REGIONAL MUNICIPALITY OF YORK

TESTON ROAD AREA TRANSPORTATION IMPROVEMENTS

INDIVIDUAL ENVIRONMENTAL ASSESSMENT TERMS OF REFERENCE

June 2018
As Amended October 2018

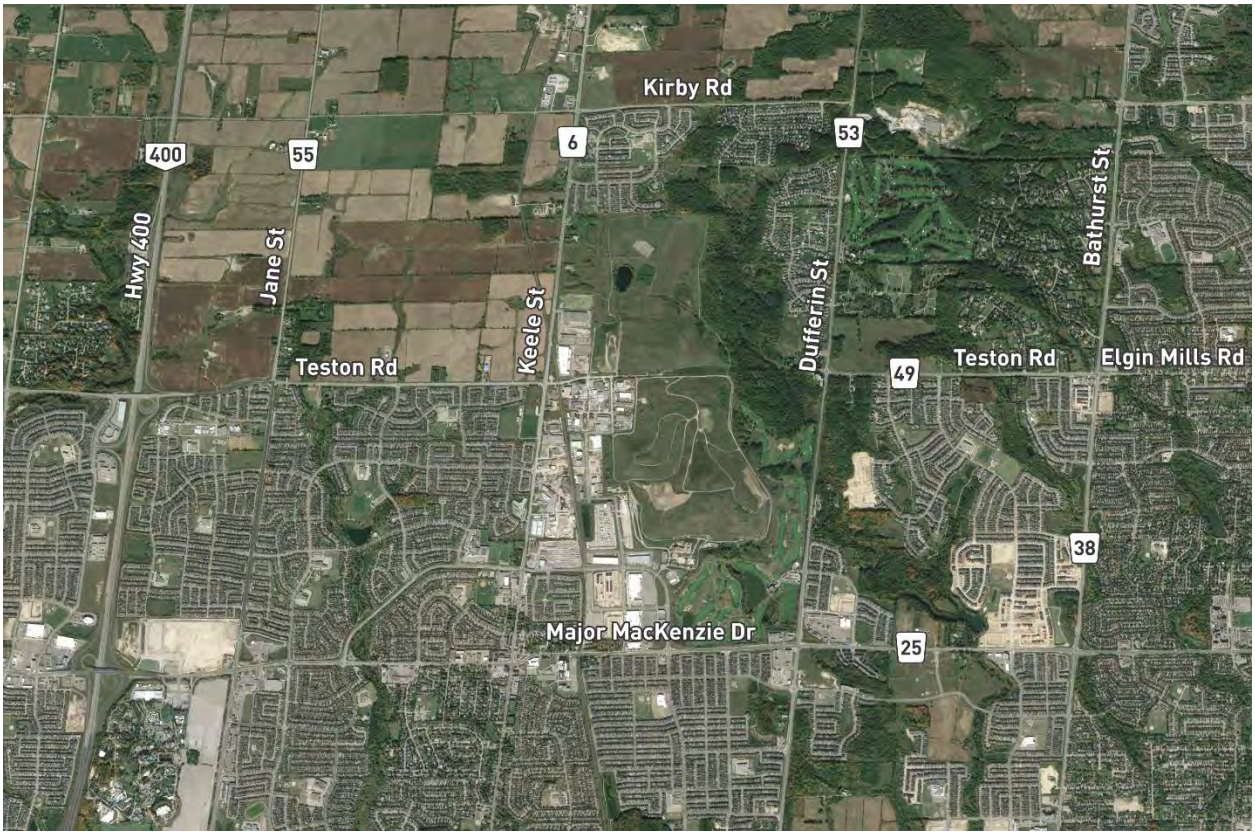


TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS

ANSI	Area of Natural and Scientific Interest
ESA	Endangered Species Act
ESAs	Environmentally Sensitive Areas
FMZ	Fish Management Zone
GTA	Greater Toronto Area
HOV	High Occupancy Vehicle
IDF	Intensity-Duration-Frequency
IEA	Individual Environmental Assessment
ITS	Intelligent Transportation System
MCEA	Municipal Class Environmental Assessment
MECP	Ministry of the Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
NMRP	North Maple Regional Park
OEAA	Ontario Environmental Assessment Act
OP	Official Plan
RBL	Reserved Bus Lane
SARA	Species at Risk Act
TDM	Transportation Demand Management
TMP	Transportation Master Plan
TTS	Transportation Tomorrow Survey
ToR	Terms of Reference
TRCA	Toronto and Region Conservation Authority
TSM	Transportation System Management
v/c	Volume to Capacity Ratio
YRTDF Model	York Region's Travel Demand Forecasting Model

GLOSSARY

Alternative Methods - Alternative Methods of carrying out the proposed undertaking are different ways of doing the same activity.

Alternatives - Both Alternative Methods and Alternatives To a proposed undertaking.

Alternatives To - Alternatives To the proposed undertaking are functionally different ways of approaching and dealing with a problem or opportunity

Capacity – In transportation planning, a limit, usually defined by infrastructure, of the number of vehicles or people that can pass through the infrastructure over a set period of time.

Climate Change - A change in global or regional climate patterns, in particular, a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.

Consultation - A two-way communication process to involve interested persons in the planning, implementation and monitoring of a proposed undertaking.

Cumulative Effects - Cumulative effects are changes to the environment that are caused by an action in combination with other past, present and future human actions.

Environment - For the purposes of this study, the term "environment" reflects the broad definition in the OEAA, which includes natural, social, economic, built and cultural features.
Environmental Effect - The effect that a proposed undertaking or its alternatives has or could potentially have on the environment, either positive or negative, direct or indirect, short- or long-term.

Minister - Minister of the Environment, Conservation and Parks.

Mitigation (environment) – Refers to the use of measures or actions to avoid or reduce impacts on the environment or to protect or enhance the environment.

Mobility – The movement of people and goods.

Natural Environment – Lands containing natural areas, natural corridors and linkages between them comprised of naturalized corridors, which together form an integrated system of protected areas.

Net Effects - Effects on the environment that remain after standard mitigation measures have been applied to reduce the extent of the effect.

Peak Period – Period(s) of the day when traffic congestion and crowding on public transportation is highest. Often the AM and PM peak periods occur during the typical daily commute times.

Proponent - A person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

Right-of-way – A right-of-way is a type of easement granted or reserved over the land for transportation purposes; this can be for a highway, public footpath, rail transport, canal as well as electrical transmission lines, oil and gas pipelines.

TDM – Transportation Demand Management (or traffic demand management or travel demand management) is the application of strategies and polices to reduce travel demand (specifically) that of single-occupancy private vehicle(s), or to redistribute this demand in space or time.

TSM – Transportation Systems Management improves transportation system efficiency and optimizes the use of existing and planned infrastructure through a range of strategies, policies and initiatives.

Road Network – The road network is the system of interconnected roads designed to accommodate wheeled road going vehicles and pedestrian traffic.

Terms of reference - A document prepared by the proponent and submitted to the Ministry of the Environment, Conservation and Parks for approval. The terms of reference sets out the framework for the planning and decision-making process to be followed by the proponent during the preparation of an environmental assessment. In other words, it is the proponent's work plan for what is going to be studied. If approved, the environmental assessment must be prepared according to the terms of reference

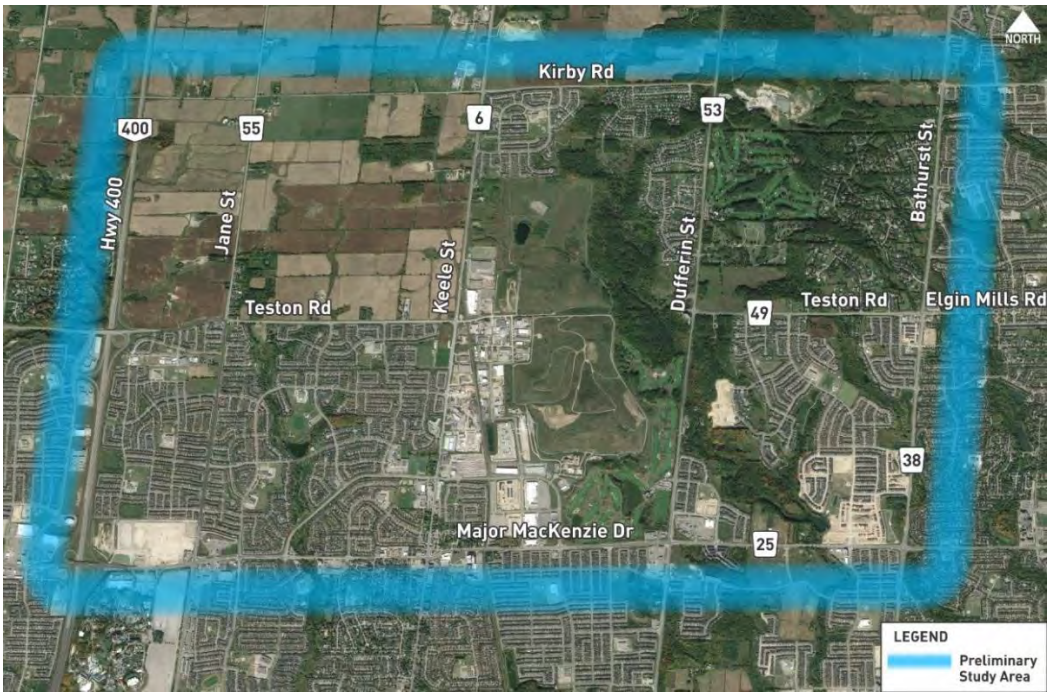
Undertaking - An enterprise, activity or a proposal, plan, or program that a proponent initiates or proposes to initiate

1 INTRODUCTION

The Terms of Reference (ToR) provides a framework for the planning and decision-making process to be followed during the preparation of the Individual Environmental Assessment (IEA) for Teston Road Area Transportation Improvements in the City of Vaughan between Highway 400, Bathurst Street, Major Mackenzie Drive and Kirby Road. The Preliminary Study Area for the IEA, shown in **Figure 1-1**, was established as part of the ToR process with input from the public and agencies. The study area extends beyond the Teston Road Corridor to accommodate a wide range of potential transportation solutions that allow for a range of alternatives to be reviewed during the IEA. Further details on the Preliminary Study Area can be found in **Section 4.1**.

The study area is broad enough to accommodate a wide range of potential transportation solutions

Figure 1-1: Preliminary Study Area



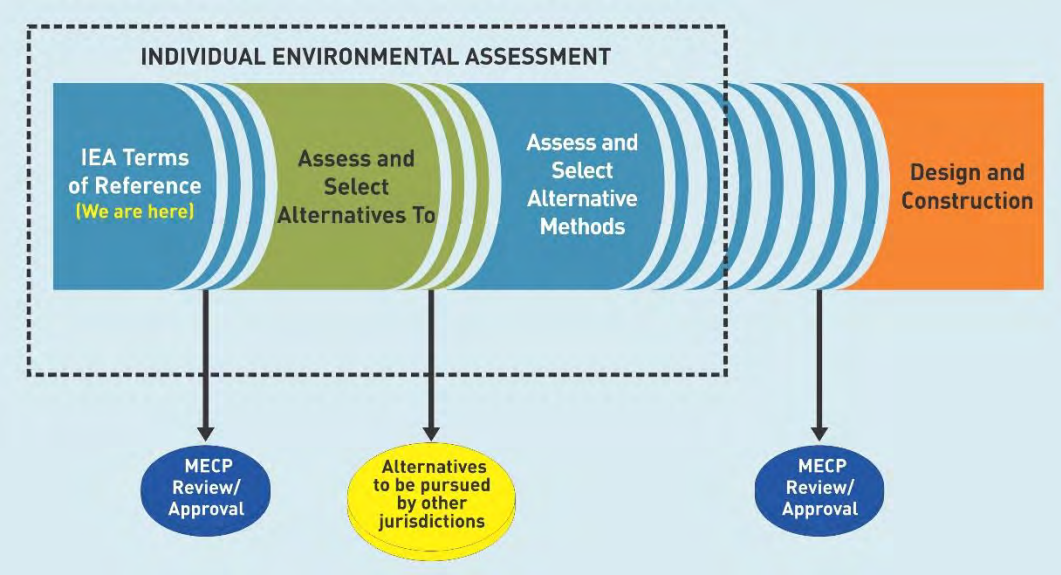
The ToR requires approval by MECP before the IEA can commence

The IEA process, shown in **Figure 1-2**, will identify the transportation problems and opportunities and evaluate alternative solutions to address them. The first phase in the IEA process is the preparation of a ToR. The draft ToR will be submitted to the *Minister of the Environment, Conservation and Parks*(Minister) under Section 6 (2) (a) of the *Ontario Environmental Assessment Act* (OEAA) for approval. If the IEA ToR is approved by the Minister, the subsequent IEA study will follow a structured planning process including:

- Identify problems and opportunities;
- Develop and select Alternatives To the Undertaking (or Alternatives To). Alternatives To address the transportation problems and opportunities. (see **Chapter 5** for details);
- Develop and select Alternative Methods to implement the Alternatives To (or Alternative Methods). Alternative Methods are different ways of implementing the preferred Alternative To (see **Chapter 6** for details); and
- Recommend specific infrastructure, as required, including the associated (environmental) effects and mitigation measures.

The Undertaking will be defined during the IEA.

Figure 1-2: High Level IEA Process



Two types of Alternatives: Alternatives To (address the transportation problems and opportunities) and Alternative Methods (ways to implement the preferred Alternative To)

As part of an IEA, the OEAA requires proponents to examine two types of alternatives; Alternatives To the Undertaking and Alternative Methods of Carrying out the Undertaking. Although referenced throughout the IEA process, the Undertaking is not fully identified until the end of the process. Alternatives To the Undertaking or Alternatives To, are defined as functionally different ways of addressing the identified problems and opportunities. Once the Undertaking has been determined, Alternative Methods of Carrying Out the Undertaking or Alternative Methods (such as, specific design and location alternatives) are considered. An Undertaking will be identified through the IEA planning process identified in this ToR.

This ToR identifies, at a minimum, what York Region will do during the IEA process. Although the ToR will be used as a guide to the IEA study, refinements to the IEA process and study tasks will be considered by York Region over the course of the study, based on public and agency input, any changes to Regional policy, and the availability of new information. York Region will undertake the IEA based on the legislative requirements, policies, procedures and protocols that are in place at the time the study is being completed. Transportation issues in the Preliminary Study Area are influenced by a much broader area. As a result, travel demand analysis will be carried out in a much broader context, including consideration of major transportation infrastructure in proximity to the Preliminary Study Area, and linkages to/from other key areas. The results of analysis during the study could also affect the Preliminary Study Area.

1.1 Planning and Environmental Assessment Process

Planning for all major transportation infrastructure projects in the Province of Ontario is conducted in a similar manner. Accordingly, the steps in the IEA planning process include:

- Preliminary identification of existing and future transportation problems and opportunities;
- Development of an IEA ToR; and
- Undertaking an IEA.

There are two formal MECP approvals required: ToR and at conclusion of IEA

The overall planning process includes significant public consultation and involvement from appropriate municipal, provincial and federal government agencies. It also includes engagement with Indigenous Communities.

The IEA process for Teston Road is outlined in **Figure 3-1**. Approval from the *Ministry of the Environment, Conservation and Parks (MECP),* previously known as the *Ministry of Environment and Climate Change* (MOECC) is required for the ToR and at the conclusion of the IEA study once the IEA Report is submitted.

At the conclusion of the IEA, a formal approval process is initiated to ensure that a reasonable solution has been provided.

If the IEA is approved, additional engineering and environmental studies are undertaken to further refine the design, develop detailed mitigation measures, obtain specific permits and approvals required under other legislation, and prepare for construction.

As part of the formal approval process, the IEA ToR is submitted to the MECP for public, municipal, Indigenous Community and government agency comment and review. The approval of the ToR is the first statutory decision made by the Minister in the IEA planning and approval process.

The IEA study must be consistent with the requirements of Section 6.1(2) of the OEAA

The IEA study will be consistent with the requirements set out in Section 6.1(2) of the OEAA and address the following components:

- A description of the purpose of the Undertaking;
- A description and statement of the rationale for the proposed Undertaking
- A description and rationale for the Alternatives To and Alternative Methods;
- A description of:
  - The environment that will be affected or might reasonably be anticipated to be affected, directly or indirectly, by the Undertaking, the Alternatives To and the Alternative Methods;
  - The effects that will be caused or that might reasonably be expected to be caused to the environment, by the Undertaking, the Alternatives To and the Alternative Methods;
  - The actions necessary or that might reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the Undertaking, the Alternatives To and the Alternative Methods;
- An evaluation of the advantages and disadvantages to the environment of the Undertaking, the Alternatives To and the Alternative Methods; and
- A description of the consultation undertaken by the proponent and the results of the consultation.

The specific activities to be carried out as part of the IEA are described in more detail in the following chapters of this document.

A Consultation Record that summarizes the consultation undertaken during the preparation of this IEA ToR has been completed and made available under separate cover.

Consultation to be undertaken during the course of the IEA is documented in **Chapter 8**.

1.2 Identification of the Proponent

The **Regional Municipality of York** ('York Region') is the proponent for this IEA ToR for Teston Road from Keele Street to Bathurst Street.

1.3 How the IEA will be Prepared

The preparation of an IEA ToR for Teston Road Area Improvements, and subsequent submission to the Minister for review and a decision regarding approval is subject to the OEAA.

This ToR has been prepared in accordance with Section 6(2)(a) of the OEAA and specifically addresses the following:

- Identification of the Proponent (**Chapter 1** of this document);
- The purpose of the Undertaking (**Chapter 2**);
- Description and Statement of Rationale for the Proposed Undertaking (**Chapter 3**);
- Description of the Environment and Potential Effects (**Chapter 4**);
- Description of the Rationale for the Alternatives To the Undertaking (**Chapter 5**);
- Description of the Assessment and Evaluation Methodology (**Chapter 6**);
- Commitment to carry out compliance monitoring (**Chapter 7**);
- Description of the Consultation Plan proposed for the Environmental Assessment (**Chapter 8**);
- Consultation Undertaken to Assist in the Preparation of this ToR (**Chapter 9**);
- Flexibility for Accommodating New Circumstances (**Chapter 10**);
- Other Approvals Required (**Chapter 11**); and,
- Documents used as Reference in Preparation of this ToR (**Chapter 12**)

This ToR describes the proposed approach to address the requirements of the IEA process. The consultation process, range and types of alternatives to be considered, the specific evaluation factors, criteria and measures have the flexibility to be modified and refined based on study findings and stakeholder comments received during the IEA study.

Additional documentation submitted with this ToR, not subject to formal approval, includes an Appendix A (summary of evaluation and criteria for alternative methods) and the Consultation Record During Preparation of the ToR.

2 PURPOSE OF THE UNDERTAKING

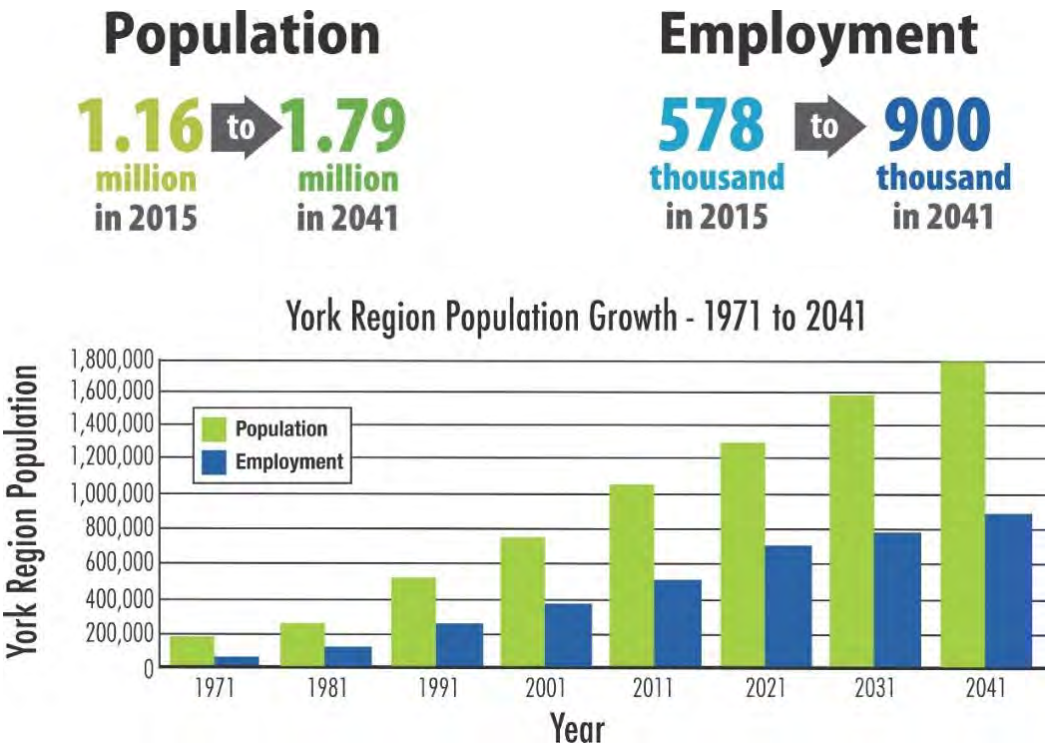
2.1 Background

York Region is amongst Canada's fastest growing large municipalities.

South Central Ontario has transformed from a Toronto-based hub to non-centralized residential and business regions, cities and towns. This change has heavily influenced all transportation authorities including York Region in their expansion and development plans to accommodate increasing travel demands along north/south and east/west corridors.

York Region is the third largest municipality in Ontario and the sixth largest in Canada. Its growing community is ranked as Canada's fastest growing large municipality in the 2006 to 2011 period (2011 Canada Census). By the year 2041, York Region is expected to reach 1.79 million residents, 900,000 jobs and more than 510,000 households. The region consists of nine cities and towns which are connected by 1,060 kilometres of Regional roads. The north/south and east/west corridors traverse the 1,762-square kilometre area and support secondary connectors to the surrounding provincial highways. **Figure 2-1** summarizes the anticipated York Region Population Growth and Employment Growth to the year 2041 (York Region TMP).

Figure 2-1: York Region Population and Employment Growth (YR TMP, 2016)



An interconnected mobility system is an essential foundation of the York Region TMP

Within York Region, the population of the City of Vaughan increased from 15,000 in the 1970s to over 330,000 residents in 2016. To support this rapid and continued growth, the City of Vaughan needed to change its connectivity structure from auto-oriented dependence into a fully urbanized road network, i.e. finer grid network connections, continuity of roadways, sidewalks, cycle tracks, multi-use paths etc. It also required the improvement of boundary arterials consisting of a few through-corridors towards a fully harmonized, well connected, uninterrupted urban network.

York Region's 2016 Transportation Master Plan (TMP) was developed to provide a framework for making decisions related to the transportation system up to the year 2041. The TMP states "*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 2002 and 2009 TMPs and the 2008 Pedestrian and Cycling Master Plan provide the basis for the 2016 TMP. The "*TMP update builds on this existing foundation to deliver transportation projects and programs that will continue to improve mobility and provide options for residents and businesses as well as position the Region to respond to emerging issues, policy changes and trends in the future."*

The TMP was developed in accordance with the Municipal Class Environmental Assessment (EA) process. Extensive community consultation and engagement throughout the Master Plan development process generally fulfills the requirements of Phase 1 and 2 of the EA requirements for road improvement projects.

Teston Road is a key Regional east/west arterial making it integral to the local transportation network

Teston Road is a key Regional east/west arterial road, with an interchange at Highway 400 (interchange opened in October 2009). The Teston Road Area Improvements (the subject section) is an Urban Regional Designated Area as classified by the York Region's TMP. Following the closing of the Keele Valley Landfill in 2002, this section of Teston Road has experienced a range of new land uses. It now serves 9 new residential communities, 4 commercial areas, 4 industrial facilities, 2 golf courses and a retirement residence within a range of 3.5 kilometres. Additional development applications are expected in the future.

Figure 2-2 shows the designated urban areas within York Region from the TMP.

Historically, Teston Road was a continuous corridor, however, the washout of the crossing structure over the East Don River occurred during Hurricane Hazel (October 1954) which resulted in what has become a discontinuous roadway. Discontinuity on Teston Road between Keele Street and Dufferin Street is a barrier to the local and regional east/west trips. Continuous regional transportation connectivity through the northern section of the City of Vaughan is deficient. Teston Road is one of several solutions to improve connectivity.

Discontinuity may add traffic load to parallel east/west alternatives such as the already congested Major Mackenzie Drive which travels through constrained areas including the Village of Maple. Study alternatives should also address these issues.

The discontinuous roadway is also part of the regional cycling network. The current network requires out-of-way travel by cyclists, channeling additional cycling traffic on Keele Street or Dufferin Street**.** York Region's Pedestrian and Cycling Plan Development Report identified this section of Teston Road as a proposed cycling facility in its 10-year plan (by 2026) as shown in **Figure 2-3.**

A previous Municipal Class EA study was completed in February 2003 for the Widening and Reconstruction of Teston Road between Pine Valley Drive and Bathurst Street. The problem statement for this previous EA study was as follows:

1. Teston Road is a key east-west arterial road with capacity deficiencies for future traffic and was discontinuous as a direct connection between Keele Street and Dufferin Street.
2. There were safety, geometry and capacity issues within the entire Teston Road corridor between Pine Valley Drive and Dufferin Street.

During Phase 2 of the 2003 Municipal Class EA the Alternatives To that were examined and evaluated along the entire corridor concluded that improvements were necessary in the Teston Road Corridor, between Pine Valley Drive and Bathurst Street including a connection of Teston Road between Keele Street and Dufferin Street (also see **Section 2.3**).

York Region committed to completing an IEA for this section of Teston Road

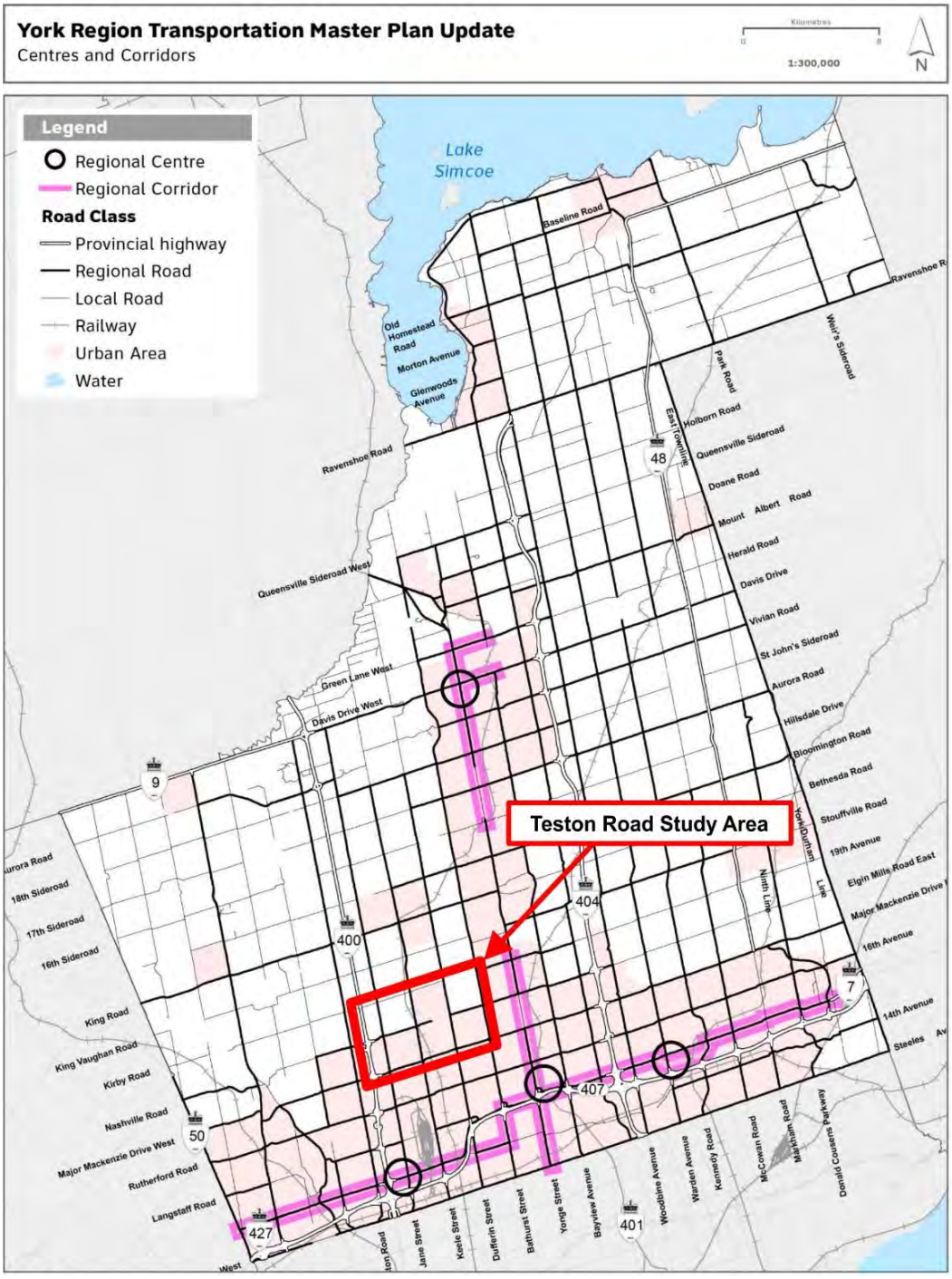
During Phase 3 of the Municipal Class EA, it became apparent that due to the potentially significant environmental and cost implications, a more detailed study would be required for the section of Teston Road between Keele Street and Dufferin Street. In order to proceed with the Class EA for the remaining sections of Teston Road, the 'Do Nothing' option was recommended for this section. By recommending the 'Do Nothing' option for this section of Teston Road, the previous Class EA was not able to address the discontinuity component of the Teston Road project problem statement (#1 above). As a result, in April 2003 York Region committed to completing an IEA for the Section of Teston Road between Keele Street and Dufferin Street to address the environmental concerns including the potential impact to the closed landfills and East Don River Valley.

Of the east-west corridors parallel to Teston Road, namely Major Mackenzie Drive and Kirby Road, Major Mackenzie Drive is the only continuous east-west corridor within the study area with an interchange at Highway 400. As a result, Major Mackenzie Drive experiences significant congestion (see **Section 2.2**). Currently, Major Mackenzie Drive is a four-lane arterial roadway and is identified in the York Region TMP as a future Rapid Transit corridor. Kirby Road, owned by the City of Vaughan, is a two-lane minor arterial roadway within the study area with a discontinuity between Dufferin Street and Bathurst Street. Successive City and Regional TMPs including Vaughan's TMP 2013 and York Region's TMP 2016 identified the need to improve Kirby Road including widening to 4 lanes and a connection of the missing link between Dufferin Street and Bathurst Street.

The north-south Regional roadway corridors within the study area are Jane Street, Keele Street, Dufferin Street and Bathurst Street. Jane Street is an urban arterial with 4 lanes between Major Mackenzie Drive and Teston Road. Recommended improvements to Jane Street, identified in the York Region TMP, include widening to 4 lanes from Teston Road to Bloomington Road. Keele Street is a 4-lane urban arterial with no recommended improvements identified in the York Region TMP. Dufferin Street is a 2-lane minor arterial. Planned improvements to Dufferin Street include widening to 4 lanes from Major Mackenzie Drive to 15th Sideroad (Y.R. 40) of the study area. Bathurst Street is a major 4 lane urban arterial, recommended improvements, according to the York Region TMP, include widening to 6 lanes from 407 ETR to Teston Road.

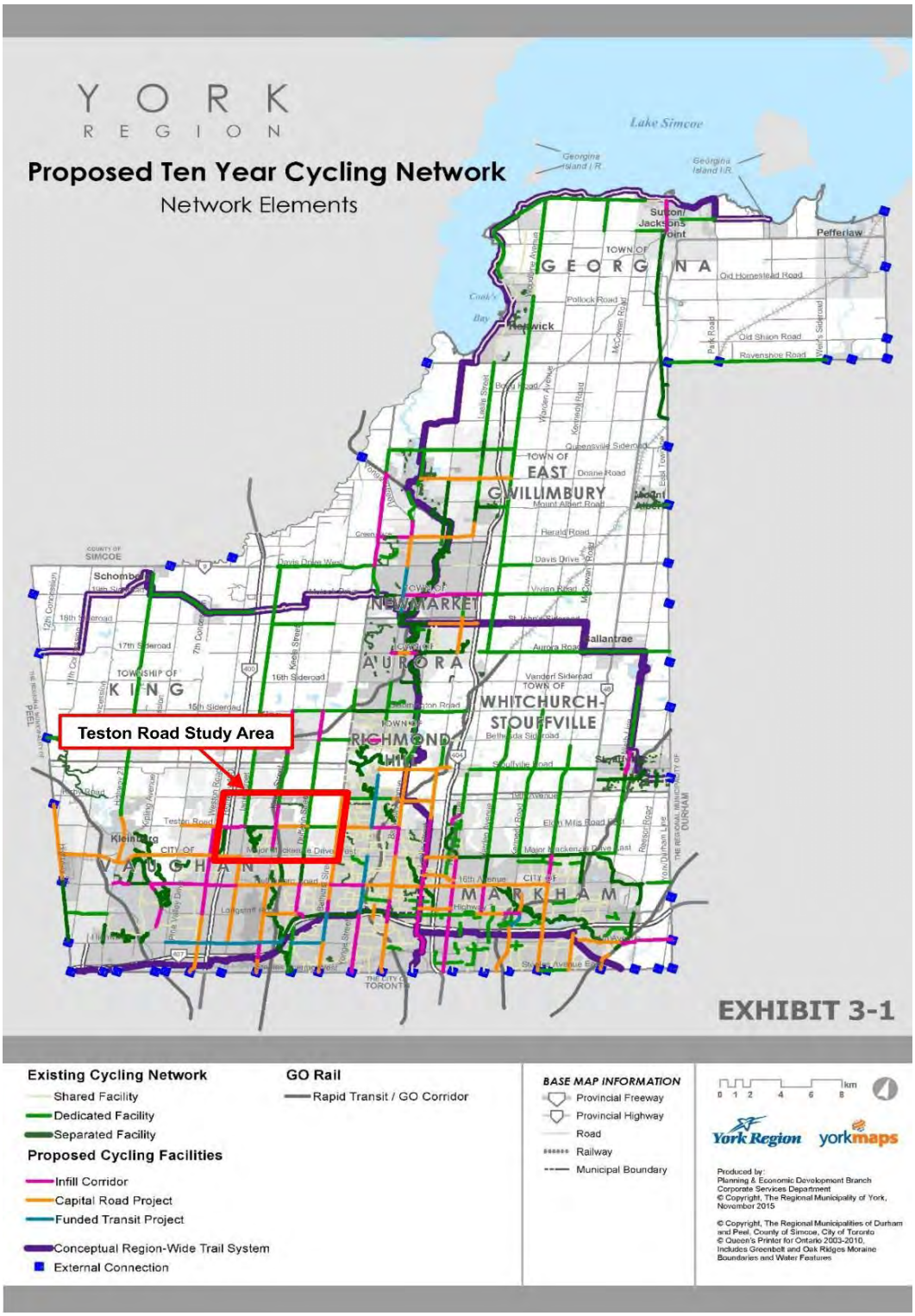
To address transportation requirements for York Region, the majority of the existing two lane Regional Roads within the study area are slated for improvements and/or widening according to the York Region TMP.

Figure 2-2: Designated Urban Areas (York Region TMP, 2016)



The majority of the study area is a designated urban area

Figure 2-3: Proposed 10 Year Cycling Network (York Region Pedestrian and Cycling Plan Development Report, 2016)



This section of Teston Road has a proposed cycling facility in its 10 years plan (by 2026)

2.2 Need and Justification for the Proposed Undertaking

York Region's Travel Demand Forecasting model (YRTDF model, EMME based) was used to evaluate future traffic conditions and assess the 'Need and Justification' for the proposed 'Undertaking'. The model simulates typical weekday morning peak hour traffic conditions; therefore, the analysis was conducted for only for the morning peak hour. The travel demand model is calibrated based on the 2011 Transportation Tomorrow Survey (TTS) data and provides travel demand forecast for 2041 conditions for the proposed land use in the Greater Toronto Area (GTA). The travel demand analyses were conducted for the following two scenarios, existing (2016) and future (2041) conditions:

Travel demand forecasts for the existing (2016) and future (2041) were reviewed and consider future planned improvements in the York Region TMP except for Teston Road from Keele to Bathurst Streets

- Scenario A: existing (2016) condition
- Scenario B: future (2041) condition

Scenario B considered all planned/proposed network improvements identified in the York Region TMP for the future (2041) condition (except for Teston Road between Keele Street and Bathurst Street), including transportation network improvements adjacent to the study area, see **Figure 2-4:**

- Four-lane widening of Teston Road between Bathurst Street and Yonge Street (Municipal Class EA has been approved and detailed design is underway for a 5-lane cross section with construction occurring 2022-2026)
- Four-lane widening of Dufferin Street between Sir Benson Drive and Teston Road (Municipal Class EA is currently ongoing, if approved, construction would occur between 2022-2026)
- Four-lane widening of Dufferin Street to 15th Sideroad (Y.R. 40), occurring 2032-2041 which assumes EA approval of future Municipal Class EA Study)
- Four-lane widening of Kirby Road (owned by the City of Vaughan and potential candidate to be transferred to the Region) between Weston Road and Bathurst Street (including the new road construction between Dufferin Street and Bathurst Street, occurring 2027-2031). This scenario assumes EA approval of ongoing Municipal Class EA study (by others) for Kirby Road between Dufferin Street and Bathurst Street and future Municipal Class EA Study for the remaining section of Kirby Road)
- Dedicated transit rapidway on Major Mackenzie Drive (occurring 2027-2031 which assumes EA approval)

The proposed Kirby GO Station on the Barrie GO Transit rail line, which is to be located at the southwest corner of the Kirby Road and Keele Street intersection, falls within the study area. Based on the review of the recent version of the model used for the travel demand analysis for this study, we understand the model was not assigning any trips to/from the Kirby GO Station.

Additionally, York Region's travel demand model considers future growth in Active Transportation and Transit modal shares within the Region.

The volume to capacity (v/c) ratios were estimated for each roadway segment by direction, using the model assigned vehicular volumes and planning level capacities according to York Region's travel demand model. The v/c ratios and the respective Level of Service (LOS) are defined by six levels or grades of generalized traffic conditions and characteristics. Presented in **Table 2-1**, these are commonly used as the measurement of overall transportation system operations for links and intersections.

Figure 2-4: Proposed 2041 Road Network (York Region TMP, 2016)

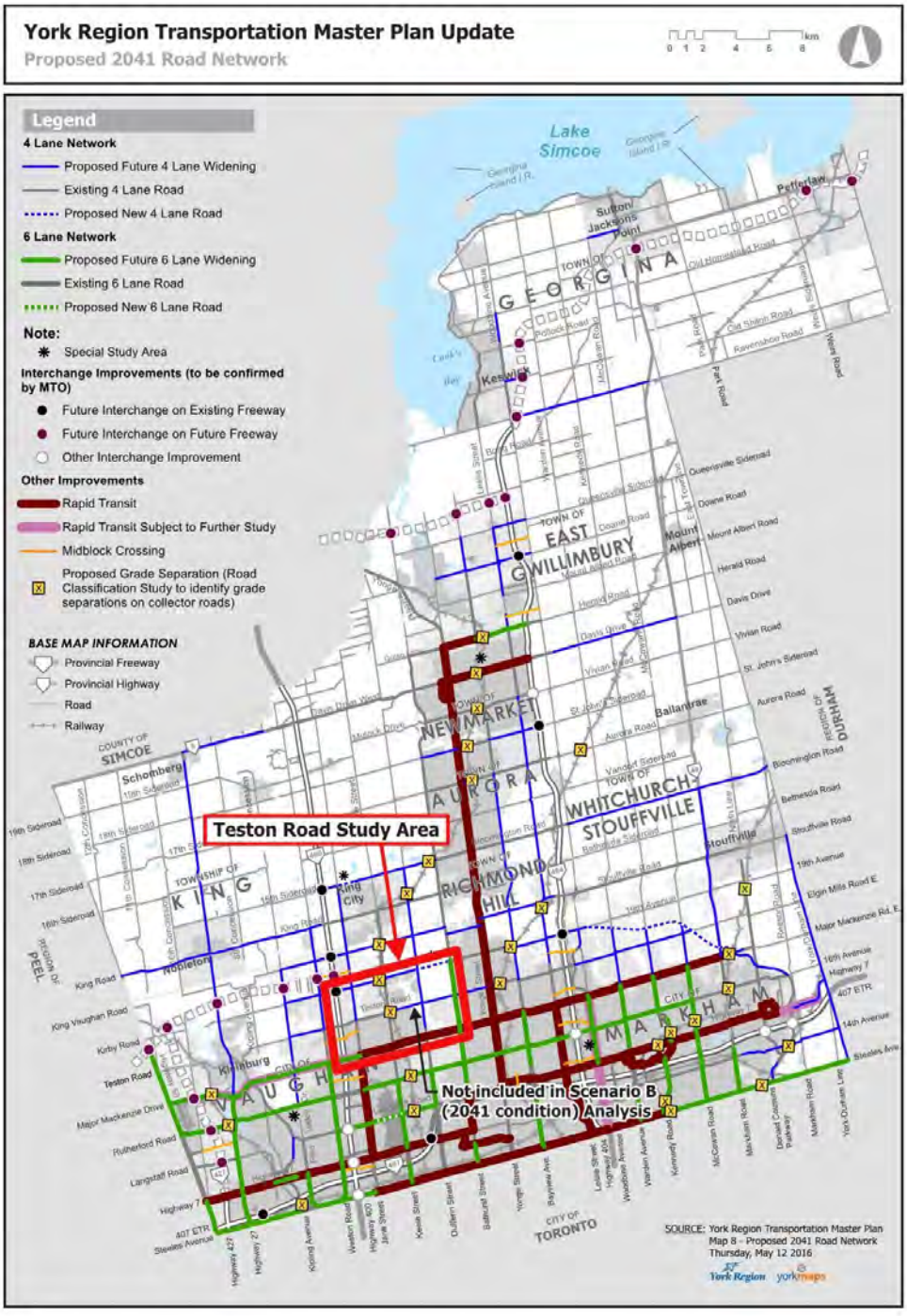


Table 2-1: Volume to Capacity Ratio & Operating Conditions Guideline

V/C Ratio	Level of Service (LOS)	Traffic Operating Condition
≤0.70	A + B	Free Flow
0.71 to 0.80	C	Stable
0.81 to 0.90	D	Unstable
0.91 to 1.00	E	Congested
> 1.00	F	Very-Congested

The model outputs (v/c ratios) for Scenarios A and B are presented in **Figure 2-5** and **Figure 2-6**, respectively.

The analysis results indicate that under existing conditions (Scenario A, refer to **Figure 2-5**), westbound traffic on Major Mackenzie Drive is operating at 'congested' or 'very-congested' conditions (with v/c ratios from 0.96 to 1.23). The model simulates morning peak hour traffic conditions with westbound traffic representing the predominant direction of travel. Similar conditions prevail in the afternoon peak hour, with predominantly eastbound traffic occurring on east-west corridors within the study area.

Estimated future conditions (Scenario B) show adjacent parallel corridors, Kirby Road and Major Mackenzie Drive, operating with v/c over 1.0 (refer to **Figure 2-6** i.e. 'over-congested' conditions).

All east/west corridors within the study area are expected to operate at 'very congested' conditions by 2041 with planned improvements

With the currently planned improvement, westbound traffic on Kirby Road and Major Mackenzie Drive (between Keele Street and Dufferin Street) are expected to operate with v/c ratios of 1.17 and 1.10, respectively. Similarly, high v/c ratios and congestion are expected to occur in the eastbound direction during the afternoon peak hour. The expected future condition would result in an unacceptable level of service for commuters, goods movement and also higher levels of air pollution due to higher vehicle emissions.

Teston Road is designated as a major east-west arterial within the regional road network. Preliminary Analysis shows that even with other planned/proposed improvements, without improvements to Teston Road, the east-west corridors of Kirby Road and Major Mackenzie Drive are expected to operate at 'very-congested' conditions. These results demonstrate the need for additional east-west transportation capacity within the study area. Improvements within the Teston Road Area are required to address the following:

- Congestion and out-of-way travel currently faced by commuters attempting to access Highway 400;
- Continuous east-west crossing opportunities between Keele Street and Dufferin Street are limited by existing landfill facilities and natural environment features. These non-continuous segments burden both existing north–south and east–west surrounding road systems with additional traffic volumes.

A more detailed traffic analysis model and review would still be required as part of the IEA to confirm the need and justification for transportation improvements, to confirm and identify any additional problems and opportunities and determine the effectiveness of potential transportation solutions.

Figure 2-5: Traffic Conditions for Scenario A – 2016 Base Conditions (morning peak hour)

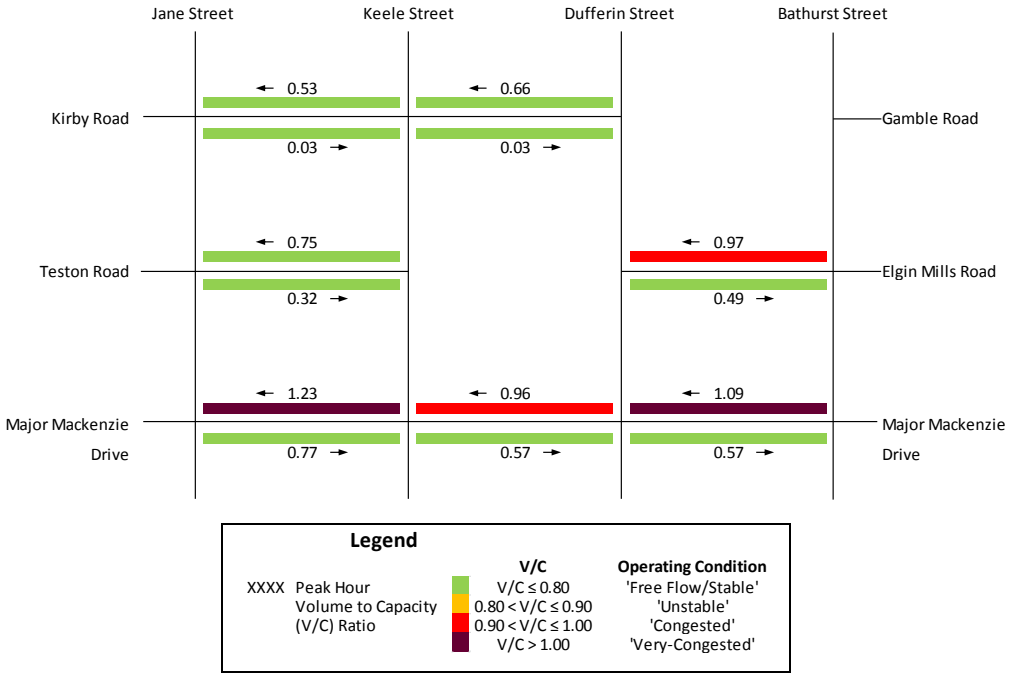
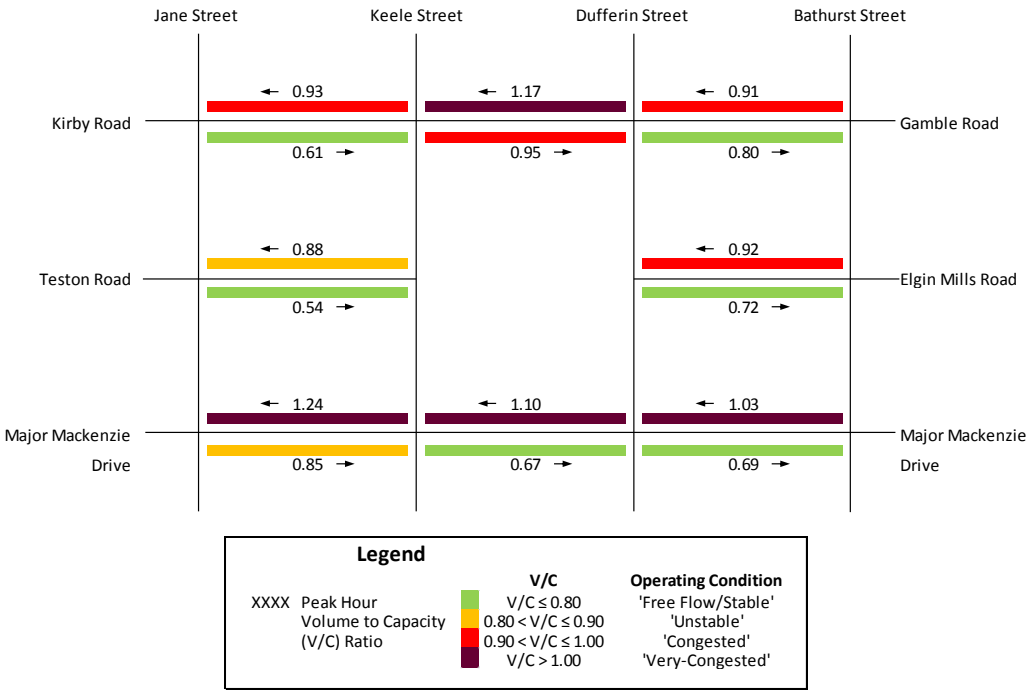


Figure 2-6: Traffic Conditions for Scenario B – 2041 Future Conditions (morning peak hour)



2.3 Summary and Purpose of the Undertaking and the IEA Study

The purpose of the Undertaking is to improve efficiency, safety and continuity of the transportation network within the study area.

The Purpose of the Undertaking is to improve the efficiency, safety and continuity of the transportation network within the study area. The IEA will consider a range of alternatives to address transportation capacity challenges within the Preliminary Study Area.

The specific need for and description of any proposed undertaking(s) will be determined during initial phases of the IEA study and will be based on the approved legislation (Federal, Provincial, Conservation Authority and Municipal) as well as plans, policies, guidelines, considerations and planning objectives in place at that time. Work supporting the need for any proposed undertaking(s) and a description of the proposed undertaking(s) will be documented in a *Transportation Planning Needs Report*, including a comprehensive network analysis, which will be made available for government agency review.

Consideration of the Purpose of the Undertaking for a transportation project requires a clear understanding of the problems and opportunities within the study area and within the planning horizon to 2041. During the IEA study that follows the ToR approval a significant amount of additional technical work will be undertaken to define and document transportation problems and opportunities. This analysis will form the rationale for any proposed improvements and the rationale for the 'Undertaking'. Work will be based on the most recent available planning policies, population, employment, growth, economic and travel data.

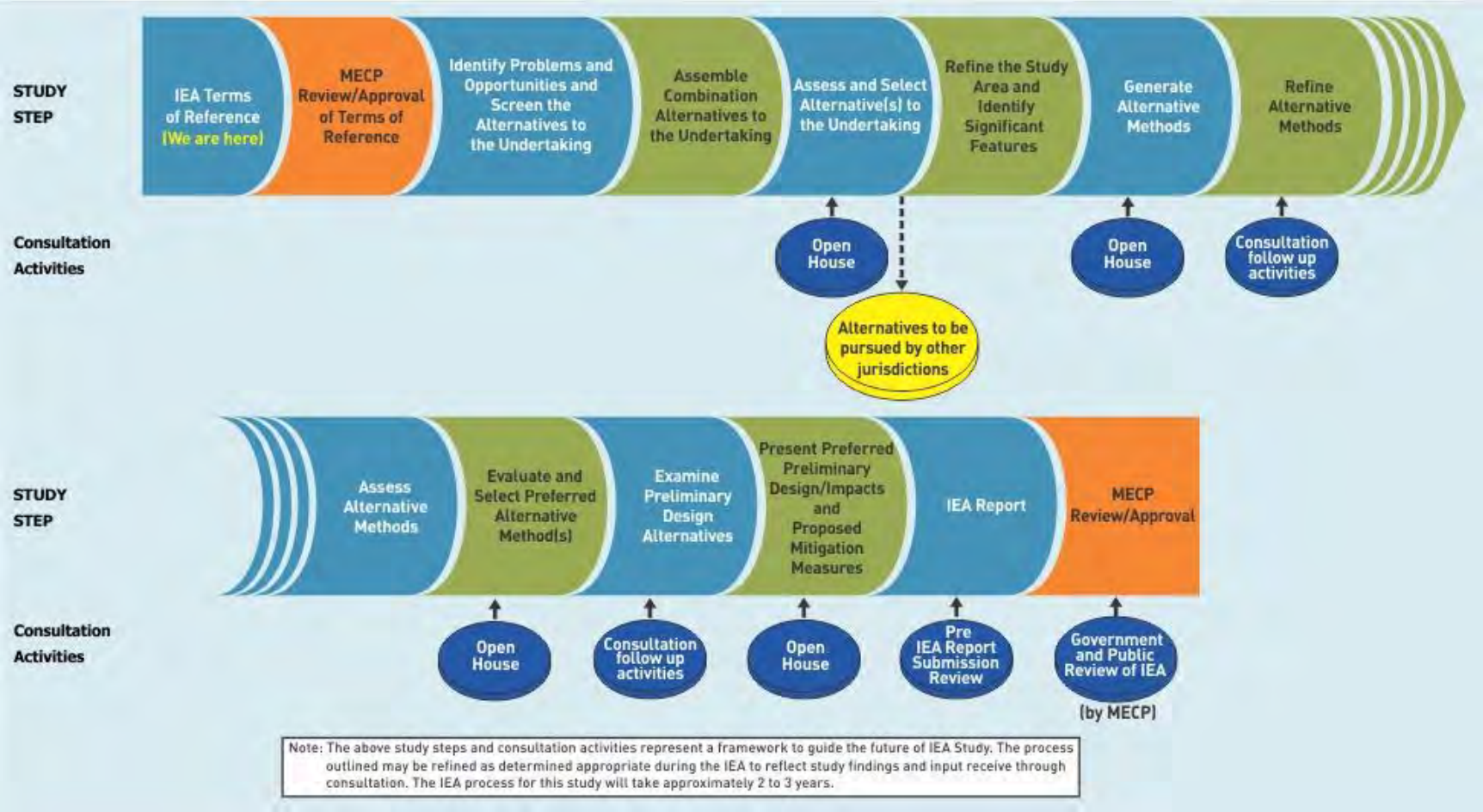
3 DESCRIPTION OF AND RATIONALE FOR THE PROPOSED UNDERTAKING

Although the purpose of the proposed undertaking was identified in **Section 2.3**, the actual undertaking itself has not yet been determined. The Undertaking may consist of a combination of transportation improvements (i.e. new roads, widening existing roads, operational road improvements etc.) to enhance the efficiency, safety and continuity of the transportation network within the study area.

The IEA process takes approximately 2 to 3 years to complete.

During the IEA study the purpose of and rationale for the Undertaking and the identification of Alternatives To will be further developed. Alternatives To and Alternative Methods will then be generated and assessed. A preferred Alternative Method(s) will then be selected. The overall IEA planning process is illustrated in **Figure 3-1** and fully described in **Chapters 4 and 6**. The IEA process for this study will take approximately 2 to 3 years from initiation of the IEA by York Region to submission of the IEA Report to the MECP.

Figure 3-1: Overall IEA Planning Process



4 DESCRIPTION OF THE ENVIRONMENT AND POTENTIAL EFFECTS

The proposed IEA study will utilize a study process that seeks to avoid, minimize or prevent detrimental environmental effects. For the purposes of this study, the term "environment" reflects the broad definition in the OEAA, which includes natural, social, economic, built and cultural features. Specific mitigation measures and the approaches for management of environmental effects will be developed and addressed during the IEA study once the potential transportation improvements are better understood.

4.1 Preliminary Study Area

The Preliminary Study Area will be refined during the IEA

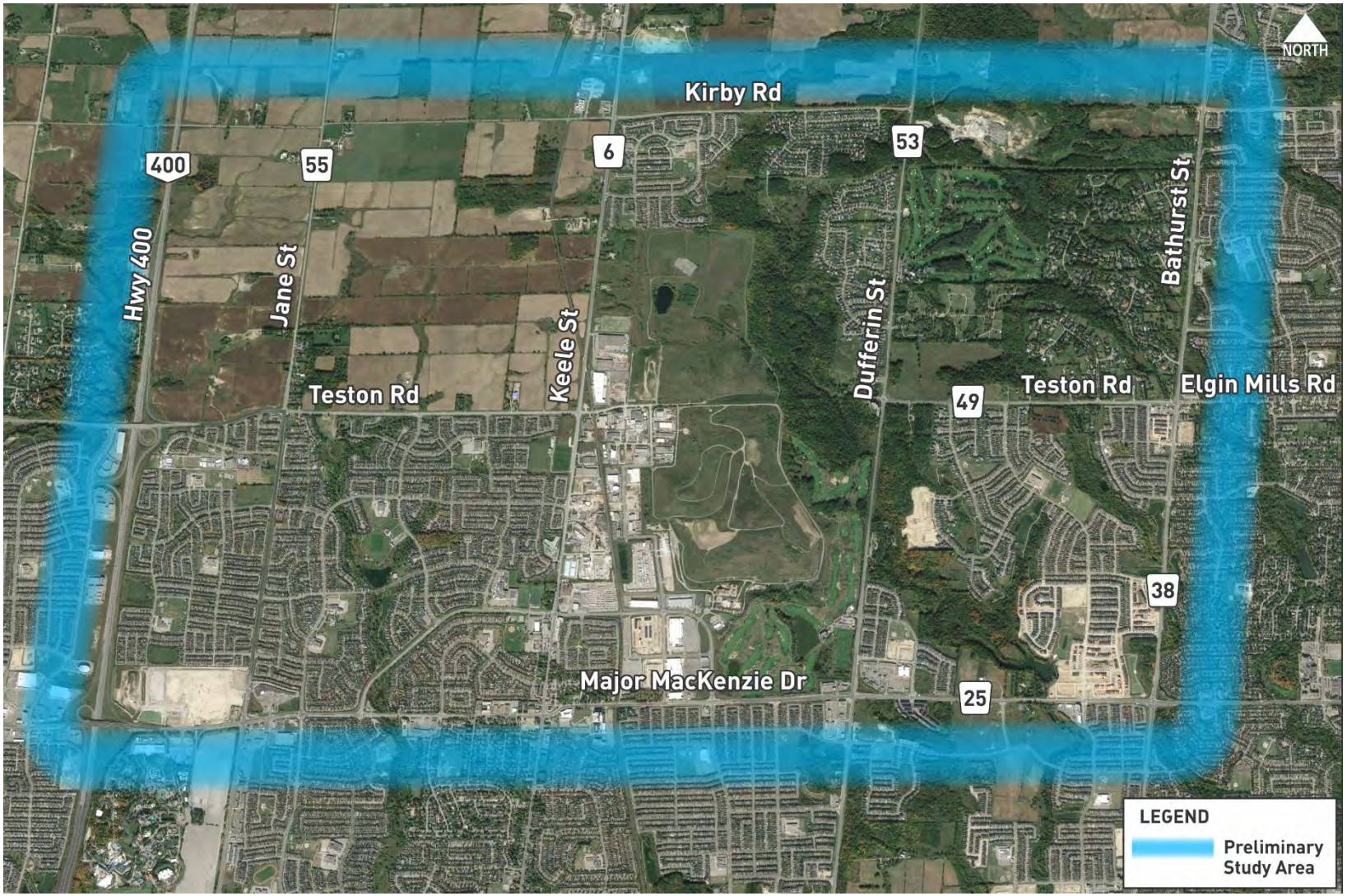
The Preliminary Study Area is shown in **Figure 4-1.** The Preliminary Study Area extends from west of Highway 400 to just east of Bathurst Street and just south of Major Mackenzie Drive to just north of Kirby Road. This study area includes multiple east/west and north/south regional and local corridors as well as Highway 400 which is a provincial north/south highway in order to allow for multiple existing road networks to be considered during the review of alternatives.

As noted in **Section 2.1**, in April 2003 York Region committed to completing an IEA for the Teston Road Area Improvements after the completion of a previous Municipal Class EA Study (completed February 2003). The study area identified in the ToR has unique features that include the East Don River tributary and the valley lands, the spur of the Oak Ridges Moraine, the closed Keele Valley Landfill site and the Vaughan waste disposal site. There are limited uses permitted in these areas. The study area identified is broad and includes lands that are not constrained by these features.

The Preliminary Study Area is larger than the area that was previously reviewed in the 2003 Municipal Class EA, to accommodate a variety of potential transportation solutions that allow for a range of alternatives to be reviewed during the IEA.

The Preliminary Study Area was refined throughout the development of the ToR in consideration of input by stakeholders. Traffic analysis completed during the IEA may encompass a revised study area as alternatives are generated and assessed. The Preliminary Study Area will then be confirmed and refined.

Figure 4-1: Preliminary Study Area



4.2 Preliminary Description of the Environment

Secondary source environmental research (a 'desktop study') was undertaken during the preparation of the ToR. This section provides an overview of the existing environment, major features and constraints within the Teston Road Preliminary Study Area based on a review of existing information collected in spring 2017 and additional natural environment information provided by TRCA and MNRF in fall of 2017. The following subsections provide a brief overview of the major environmental features and conditions in this area.

Further environmental investigations, including updated and more detailed secondary source reviews and field investigations, will occur during the IEA study to inventory the existing environment as defined by the OEAA and as set out in the ToR.

4.2.1 SOCIO-ECONOMIC ENVIRONMENT

York Region is the third-largest municipality in Ontario and the sixth largest in Canada, with a population of 1,156,000 as of mid-2015. Ranked as the fastest-growing large municipality in Canada, growth will put a strain on current transportation infrastructure and services and require coordination and management through providing necessary infrastructure and services. York Region's Vision 2051 is a long-term strategy to create a seamless network for mobility that provides access to all destinations using diverse transportation options for people in all communities, promotes active healthy living and safely and efficiently moves people and goods. A summary of the existing land use within the study area is shown on **Figure 4-2.**

The street network in the study area includes local (City of Vaughan) streets, Regional Arterials and a Provincial Highway (Highway 400)

York Region's street network includes roads owned and operated by local municipalities, York Region and the Province. Each is a critical part of the transportation network. In planning for future urban growth and to accommodate transportation demands, York Region's Official Plan (OP) Office Consolidation (2016) lists the undertaking of an IEA for Teston Road within the study area as one of Regional Council's policies. According to the policy, the IEA will include a comprehensive network analysis and environmental impact assessment to determine a preferred transportation strategy for Teston Road.

Located within York Region, the City of Vaughan is a municipality north of Toronto centrally located along Highway 400. It is bounded by King Township to the north, the City of Toronto to the south, the City of Markham and Town of Richmond Hill to the east, and Peel Region/City of Brampton to the west. Comprised of the communities of Kleinburg, Maple, Woodbridge and Thornhill, the City of Vaughan covers an area of approximately 273 square kilometres with a population of 306,233 – up 6.2% between 2011 and 2016 (Statistics Canada, Census Profile, 2016 Census).

York Region's OP (2010) estimates that the City of Vaughan will accommodate 29% of York Region's population growth and 33% of the Region's employment growth between the years 2006 and 2031 (Vaughan Official Plan 2010 (VOP 2010)– Volume 1, Section 1.1). To manage this growth, a set of street and public infrastructure initiatives are defined by the Vaughan TMP (2012).

A gap in the road network, together with discontinuous roadways is one of the factors leading to added congestion. One recommendation in York Region's TMP is the completion of the grid network through the improvement of discontinuous road links. The TMP also recommends the implementation of programs and services to shift travel to other modes, including transit, ride sharing, cycling and walking, making more efficient use of existing transportation infrastructure and reducing increases in road congestion.

Teston Road, in the City of Vaughan, starting at Islington Avenue (as Stegman's Mill Road) and traversing east to Bathurst Street where it adjoins Elgin Mills Road in the Town of Richmond Hill, is a discontinuous Regional road link identified in the TMP (2016). The discontinuous section between Keele Street and Dufferin Street is currently a 2-lane rural roadway which runs along the Concession line; on the west end the roadway terminates at Rodinea Road approximately 500 m east of Keele Street, and at the east end the roadway terminates approximately 275 m west of Dufferin Street in a cul-de-sac. The right-of-way through the discontinuous link is currently owned by the City of Vaughan and York Region.

Teston Road and Elgin Mills Road function as an east/west arterial corridor connecting communities in the City of Vaughan, the Town of Richmond Hill, and the City of Markham. The City of Vaughan has undergone a significant transformation in recent years, with provincial and regional forecasts predicting a doubling of population and employment from the year 2006 to 2031 (Vaughan Official Plan 2010 (VOP 2010) – Volume 1, Section 1.1).

The City of Vaughan's OP notes a policy of the City Council to plan for land uses that will accommodate the forecasted population and employment growth by the year 2031 (Vaughan Official Plan 2010 (VOP 2010), Section 2.1, Planning for Growth).

The existing transit network in the study area includes local service, VIVA, and GO Transit.

Current transit infrastructure in the City of Vaughan consists of express service, VIVA service, trunk service, local service, GO Transit and TTC. In the proximity to the Teston Road Preliminary Study Area, the GO Barrie rail corridor services the City of Vaughan with stops at Major Mackenzie Drive, Rutherford Road and York University (City of Vaughan TMP, 2012).

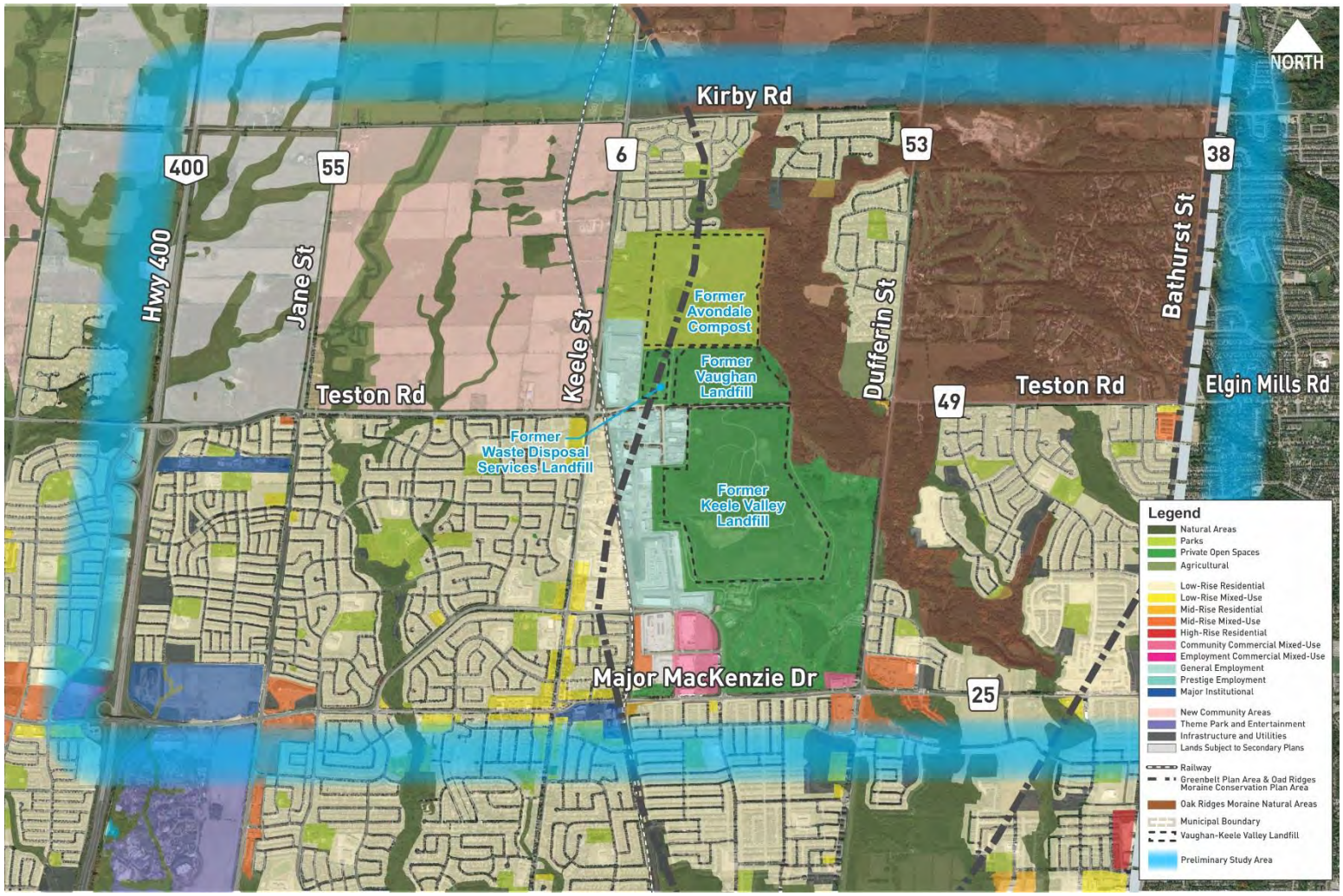
Areas to the north of Teston Road include a Natural Heritage System, and Protected Countryside as a part of the Oak Ridges Moraine Area, shown in **Figure 4-3** (Vaughan Official Plan 2010 (VOP 2010) – Volume 1, Schedule 13). Parts of the study area are subject to the Oak Ridges Moraine Conservation Plan (2017), the Greenbelt Plan (2017) and Growth Plan for the Greater Golden Horseshoe (2017). The portion south of Teston Road is mostly urban, however there is a significant natural heritage system and numerous watercourse crossing within the area. East of Dufferin Street, land use is mainly rural and agricultural with some natural linkage areas as well as residential and a golf course. Within the Preliminary Study Area, land use adjacent to Teston Road includes industrial, employment, institutional, residential and parkland/natural area. The Provincial Policy Statement (2014) contains policies that protect Ontario's natural heritage and water resources. A future IEA will reference all applicable policies of the plans and describe how the proposed project adheres to the policies and should any alternative be within the ORMCP a full analysis of the proposal shall be completed against all applicable policies in the ORMCP

The land use includes Maple Nature Reserve and Oak Ridges Moraine

The Maple Nature Reserve, with an access point on Teston Road, is located between Dufferin Street and Bathurst Street and between Teston Road and Major Mackenzie Drive. This 35-hectare area, located within the Oak Ridges Moraine, is home to over 300 species of plants and animals and includes mature forests, valleys, meadows, rolling hills, ponds and wetlands as part of the Don River watershed. The Maple Nature Reserve, adjacent to the provincially-designated Area of Natural and Scientific Interest (ANSI) Maple Uplands, (see **Section 4.2.3**)., protects the ecological integrity of the natural environment while allowing for nature-oriented recreational uses.

Bartley Smith Greenway North is a 4 km trail segment that is part of a larger 15-kilometre trail system split into northern and southern sections, as seen in Error! Reference source n ot found.. The northern trail segment begins at Major Mackenzie Drive north of McNaughton Road and passes through Mackenzie Glen District Park, ending at Teston Road.

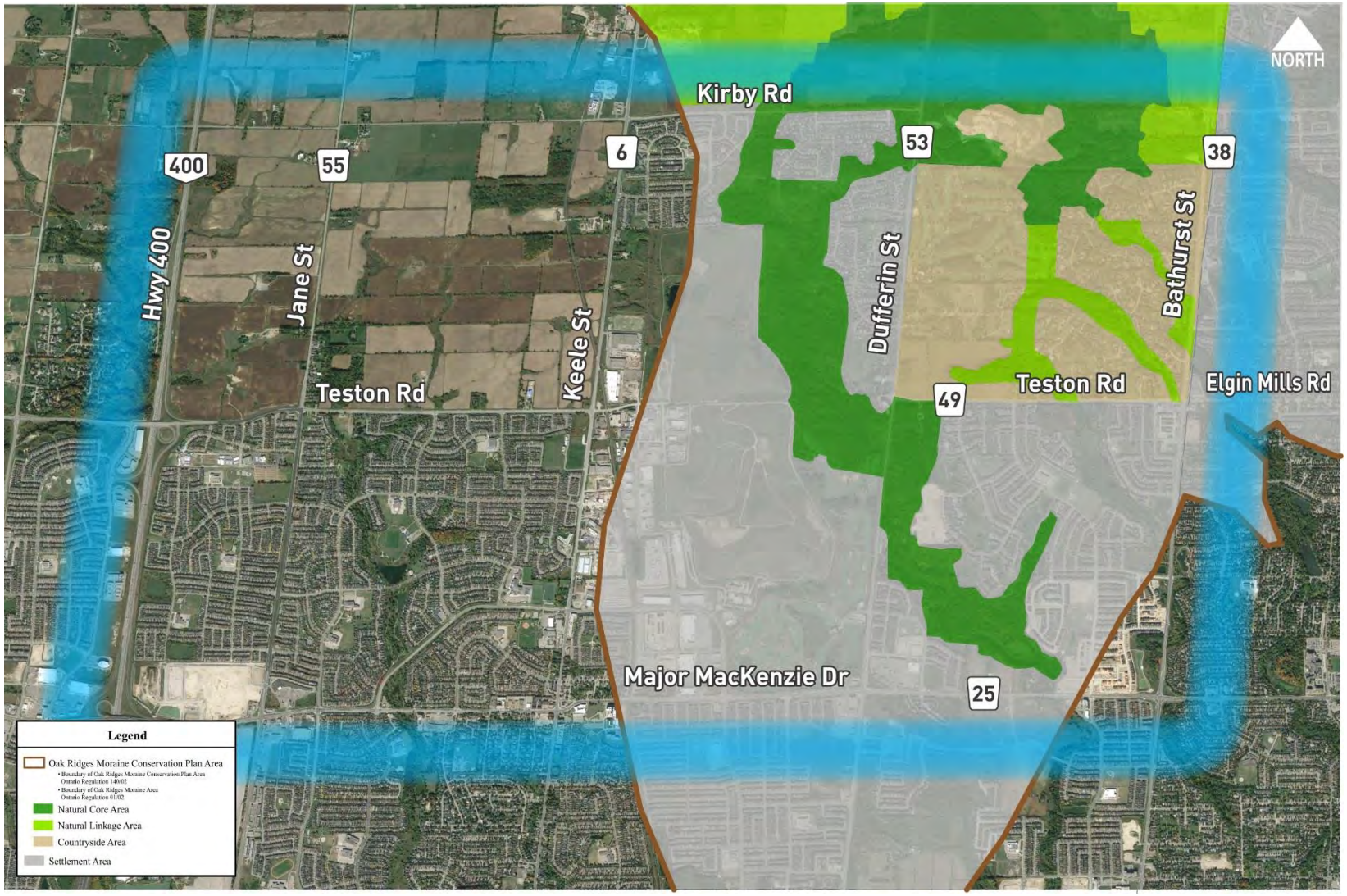
Figure 4-2: Land Use Surrounding Teston Road



The study area is a mix of land uses including natural, residential, commercial / industrial and agricultural.

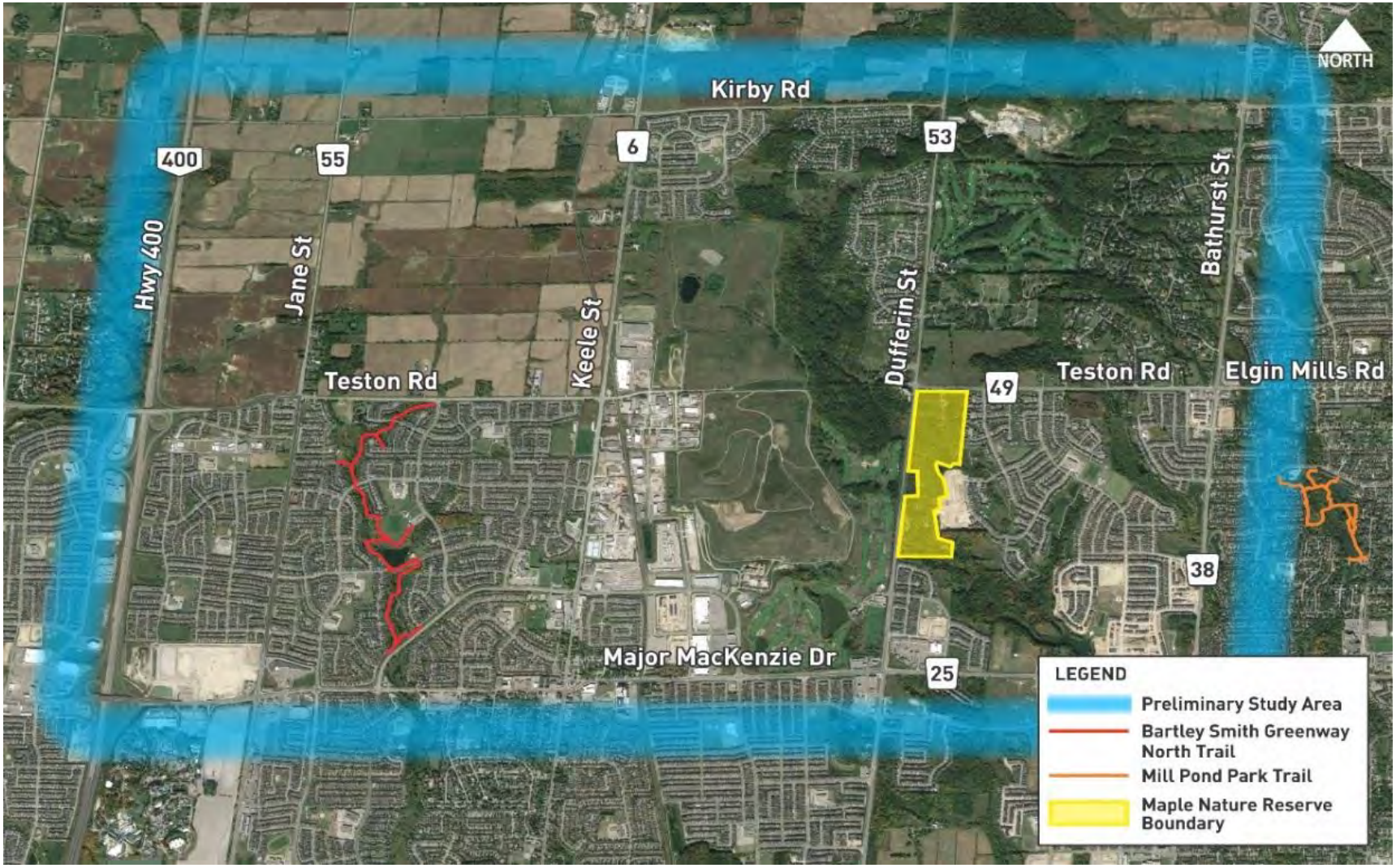
The Oak Ridges Moraine Conservation Plan Area is one of the significant features within the Study Area.

Figure 4-3: Oak Ridges Moraine Conservation Plan Area (2017)



Mill Pond Park Trail is a 2.4 km trail within Mill Pond Park within the City of Richmond Hill. Trail segments allow access to the park from several roadways and the surrounding residential communities, and connects several parks such as Stavert Park, Shaun Beggs Park and Karindon Park, as seen in Error! Reference source not found.. The northern trail s egment begins at Oxford Street, crosses Regent Street to the south and ends at Mill Street.

Figure 4-4: Trail Map within Study Area



The closed Keele Valley Landfill area south of the Teston Road right-of-way, and Vaughan Waste Disposal site and the Disposal Services Landfill on the north side of the Teston Road right-of-way, shown as yellow area #2 in **Figure 4-5**, fall under MECP guidelines. These guidelines state that no land use change may take place within 30 m of its perimeter, where technical controls for leachate, or leachate and gas surrounding a fill area are required (MECP, D-4 Land Use on or Near Landfills and Dumps, Section 5.2). These measures are required to protect the integrity of the clay liner of the Keele Valley Landfill site and gas and leachate systems surrounding the fill area (Keele Valley Landfill Site Approvals and Closure Plan). As noted in the Vaughan OP 2010 Amendment 535, new policies regarding land use in the vicinity of the Keele Valley Landfill site which comply with the closure have been introduced in the form of the Maple Valley Plan. The purpose of this plan is to combine the approximate 254 hectares between the Keele Valley and other landfills, along with former MNRF lands to create a major city park incorporating open space/parkland, sports and recreation facilities (potentially a golf course), children's play areas and picnic areas.

There may also be other contaminated sites present in the project area, which were not evaluated in this report. Further contaminant investigations will identify/evaluate the presence of these sites and their impacts to the project.

There are multiple areas subject to secondary plans within and adjacent to the study area

Areas Subject to Secondary Plans

Future Employment Area

The Highway 400 North Employment Lands Secondary Plan Area, seen in **Figure 4-6**, is bounded by the King-Vaughan municipal boundary to the north, Teston Road to the south, Weston Road to the west and Jane Street to the east. The Highway 400 North Employment Lands Secondary Plan (approved by Ontario Municipal Board November 21, 2011) was initiated by the City of Vaughan in 2005 to bring in prestige areas, employment and mixed-use lands with direct access and exposure to Highway 400.

New Community Area – Block 27

The Block 27 area, seen in **Figure 4-6,** is bounded by Teston Road to the south, Kirby Road to the north, Jane Street to the east and Keele Street to the west, and is a proposed residential community area for which a Secondary Plan is being developed by the City of Vaughan. Future land use of the New Community Areas will consist of commercial, residential and community facilities such as schools and parks. The Kirby GO Rail Station on the Barrie rail corridor, currently being reviewed by Metrolinx, and Transit Supportive Development are also being considered in the northeast corner of Block 27.

North Maple Regional Park

North Maple Regional Park (NMRP), seen in **Figure 4-6** is located between a residential neighborhood to the north and an industrial area to the south. This area will serve as a future gateway with integrated road entrances and circulation network connecting to the neighboring Block 27 road network.

The purpose of the NMRP is to create and facilitate active and passive recreational activities and amenities such as sports fields (soccer and baseball), multi-season amenities (outdoor skating, skateboarding, splash pad), trailheads and open space, and environmental restoration.

Maple/GO Secondary Plan

The Maple GO Station Secondary Plan Area (Vaughan Official Plan Amendment 1), seen in **Figure 4-6**, is located east of the existing Maple GO Station, west of Troon Avenue, north of Hill Street, and south of McNaughton Road East. The Maple GO Secondary lands are to

be developed in accordance with the Mid-Rise Mixed-Use designation of the Vaughan Official Plan 2010 (VOP 2010), permitting both commercial and residential uses.

Areas Subject to Area Specific Plans

Heritage Conservation Districts

There are multiple areas subject to Area Specific Plans and Site Specific within and adjacent to the study area

The Maple Heritage Conservation District, seen in yellow area #1 **Figure 4-5**, is a cultural heritage district containing fifty-one (51) properties identified in the City of Vaughan Heritage Inventory, and four (4) properties designated under Part IV of the Ontario Heritage Act. These four properties are:

- St. Andrew's Presbyterian Church, 9860 Keele Street
- Beaverbrook House, 9995 Keele Street
- Saint Stephen's Anglican Church, 10111 Keele Street
- Maple Cemetery Vault, 2000 Major Mackenzie Drive

Keele Valley Landfill Area

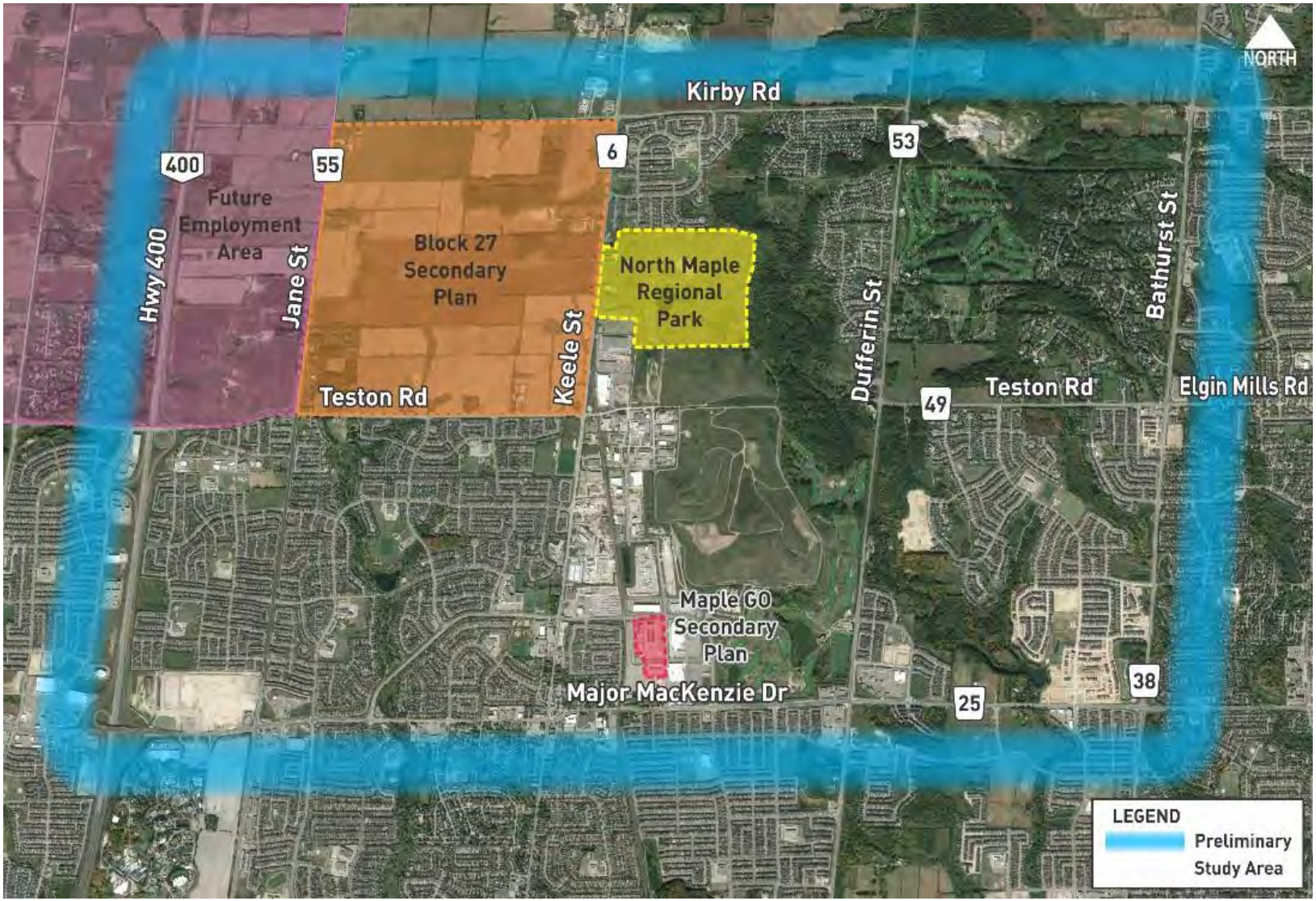
Refer to previous **Section 4.3** Socio-Economic Environment description of Keele Valley Landfill Area.

Northeast Quadrant of Major Mackenzie Drive and Weston Road

The northeast quadrant of Major Mackenzie Drive and Weston Road, seen in yellow area #3 in **Figure 4-5**, has been identified as a Village and Commercial District and contains a Village Promenade with pedestrian focused character.

Figure 4-5: Areas Subject to Site Specific / Area Specific Plans

Figure 4-6: Proposed New Development



Areas Subject to Site Specific Plans

Additional areas within the study boundary that are subject to site specific plans are identified in the blue areas seen in **Figure 4-5.**

The Vaughan Healthcare Centre Precinct Plan, seen in blue area #4 **Figure 4-5** (Vaughan Official Plan 2010 (VOP 2010) – Volume 2, Section 13.6), was approved by Vaughan Council in November 2013. The Plan provides a framework for the development of the Mackenzie Vaughan Hospital and integrating it with the City of Vaughan-owned lands. The Plan includes a master servicing strategy, functional transportation master plan, community energy plan, urban design framework and the phasing of proposed development.

Subject lands located at 1600 Teston Road are currently being reviewed as a development application pursuant to the Planning Act and are divided into two areas subject to the Core Features policies and Enhancement Areas policies, as described in Section 3.2.3, Volume 1 of the Vaughan Official Plan 2010 (VOP 2010) – Volume 2, Section 13.20. According to the Vaughan Official Plan 2010 (VOP 2010), Core Features are defined as wetlands, woodlands, valley and stream corridors and are to be protected and enhanced. Enhancement Areas support these features and create a connection, establishing a strong network. For lands designated as Natural Areas located at 1600 Teston Road, application for other uses is to be considered by the municipality.

The Ahmadiyya Campus is identified in the Vaughan Official Plan 2010 (VOP 2010) – Volume 2, Section13.9 as “Major Institutional” with primary Place of Worship use, while the Northeast corner of Cityview Boulevard and Major Mackenzie Drive is identified as having retails uses, and 77 Eagleview Heights as a townhouse complex.

At the northwest corner of Keele Street and Kirby Road, subject lands may be utilized for a variety of uses including an Automobile Gas Bar and Service Station, place of worship, institutional use, transportation and industrial uses (Vaughan Official Plan 2010 (VOP 2010, Volume 2, Section 13.18).

The existing heritage building located at 2057 Major Mackenzie Drive must be maintained, protected, and integrated with any new development, in accordance with policies outlined in the Official Plan, Vaughan Official Plan 2010 (VOP 2010, Volume 2, Section 13.8.

Low-Rise buildings are permitted on the southwest corner of Bathurst Street and Teston Road, in accordance with policies outlined in the Vaughan Official Plan 2010 (VOP 2010) – Volume 2, Section 13.2. The northwest corner of Major Mackenzie Drive and Bathurst Street includes the development of 400 residential units including a community park and school block, collector road links, open space and trail system, and stormwater management facilities.

During the IEA detailed Socio-Economic Environment Investigations with be undertaken.

The above provides a summary of the socio-economic environment, as part of the IEA, detailed socio-economic environmental investigations will be undertaken. The scope of these investigations will be developed prior to initiation of the IEA and will be based on discussions with the regulatory agencies and municipalities so that any changes in land-use and future planning initiatives are captured to ensure that any potential effects to the socio-economic environment are reviewed and assessed. Appendix A provides further detail on socio-economic factors, criteria, rationale and data sources to be used during the IEA. The stakeholder input received regarding the scope of these investigations are documented in the ToR consultation record.

4.2.2 CULTURAL ENVIRONMENT

The following presents an overview of the cultural environment, which includes information regarding the Pre- and Post-Contact settlement history of the Preliminary Study Area. This

information is based on known archaeological resources, built heritage resources, and cultural heritage landscapes.

ARCHAEOLOGY

To date, multiple archaeological sites have been identified within the study area.

A baseline review of the study area was completed for the built and cultural environment that included a review of historical and topographic mapping, the Vaughan Heritage Inventory, a windshield survey of the study corridor, a site review of the closed Keele Valley Landfill property and consultation with the City of Vaughan Municipal Heritage Coordinator. The Preliminary Study Area is located in the South Slope and Oak Ridges Moraine physiographic regions, within the Don River Watershed. Archaeological evidence demonstrates that this region has a long and rich settlement history beginning as early as 12,000 Before Present (B.P.). Settlement was heavily influenced by the environment, and was dependent on proximity to water (for human consumption, food procurement, transportation, and milling), soil conditions (for agriculture), local biotic communities (for food, shelter, and clothing), and landscapes (which may have spiritual significance).

The Pre-Contact history of the region provides insight into the Indigenous populations that inhabited the landscape. Archaeologists generally divide this complex history into three main periods: Palaeo-Indian (ca. 11,500 to 9,000 B.P.), Archaic (ca. 9,000 to 3,000 B.P.) and Woodland (ca. 3,000 to 450 B.P.). Each of these periods comprises a range of discrete sub-periods characterized by specific material culture, settlement patterns and lifeways. In general, over time populations transitioned from small groups of mobile hunter-gatherers, to larger bands practicing semi-permanent, seasonal settlement, to large communities of up to 2,500 people who resided in villages that were occupied year-round.

The arrival of the European explorers and traders at the beginning of the 17th century triggered widespread shifts in Indigenous life and set the stage for the ensuing Euro-Canadian settlement process. Documentation for this period is abundant, ranging from the first sketches of Upper Canada and the written accounts of early explorers to detailed township maps and lengthy histories. With respect to the study area, Euro-Canadian settlement began in the late 18th century with the establishment of York County and the Township of Vaughan. Early settlement was influenced by many factors including proximity to water, the clearing of roads, and the construction of railways. Nearby communities include the Town of Maple and the Town of Richmond Hill. Additionally, the Northern Railway was located along the western edge of the study area.

To date, multiple archaeological sites have been identified within the study area, documenting the Indigenous and Euro-Canadian occupation of the land. The Pre-Contact sites range in date from the Early Archaic to the Late Woodland periods and include small finds indicative of peoples in passage, as well as short and long-term camps and Late Woodland villages. Post-Contact sites settled by Euro-Canadian populations have also been identified and include 19th century cabins, homesteads, and middens. The numerous archaeological sites known to have existed within the study area is not only a testament to the rich settlement history of the region, but also suggests that additional archaeological sites may be present in the area.

BUILT /CULTURAL HERITAGE

Teston Road from Bathurst Street to Dufferin Street was developed as an early transportation route between Lots 25 and 26 in the Township of Vaughan. Tremaine's Map of York County (1860) shows Teston Road as an open sideline between Lots 25 and 26 from Yonge Street to Keele Street. The Vaughan Township map in the Illustrated Historical Atlas of the County of York (1878) continues to show the current Teston Road running westward from Yonge Street to Keele Street. Early 20th Century topographic maps show Teston Road as a local gravel road between Lots 25 and 26 between Dufferin and Keele

Street. The closed Keele Valley Landfill site was opened in the early 1980s between Dufferin Street and Keele Street to the north of Major Mackenzie Drive West. The landfill ceased operation in 2002.

Identified Cultural Heritage Resources

Preliminary review has identified 11 cultural heritage resources within the study area.

The result of the windshield survey and consultation with the City of Vaughan is the identification of seven cultural heritage resources in addition to the four identified above in **Section 4.2.1** within the Maple Heritage Conservation District including:

1. 1138 Teston Road, an existing barn that is not included on the City of Vaughan Heritage Inventory as listed or designated property;
2. 1600 Teston Road, a residence and barn, included on the City of Vaughan Heritage Inventory as listed property;
3. Agricultural lands/cultural heritage landscape; northeast corner at Teston Road and Dufferin Street; and,
4. Railscape; the GO railway line that crosses Teston Road and Keele Street within the study area;
5. 11151 Keele Street (1850 Wm. Develin House), is within the study area and north of Teston Road, included on the City of Vaughan Heritage Inventory; and
6. 11244 Keele Street (1875, house and barn), is within the study area and north of Teston Road, included on the City of Vaughan Heritage Inventory.
7. 2057 Major Mackenzie Drive (1837 Joshua Oliver House), is within the study area and south of Teston Road, included on the City of Vaughan Heritage Register.

Also of note, the property at 810 Teston Road is included on the City of Vaughan Heritage Inventory, however, the Dutch Revival building noted in the inventory appears to have been demolished.

During the IEA detailed Cultural Environment Investigations with be undertaken.

As part of the IEA, detailed cultural environmental investigations will be undertaken. The scope of these investigations will be developed prior to initiation of the IEA and will be based on discussions with the regulatory agencies and Indigenous Communities to ensure that any potential effects to cultural resources are reviewed and assessed. Studies may include, but are not limited to: additional Stage 1 Archaeological review, Stage 2 (3 or 4) Archaeological studies as required, Heritage Impact Assessment etc. Appendix A provides further detail on cultural factors, criteria, rationale and data sources to be used during the IEA. The stakeholder input received regarding the scope of these investigations are documented in the ToR consultation record.

4.2.3 NATURAL ENVIRONMENT

The Preliminary Study Area encompasses part of the Oak Ridges Moraine physiographic region with the most prominent feature being the East Don River Valley which traverses the central portion of the study area in a northwest-southeast orientation. In addition to the East Don River Valley, several West Don River and East Humber River tributaries fall within the western portion of the study area.

The East Don River Valley is the most prominent natural heritage feature within the Preliminary Study Area.

The study area falls within the Oak Ridges Moraine Conservation Plan Area (2017) with the East Don River Valley mapped as a 'Natural Core Area', and is also contained within the Greenbelt Plan Area (2017). The study area is located within the jurisdiction of the Toronto Region Conservation Authority (TRCA) and the Aurora District of the Ministry of Natural Resources and Forestry (MNRF).

There are several other overlapping designations for the features associated with the East Don River Valley including:

- McGill Area Environmental Significant Area (ESA #73)

- Oak Ridges Moraine Maple Spur Earth Science (ANSI)
- Maple Uplands and Kettle Wetlands Life Science (ANSI)
- York Region's 'Natural Heritage System' and 'Significant Forests'
- Unevaluated wetland.

East of the East Don River Valley, there are 'Significant Forests' and two additional unevaluated wetlands mapped along McNair Creek and the two tributaries of the East Don River (west and east of Bathurst Street). These forest and wetland habitats can be expected to be sensitive to encroachment, particularly to fragmentation-related impacts that could occur as a result of crossing these features. Wetland hydrology is expected to be sensitive to impacts associated with direct encroachment and changes that might occur indirectly as a result of adjacent construction activities.

West of the East Don River Valley, the landscape is predominantly agricultural with several small unevaluated wetlands throughout the landscape. Portions along the tributary systems as well as small woodlands dispersed within the landscape are mapped as part of the TRCA Natural Heritage System. These forest and wetland habitats can be expected to be sensitive to encroachment.

The streams, shown in **Figure 4-7** and **Figure 4-8,** form part of the upper tributaries of the West Don River and the East Don River and East Humber River with Keele Street and Jane Street being the general drainage boundaries. West Don River tributaries are managed within Fish Management Zone (FMZ) 2 and the East Don River and East Humber River tributaries within FMZ 1. FMZ 2 streams within the study area are intermittent systems that drain the agricultural land north of Teston Road. This last remaining block of existing rural land uses within the upper West Don watershed is proposed for development, known as Area Block 27. FMZ 1 streams are more sensitive when compared to FMZ 2, as streams in this management zone provide habitat conditions with cold water thermal regimes and are home to more diverse fish communities. The cold water thermal regimes can be expected to be sensitive to any interference with groundwater contributions or removal of riparian cover.

Both the TRCA and MNRF were contacted to provide existing information on natural heritage features within the Preliminary Study Area. The TRCA information was limited to historical data as such future work would be required to capture baseline conditions on natural heritage features as part of the IEA. The East Don River stream systems are regulated by MNRF as habitat for Redside Dace (*Clinostomus elongates*), a species listed as endangered under the provincial Endangered Species Act (ESA) and has currently been up-listed to Schedule 1 under the federal Species at Risk Act (SARA). The current habitat classification and extent for these regulated areas is unknown.

Since the closure of the Vaughan Landfill site, the land has evolved into extensive old field / grassland habitat that have largely been unaltered. Given the type and extent of the habitat, it provides ideal breeding habitat for several field bird Species at Risk (SAR). SAR habitat potential is also present in the woodland associated with the East Don River Valley for a variety of species, including several SAR birds and bats, and at least one amphibian. The ponds in the study area provide potential habitat for amphibians and turtles, including one SAR.

MNRF, identified the following species within the study area, specifically between Keele Street and Bathurst Street:

- Acadian Flycatcher *Empidonax virescens* – Endangered
- Butternut *Juglans cinerea*– Endangered
- Redside Dace *Clinostomus elongates* – Endangered
- Bank Swallow *Riparia* – Threatened

- Barn Swallow *Hirundo rustica* – Threatened
- Chimney Swift *Chaetura pelagica* – Threatened
- Bobolink *Dolichonyx oryzivorus* – Threatened
- Eastern Wood-pewee *Contopus virens* – Special Concern
- Red-headed Woodpecker *Melanerpes erythrocephalus* – Special Concern

MNRF also noted the potential for these species to be in the study area:

- American Ginseng *Panax quinquefolius* – Endangered
- Eastern Small-footed Myotis *leibii* – Endangered
- Little Brown Myotis *lucifugus* – Endangered
- Northern Myotis *septentrionalis* – Endangered
- Tri-coloured Bat *Perimyotis subflavus* – Endangered
- Least Bittern *Ixobrychus exilis* – Threatened
- Monarch *Danaus plexippus* – Special Concern

SAR potential within the agricultural lands and isolated pockets of woodland are likely limited to birds, bats and the Butternut tree.

During the IEA detailed Natural Environment Investigations with be undertaken.

As part of the IEA, detailed natural environmental investigations will be undertaken. The scope of these investigations will be developed prior to initiation of the IEA and will be based on discussions with the regulatory agencies to ensure they address any species-specific surveys which may be required to confirm SAR presence and use of habitats that may be impacted by the transportation network. Appendix A provides further detail on environmental factors, criteria, rationale and data sources to be used during the IEA. The stakeholder input received regarding the scope of these investigations are documented in the ToR consultation record.

Figure 4-7: Natural Environment Overview

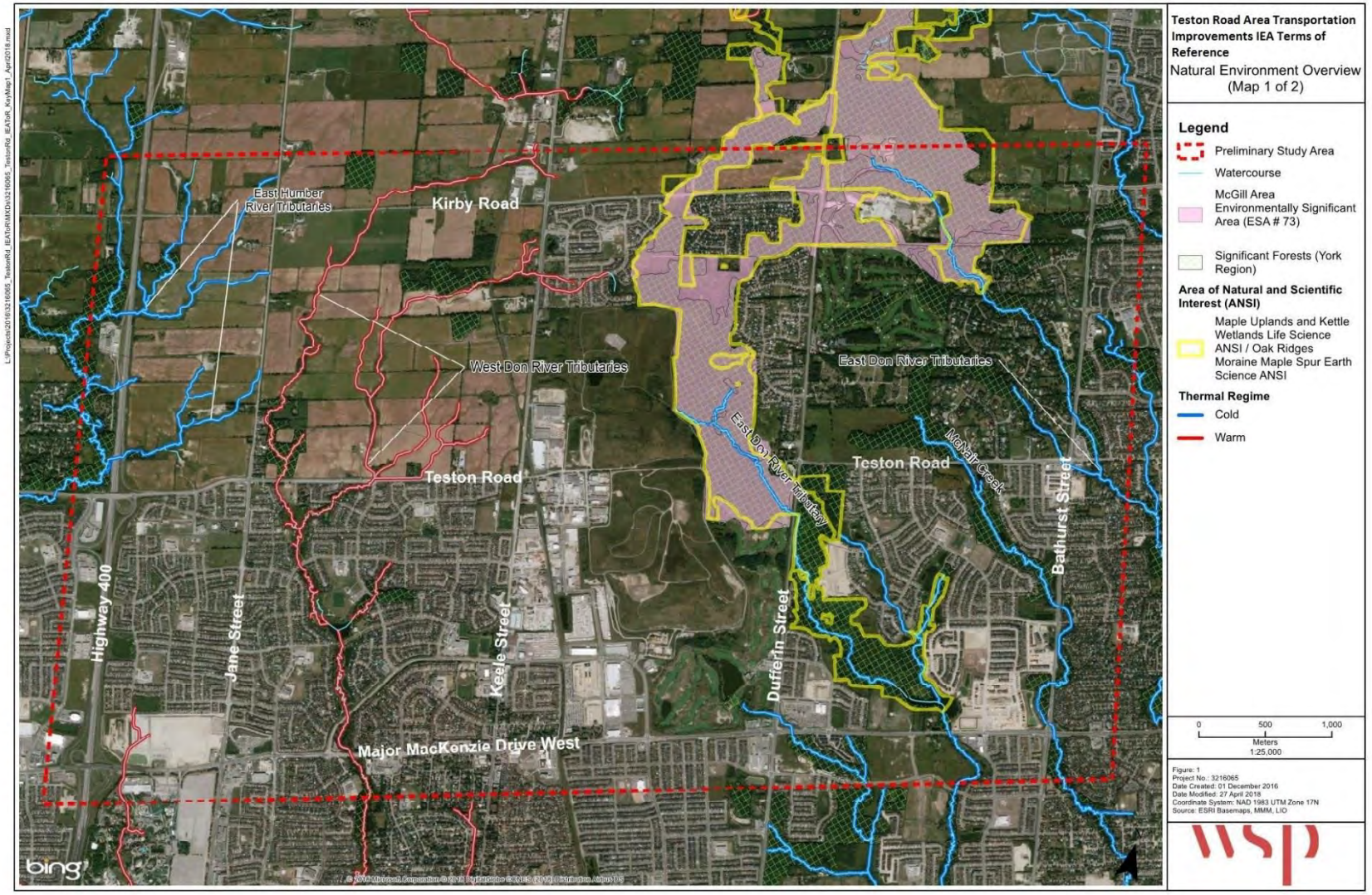
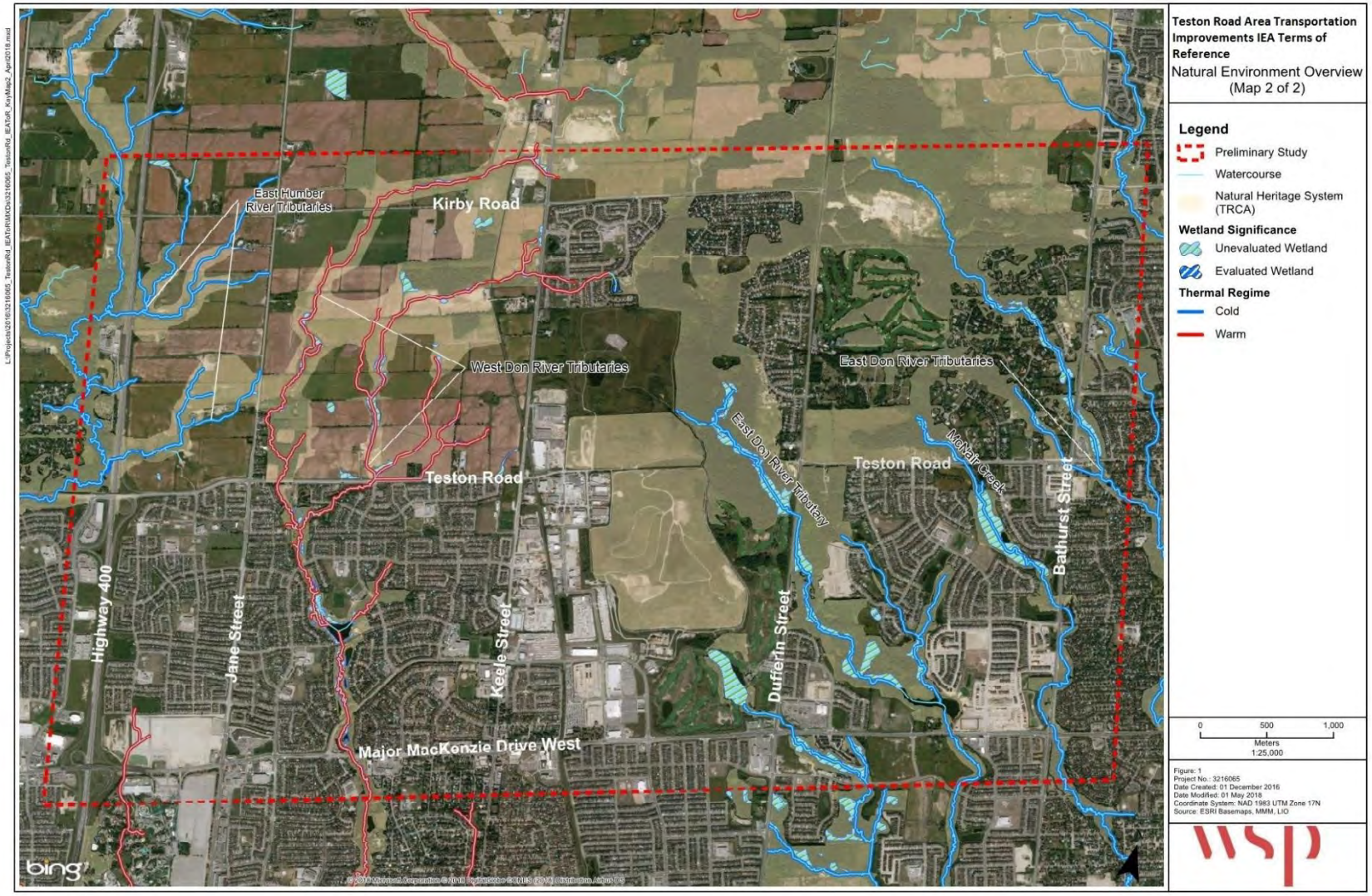


Figure 4-8: Natural Environment Overview



4.3 Types of Potential Environmental Effects

Types of Environmental Effects to be considered in the IEA include Natural, Cultural and Socio-Economic

The types of potential environmental effects that will be assessed during the preparation of the IEA include, but are not limited to, those that are summarized in **Table 4-1.** Potential environmental effects are based on the Alternatives To identified in **Chapter 5**. The types of potential environmental effects (both positive and negative) have been grouped into Natural Environment, Cultural Environment and Socio-Economic Environment. Climate change and cumulative effects will be integrated into the assessment of alternatives and the IEA will evaluate the advantages and disadvantages to the environment of the proposed undertaking and the alternative methods based on net effects. Both the impact of the undertaking on climate change as well as the impact of climate change on the undertaking will be assessed. The most current rainfall intensity-duration-frequency (IDF) curves for drainage will be used and, if available, IDF curves that include consideration of climate change could be used. The impact of extreme weather conditions such as the regional storm (Hurricane Hazel) will also be reviewed. Current practice is to review the regional storm event, which is greater than the 100-year storm event in the study area. If data/model for a larger storm event is available at the time of the IEA, this will be considered. A full review of the existing source water protection conditions and any impacts shall be reviewed and documented during the IEA.

Further environmental investigations, including secondary source reviews and field investigations will occur during the IEA study.

The environmental work will be undertaken to further identify environmental conditions and to develop more detailed mapping describing the environmental features, including floodplain mapping, during the IEA. This will assist the assessment of Alternatives To and the generation and evaluation of Alternative Methods. As the IEA study progresses and the range of alternatives become more focused, more detailed environmental investigations will be undertaken.

In generating, assessing and evaluating alternatives and selecting a preferred Alternative Method, the main objective is to minimize or prevent significant adverse environmental effects while selecting a transportation solution that addresses the identified problem and opportunities.

4.3.1 CLIMATE CHANGE

Climate change will be considered for all aspects of the Environment: Natural, Cultural and Socio-Economic

Climate change will be considered as part of the assessment of alternatives and for the selected preferred alternative (if applicable) during the IEA study. MECP's Guide "Considering Climate Change in the Environmental Assessment Process (October 2017)" should be followed. The IEA should include the consideration of:

- The impacts of the Undertaking on climate change
- The impacts of climate change on the Undertaking
- Various means of identifying and minimizing the negative impacts during a project

Each of these considerations can impact all aspects of the environment (natural, cultural, socio-economic) and as such a holistic review of climate change should be applied, as applicable, for the review of alternatives (Alternatives To and Alternative Methods) and ultimately the preferred alternative.

IMPACT OF THE PROJECT/ALTERNATIVES ON CLIMATE CHANGE

At a minimum the project/alternatives impact on climate change will consider any greenhouse gas emission from a project or landscape change that affects the removal of carbon dioxide from the atmosphere or the storage of carbon on the landscape that potentially contributes to global climate change.

IMPACT OF CLIMATE CHANGE ON THE PROJECT/ALTERNATIVE

Climate change and extreme weather events can have a significant impact on transportation infrastructure. The frequency, severity and/or duration of climate change stressors will be reviewed and assessed in terms of their potential impact on the project/alternatives – examples of these stressors are temperature extremes, precipitation (rain & snow) and wind speed.

Table 4-1: Potential Environmental Effects

Socio-Economic	Cultural	Natural
– Temporary or permanent construction related disturbance (i.e. odours, noise, dust, fumes etc.) – Removal/ alteration of planned or proposed development – Link existing and proposed development/communities – Displacement of businesses, residences and/ or community facilities – Improved access/linkages to businesses, residences and/ or community facilities – Temporary or permanent disruption to businesses, residences and/ or community facilities – Alteration to roadways (i.e. potential widening) – Disturbance/ alteration to existing utilities and engineered landfill controls – Disruption to or limiting the implementation of a continuous major recreational trail network – Enhancing or connecting major recreational trail networks – Temporary or permanent disruption to agricultural operation(s) – Reduction in travel time – Relief to highly congested roads through additional transportation capacity – Improved local and regional air quality – Local and regional air quality impacts – Greenhouse gas emissions – Noise	– Alteration/ displacement of known and not yet known archaeological sites – Discovery/ documentation of not yet known archaeological sites – Disruption or loss of built heritage sites – Potential protection/ preservation of cultural heritage/ archaeological sites – Disturbance to lands with significant archaeological potential – Disturbance/ alteration to Indigenous sites	– Temporary and/ or long-term degradation/reduction in groundwater quality and/ or quantity – Temporary and/ or long-term degradation/alteration and/or reduction in surface water quality and/ or quantity – Discovery/ documentation of natural features – Temporary or permanent loss of/ disturbance to aquatic features or loss of functions including flora, fauna and habitat – Temporary or permanent loss of/ disturbance to wildlife and/ or terrestrial species and habitat including flora, fauna, wildlife passage and the genetic connectivity of plants – Potential protection and preservation of natural resources opportunities – Short-term construction related effects (i.e. dust, noise, fumes etc.) – Source water impacts – Impacts on nearby landfill sites – -Impacts due to increase lighting, traffic and noise.

5 DESCRIPTION OF AND RATIONALE FOR ALTERNATIVES TO THE UNDERTAKING

Alternatives To are functionally different ways to address the problems and opportunities

Alternatives To are defined as functionally different ways of addressing the identified problems and opportunities. Sometimes these types of alternatives are referred to as Transportation System Alternatives. The term Undertaking has been used to be consistent with the OEAA even though an Undertaking is not fully identified until the end of the process. The IEA process will identify and evaluate Alternatives To that could address the identified problems and opportunities as well as Alternative Methods for the implementation of the preferred Alternative To (the Undertaking). A 'Do Nothing' scenario is carried forward to represent a base case for comparison when evaluating both the Alternatives To and Alternative Methods. Once the transportation problems and opportunities have been clearly identified, the Preliminary Study Area, shown in **Figure 1-1** and **Figure 4-1,** will be further reviewed and modified, if required, to better address the problems and opportunities.

The principles for transportation planning to be considered when developing the specific Alternatives To are summarized below:

- Make effective and efficient use of existing infrastructure;
- Develop a network that focuses on:
  - Encouraging economic growth and vitality of the Region,
  - Improving liveability, health and social well-being to the residents,
  - Protecting and sustaining the natural and built environment,
  - Maintaining the financial sustainability, openness, accessibility, transparency, accountability and reliability of the Region's government and related programs and services;
- Ensure effective co-ordination with other York Region and local planning initiatives.

5.1 Identification of Alternatives To the Undertaking

The 'Do Nothing" Alternative is carried forward throughout the evaluation process for both Alternatives To and Alternatives Methods

Alternatives To provide an opportunity to examine fundamentally different ways of addressing transportation problems. In recognition of these fundamental differences among the Alternatives To, it is appropriate to examine the effectiveness of each type of alternative to address the problem(s) and take advantage of opportunities at a functional level.

Putting these into context, the Alternatives To considered in the IEA study will include, but are not limited to: **Do Nothing** – 'Do Nothing' is considered the status quo, where the transportation system would be limited to maintenance of current transportation infrastructure and the implementation of already approved Provincial, Regional and local Municipal initiatives. The 'Do Nothing' alternative is carried forward to provide a comparison to preferred Alternative To and Alternative Methods.

- **Travel Demand Management (TDM)** – TDM strategies include measures to improve the current transportation system by managing travel demand. TDM strategies aim to reduce overall demand on the network by shifting demand to off-peak periods and promoting alternative transportation options, such as transit, cycling and walking.

- **Transportation Systems Management (TSM)** –TSM improves transportation system efficiency and optimizes the use of existing and planned infrastructure through a range of strategies, policies and initiatives. Measures may include systems to prioritize transit, ITS (intelligent transportation system) strategies, carpooling, High Occupancy Vehicle (HOV) lanes, autonomous/driverless & connected vehicles, providing real-time information (i.e. traffic and transit delays via smart phone apps) to users, Reserved Bus Lanes (RBL), ride-sharing services, Park and Ride facilities and intersection improvements;
- **Improved and/or New Transit Services** – Expanding the capacity of the transit system increasing service frequency, creating new routes on existing corridors and building bus rapidways on existing corridors.
- **Improved and/or New Roadways/Transitways** – The provision of improved capacity and operations on existing facilities and/or accommodating required capacity in new corridors may increase the performance of the transportation network. Congestion may be relieved through additional capacity on existing roadways/transitways or by introducing capacity in new corridors for roads, transitways or both; and
- **Combinations of the above** – In addition to the individual Alternatives To the IEA proposes evaluating alternatives that combine some or all of the options under consideration to add capacity and reduce demand.

5.2 Evaluation of Alternative(s) To the Undertaking

Alternatives To will be assessed based on how they address the stated transportation problems and opportunities, while considering potential effects on the environment. Following the initial assessment, combinations of a number of alternatives will be evaluated based on the factors and criteria identified in **Table 5-1**. A detailed rationale for the selection of the preferred Alternative(s) To will be provided in the IEA report.

Stakeholders will be provided the opportunity to review and provide comments on the factors and criteria used to identify a preferred Alternative To the Undertaking or preferred combination of Alternatives To the Undertaking.

Each Alternative To will result in a unique set of advantages and disadvantages. The Project Team will examine the significance of the specific potential effects, focusing on relevant information, in order to select Alternative(s) To the Undertaking. When comparing the advantages and disadvantages and developing the rationale for the preferred Alternative(s) To, the Project Team will consider:

- Net effects as required under the OEAA; these refer to the effects on the environment that remain after standard mitigation measures have been applied to reduce the extent of the effect.
- Indigenous issues and concerns;
- Public, Agencies, Consultation Groups, and other stakeholder issues and concerns; and
- Project Team (staff from York Region and their Consultants) expertise.
- Climate Change; as outlined in **Section 4.3.1**

The project team will also adhere to all relevant Federal, Provincial, Conservation Authority and Municipal legislation, plans, policies, and guidelines including the Oak Ridges Moraine Conservation Plan (2017), the Greenbelt Plan (2017), Provincial Policy Statement (2014), and Growth Plan for the Greater Golden Horseshoe (2017).

Evaluation Method

The evaluation of Alternatives To and Alternative Methods is an integral component of the IEA. A sound evaluation process is based on five key principles:

- The evaluation of alternatives must be **clear and systematic**;
- The process must be **rational and understandable**;
- The results must be **replicable**;
- The data must be **traceable**; and
- The entire process must be **participatory**, with broad but not duplicative opportunities from the public, regulatory agencies, municipalities, Indigenous Communities etc.

The MECP recommends the evaluation approach be clearly described and government ministries, municipalities, agencies, Indigenous Communities and the public should be consulted early in the IEA study. The method(s) used to predict the potential net environmental effects and evaluate advantages and disadvantages should clearly identify the relative differences amongst alternatives and the logic for the selection of a preferred Alternative Method.

The Reasoned Argument evaluation approach is proposed for both Alternatives To and Alternative Methods. During the IEA study, the decision-making process will be clearly documented to support a traceable process and to ensure that it is clear to those who may be affected by the decisions. Opportunities for stakeholder input into this process are outlined in **Chapter 8**. Details on the Reasoned Argument evaluation method and the evaluation approach are outlined as follows:

The Reasoned Argument Evaluation Method is proposed for both Alternatives To and Alternative Methods

Reasoned Argument Method

This method identifies the differences in net effects associated with various alternatives evaluated as required under the OEAA. Based on these differences, the advantages and disadvantages of each alternative are identified. The relative significance of the effects are examined to provide a clear rationale for the selection of a preferred Alternative Method.

The evaluation will be summarized in tables, supplemented by text in the IEA Report to ensure the process is clear, traceable and replicable.

Evaluation Approach

Input from stakeholders will be encouraged through Open Houses and other public consultation activities. Opportunities to provide feedback ensure that issues, concerns and the magnitude of potential effects are identified and understood by the Project Team.

The decision-making process and rationale will be clearly documented and stakeholders will be invited to provide feedback. During the IEA, additional evaluation methodologies may be utilized to ensure that the nature and magnitude of potential effects (of significant community and/or environmental value) are identified and mitigated.

The nature and scope of field investigations will be determined prior to or very early on in the IEA study and outlined in work plans for input by stakeholders. Stakeholder input received regarding the work plans will be documented in the IEA. Data necessary to support the evaluation of Alternatives To and Alternative Methods will be collected through consultation with ministries, agencies and other stakeholders from secondary sources, prediction models and site-specific field investigations. Some existing information sources are identified in the supporting documentation and will be expanded following initiation of the IEA study and in consultation with stakeholders.

The Alternatives To will be reviewed with stakeholders and Indigenous Communities throughout the consultation process. Community consultation is critical to developing a reasonable set of Alternatives To. Local residents add valuable information to the database

gathered by the Project Team. Refinements to the Alternatives To will be integrated where warranted and a final set of Alternatives To will be brought forward to the evaluation process.

To determine "next steps", the selected Alternative(s) To will be placed into one of the following four categories:

1. If the preferred Alternative To is "Do Nothing" – the IEA process is complete and no further study will be initiated.
2. If the preferred Alternative To is a transportation mode or solution that is outside the jurisdiction of York Region – the current IEA process will be halted and York Region will refer the planning alternative to the appropriate agency or jurisdiction for further review and action.
3. If the preferred Alternative To is entirely within the jurisdiction of York Region – the IEA process continues and York Region will proceed to the Alternative Methods stage as outlined in this IEA ToR document.
4. If the preferred Alternative To is a combination of solutions that are within the jurisdiction of York Region and modes/solutions that are outside the jurisdiction of York Region – the IEA process continues; York Region proceeds to the Alternative Methods as outlined in this IEA ToR. Alternatives To that are outside York Region jurisdiction are referred to the appropriate agency for further review and action.

Table 5-1: Proposed Factors and Criteria for Assessing Alternatives To the Undertaking

CRITERIA
Factor: Natural Environment
The degree to which the proposed transportation system modification impacts natural features, species of conservation concern, and SAR, such as: aquatic ecosystems, terrestrial ecosystems, groundwater, surface water and source water. The degree to which the proposed transportation system modification supports federal, provincial, municipal and conservation authority environmental protection policies and guidelines.
Factor: Socio-Economic Environment
The degree to which the proposed transportation system modification supports: – existing and planned future land use and growth including recognition of growth management plans and policies as articulated in provincial policies and municipal OPs and regulatory requirements for the perpetual care and control of closed landfills – provincial, regional and municipal economy including: manufacturing and trade; tourism and recreation; and agriculture The degree to which the proposed system modification impacts features such as communities, resources, air quality, noise etc.
Factor: Cultural Environment
The degree to which the proposed transportation system modification impacts cultural features, such as: – properties of cultural heritage value, including: archaeological sites, built heritage resources and cultural heritage landscapes – Indigenous sites
Factor: Transportation

CRITERIA
The degree to which the proposed transportation system modification: – supports federal/provincial/municipal transportation policies/goals/objectives; – improves system capacity & efficiency for the movement of people and goods; – improves system capacity & efficiency to reduce growth in peak travel demand; – makes effective and efficient use of the existing road and transit system using Transportation Demand Management and Transportation System Management strategies; – improves system reliability and redundancy during adverse conditions; – improves traffic safety through congestion reduction; – enhances goods movement by linking communities within the York Region; and – improves mobility and accessibility through enhanced modal integration/choice for a more balanced transportation system;

6 DESCRIPTION OF AND RATIONALE FOR ALTERNATIVE METHODS

Alternative Methods are different ways of performing the same activity to address the problem or opportunity

The process outlined in this chapter is applicable to transportation solutions that fall within the mandate of York Region that require an IEA. As described in **Chapter 5**, should the assessment of Alternatives To identify other/additional solutions, an appropriate study process would be pursued by the pertinent agency/proponent(s).

After determining the Alternative(s) To, the IEA study will focus on the following study steps:

- Refining/confirming the study area;
- Identifying significant study area features (data collection);
- Generating Alternative Methods;
- Refining Alternative Methods;
- Assessing Alternative Methods (including the refinement of evaluation criteria / measures);
- Evaluating and selecting a preferred Alternative Method(s);
- Preparing the concept design of the selected preferred Alternative Method(s) (including the identification of potential effects and development of mitigation measures); and
- Preparing and submitting an IEA Report for public and agency review and comment and MECP approval.

The process for generating and evaluating Alternative Methods within the broader context of the IEA study process is illustrated in **Figure 3-1.**

6.1 Process for Refining the Study Area

Based on the results of the evaluation of Alternatives To, the Preliminary Study Area will be refined to ensure that a range of Alternative Methods are generated. The study area does not limit the potential to examine environmental effects outside of its boundaries.

The York Region Project Team will refine the study area through consultation with stakeholders. The following types of inputs will be considered and used to guide the generation of study area limits:

- Identified transportation problems and opportunities;
- Significant natural, socio-economic and cultural environmental features (as identified through secondary source data and consultation);
- Current government land use planning policies and initiatives; and
- Existing transportation infrastructure.

6.2 Generating and Evaluating Alternative Methods

Alternative Methods are specifically generated for the preferred Alternative To

The process for generating and evaluating Alternative Methods is illustrated in **Figure 3-1** and is intended to be flexible. This way it can accommodate revisions / enhancements to the criteria for identifying and assessing Alternative Methods (as listed in this ToR) during the IEA study. Alternative Methods will be generated specifically for the identified preferred Alternative To.

The underlying principle in the Alternative Methods generation process is to start with a broad perspective which then becomes more focused as the study progresses. The "Do Nothing" scenario will be carried forward to represent a base case for comparison to the preferred Alternative Method(s). The starting point is a broad IEA Study Area that can accommodate a range of alternatives. At this stage environmental information, based largely on secondary sources, initial field reviews and consultation input, will be collected to identify significant environmental features.

This principle will be applied as follows:

- Upon refining the IEA Study Area, Alternative Methods will be generated and examined in greater detail as the study progresses to determine potential environmental effects.
- Alternative Methods will be comparatively evaluated to determine the best or preferred alternative(s) and mitigation measures will be identified.
- The preferred Alternative Methods(s) will be more fully developed to determine the best Concept Design in order to fully document potential environmental effects (both within and outside of the defined study area where appropriate) and allow mitigation measures to be developed in greater detail.

Under this process, as Alternative Methods are developed, study area information is supplemented with more extensive field data and additional research as required. Once a preferred Alternative Method(s) is identified, the concept design proceeds with even more focused data that will include detailed field surveys. The IEA Report will be submitted to MECP for an approval decision once the concept design is completed.

6.3 Guiding Principles and Considerations to Generate Alternative Methods

Alternative Methods will be generated based on the following guiding principles to minimize negative environmental effects and address the identified transportation problems and opportunities:

- Utilize existing infrastructure efficiently and effectively - Taking advantage of transportation and other linear corridors may reduce effects to the natural, social and economic environments;
- Minimize effects to existing and future planned (approved) land uses;
- Adhere to all relevant Federal, Provincial, Conservation Authority and Municipal legislation, plans, policies, and guidelines including the Oak Ridges Moraine Conservation Plan (2017), the Greenbelt Plan (2017), Provincial Policy Statement (2014), and Growth Plan for the Greater Golden Horseshoe (2017);Avoid or minimize effects to natural systems, with particular emphasis on natural features, functions, systems and communities;
- Avoid or minimize impacts to prime agricultural areas and individual agricultural operations;
- Minimize effects to urban/rural areas - Such areas generally provide a focus for cultural, recreational, social and economic activities; and
- Resolve transportation problems and take advantage of existing and future opportunities recognizing project need - as determined during the initial stages of the IEA study.

The objectives and rationale for generating Alternative Methods will ensure that alternatives are efficient, meet technical objectives/design requirements, and minimize/avoid potential adverse effects to significant environmental and study area features. **Table 6-1** outlines the

environmental and technical considerations that will be considered to address the objective to minimize/avoid potential adverse environmental effects. These represent the minimum environmental considerations for generating Alternative Methods and are subject to further refinement and modification during the IEA based on study findings and input from stakeholders.

The Alternative Methods will then be reviewed with stakeholders and Indigenous Communities through the consultation and engagement process. Consultation and engagement is critical to developing a representative set of Alternative Methods. Local residents add valuable information to the database gathered by the Project Team. Refinements to the Alternative Methods will be integrated where warranted and a final set of Alternative Methods will be brought forward to the evaluation process.

Table 6-1: Environmental and Technical Considerations during the Generation of Alternative Methods

COMPONENT	FEATURES / CONSIDERATIONS
Natural Environment	– Groundwater Quality and Quantity – Surface Water Quality and Quantity – Wetlands – ANSIs – Environmental Sensitive Areas (ESAs) (i.e. Oak Ridges Moraine) – Woodlands / Vegetation – Wildlife Corridors – SAR / TRCA Species of Concern – Valley lands and stream/river corridors – Significant Natural Resources (mineral, petroleum and aggregate resources)
Social/Economic Environment	– Indigenous Communities use of land and resources for traditional purposes – Provincial / Federal / Municipal Land Use Planning Policies/Goals/Objectives – Agricultural Lands – Areas of Residential / Commercial / Institutional / Agricultural Development – Landfills and Hazardous Waste Sites – Noise – Air Quality
Cultural Environment	– Archaeological sites – Built heritage resources – Cultural heritage landscapes
Technical /Costs	– Adherence to Applicable Design Standards – Efficiency – Compatibility with, and benefits to, the overall Transportation Network – Utilization of existing linear corridors (e.g. hydro) where feasible

COMPONENT	FEATURES / CONSIDERATIONS
	— Construction Costs

Specific objectives or guiding principles for each of the above components / considerations will be developed during the IEA in consultation with stakeholders.

6.4 Evaluation and Selection of Alternative Methods

After Alternative Methods are generated and refined based on consultation, the evaluation of the alternatives will commence.

The evaluation of Alternative Methods is a two-step process. The first step identifies the advantages and disadvantages of the various alternatives under consideration. At this stage, each environmental feature is examined to determine the extent of potential effect. Net effects, or the effects on the environment (as required under the OEAA) that remain after standard mitigation measures have been applied, will be identified.

The second step is the evaluation. Building on the information obtained from the impact assessment stage, this stage involves a comparative analysis of the advantages and disadvantages of the Alternative Methods under consideration to select a preferred Alternative Method(s). At this stage, the relative importance of the environmental features and significance of the effects are determined. A "Do Nothing" scenario will be carried forward to represent a base case for comparison to the preferred Alternative Method. The evaluation approach for Alternative Methods is the same as outlined above in **Section 5.2** for Alternatives To.

York Region is proposing the Reasoned Argument evaluation approach to assist in the selection of Alternative Method(s) for this undertaking. Details on the Reasoned Argument evaluation method are outlined in **Section 5.2**. The evaluation approach for Alternative Methods is the same as Alternatives To, as outlined in **Section 5.2.**

6.4.1 Factor Specific Environmental Inputs to the Evaluation of Alternative Methods

The data collected for the study area will assist in identifying the types of effects each Alternative Method may have on each environment component. Environmental components include:

- Socio-Economic Environment;
- Natural Environment; and
- Cultural Environment.

Technical requirements and costs will be considered in the evaluation of Alternative Methods. The proposed Evaluation Factors and Sub-factors for Alternative Methods are shown in **Table 6-2.** Data collection for each of the environmental disciplines will be conducted consistent with the most current Federal, Provincial, Conservation Authorities and Municipal policies, plans and procedures. Each of these components will be defined by a set of evaluation criteria. Net-Effects will be quantified according to the list of criteria shown in **Appendix A**. Necessary technical studies will be undertaken to assess the potential effects. These criteria are intended to assist the environmental specialists in determining the overall effect of the various alternatives on the socio-economic, natural and cultural environments. In determining the overall effect, the specialists will consider how the factors and criteria interact and function together. The evaluation criteria as listed represent the minimum requirements in the process of evaluating Alternative Methods.

Consideration of other factors such as Ecosystems Services could be considered as appropriate. Each factor and criteria will require consideration of related indicators, measures and analyses. A description of the appropriate rationale and data sources associated with the evaluation criteria/indicators is outlined in **Appendix A**. The evaluation factors/criteria are subject to refinement and modification during the IEA based on study findings, provincial policy and input from stakeholders. Specific measures will be developed during the IEA study. As such, all stakeholders will be provided with the opportunity to review and provide comments on the factors, criteria and measures used to identify a preferred Alternative Method(s) either prior to or during the IEA study.

Table 6-2: Summary of Evaluation Factors and Sub-Factors for Alternative Methods

FACTORS	SUB-FACTORS
1. NATURAL ENVIRONMENT	
1.1 Fisheries and Aquatic Ecosystems	1.1.1 Fish and Fish Habitat
1.2 Terrestrial Ecosystems	1.2.1 Wildlife and Wildlife Habitat, including wildlife passage
	1.2.2 Wetlands
	1.2.3 Woodlands and other Vegetation, including genetic connectivity of plants
	1.2.4 Designated/Special/Natural Areas
1.3 Groundwater	1.3.1 Areas of Groundwater Recharge or Discharge
	1.3.2 Groundwater Source Areas and Wellhead Protection Areas
	1.3.3 Large Volume Wells
	1.3.4 Private Wells – Domestic and Commercial Groundwater Users
	1.3.5 Groundwater-Sensitive Ecosystems
	1.3.6 Highly Vulnerable Aquifers
	1.3.7 Contamination Concerns
	1.3.8 Existing Landfills
	1.3.9 Flowing Artesian Conditions
1.4 Surface Water	1.4.1 Watershed / Subwatershed Drainage Features/Patterns
	1.4.2 Surface Water Quality and Quantity
2. LAND USE /SOCIO-ECONOMIC ENVIRONMENTAL	
2.1 Land Use Planning Policies, Goals, Objectives	2.1.1 Indigenous Land Claims
	2.1.2 Provincial / Federal Land Use Planning Policies/Goals/Objectives
	2.1.3 Municipal (local and regional) Land Use Planning Policies / Goals / Objectives
	2.1.4 Development Objectives of Private Property Owners
2.2 Land Use – Community	2.2.1 Indigenous Community Reserves
	2.2.2 Indigenous Sacred Grounds
	2.2.3 Urban and Rural Residential
	2.2.4 Commercial/Industrial

FACTORS	SUB-FACTORS
	2.2.5 Tourist Areas and Attractions
	2.2.6 Community and Recreational Facilities / Institutions
	2.2.7 Municipal Infrastructure and Public Service Facilities
2.3 Noise Sensitive Areas (NSA's)	2.3.1 Transportation Noise
2.4 Land Use - Resources	2.4.1 Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes
	2.4.2 Agriculture
	2.4.3 Recreational
	2.4.4 Aggregate and Mineral Resources
2.5 Major Utility Transmission Corridors	
2.6 Contaminated Property and Waste Management	2.6.1 Existing landfills under Provincial regulations and ECA requirements
	2.6.2 Contaminated Properties
2.7 Air Quality	2.7.1 Local and regional air quality impacts; greenhouse gas emissions
3. CULTURAL ENVIRONMENT	
3.1 Cultural Heritage – Built Heritage and Cultural Heritage Landscapes	3.1.1 Built heritage - These resources may be identified through designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions or through technical heritage studies
	3.1.2 Cultural Heritage Landscapes - These resources may be identified through designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions
3.2 Cultural Heritage – Archaeology	3.2.1 Pre-contact and Historic Indigenous Archaeological Sites
	3.2.2 Historic Euro-Canadian Archaeological Sites
4. TRANSPORTATION	
4.1 System Capacity & Efficiency	4.1.1 Movement of People and Goods
	4.1.2 System performance during peak periods
4.2 System reliability / redundancy	
4.3 Safety	4.3.1 Traffic, Pedestrian and Cyclist Safety
	4.3.2 Emergency Access
4.4 Traffic Operations / Mobility & Accessibility	4.4.1 Modal integration, balance
	4.4.2 Linkages to Population and Employment Centres
	4.4.3 Accommodation for pedestrians and cyclists
4.5 Network Compatibility	4.5.1 Network connectivity
	4.5.2 Flexibility for future expansion

FACTORS	SUB-FACTORS
4.6 Engineering	4.6.1 Constructability
	4.6.2 Compliance with design criteria
4.7 Construction Cost	

6.5 The Undertaking – Concept Design

Concept Design is completed for the preferred Alternative Method(s)

Once a preferred Alternative Method(s) is identified it will be developed to Concept Design level of detail to describe the Undertaking, assess the potential effects and develop specific mitigation measures based on the criteria presented in **Table 6-2** and refined as appropriate during the IEA. The technical studies for the various components of the environment will be undertaken to assess potential effects and develop detailed mitigation measures. At a minimum, a Reasoned Argument evaluation method will be employed to facilitate identification of the advantages and disadvantages of concept design alternatives considered during the IEA.

Approval requirements, mitigation or compensation measures and enhancement opportunities will be addressed with agencies, conservation authorities, municipalities, Indigenous Communities and other stakeholders at this study stage. The process for generating, assessing and selecting the concept design for the preferred Alternative Method will be confirmed during the IEA. Consideration will be given to application of context sensitive design principles during this stage.

The identification of mitigation measures will be developed in the context of all relevant technical guidelines. Appropriate technical and economically feasible mitigation measures will be developed for specific characteristics and sensitivities of the environmental features and the related significance (e.g. magnitude, duration, certainty) of the potential effect.

Mitigation measures will be developed in consultation with appropriate agency staff and stakeholders to confirm the environmental analyses, issues and effects, and subsequently to review the assessment of effects and proposed mitigation measures. Mitigation measures will also include recommendations for a monitoring program.

7 COMMITMENTS AND MONITORING

7.1 IEA Terms of Reference Commitments

Commitments on future environmental work, consultation and monitoring will be documented in the IEA

The IEA Report will include a comprehensive list of all commitments made during the ToR process and during the IEA study to guide future environmental work and consultation as well as effects and compliance monitoring. A table will be included in the IEA to list all commitments and where those commitments can be found in the IEA Report. In addition, the IEA Report will demonstrate how ToR commitments were addressed during the IEA study.

7.2 Environmental Effects and IEA Compliance

During the IEA, York Region will commit to developing a monitoring program that will address environmental effects associated with the construction, operation and maintenance of the preferred Alternative Method. The monitoring program will include adaptive environmental management strategies which will allow for the early identification of undesirable environmental effects and the development and implementation of an intervention strategy aimed at addressing such effects before they become problems

During the planning and design processes, York Region will ensure compliance with IEA process commitments prior to project implementation. If the preferred Alternative Method includes a construction phase, York Region will ensure that external notification and consultations are consistent with any commitments made in the IEA Report or other environmental documentation. Following construction, monitoring will ensure that any follow-up information is provided to external agencies as per any outstanding environmental commitments.

8 CONSULTATION PLAN FOR THE IEA

Consultation is an integral component of the IEA Process

Consultation is an integral component of the IEA process. The purpose of the consultation program is to actively pursue input to assist the York Region in making decisions throughout the IEA process. Consultation provides opportunities for two-way communication with stakeholders. Consultation activities also enable the identification of potentially significant environmental issues early in the decision-making process and ensure they are given appropriate consideration. The consultation program for the IEA is based on the following principles:

- All reasonable efforts will be made to ensure that potentially affected or interested parties are given opportunities to participate in the consultation process;
- Stakeholders may provide input at any time during the study; however, structured opportunities for input will occur at key study stages;
- York Region will constructively address input received during the consultation process;
- York Region will make reasonable efforts to resolve concerns; and
- Consultation plans and processes will be sufficiently flexible to permit responses to new issues that may arise as the study proceeds.

Consultation undertaken to assist in the preparation of this ToR is outlined in the Consultation Record under separate cover.

Various forms of consultation will take place throughout the study. Consultation activities may not be limited to those described in this section. The Project Team may consider additional enhancements to the IEA consultation plan if deemed to be of value to the study.

The purpose of this chapter is to present the proposed plan for stakeholder consultation during the IEA. Stakeholders can be defined as any individual or group who has an interest in the study, could be affected by the study or can provide pertinent information regarding the study. This can include public/interest groups, regulatory agencies, Indigenous Communities and local municipalities. Stakeholders consulted in the preparation of this ToR will form a starting point for establishing stakeholder contact lists during the IEA. A list of stakeholders consulted in preparation of this document is provided in the Consultation Record.

8.1 Overall Process for Consultation

Consultation with affected parties is an essential part of the IEA process and provides a mechanism for the proponent to define and respond to issues.

As part of initiating the ToR process, a Stakeholder Sensitivity Analysis (SSA) was undertaken with the following objectives:

- To build a comprehensive database
- To obtain opinions on participation methods and communication tools
- To obtain initial opinions and views on the study

The SSA results are documented in the Consultation Record and are reflected in the proposed consultation plan for the IEA as described below.

It is recognized that the identification and resolution of issues during each of the following stages of the IEA will be important. The public, agency / municipal, businesses, utilities and Indigenous Communities consultation process outlined in this section is focused on facilitating meaningful dialogue with stakeholders to identify and address study issues as

they arise. Various consultation tools and approaches (including notification, meetings, presentations and workshops) will be utilized to provide study updates and identify and discuss study issues raised by stakeholders.

While stakeholders participating in this study process may have differing views, values, opinions and interests, York Region will consider various means of identifying and addressing / resolving issues. In addition to the proposed methods outlined in the following sections of this ToR, tools such as mediation and other alternative dispute resolution (ADR) techniques requested by stakeholders can be considered during the IEA, at the discretion of York Region, to address specific study issues.

8.2 Public Consultation

Public comments and views will assist York Region in the decision-making process

The public has a major role and responsibility in determining the success of a public consultation program. The level of public engagement, the issues they raise and how such issues are resolved all influence the effectiveness of the consultation process.

The consultation plan will be designed such that the public will be provided reasonable timeframes for reviewing and providing comments on documentation and information made available during the IEA. The proposed consultation plan encourages proactive communication, which will allow comments and views of the public to assist York Region in the decision-making process. Stakeholder Groups can be formed as needed during the IEA.

8.2.1 PUBLIC NOTIFICATION

The first component of the Consultation Plan will be to develop contact lists, which will include interested individuals, ratepayer groups and recreational groups etc. located in the study area. The mailing list developed during the IEA ToR will be the starting point for this stakeholder list. As appropriate, these stakeholders will be notified by letter/email of project activities. York Region will publish advertisements for study commencement, each round of Public Open Houses and the formal Environmental Assessment Report submission in the current local newspapers, (e.g. *The Vaughan Citizen* and *The Richmond Hill Liberal)*, once a week for two separate weeks.

Study updates will also be provided on the York Region's website and on York Region's Facebook and Twitter channels, and other such media sites.

8.2.2 PUBLIC OPEN HOUSE AND FOLLOW-UP ACTIVITIES

Open Houses will be held at each major decision milestone in the IEA process. A total of 4 Public Open Houses are proposed during the IEA

The IEA proposes four rounds of Public Open Houses be held to coincide with the study steps depicted in **Figure 3-1.** The first and second Open Houses held during the IEA will provide information on the Alternatives To and Alternative Methods, respectively. A third Public Open House will be held to present outcomes on the Evaluation and Selection of the Preferred Alternative Method(s) and the last Open House will present the Preferred Concept Design, Impacts and Proposed Mitigation Measures. The Public Open Houses will be supplemented by follow-up activities where appropriate. Each round of Public Open Houses may include individual events held throughout the identified study area. The precise locations/venues and timing for each Public Open House will be determined during the IEA based on the project study area, project needs/issues, input from municipalities and the availability of venues.

The Public Open Houses will be arranged as drop-in centres to allow the public to see results, share information, and speak with the Project Team. The format of each round of

Public Open House will depend on the nature of the information being presented and input sought.

Follow-up consultation activities will be held as necessary throughout the project. It is expected that these activities will help facilitate dialogue and resolve outstanding concerns and issues during the IEA process. Follow up activities will be arranged to address specific project issues and concerns as they arise. The format of these activities will be flexible but could include stakeholder group meetings, workshops, kitchen table meetings, presentations, surveys, and other consultation activities.

Summary Reports for Public Open Houses, follow-up activities and other consultation events will be prepared and posted on the project web page.

8.2.3 PROJECT WEB PAGE

York Region will maintain project web page, www.york.ca/TestonRoad , and post all current and pertinent information regarding the project such as: notices of study commencement, notices of public events, project documents for information/review, the project process/schedule and opportunities for involvement. At key decision points, the web page will also include the ability to provide comments to facilitate feedback from interested parties. Residents and stakeholders will be invited to provide comments and submit questions about the project via the roads.ea@york.ca email address.

8.2.4 REGULATORY AGENCY CONSULTATION

Key agencies will continue to be engaged throughout the IEA process

Government agencies offer valuable input and professional expertise related to compliance, are knowledgeable regarding local issues and can assist in the identification of local interest groups to be consulted.

Meetings will be held with potentially affected provincial ministries, agencies and federal departments and conservation authorities. Notification letters distributed early in the IEA study will solicit participation in the study. Ministries and agencies will be kept apprised of project activities through scheduled meetings and will be sent notices regarding all consultation activities.

Consultation with provincial ministries and agencies will involve reviewing, commenting and providing input to the environmental assessment studies, the technical analysis and the ongoing comment/input to the consultation process. Provincial ministries and agencies will be given a minimum of 30 calendar days to provide comments on project documentation at the following key milestones:

- Identifying Preferred Alternative(s) To,
- Identifying Alternative Methods, and
- Selecting Preferred Alternative Method(s).

Agencies and other stakeholders will be provided a minimum of 45 calendar days to comment on the draft IEA Report. Liaison with representatives of provincial ministries and agencies will be arranged to obtain information on study area features, exchange pertinent study information and obtain input on project issues pertaining to each agency's mandate.

Agency meetings will be held to coincide with key study stages/milestones. Additional meetings will be held as required.

8.3 Engaging Indigenous Communities

York Region will strive to provide appropriate and meaningful consultation and engagement, with respect and good faith, which provides Indigenous Communities with the opportunity to be informed, and to have their opinions heard and considered.

Engagement with Indigenous Communities will be proactive and ongoing throughout the IEA

Issues which will be discussed with Indigenous Communities include but are not limited to the following:

- Effects on land used for traditional hunting or fishing;
- Effects to areas used for the harvesting of traditional foods;
- Effects to locations of medicinal plants;
- Effects to sacred grounds;
- Effects to known burial sites; and
- Implications to Land Claim areas and treaty rights.

York Region will be proactive in identifying and making initial contact with potentially affected Indigenous Communities. York Region will consult with Indigenous Communities both on the need for an undertaking as well as identification and assessment of Alternatives To and Alternatives Methods.

Engagement with Indigenous Communities will continue as the study proceeds. Notices (Notice of Commencement, etc.) will be sent to all identified Indigenous Communities via mail throughout assessment and evaluation of Alternative Methods to determine issues and the relative significance of identified features. Engagement will continue into the Concept Design process to ensure that appropriate mitigation strategies are developed where necessary to address the environmental effects of the preferred Alternative Method.

Where requested, York Region will offer presentations to the Chief and Elected Council of each affected Indigenous Community (or such other groups, staff or committees as requested by the Chief) prior to each round of Open Houses. Proactive follow-up actions will be implemented as needed to address any concerns identified by an individual Indigenous Community.

Indigenous Communities will be provided the opportunity to review and comment on the draft IEA Report a minimum of 45 calendar days prior to submission to the Minister for formal review and approval of the undertaking.

8.4 Municipal Consultation

Based on the geographic and infrastructure context of the Preliminary Study Area, the City of Vaughan and City of Toronto Landfill Operations (Keele Valley Landfill) will be important in the formal consultation process led by York Region.

8.5 Pre-Submission Review of the Draft Environmental Assessment Report

All stakeholders will have opportunity to review the Draft IEA report prior to formal submission to MECP

An IEA Report will be prepared at the conclusion of the IEA to document all phases of the study. At a minimum, the IEA Report will document all items as described under the OEAA. This includes:

- The purpose and rationale for the undertaking
- Alternatives considered (Alternatives To and Alternative Methods)
- Consultation undertaken
- Description of the Undertaking (Concept Design)
- Advantages and disadvantages of proceeding with the Undertaking and any alternatives
- Environmental effects and proposed mitigation measures associated with the Concept Design
- Commitments to compliance monitoring, and future commitments to be satisfied at subsequent design stages.

The IEA Report will also include an executive summary, technical reports and maps in accordance with the requirements of *Ontario Regulation 334* under the OEAA. The executive summary must contain a brief summary of the main points of the document. It should be consistent with the way in which the EA is organized. Section headings that appear in the main document should appear in the executive summary followed by a summary of that section and the conclusions reached.

A draft IEA Report will be made available to the public and provincial government agencies, municipalities and Indigenous Communities for review prior to formal submission to the MECP. The documentation will be available at government offices, public libraries and on the project web site for a minimum period of 45 calendar days.

After the pre-submission review and consideration of any comments received, the IEA Report will be formally submitted to the Minister for an approval decision of the undertaking. After submission, MECP will undertake a formal public and agency review process for the IEA Report. MECP is responsible for review and consideration of comments received on the IEA and will consider all comments when deciding whether to approve, approve with conditions, and refer to a tribunal for mediation or not to approve the IEA Report.

In addition to the IEA Report, various working and technical papers will be prepared at appropriate stages of the IEA to document technical work that is undertaken to support the decision-making process.

Activities following the approval of the IEA Report and other approvals required are described in **Chapter 11**. Other approval requirements will be outlined in the IEA Report.

9 CONSULTATION UNDERTAKEN TO ASSIST IN THE PREPARATION OF THIS TERMS OF REFERENCE

Extensive consultation was undertaken to assist in the preparation of this ToR. The details of this consultation are included in the Consultation Record which is bound under a separate cover. During the ToR, the following consultation mechanisms were used: Notice of Commencement published in local newspapers; direct agency engagement; development of a project web page; a Public Open House and engagement with Indigenous Communities.

9.1 INDIGENOUS COMMUNITY ENGAGEMENT

As part of the ToR process the following Indigenous Communities were engaged:

- Alderville First Nation
- Mississaugas of Scugog Island First Nation
- Mississaugas of the New Credit First Nation
- Curve Lake First Nation
- Chippewas of Georgina Island First Nation
- Metis Nation of Ontario
- Hiawatha First Nation
- MNO Toronto and York Region Metis Council
- MNO Credit River Metis Council

The following is a summary of the Indigenous Community Consultation undertaken as part of the ToR process. Further details, including copies of meeting minutes and correspondence can be found in the Consultation Record which is bound under a separate cover.

9.1.1 INDIGENOUS COMMUNITIES MEETINGS

Indigenous Community engagement has been an important part of in the development of this ToR and as such the Indigenous Communities were engaged early on in the process in order to provide their valuable input into the development of this ToR document. On July 11, 2017 the Project team met with representatives from the following Indigenous Communities:

- Alderville First Nation
- Mississaugas of Scugog Island First Nation
- Mississaugas of the New Credit First Nation
- Curve Lake First Nation

A teleconference was held with Huron-Wendat First Nation on July 28, 2017 as they were not available to attend the July 11th meeting. Additionally, Chippewas of Georgina Island First Nation, Metis Nation of Ontario Hiawatha First Nation, MNO Toronto and York Region Metis Council and MNO Credit River Metis Council were contacted to participate in the meeting (several voice mails messages left) however the messages were not responded to. All these Indigenous Communities were provided opportunity to review the draft and final ToR document.

These meetings were held to present an overview of the project including the study area & context, key constraints, the previous EA study, the purpose of the ToR, the scope and contents of the ToR, an overview of the ToR and subsequent IEA process, consultation and the Indigenous Communities role in this study as well as a summary of the preliminary findings of the Stage 1 Archaeological Assessment. **Table 9-1** summarizes the comments and concerns presented by the Indigenous Communities at these meetings and how these concerns have been addressed in the ToR.

Table 9-1: Summary of Indigenous Community Meeting Comments

Comments By:	Comment	Response
Mississaugas of Scugog Island First Nation	Concerns regarding the Teston Ossuary and how the development will impact it in the future	York Region and the City of Vaughan both have put in place policy's to not allow development or other potential impacts to this site
	Requested that their monitors be on site during the Stage 2/3/4 Archaeology field work.	When the IEA is initiated York Region will contact the Indigenous Communities for their input and requirements.
	Noted that they require at least 6 weeks to review any documents.	York Region provided a 6-week review period for both the draft ToR and the draft Stage 1 Archaeology Report
Mississaugas of the New Credit First Nation	Requested that their monitors be on site during the Stage 2/3/4 Archaeology field work.	When the IEA is initiated York Region will contact the Indigenous Communities for their input and requirements.
	Would like to review the Stage 1 Archaeology Report prior to submission to MTCS and the draft ToR prior to going to MECP.	York Region provided all Indigenous Communities with opportunity to review the Stage 1 Archaeology report prior to submission to MTCS (see below)
	Would like the opportunity to work closely with York Region regarding	As per Section 8.3 of the ToR, York Region is committed to providing

Comments By:	Comment	Response
	Archaeology and Environment matters	appropriate and meaningful consultation with the Indigenous Communities during the IEA
	Noted that they require at least 6 weeks to review and documents	York Region provided a 6-week review period for both the draft ToR and the draft Stage 1 Archaeology Report
	Expressed interest in having recurring meetings throughout the project at the IEA stage and would like to meet with York Region after the ToR is approved but prior to the initiation of the IEA	As per Section 8.3 of the ToR, York Region is committed to providing appropriate and meaningful consultation with the Indigenous Communities during the IEA
Curve Lake First Nation	Would like to review the Stage 1 Archaeology report and draft ToR before they are submitted to MTCS and MECP respectfully. They will need at least 6 weeks to review any documents	York Region provided all Indigenous Communities with opportunity to review the Stage 1 Archaeology report prior to submission to MTCS (see below) York Region provided a 6-week review period for both the draft ToR and the draft Stage 1 Archaeology Report
	Noted that they would like to see green technologies and green space incorporated into any preferred solution	As per Section 8.3 of the ToR, York Region is committed to providing appropriate and meaningful consultation with the Indigenous Communities during the IEA
	Noted that would like to see any opportunities to highlight the history and provide educational opportunities of the Indigenous Communities within the project and show the significance of their presence within this area	As per Section 8.3 of the ToR, York Region is committed to providing appropriate and meaningful consultation with the Indigenous Communities during the IEA

Comments By:	Comment	Response
Alderville First Nation	Would like to have the opportunity to review the historical documentation and reports	York Region provided all Indigenous Communities with opportunity to review the Stage 1 Archaeology report, which included a summary of supporting documentation and reports prior to submission to MTCS (see below)
	Expressed concerns regarding the potential impacts to the environment as well as the amount of development and the reduction of green space	Noted. As per Section 4.0 York Region recognizes that parts of the study area include an ANSI and Oak Ridges Moraine Core Plan Area. During the IEA these constraints will be thoroughly reviewed and considered
	Noted that a plan for replacement of any landfill monitoring should be in place if it is impacted by this project	Agreed. York Region has included the Toronto Keele Valley Landfill Group and the Vaughan Landfill Specialists as part of the ToR process and will continue to consult with these groups throughout the IEA
Huron-Wendat Nation	Noted that their main concern is the archaeological studies and findings and in particular the high potential for Huron-Wendat ossuary within the study area of this project and as such Huron-Wendat do not want any other Nation to speak for them in this regard	Noted
	Requested that for all Stage 2 (3 and 4, if applicable) their monitors be on site	As per Section 8.3 of the ToR, York Region is committed to providing appropriate and meaningful consultation with the Indigenous Communities during the IEA

Comments By:	Comment	Response
	Huron-Wendat would like to review all archaeological reports, including the Stage 1 report, prior to the reports being finalized	York Region provided all Indigenous Communities with opportunity to review the Stage 1 Archaeology report prior to submission to MTCS (see below)

9.1.2 NOTICE OF COMMENCEMENT AND OPEN HOUSE

NOTICE OF COMMENCEMENT

All engaged Indigenous Communities were mailed the Notice of Commencement (NOC) on December 29, 2016.

Comments received from the NOC were the identification of the main contact person for the Mississaugas of the New Credit First Nation.

OPEN HOUSE

All engaged Indigenous Communities were mailed the Notice of Open House on April 7, 2017.

Comments received from the Open House Notice were the identification of the main contact person for Mississaugas of Scugog Island First Nation. . Mississaugas of Scugog Island First Nation also expressed concern about the overall potential impacts of development within the natural areas of the study area and impacts to the Teston Ossuary. As per Section 4.0 of this ToR, York Region recognizes that parts of the study area include an ANSI and Oak Ridges Moraine Core Plan Area. During the IEA these constraints will be thoroughly reviewed and considered. York Region and the City of Vaughan both have put in place policy's to not allow development or other potential impacts to the Teston Ossuary.

The project team has no record of any representatives of the engaged Indigenous Communities attending the Open House.

9.1.3 TOR REVIEWS

DRAFT TOR

Indigenous Communities were provided the opportunity to review and comment on the draft ToR prior to the final submission to the Minister of Environment, Conservation and Parks Hard copies of the draft ToR were sent to the engaged Indigenous Communities on February 20, 2018. As per the previous requests by the Indigenous Communities, a six-week review period was provided with comments requested to be provided by April 5, 2018.

One comment was received by Huron-Wendat on the draft ToR which was to reiterate that their main concerns are archaeology and their heritage. As per Section 8.3 of the ToR,

York Region is committed to providing appropriate and meaningful consultation with the Indigenous Communities during the IEA.

FINAL TOR (MECP SUBMISSION)

York Region sent a letter to all engaged Indigenous Communities on May 17, 2017 to provide notification that the final ToR document would be sent for review on June 7, 2018.

Hard copies of the Final ToR were sent to all engaged Indigenous Communities on June 6, 2018. Three comments were provided to MECP during the final ToR process. **Table 9-2** summarizes the comments and how these concerns have been addressed in the ToR.

Table 9-2: Summary of Indigenous Communities Comments on Final ToR

Comments By:	Comment	Response
Mississaugas of the New Credit First Nation	• Concern that the project will go through an ANSI • Impacts to the protected area from increased growth and traffic in the area • Meetings are required for consultation	The ToR has noted that the study area includes an ANSI and is within the ORCMP, potential impacts to these will be considered during the review of alternatives during the IEA. As per Section 8.3 of the ToR, York Region is committed to providing appropriate and meaningful consultation with the Indigenous Communities during the IEA
Huron-Wendat Nation	Huron-Wendat Nation has great interest in the project as the study area contains numerous Huron archaeological sites and want to be involved in every aspect of the project that is touching the heritage and archaeology	As per Section 8.3 of the ToR, York Region is committed to providing appropriate and meaningful consultation with the Indigenous Communities during the IEA The Indigenous Communities were extensively consulted with during the development of the Stage 1 Archaeology Assessment.
Mississaugas of Scugog Island First Nation	Mississaugas of Scugog Island First Nation are interested in the project and will provide comments.	As per Section 8.3 of the ToR, York Region is committed to providing appropriate and meaningful

Comments By:	Comment	Response
	To date the ministry has not received any additional comments from the Mississaugas of Scugog Island First Nation	consultation with the Indigenous Communities during the IEA

9.1.4 STAGE 1 ARCHAEOLOGICAL ASSESSMENT INPUT

Based on the comments provided by the Indigenous Communities the during the ToR process, the Project Team recognized that one of the major concerns expressed by the Indigenous Communities was to be included on the Archaeological Assessments (all Stages). Concurrently with the ToR, the Stage 1 Archaeological Assessment was completed and as per the Indigenous Communities request the Stage 1 Archaeological Assessment Report was circulated to all engaged communities on March 19, 2018 and follow up emails and phone calls were made to the engaged Indigenous Communities to confirm whether they had any input prior to submission to MTCS. A summary of the correspondence regarding the draft Stage 1 Archaeological Assessment is noted below:

- Huron-Wendat Nation Council approved of results and recommendations and requested to be engaged at a Stage 2 level.
- The Chippewas of Georgina Island First Nation expressed no comments or concerns.
- Hiawatha First Nation expressed no comments or concerns.
- Mississaugas of the New Credit First Nation provided a detailed response with notes to take into consideration and a request for clarification.
- Alderville First Nation deferred to Curve Lake or Mississauga of Scugog Island for response.
- Curve Lake First Nation – The Project Team followed up with Curve Lake First Nation via e-mail and telephone, however no response received.
- Mississaugas of Scugog Island First Nation – The Project team followed up with Mississaugas of Scugog Island First Nation via e-mail and telephone, however no response received.
- MNO Credit River Metis Council – The Project Team followed up with MNO Credit River Metis Council First Nation via e-mail and telephone, however no response received.
- MNO Toronto & York Region Metis Council – The Project Team followed up with MNO Toronto & York Region Metis Council via e-mail and telephone, however no response received.

10 FLEXIBILITY FOR ACCOMMODATING NEW CIRCUMSTANCES

The ToR is intended to retain adequate flexibility to accommodate potential IEA requirements throughout the study process

Should this Terms of Reference (ToR) be approved by the MECP it is important that flexibility be retained so that when the IEA study is undertaken, potential requirements can be accommodated throughout the study process. During the IEA study it may become evident that some of the commitments outlined in the ToR may require modifications, additions or refinements as further details of the study are determined. Modifications/additions/refinements that could be required may include, but are not limited to:

- Additional problems and opportunities
- Additional alternatives
- Revisions and/or modifications to the Preliminary Study Area
- Additional evaluation criteria and/or indicators
- Additional assessment and evaluation methodologies utilized to select the recommended Alternative(s) To and/or Alternative Method(s)
- Additional consultation activities
- Examination of additional environmental effects

11 OTHER APPROVALS REQUIRED

Consultation with approval agencies will continue during the IEA to coordinate timing of approvals, approval requirements and to ensure that approvals are ultimately obtainable. Potential permits/approvals/authorizations and agreements required may include but are not limited to the following:

- Navigation Protection Act Approval (Federal Government)
- Fisheries Act Authorization (Federal Government)
- Ministry of the Environment, Conservation and Parks (MECP)
- Ministry of Tourism, Culture and Sport (MTCS)
- Ministry of Natural Resources and Forestry (MNRF)
- Toronto and Region Conservation Authority (TRCA)
- Agreements with local utilities
- Railway Crossing Agreements
- Other agency approvals as required

12 REFERENCES

The following documents were referenced in preparation of this Terms of Reference:

- MECP Code of Practice – Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario – January 2014
- York Region Transportation Master Plan – 2016
- York Region Official Plan – 2010
- York Region Official Plan – 2016 Office Consolidation
- MECP's Considering Climate Change In The Environmental Assessment Process - October 2017
- City of Vaughan Transportation Master Plan – 2013
- City of Vaughan Official Plan – 2010 (VOP 2010)
- Widening and Reconstruction of Teston Road from Pine Valley Drive to Bathurst Street Class EA – 2003
- Growth Plan for the Greater Golden Horseshoe - 2017
- York Region 10 Year Cycling Report - 2017
- York Region Travel Demand Forecasting Model (YRTDF) – EMME based
- Statistics Canada, Census Profile, 2011 & 2016 Census
- City of Vaughan Heritage Inventory
- York Region Self Service Data Site (Includes data from TRCA)

APPENDIX

A SUMMARY OF EVALUATION AND CRITERIA FOR ALTERNATIVE METHODS

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
1. **NATURAL ENVIRONMENT**				
1.1 Fisheries and Aquatic Ecosystems	1.1.1 Fish and Fish Habitat	– Degree of potential negative effect on fish habitat (e.g., size/scale/extent, duration, intensity/magnitude), considering sensitivity and relative quality and distribution of fish and fish habitat, e.g.: – direct presence of commercial, recreational or Aboriginal (CRA) fishery or relative contribution of fish or habitat to productivity of CRA fishery – species and/or habitat sensitivity to disturbance – species rarity, including species at risk (special concern, threatened or endangered fish species) – fish dependence on habitat and potential for effect to impact productivity (e.g. specialized / critical fish life stage processes like spawning, rearing, nursery, feeding) and fish movement/migration – fisheries/fish community management goals and objectives	– The crossing of water bodies by transportation infrastructure has the potential to affect fish and fish habitat features through impediments to fish passage, loss of vegetation, changes to channel fluvial geomorphology (channel form and function), substrate and cover, changes to the water quality due to erosion and sedimentation, stormwater discharge and temperature changes, etc. – The relative overall impact is higher (and potential for mitigation effectiveness lower or more difficult) for crossings that support less common and/or more sensitive fish communities and habitat features and functions. – Siting issues include: – Meandering crossings create design challenges and tend to be more 'unstable'/subject to migration than straight riffle sections. – Steep valley slopes and intact vegetation communities create access issues and greater overall disturbance.	– Field investigations – Fisheries and Oceans Canada Species at Risk (SAR) mapping – Ontario Ministry of Natural Resources and Forestry (MNRF) fish records and databases – MNRF Natural Resource Values Information System (NRVIS), Land Inventory Ontario (LIO), Natural Heritage Information Centre (NHIC) – Toronto Region Conservation Authority (TRCA) (e.g. Fish records, inventories, monitoring studies) – Fisheries Management Plans for long-term management goals, as well as Watershed and Subwatershed studies, and other development related studies (e.g. Environmental Impact Statements) – Indigenous communities – SAR Recovery Plans, Committee on the Status of Endangered Wildlife in

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		— Potential constraints/issues/challenges to designing, constructing and mitigating crossing to avoid serious harm to fish (e.g., whether there are measures and standards to avoid, mitigate or offset serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery).	— Presence of groundwater discharge creates construction issues; potential slope instability and obstruction of groundwater affects coldwater (incl. some SAR like Redside Dace) fish and fish habitat. — Channel realignment requires considerable effort to replace habitat features and functions and commensurate risk, particularly in more complex habitats, and reduces productivity in the short to medium term. Some functions are difficult to reinstate and certain habitat and physical conditions create construction and re-stabilization challenges. — The federal Fisheries Act prohibits serious harm to fish including the obstruction of fish passage unless authorized by Fisheries and Oceans Canada (DFO). Where effects cannot be mitigated and the project works may result in serious harm to fish, the works may proceed with authorization by DFO, usually supported by a plan that includes measures designed to off-set the loss. — Certain species of fish are also protected by the Endangered Species Act (ESA) and/or the	Canada (COSEWIC) status / assessment reports, etc. — Direct consultation with agency staff — Class Environmental Assessment for the Widening and Reconstruction of Teston Road: Environmental Study Report (Giffels 2003). — MNRF Species at Risk Conservation Policy V. 1.2: Guidance for Development Activities in Redside Dace Protected Habitat: March 2016. — Naturalist groups, public interest groups, general public

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
			Species at Risk Act (SARA). The rarity of these species elevates their sensitivity and many depend on specific habitat features that are often not well understood. – Provincial Policy Statement (PPS) (2014) Policy 1.6.8.5 stipulates that when planning for corridors and rights-of-way for significant transportation infrastructure, consideration will be given to significant natural heritage, water, agricultural, mineral, cultural heritage and archaeological resources. – Relevant aspects of the PPS (2014) also include minimizing impacts to water quality and quantity of surface water, including headwater areas and groundwater and related functions.	
1.2 Terrestrial Ecosystems	1.2.1 Wildlife and Wildlife Habitat, including wildlife passage	– Potential for and significance of encroachment, fragmentation, removal, long-term alteration / disruption as applicable to the following, and considering potential for impacts to individuals, species groups and/or populations and impacts to their respective habitats and movement among them:	– Construction of transportation infrastructure has the potential to affect wildlife and wildlife habitat through direct and indirect impacts including, but not limited to, mortality, harm, and/or harassment of individuals (wildlife), interference with movement particularly among critical habitats, direct removal of or changes to wildlife habitat (composition, introduction of	– Field investigations – Natural Heritage Information Centre (NHIC) – Ministry of Natural Resources and Forestry (MNRF) – Toronto Region Conservation Authority (TRCA) – ESA reports

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		— Habitat rarity (i.e., representation on the landscape) — Habitat sensitivity / resilience — Habitat diversity within feature and landscape — Habitat function within feature and landscape — Confirmed Significant Wildlife Habitat — Potential Significant Wildlife Habitat — Movement corridors and habitat connectivity — Potential or confirmed habitat for Species at Risk — Presence of Wildlife Species at Risk — Interference with critical wildlife life stage processes (e.g., mating / rearing, etc.) — Potential constraints and opportunities to design, construct, operate and mitigate the infrastructure to avoid or minimize impacts to wildlife and wildlife habitat.	invasive species, etc.), loss of diversity, increased noise, light and runoff (water, sediment, etc.), habitat avoidance, edge impacts, etc. — Consideration of the species biology (e.g., life cycle), movement, etc. will be considered in assessing alternatives. — Species at Risk are legislatively protected (ESA, SARA) and are generally more susceptible to stressors (e.g., changes to their habitat). Consideration for the maintenance and/or protection of these species will be a priority. — Provincially and regionally rare species will also be considered in the assessment of diversity, significance and sensitivity. — The Migratory Birds Convention Act (MBCA) provides protection for migratory bird species (as listed), their nests and their young.	— Land Information Ontario (LIO) — Species at Risk Recovery Plans and Management Guidelines (where available) — MNRF Significant Wildlife Habitat Technical Guide — Significant Wildlife Habitat Criterion Schedules for Ecoregion 6E (MNRF 2015) — MNRF Natural Heritage Reference Manual — Atlas of the Breeding Birds of Ontario — Ontario Nature's Ontario Reptile and Amphibian Atlas (ORAA) website — Federation of Ontario Naturalists' Ontario Mammal Atlas — Indigenous communities — Naturalist groups, public interest groups, general public — Class Environmental Assessment for the Widening and Reconstruction of Teston Road: Environmental Study Report (Giffels 2003)
	1.2.2 Wetlands	— Potential for and significance of encroachment,	— Wetlands serve ecological functions to varying degrees	— Field investigations — NHIC

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		fragmentation, removal and/or long-term alteration / disruption on wetland features as applicable to the following: – Provincially Significant Wetlands – Non-provincially Significant Wetlands – Un-evaluated wetlands – Lands adjacent to wetland features required to maintain ecological features and functions – Rarity, feature sensitivity / resilience (incl. hydrological functions / dependencies), feature diversity, size and representation on the landscape – Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to wetlands.	including groundwater recharge / discharge, flood attenuation, wildlife movement corridors, habitat for flora and fauna, and water filtration. – Wetlands may be impacted through direct and indirect impacts – including, but not limited to direct removals, changes to hydrological regime within or in adjacent areas that support wetland features, impacts to water quality, introduction of invasive species, and indirect impacts to the species assemblages that use wetland features. – Wetlands offer habitat opportunities to Species at Risk, provincially and regionally rare species, wetland-dependent species and area sensitive / disturbance sensitive species. SAR wildlife and SAR flora are addressed in the Wildlife and Wildlife Habitat and Woodlands and other Vegetation sub-factors, respectively	– MNRF wetland mapping and Wetland Data files – ESA reports – TRCA (regulation limits mapping, identification of unevaluated wetlands) – LIO – Ontario Wetland Evaluation System – MNRF Natural Heritage Reference Manual – Indigenous communities – Naturalist groups, public interest groups, general public – Class Environmental Assessment for the Widening and Reconstruction of Teston Road: Environmental Study Report (Giffels 2003) – TRCA Wetland Water Balance Risk Evaluation (2017)
	1.2.3 Woodlands and other Vegetation, including genetic connectivity of plants	– Potential and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: – Significant woodlands – Significant valleylands	– Woodlands serve ecological functions to varying degrees including providing multi-trophic habitat for wildlife, soil stability, carbon cycling etc. – Woodlands and other vegetation may be impacted through direct	– Field investigations – NHIC – MNRF – LIO – TRCA

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		— Rarity, feature sensitivity / resilience, feature diversity, size and representation on the landscape — Individuals / populations or habitats for vegetation Species at Risk — Individuals / populations or significant representation of vegetation species of provincial or regional / local conservation concern — Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to woodlands and other vegetation.	and indirect impacts – including, but not limited to direct removals, changes to size, fragmentation, introduction of invasive species, and indirect impacts to the species assemblages that use the woodland features. — Large natural and relatively undisturbed features typically have high ecological sensitivity and value however some small, uncommon features can also have important functions and small, degraded isolated remnant woodlots can have ecological value locally. — Woodlands and other vegetation communities (e.g., prairies, grasslands) offer habitat opportunities for Species at Risk, provincially and regionally rare species, and area sensitive / disturbance-sensitive species.	— MNRF Natural Heritage Reference Manual — MNRF Significant Wildlife Habitat Technical Guide — ESA reports — Indigenous communities — communities — Naturalist groups, public interest groups, general public — Class Environmental Assessment for the Widening and Reconstruction of Teston Road: Environmental Study Report (Giffels 2003)
	1.2.4 Designated/Special Natural Areas	— Potential for and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: — Purpose / rationale for the original designation (i.e. relative potential to affect the core feature / function designated).	— Elements of the features and functions may be captured under other factors and sub-factors, however specific consideration must be given to broader, overall functions and values the designated areas may provide / represent as a whole and/or as part of a system: — High quality examples of earth or life science features	— Field investigations (delineation of designated feature boundaries, as appropriate) — Identified by municipality, Conservation Authority, MNRF, interest groups or other background sources — Bird Studies Canada — Greenbelt Plan

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		– Impact to the designated feature and its function(s) – Impact to the overall designation (i.e., does the impact effect the purpose of the designation) – Designated natural areas include heritage rivers, Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs), Natural Heritage System(s), conservation lands (e.g. management tracts, reserves, and conservation areas), etc.	– A connected system designed for the maintenance or enhancement of natural features and functions at a regional or provincial scale. – Recognition of the area relative to historic aboriginal and/or social importance. – Designated features have already been evaluated against a set of criteria to determine their significance at a particular scale (e.g., municipal, provincial, federal), and due consideration should be made for these features and functions within the evaluation of alternatives.	– Oak Ridges Moraine Conservation Plan (2017) – Indigenous communities – Class Environmental Assessment for the Widening and Reconstruction of Teston Road: Environmental Study Report (Giffels 2003)
1.3 Groundwater	1.3.1 Areas of Groundwater Recharge or Discharge	– Evaluate the potential and significance of road construction to areas of groundwater recharge or discharge due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater and surface water base-flow and water quality.	– Transportation infrastructure have the potential to effect groundwater resources through removal of recharge areas, interference with discharge areas/shallow groundwater zones, and introduction of contaminated runoff. Consequently, effects to areas identified as being susceptible to groundwater contamination and/or interference should be avoided minimalized to the extent possible. Adherence to the Clean Water Act, Ontario Water Resources Act and the Credit Valley, Toronto and	– Clean Water Act – Ontario Water Resources Act – Geological Mapping – CTC Source Protection Plan – Toronto and Region Conservation Authority Source Protection Area Assessment Report – MECP Water Well Record Database – MECP Permit to Take Water (PTTW) Database
	1.3.2 Groundwater Source Areas and Wellhead Protection Areas	– Evaluate the potential and significance of road construction on groundwater/surface water flow regimes and quality due		

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, as they pertain to applicable Source Protection Area and Wellhead Protection Area policies.	Region, Central Lake Ontario (CTC) Source Protection Plan.	– MECP Provincial Groundwater Monitoring Network Database – MECP Provincial (Stream) Water Quality Monitoring Network Database – Oak Ridges Water Program – Landfill reports, which present details of landfill purge wells
	1.3.3 Large Volume Wells	– Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, .and the quantity and quality effects to these large volume wells. The purpose of the water takings from these large volume users must be taken into consideration.		
	1.3.4 Private Wells - Domestic and Commercial Groundwater Users	– Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to groundwater dependent		

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		domestic and commercial users.		
	1.3.5 Groundwater-Sensitive Ecosystems	— Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater dependent ecosystems, Environmentally Significant Areas and Areas of Natural and Scientific Interest.		
	1.3.6 Highly Vulnerable Aquifers	— Evaluate the potential and significance of road construction to areas of highly vulnerable aquifers to physical intrusion, interception, dewatering drawdown, soil impoundment and compaction, and the effects on aquifers water base-flow and water quality.		
	1.3.7 Contamination Concerns	— Evaluate the potential and significance of road construction on introducing contamination through road runoff and by intercepting contaminated groundwater plumes.		
	1.3.8 Existing Landfills	— Evaluate the potential and significance of road		

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		construction adjacent to three closed landfills (A private landfill and the Vaughan Landfill to the north, and the Keele Valley Landfill to the south) with known groundwater contamination issues.		
	1.3.9 Flowing Artesian Conditions	– Evaluate the potential and significance of road construction to flowing artesian conditions due to physical intrusion.		

1.4 Surface Water	1.4.1 Watershed / Subwatershed Drainage Features/ Patterns	Potential and significance of:
		– Encroachment, severance, displacement
		– Long-term alteration / disruption as applicable to the following:
		  – Watercourse crossings (permanent, intermittent, and ephemeral)
		  – Flood plain
		  – Riparian areas
		  – Headwater areas
		  – McGill ESAs and ANSI
		  – Vegetative community
		  – Oak Ridges Moraine – Natural Core Area (2017)
		  – Watershed and subwatershed management plans.
			– It is an objective to protect, improve or restore the quality and quantity of surface water, including headwaters, McGill ESAs and ANSI and the Oak Ridges Moraine.
			– The crossing of water bodies and environmentally sensitive areas has the potential to affect fish and aquatic habitat features through impediments to fish passage, loss of vegetation, changes to channel geomorphology (channel form and function), substrate and cover, changes to the water quality due to erosion and sedimentation, stormwater discharge and temperature changes.
				– Topographic maps
				– Aerial photographs
				– Base maps
				– Watershed Management Plans
				– Watershed and Subwatershed studies
				– Toronto Region Conservation Authority (TRCA) reports, manuals, development, interference with wetlands and alterations to shorelines and watercourses Regulation
				– Provincial Water Quality Monitoring Network
				– MECP data
				– HYDAT (Environment Canada) data
				– MNRF field studies

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**

		– The approach to the fluvial geomorphology assessment will be confirmed, reviewed and made acceptable to reviewing agencies.
		– Other concerns:
		  – Proximity to landfill sites
		  – Source water protection
				– Guidelines for land use on or near landfill sites
				– Papers available at www.sustainabletechnologies.ca

	1.4.2 Surface Water Quality and Quantity	– Potential and significance of effects on water quality through direct and indirect discharges of contaminated and sediment-laden runoff – Potential and significance of effects on stream hydrology due to changes in ground permeability, modifications to surface drainage patterns and volumes and alterations of water bodies		– York Region Road Design Guidelines – TRCA Stormwater Management Guidelines – Flood Flow Criteria – TRCA Stormwater Management Guidelines – Erosion Control Criteria – TRCA Stormwater Management Criteria document – TRCA/CVC Low Impact Development Stormwater Management Manual (2008) – TRCA East Don River Watershed Plan Report – Oak Ridges Moraine Conservation Plan (2017) – MECP Stormwater Management Planning and Design Manual (2003) and the final version of MECP's Low Impact Development

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
				Stormwater Management Design guideline – Source water protection-Act for Clean Water
2. **LAND USE / SOCIO-ECONOMIC ENVIRONMENTAL**				
2.1 Land Use Planning Policies, Goals, Objectives	2.1.1 Indigenous Land Claims	The potential and significance of: – encroachment, severance, displacement – long-term alteration/disruption to Indigenous Land Claims	– First Nations Land Claims in the area must be documented	– Agency consultation (Ministry of Indigenous Relations and Reconciliation, Aboriginal Affairs and Northern Development Canada) – Indigenous communities – Up-to-date land use proposals and applications – Federal/provincial/municipal land use goals, objectives, policies and Policy Statements (The Oak Ridges Moraine Conservation Plan (2017) and Greenbelt Plan (2017), Places to Grow: The Growth Plan for the Greater Golden Horseshoe, Regional Transportation Plan (2017)) – Agency consultation (Ministry of Municipal Affairs and Housing, Ministry of Indigenous Relations and Reconciliation, Aboriginal Affairs and Northern Development Canada, Ministry of Tourism, Culture and Sport, Transport
	2.1.2 Provincial / Federal Land Use Planning Policies/Goals/ Objectives	– How the development of alternatives fits into the Provincial/Federal land use planning policies/goals/objectives	– It is important to understand how each alternative fits into current and future land use plans – As outlined by the Planning Act, municipalities are required to set out planning goals and policies to guide future land use – Municipal plans are to be consistent with the Provincial Policy Statement (PPS, 2014) – City of Vaughan OP (2010) section 3.5.6 states that all infrastructure (existing, expanded, new) must meet one of the two objectives: 1 Supports agriculture, recreation and tourism, rural settlement areas, resource use or the rural economic activity that exists and is permitted within the Greenbelt; or 2 Serves the significant growth and economic development expected in southern Ontario	
	2.1.3 Municipal (local and regional) Land Use Planning Policies/ Goals/ Objectives	– How the development of alternatives fits into the local and regional land use planning policies/goals/objectives (York Region Official Plan, Vaughan Official Plan, 2010)		
	2.1.4 Development Objectives of Private Property Owners	– Development objectives of private property owners should be in conjunction with land use policies and future land use		

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
			beyond the Greenbelt by providing for the appropriate infrastructure connections among urban growth centres	Canada, Public Works and Government Services Canada) — Development Organizations (i.e. Building Industry and Land Development Association) — Field Investigations/observations — Public consultation
2.2 Land Use – Community	2.2.1 Indigenous Community Reserves	The potential and significance of: — encroachment, severance, displacement, — long-term alteration/disruption — nuisance effects — change to access / travel time to Indigenous Community Reserves.	— It is important to note the potential and significance of impact of each alternative to Indigenous Community Reserves within the study area — It is important to note the existence of any Indigenous sacred grounds within the study area and the potential impacts — It is important to determine the number of residents impacted and displaced — The number of businesses impacted — Parking and access impacts – to commercial/industrial/community facilities/institutions — Limiting access to commercial and industrial businesses will impact revenue — Impacts to tourist areas and attractions such as parks, golf	— Aboriginal Affairs and Northern Development Canada (AANDC) consultation — Indigenous communities — Federal/provincial/municipal land use plans — Up-to-date land use proposals — Federal/provincial/municipal land use goals, objectives, policies and Policy Statements — Public consultation — Agency consultation (Ministry of Municipal Affairs and Housing, Ministry of Indigenous Relations and Reconciliations and Northern Development Canada, Ministry of Tourism, Culture and Sport, Transport Canada, Public
	2.2.2 Indigenous Sacred Grounds	The potential and significance of: — encroachment, severance, displacement — long-term alteration/disruption — nuisance effects — change to access/travel time to Indigenous Sacred Grounds.		
	2.2.3 Urban and Rural Residential	The potential and significance of: — encroachment, severance, displacement — long term alteration/disruption — nuisance effects		

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		— change to access/travel time to urban and rural residential communities.	courses, trails – limited access impacts users — It is important to provide enhanced connectivity to encourage travel to tourist areas and attractions	Works and Government Services Canada) — Development Organizations (i.e. Building Industry and Land Development Association) — Don River Watershed Plan, TRCA (2009) — Field investigations
	2.2.4 Commercial/ Industrial	The potential and significance of: — encroachment, severance, displacement — long term alteration/disruption — nuisance effects — change to access/travel time to commercial/industrial.		
	2.2.5 Tourist Areas and Attractions	The potential and significance of: — encroachment, severance, displacement — long term alteration/disruption — nuisance effects — change to access/travel time — changes to facilities / services to tourist areas and attractions.		
	2.2.6 Community and Recreational Facilities / Institutions	The potential and significance of: encroachment, severance, displacement — long term alteration/disruption — nuisance effects — change to access/travel time — changes to facilities / services to community facilities/institutions.		
	2.2.7 Municipal Infrastructure and Public	The potential and significance of:		

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
	Service Facilities	– encroachment, severance, displacement – long term alteration/disruption – nuisance effects – change to access/travel time – changes to facilities / services to municipal infrastructure and public service facilities.		
2.3 Noise Sensitive Areas (NSA's)	2.3.1 Transportation Noise & Vibration	– Potential for significant traffic noise increases in Noise Sensitive Areas (NSAs) – Potential for vibration impacts (any sensitive equipment, or vibration impacts during construction)	– The MECP Noise Pollution Control (NPC) guidelines (i.e. NPC-115, NPC-118, NPC-300, NPC-233, NPC-207, NPC-119, NPC-233). These MECP documents establish ambient noise criteria, based on one-hour average sound pressure levels (Leq) and evaluate ambient vibration levels based on either Peak or Root Mean Square (RMS) velocity, as applicable. Noise levels generally rise with increased traffic volumes. Generally, a doubling of traffic volumes results in approximately a 3dBA increase in noise levels. – Based on Ontario Ministry of Transportation (MTO) and MECP Noise Protocol, where a new roadway is proposed and where an existing roadway is proposed to be modified/widened highway noise is to be considered.	– Field investigations – Topographic Maps – Base mapping and field reviews. – Municipal land use information – York Region mapping and information sources – MPAC records – Municipal Staff – Public Consultation – Traffic Volume predictions – Noise Effect Studies – Publications NPC-115, NPC-118, NPC-300, NPC-233, NPC-207, NPC-119

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
			— In addition to MTO/MECP noise protocol York Region Noise Policy and Standard Operating Procedure is to be considered for transportation development projects within York Region.	
2.4 Land Use - Resources	2.4.1 Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes	The potential and significance of: — encroachment, severance, displacement, — long-term alteration/disruption — nuisance effects — change to access / travel time to Indigenous Treaty Rights and use of land and resources for traditional purposes.	It is important to recognize the potential and significance of effects on / to: — Lands used for traditional hunting/fishing — Lands used for harvesting traditional foods — Lands containing locations of medicinal plants — Sacred grounds — Known burial sites	— Indigenous community consultation — Agency consultation (Ministry of Indigenous Relations and Reconciliation, Aboriginal Affairs and Northern Development Canada) — First Nations and Métis communities
	2.4.2 Agriculture	The potential and significance of: — Impacts to prime agricultural areas and agricultural infrastructure — encroachment, severance, displacement, — long-term alteration/disruption — nuisance effects to Agricultural Lands	— It is important to protect prime agricultural lands, especially those with high quality soil classes — It is important to achieve a well-developed transportation network which increases the efficiency of Vaughan's agriculture	— Official land use plans and policies — Provincial Policy Statements — Soil mapping — Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) maps and policies — Canada Land Inventory (CLI) — Provincial Land Evaluation and Area Review (LEAR) — The Greenbelt Plan

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
	2.4.3 Recreational	The potential and significance of: – encroachment, severance, displacement – long term alteration/disruption – nuisance effects – change to access/travel time – changes to facilities / services to recreational areas and facilities.	– It is important that recreational facilities are accessible, as impacts to access will affect use	– Oak Ridges Moraine Conservation Plan (2017) – Vaughan Social Services Study (2009) – Active Together Master Plan (2008) – Agency consultation (Ministry of Tourism, Culture and Sport, Ontario Parks and Conservation Authorities
	2.4.4 Aggregate and Mineral Resources	The potential and significance of: – Encroachment on or loss of aggregate and mineral resources	– It is important to document and minimize impacts to aggregate and mineral resources – Protection of aggregate and mineral resources for future use	– Provincial policy documentation – York Region Official Plans – City of Vaughan Official Plans (2010) – Environmental Protection Act – MECP guidelines and policies
2.5 Major Utility Transmission Corridors		Potential and significance of: – Encroachment, severance, displacement; – Long-term alteration / disruption; – Change to access/ travel time; – Change to facilities / utilities / services to major utility transmission corridors (i.e. railroads, hydro, gas, oil).	– Utility corridors are subject to regulations from owners and governing authorities for operation of utilities including National Energy Board, Ontario Energy Board, Transport Canada, Railway Safety Act, etc.	– Consultation with utility providers, operators and regulatory authorities.
2.6 Contaminated Property and	2.6.1 Existing landfills under Provincial	Potential and significance of:	– Localized significant sources of contamination can be associated	– Field Investigations

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
Waste Management	regulations and ECA requirements	– Encroachment, severance, displacement; – Long-term alteration / disruption; – Change to access / travel time; – Change to facilities / utilities /services to contaminated property and waste management (e.g., Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas); – Road salt impacts; – Collection system for landfill gas	with operating and closed waste disposal sites. Consideration should be given to avoiding / minimizing effects in the "area of influence" of waste disposal sites. – There is the potential that some of the lands in the project area may be contaminated due to the nature of existing and historical land use especially in commercial / industrial areas with heavy industrial activity. – Appropriate contaminant assessments / studies shall be carried on these sites for the project to comply with recommendations of the assessments / studies. – There are potential impacts to existing landfill infrastructure (i.e., road salt liners, monitoring/collection wells, collection systems, etc.) – There are potential impacts to space requirements for future landfill engineering controls, if required by the MECP – There is a potential for roadway maintenance practices (i.e. road salts) to impact the effectiveness of the existing chloride landfill monitoring systems.	– EcoLog ERIS Database Search – MECP Waste Disposal Site Inventory – MECP electronic registry for Records of Site Condition – Technical Standards and Safety Authority – Current and Historical Aerial Photographs – Municipal Directories and Assessment Maps – OBM and NTS Mapping – Historical Plans, Soils, Hydrogeological and Geological Maps – Libraries, Historical Archives, Land Registry Offices and Municipal Offices – Landfill reports prepared for the City of Toronto and City of Vaughan – Certificates of Approvals for Waste Disposal Sites
	2.6.2 Contaminated Properties	Potential and significance of: – Encroachment, severance, displacement; – Long-term alteration / disruption; – Change to facilities / utilities /services to contaminated property		
2.7 Air Quality	2.7.1 Local and regional air	– Qualitative comparison of alternatives for both local and	– The scale of the project is sufficiently small that a	– Traffic volumes

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
	quality impacts; greenhouse gas emissions	regional air quality, and for GHG's, based on traffic volumes, speeds, intersection delays and proximity to sensitive receptors. – Quantitative assessment of local air quality for the preferred alternative. – Consideration of sensitive receptors.	qualitative approach is considered adequate. This meets the spirit of guidance on air quality and climate change from both the MTO and MECP.	– Intersection analysis (turning movements and delay times) – Route alignment drawings – Satellite images, street photos and mapping showing adjacent land uses – Agency Consultation (MECP) – MECP Air Quality Guidelines
3. **CULTURAL ENVIRONMENT**				
3.1 Cultural Heritage – Built Heritage and Cultural Heritage Landscapes	3.1.1 Built heritage resources - These resources may be identified through listing designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions or through technical heritage studies	Potential and significance of: – encroachment, severance, displacement, property acquisition; – long-term alteration/ disruption; – change in area character/ aesthetics; – temporary vibration related effects to built heritage structures; – permanent obstruction of significant views or vistas; – shadows from any new proposed structures (i.e. bridges); – audible or atmospheric elements that may lead to impact (i.e. dust particles from construction activity); – nuisance effects;	– New transportation infrastructure may result in the loss of built heritage resources and cultural heritage landscapes resulting in the removal of significant cultural heritage resources which contribute to the character of an area. – The effectiveness of proposed conservation, mitigation or avoidance measures should be evaluated on the basis of established principles, environmental standards and practices for cultural heritage conservation, as well as compliance with the Ontario Heritage Act.	– Field Investigations – Historical mapping and aerial photographs, municipal, provincial and federal inventories, listings, plaques, easements and designations of National Historic Sites and/or under the Ontario Heritage Act. – Input from other factor areas – Consultation with municipal and regional heritage planning staff or designates, Municipal Heritage Committees, historical societies and other heritage groups as necessary – Consultation with local heritage organizations

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		— change to access / travel time; — change to facilities / utilities / services to BHRs and Cultural Heritage Landscapes (CHLs) of local, provincial or national cultural heritage value or interest including Ontario Heritage Trust easements properties.		knowledgeable about local cultural heritage — Consultation with Ministry of Tourism, Culture and Sport and Ontario Heritage Trust, — 2017 survey investigations — Municipal heritage inventories for designated and listed built heritage structures — Relevant municipal or provincial heritage and/or archaeological assessment reports related to the subject area. — Legislation and guidelines from Ontario Heritage Act, Environmental Assessment Act, Planning Act and Provincial Policy Statements.
	3.1.2 Cultural Heritage Landscapes - These resources may be identified through designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions	Potential and significance of: — encroachment, severance, displacement, property acquisition; — long-term alteration/ disruption; — change in area character/ aesthetics; — temporary vibration related effects to built heritage structures; — permanent obstruction of significant views or vistas; — shadows from any new proposed structures (i.e. bridges); — audible or atmospheric elements that may lead to impact (i.e. dust particles from construction activity); — nuisance effects; — change to access / travel time; — change to facilities / utilities / services to Cultural Heritage		

Summary of Evaluation Factors and Criteria for Alternative Methods					
FACTORS		**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
			Landscapes (CHLs) of local, provincial or national cultural heritage value or interest including Ontario Heritage Trust easements properties.		
3.2	**Cultural Heritage – Archaeology**	3.2.1 Pre-contact and Historic Indigenous Archaeological Sites	– Potential for destruction or disturbance of pre-contact and contact Indigenous archaeological sites of local, provincial or national interest	– Disturbance or destruction of certain archaeological sites of local, provincial or national interest represents a significant cultural loss. – Effects to archaeological resources/sites should be avoided or minimized to the extent possible. – Significant archaeological sites shall be preserved and avoided in accordance with the Ontario Ministry of Tourism, Culture and Sport (MTCS) and Indigenous Community policies and procedures, and all others shall be excavated to MTCS standards.	– Ontario Ministry of Tourism, Culture and Sport (MTCS) Ontario Archaeological Sites Database – Ontario Ministry of Tourism, Culture and Sport (MTCS) Ontario Public Register of Archaeological Reports – Previous archaeological/heritage studies and reports – Historic mapping – Other published and unpublished archaeological literature – Indigenous Communities Ossuary potential modeling
		3.2.2 Historic Euro-Canadian Archaeological Sites	– Potential for destruction or disturbance of historic Euro-Canadian archaeological sites of local, provincial or national interest.		
4.	**TRANSPORTATION**				
4.1	**System Capacity & Efficiency**	4.1.1 Movement of People and Goods	– Potential to support the efficient movement of people between communities based on Level of Service (LOS) and volume to capacity (v/c) on a network screenline and critical link basis.	– The approved Regional Municipality of York Transportation Master Plan within the Preliminary Study Area, suggest that population and employment growth will continue over time and will be important to future economic prosperity. In order for this economic growth to be realized	– Base mapping and field reviews. – Stakeholder consultation – Traffic data collection – Travel Demand Analysis using York Region's Travel Demand Model (EMME)

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
			and efficient transportation system to move people within the Preliminary Study Area is considered fundamental. These plans envision a safe and efficient transportation system that will provide connectivity among transportation modes and offer a balance of transportation choices.	
	4.1.2 System performance during peak periods	— Potential to reduce growth in peak hour travel demand through TDM and TSM strategies.	— There is a need to determine how well transportation solutions operate during peak periods.	
4.2 System reliability / redundancy		— Potential to support system reliability and redundancy for travel between communities during adverse conditions.	— There is a need to determine how well transportation solutions operate during peak periods.	
4.3 Safety	4.3.1 Traffic Safety	— Potential to improve traffic safety based on opportunity to reduce traffic volumes and/or congestion in the study area.	— Transportation agencies have developed design standards to ensure that safety objectives are reflected in all new/expanded infrastructures. These standards are not subject to modification or compromise to avoid/reduce effects, costs, etc.	— Transportation Association of Canada (TAC) Manual – Geometric Design Guide for Canadian Roads — York Region standards
	4.3.2 Emergency Access	— Potential to provide and/or improve emergency access on existing and/or New York Region facilities.	— There is a need to determine emergency access and safety issues related to transportation solutions.	— Consultation with Emergency Services Providers
4.4 Traffic Operations, Mobility & Accessibility	4.4.1 Modal integration, balance	— Potential to improve existing and future transportation conditions for all the transportation modes including	— There is a need to determine how transportation solutions address future needs in relation to existing and proposed future	— Traffic operations simulations (i.e. models)

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
		auto, cyclist, pedestrian and transit. Assess performance of proposed transportation improvement alternatives, based on transportation analysis (e.g. screenline analysis and intersection operational analysis – identifying volume/capacity ratio, level of service, travel time / delay, etc.); and potential to address congestion and opportunity to provide network improvements for various transportation modes.	transportation infrastructure (like transit, ride-sharing and other transportation modes).	– TAC Manual – Geometric Design Guide for Canadian Roads – Base mapping and field reviews
	4.4.2 Linkages to Population and Employment Centres	– Potential to improve accessibility to urban growth centres for people and goods movement based on higher order network continuity and connectivity. .	– Reducing travel times, out-of-way travel and improving reliability would lead to lower transportation costs and benefit the local economy.	– Base mapping and field reviews. – Traffic operations simulations (i.e. models)
	4.4.3 Accommodation for pedestrians and cyclists	– Potential to accommodate pedestrians and cyclists within critical travel corridors. As well as preservation of existing and future planned pedestrian and cycling facilities including nature trails.	– Disruption of community activities may affect quality of life for residents, businesses and community groups including local pedestrian and cycling facilities.	– Stakeholder input – Consultation with Community Groups
4.5 Network Compatibility	4.5.1 Network connectivity	– Potential to improve Regional and local network connectivity within, through and to/from the Preliminary Study Area.	– There is a need to determine how transportation solutions address future needs in relation to existing and proposed future transportation infrastructure (other transportation modes).	– Traffic operations simulations (i.e. models) – Consultation with City of Vaughan

Summary of Evaluation Factors and Criteria for Alternative Methods				
FACTORS	**SUB-FACTORS**	**CRITERIA**	**RATIONALE**	**DATA SOURCE**
	4.5.2 Flexibility for future expansion	– Potential to address future transportation needs beyond the forecasted planning horizons.	– There is a need to determine the flexibility of transportation solutions to address future needs beyond the forecasted planning horizon.	– Stakeholder Consultation
4.6 Engineering	4.6.1 Constructability	– Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	– Physical conditions and staging issues can affect the feasibility of implementing transportation solutions.	– TAC Manual – Geometric Design Guide for Canadian Roads – York Region standards – Consultation with affected stakeholders
	4.6.2 Compliance with design criteria	– Conformity to applicable York Region safety and design standards.	– Design standards have been developed to ensure that safety objectives are reflected in all new/expanded infrastructure	
4.7 Construction Cost		– Relative road construction costs.	– There is a need to identify the costs associated with possible transportation solutions. Construction costs can influence the feasibility of a given Alternative Method.	– Cost data – Base mapping and field reviews