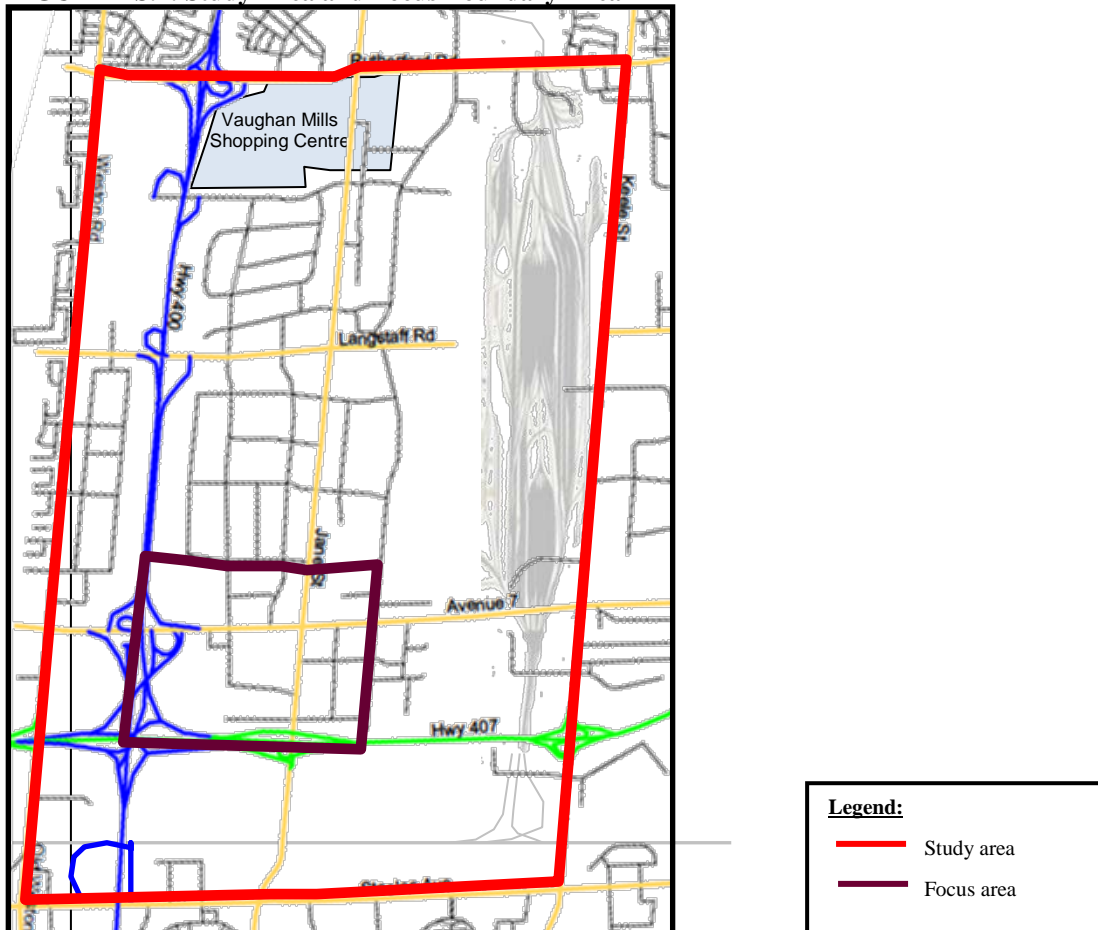


# EXECUTIVE SUMMARY

## ES.1 INTRODUCTION

The Vaughan Metropolitan Centre (VMC) is a designated Regional Centre in the York Regional Official Plan (2010) and has an Urban Growth Centre designation in the Province’s *Places to Grow*. As the VMC will become an integral component within the City of Vaughan and York Region, York Region, in partnership with the City of Vaughan, initiated the Vaughan Metropolitan Centre and Surrounding Areas Transportation Study in December 2011. The purpose of this study 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. Recommendations from the study built on existing plans that included *Places to Grow*, *The Big Move*, York Region’s Official Plan and Transportation Master Plan and the City of Vaughan’s Secondary Plan, Transportation Master Plan and the VMC Transportation Plan. The study area is shown in **FIGURE ES.1**.

**FIGURE ES.1: Study Area and Focus Boundary Area**



The study had two main components, the technical and the consultation components. The technical component of the study included the identification of development levels that could be facilitated by planned transportation infrastructure, a feasibility review of the potential for infrastructure construction, possible alternatives for areas with significant construction or cost issues and development of an implementation strategy. The consultation component of the study provided stakeholders, both internal (City of Vaughan and York Region) and external (Ministry of Transportation Ontario, CN Rail, SmartCentres, Bentall-Kennedy), with the opportunity to verify or identify issues and concerns, to discuss, review and provide comments / feedback regarding transportation infrastructure alternatives and to identify infrastructure requirements that were feasible and supported by the stakeholders. This extensive consultation process ensured that study recommendations were within expectations of stakeholders.

## ES.2 BACKGROUND

The Vaughan Metropolitan Centre (VMC) has been the subject of several Transportation Studies, Secondary Plans, Transit Corridor and Environmental Assessment studies. Most recently, the City of Vaughan completed the VMC Secondary Plan (2010) and the Vaughan Metropolitan Centre Transportation Plan (2010). These studies 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 within the study area were not resolved. A review of these reports noted that the following four transportation infrastructure improvements, as described below and identified in **FIGURE ES.2**, had key issues that were reviewed as part of this study.

**FIGURE ES.2: Transportation Infrastructure Improvements for Review**



### ***ES.2.1 Highway 400 / Highway 7 Interchange***

In a recent but incomplete Class EA, two links were identified to improve connectivity between Highway 7 and Portage Parkway and to provide a diversion route for truck traffic from Highway 7 in the vicinity of Highway 400. One link, referred to as Link 4, would connect the Highway 400 northbound off-ramp terminal at Highway 7 to Applewood Crescent at Portage Parkway. The other link, referred to as Link 5, was a new Highway 400 northbound on-ramp from a new road parallel to Highway 7 that would replace the existing Highway 400 northbound on-ramp from Highway 7 westbound. Stakeholder concerns associated with these two links were carried forward and addressed in this study through a constructability and feasibility review.

### ***ES.2.2 Highway 400 / Langstaff Road Interchange***

The VMC Transportation Plan (VMC TP) study proposed that the existing Highway 400 / Langstaff Road partial interchange be converted to a full interchange to assist in diverting auto and truck traffic from the Highway 400 / Highway 7 and Highway 400 / Rutherford Road full movement interchanges as both are highly utilized. Due to existing geometric and land constraints in the northeast quadrant of the interchange (i.e., limited acceleration distance to the Bass Pro diverge), the study had identified the potential for a Highway 400 northbound on-ramp in the southeast quadrant of the interchange. As the VMC TP did not undertake a functional analysis of this opportunity, this infrastructure recommendation was carried forward for further constructability and feasibility assessment in this study.

### ***ES.2.3 Langstaff Road Extension (crossing the CN Rail Yard)***

Langstaff Road is a four-lane roadway west of Creditstone Road and a two-lane roadway east of Keele Street. It is not connected between Creditstone Road and Keele Street as the CN rail yard, which extends northerly from Highway 7 to Rutherford Road, acts as a natural barrier to many of the roads that run parallel between Highway 7 and Rutherford Road. A key network recommendation from the VMC TP was the connection of Langstaff Road 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 between Highway 7 and Rutherford Road. This recommendation was carried forward into this study for a review of possible extension alternatives and the identification of constructability and feasibility issues.

### ***ES.2.4 Colossus Drive Extension (crossing Highway 400)***

As a result of high traffic volumes on Highway 7 throughout the VMC area, the VMC TP noted the potential for an east-west bypass route south of Highway 7. The proposed route would connect Colossus Drive in the west with Interchange Way in the east via an overpass over Highway 400. It was assumed that this overpass would be implemented as a four-lane collector road. A preliminary engineering assessment of the overpass facility was prepared by the VMC TP; however, this infrastructure improvement was carried forward into this study for a review of constructability / feasibility concerns and construction cost estimates.

### ES.3 TRANSPORTATION INFRASTRUCTURE OPPORTUNITIES AND FEASIBILITY

The VMC Secondary Plan (VMC PLAN) and the VMC Transportation Plan (VMC TP) studies prepared in 2010 indicated that additional analysis is required to address the feasibility and construction costs of the following transportation system infrastructure:

- Highway 400 / Highway 7 Interchange (NB off-ramp extension)
- Highway 400 / Langstaff Road Interchange (NB on-ramp and SB off-ramp)
- Langstaff Road Extension (crossing CN rail yard)
- Colossus Drive Extension (crossing Highway 400)

Functional plans were prepared on aerial photo base plans following the MTO design guidelines for associated MTO ramps and municipal design guidelines for municipal roadways associated with the Highway 400 interchange improvements. Plans and profiles were developed for the major structures associated with the Langstaff Road Extension and the Colossus Drive Extension. An overview of the feasibility analysis undertaken to assess opportunities, alignments, profiles, construction impacts and capital cost estimates of the transportation infrastructure noted above is provided below.

#### *ES.3.1 Highway 400 / Highway 7 Interchange (NB off-ramp extension)*

The feasibility review of road improvement opportunities associated with the Highway 400 / Highway 7 interchange NB off-ramp extension included the Ministry of Transportation position as part of the VMC TP that any proposed ramp changes maintain the existing Highway 400 northbound on-ramp configuration from Highway 7 westbound. Discussions between the study's Project Team and stakeholders resulted in the development of four (4) functional design preliminary options that generally maintained the existing Highway 400 northbound on-ramp configuration from Highway 7 westbound and provided for a northbound off-ramp extension that would connect with Applewood Crescent at Portage Parkway.

For each of the functional design preliminary options, a summary of implementation issues was prepared that identified issues related to: property, setback, ramp geometrics, ramp intersection operations, approvals, constructability concerns and construction costs. The feasibility analysis indicated that any of the four (4) preliminary options could be constructed subject to specific design detail, property acquisition and approvals being satisfied by the City, Region and Ministry of Transportation.

Subsequently, a detailed Highway 7 Corridor Traffic Engineering and Preliminary Design Study was undertaken, concurrent with the VMC and Surrounding Areas Transportation Study. The purpose of the *Highway 7 Corridor between Weston Road and Edgeley Boulevard Traffic Engineering and Preliminary Design Study* was to address the MTO approval process associated with the traffic operations at the Highway 400 northbound off-ramp extension at Highway 7 and to prepare the associated preliminary design of the recommended intersection alternative. The results of the detailed study, attached in Appendix B, were submitted to MTO for approval in mid August 2012 and are summarized in the following paragraphs.

**ES.3.1.1 Highway 7 Corridor Traffic Engineering and Preliminary Design Study**

The traffic engineering study included a review of existing traffic operations and travel patterns and future travel demand forecasts that were incorporated into a detailed traffic operations micro-simulation analysis (VISSIM) that analyzed the 2031 PM peak hour operating conditions associated with the following Highway 400 northbound (NB) off-ramp and Highway 400 NB on-ramp from Highway 7 westbound (WB) alternative design concepts, as shown in **FIGURE ES.3** to **FIGURE ES.6**.



**FIGURE ES.3: Alternative 1**

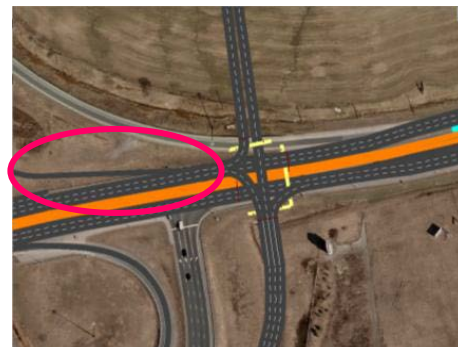


**FIGURE ES.4: Alternative 2**

**LEGEND:**  Existing Highway 400 NB on-ramp location from Highway 7 WB



**FIGURE ES.5: Alternative 3**



**FIGURE ES.6: Alternative 4**

**LEGEND:**  New Highway 400 NB on-ramp location from Highway 7 WB

**Technical Evaluation:**

The VISSIM model results indicate that all four (4) alternatives provide good operations at the Highway 400 off-ramps and their associated intersections. It is also noted that Alternatives 1 and 2 provide the better operations along Highway 7 within the study corridor. Furthermore, the southbound right-turn movement at the Applewood Crescent extension provides additional north-south connectivity and provides some relief to the congestion experienced at Edgeley Boulevard. However, if a threshold volume of 1,000 vehicles is maintained on the Highway 400 NB on-ramp from Highway 7 WB, Alternatives 3 and 4 would have similar operations along Highway 7 as that observed in Alternatives 1 and 2. It is of note that in order to maintain the

threshold volume, there will be a need to provide additional infrastructure to carry the offset vehicles.

### **Planning / Urban Design Evaluation:**

As an urban growth centre, the VMC is being designed to focus on urban development that capitalizes on the significant investment in transit infrastructure made by all levels of government. The off-ramp from Highway 400 onto Highway 7 and the associated Highway 7 and Highway 400 frontages are one of the prime gateways for the VMC. As such, built form and the quality of development in this location are essential to the success of the VMC as a whole.

Alternatives 1 and 2, with the combination of the grade separation and the positioning of the on-ramp extending west from Commerce Street, limit the entire Highway 7 frontage from a built form perspective.

Comparatively, Alternatives 3 and 4 provide a wide array of design benefits as it allows for an urban street frontage along Highway 7. Furthermore, it reduces the amount of land needed for ramps and brings the built form significantly closer to both Highway 7 and Highway 400. This configuration is safer and more convenient for pedestrians, better utilizes the VIVANext station on the western portion of the VMC and creates an attractive street frontage along Highway 7.

Alternatives 3 and 4 meet the design principles of the VMC Secondary Plan, the York Region Official Plan and the Province's *Places to Grow* and accommodate the creation of a strong urban gateway for visitors to the VMC. As such, Alternatives 3 and 4 are the preferred alternatives from an urban design perspective.

### **Multimodal Access Evaluation:**

The location of the Highway 400 northbound on-ramp in Alternatives 3 and 4 is west of the Applewood Crescent (Highway 400 northbound off-ramp extension) intersection and the signal would control the traffic flow to the northbound on-ramp. This traffic control would provide some gap opportunities for pedestrians and cyclists crossing the ramp. The amount of pedestrian and cycling activity west of Applewood Crescent will also be significantly less than east of it since the extent of the VMC core is east of Highway 400. Transit stations will be located along Highway 7 on the west side of Highway 400 as well. Hence, the amount of east-west pedestrian and cycling demand across Highway 400 will be less than east of Applewood Crescent. The configuration of Alternatives 3 and 4 has a better fit for the vision of "city building" in the Region to accommodate walking and cycling, and reduces the amount of users crossing the northbound on-ramp.

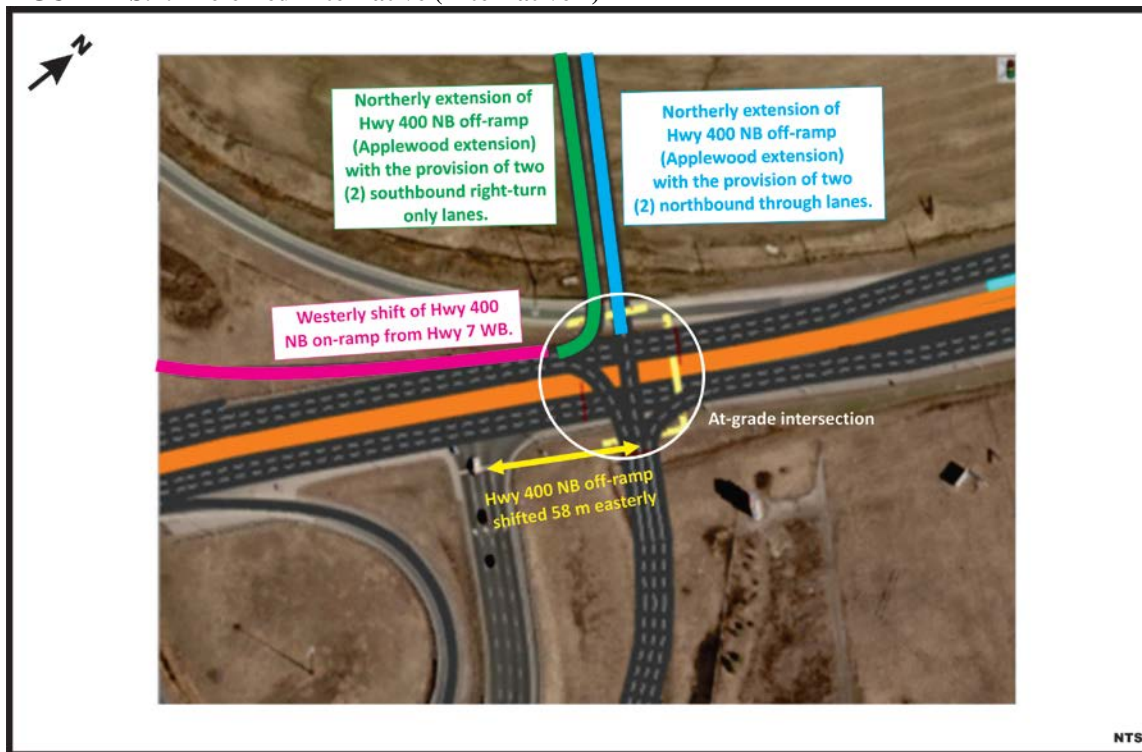
Based on a review of the designs to encourage and promote safer walking and cycling activity in York Region, Alternatives 3 and 4 provide greater protection to accommodate the future urban context for pedestrians and cyclists in the VMC.

**Preferred Alternative:**

It is recommended that the preferred alternative for the Highway 400 NB off-ramp / Highway 7 intersection is **Alternative 4**. This recommendation is based on consideration of the technical traffic operations, multimodal access and urban design / planning perspectives from the York Region and City of Vaughan study Project Team along with an understanding that additional transportation infrastructure is required within and adjacent to the VMC lands to support forecast traffic demand.

In this alternative, the Highway 400 NB off-ramp terminal intersection is relocated 58 meters to the east of the existing ramp terminal / intersection. It provides two northbound through lanes from the ramp across Highway 7 into the Secondary Plan lands (Applewood Crescent extension) as well as two southbound right-turn lanes exiting the parcel from the Applewood Crescent extension. In this alternative, the Highway 400 NB on-ramp from the east is at-grade and begins immediately west of the Highway 400 NB off-ramp terminal intersection as shown in **FIGURE ES-7**.

**FIGURE ES.7: Preferred Alternative (Alternative 4)**



It is of note that the construction staging options associated with Alternative 4 allow for the construction of the realigned ramp, new at-grade intersection and the new Highway 400 NB on-ramp from Highway 7 WB to be constructed without adverse impacts to the existing ramp operations.

**Preliminary Design:**

Plans and profiles for the Highway 400 NB off-ramp, the Highway 400 NB on-ramp from Highway 7 WB and the ramp terminal intersection indicate that Alternative 4 can be constructed to address the traffic operations and the drainage considerations based on defined MTO design criteria.

Cost estimates associated with the Highway 400 NB off-ramp, the Highway NB 400 on-ramp, the ramp intersection and drainage requirements were undertaken based on quantities and associated unit costs. The estimated construction cost, inclusive of Minor Items, Contingency, Engineering and HST is approximately \$6,200,000.

**ES.3.2 Highway 400 / Langstaff Road Interchange (NB on-ramp and SB off-ramp)**

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.

Due to constraints in the northeast quadrant of the interchange, the northbound on-ramp was provided in the southeast quadrant, requiring an easterly shift of the existing northbound off-ramp. FIGURE ES-8 displays the functional design that allows for the construction of a dual lane on-ramp as this design better addresses traffic operational concerns.

**FIGURE ES-8: Highway 400 / Langstaff Road NB On-ramp**



A summary of the implementation issues are:

- Property - Additional property is required for NB on-ramp
- Setback - Setback impacts to existing building
- Ramp Geometrics - Two lane on-ramp design addresses traffic operational concerns
- Ramp Intersection - Ramp intersection spacing requires coordinated traffic signals
- Approvals - Approvals required from MTO, City and Region
- Constructability - Widening Highway 400 under Langstaff Road (bridge footings)
- Construction Costs - Over \$10M



Key reminders:

- The provision of the Highway 400 NB on-ramp is feasible provided that the existing bridge footings do not restrict the construction of the additional lanes using construction techniques such as jacked box construction.
- The requirement and timing of the Highway 400 NB on-ramp from Langstaff Road is tied to the traffic operations and traffic threshold flows (1,000 vehicles) of the Highway 7 WB to Highway 400 NB on-ramp.

The location and functional design of the proposed southbound off-ramp is presented on **FIGURE ES-9**.

**FIGURE ES-9: Highway 400 / Langstaff Road SB Off-ramp**



A summary of the implementation issues are:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>➤ Property</li> <li>➤ Setback</li> <li>➤ Ramp Geometrics</li> <li>➤ Ramp Intersection</li> <li>➤ Approvals</li> <li>➤ Constructability</li> <li>➤ Construction Costs</li> </ul> | <ul style="list-style-type: none"> <li>- Additional property is required adjacent to existing development</li> <li>- Setback impacts to existing building</li> <li>- Detail design could reduce existing property impacts</li> <li>- Ramp intersection spacing requires coordinated traffic signals</li> <li>- Approvals required from MTO, City and Region</li> <li>- Re-engineering storm water pond issue</li> <li>- Over \$5M</li> </ul> |
|--|--|

Key reminders:

- The provision of the Highway 400 SB off-ramp is feasible from geometric standards but will require appropriate interchange ramp signage prior to the start of the collector lanes and the re-engineering of the existing storm water pond.

### ES.3.3 Langstaff Road Extension (crossing CN rail yard)

Three alignments were reviewed for the Langstaff Road extension crossing the CN rail yard, a north alignment, a centre alignment and a south alignment. A description of each alignment, the functional design and its associated implementation issues are summarized below.

#### North Alignment:

From Keele Street, the alignment passes through the existing built property west of Keele Street, turning north on the east side of the yard, turning west across the rail tracks leading to the hump yard operations and then turning south on the west side of the yard connecting to the existing Langstaff Road west of the rail yards. The functional design is presented in **FIGURE ES-10**. The North Corridor Alignment is comprised of a cast-in-place bridge design or similar bridge design for crossing the rail tracks, roadway approaches to the bridge structure using a reinforced earth embankment system and, where possible, constructing the roadway on the existing grade.

**FIGURE ES-10: Langstaff Road Extension – North Corridor Alignment**



A summary of the implementation issues are:

- The North Corridor Alignment as presented results in minor implementation impacts associated with rail operations, track detours and site access / constructability. Moderate implementation impacts are anticipated for construction staging and safety work zones. The estimated construction cost for the North Corridor Alignment is approximately \$205M.

#### Centre Alignment:

From Keele Street, the alignment passes through the existing built property west of Keele Street travelling across the rail tracks connecting to the existing Langstaff Road west of the rail yards. The functional design is presented in **FIGURE ES-11**. The Centre Corridor Alignment is

comprised of a cast-in-place bridge design or similar bridge design for crossing the rail tracks, roadway approaches to bridge structure using a reinforced earth embankment system and, where possible, constructing the roadway on the existing grade

**FIGURE ES-11: Langstaff Road Extension – Centre Corridor Alignment**



A summary of the implementation issues are:

- The Centre Corridor Alignment as presented results in major implementation impacts associated with rail operations, track detours, site access / constructability, construction staging and safety work zones. The estimated construction cost for the Centre Corridor Alignment is approximately \$195M.
- Discussions with CN indicated that the Centre Corridor Alignment has the least impact on the CN rail yard provided it is a tunnel underground or a high level bridge (suspension or cable-stay). CN staff noted that the high level bridge alternative has significant safety/operational issues that would require mitigation.

### South Alignment:

From Keele Street, the alignment passes through the existing built property west of Keele Street, turning south on the east side of the yard, turning west across the rail tracks at the south end of the hump yard operations and then turning north on the west side of the yard connecting to the existing Langstaff Road west of the yards. The functional design is presented in **FIGURE ES-12**. The South Corridor Alignment is comprised of a cast-in-place bridge design or similar bridge design for crossing the rail tracks, roadway approaches to bridge structure using a reinforced earth embankment system and, where possible, constructing the roadway on the existing grade.

**FIGURE ES-12: Langstaff Road Extension – South Corridor Alignment**



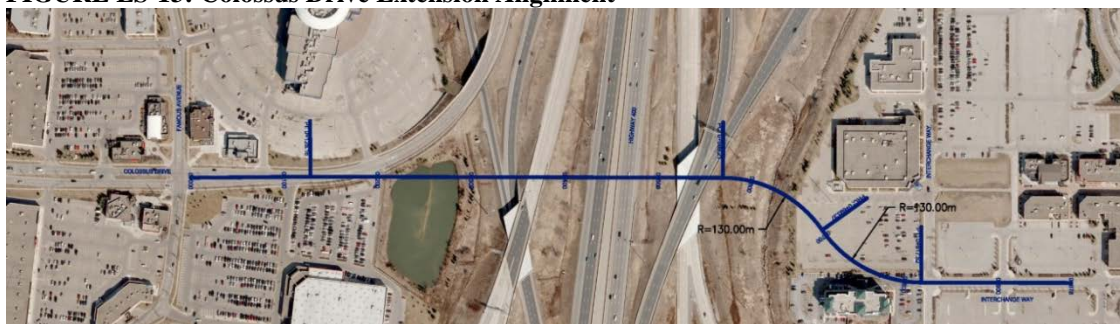
A summary of the implementation issues are:

- The South Corridor Alignment as presented results in moderate implementation impacts associated with rail operations, track detours, site access / constructability, construction staging and safety work zones. The estimated construction cost for the South Corridor Alignment is approximately \$190M.
- Discussions with CN indicated that the South Corridor Alignment impacts CN operations and lands designated for either CN use or client use redevelopment and is therefore not supported by CN staff.

**ES.3.4 Colossus Drive Extension (crossing Highway 400)**

An alignment was prepared for the Colossus Drive Extension that allowed for Colossus Drive to continue easterly across Highway 400 on a high bridge structure with back to back curves where Colossus Drive connects with Interchange Way. It is of note that additional detailed design is required to define the proposed alignment adjacent to the existing hotel. The functional design is presented in FIGURE ES-13.

**FIGURE ES-13: Colossus Drive Extension Alignment**



A summary of the implementation issues are:

- Property - Additional property is required adjacent to existing development
- Setback - Setback impacts to existing building
- Ramp Geometrics - Approach grades of 6% reasonable
- Intersection - Provision of signals at Interchange Way intersection likely
- Approvals - Approvals required from MTO, City and 407 ETR
- Constructability - Work zones in Highway 400 corridor and length of construction
- Construction Costs - Approximately \$95M

Key reminders:

- The Colossus Drive Extension across Highway 400 can be constructed to City municipal design standards. The provision of roadway approaches at a 6% grade to the overpass meet reasonable design standards as the Portage Parkway overpass of Highway 400 was constructed with 6% grades. The bridge deck clearance of 7.5m over the 407 ETR ramps would set the bridge deck 12.5m over the existing grade of Colossus Drive. The estimated construction cost for the Colossus Drive Extension is approximately \$95M.

#### ES.4 EXISTING AND FUTURE CONDITIONS

A review of existing and future land use and transportation conditions was undertaken to verify the need for the identified transportation infrastructure improvements and their benefits to the overall transportation system. The assessment was undertaken using the Vaughan Sub-Area Model (VSAM) developed in EMME.

##### ES.4.1 Existing Conditions

The VMC and surrounding areas currently has minimal population. The majority of its land uses are employment focused with 21% of the total jobs within the study area found in the VMC core area (focus study area), that is, the area bounded by Highway 407, Creditstone Road, Portage Parkway and Highway 400. Existing travel characteristics obtained from VSAM indicate that in the AM peak period, 96% of the trips destined to the VMC core area arrive by auto with only 4% reported transit use. The majority of the trips destined to the VMC core area originate from York Region or the City of Toronto. The assessment of truck traffic indicates that a large volume of trucks are using Highway 7 and Highway 407, with high proportions also using Rutherford Road, Keele Street and Langstaff Road. The main areas of congestion within the VMC core area are Highway 7 east of Highway 400 and Jane Street south of Highway 7. Within the VMC study area, Langstaff Road, Rutherford Road and Keele Street all experience congestion within the AM peak hour.

##### ES.4.2 Future Conditions

The VMC core area (Focus Area) is projected to have approximately 14,500 residents and more than a sixty percent increase in jobs relative to 2006, to approximately 19,000, by 2021. By 2031, the population within the Focus Area is expected to increase further by approximately 70% over 10 years to 24,800. However, the majority of the forecasted employment is expected to be

in place by 2021, with only a modest increase (to 20,300) in employment between 2021 and 2031 within the Focus Area. These land use assumptions were included in the VSAM. Committed transportation infrastructure improvements, both road and transit, were also included into the model for the 2021 and 2031 horizon years, as agreed upon by City and Region staff. The future transportation network was then assessed based on the PM peak hour auto, truck and transit volumes from VSAM as the PM peak hour peak direction estimates for auto driver trips were approximately 9% higher than the AM peak hour peak direction auto trips.

Despite the planned population and employment growth in VMC and City of Vaughan from 2006 to 2031, the PM peak hour trip making associated with the VMC zones is not predicted to increase proportionately because of changes in the land use form and mix of uses associated with a mixed-use “mobility hub”. Experience demonstrates that the planned development of the VMC can be expected to increase internal trip capture and pass-by trip percentages. In addition, road network improvements will considerably increase total capacity for traffic to and from the VMC area (as measured at the VMC cordon) while Highway 7 itself will have reduced capacity because of the Rapidways that are currently under construction.

With the projected population and employment growth from 2006 to 2031 and committed transportation improvements, the v/c ratios for traffic crossing the VMC cordon during the PM peak hour are forecasted to decline, even as auto traffic to, from and through the VMC core area continues to increase.

#### *ES.4.3 Alternative Network Benefits*

To determine the benefits of the four transportation infrastructure improvements being reviewed as part of this study, an overall system benefit analysis of seven scenarios for both the AM and PM peak hour for the 2021 and 2031 horizon years was undertaken. The seven scenarios were as follows:

- a. Planned Improvements
- b. Planned Improvements with NB off-ramp extension
- c. Planned Improvements with NB off-ramp extension and Langstaff Road Interchange improvements
- d. Planned Improvements with NB off-ramp extension, Langstaff Road Interchange Improvements and Langstaff Road Extension
- e. Planned Improvements with NB off-ramp extension, Langstaff Road Interchange Improvements, Langstaff Road Extension and Colossus Drive Extension
- f. Planned Improvements with Colossus Drive Extension
- g. Planned Improvements with Langstaff Road Interchange Improvements and Colossus Drive Extension

Early in the process it was determined that the “*base case*” for the comparative analysis should be *Scenario B*, which includes the Highway 400 northbound off-ramp extension at Highway 7. A summary of the comparative analysis is included in **TABLE ES.1**.

**TABLE ES.1: Alternative Network Scenario Benefits Summary**

Infrastructure Improvement Scenario	Congested Roadway Sections (lane km)	Reduced Congestion Comparison to Scenario B	Associated Traffic Relief	Study Area System Impact	Focus Area System Impact
B. Base Case + NB off-ramp extension	64		Relieves traffic on Hwy 7, Commerce St., Edgeley Blvd. and Jane St.	Local	Major
C. Scenario B + Langstaff Interchange ramps	64	-	Relieves traffic on Weston Rd. and Jane St. north of Langstaff Rd.	Local	Limited
D. Scenario C + Langstaff Road extension	52	19%	Relieves traffic on 407ETR, Keele St., Rutherford Rd., Major Mackenzie Dr., Hwy 7,	System	Moderate
E. Scenario D + Colossus Drive	50	22%	Majority of relief on 407ETR, Keele St., Rutherford Rd., Major Mackenzie Dr., Hwy 7	System	Moderate
F. Scenario B + Colossus Drive	63	1%	Minor relief of traffic on Hwy 7	Local	Limited
G. Scenario C + Colossus Drive	62	3%	Minor relief of traffic on Hwy 7	Local	Limited

*Assumption: Congested roadway: volume / capacity (v/c) ratio > 0.9*

At this system level, it is clear that Scenario D, which includes the Langstaff Road Extension, appears to offer the greatest quantitative benefits in that this new roadway would reduce the congested lane km from 64 to 52, a 19% reduction compared to Scenario B. However, the comparison of Scenario B with the other scenarios suggests that the potential benefits of adding Langstaff Road Interchange ramps by itself without the Langstaff Road overpass (Scenario C), and/or Colossus Drive (in Scenarios E, F and G), are very limited if the Highway 400 northbound on-ramp from Highway 7 westbound carries over 1,600 vehicles in the PM peak hour as indicated by the VSAM model.

However, the detailed Highway 7 Corridor Traffic Engineering and Preliminary Design Study indicated that the Highway 400 northbound on-ramp has a vehicle threshold of approximately 1,000 vehicles, at which time Highway 7 westbound becomes very congested. Thus, the provision of the Langstaff Road / Highway 400 northbound on-ramp is required to address the forecast WB to NB demand resulting in significant benefits to the transportation system.

Additional network and sensitivity analysis was also undertaken to better understand the comparative benefits of the identified transportation improvements from a local and regional level. It was noted that the provision of the Langstaff Road Extension together with Langstaff Road Interchange improvements would significantly reduce congestion on Rutherford Road and Highway 7, especially during the AM peak hour.

Colossus Drive also offers modest benefits for traffic congestion during the AM peak hour on Highway 7 near Highway 400, except along Highway 7 in the westbound direction, east of the Highway 400 northbound off-ramp terminal. However, it is recommended that continued monitoring of development and traffic demands be undertaken to ensure that the required infrastructure is implemented within the correct timeframe and be able to meet travel demands and address congestion concerns.

## ES.5 STAKEHOLDER CONSULTATION

Stakeholder consultation was an important aspect of this study. The early involvement of both internal and external stakeholders in the study process ensured that all issues and concerns were documented and addressed, where applicable. In addition, stakeholders were able to provide more support to the study and study recommendations as they played a role in the decision-

making process. External stakeholders that were consulted throughout the course of the study included the Ministry of Transportation Ontario, CN Rail and adjacent land owners (Smart Centres and Bentall-Kennedy). Internal stakeholders included representatives from various departments in both York Region and the City of Vaughan. FIGURE ES.14 provides an overview of stakeholder consultation throughout the course of the study.

FIGURE ES.14: Stakeholder Points of Contact



## ES.6 STUDY RECOMMENDATIONS

### ES.6.1 Implementation Strategy

The implementation strategy identified for the Vaughan Metropolitan Centre and surrounding areas is summarized in five steps.

1. Implement the committed road and transit improvements to support planned development levels to 2031.
2. Implement the Highway 400 / Highway 7 interchange improvements (Preferred Alternative #4 - Highway 400 NB off-ramp realignment 58m east of existing and extension northerly from Highway 7 to Portage Parkway) with consideration for:
  - a. *Traffic Threshold Monitoring*
    - To maintain a reasonable operating Level of Service (LOS) associated with the forecast traffic threshold of 1,000 vehicles on the Hwy 400 NB on-ramp from Hwy 7 WB, continuous monitoring and documentation of the traffic is required for both the on-ramp and the supporting transportation infrastructure within the VMC and surrounding areas as they develop.
  - b. *Additional Supporting Transportation Infrastructure*
    - Highway 400 / Langstaff Road Interchange (WB to NB on-ramp)
    - Colossus Drive / Highway 400 Overpass
  - c. *Potential Funding Partnerships for Supporting Transportation Infrastructure*
    - York Region / MTO / City of Vaughan / Metrolinx / VMC Developers  
All agencies and stakeholders listed are subject to discussion
    - Impacts of proposed development on highway corridor



3. The Langstaff Road / Highway 400 Interchange improvements to and from the north could be required to relieve future Highway 7 corridor congestion in the medium term if traffic threshold monitoring determines that development in the VMC and nearby areas are likely to generate levels of traffic demand that cannot be accommodated by the planned Highway 400 / Highway 7 interchange improvements in the short-term. The full interchange at Langstaff Road / Highway 400 would complement the construction of the Langstaff Road Extension (as noted in item 4 below).
4. While not necessary to accommodate planned VMC growth in the 2012-2031 timeframe, the Langstaff Road Extension would offer substantial benefits to the operation of the transportation system in the broader study area, addressing projected congestion on other east-west routes including Rutherford Road. Although the construction of the overpass is feasible, the constructability issues require further study and property requirements on the both the west and east sides must be addressed/protected in any planned developments.
5. The proposed Colossus Drive Extension may be required in the longer term (post 20 year planning horizon) to accommodate proposed development in the Weston Road/Highway 7 area and within the VMC area. Although the construction of the overpass is feasible, the constructability issues require further study and property requirements on the east side must be addressed/protected in any planned developments.

TABLE ES.2 provides a summary of the various transportation infrastructure improvements and the associated planning horizon in which it should be implemented to accommodate the planned and future growth within the VMC and surrounding areas.

**TABLE ES.2: Summary of Recommended Transportation Infrastructure Improvements**

Infrastructure Improvement	Timing
<b>Short Term</b>	Up to 2017
<ul style="list-style-type: none"> <li>• Millway Avenue Realignment – 4 lanes (Highway 7 to Portage Parkway)</li> <li>• Portage Parkway Widening – 4 lanes (Edgeley Boulevard to Jane Street)</li> <li>• Portage Parkway Extension – 4 lanes (Jane Street to Creditstone Road)</li> <li>• Spadina Subway Station</li> <li>• Highway 400 NB off-ramp extension at Highway 7 (Highway 7 to Portage Parkway)</li> <li>• Highway 7 Rapidway (VIVA stations at Commerce St., Millway Ave., Creditstone Rd.)</li> </ul>	
<b>Medium Term</b>	2017-2031
<ul style="list-style-type: none"> <li>• Creditstone Road Widening – 5 lanes (Peelar Road to Langstaff Road)</li> <li>• Highway 400 / Langstaff Road Interchange (SB off-ramp, EB and WB to NB on-ramp)</li> <li>• Langstaff Road Extension across CN Rail Yard</li> </ul>	
<b>Longer Term</b>	Beyond 2031
<ul style="list-style-type: none"> <li>• Colossus Drive Extension across Hwy 400</li> </ul>	20+ years

It is recommended that the City of Vaughan and/or York Region initiate the planning and detailed design studies required to implement the defined Short Term improvements (0-5 years) including:

- Millway Avenue Realignment
- Portage Parkway Widening
- Portage Parkway Extension
- Highway 7 / Highway 400 NB Off-Ramp Extension
- Highway 7 Rapidway

It is recommended that York Region initiate the planning and detailed design studies to identify property protection for proposed improvements to the Highway 400 / Langstaff Road Interchange, noted as a medium-term improvement, if the results of ongoing traffic threshold monitoring studies (and periodic VMC Travel Demand studies patterned after the North York Centre Travel Bulletins prepared by the City of Toronto Transportation Planning) suggest that additional road capacity will be required to accommodate auto traffic, once the impacts of committed road and rapid transit projects have been considered.

It is recommended that York Region initiate the planning and preliminary design studies to identify property protection for the proposed Langstaff Road Extension crossing the CN rail yard to address medium to long term increases in auto and truck traffic in the VMC area.

It is recommended that a Benefit Cost Analysis of the Langstaff Road Extension be undertaken by the -York Region to determine the benefits of this infrastructure with respect to the primary VMC area and the broader economic / development benefits.

It is also recommended that the City of Vaughan initiate the planning and preliminary design studies to identify property protection for the proposed Colossus Drive Extension crossing Highway 400.

### *ES.6.2 Implementation Policies*

#### **Transportation Corridor Property Protection Policies:**

In order to protect future road corridor approaches to the Langstaff Road Extension and the Colossus Drive Extension, it is recommended that a transportation corridor protection policy be included in York Region and the City of Vaughan Official Plans, respectively, and the Vaughan Metropolitan Centre Secondary Plan. The intent of the Transportation Corridor Property Protection Policy is to effectively place a development constraint designation on specific lands that would preclude the implementation of the major transportation corridor approach roadways. Any proposed development application impacting lands within the Transportation Corridor Property Policy lands would require York Region in the case of Langstaff Road Extension and the City of Vaughan in the case of the Colossus Drive Extension to initiate planning and preliminary design studies to further define the property protection limits.

### Transportation Policies:

Transportation policies that should be adhered to throughout the development and implementation of transportation infrastructure improvements within the VMC and surrounding areas include:

- Implementation of reduced parking supply standards for new development;
- Implementation of paid parking to support the rational of allocation of available parking spaces;
- Inclusion of the area-wide Transportation Management Association, as identified in Smart Commute North Toronto Vaughan, to promote continued development of the existing TDM programs within Vaughan;
- Inclusion of the cycling network and policies identified in the VMC Bike Network; and,
- Discouragement of commuter parking within the VMC area.

### Congestion Monitoring Policies:

In order to ensure that this study's recommended transportation infrastructure supports the new developments in the VMC and surrounding areas, it is recommended that York Region and the City of Vaughan initiate a Transportation Congestion Monitoring Program that reviews the traffic volumes, transit passenger ridership and general operating levels of service on the transportation system serving the VMC area every two years.

In addition, a congestion monitoring program of the Highway 7 and Highway 400 corridors shall be developed and defined by York Region and MTO to determine the need for future study and implementation of the recommended alternative improvements. Required analysis and detailed studies as part of the monitoring program will be conducted by York Region in consultation with MTO, City of Vaughan and other stakeholders to assess the feasibility and opportunities for interchange and network improvements including the Highway 400/Langstaff Road Interchange and Langstaff Road Crossing of the CN Rail yards.