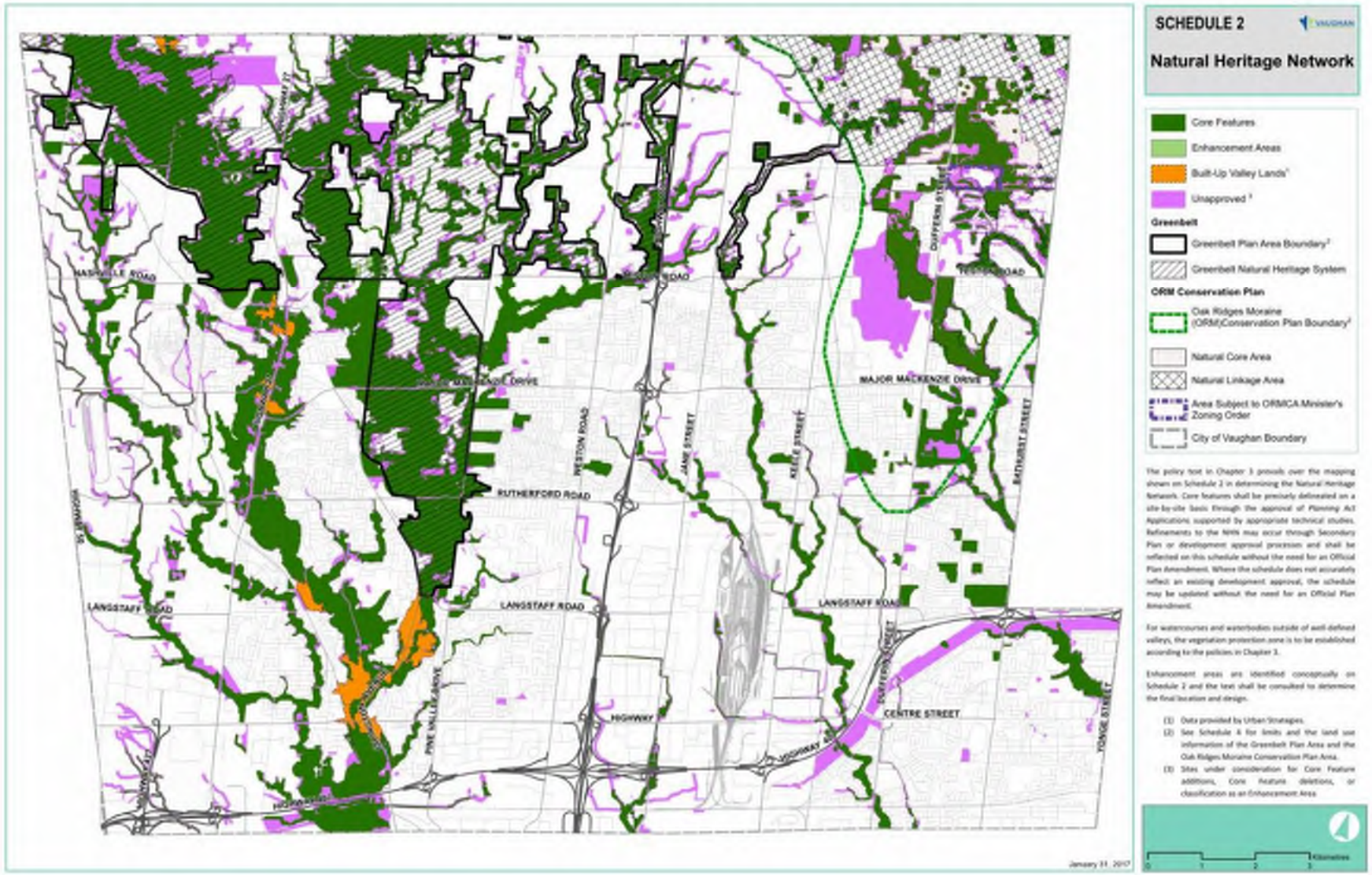


Figure 2-12. City of Vaughan Natural Heritage Areas



2.3.2 VAUGHAN METROPOLITAN CENTRE SECONDARY PLAN

The Vaughan Metropolitan Centre, as identified in the City of Vaughan's Official Plan extends from Highway 400 in the west, to Creditstone Road in the east, and from Portage Parkway in the north, to Highway 407 in the south (**Figure 2-13**). The Vaughan Metropolitan Centre is located northeast of the Highway 400 and Highway 407 interchange. In addition to the so defined Vaughan Metropolitan Centre lands, the Vaughan Official Plan also defines the former Vaughan Corporate Centre area into lands west of Highway 400 and east of Weston Road as a Primary Centre; and lands east of Creditstone Road and west of the CN rail lands are designated as an Employment Area.

The Vaughan Metropolitan Centre Secondary Plan that constitutes a part of the City of Vaughan Official Plan was originally approved by the City of Vaughan Council in September 2010 and is intended to guide and regulate development of the Vaughan Metropolitan Centre. The Secondary Plan was partially approved by the Ontario Municipal Board on November 18, 2015, November 18, 2016 and January 23, 2017.

The VMC UGC is unique amongst the 25 designated Urban Growth Centres (UGC) in the *Growth Plan* as it has the greatest potential and is the least developed of all the UGCs. It is one of only two UGCs outside of Toronto that is planned to be served by a subway; it has excellent highway access; and it is not directly adjacent to existing low-density residential fabric.

Complementary to the VMC's status as an Urban Growth Centre is its designation as an Anchor Mobility Hub in the Metrolinx's Regional Transportation Plan (RTP). This designation reflects the fact that the VMC will be the place where two rapid transit lines - the Spadina subway extension and VIVA's Highway 7 line - will intersect and converge with the regional bus network.

Anchor Mobility Hubs are envisaged as the "anchors" of a successful regional transportation network and are recommended to achieve a density of 200-400 people and jobs per hectare. Mobility hubs are ideal locations to develop transit supportive residential and employment densities and should evolve as vibrant places of activity and major regional destinations.

The City of Vaughan Official Plan notes that the VMC will comprise distinct development precincts including residential neighbourhoods, office districts, employment areas and mixed-use areas, all linked by a robust system of parks, squares and open spaces and a fine grain grid pattern of streets. It establishes growth targets for the VMC of 12,000 residential units and 6,500 new jobs by 2031.

The Secondary Plan proposes new local road connections and improvements to the existing local system within the VMC to enhance the connectivity within the centre and with regional

roads. The Secondary Plan acknowledges that improvements to Regional roads, including the connection of Langstaff Road across CN lands, improvements to the Highway 400 / Langstaff Road Interchange and provision for active transportation and local transit will enhance the overall function of the VMC.

Figure 2-13. Vaughan Metropolitan Centre Urban Design Concept

Source: UrbanToronto.ca February 16, 2016

2.3.3 VAUGHAN METROPOLITAN CENTRE AND SURROUNDING AREAS TRANSPORTATION STUDY

The Vaughan Metropolitan Centre (VMC) has been the subject of several transportation studies, the Secondary Planning process described in the section above, transit corridor and environmental assessment studies. These studies have provided direction for specific policies and infrastructure needs to be implemented within the VMC area. However, questions related to the feasibility, cost and operations associated with specific transportation infrastructure recommendations and truck traffic required more detailed analysis.

The purpose of the Vaughan Metropolitan Centre and Surrounding Areas Transportation Study (Halcrow 2013) was to further define the transportation infrastructure needed to facilitate planned (and potential) development within the VMC and surrounding areas to ensure feasibility from a technical perspective. The study, undertaken jointly by the City of Vaughan

and York Region, reviewed transportation network issues that had been identified in previous work, including the Highway 400 / Langstaff Road Interchange and the Langstaff Road Extension which are described below.

Highway 400 / Langstaff Road Interchange

The VMC Transportation Plan (VMC TP) indicated that the provision of a full interchange at Highway 400 and Langstaff Road would greatly improve accessibility to the VMC and surrounding areas, assist in diverting auto and truck traffic from the full movement interchanges at Highway 7 and Rutherford Road and provide an alternate truck route for the industrial lands located west of the CN MacMillan Rail Yard.

Halcrow's analysis of the benefits of providing a full interchange at Highway 400 / Langstaff Road indicated that the Weston Road and Jane Street corridors between Rutherford Road and Langstaff Road would experience a reduction in traffic volumes as well as reduced traffic volumes on Highway 400 northbound. Therefore the provision of a full-movement interchange at the existing Highway 400 / Langstaff Road partial interchange was reviewed for constructability and feasibility. Alternative functional designs were developed for the northbound on-ramp and the southbound off-ramp for discussion with MTO.

Langstaff Road Extension

A key network recommendation from the VMC TP was the connection of Langstaff Road across the CN MacMillan Rail Yard between Creditstone Road and Keele Street as it would aid in the reduction of traffic volumes on both Highway 7 and Rutherford Road, provide alternate routes for truck traffic and provide better servicing options to the industries located in the area, as well as improve the Regional travel linkages from Keele Street westerly to Islington Avenue.

Halcrow (2013) considered three alignments for the Langstaff Road crossing of the rail yard: a north alignment, a centre alignment and a south alignment for discussion with CN Rail.

Study Conclusions

- The study concluded that Langstaff Road improvements would offer substantial benefits to the operation of the overall transportation network, addressing existing and projected traffic congestion on other east-west routes including Highway 7 and Rutherford Road and improving access to VMC and existing / planned industrial development within the VMC and surrounding area.
- The study supported the general feasibility of the Langstaff Road extension and full movement interchange at Highway 400 and identified the technical issues to be addressed in subsequent, more detailed studies.
- The study recommended that these improvements be implemented together in the 'medium-term' (2017 to 2031).

2.4 OTHER RELATED PLANS

2.4.1 HIGHWAY 400

The Ontario Ministry of Transportation (MTO) is currently implementing High Occupancy Vehicle (HOV) lanes on Highway 400 from Major Mackenzie Drive to King Road with a target completion date of 2018, through the Southern Highway Program (2016-2020).

MTO has indicated an interest to consider pursuing extending HOV lanes on Highway 400, to south of Major Mackenzie Drive, including through the Langstaff Road Interchange area, in the future. Currently there are no timeframes identified for this work.

2.4.2 CANADIAN NATIONAL RAIL MACMILLAN RAIL YARD

The MacMillan Rail Yard is the 2nd largest rail classification yard in Canada, after Canadian National's (CN) Symington Yard in Winnipeg. It is named after former CN president Norman John MacMillan.

The MacMillan Rail Yard is located at the junction of the CN York Subdivision and CN Halton Subdivision. The yard measures approximately 4 km in length and 1.6 km in width with a north-south orientation. The property is bordered by four main roads: Highway 7 to the south, Keele Street to the east, Rutherford Road to the north, and Creditstone Road to the west. There are five road entrances into the yard which are designated as: S Yard, Jane Street, CargoFlo, Bowes Street, and Administration Road.

Much of the yard is comprised of side-by-side track, switches, and control tower buildings. The yard is designed to take incoming trains and reorganize and rejoin the individual cars based on destination to create new departing trains. The yard operates 24 hours a day and handles over 1 million cars (loads and empties) per year. In addition to car handling, other yard facilities include locomotive repair, car washing, and car repair. Additional detail regarding the yard operations can be found in **Section 5.1.2** of this report.

The yard was developed in the late 1950s as part of CN's redesign of its Toronto track network. At the time of construction, Vaughan was a largely rural community, however, subsequent development on adjacent properties has created an industrial area surrounded by a variety of industrial consignors, distributors, and suppliers. Some commercial establishments (e.g., restaurants, retail and wholesale outlets) are located along the perimeter of the yard.

CN Rail has been engaged by York Region during the Langstaff Road Class EA study and has indicated that currently there are no plans for operational change or improvements / expansion of the McMillan Rail Yard. CN Rail will continue to be engaged through the Langstaff Road

Class EA study and any evolving plans by CN Rail will be incorporated in to the study, as appropriate.

2.4.3 METROLINX REGIONAL TRANSPORATION PLAN (*THE BIG MOVE*)

The Barrie GO Line is identified for Regional Rail (two-way full day service) as part of their 15 year plan for Regional Rapid Transit. The anticipated increased service will create more frequent road blockages at the existing at-grade Langstaff Road crossing, located just east of Keele Street.

2.5 SUMMARY OF THE PLANNING AND POLICY FRAMEWORK

Several progressive objectives, policies and actions are embedded in many of the Region's Council-approved plans that support the undertaking of the Langstaff Road Class EA and the consideration of improvements to Langstaff Road, including completion of a road connection across the CN McMillan Rail Yard and improvements to the Langstaff Road Interchange at Highway 400.

The Region's Vision 2051, York Region Official Plan (2010), the Strategic Plan (2015-2019) and the Transportation Master Plan (2016) include the necessary foundation and framework for making decisions about Langstaff Road that fully evaluate economic, environmental and community considerations. The City of Vaughan Official Plan, the VMC Secondary Plan and the VMC Surrounding Areas Transportation Study also provide growth and transportation planning and analysis that recommends improvements to Langstaff Road as a vital part of an efficient transportation network.

The Langstaff Road Class EA study builds on this planning history and policy framework to deliver a study that looks to: improve mobility for residents and businesses; position the Region to respond to the forecasted population and employment growth; and support the successful implementation of the Vaughan Metropolitan Centre, a Provincial Growth Plan-designated Urban Growth Centre.

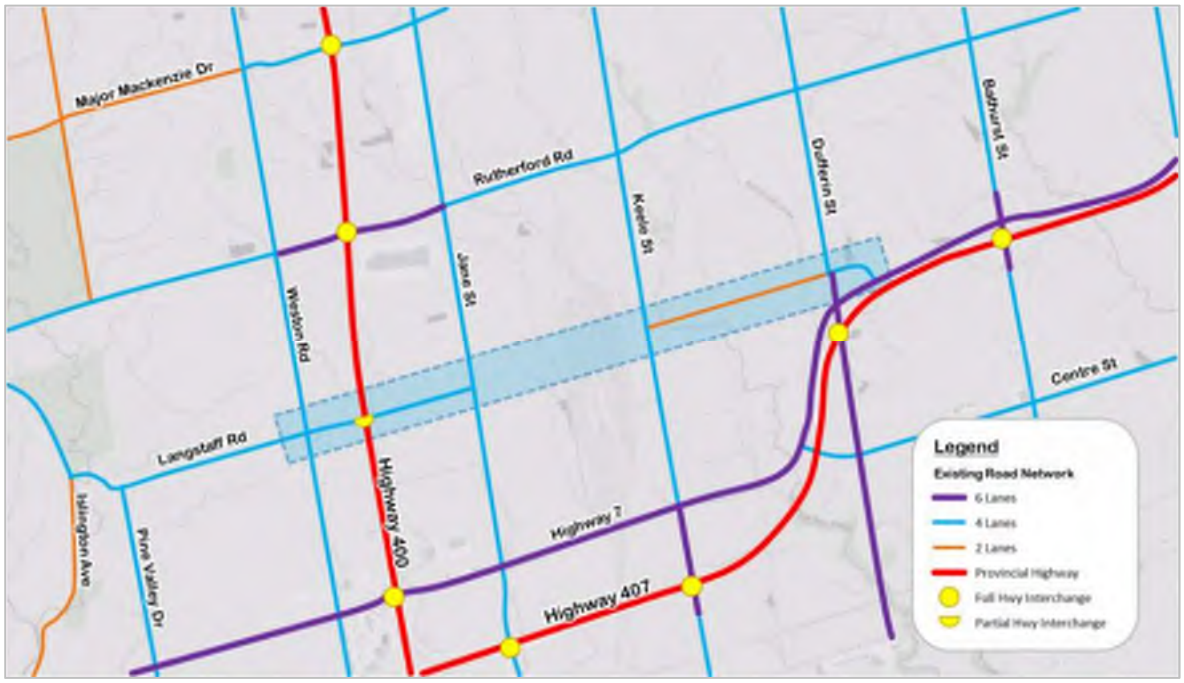
3 TRANSPORTATION ASSESSMENT

3.1 TRAVEL DEMAND STUDY AREA

As noted in the introduction to this report, the primary study area for the Langstaff Road Class EA study area runs from Weston Road and Highway 7. The travel demand analysis considered an extended area beyond the primary study area, bounded by Rutherford Road to the north, Thornhill Woods Drive to the east, Highway 7 to the south and Islington Avenue to the west. This expanded area provided the road network context to facilitate a comprehensive travel demand analysis and review of impacts associated with potential Langstaff Road improvements. The study area is depicted in **Figure 3-1** and the Regional road network surrounding the study area is shown in **Figure 3-2**.

Figure 3-1. Langstaff Class EA Travel Demand Study Area

Figure 3-2. Existing Regional Road Network



In the Regional road network context, Langstaff Road is an arterial road that runs between Islington Avenue to the west and Highway 7 to the east. Due to the location of the CN MacMillan Rail Yard, Langstaff Road is discontinuous between Jane Street and Keele Street. The west segment of Langstaff Road is currently a four lane roadway, whereas the east segment is currently at two lanes. A short segment of Langstaff Road between Jane Street and Creditstone Road (terminating at the CN Rail Yard) is presently a four lane collector road under the jurisdiction of the City of Vaughan.

Langstaff Road is situated along the Highway 400 corridor and is connected to the provincial highway through a partial interchange that provides access to and from the south. Highway 400 is an important element of the transportation system supporting the function and growth of York Region. While it may impose a physical barrier between communities on either side of the highway, its location in the study area serves major business centres and employment areas in the City of Vaughan.

As discussed previously land uses adjacent to Langstaff Road, between Weston Road and Dufferin Street, are predominately commercial and industrial, whereas land uses between Dufferin Street and Highway 7 are primarily residential. The mix of land use within the Langstaff Road EA study area and the discontinued sections of the road due the CN MacMillan Rail Yard pose substantial constraints to the transportation network and require consideration of transportation needs to facilitate a safe, sustainable and efficient travel environment for residents and businesses for the future.

3.2 YORK REGION TRANSPORTATION MASTER PLAN

Section 2.2.4 of this report reviews the key objectives and the Proposed 2041 Transportation Network of the Region's Transportation Master Plan (TMP) that constitute the planning and policy context for the Langstaff Road Class EA study. Additional aspects of the TMP that are particularly relevant to the travel demand analysis are reviewed in this section.

The TMP identifies Langstaff Road improvements between Weston Road and Highway 7 within three sections: Weston Road to Jane Street; Jane Street to Keele Street; and Keele Street to Dufferin Street. York Region has proposed network improvements in each of these sections with a vision to build and improve transportation network connectivity, provide close live / work opportunities, promote efficient movement of goods and people, and invest in infrastructure to support future growth. These improvements include a new road crossing over the CN MacMillan Rail Yard, widening of Langstaff Road with a provision of Transit/High Occupancy Vehicle (HOV) lane in each direction and Highway 400 Interchange improvements.

Population and employment within the extended study area (as presented in **Table 3-1**), is expected to increase by approximately 35% from the current 2016 population of 135,698 and 16% from the current employment of 132,969 by 2041, respectively.

The increase in travel demands associated with future growth will continue to reduce the operating performance of the transportation network in the area unless additional transportation capacity and improved transportation network efficiency are provided, particularly in the east-west direction in the vicinity of the CN MacMillan Rail Yard where transportation network capacity is severely limited.

Table 3-1. York Region Growth Targets within Extended Area

GROWTH TARGETS	2016		2031		2041	
	Population	Employment	Population	Employment	Population	Employment
Total[1]	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%

[1] Based on the Region staff-preferred growth scenario with a 45% intensification target, presented in November 2015 as part of York Region's municipal comprehensive review process.

3.2.1 TMP-RECOMMENDED IMPROVEMENTS ON LANGSTAFF ROAD

To address York Region's future mobility needs, the TMP identifies the following improvements and implementation timing on Langstaff Road, within the study area:

- Weston Road to Jane Street (ID: 2079), Keele Street to Dufferin Street (ID: 2081)
  - Widen to 6 lanes with Transit/HOV lanes
    - TMP Phase (Weston Road to Jane Street): 2027 to 2031
    - TMP Phase (Keele Street to Dufferin Street): 2022 to 2026
  - Part of the Frequent Transit Network to support BRT/Rapid Transit
  - Barrie GO Rail Grade Separation east of Keele Street
- Jane Street to Keele Street (ID: 2080)
  - Construct connection across CN Rail Yard
  - Provide 6 lanes with Transit/HOV lanes
    - TMP Phase: 2027 to 2031
  - Part of the Frequent Transit Network to support BRT/Rapid Transit

3.2.2 TMP-RECOMMENDED IMPROVEMENTS ON OTHER REGIONAL ROADS

The TMP also recommends the following network improvements within the extended study area:

- Weston Road: Widen to 6 lanes including Transit/HOV lanes, from Steeles Avenue to Major Mackenzie Drive;
- Jane Street: Rapid Transit Corridor between Highway 7 and Major Mackenzie Drive;
- Keele Street: Widen to 6 lanes including Transit/HOV lanes from Highway 7 to Rutherford Road;
- Dufferin Street: Widening to 6 lanes including Transit/HOV lanes from Langstaff Road to Rutherford Road; and
- Rutherford Road/Carville Road/16th Avenue: Widening for Transit/HOV lanes from Jane Street to McCowan Road.

3.2.3 STRATEGIC GOODS MOVEMENT NETWORK

As discussed in **Section 2.2.4.4** of this report, Langstaff Road, between Highway 400 and Dufferin Street, is identified as part of the Region's Strategic Goods Movement Network (SGMN). This strategic network is intended to facilitate safe and efficient movement of goods to and from key origins and destinations including Provincial highways, intermodal rail yards and commercial and industrial employment areas. Langstaff Road is designated as a Primary Arterial Goods Movement Corridor in the SGMN as it meets the following criteria:

- An urban arterial serving employment and industrial lands;
- Is expected to handle more than 2,500 trucks per 8-hour period and more than 10% modal split of medium and heavy trucks;
- Contains mixed traffic and minimal overlap with rapid transit corridors;
- Provides accessibility to employment lands; and
- Ensures that trucks can easily access 400-series highways and their destinations to support regional economic growth.

In order to accommodate trucks on Primary Arterial Good Movement Corridors, the TMP generally considers these roadways to apply freight-supportive street design standards and land use planning policies and are typically future six-lane corridors with inclusion of truck-only design elements in special cases.

The Ontario Trucking Association (OTA) works to represent the trucking industry when new infrastructure projects are being initiated. Most recently OTA has provided feedback on a variety of key projects the Langstaff Road Class EA. In a recent OTA article (March 27, 2017) posted on their website (http://ontruck.org/ota-pushing-truckings-interests-across-the-province/), OTA president Stephen Laskowski stated:

"As a major user of Ontario's infrastructure, well-maintained highways and the modernization of interchanges are vitally important to the Ontario trucking industry. It's critical MTO, as well as its consultants and contractors all consider trucking activities both in the design of new infrastructure and the maintenance and upgrading of existing infrastructure."

3.3 TRAVEL DEMAND ANALYSIS

The travel demand analysis was conducted to establish road network improvement needs, using the York Region Travel Demand Forecasting (YRTDF) model. This model is an EMME-based, conventional four-step transportation demand forecasting model, simulating the morning peak hour travel demands in existing and future planning horizon years. For this

study, the travel demand analysis evaluates the YRTDF model results for the existing conditions (2016) and the future (2041) planning horizon.

In order to establish meaningful high occupancy vehicle (HOV) lane usage estimates on area roadways in future planning horizon road networks, the YRTDF model was modified to estimate automobile trips by vehicle occupancy. The changes apply carpool data derived from the 2011 Transportation Tomorrow Survey (TTS) for single occupant vehicles (SOV), HOV with two persons (HOV2) and HOV with three or more persons (HOV3+). Proportions for each of the vehicle occupancy classes were calculated and incorporated to the YRTDF automobile trip matrices on a planning district basis to preserve original YRTDF travel demand totals. The 2011 TTS-derived vehicle occupancy proportions were maintained in all planning horizons to provide conservative forecasts. The demand forecasting process also included a review of the YRTDF-modelled transportation road network for each of the planning horizons in the vicinity of Langstaff Road study area to confirm assumed road network attributes as well as network improvements identified in the TMP.

3.3.1 SCREENLINE LOCATIONS

A screenline is generally a linear feature such as a road, a river, a rail line or a municipal boundary that is used to evaluate cumulative travel demand of similar roadway facilities crossing such features. Local streets are generally excluded from screenline analyses, as their low traffic volumes tend to skew the screenline capacity results.

A volume to capacity (V/C) ratio is established by comparing the cumulative travel demand to available screenline capacity, which provides an indication of how well a specific corridor/screenline is operating.

The analysis considered a total of six screenlines; the chosen locations of the screenlines are displayed in **Figure 3-3**. For the north-south screenline analysis, traffic using the following east-west corridors were considered (from north to south):

- Rutherford Road;
- Langstaff Road; and
- Highway 7.

For the east-west screenline analysis, the north-south roadway corridors considered include (from west to east):

- Edgeley Boulevard;
- Jane Street;
- Creditstone Road;

- Keele Street, and
- Dufferin Street.

The assigned arterial traffic volumes and lane capacities were obtained from the YRTDF model and used to calculate the screenline V/C ratios. In general, a capacity of 900 and 500 vehicles per hour per lane was modelled for General Purpose Lane (GPL) and High Occupancy Vehicle (HOV) lanes on major arterial corridors, respectively.

For this study, the V/C ratios and the respective Level of Service (LOS) are defined by four levels or grades of generalized traffic conditions and characteristics. These commonly used measurements of overall transportation system operations for links and intersections are presented in **Table 3-2**.

Figure 3-3. Travel Demand Analysis Screenlines

Table 3-2. Volume to Capacity Ratio Ratings

V/C RATIO	LOS	FACILITY OPERATION	SCREENLINE OPERATION
≤ 0.85	A - C	Free/Stable Flow	Good/Uncongested
0.86 to 1.00	D	Unstable Flow	Unstable
1.01 to 1.10	E	Congested	Congested
> 1.10	F	Very Congested	Very Congested

3.3.2 EXSITING CONDITIONS (2016) AND SCREENLINE RESULTS

A visual depiction of the 2016 AM peak hour operating conditions of the north-south and east-west screenlines are presented in **Figures 3-4 and 3-5**, respectively.

The existing link V/C ratios near the CN Rail Yard (for Rutherford Road and Highway 7) are presented in **Figure 3-6**.

The north-south screenline analysis results (presented in **Figure 3-4**) for the existing morning peak hour demonstrate that westbound traffic flow near the CN Rail Yard operates at a *Congested* condition (Screenline 3). The westbound traffic flow operates in an *Unstable* condition just west of Dufferin Street (Screenline 4) and becomes *Uncongested* west of Jane Street (Screenline 2).

A similar trend can be seen in the eastbound direction, where the flow of traffic is operating at an *Unstable* condition east of Weston Road (Screenline 1) and becomes *Congested* with a V/C ratio of 1.03 east of Highway 400 (Screenline 2). ferr

The eastbound traffic operates in an *Unstable* condition near the CN Rail Yard (Screenline 3), and then *Uncongested* condition just west of Dufferin Street (Screenline 4).

The lands across Langstaff Road between Jane Street and Dufferin Street provide industrial and commercial land use, and these lands attract/generate a significant amount of trips which are destined to the study area during the morning peak hour.

The analysis of the east-west screenlines (**Figure 3-5**) shows that the northbound traffic is currently operating in *Uncongested* conditions with a V/C ratios of 0.42 and 0.37 north and south of Langstaff Road, respectively. However, southbound traffic is considered *Unstable* with V/C ratios ranging between 0.90 and 0.99, which indicate that north-south corridors are currently approaching the planning level capacity and may need additional capacity to accommodate the future traffic growth.

Figure 3-4. Existing - AM Peak Hour North-South Screenline V/C

Figure 3-5. Existing - AM Peak Hour East-West Screenline V/C

Further analysis of the existing east-west links near the CN Rail Yard (**Figure 3-6**) indicate *Very Congested* conditions in the westbound direction and approaching the planning capacity in the eastbound direction on Rutherford Road. The eastbound traffic on a segment of Highway 7 between Jane Street and Keele Street is operating at an *Uncongested* condition, while the westbound traffic is operating at an *Unstable* condition with a V/C ratio of 0.94.

Figure 3-6. Existing - AM Peak Hour Link V/C at CN Rail Yard

In summary, the travel demand analysis results for the existing conditions show poor performance in the eastbound and westbound directions, particularly across the CN Rail Yard screenline during the AM Peak Hour. As well, the southbound traffic (peak direction during morning peak hour) demand is approaching the planning level capacity. **These poor AM Peak Hour operating conditions on the current road network indicate the potential need for additional east-west roadway capacity in the study area.**

3.3.3 LANGSTAFF ROAD IMPROVEMENT SCENARIOS

To assess the future (2041) transportation conditions with alternative improvements and to identify potential transportation needs within the study area, five improvement scenarios were assessed using the Region's travel demand model, summarized in **Table 3-3**.

The potential improvements include six-lane widening of Langstaff Road with additional Transit/HOV lanes or General Purpose Lanes (GPL), provision of a new connection across the CN MacMillan Rail Yard and Highway 400 interchange improvements. It is of note that the following future improvement scenarios consider all other planned/proposed road network and major transit improvements to the surrounding road network, as identified in the TMP and summarized in **Section 3.2.2** of this report.

Table 3-3. Langstaff Road EA Improvement Scenarios

IMPROVEMENT SCENARIOS	EXISTING LANGSTAFF ROAD	LANGSTAFF CONNECTION ACROSS CN RAIL YARD	HIGHWAY 400 INTERCHANGE
1. Base Case	No change	No link	No change
2. Langstaff Road East Improvements	4GPL (between Keele & Dufferin)	No link	No change
3. Widen Langstaff Road for Transit/HOV and Build Langstaff Connection	4GPL+2HOV	4GPL+2HOV	No change
4. Widen Langstaff Road for Transit/HOV, Build Connection and Interchange Improvement	4GPL+2HOV	4GPL+2HOV	Convert to full interchange
5. Widen Langstaff Road for Goods Movement, Build Connection and Interchange Improvement	6GPL	6GPL	Convert to full interchange

Scenario 5 represents the context-sensitive improvement alternative for the study area. Notwithstanding current Regional policy regarding six-lane roadway widening projects which prescribes the use of Transit/HOV lanes, Scenario 5 is deemed appropriate in this case, based on local conditions, adjacent land use of the commercial and industrial employment areas and the designation of Langstaff Road within the strategic goods movement network.

The widening of Langstaff Road to a six GPL cross-section can also benefit adjacent parallel corridors of Rutherford Road and Highway 7 by providing an opportunity for enhanced modal separation between different travel modes; in this scenario, commercial vehicle traffic would

likely be drawn away from the parallel roadways to Langstaff Road, which would enhance traffic operations and safety on the Rutherford Road Transit/HOV facility and Highway 7 Rapid Transit corridor for all road users, including motorists, transit passengers, pedestrians and cyclists.

The travel demand analysis results for these five scenarios are summarized in **Section 3.4**.

3.4 FUTURE (2041) CONDITIONS - SCREENLINE RESULTS

3.4.1 SCENARIO 1 – BASE CASE

The 2041 AM peak hour operating conditions for the Base Case scenario for the north-south and east-west screenlines are presented in **Figures 3-7 and 3-8**, respectively.

The existing link V/C ratios near the CN Rail Yard (for Rutherford Road and Highway 7) are presented in **Figure 3-9**.

Figure 3-7. Future Base Case - AM Peak Hour North-South Screenline V/C

Forecasted growth to the future 2041 planning horizon with respect to the Base Case scenario shows that all the east-west corridors are expected to operate with heavy traffic demands, approaching or over planning level capacity (**Figure 3-7**).

The westbound traffic flow near the CN Rail Yard (Screenline 3) is expected to operate in a *Very Congested* conditions. Traffic flow in the same direction will operate in a *Congested* condition with a V/C ratio of 1.04 west of Dufferin Street (Screenline 4).

The eastbound direction shows *Congested* conditions with a V/C ratios of 1.08 just east of Weston Road (Screenline 1), and of 1.10 east of Highway 400 (Screenline 3).

The east-west screenline analysis results show that the northbound traffic will continue to operate in an *Uncongested* condition during the 2041 AM Peak Hour, while the southbound traffic condition will deteriorate from an *Unstable* operation to a *Congested* operation with V/C ratios of 1.09 and 1.04 north of Langstaff Road (Screenline 5) and south of Langstaff Road (Screenline 6), respectively.

Despite the inclusion of Transit/HOV lanes on Rutherford Road, the Rutherford Road east-west link at the CN Rail Yard will remain over capacity. The eastbound and westbound traffic flows is expected to operate at a *Congested* condition with a V/C ratio of 1.07 and at a *Very Congested* condition with a V/C ratio of 1.22, respectively.

At Highway 7, the eastbound traffic is expected to operate at an *Unstable* condition, while the westbound direction is expected to operate at a *Congested* condition.

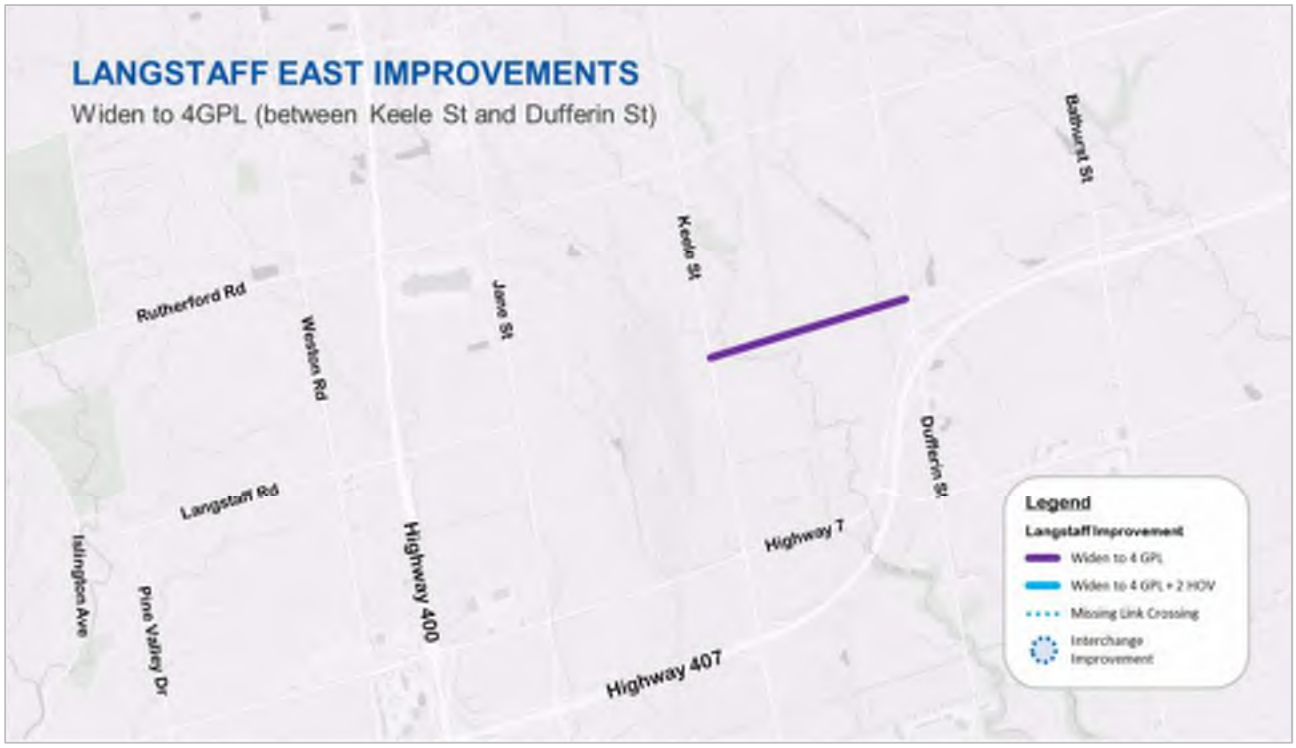
Figure 3-8. Future Base Case - AM Peak Hour East-West Screenline V/C

Figure 3-9. Future Base Case - AM Peak Hour Link V/C at CN Rail Yard

3.4.2 SCENARIO 2 – LANGSTAFF EAST IMPROVEMENTS

This scenario entails widening Langstaff Road between Keele Street and Dufferin Street from two GPL to four GPL, as shown in **Figure 3-10**. This improvement is expected to provide additional east west capacity on Langstaff Road east of the CN Rail Yard.

Figure 3-10. Langstaff East Improvements



With the improvement on Langstaff Road between Keele Street and Dufferin Street only, the westbound 2041 AM Peak Hour traffic flow west of Dufferin Street could marginally improve from a *Congested* to *Unstable* condition with a V/C ratio of 0.98.

The analysis result of this scenario shows that the operating conditions for all other screenlines are expected to remain similar to the Base Case, as illustrated **in Figure 3-11, 3-12 and 3-13**.

Figure 3-11. Future East Improvements - AM Peak Hour North-South Screenline V/C

Figure 3-12. Future East Improvements - AM Peak Hour East-West Screenline V/C

Figure 3-13. Future East Improvements - AM Peak Hour Link V/C at CN Rail Yard

3.4.3 SCENARIO 3 – BUILD LANGSTAFF CONNECTION AND TRANSIT/HOV LANES

This scenario includes the provision of the connecting link on Langstaff Road across the CN Rail Yard between Jane Street and Keele Street, and the widening of Langstaff Road between Weston Road and Dufferin Street with a six-lane cross-section, including a Transit/HOV lane in each direction. As illustrated in **Figure 3-14**, provision of the Langstaff Road connection is expected to provide continuity in the east-west direction on Langstaff Road and alleviate traffic congestion from parallel corridors within the area. **Figures 3-15, 3-16 and 3-17** illustrate the screenline operating conditions considering the improvements considered in Scenario 3.

The screenline analysis of Scenario 3 shows improvements in operating conditions at two screenline locations compared to Scenario 2: at the CN Rail Yard (Screenline 3) and west of Dufferin Street (Screenline 4). At the CN Rail Yard screenline, the westbound traffic flow could improve from *Very Congested* to *Congested* conditions corresponding to a V/C ratio of 1.01 compared to 1.16 (for Scenario 2). The eastbound traffic flow is also expected to improve from *Unstable* to *Uncongested* conditions. However, the increased road network capacity along Langstaff Road yields negligible improvement on the screenlines east of Jane Street (Screenline 1 and 2). The scenario improvements will also have marginal improvements on the northbound and southbound traffic flow (presented **in Figure 3-16**).

Figure 3-14. Langstaff Widened for Transit/HOV and Connection of Langstaff

Figure 3-15. Future Build Connection & Transit/HOV Lanes - AM Peak Hour North-South Screenline V/C

Figure 3-16. Future Build Connection & Transit/HOV Lanes – AM Peak Hour East-West Screenline V/C

Figure 3-17. Future Build Connection & Transit/HOV Lanes - AM Peak Hour Link V/C at CN Rail Yard

Further analysis of the east-west links near the CN Rail Yard shows noticeable improvement in expected 2041 AM Peak Hour operating conditions, specifically on Rutherford Road, as traffic in the area will utilize the added network capacity provided by the Langstaff Road link and thus reducing travel demand on the parallel corridors.

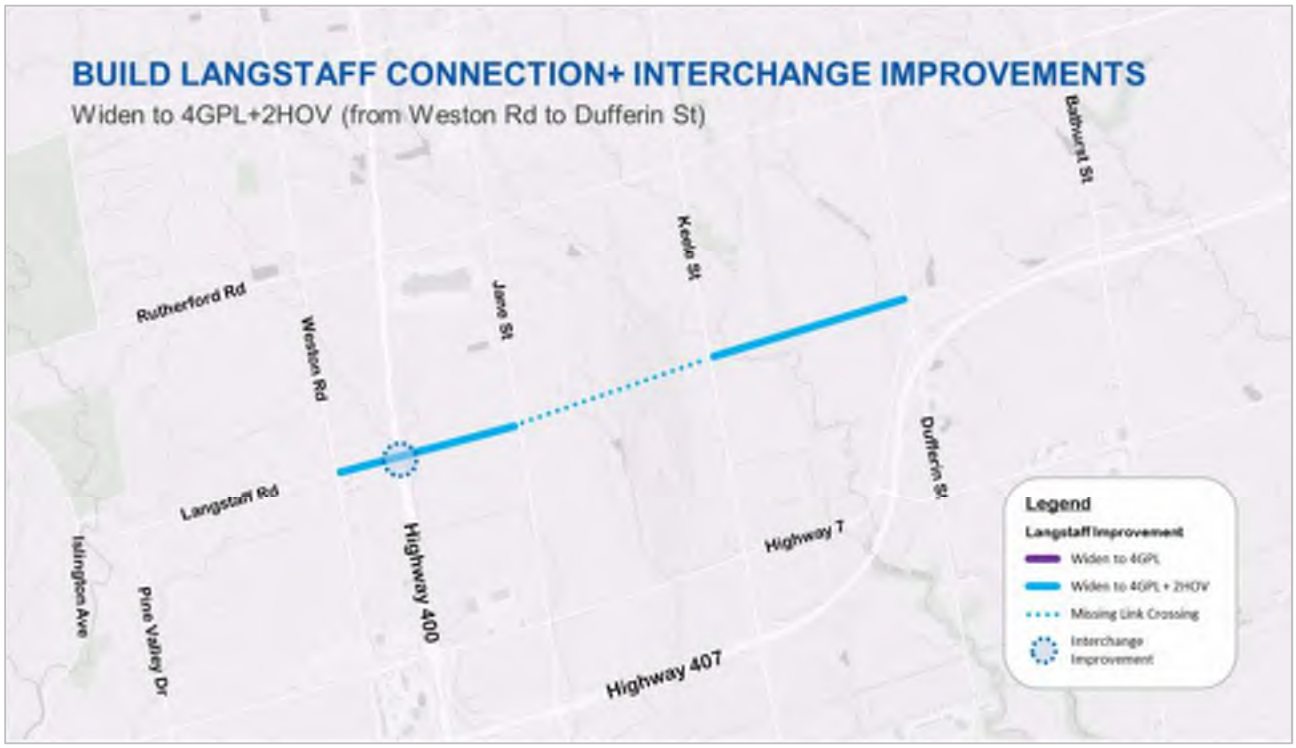
The westbound traffic flow on Rutherford Road could improve from being *Very Congested* to *Congested*. Accordingly, the westbound traffic flow on Highway 7 will improve from being *Congested* to *Unstable* at a V/C of 0.97.

The Langstaff Road link across the CN Rail Yard is expected to be fully utilized and handle traffic volumes in the range of 1600 to 2300 vehicles in the morning peak hour; these volumes correspond to operating conditions of *Uncongested* in the eastbound direction and *Congested* in the westbound direction. Findings therefore indicate that the new Langstaff Road connection will be well utilized.

3.4.4 SCENARIO 4 – BUILD LANGSTAFF CONNECTION, TRANSIT/HOV LANES AND INTERCHANGE IMPROVEMENTS

Scenario 4 includes all the improvements considered in Scenario 3 combined with the improvement to the existing Highway 400 partial interchange at Langstaff Road to a full interchange, providing highway access to and from the north. Scenario 4 is presented in **Figure 3-18**.

Figure 3-18. Langstaff Widened for Transit/HOV, Build Connection and Interchange Improvements



The future traffic conditions as a result of the improvements considered in Scenario 4 on the screenline and the east-west link operating conditions are presented in **Figures 3-19, 3-20 and 3-21**.

As can be expected using screenline level analysis, results of Scenario 4 show very marginal improvements at the screenline V/C ratios, compared to the Scenario 3, since no additional arterial roadway capacity is introduced in the study area. As noted earlier, the consideration of travel demand associated with additional Highway 400 access will be addressed in more detail later in the study.

Figure 3-19. Future Build Connection, Transit/HOV Lanes and Full IC - AM Peak Hour North-South Screenline V/C

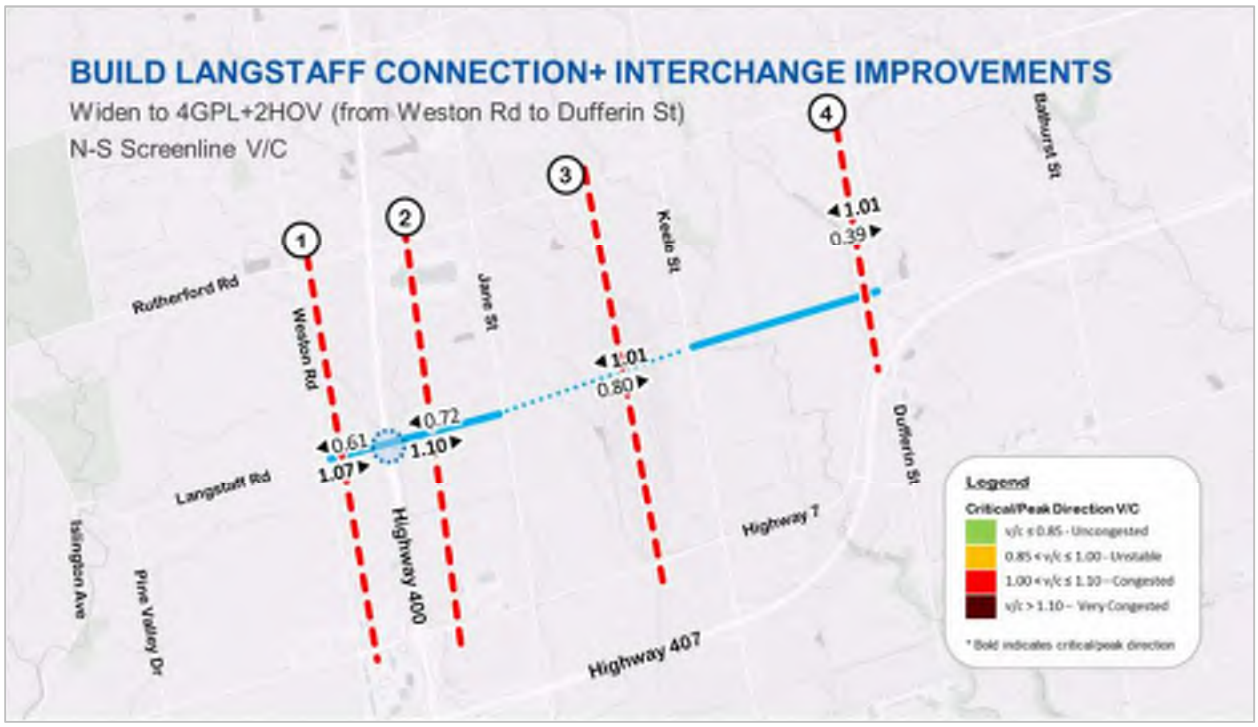


Figure 3-20. Future Build Connection, Transit/HOV Lanes and Full IC - AM Peak Hour East-West Screenline V/C

Figure 3-21. Future Build Connection, Transit/HOV Lanes and Full IC - AM Peak Hour Link V/C at CN Rail Yard)

Detailed examination of the north-south screenlines east of Weston Road and Highway 400 provides a greater understanding relating to the Highway 400 / Langstaff Road Interchange improvements. Inspection of the link volumes adjacent to the interchange along the two screenlines, presented in **Table 3-4** show notable changes in traffic demands on the arterial corridors.

Table 3-4. Comparison of Volumes for Screenline Adjacent to Highway 400

		WESTBOUND		EASTBOUND	
SCREENLINE	**ARTERIAL ROAD**	**Partial IC (Scenario 3)**	**Full IC (Scenario 4)**	**Partial IC (Scenario 3)**	**Full IC (Scenario 4)**
East of Weston Road	Rutherford Road	1025	1012	3164	3107
	Langstaff Road	886	971	2318	2488
	Highway 7	2761	2743	2739	2787
East of Weston Road Screenline Total		4672	4726	8221	8382
East of Highway 400	Rutherford Road	1920	1828	3077	3070
	Langstaff Road	993	1206	2518	2505
	Highway 7	2610	2577	3014	3001
East of Highway 400 Screenline Total		5523	5611	8609	8576

For the screenline east of Weston Road (Screenline 1), the Highway 400/Langstaff Road Interchange draws slightly additional traffic volumes to the arterial roads, resulting in a combined direction increase of 215 vehicles. Volumes remain relatively consistent between the two interchange alternatives for the screenline east of Highway 400 (Screenline 2), though indicate a redistribution of traffic along the links in the westbound direction; traffic volumes in the westbound direction are increase on Langstaff Road and decrease on Rutherford Road and Highway 7.

3.4.5 SCENARIO 5 – BUILD LANGSTAFF CONNECTION, INTERCHANGE IMPROVEMENTS AND WIDENING FOR GOODS MOVEMENT CORRIDOR

This scenario considers provision of the Langstaff Road connection across the CN Rail Yard between Jane Street and Keele Street, widening of Langstaff Road between Weston Road and Dufferin Street with six GPLs and Highway 400 interchange improvements (providing full highway access to and from the north).

These improvements provide context-sensitive transportation system improvements relating to the adjacent land use of commercial and industrial employment areas surrounding the Langstaff EA study area and support strategic goods movement network initiatives as outlined in the 2016 York Region TMP. The screenline analysis results for this scenario are presented in **Figures 3-22, 3-23 and 3-24**.

As presented in **Figure 3-22**, Scenario 5 improvements could provide additional vehicular capacity as compared to Scenario 4, and further reduce congestion specifically for the westbound direction during the morning peak hour at the CN Rail Yard (Screenline 3) – operating in a *Unstable* condition (V/C of 0.98) compared to *Congested* condition (V/C of 1.01) in Scenario 4.

Figure 3-22. Future Build Connection, 6-GPL and Full IC - AM Peak Hour North-South Screenline V/C

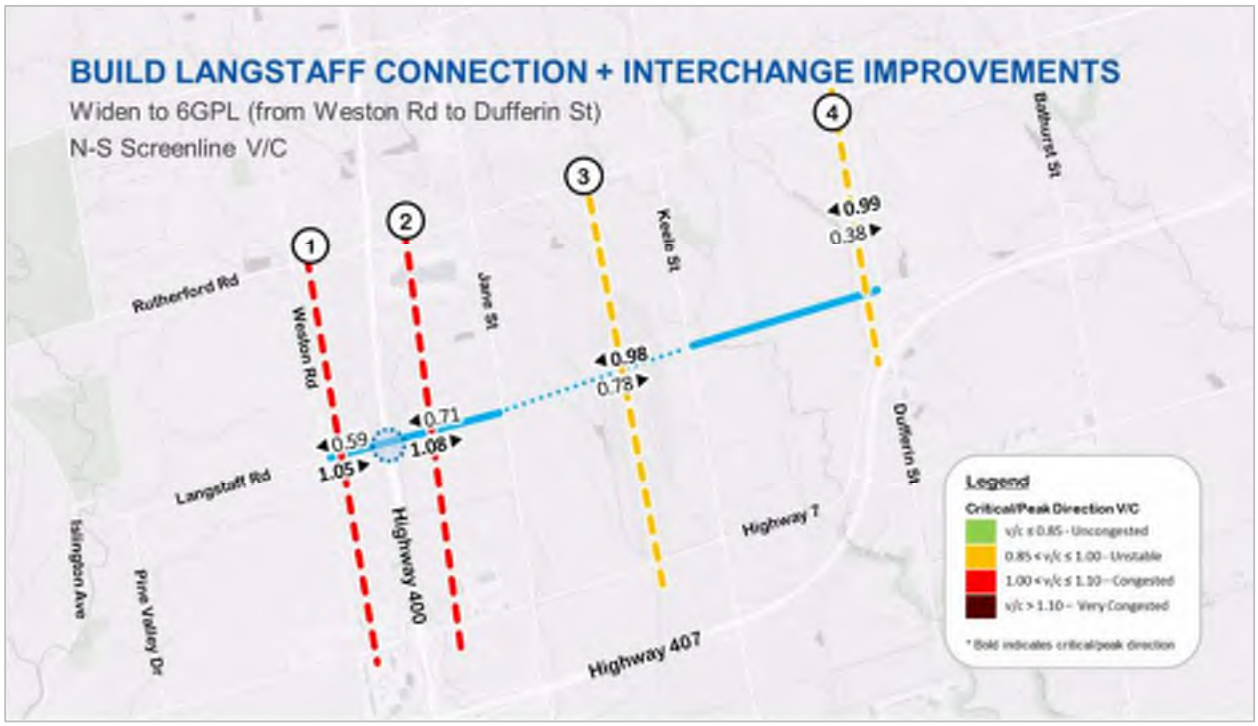


Figure 3-23. Future Build Connection, 6-GPL and Full IC - AM Peak Hour East-West Screenline V/C

Figure 3-24. Future Build Connection, 6-GPL and Full IC - AM Peak Hour Link V/C at CN Rail Yard

3.5 SUMMARY OF FUTURE IMPROVEMENT SCENARIOS

3.5.1 CAPACITY ANALYSIS RESULTS

A summary of capacity analysis results (using V/C ratios) for all analysis scenarios is provided in **Table 3-5**.

The V/C results were calculated based on the simulated volumes shown in **Table 3-6**.

Table 3-5. Comparison of Screenline V/C Ratios

	Existing (2016) Conditions	Future (2041) Conditions				
		Scenario 1: Base Case	Scenario 2: East Improvements	Scenario 3: Widen for Transit/HOV and Build Connection	Scenario 4: Widen for Transit/HOV, Build Connection & Interchange Improvement	Scenario 5: Widen for Goods Movement, Build Connection & Interchange Improvement
North-South Screenline V/C						
East of Weston Road	0.98	1.08	1.08	1.05	1.07	1.05
East of Highway 400	1.03	1.10	1.10	1.10	1.10	1.08
At CN Rail Yard	1.06	1.15	1.16	1.01	1.01	0.98
West of Dufferin Street	0.95	1.04	0.98	1.01	1.01	0.99
East-West Screenline V/C						
North of Langstaff Road	0.99	1.09	1.10	1.11	1.10	1.10
South of Langstaff Road	0.90	1.04	1.02	1.04	1.04	1.05
Connection V/C at CN Rail Yard						
Rutherford Road	1.25	1.22	1.27	1.07	1.07	1.06
Langstaff Road	-	-	-	1.00	1.00	0.95
Highway 7	0.94	1.09	1.08	0.97	0.97	0.95

As presented in **Table 3-5**, Scenario 5 (widening Langstaff Road with six general purpose lanes, connecting Langstaff Road across CN Yard and Highway 400 interchange improvements) will not only provide additional vehicular capacity compared to other scenarios, but is also expected to improve traffic operations within the study area as this corridor includes higher share of commercial vehicles and number of commercial accesses.

As segments of Langstaff Road, between Highway 400 and Dufferin Street are designated as *Primary Arterial Goods Movement Corridor* in the TMP, the proposed improvements in Scenario 5 will facilitate safe and efficient movement of goods to and from key origins and destinations including Provincial highways, intermodal rail yards and commercial and industrial employment areas.

Table 3-6. Comparison of Screenline Volumes

SCREENLINE	ROAD	EASTBOUND/NORTHBOUND VOLUMES						WESTBOUND/SOUTHBOUND VOLUMES					
		Existing (2016)	Scenario 1: Base Case	Scenario 2: East Improvements	Scenario 3: Widen for Transit/HOV and Build Connection	Scenario 4: Widen for Transit/HOV, Build Connection & Interchange Improvement	Scenario 5: Widen for Goods Movement, Build Connection & Interchange Improvement	Existing (2016)	Scenario 1: Base Case	Scenario 2: East Improvements	Scenario 3: Widen for Transit/HOV and Build Connection	Scenario 4: Widen for Transit/HOV, Build Connection & Interchange Improvement	Scenario 5: Widen for Goods Movement, Build Connection & Interchange Improvement
East of Weston Road	Rutherford Road	2973	3215	3212	3164	3107	3113	1092	1086	1081	1025	1012	999
	Langstaff Road	1684	1886	1875	2318	2488	2628	653	641	635	886	971	1035
	Highway 7	2532	2777	2795	2739	2787	2775	2952	2694	2698	2761	2743	2752
East of Weston Road Screenline Total		7189	7878	7882	8221	8382	8516	4697	4421	4414	4672	4726	4786
East of Highway 400	Rutherford Road	2694	3084	3093	3077	3070	3031	1846	1783	1799	1920	1828	1834
	Langstaff Road	1883	1922	1915	2518	2505	2735	376	462	466	993	1206	1281
	Highway 7	2929	3040	3041	3014	3001	2988	2028	2446	2442	2610	2577	2600
East of Highway 400 Screenline Total		7506	8046	8049	8609	8576	8754	4250	4691	4707	5523	5611	5715
At CN Rail Yard	Rutherford Road	1792	2458	2464	2146	2145	2111	2242	2815	2910	2457	2451	2431
	Langstaff Road	-	-	-	1598	1594	1769	-	-	-	2294	2311	2573
	Highway 7	2117	2662	2662	2368	2373	2353	2826	3258	3250	2906	2904	2852
At CN Rail Yard Screenline Total		3909	5120	5126	6112	6112	6233	5068	6073	6160	7657	7666	7856
West of Dufferin Street	Rutherford Road	1113	1348	1253	1312	1295	1306	1829	2244	2107	2252	2249	2243
	Langstaff Road	503	378	693	1048	1059	1172	1084	1196	1900	2625	2640	2855
	Highway 7	42	934	933	813	820	794	3082	3618	3547	3427	3423	3392
West of Dufferin Street Screenline Total		1658	2660	2879	3173	3174	3272	5995	7058	7554	8304	8312	8490
North of Langstaff Road	Edgeley Boulevard	702	767	755	741	689	681	493	838	846	925	901	899
	Jane Street	817	534	505	758	646	747	1506	1774	1747	1843	1860	1856
	Creditstone Road	11	236	236	303	302	304	441	590	592	563	539	545
	Keele Street	552	827	1187	703	662	703	2115	2874	2976	2896	2883	2881
	Dufferin Street	975	1055	853	725	721	672	2271	2847	2858	2874	2870	2866
North of Langstaff Road Screenline Total		3057	3419	3536	3230	3020	3107	6826	8923	9019	3230	9053	9047
South of Langstaff Road	Edgeley Boulevard	28	58	49	40	103	96	851	1179	1159	1195	1236	1252
	Jane Street	741	578	554	427	420	415	1479	1750	1750	1864	1837	1856
	Creditstone Road	53	302	303	109	113	68	677	846	845	854	853	853
	Keele Street	546	904	866	671	692	687	1763	2540	2360	2345	2364	2331
	Dufferin Street	1731	1760	1923	2187	2198	2272	2719	2817	2858	2883	2894	2929
South of Langstaff Road Screenline Total		3099	3602	3695	3434	3526	3538	7489	9132	8972	3434	9184	9221

3.6 SUMMARY OF TRAVEL DEMAND ANALYSIS

Travel demand analysis for the existing (2016) and future (2041) transportation conditions for Langstaff Road has been conducted to assess the road network improvement needs and justification. This analysis applies the YRTDF model to forecast future travel demands based on regional population and employment growth targets. The key aspects of this analysis are summarized below:

- To assess the future (2041) transportation conditions with alternative improvements and to identify potential transportation needs within the study area, five improvement scenarios were assessed. The potential improvements include six-lane widening of Langstaff Road to accommodate Transit/HOV lanes or general purpose lanes (GPL), connecting Langstaff Road across the CN Rail Yard and Highway 400 Interchange improvements (to provide access to and from the north).
- The existing (2016) travel demand analysis result confirms that east-west traffic volumes are operating at Very Congested conditions near the CN Rail Yard crossing, and approaching planning level capacity at other screenline locations within the study area. The 2016 York Region TMP indicates that population within the extended study area is expected to increase by 47,700 persons and employment by 21,500 in 2041—this represents approximately a significant 35% and 16% increase in population and employment from 2016 (i.e. 1.4% and 0.6% growth per annum), respectively.
- The future (2041) travel demand analysis for the Base Case (Scenario 1) accounted for all regional TMP recommended improvements *excluding* Langstaff Road improvements. Findings under Scenario 1 indicate that the east-west corridors (Rutherford Road, Langstaff Road and Highway 7) will be operating with very high delays under Very Congested conditions. This scenario highlights the need for additional transportation capacity within the study area.
- With the provision of the new connection of Langstaff Road across the CN Rail Yard and widening of Langstaff Road between Weston Road and Dufferin Street with 4 GPL + 2 HOV (Scenario 3), congestion within the study area could be reduced significantly. The connection across CN Rail Yard could provide much needed transportation capacity within the study area by relieving capacity constrained conditions on Rutherford Road and Highway 7. The new connection will also provide opportunity for truck traffic to access area highways directly, thereby reducing truck traffic from other regional arterial roads.
- Scenario 4 improvements (Scenario 3 plus Highway 400 Interchange at Langstaff Rd) are expected to attract additional traffic volumes to Langstaff Road. At the screenline

level, analysis of this scenario shows very marginal improvements in screenline V/C ratios when compared to Scenario 3; this is expected since no additional arterial roadway capacity was introduced. For the screenline east of Weston Road (Screenline 1), the Highway 400 interchange at Langstaff Road draws slightly more additional traffic, resulting in a 2041 AM Peak Hour combined direction increase of 215 vehicles. Volumes remain relatively consistent between the two scenarios for the screenline east of Highway 400 (Screenline 2), but show a redistribution of traffic along the links in the westbound direction; an increase on Langstaff Road and decrease on both Rutherford Road and Highway 7.

- In the context of the commercial and industrial land uses in the study area, the regional road network servicing the study area experiences greater amounts of commercial vehicles as compared to other such roads within the region. High commercial vehicle traffic levels may result in traffic operational issues given that the proposed widening for Transit/HOV lanes would not accommodate such vehicles in a curb lane combined with a high number of driveway accesses on Langstaff Road which therefore require mixed traffic to use the Transit/HOV lanes for turns. Trucks entering/exiting from the adjacent industrial/commercial lands could pose a potential safety concern and significantly reduce the Transit/HOV benefits. Scenario 5 addresses this concern by allocating the widening of Langstaff Road for six general purpose lanes.
- The proposed improvements in Scenario 5 are recommended based on the following:
    - Travel demand modelling results shows that improvements under Scenario 5 would provide additional vehicular—in particular goods movement—capacity compared to Scenario 4, which would reduce congestion within the study area, leading to improved overall traffic operations;
    - A relatively shorter distance of Transit/HOV network on Langstaff Road would not add overall benefits to the greater transportation network; and
    - High number of accesses and proportion of commercial vehicles in the study area which would be better served with six GPLs.
- In summary, from a travel demand analysis standpoint using screenline and link analysis techniques, needs and justification have been identified for the following preliminary Langstaff Road improvements:
    - Widening Langstaff Road to six general purpose lanes;
    - Provision of a new connection on Langstaff Road across the CN Rail Yard; and
    - Conversion of the existing partial Highway 400 interchange to a full interchange (providing highway access to and from the north). This feasibility and benefit is to be studied further using microsimulation analysis.

- Implementation of the proposed improvements will provide the following benefits:
  - Congestion reduction in east-west corridors (i.e. Rutherford Road and Highway 7);
  - Supports Langstaff Road as a Primary Arterial Goods Movement Corridor;
  - Direct access to area highways, which can reduce truck traffic on surrounding arterial roads; and
  - Improvement of traffic operations at the Highway 400 interchanges with Highway 7 and Rutherford Road, which will be confirmed based on detailed traffic operational analysis using micro-simulation analysis.

4 PROBLEM AND OPPORTUNITY STATEMENT

4.1 SUMMARY OF PROBLEMS AND OPPORTUNITIES

Based on the review of the planning and policy context and the detailed travel demand analysis presented in this report, the problems and opportunities identified for Langstaff Road are summarized below.

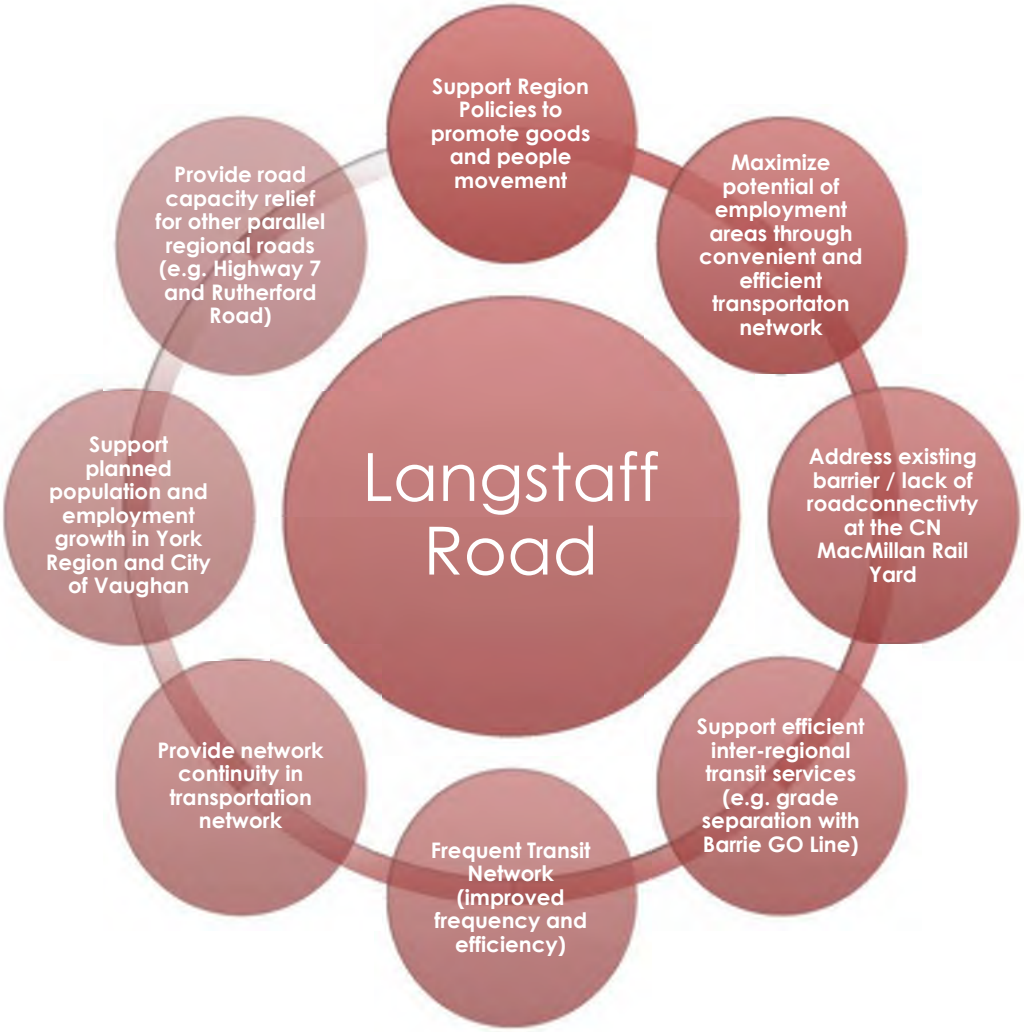
- Traffic congestion continues to be identified as the top issue facing York Region residents. Furthermore, residents identify traffic as the greatest threat to quality of life in York Region, followed closely by the high rate of development taking place.
- The delivery of an interconnected system of mobility (including vehicle, transit and active transportation) is supported by the progressive objectives, policies and actions embedded in many of the Region's Council-approved plans and documents, including Vision 2051, the York Region Official Plan (2010), the 2015 to 2019 Strategic Plan, and the York Region TMP (2016).
- Within the Langstaff Road study area, the existing (2016) east-west traffic volumes are operating at *Very Congested* conditions near the CN Rail Yard crossing, and approaching capacity at other east-west and north-south roads within the study area such as Highway 7 and Rutherford Road.
- The York Region TMP indicates that population within the extended study area (**Figure 3-1**) is expected to increase by 47,700 persons and employment by 21,500 by 2041, which represents approximately a significant 35% and 16% increase in population and employment from 2016 (i.e. 1.4% and 0.6% growth per annum), respectively. This will result in deteriorating traffic conditions on all roads in the area.
- The lack of connectivity at the CN MacMillan Rail Yard severely limits the contribution that Langstaff Road can make to the overall east-west arterial road network. The at-grade crossing at the Barrie Go Rail line and the partial interchange at Highway 400 also impacts the efficiency of this route.
- The Transportation Master Plan (TMP), which was endorsed by Council in June 2016, sets out the infrastructure and policy requirements to enable the Region to build and maintain an interconnected transportation system to accommodate growth to 2041. The TMP recommends the following improvements for Langstaff Road within the study area:
    - Widen to 6 lanes with Transit/HOV lanes;

- Frequent Transit Network;
- Barrie GO Rail Grade Separation; and
- Connect across CN MacMillan Rail Yard.

- The TMP also recommends the following network improvements to other Regional arterial roads within the extended study area:
  - Weston Road: Widen to 6 lanes including Transit/HOV lanes, from Steeles Avenue to Major Mackenzie Drive;
  - Jane Street: Rapid Transit Corridor between Highway 7 and Major Mackenzie Drive;
  - Keele Street: Widen to 6 lanes including Transit/HOV lanes from Highway 7 to Rutherford Road;
  - Dufferin Street: Widening to 6 lanes including Transit/HOV lanes from Langstaff Road to Rutherford Road; and
  - Rutherford Road/Carville Road/16th Avenue: Widening for Transit/HOV lanes from Jane Street to McCowan Road.
- Langstaff Road, between Highway 400 and Dufferin Street, is identified as part of the Region's Strategic Goods Movement Network (SGMN). This strategic network is intended to facilitate safe and efficient movement of goods to and from key origins and destinations including Provincial highways, intermodal rail yards and commercial and industrial employment areas. Langstaff Road is designated as a Primary Arterial Goods Movement Corridor in the SGMN as it meets the following criteria:
  - Is an urban arterial serving employment and industrial lands;
  - Is expected to handle more than 2,500 trucks per 8-hour period and more than 10% modal split of medium and heavy trucks;
  - Contains mixed traffic and minimal overlap with rapid transit corridors;
  - Provides accessibility to employment lands; and
  - Ensures that trucks can easily access 400-series highways and their destinations to support regional economic growth.
- Various improvement scenarios examined in the travel demand analysis for Langstaff Road confirm that additional vehicular capacity would reduce congestion within the study area, leading to improved overall traffic operations including more effiicent movement of goods and better access to employment areas.

- A relatively short distance of Transit/HOV network on Langstaff Road, as considered by the TMP, would not benefit the transportation network; the high number of accesses and proportion of commercial vehicles in the study area which would be better served with six general purpose lanes.
- The travel demand analysis demonstrates that the following improvements should be considered:
  - Widening Langstaff Road to six general purpose lanes;
  - Provision of a new connection on Langstaff Road across the CN Rail Yard; and
  - Conversion of the existing partial Highway 400 interchange to a full interchange (providing highway access to and from the north). This feasibility and benefit is to be studied further using microsimulation analysis.
- The travel demand analysis suggests that implementation of these improvements would provide the following benefits:
  - Congestion reduction in other east-west corridors (i.e. Rutherford Road and Highway 7);
  - Supports Langstaff Road as a Primary Arterial Goods Movement Corridor;
  - Direct access to area highways, which can reduce truck traffic on surrounding arterial roads; and
  - Improvement of traffic operations at the Highway 400 Interchanges with Highway 7 and Rutherford Road, which will be confirmed based on detailed traffic operational analysis using micro-simulation analysis.

Figure 4-1. Summary of Problems and Opportunities



4.2 PROBLEM AND OPPORTUNITY STATEMENT

Langstaff Road is a major Regional east-west arterial road, designated as part of the Region's Strategic Goods Movement Network, strategically located within an intensifying employment area, and in close proximity to the Vaughan Metropolitan Centre and other primary growth areas in the City of Vaughan.

The role and function of Langstaff Road in the Region's future transportation network is severely limited by: 1) the lack of connection across the CN MacMillan Rail Yard; 2) the restricted access to Highway 400 at the partial interchange; 3) the need for additional road capacity to serve employment areas; and 4) the at-grade crossing of the Barrie GO Line.

These limitations will continue to create additional pressure on adjacent east-west arterial routes and interchanges at Rutherford Road and Highway 7.

Improvements to Langstaff Road are necessary to accommodate long term travel demands, support key growth policies, maximize the potential of employment areas and support the goods movement network.

There is an opportunity to significantly improve the overall function of Langstaff Road in the Regional transportation network, facilitate more efficient movement of people, vehicles and goods, improve access to transit and provide sustainable transportation choices by linking the active transportation network.

5 EXISTING CONDITIONS

5.1 SOCIO-ECONOMIC

5.1.1 LAND USE

Land use along the Langstaff Road between Weston Road and Dufferin Street consists of a dense mix of commercial and industrial businesses.

East of Dufferin Street and west of Weston Road, land use transitions to residential with some recreational / parkland east of Dufferin Street.

Selected City of Vaughan Official Plan Schedules are provided in **Figures 2-10, 2-11 and 2-12** and key aspects are summarized below:

- Lands adjacent to Langstaff Road between Weston Road and Dufferin Street are designated for employment;
- Lands west of Dufferin Street are designated residential;
- Core features of the Natural Heritage System are identified in three locations: within the Highway 400 / Langstaff Road Interchange; along the valley crossing just east of Keele Street; and at the woodland located in the northeast quadrant of Langstaff Road and Dufferin Street.

5.1.1.1 COMMUNITY FEATURES

The following community features are noted within the study area:

- Cemetery:
    - Old St. Stephen's Cemetery (adjacent to Langstaff Park) – south side of Langstaff Road, east of Keele Street
- Places of Worship:
    - Langstaff Gospel Hall – north side of Langstaff Road, east of Dufferin Street
- Parks:
    - West Crossroad Park – south side of Langstaff Road, east of Dufferin Street
    - LeParc Park – south side of Langstaff Road, west of Dufferin Street
    - Langstaff Park – south side of Langstaff Road, west of railway track

There are no schools or community centres located along Langstaff Road within the study area.

5.1.2 ECONOMIC ACTIVITY

Langstaff Road has an important strategic location within York Region and City of Vaughan, connecting with Highway 400, the CN MacMillan Rail Yard and Highway 7, and in close proximity to Highway 407. Langstaff Road services many industrial and employment uses in the area and is a major route for goods movement, particularly to the west of the rail yard.

As part of this study, an informal inventory of businesses was prepared and is provided in **Figure 5-1**. The inventory highlights the variety of goods and services provided within the study area, all of which rely on an efficient transportation network to support customer service and goods movement.

Langstaff Road is identified as a Primary Arterial Goods Movement Corridor between Highway 400 and Dufferin Street in the Strategic Goods Movement Network (SGMN), York Region Transportation Master Plan 2016. In order to accommodate trucks on Primary Arterial Goods Movement Corridors, the Transportation Master Plan generally considers these roadways to apply freight-supportive street design standards and land use planning policies and are typically future six-lane corridors with inclusion of truck design elements.

The existing partial interchange at Highway 400 and the lack of road network connectivity across the CN Rail Yard hinder the function of Langstaff Road in the SGMN and therefore limits the potential of this area for strong economic activity and employment, with the expectation that future traffic congestion will worsen without improvements. The lack of through connection on Langstaff Road also leads to heavier congestion on parallel Regional roads such as Highway 7 and Rutherford Road.

5.1.3 PLANNED URBAN INTENSIFICATION

As discussed in **Chapter 2** of this report, the Provincial Growth Plan identifies the Vaughan Metropolitan Centre (VMC) as a designated Urban Growth Centre, recognizing its location along the Highway 7 VIVA corridor and at the terminus of the planned Spadina Subway Extension.

The VMC is located just south of the Langstaff Road EA study area, extending from Highway 400 in the west, to Creditstone Road in the east, and from Portage Parkway in the north, to Highway 407 in the south (**Figure 2-13**) and is located northeast of the Highway 400 and Highway 407 interchange.

In addition to the VMC, the City of Vaughan Official Plan also defines the former Vaughan Corporate Centre area into lands west of Highway 400 and east of Weston Road as a Primary Centre; and lands east of Creditstone Road and west of the CN rail lands as an Employment Area.

The VMC is unique amongst the 25 designated Urban Growth Centres (UGC) in the Growth Plan as it has the greatest potential and is the least developed of all the UGCs. It is one of only two UGCs outside of Toronto that is planned to be served by a subway; has access to two 400 series highways; and it is not directly adjacent to existing low-density residential fabric.

The VMC is envisioned to become Vaughan's downtown – the highest density node within the City and a focus for civic activities, business, shopping, entertainment and urban living. The VMC can accommodate a significant amount of Vaughan's planned residential and employment growth and it is an appropriate location for major Institutional uses.

Figure 5-1. Overview of Businesses Along Langstaff Road

To be inserted

5.1.4 CN MACMILLAN RAIL YARD

The CN MacMillan Rail Yard is the most prominent feature in the study area. The facility is a 'rail classification yard' where incoming rail cars are classified, formed into blocks according to their destinations, made into trains and sent to their next destination. This yard operates 24 hours a day and handles over a million cars (loaded and empties) per year. It is used to transfer liquid and dry bulk, as well as intermodal containers and automobiles between trucks and rail cars.

The CN MacMillan Yard is approximately 1.6 kilometers wide (east-west) and 4.0 kilometers long (north-south). It occupies approximately 1000 acres of land, bounded by Highway 7 to the south, Keele Street to the east, Rutherford Road to the north, and Creditstone Road to the west.

The CN MacMillan yard consists of a central core of two classification yards, surrounded by departure yards, a receiving yard and local industrial customer base. It has flat switching capability, as well as dual and single hump operations. Approximately 1800 to 3000 cars per day are processed through the dual hump and 100 to 200 cars over the local hump.

It has five operation yards, a receiving yard, a main classification yard, a local classification yard, an east departure yard and a west departure yard. The receiving yard contains 16 tracks with capacity of 1500 cars on track. The main classification yard contains 71 tracks and is used to sort traffic by specific destination. It consists of two sides, east and west. Each side is associated with its own departure yards. The local classification yard has 33 tracks and is used to sort and store local traffic for over 60 industrial customers in and around the Greater Toronto Area. The east and west departure yards each contain 9 tracks with a capacity of 800 cars. The east departure yard handles traffic for eastern Canada. It dispatches five trains daily. The west departure yard handles traffic for western Canada, Ontario and the US.

In addition to the five operating yards, there are 4 industrial yards (A yard, R yard, S yard and west industrial yard); as shown in **Figure 5-2**. The trans-load facility, CN Cargoflo, is located within the A and R yard. Liquid Bulk is handled in the A yard on 14 tracks, serving 12 to 15 customers; and Dry Bulk is handled in the R yard on 3 tracks serving 8 to 10 customers. Triple Crown is also located in the A Yard, which operates two specialized Roadrailers five days a week, to and from Midwest US via the Sarnia Tunnel. The third facility located in the A yard is Autoport Toronto, a 60 acre facility with inventory capacity of 5,500 vehicles. There are 4 tracks designed to hold 60 railcar spots. Autoport also operates a 9,000 square foot service center.

The S yard is a 14 acre site with 1 track with capacity of 12 cars. It serves 2 customers and primarily handles lumber shipped on center beams and containers of dimension lumber from

Edmonton. The west industrial yard serves 8 customers with the largest operation being the steel facility.

Figure 5-2. CN MacMillan Rail Yard Key Map

5.2 CULTURAL ENVIRONMENT

5.2.1 ARCHAEOLOGY

A Stage 1 Archaeological Assessment was completed for the Langstaff Road Class EA. The purpose of the Stage 1 archaeological assessment is to provide information about the property's geography, history, previous archaeological fieldwork, and current land condition in order to determine the archaeological potential of the area. The full report is provided in **Appendix X** and key findings are summarized in this section.

The background research resulted in the identification of multiple features of archaeological potential within the study area. Most prominent is proximity to the previously identified archaeological sites located within the study area (including three Late Woodland villages), the presence of the Don River and its tributaries, and the presence of historic roadways (Langstaff Road, Weston Road, Jane Street, Keele Street, and Dufferin Street), dwellings, orchards, laneways, and the historic Canadian Northern Railway.

Furthermore, Langstaff Cemetery (aka the St. Stephen's Anglican Cemetery) is located within the study corridor.

The presence of the above features indicates there is high archaeological potential for encountering archaeological sites associated with the occupation of the study area by both Indigenous peoples and early settlers.

However, the potential for a study area to contain archaeological resources is tempered with a consideration of previous archaeological work already completed within the study area, as well as the presence and extent of past disturbances and other areas of low archaeological potential.

Approximately 0.1% of the study area has been previously assessed and does not require further assessment. Approximately 75.4% of the study has been subject to deep and extensive land alterations that have removed archaeological potential within the study area.

Approximately 1.1% of the study area was assessed a low and/or permanently wet including the Don River, Black Creek, and a pond. Areas assessed as low and wet do not require further assessment. Approximately 0.2% of the study area is comprised by the Langstaff Cemetery, and should be avoided by the proposed undertaking.

Approximately 23.2% of the study area is located within previously unassessed lands that hold archaeological potential and will require further assessment. Areas of archaeological potential include greenspace along rivers, parklands, and woodlots. Additionally, a property inspection of the rail yard could not be completed due to a lack of permission to enter. While the construction of the rail yard has likely caused some disturbance to the study corridor, the degree of disturbance could not be determined through this Stage 1 assessment. As a result, this area will require further assessment to confirm disturbance

Three confirmed Late Woodland villages and one unconfirmed village have been documented within 1 km of the study area. When an application of the York Region and City of Vaughan Ossuary Potential Model is applied, large portions of the study area are located within an area of heightened potential to encounter ossuaries. Burial avoidance strategies will be required throughout these areas. This is true even for lands that have been previously subject to archaeological assessment, as ossuaries are often found at a depth not reached by standard archaeological survey methods.

On the basis of above information, the following recommendations are made:

- Additional archaeological assessment is not required for those areas visually determined to be disturbed including: Langstaff Road, Weston Road, Jane Street, Keele Street, Dufferin Street, Highway 7, and Highway 400, and the numerous side streets within the study corridor, as well as housing, commercial, and industrial developments. Additionally, all areas assessed as low and permanently wet do not require further assessment.

- Additional archaeological assessment is not required for those areas previously subject to archaeological assessment, where it has been determined that archaeological potential no longer exists.
- One historic cemetery is located within the study corridor, and should be avoided by the proposed undertaking. Currently, the limits of the cemetery are not known. If future impacts are proposed within 10 m of the cemetery, a cemetery investigation program is required. The cemetery investigation program must involve mechanical topsoil removal within the proposed area of impact for a minimum of 10 m beyond the known cemetery limits to confirm there are no burials outside of the known cemetery limits. However, if proposed development impacts are more than 10 m from the edge of the cemetery, the development impacts are considered to pose no threat to the cemetery. Regardless, it is recommended that a temporary barrier be erected around nearby cemeteries and that "no go" instructions be issued for all onsite crews as a precautionary measure.
- The remainder of the study area contains archaeological potential and will require a Stage 2 archaeological assessment prior to any ground disturbing activities:
    - Since the areas identified as holding archaeological potential are comprised of wooded greenspace along rivers, woodlots, and public parklands, ploughing is not feasible. As a result, the portion of the study corridor with archaeological potential must be subject to a test pit survey as per Section 2.1.2 of the Standards and Guidelines for Consultant Archaeologists (MTCS 2011:31).
    - The portion of the property not subject to the property inspection (rail yard) must be subject to a combination survey comprised of a mixture of test pit survey and visual assessment, as per Section 2.1.8 of the Standards and Guidelines for Consultant Archaeologists (MTCS 2011:38).
- According to York Region's Official Plan ROPA 6, where there is the potential for lands to contain an ossuary, it is recommended that burial avoidance strategies be implemented to attempt to mitigate any negative impacts to unknown ossuary locations. Based on the ossuary potential model, several large portions of the study area have the potential to contain as ossuary.

The findings and recommendations of the Stage 1 assessment will be incorporated into Phase 3 of the Class EA process and will be reviewed again in the context of the preliminary design plan and refined, as appropriate.

5.2.2 BUILT HERITAGE

A Cultural Heritage Landscapes and Built Heritage Resources Existing Conditions Report was prepared for the Langstaff Road Class EA. The full report is provided in **Appendix X** and summarized below.

Principal cultural heritage landscapes and aboveground built heritage features older than 40 years of age and located within and adjacent to the study area were identified. A total of four (4) heritage resources were identified as a result of the November 6, 2016 survey. These are summarized below. The full report (**Appendix X**) includes a site number, resource category, resource type, location, description and digital photograph.

- Cultural Heritage Landscape – Transportation: CNR MacMillan Yard. Not included on the Listing of Buildings of Architectural and Historical Value in accordance with Part IV, Subsection 27 of the OHA.
- Cultural Heritage Landscape – Cemetery: Old St. Stephen's Church Cemetery. Not included on the Listing of Buildings of Architectural and Historical Value in accordance with Part IV, Subsection 27 of the OHA. The site incudes a stone cairn with tombstones mounted on the wall. A plaque notes the "Pioneer Cemetery of Old St. Stephen's Church for the German Episcopal Congregation established by rights of the Church of England-1833. Restored by the Township of Vaughan1965".
- Cultural Heritage Landscape – Transportation: Metrolinx GO Transit Barrie Line. Not included on the Listing of Buildings of Architectural and Historical Value in accordance with Part IV, Subsection 27 of the OHA. Has its origin in the early 1850s when it was opened as the Northern Railway through Vaughan Township. The Grand Truck Railway acquired in the late 19th Century followed by CN in the early 1920s.
- Built Heritage Resource – Residential: 1300 Langstaff Road (located off Thornhill Woods Drive). Designated Part IV, OHA, By-law374-90, included in the Listing of Buildings of Architectural and Historical Value in accordance with Part IV, Subsection 27 of the OHA, June 27, 2005. Isaac Baker built a Four Square style residence in concrete block in 1929. The Langstaff Gospel Hall acquired the property in1994 and the new hall was completed in 1999. The site also includes Baker's harness workshop, a one storey wood frame structure that housed the Langstaff Gospel Hall congregation from 1994 to1999.

The findings and recommendations of the heritage existing conditions report will be incorporated into Phase 3 of the Class EA process and will be reviewed again in the context of the preliminary design plan and refined, as appropriate.

5.3 NATURAL ENVIRONMENT

Work in progress. To be inserted once complete.

5.4 DRAINAGE AND STORMWATER MANAGEMENT

Work in progress. To be inserted once complete.

5.5 HYDROGEOLOGY

Work in progress. To be inserted once complete.

5.6 CONTAMINATION OVERVIEW STUDY

Work in progress. To be inserted once complete.

5.7 TREE INVENTORY

Work in progress. To be inserted once complete.

6 PLANNING ALTERNATIVES

The Class Environmental Assessment for Municipal Road Projects, Schedule 'C' requires that, once a transportation need is determined (Phase 1), planning alternatives (alternative solutions) be considered (Phase 2).

Chapters 2, 3 and 4 of this report set out the transportation needs (Phase 1) by providing the transportation and planning policy context (**Chapter 2**) and the analysis of existing and future traffic conditions to identify the transportation deficiencies (**Chapter 3**). The problems and opportunities that have been identified through the Phase 1 (**Chapter 4**) work are summarized below:

- Traffic congestion continues to be identified as the top issue facing York Region residents and businesses. Furthermore, residents identify traffic as the greatest threat to quality of life in York Region, followed closely by the high rate of development taking place.
- The delivery of an interconnected system of mobility (including vehicles, transit and active transportation) is supported by the progressive objectives, policies and actions embedded in many of the Region's Council-approved plans and documents, including Vision 2051, the York Region Official Plan (2010), the 2015 to 2019 Strategic Plan, and the York Region TMP (2016).
- Within the Langstaff Road study area, the existing (2016) east-west traffic volumes are operating at *Very Congested* conditions near the CN Rail Yard crossing, and approaching capacity at other east-west and north-south roads within the study area such as Highway 7 and Rutherford Road.
- The York Region TMP indicates that population within the extended study is expected to increase by 47,700 persons and employment by 21,500 by 2041, which represents approximately a significant 35% and 16% increase in population and employment from 2016 (i.e. 1.4% and 0.6% growth per annum), respectively. This will result in deteriorating traffic conditions on all roads in the area.
- The lack of connectivity at the CN MacMillan Rail Yard severely limits the contribution that Langstaff Road can make to the overall east-west arterial road network. The at-grade crossing at the Barrie GO Rail line and the partial interchange at Highway 400 also impacts the efficiency of this route.
- The Transportation Master Plan (TMP), which was endorsed by Council in June 2016, sets out the infrastructure and policy requirements to enable the Region to build and

maintain an interconnected transportation system to accommodate growth to 2041. The TMP recommends the following improvements for Langstaff Road within the study area:

- Widen to 6 lanes with Transit/HOV lanes;
- Frequent Transit Network;
- Barrie GO Rail Grade Separation; and
- Connect across CN MacMillan Rail Yard.

- The TMP also recommends the following network improvements to other Regional arterial roads within the extended study area:
  - Weston Road: Widen to 6 lanes including Transit/HOV lanes, from Steeles Avenue to Major Mackenzie Drive;
  - Jane Street: Rapid Transit Corridor between Highway 7 and Major Mackenzie Drive;
  - Keele Street: Widen to 6 lanes including Transit/HOV lanes from Highway 7 to Rutherford Road;
  - Dufferin Street: Widening to 6 lanes including Transit/HOV lanes from Langstaff Road to Rutherford Road; and
  - Rutherford Road/Carville Road/16th Avenue: Widening for Transit/HOV lanes from Jane Street to McCowan Road.
- Langstaff Road, between Highway 400 and Dufferin Street, is identified as part of the Region's Strategic Goods Movement Network (SGMN). This strategic network is intended to facilitate safe and efficient movement of goods to and from key origins and destinations including Provincial highways, intermodal rail yards and commercial and industrial employment areas. Langstaff Road is designated as a Primary Arterial Goods Movement Corridor in the SGMN as it meets the following criteria:
  - Is an urban arterial serving employment and industrial lands;
  - Is expected to handle more than 2,500 trucks per 8-hour period and more than 10% modal split of medium and heavy trucks;
  - Contains mixed traffic and minimal overlap with rapid transit corridors;
  - Provides accessibility to employment lands; and
  - Ensures that trucks can easily access 400-series highways and their destinations to support regional economic growth.
- Various improvement scenarios examined in the travel demand analysis for Langstaff Road confirm that additional vehicular capacity would reduce congestion within the

study area, leading to improved overall traffic operations including more effiicent movement of goods and better access to employment areas.

- A relatively short distance of Transit/HOV network on Langstaff Road, as considered by the TMP, may not significantly benefit the transportation network; the high number of accesses and proportion of commercial vehicles in the study area together with the short length of the network link may better support area demands with six general purpose lanes.
- The travel demand analysis demonstrates that the following improvements should be considered:
  - Widening Langstaff Road to six general purpose lanes;
  - Provision of a new connection on Langstaff Road across the CN Rail Yard; and
  - Conversion of the existing partial Highway 400 interchange to a full interchange (providing highway access to and from the north). This feasibility and benefit is to be studied further using microsimulation analysis.
- The travel demand analysis (Chapter 3) suggests that implementation of these improvements would provide the following benefits:
  - Congestion reduction in other east-west corridors (i.e. Rutherford Road and Highway 7);
  - Added network contuity and capacoty to support Langstaff Road as a Primary Arterial Goods Movement Corridor;
  - Direct access to area highways, which can improve goods movement travel and reduce truck traffic on surrounding arterial roads; and
  - Improvement of traffic operations at the Highway 400 Interchanges with Highway 7 and Rutherford Road, which will be confirmed based on detailed traffic operational analysis using micro-simulation analysis.

Problem and Opportunity Statement

Langstaff Road is a major Regional east-west arterial road, designated as part of the Region's Strategic Goods Movement Network, strategically located within an intensifying employment area, and in close proximity to the Vaughan Metropolitan Centre and other primary growth areas in the City of Vaughan.

The role and function of Langstaff Road in the Region's future transportation network is severely limited by: 1) the lack of connection across the CN MacMillan Rail Yard; 2) the restricted access to Highway 400 at the partial interchange; 3) the need for additional road capacity to serve employment areas; and 4) the at-grade crossing of the Barrie GO Line.

These limitations will continue to create additional pressure on adjacent east-west arterial routes and interchanges at Rutherford Road and Highway 7.

Improvements to Langstaff Road are necessary to accommodate long term travel demands, support key growth policies, maximize the potential of employment areas and support the goods movement network.

There is an opportunity to significantly improve the overall function of Langstaff Road in the Regional transportation network, facilitate more efficient movement of people, vehicles and goods, improve access to transit and provide sustainable transportation choices by linking the active transportation network.

As an example of the impact of not implementing a new crossing, currently between Highway 7 at Langstaff Road to Weston Road at Langstaff Road, the travel time by car or truck is approximately 20 minutes and a distance of at least 10 km. With a new connection in operation, the distance would be reduced to approximately 7km. This reduction of 30% travel distance would be compounded to all vehicles requiring out-of-way travel over many years which in turn has a bearing on emissions and energy use.

6.1 ALTERNATIVE PLANNING SOLUTIONS

Transportation planning alternative solutions represent reasonable means of addressing the stated transportation problems and opportunities. In addition to 'Do Nothing', alternatives to address deficiencies in the transportation network capacity typically include those that increase network capacity, reduce transportation demand or combinations thereof.

Transportation planning alternatives provide an opportunity to examine, in a broad and general way, fundamentally different ways of addressing transportation problems. The alternatives are assessed against their ability to reasonably address the problems and opportunities, and in consideration of the constraints identified in the early stages of the study, to identify a preferred solution(s) for which alternative designs can be developed. For this study, alternative solutions have been identified as:

- Alternative 1: Do Nothing
- Alternative 2: Transportation Demand Management
- Alternative 3: Alternative Modes of Transportation
- Alternative 4: Operational Improvements
- Alternative 5: Upgrade Parallel Roads Beyond Planned Improvements
- Alternative 6: Langstaff Road and Highway 400 Interchange Improvements

The analysis and evaluation of the alternative planning solutions are further discussed in **Section 6.2** and **Table 6-2**.

6.1.1 ALTERNATIVE 1 – DO NOTHING

"Do Nothing" is considered the status quo, maintaining the existing road network as is on Langstaff Road, with activities being limited to regular operations and maintenance. To maintain the status quo would result in the escalation of the existing traffic congestions issues, reduction in safety, and continuing operational issues at intersections within the transportation network. It would not address any of the identified problems and opportunities. This alternative would provide no appreciable improvement to traffic capacity and operations and is not consistent with Region transportation policies.

6.1.2 ALTERNATIVE 2 – TRANSPORTATION DEMAND MANAGEMENT

This alternative seeks to reduce traffic demand on Langstaff Road by implementing Transportation Demand Management (TDM) strategies such as: shifting demands to time periods outside of rush hours (encouraging flex time work schedules); encourage behavioural shift to alternative modes of transportation (transit, cycling, walking) or rideshare; providing traveler information tools including intelligent transportation systems, mobile and social applications and other methods for promoting more efficient use of the transportation network. TDM strategies are already being implemented by the Region (for example, the *MyTrip* program), as part of the preferred planning solution.

6.1.3 ALTERNATIVE 3 – ALTERNATIVE MODES OF TRANSPORTATION

This alternative encourages the reduction in automobile use by providing safe and attractive pedestrian and cycling facilities and improving transit system efficiency and reliability by introducing transit priority measures such as transit queue jump lanes. On its own, this alternative does not address the overall traffic capacity needs. However, it is recommended as part of the preferred planning solution.

6.1.4 ALTERNATIVE 4 – OPERATIONAL IMPROVEMENTS

This alternative involves undertaking intersection improvements such as providing dedicated turn lanes, installation of new traffic signals and improving signal timing and phasing as a means of improving traffic operations and safety. This alternative does not address the overall traffic capacity needs. However, it is recommended as part of the preferred planning solution.

6.1.5 ALTERNATIVE 5 – UPGRADE PARALLEL ROADS BEYOND PLANNED IMPROVEMENTS

Undertake capital improvements to widen other east-west roads (Rutherford Road, Highway 7) beyond planned improvements (for example, widening from four to eight lanes) to address the need for increased east-west traffic capacity. This does not address the problems and opportunities and defers capital investment on Langstaff Road. This alternative is not recommended.

6.1.6 ALTERNATIVE 6 – LANGSTAFF ROAD AND HIGHWAY 400 INTERCHANGE IMPROVEMENTS

This alternative considers widening Langstaff Road, construction of a road connection crossing of the CN Rail Yard and improvement of the Highway 400 Interchange in order to increase east-west traffic capacity and optimize traffic flow.

6.2 ANALYSIS AND EVALUATION OF PLANNING SOLUTIONS

As noted above, alternative solutions were assessed against their ability to reasonably address the problems and opportunities. Criteria were developed to guide the assessment process so that transportation planning, technical and environmental (socio-economic, cultural / heritage, natural environment) conditions were all factored into the assessment. The assessment criteria are listed in **Table 6-1** and the comparison of the alternative solutions can be found in **Table 6-2** with a summary provided in **Table 6-3**.

Table 6-1. Factors Considered in Evaluating Alternative Solutions

Category	Factors
Social / Community	➢ Amount and type of property required ➢ Supports future growth and employment and economic sustainability (movement of people and goods) ➢ Potential impact to businesses (disruption and nuisance) ➢ Potential impacts to residences ➢ Ability to enhance access to employment areas
Natural Environment	➢ Potential impacts to environmentally sensitive areas ➢ Potential impacts to terrestrial and aquatic species and habitats ➢ Potential changes to drainage
Heritage	➢ Effects on archaeological resources ➢ Effect on cultural heritage resources
Transportation	➢ Addresses existing and future capacity concerns on Langstaff Road and adjacent arterials ➢ Consistency with Region planning and policy documents ➢ Improves goods movement efficiency and reliability ➢ Improves transit network operations ➢ Improves active transportation network connectivity (pedestrians, cyclists) ➢ Improves traffic operations ➢ Improves road safety
Cost	➢ Comparative cost including utility relocation, capital, property and operations/maintenance

Table 6-2. Assessment of Alternative Solutions

Category	Alternative 1: Do Nothing	Alternative 2: Transportation Demand Management	Alternative 3: Alternative Modes of Transportation	Alternative 4: Operation Improvements	Alternative 5: Upgrade Parallel Roads Beyond Planned Improvements	Alternative 6: Langstaff Road and Hwy 400 Interchange Improvements
Social / Economy / Community	- No property required - Congestion will worsen impacting local and regional trips - No opportunity to improve transit and cycling / pedestrian activities on Langstaff Road - No opportunity to provide support for goods movement - No opportunity to enhance access to employment areas	- No property required - Congestion will worsen impacting local and regional trips - Although supportive of transit, cycling and pedestrian activities, this does not provide the infrastructure to support or enhance these forms of transportation - No opportunity to enhance access to employment areas	- Some property may be required but likely minimal - Congestion will worsen impacting local and regional trips - Some opportunity to enhance access to employment areas - No opportunity to provide support for goods movement	- Some property may be required in localized areas - Congestion will worsen impacting local and regional trips - No opportunity to improve transit and cycling / pedestrian activities - Limited opportunity to enhance access to employment areas - Limited opportunity to provide support for goods movement	- Widening Highway 7 and Rutherford Road with one additional lane in each direction - significant property impacts - No opportunity to improve transit and cycling / pedestrian activities on Langstaff	- May result in property impacts - Supports mobility for all modes within local community and across Region - Provides opportunity to enhance access to employment areas - Provides opportunity to enhance goods movement
Natural Environment	- Avoids potential impacts to natural environment	- Avoids potential impacts to natural environment	- Very low potential for impacts to natural environment, since pedestrian and cycling opportunities may be kept within the existing right-of-way	- Very low potential for impacts to natural environment, since the implementation of operation improvements such as turning lanes may be kept within the existing right-of-way	- Avoids potential impact to natural environment along Langstaff Road but likely significant impacts to natural features along other corridors	- Moderate potential for impacts to natural features since crossings at Black Creek, Westminster Creek and the West Don River may require replacement - Impacts can likely be minimized through mitigation measures
Cultural Environment	- No potential built heritage or archaeological impacts	- No potential built heritage or archaeological impacts	- Low potential built heritage or archaeological impacts	- Low potential built heritage or archaeological impacts	- High potential for impacts to archaeological and Built Heritage features in other corridors	- Some potential archaeological impacts in undisturbed areas - High potential to impact built heritage Property
Transportation	- Not consistent with City / Region planning policies - Does not address anticipated transportation needs - Does not improve network connectivity - Does not improve road operations or safety - Does not support improvements to transit, pedestrian and cycling	- Currently being implemented through Region policies - Does not fully address anticipated transportation needs or improve network connectivity, transit, pedestrian and cycling facilities - May result in some shift in travel demand but overall does not improve road operations or safety	- Consistent with Region planning policies - Does not fully address anticipated transportation needs - Does not improve network connectivity for all users - Does not improve road operations or safety - Supports transit, cycling and pedestrian facilities	- Consistent with Region planning policies - Improves operations and safety at intersections but not for the entire Langstaff Road corridor - Only minor contribution to network connectivity	- Not consistent with Region planning policies - Would provide additional west-east capacity in other corridors - Does not improve network connectivity - Would not improve operations or safety on Langstaff Road - Does not improve transit, pedestrian and cycling facilities along Langstaff Road	- Consistent with Region planning policies - Addresses anticipated transportation needs - Improves network connectivity for all users - Improves road operations and safety
Cost	- N/A - No capital costs - Continual costs for operations and maintenance	- $ - No capital costs - Nominal costs associated with program implementation - Continual costs for operations and maintenance	- $$ - Costs associated with implementation of new transit routes and sidewalks/multi-use trails are low compared to other alternatives	- $$ - Costs associated with construction and implementation of operational improvements are low compared to other alternatives	- $$$$$ - Construction costs are significant	- $$$$$$$ - Costs associated with construction for widening , grade separation, new connection, as well as replacement of existing structures and improvements to pedestrian and cycling facilities
Evaluation Result	**Not Recommended**	**Already Being Implemented**	**Recommended**	**Recommended**	**Not Recommended**	**Recommended**

Table 6-3. Alternative Solutions Evaluation Summary

Category	Alternative 1: Do Nothing	Alternative 2: Transportation Demand Management (TDM)	Alternative 3: Alternative Modes of Transportation	Alternative 4: Operation Improvements	Alternative 5: Upgrade Parallel Roads Beyond Planned Improvements	Alternative 6: Langstaff Road and Hwy 400 Interchange Improvements
Social / Economy/ Community						
Natural Environment						
Cultural Environment						
Transportation						
Cost	$	$$	$$$	$$$	$$$$$	$$$$$$$
Recommendation	**Not Recommended** Does not address the needs for the Langstaff Road.	**Already Being Implemented** TDM is already being implemented through various Region programs and policies. TDM does not fully address the needs on Langstaff Road but is viewed as a key component to sustainable transportation choices.	**Recommended** These improvements alone would only partially address the transportation needs. Will work in combination with the preferred solution (i.e. Langstaff Road and Highway 400 interchange improvements).	**Recommended** These improvements alone would only partially address the transportation needs. Will work in combination with the preferred solution (i.e. Langstaff Road and Highway 400 interchange improvements).	**Not Recommended** Significantly greater impacts than other alternatives. Does not address needs on Langstaff Road and not consistent with York Region plans/policies.	**Recommended** Provides necessary roadway infrastructure to improve connectivity and efficiency for goods and people movement, as well as to support economic growth in the area. Consistent with Region plans/policies.

						Opportunity to mitigate some impacts.

6.3 PRELIMINARY PREFERRED PLANNING SOLUTION

Based on the assessment and evaluation, the preliminary Preferred Planning Solution carried forward for public review at Open House 1 includes a combination of Alternatives 3, 4 and 6, as follows:

- **Add New Lanes:** Widen Langstaff Road to provide increased traffic capacity by adding new lanes to optimize traffic flow.
- **Langstaff Road Connection:** Construct Langstaff Road link across the CN MacMillan Yard.
- **Highway 400 Interchange Improvements:** Convert the Highway 400/Langstaff Road Interchange to a full-move interchange to provide better connection and to optimize traffic flow.
- **Grade Separation with Barrie GO Line:** Construct grade separation at Langstaff Road and Barrie GO Line
- **Intersection Improvements:** Consideration of 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).

6.4 CONSULTATION DURING PHASES 1 AND 2

The public consultation aspects of the Langstaff Road Class EA are documented in **Chapter X <insert future Consultation Chapter>**, and are summarized here as they specifically relate to Phases 1 and 2 of the Class EA process.

The Notice of Commencement, issued December 8, 2016, invited interested parties to provide information that might be relevant to the study such as existing issues, concerns, opportunities for improvements, and desired study outcomes.

Members of the public were invited to contact the Region at any time during the study however, formal points of contact during Phases 1 and 2 were provided at Open House 1 (OH1) (June 14, 2017).

6.4.1 NOTICE OF COMMENCEMENT

Community feedback received in response to the Notice of Commencement was overwhelmingly supportive and enthusiastic about the improvements being considered in the study and included the following general themes:

- High level of support for road connection over CN Rail Yard to relieve congestion on Highway 7 and Rutherford Road;
- High level of support for full interchange at Highway 400;
- Concern about increased truck traffic in residential areas.

6.4.2 OPEN HOUSE 1 (JUNE 14, 2017)

The purpose of Open House 1 (OH1) was to:

- Present background on the Region's Plans and Policies related to growth, transportation, infrastructure planning, active transportation, streetscape and design, which serve as the basis for this study;
- Provide an overview of the Class EA study including rationale and Regional context, existing and future needs, options being considered to address needs, and supporting technical studies;
- Provide a summary of feedback received to date (i.e. following the Notice of Commencement); and
- Invite members of the public to provide input early in the study and ask questions.

Feedback received around OH1 included the following general themes:

- York Region Cycling Coalition indicated strong support for the consideration of cycling facilities on Langstaff Road;
- High level of community support for the new road connection across CN Rail Yard;
- High level of interest in the study by business community;
- Some resident concerns about truck traffic west of Highway 400.

6.4.3 STAKEHOLDER AND AGENCY MEETINGS DURING PHASES 1 AND 2

Chapter X <insert future Consultation Chapter> documents all meetings with stakeholders and agencies during the Class EA study. Meetings convened during Phases 1 and 2 of the Class EA study focused on the key approval agencies and included:

- MTO (3 meetings – December 2, 2016, May 10, 2017, July 26, 2017);

- CN Rail (3 meetings – January 20, 2017, May 15, 2017, June 29, 2017);
- TRCA (1 meeting – February 16, 2017); and
- Metrolinx (1 meeting – January 20, 2017).

6.5 CONFIRMATION OF THE PREFERRED PLANNING SOLUTION

Public and agency feedback received during and following OH1 did not trigger any changes to the alternative solutions being considered or the selection of the preliminary preferred planning solution for Langstaff Road.

Following OH1, the preliminary preferred planning solution was confirmed as the Preferred Planning Solution to be carried forward into Phase 3 of the Class EA process.

APPENDIX

A TITLE

APPENDIX

A-1 TITLE