
Vaughan Tomorrow

OUR CITY OUR FUTURE

# A New Path

# Transportation Master Plan

VAUGHAN

November 2012

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# 1. Introduction

The Vaughan Transportation Master Plan (TMP) is the City's transportation "blueprint" and will assist with addressing growth in a sustainable manner through to 2031. In response to the Provincial *Growth Plan for the Greater Golden Horseshoe*, the City has seized a unique opportunity to update its growth management strategy; the TMP is an essential part of Vaughan's transformation into a more sustainable destination. Working with stakeholders and the general public, the City has developed a TMP that balances the need for local improvements, strong Regional investments in transit service and arterial road improvements, sidewalks, on-street and off-street bicycle facilities, and a mix of land uses and activities.

## 1.1 Historical Patterns of Growth

The City of Vaughan has evolved from a group of four villages (Woodbridge, Kleinburg, Maple and Thornhill) and other small settlements, which were incorporated with the surrounding countryside into the Town of Vaughan in 1974. With the ensuing expansion of water and sewer infrastructure, the groundwork was laid for an explosion of growth. Over the 1970s and 1980s, population grew from 15,000 to 100,000 and in 1991, Vaughan became a City. During the 1990s, Vaughan continued its fast growth pace, not only in population, but also in employment. Currently, Vaughan is home to over 250,000 residents and 160,000 jobs.

The growth over the past 40 years has taken place in primarily a suburban form with residential development characterized by single family homes on large lots in subdivisions turned inward from the bounding arterials with few through routes connecting one to the other. Over the past 20 years, employment in the City has thrived as a result of the two major inter-modal railyards, excellent highway connections, proximity to Pearson International Airport and the availability of large tracts of relatively inexpensive land. Large employment areas have developed separated from residential communities. Commercial development has been built primarily as single storey structures within industrial parks or large stand-alone retail centres with extensive surface parking.

From a transportation perspective, these patterns of growth have resulted in an auto-oriented urban structure for the City of Vaughan with the resultant following major issues:

- An increasing number of cars and trucks travelling increasingly longer distances, creating greater levels of congestion on a substantially disjointed road network;

- Efficient and cost-effective public transit being difficult to provide, thereby limiting solutions to traffic congestion; and
- Separation of places to live, work and shop, making it difficult for Vaughan residents to walk or cycle as part of their daily routines.

It is within this historical growth context that the City initiated the comprehensive Vaughan Tomorrow growth management work plan which included, among other components, development of a Transportation Master Plan completely integrated with the new City-wide Official Plan.

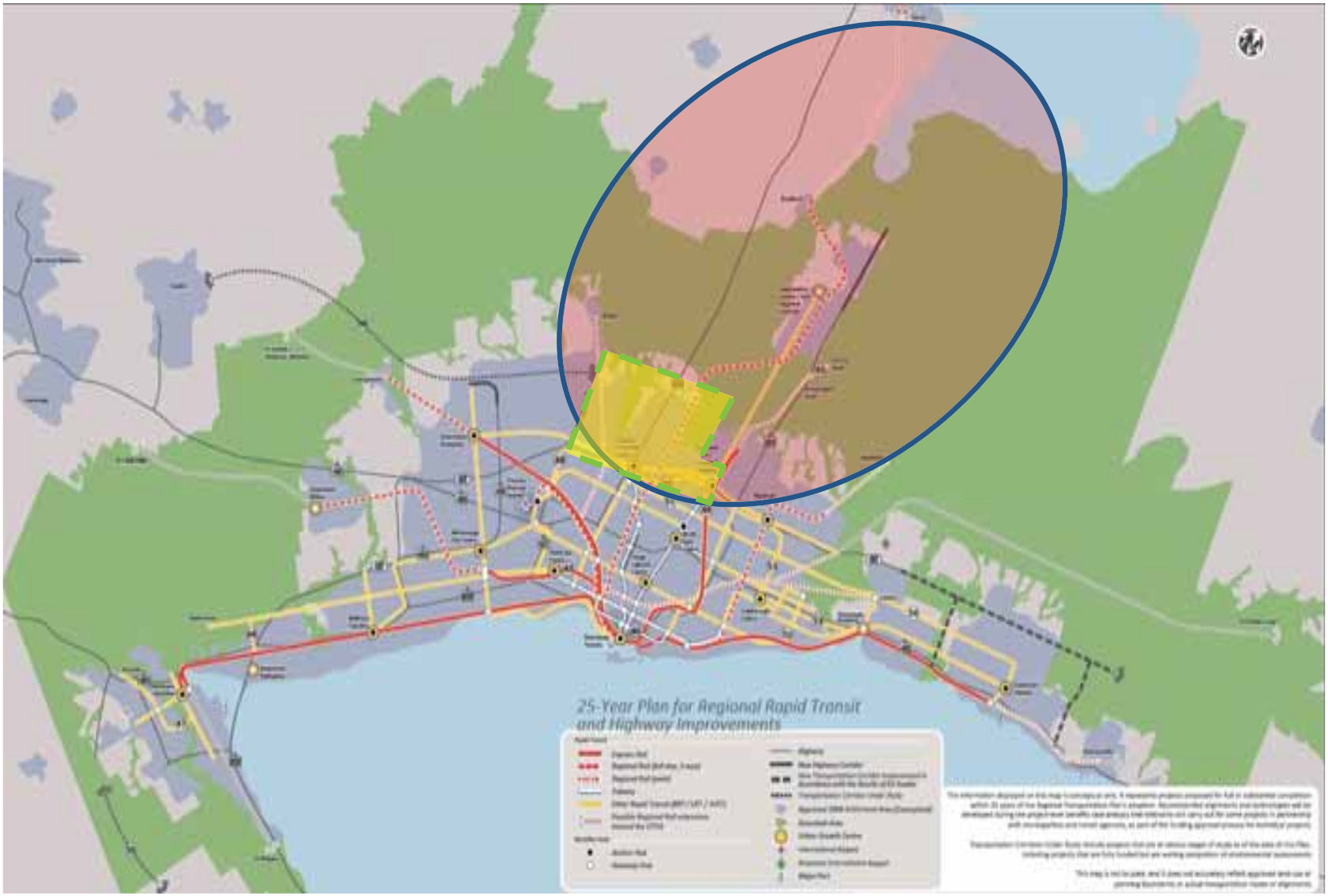
## 1.2 Planning Background and Regional Context

Until very recently, the current planning document for the City of Vaughan has been Official Plan Amendment (OPA) 600, which was introduced and approved by Regional Council on June 21, 2001 as an improvement and refinement to the original policy and land use framework of OPA 400. This document explains the planning rationale and includes policies to guide land use development including transportation planning. The Vaughan TMP builds on the OPA 600 and provides a strategy within the context of York Region and neighbouring municipalities including Markham, Richmond Hill, King Township, the City of Brampton in Peel Region, and the City of Toronto. These municipalities work in partnership to provide transportation services across the central portion of the Greater Toronto and Hamilton Area (GTHA).

Ultimately, population and employment growth, and intensification of this growth, in the York Region and beyond is set by the *Growth Plan*. It sets policies for managing growth and development, and guiding planning decisions throughout the Greater Golden Horseshoe (GGH) through to 2031, representing a broad planning vision. York Region, in consultation with its local municipalities, is responsible for planning and allocating growth within its boundary. The Region has recently revised its Official Plan to conform to the *Growth Plan* and as part of that process has updated its Regional Transportation Master Plan.

Within the GTHA, Metrolinx has been established to develop and implement an integrated multi-modal transportation plan. This Regional Transportation Plan (see Exhibit 1-1) guides long term planning for transportation across the GTHA, and a number of actions are moving forward. GO Transit is also part of Metrolinx, which provides inter-regional rail and bus transit services throughout the GTHA, including Vaughan. Regional and local transit services are provided by York Region (York Region Transit / VIVA). Partnership with Vaughan's neighbouring municipalities, as well as provincial agencies, the York Region and other stakeholders, is critical to the success of the TMP.

## Exhibit 1-1: 25-Year Plan for Regional Rapid Transit and Highway Improvements




*Source: The Big Move, Metrolinx RTP, November 2008*

## 1.3 Study Purpose

The City of Vaughan's TMP is an element of a wider initiative in Vaughan, working toward a sustainable strategy for future growth. Vaughan Tomorrow, the City's Growth Management Strategy, identifies and addresses the ongoing challenges and opportunities that will shape the future of the City. The program overview is illustrated in **Exhibit 1-2** and as part of this process a number of initiatives have recently been completed or are underway, including:

- Vaughan Vision 2020, outlining the City's mission, vision, goals and objectives;
- Environmental Master Plan, ensuring sustainability throughout the City's activities (adopted April 2009);
- Official Plan Review, creating a new Official Plan and secondary plans to guide development in Vaughan to 2031 (adopted September 2010); and
- A series of individual master plans to support these growth management initiatives, including the TMP.

**Exhibit 1-2: Vaughan Tomorrow Program Overview**


Three key issues need to be addressed in the TMP, to ensure its long term sustainability. It must further the City's integration of land use and transportation; minimize impacts of transportation improvements on the natural environment; and reduce dependence on the automobile, through minimizing the growth in travel demand and through providing a greater menu of travel choices.

The purpose of the Vaughan TMP is to evaluate transportation needs and identify policies, infrastructure and services needed to efficiently accommodate the population and employment growth to 2031. To secure sustainable growth, the TMP seeks to make transit more competitive for travel within the City and the employment areas that are expected to account for the most significant increases in travel. The TMP has been developed to ensure a more effective transportation system, through elements including: integrating transportation and land use development; integrating local, regional and provincial infrastructure and services; promoting economic development; and supporting healthier lifestyles.

In addition to addressing the transportation needs of the City as a whole, the TMP provides additional analysis for four locations to support the new Official Plan's Focused Area Studies and Secondary Plan Areas. These areas are: Vaughan Metropolitan Centre (VMC); Kleinburg-Nashville Focus Area; Woodbridge Core Focus Area; and the West Vaughan Employment Area. The transportation needs for these areas is documented in **Appendices A and B**. The Yonge / Steeles Corridor is also a Focus Area where separate transportation studies were already underway or committed. The report on the *Yonge Steeles Corridor Secondary Plan* is available at the City's Vaughan Tomorrow website. The transportation implications of the proposed intensification of this area have been considered in this TMP.

### *1.3.1 Addressing Future Transportation Needs*

Based on the *Growth Plan* and York Region's recommended allocation of growth, the City is anticipating significant increases in population and employment. Vaughan's population and employment are projected to increase by 68% and 64% between 2006 and 2031, respectively, with 45% of residential growth expected to be within Intensification Areas and the remainder in currently designated areas (discussed further in **Chapter 3**). This growth is anticipated to place increased pressure on the City's transit services, roads, rail facilities and walking and cycling infrastructure. As the need for travel increases and the City continues to grow, a long-term transportation strategy is needed to manage transportation demand, and improvements in infrastructure and services. Vaughan is already experiencing peak period congestion on its roadways, and its transit mode share is only about 6%.

The Vaughan TMP will assist accommodation of the City's growth and creation of opportunities for more sustainable forms of travel. In order to address current and future transportation needs, the TMP includes road infrastructure improvements; however, its focus is on identifying new ways of managing growth and congestion, and providing for more sustainable travel alternatives now and into the future. Through providing more and better transportation choices and proactively managing travel demand, the City will be able to provide sustainable transportation solutions for the long term.

### *1.3.2 Satisfying Class EA Requirements*

While the Vaughan TMP seeks a more balanced approach to managing future growth and congestion, the City has identified several local road improvements that will improve connections to new Regional

infrastructure, improve access to future local neighbourhoods, support intensification of development in transit-oriented nodes and corridors, and support increased local transit use, cycling and walking (see **Chapter 6**). Individual road improvements recommended in this Master Plan may require more thorough analyses through the Municipal Class Environmental Assessment (EA) process.

## What is a Master Plan?

Master Plans are long range plans that integrate infrastructure requirements for existing and future land uses with environmental assessment planning principles. The Municipal Class EA Master Plan process examines infrastructure systems or groups of related projects in order to outline a framework for implementation of subsequent projects or developments with environmental protection and mitigation measures integrated into the project. Requests to the Minister of Environment for a Part II Order (to require an Individual EA) are possible for specific projects identified in the Master Plan, but not the Plan itself.

The Municipal Class EA Master Plan typically differs from project-specific studies in several key respects. Long range infrastructure planning enables the proponent to comprehensively identify needs and establish broader infrastructure options. The combined impact of alternatives is also better understood, possibly leading to other more positive solutions. The opportunity to more fully integrate with land use planning also enables the proponent to consider different perspectives when examining the full effect of decisions (MEA, 2007). More specifically, Transportation Master Plans recognize the importance of all modes of travel, and emphasize that the increased use of transit is a key component of a GTA-wide integrated transportation strategy.

The Vaughan TMP addresses Phases 1 and 2 of the five-phase Municipal Class EA Process shown in the graphic below.

### The Five-Phase Municipal Class Environmental Assessment Process

| | |
|---|---|
| **Phase 1*:** | Identify the problem or opportunity. |
| **Phase 2*:** | Identify alternative solutions to address the problem or opportunity by considering the existing environment, and establishing the preferred solution. |
| **Phase 3:** | Examine alternative methods (designs) to implement the preferred solution. |
| **Phase 4:** | Complete an Environmental Study Report that documents the study process. |
| **Phase 5:** | Complete contract drawings and documents and proceed to construction and operation. |

**The Vaughan Transportation Master Plan addresses these phases of the EA process*

Depending on the scope and level of analysis of a Master Plan, the requirements of Phases 1 and 2 may be satisfied for projects identified through this process. Conversely, depending on the complexity of issues to be addressed, Phases 1 and 2 may have to be revisited as they relate to a specific project.

The EA process addresses projects by classifying them into different “schedules” according to their environmental significance (Schedule A, A+, B or C). The level of complexity and the potential effects of a project will determine the appropriate schedule that in turn will determine which phases will need to be addressed.

The four schedules of the Class EA process are summarized as follows:

1. Schedule A projects are limited in scale, have minimal adverse effects and include the majority of municipal road maintenance and operational activities. These projects are approved and may proceed directly to Phase 5 for implementation. Examples of Schedule A projects include the construction of parking lots that cost less than $8.7 million and the installation of safety projects (such as lighting or safety barriers) that cost less than $2.2 million.
2. Schedule A+ projects are pre-approved but the public must be advised prior to project implementation. Examples of Schedule A+ projects include streetscaping and localized operational improvements that cost less than $2.2 million.
3. Schedule B projects generally include improvements and minor expansions to existing facilities. These projects have some potential for adverse environmental impacts, and consultation with those who may be affected is required. Examples of Schedule B projects include the installation of traffic control devices, or smaller road-related projects. These kinds of projects require only the completion of Phases 1 and 2 of the Class EA process.
4. Schedule C projects have the potential for significant environmental effects and must proceed under the full planning and documentation procedures specified in the Class EA document. Schedule C projects generally include the construction of new and significant widenings to existing roadways.

A separate document (Appendix I) has been prepared to summarize proposed City of Vaughan projects and relate them to EA requirements.

## 1.4 Study Process

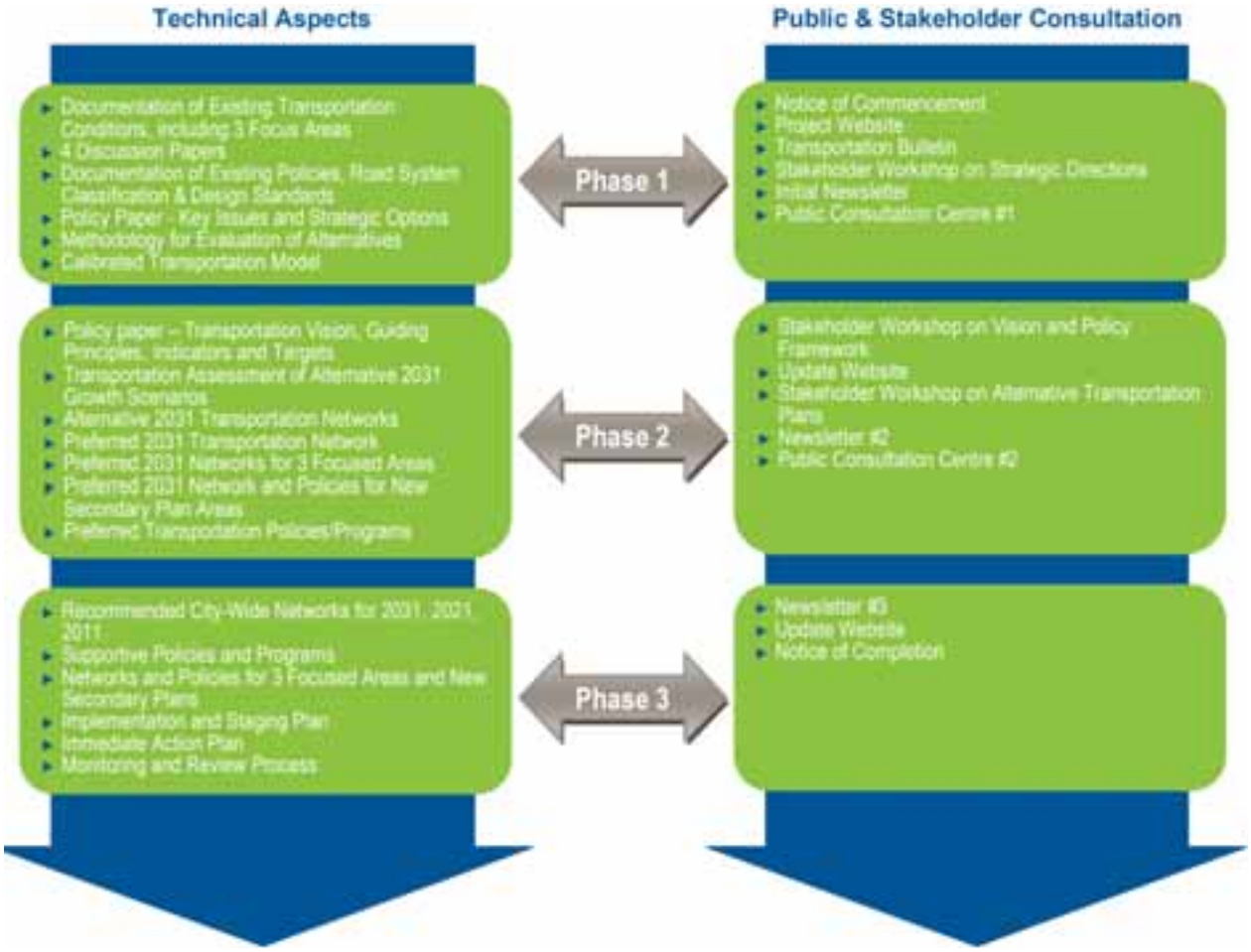
The TMP schedule and many of the work program tasks were intimately integrated with the work of the Official Plan Review team. At key points presentation of interim results were made to the City's Official Plan Review Committee and many joint workshops and public meetings were held, particularly related to the three focus areas and new secondary plan area. TMP team members also attended many working level meetings of the core Official Plan Consultation Team. Development of the City of Vaughan's TMP has proceeded in phases, with close integration of consultation activities and technical deliverables throughout the project, as shown in **Exhibit 1-3**. The three phases are as follows:

**Phase 1:** Identifies the key issues and strategic direction options to set the stage for development of a long-range transportation vision. This process involved preparation of discussion papers on key transportation issues, defining a strategic transportation direction and vision, and developing a City-wide travel forecasting model and methodology for network evaluation.

**Phase 2:** Assesses alternative transportation strategies and plans that would accommodate the City's preferred long-term growth plan, and develops complementary plans and policies for three special focus areas and one new secondary plan area in the Highway 427 extension corridor.

**Phase 3:** Finalizes the long range plan, develops an implementation strategy and phasing plan, sets out an immediate action plan, and formulates a monitoring framework to verify its continuous progress.

**Exhibit 1-3: Integration of Technical Aspects with Public and Stakeholder Consultation**




A key component of the study process was developing a City-wide travel demand model to forecast future conditions and serve as the primary analytical tool for evaluating future transportation network improvements. This is a GTA-wide EMME model based on the York Region AM peak period model, calibrated to simulate City of Vaughan conditions with multi-modal capability. A key addition to the model was the development of a PM peak period model. Representing the highest peak during a typical weekday, the PM peak period was used for analysis in addition to the AM peak period. The City-

wide analysis included assessment of all east-west and north-south travel corridors at key locations (referred to as screenlines). Separate, more detailed analyses were conducted for the Focused Areas and the West Vaughan Secondary Plan Areas, to assess finer road and transit networks.

## 1.5 Public Engagement

Public and stakeholder engagement was a central element of the Vaughan Transportation Master Plan. The primary vehicles of engagement were newsletters, public open houses, a series of "*A Blueprint to Move Vaughan*" workshops, and meetings of a Technical Advisory Committee (TAC).

### *1.5.1 Public Open Houses*

Two public open houses were held at key milestones of the TMP. The first event was held on May 28, 2009, as part of a larger open house for the City's Official Plan Review process. Relative to the Transportation Master Plan, the open house panels:

- Provided an overview of the study process;
- Illustrated how the Transportation Master Plan is integrated into the Official Plan;
- Broadly described existing transportation conditions; and
- Identified opportunities for greater use of transit, cycling, and walking for travel.

This open house was promoted as part of the Notice of Commencement for the Municipal Class EA process, published as an advertisement in the local print media (see **Appendix C1**).

The second open house was held on June 8, 2010 as a stand-alone TMP event. At this event, the project team presented:

- Study principles, goals and vision (developed previously in consultation with residents and stakeholders);
- Local road improvements proposed through the Municipal Class EA process; and
- Planned pedestrian and cycling facilities, regional transit networks, and supportive policies proposed as part of the Master Plan.

Several panels were interactive, including so-called "dot-mocracy" boards that asked residents to indicate their level of support for specific road improvements and policies. The public open house also included a presentation detailing the study process, and a "questions and answers" period to clarify key issues (see **Appendix C2**).

In advance of each open house, a project newsletter was mailed to stakeholders and distributed to several public locations throughout Vaughan. The newsletters presented an overview of items to be discussed and invited the public to attend the follow-on open houses (see **Appendix C3**).

### 1.5.2 Workshop Series

The City hosted a series of three workshops during the winter of 2009-2010 under the banner, *A Blueprint to Move Vaughan.* Stakeholders participating in the workshops included ratepayers' associations, provincial and federal ministries, regional and municipal agencies and local school boards. Each workshop was held once in the afternoon and again in the evening to accommodate all participants.

The first workshop, held on December 9, 2009, included three presentations followed by break-out sessions. Its focus was to brainstorm ideas that could increase transit use and other modes of travel in Vaughan, including potential infrastructure and policy improvements. Attendance at the evening workshop was more limited in numbers, allowing the project team to discuss the study more intimately with participants.

The second workshop was held on February 3, 2010. Its purpose was to engage stakeholders on the proposed study principles, goals and strategic actions, all with an emphasis on supporting sustainable travel. Both the afternoon and evening sessions included a recap of the previous workshop, as well as a presentation on the proposed principles, goals, criteria and indicators to measure the strategic transportation options. As part of this presentation, participants were led through a process to assess preliminary study principles, goals and actions and offer revisions. The revised principles, goals and actions were distributed to participants in the form of a matrix at the third and final workshop.

The third workshop was held on March 3, 2010, and its primary purpose was to examine the preliminary transportation alternatives assessed by the project team. Both the afternoon and evening sessions included a summary of the previous workshop, a discussion of the revised set of principles, goals and strategic actions, and the project team's preliminary assessment of potential local infrastructure improvements. Following the presentation, a facilitated discussion took place on the potential infrastructure improvements (see **Appendix C4** for a detailed summary of the workshops).

### 1.5.3 Technical Advisory Committee

A Technical Advisory Committee (TAC) was established at the outset of the TMP, and met three times during the study process. TAC membership comprised staff from the City of Vaughan, adjacent municipalities, York Region, York Region Transit, Smart Commute, Province of Ontario, Metrolinx, GO Transit and Toronto and Region Conservation Authority.

The first TAC meeting was held on May 6, 2009 in advance of the first public open house. This meeting included an overview of the study process, project schedule, deliverables and role of the committee. TAC members presiding from outside of Vaughan provided information on those studies that may be relevant to the TMP.

The second TAC meeting convened on March 3, 2010, with a focus on the preliminary study principles, goals and actions as well as alternative strategic directions developed to address future conditions.

The third TAC meeting, held on September 14, 2010, focused on preliminary ideas for the study's recommendations, phasing plan, priorities, and immediate action plan.

Documentation of the three TAC meetings is included in **Appendix C5**.

## 1.6 Transportation Issues and Challenges

The initial phases of the Master Plan study included development of four discussion papers on the following topics:

- Existing Transportation Conditions, Trends and Future Plans;
- Transportation Demand Management;
- Role of Transit; and
- Safety and Traffic Calming.

The intent of each discussion paper was to document existing conditions and policies, to summarize key issues and challenges to be addressed; and to explore options for alternative directions. These four papers are included in **Appendix D**.

A number of transportation issues and challenges were identified through this process. Key transportation-related issues for the City of Vaughan are described as follows:

- Can the City of Vaughan, together with Region of York, afford to supply sufficient transportation capacity to match the rapid growth in travel demand?
- Does the City want a society increasingly more dependent on the automobile?
- Does Vaughan need additional sources of funding to accommodate growth and manage the resultant travel demands?
- Should Vaughan travel be so heavily oriented to Toronto?
- How can Vaughan provide for efficient movement of goods to support its economic vitality?
- How should the City deal with the threat to its air quality posed by the rapid growth in auto and truck travel?
- Are current and planned development densities high enough to support efficient public transit?

Contemplation of these issues led to identification of challenges associated with each one. **Exhibit 1-4** shows the key transportation issues and challenges faced by the City of Vaughan. Addressing these challenges together with technical assessment of the City's growth and travel forecasts, as well as support for the sustainability principles identified as part of the TMP process has formed the basis for development of Vaughan's "New Path" Transport Vision, long range plan and implementation strategy (see **Chapter 4**).


Source: Urban Strategies

## Exhibit 1-4: Key Transportation Issues and Challenges for Vaughan

| Issues | Challenges |
|---|---|
| 1. Can Vaughan afford to supply sufficient capacity to match rapid growth in travel demand? | A. How to achieve development growth aspirations with reduced increases in travel demand (i.e., smart growth).<br>B. How to accommodate greater portions of travel demand by non-auto modes.<br>C. How to secure additional sources of funding. |
| 2. Does Vaughan want a society increasingly more dependent on the automobile? | B. How to accommodate greater portions of travel demand by non-auto modes.<br>D. How to make travelling by auto more difficult and/or expensive.<br>E. How to reduce the length of auto trips. |
| 3. Does Vaughan and/or the Region need additional sources of funding to accommodate/manage growth and resultant travel demands? | C. How to secure additional sources of funding.<br>F. How to make best use of existing infrastructure, so as to minimize new capital expenditures.<br>G. How to allocate limited funds to most cost-effective projects.<br>H. How to maintain our infrastructure in a state of good repair. |
| 4. Should Vaughan travel be so heavily oriented to Toronto? | I. How to develop a more self-contained City. |
| 5. How can Vaughan provide for efficient movement of goods to support its economic vitality? | J. How to spread truck traffic to off-peak periods.<br>K. How to enhance attractiveness of rail mode.<br>L. How to support more efficient movement of goods by truck. |
| 6. How should the City deal with the threat to its air quality posed by the rapid growth in auto and truck travel? | B. How to accommodate greater portions of travel demand by non-auto modes.<br>E. How to reduce the length of auto trips.<br>M. How to reduce emissions from autos and trucks. |
| 7. Are current and planned development densities high enough to support efficient public transit? | N. How to make new development more transit friendly, without necessarily increasing densities.<br>O. How to rely more on infill development. |

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## List of Exhibits

# 2. Vaughan Today – Existing Conditions

## 2.1 Introduction

As discussed in **Chapter 1**, the City of Vaughan is centred on Highway 400 immediately north of Toronto, and occupies the southwestern portion of York Region. Its four main communities include Kleinburg, Maple, Woodbridge and Thornhill. The City is the fastest growing municipality in York Region, and is characterized by its rapid population and employment growth and by its mix of residential, commercial and industrial land uses alongside agricultural uses, open space and parks. People and goods movement are served within and through the City by an extensive, multi-modal transportation system.

## 2.2 Land Use and Development

### *2.2.1 Population and Employment*

As the fastest growing municipality in York Region, the City of Vaughan has grown by more than 180,000 people between 1986 and 2006, and more than 15-fold since 1971. Its annual growth rate of more than 8% is among the highest across Canada's municipalities. Much of this rapid growth has been due to migration of people into York Region and Vaughan following the development of the York-Durham Servicing Scheme, which opened up large areas of newly available serviceable land for development. In 2006, the City contained about 249,000 residents, 27% of the total York Region population.

Between 1971 and 2006 the annual employment growth rate in the City of Vaughan was about 8%, which was the highest within York Region. Employment growth has increased in line with population growth, reflecting the relative strength of the City's economy. Vaughan's 2006 employment was about 162,000 jobs, 33% of York Region's employment and comprising the Region's highest employment share.

### *2.2.2 Land Use*

The City of Vaughan is characterized by a diverse mix of land uses, described in the new Official Plan as follows:

- **Natural Areas and Countryside** – includes environmental, agricultural or rural purposes
- **Community Areas** – include low-rise residential purposes, including related parks, community, institutional and retail uses
- **Employment Areas** – include industrial, manufacturing, warehousing, small and medium-sized offices, ancillary retail uses and parks
- **Intensification Areas** – providing for a range in intensity of use as discussed in **Chapter 3**

Additionally, the City has identified areas with significant future growth pressure that require more detailed transportation and urban planning and design analysis; these are discussed in **Chapter 3**.

### *2.2.3 Natural Heritage*

Vaughan's Natural Heritage Network consists of a wide range of natural features; its representation as per the City's new Official Plan is shown in **Exhibit 2-1**, and represents an interconnected system of natural features and functions. The Natural Heritage Network includes lands identified in the Provincial *Greenbelt Plan* and *Oak Ridges Moraine Conservation Plan*, and specific policies have been developed for these areas consistent with Provincial Plans and York Region policies. The network also includes Core Features to be protected and enhanced, such as wetlands, woodlands and valley and stream corridors. Enhancement Areas either add to or connect these Core Features. **Appendix E** documents Existing Environmental Conditions in detail.

The City's Natural Heritage Network serves as a guide for the development of solutions to address Vaughan's future transportation needs, supporting a balanced transportation system that seeks to avoid negative impacts to its natural heritage system, wherever possible.

## 2.3 Transportation

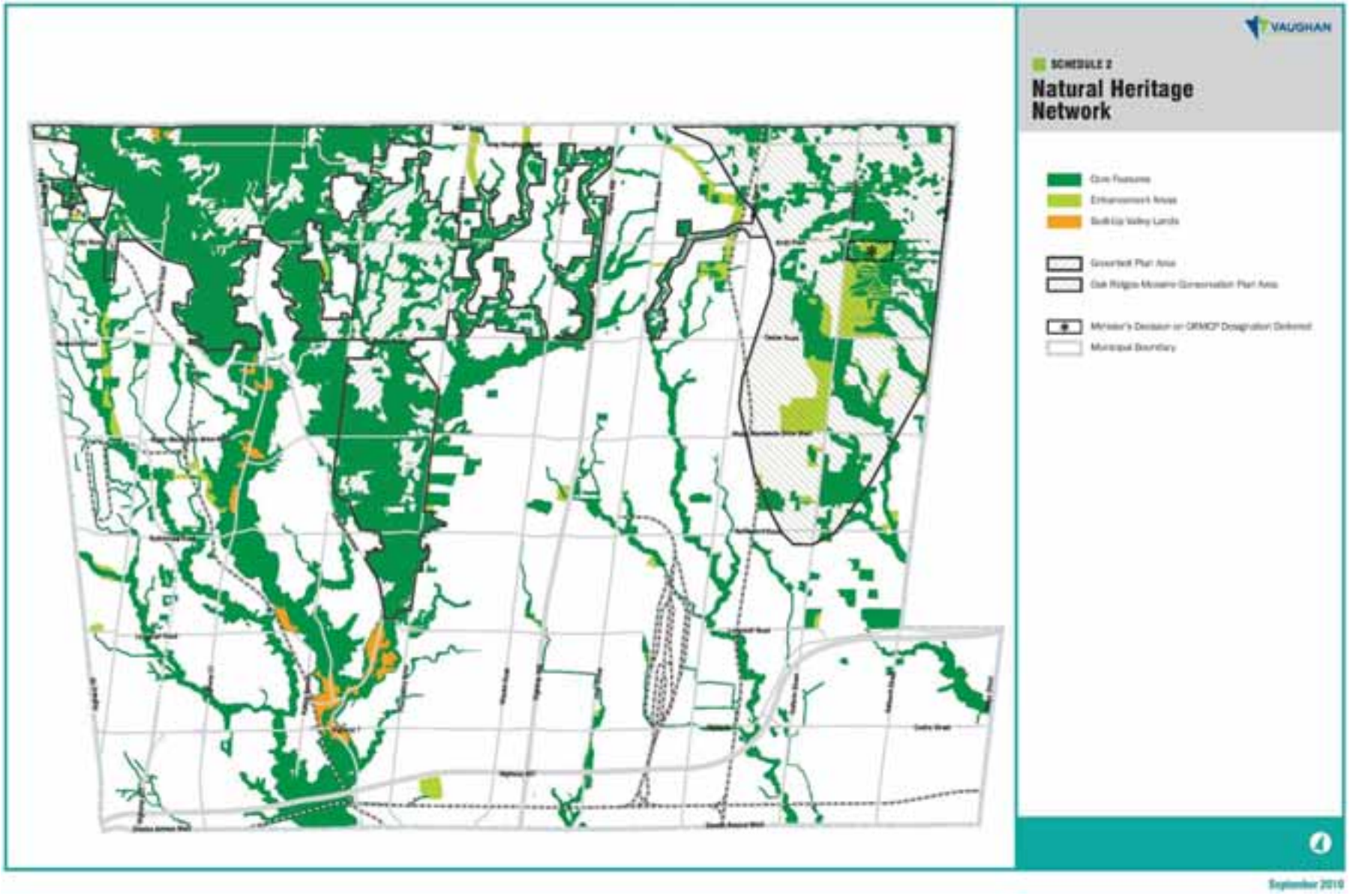
The City of Vaughan's transportation system consists of a roadway system as well as a transit network, and a pedestrian and cycling (active transportation) network. In 2006, approximately 500,000 total daily person trips were generated within the City of Vaughan, about 27% of the 1.8 million daily person trips generated in York Region[1]. The City's average daily trip rate is 1.96 per person, slightly higher than the average 1.92 daily trips per person across York Region. Average daily trip lengths in the City range from 700 m by foot, to more than 24 km by GO Rail.


Source: Urban Strategies

The majority of weekday trips generated in the City occur during the AM and PM peak commuting periods: the AM period is concentrated with up to 12% of daily trips in the hour starting at 8:00AM, while the PM period travel is spread over several hours, with two peaks at 3:00PM and 5:00PM.

1. *2006 Transportation Tomorrow Survey*

**Exhibit 2-1: City of Vaughan Natural Heritage Network (Official Plan Schedule 2)**



In 2006, Vaughan residents made about 90,500 daily work trips. Almost half of them were destined to the City of Toronto, with about 22% of those oriented to the downtown core, another 22% to the central part of Toronto (excluding the core) and the remaining 56% scattered throughout the rest of Toronto. The share of work trips by Vaughan residents remaining in Vaughan was about 30%.

A summary of the City of Vaughan's transportation services and infrastructure is provided below, based to a large extent on the content of the aforementioned 4 discussion papers (**Appendices D1, D2, D3 and D4**).

### *2.3.1 Road Network*

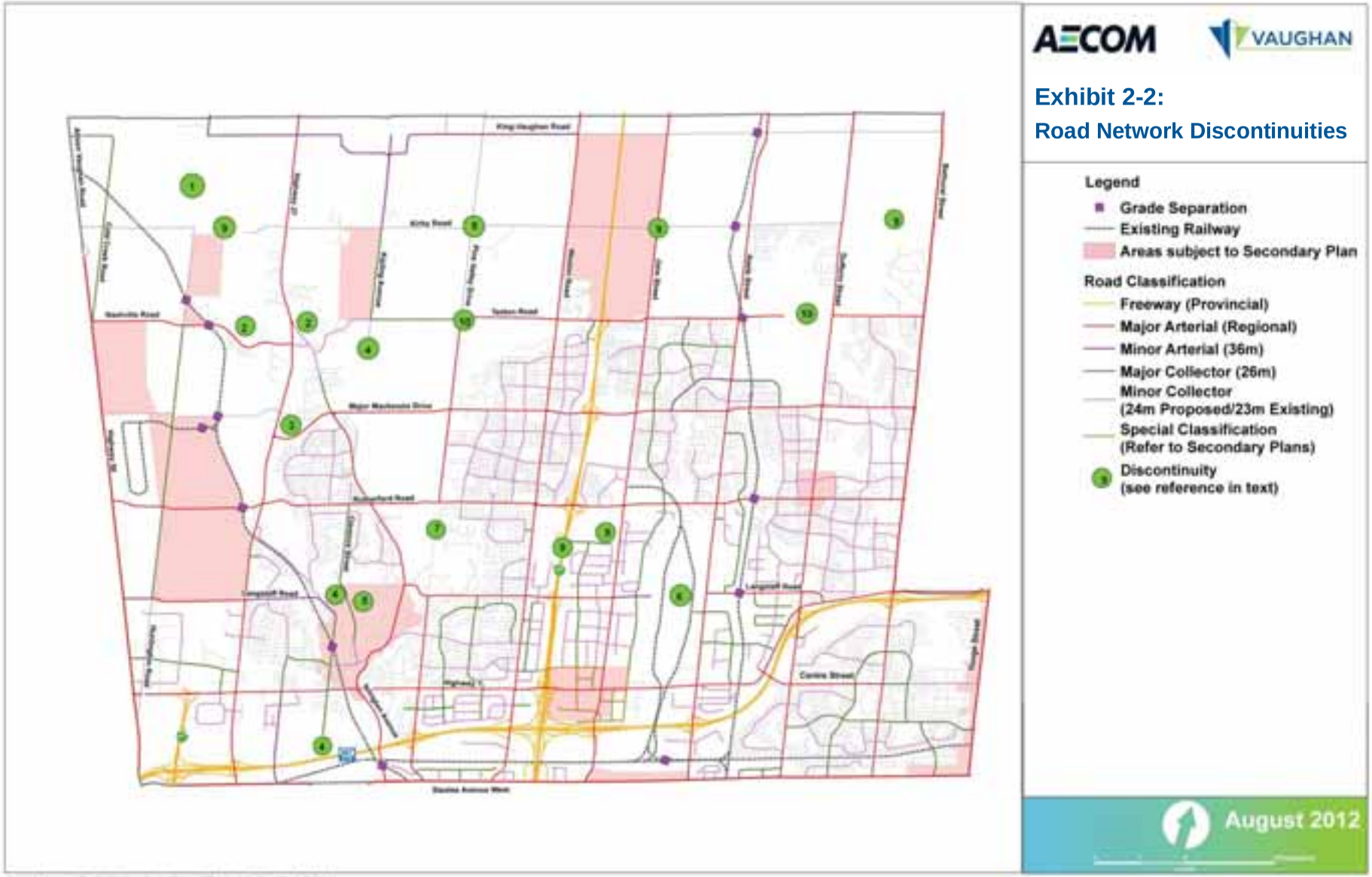
The road network serving Vaughan is comprised of 400-series highways, arterials, collector and local roadways. The City is responsible for collector and local roadways, while much of the arterial network is owned and maintained by York Region and the Province owns and maintains the 400-series highway network. **Exhibit 2-2** illustrates the existing hierarchical network of roads serving the City. The provincial 400-series highways include Highways 400, 407 and 427. Major and minor arterials generally form block grids and function as the main thoroughfares connecting to the Provincial highway system, and intersecting with collector roads and other arterials. Some of Vaughan's east-west arterials include Highway 7, Rutherford Road, Major Mackenzie Drive, Langstaff Road, Teston Road, Kirby Road and King-Vaughan Road. North-south arterials include Highway 27, Islington Avenue, Weston Road, Jane Street, Keele Street, Dufferin Street and Bathurst Street. The City's collector roads provide organization for the local street system within residential / commercial areas and provide the main connecting points to the arterial system. These roads are generally designed to be continuous and typically carry moderate traffic volumes. Examples of Vaughan's collector roads include Zenway Boulevard, Martin Grove Road, Kipling Avenue, Vellore Woods Blvd, Creditstone Road, Westminster Drive and Clark Avenue. Local roads generally connect to these collectors and provide travel options within neighbourhoods. They also serve to provide access to individual properties in residential and commercial areas.


Source: Urban Strategies

It is worth noting that there are many discontinuities in the existing road grid, which impact the efficiency of travel. These major gaps are as follows (numbers refer to locations in **Exhibit 2-2**):

1. Discontinuity of Huntington Road between north of Nashville Road and King-Vaughan Road
2. Discontinuities in the Nashville Road alignment east and west of Highway 27

## Exhibit 2-2: Road Network Discontinuities



3. Significant jog in Major Mackenzie Drive at Highway 27
4. Fragmented alignment of Kipling Avenue from south of Highway 7 throughout the City
5. Discontinuity of Langstaff Road between Kipling Avenue and Islington Avenue
6. Discontinuity of Langstaff Road between Creditstone Road and Keele Street
7. Discontinuity of Pine Valley Drive between Clubhouse Road and Rutherford Road
8. Missing Bass Pro Mills Drive connection to the collector road network west of Highway 400
9. Discontinuities in Kirby Road alignment west of Highway 27 and between Bathurst and Dufferin, plus the jogs at Pine Valley Drive and at Jane Street
10. Discontinuities of Teston Road between Dufferin and Keele and the jog at Pine Valley Drive.

As a result, there are few continuous arterials that cross from one end of the City to the other, particularly in an east-west direction and north-south in the western half of the City.

The grid network of arterials is based on the 2 km square block that has formed the basis for development approvals within the City over the past 40 years. Due to the aforementioned discontinuities of the basic grid, the presence of a strong collector road system is more important to Vaughan than many other municipalities. As a result, a policy within OPA #400 (and reinforced in OPA #600) called for three continuous collectors wherever possible in each direction within each development block (i.e., 3 east-west collectors and 3 north-south collectors). However, due to environmental constraints and other reasons, this has been difficult for the City to consistently achieve. One such reason relates to the challenges associated with traffic calming in residential communities. With the provision of more continuous collectors, concerns rose regarding the infiltration of traffic through neighbourhoods. The resulting implementation of traffic calming measures such as 4-way stops and speed bumps has reduced the effectiveness of residential collector roadways and led to opposition to the completion of missing links in the collector network.

Related to the importance of the collector road network is the specific need for mid-block crossings of 400-series highways. These major facilities (such as Highway 400) pose major barriers to crossing traffic, often resulting in heavy congestion on the arterial crossings which also have to serve as interchanges with the freeway traffic, thus limiting the flow of crossing traffic. Where residential communities abut freeways, proposals for mid-block crossings have also led to major community opposition. Therefore, wherever possible, mid-block crossings should be built in advance of adjacent developments.

The private automobile provides the main mode of travel in the City of Vaughan, with an 80% mode share in the AM peak period[2]. The high dependence on the auto in part reflects the high number of available vehicles per household: nearly 80% of the City's household have access to two or more vehicles, while only 1% has no access to a personal vehicle.

In addition to moving people, moving goods and services is a key function of Vaughan's road network. Truck volumes are typically high on the Provincial freeways serving the City (Highways 400, 427 and 407), and high on roadways serving key industrial areas such as the Canadian National (CN) and Canadian Pacific (CP) inter-modal terminals. Generally, the Vaughan road network south of Major Mackenzie Drive and west of Dufferin Street carries high truck volumes. Vaughan accommodates the top ten intersections for truck volumes within York Region.

A number of improvements to the road network within Vaughan have recently been implemented, most notably the three listed below. Future planned improvements are addressed in **Chapter 3**.

- **Dufferin Street widening** – south of Highway 407, from 4 to 6 lanes, including High Occupancy Vehicle (HOV) lanes and bicycle lanes. This is the first arterial HOV application in the Region and, as such, represents the future appearance and function of all 6-lane arterials.
- **Portage Parkway** – crossing of Highway 400 north of Highway 7.
- **Teston Road / Highway 400 interchange** (opened in Fall 2010).

A screenline/corridor analysis was conducted to identify general capacity deficiencies for 4 north-south and 3 east-west corridors across the City. **Exhibits 2-3, 2-4, 2-5** and **2-6** show AM and PM peak period congestion levels on the City's north-south and east-west screenlines, respectively, in both directions. The results of volume / capacity (V/C) analysis indicate that north-south corridors including Highway 400 and Keele-Dufferin are congested or nearing congestion in both the AM and PM peak periods. Likewise, the east-west Rutherford Road corridor is congested in both directions during peak periods. Note that some corridors, such as Islington Avenue and Teston Road, are currently operating under capacity.

### *2.3.2 Transit*

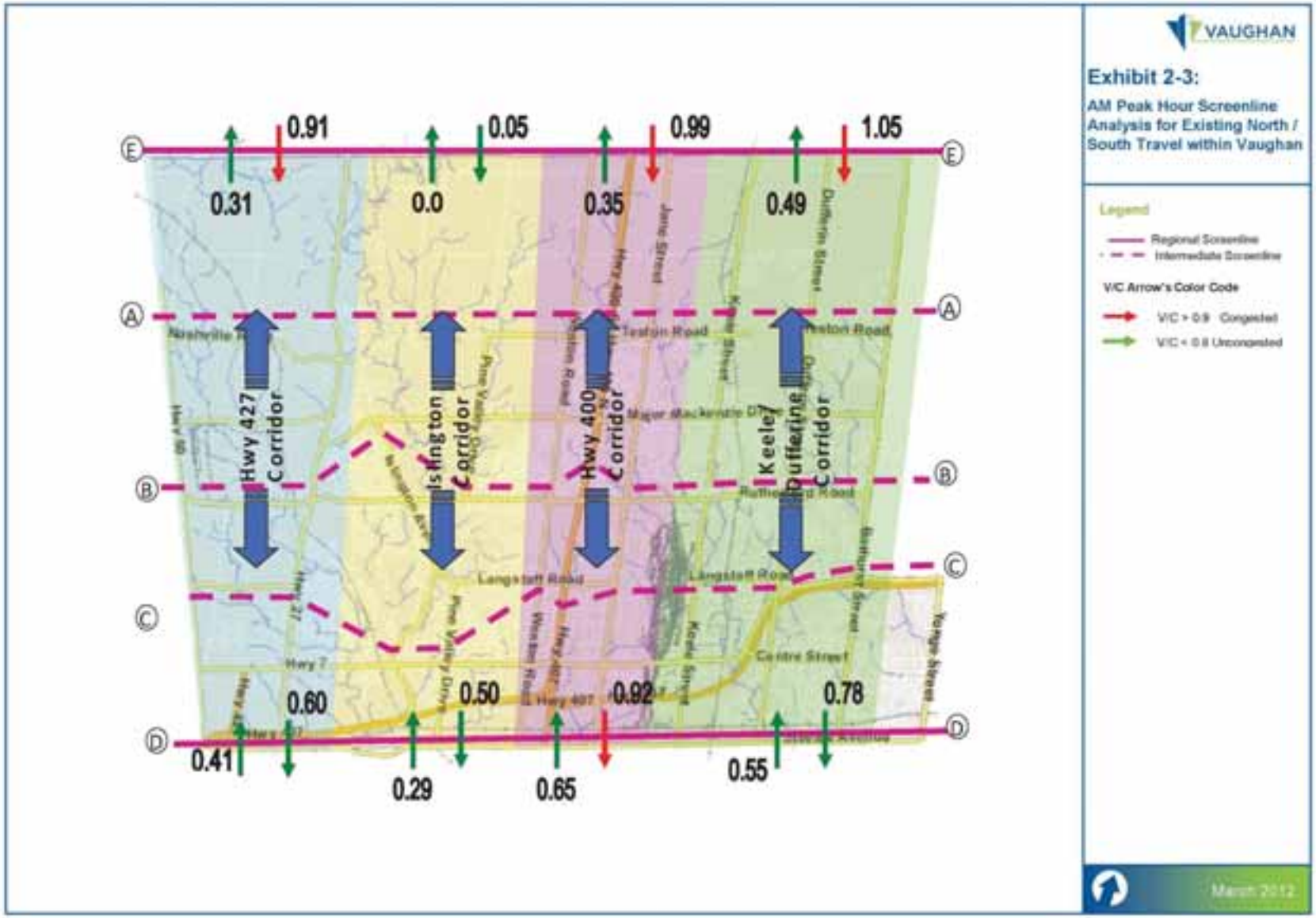
Transit infrastructure and services are becoming increasingly important throughout York Region, including the City of Vaughan, with a number of transit services available for all types of travel.

Current York Region Transit (YRT) services are shown in **Exhibit 2-7** and include a number of routes in Vaughan with a variety of service types:

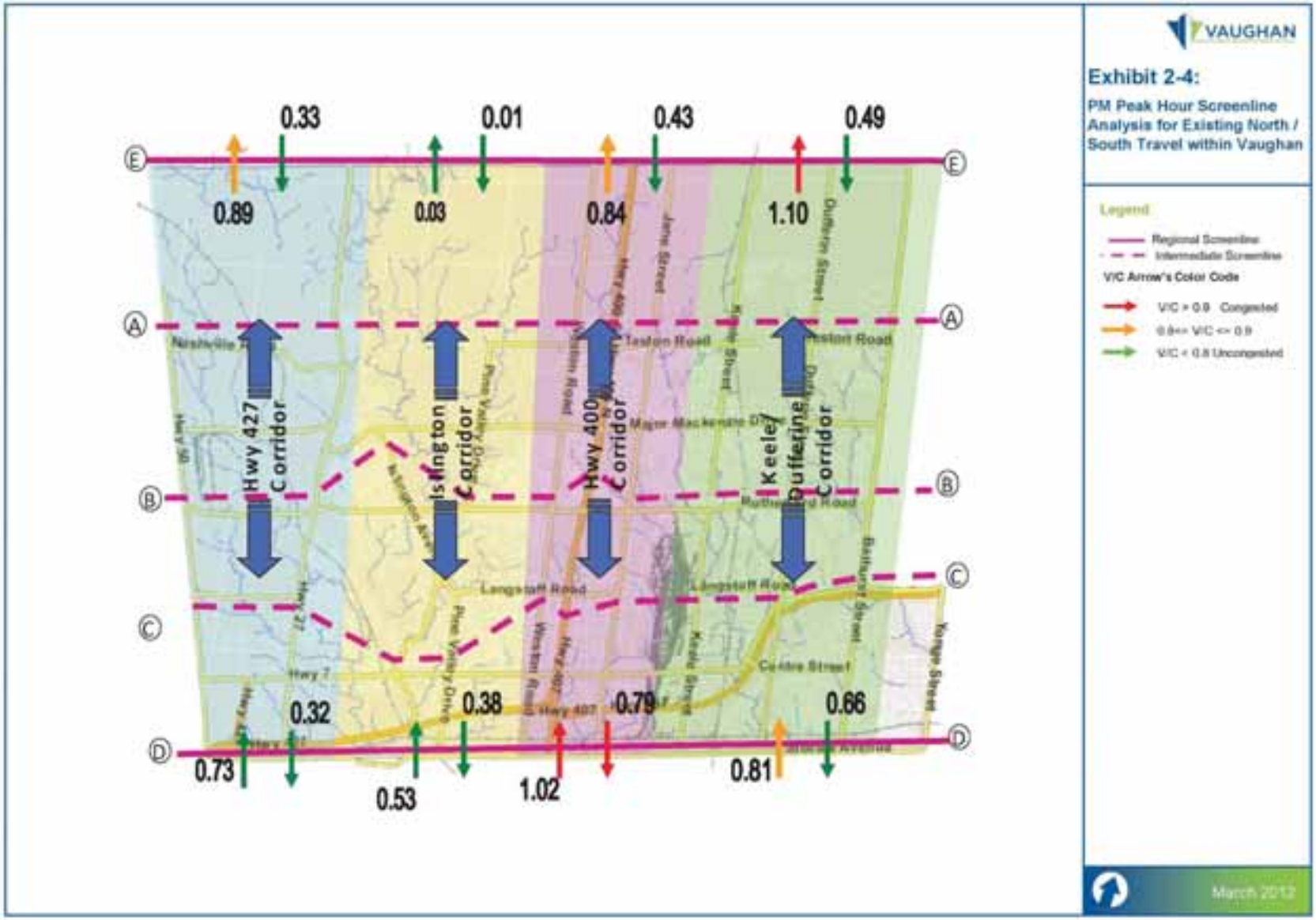
- **Express service** – fast service in coach-style buses, operating during peak periods and stopping less frequently than conventional services

*2. 2006 Transportation Tomorrow Survey*

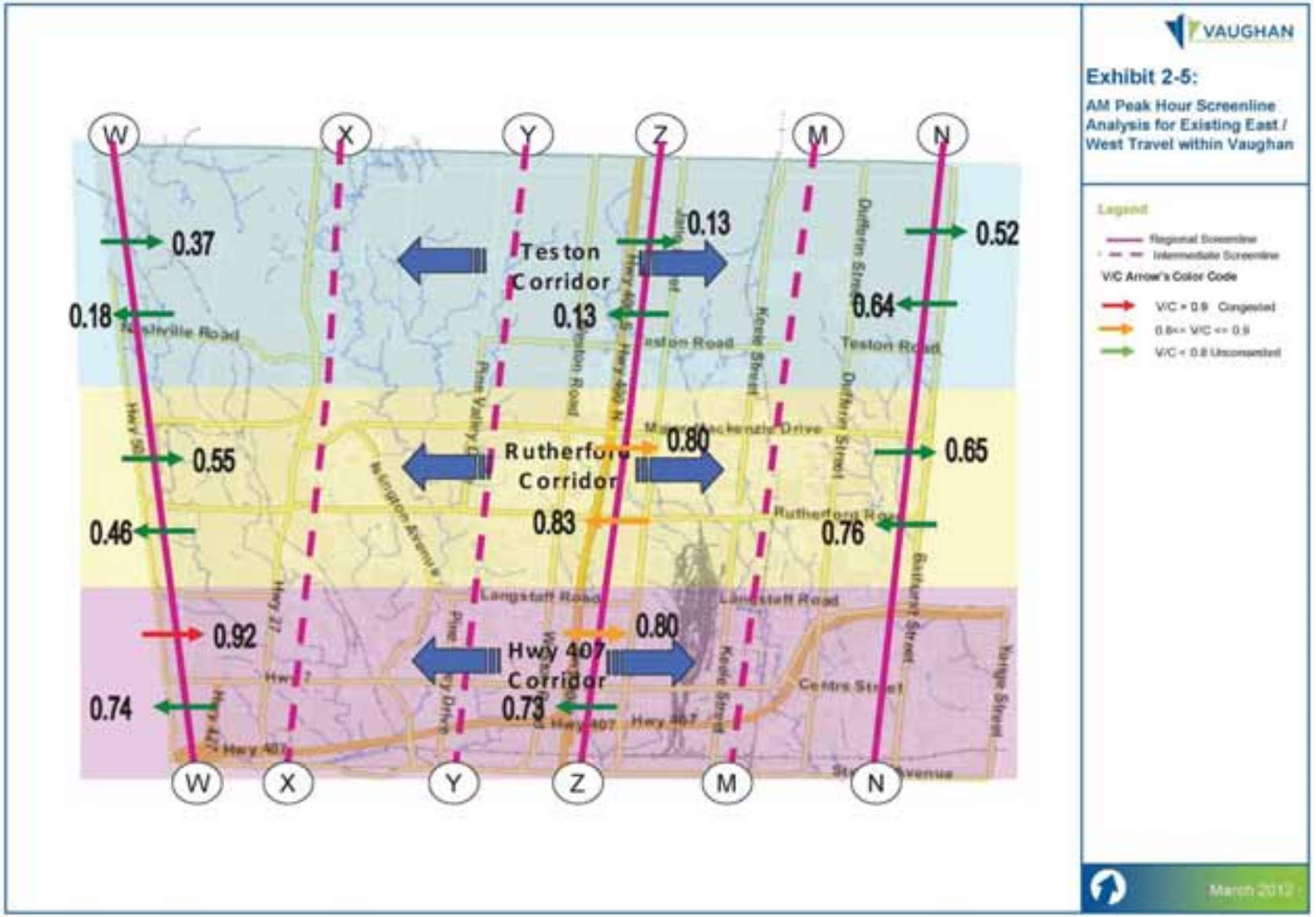
## Exhibit 2-3: AM Peak Hour Screenline Analysis for Existing North / South Travel within Vaughan



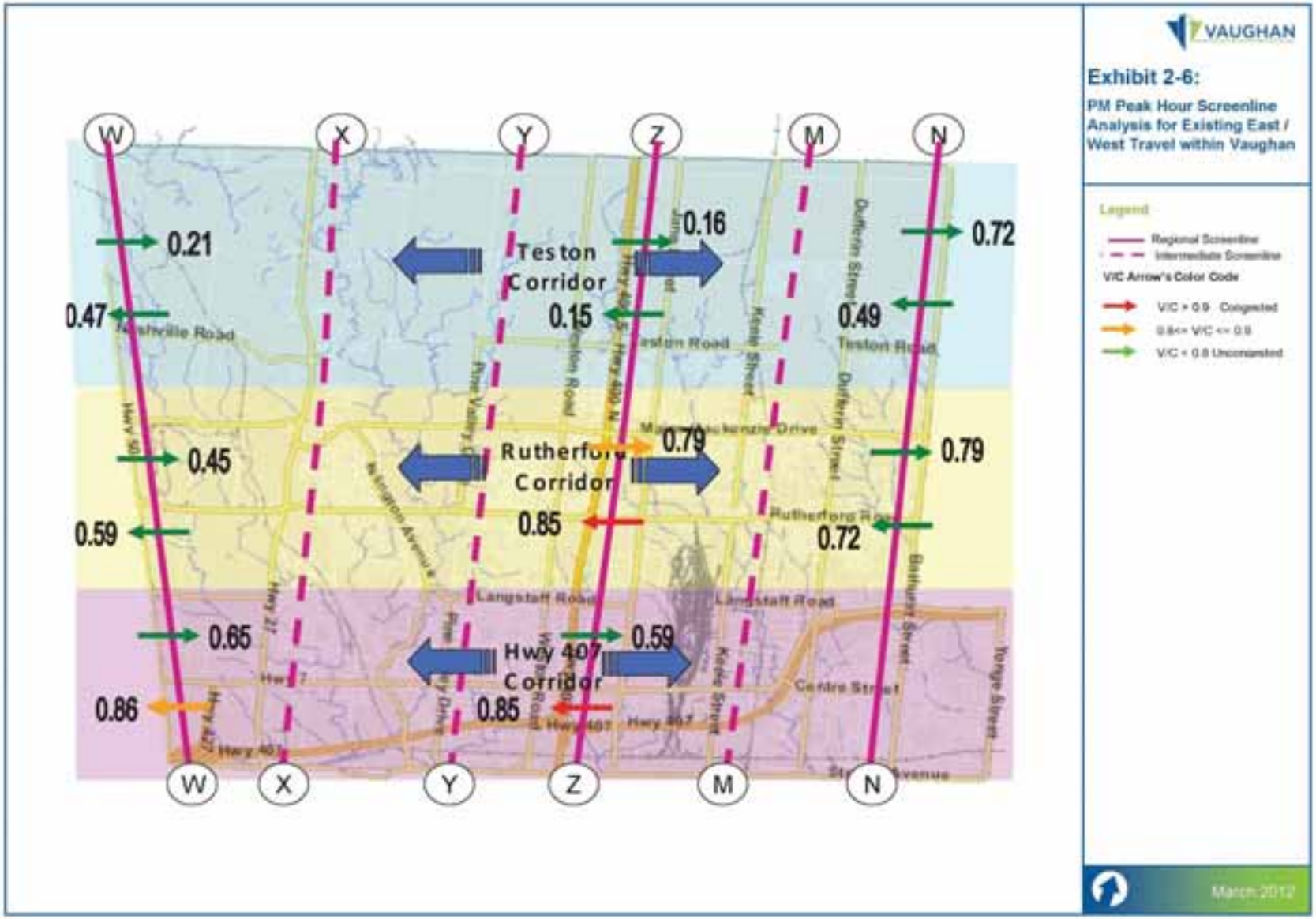
## Exhibit 2-4: PM Peak Hour Screenline Analysis for Existing North / South Travel within Vaughan



## Exhibit 2-5: AM Peak Hour Screenline Analysis for Existing East / West Travel within Vaughan



## Exhibit 2-6: PM Peak Hour Screenline Analysis for Existing East / West Travel within Vaughan



## Exhibit 2-7: Existing York Region Transit Routes

- **VIVA service** – rapid-transit vehicles operating along major corridors and connecting major centres and transit stations; includes real-time "smart" displays with vehicle arrival times, and operates every 15 minutes or less, seven days a week
  - VIVA serves Vaughan via the Orange route, along Highway 7 from Downsview Station to Martin Grove, and the Purple Route, primarily along the Highway 7 corridor east of Keele Street (with short stretches on Centre Street and Bathurst Street)


Source: York Region/VIVA

- **Trunk service** – regional service mainly operating along arterial streets, with frequent stops, slower average bus travel time and typically shorter-distance passenger trips
- **Local service** – local service operating on arterial and local streets, feeding the trunk and express systems

In addition, other transit services are provided in Vaughan by GO Transit and the Toronto Transit Commission (TTC). While the City is not included in the TTC primary service area, the TTC is contracted by York Region to provide some services within it. One GO Transit rail line serves the City: the Barrie line provides stops at Major Mackenzie Drive ("Maple"); Rutherford Road ("Rutherford"); and York University. Express GO Bus service to Yorkdale is provided along Highway 400, with several stops. GO Bus service is also provided through Vaughan along Highway 50, again with several stops. **Exhibit 2-8** illustrates the TTC and GO Transit services within Vaughan.

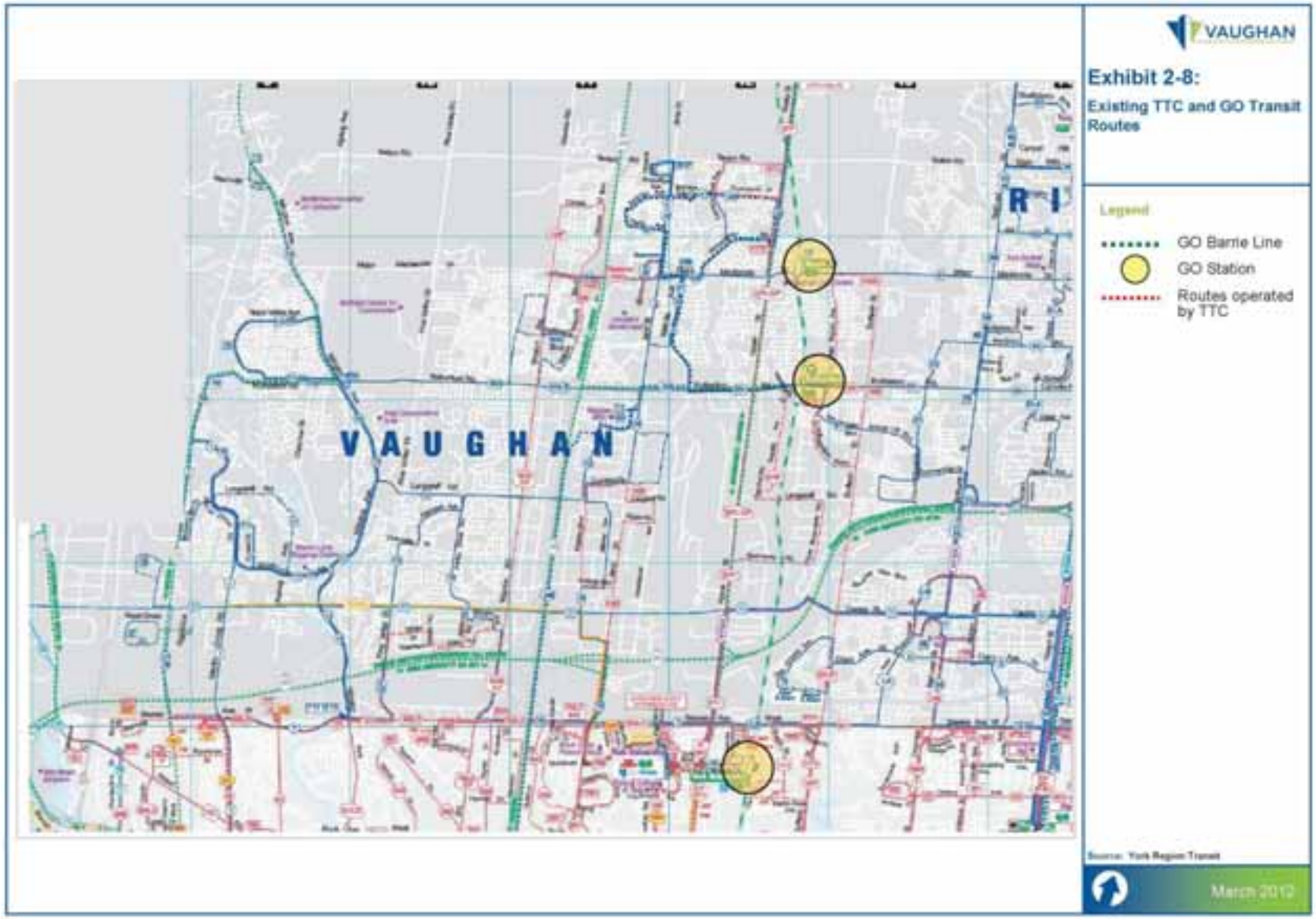
While a number of transit services are provided within Vaughan, the City's population currently does not use transit to a large extent, with only about 9% of AM peak period trips made by all forms of transit. Its use is greatest for trips from Vaughan to Toronto[3] with a 20% modal share.

As transit services are provided by York Region, the City of Toronto and Metrolinx / GO Transit, the City of Vaughan's role is to support transit use within the City and create conditions for its success (e.g. provide walking and cycling access to transit stops and stations, maintain the road network for bus services, etc.). Local and trunk services provide for shorter trips within the City, with frequent stops on arterial and local roads.

As discussed below, Vaughan's population and employment have increased significantly over the past 20 years, which has resulted in increased travel. Between 1996 and 2006, the majority of Vaughan's resident workers travelled outside of the City to work during the AM peak, primarily to suburban Toronto, followed by York Region and Peel Region. During this time, York Region's share of Vaughan trips increased from about 25% to 37%, while suburban Toronto's share fell from 50% to 38%. Toronto's downtown core has held steady at about 8% of AM trips. While the majority of Vaughan's workers are employed elsewhere within York Region, transit use has been consistently oriented toward the Toronto downtown core, where transit (TTC and GO Transit) are highly accessible and where parking costs are high. Over the past 20 years, transit mode share has decreased in Vaughan. The City's 1996 transit share of about 14% dipped in the 1990s to approximately 10%, reflecting cutbacks in support for public transit in York and Toronto. The slight recovery to 11% in 2006 reflects the substantial improvements in transit service, including improved YRT and VIVA.

*3. 2006 Transportation Tomorrow Survey*

## Exhibit 2-8: Existing TTC and GO Transit Routes



### 2.3.3 Active Transportation

In addition to serving travel by private vehicles and transit, the City of Vaughan also provides for active transportation (walking, cycling and other forms of non-motorized travel).

Vaughan's pedestrian network can be described as a two-tier system. The primary system consists of pedestrian facilities along major roads and connections to major City destinations. The secondary tier includes provision of pedestrian facilities that are more local in nature, such as local parks, community centres, schools and local shops. These secondary systems provide internal connections within communities.


Source: Urban Strategies

Based on the City of Vaughan's 2007 Pedestrian and Bicycle Master Plan Study survey, the top suggested improvement for walking in Vaughan was to provide more destinations to walk to. For cyclists, the top concerns were safety and the provision and condition of cycling facilities. Study surveys also revealed that the majority of sidewalk and pathway users (83%) walk or cycle for recreational purposes, and the majority of users of the network are Vaughan residents.

Vaughan's sidewalk policy is such that sidewalks are required where they form part of a walkway system, and are required on both sides of collector and arterial roads. Sidewalks are also required in locations where pedestrian routes connect to local amenities (e.g. schools, transit routes, parks): one sidewalk where 40 to 100 dwelling units branch off the route; and two sidewalks where more than 100 dwelling units branch off of the sidewalk route. While the 2007 Pedestrian and Bicycle Master Plan Study recommended that the current sidewalk policy be reviewed to ensure that the City is "pedestrian friendly", the review has not yet been undertaken. With the proposed intensification of development within the City and the recent approval of a new Official Plan which supports such intensification, a review of the Sidewalk Policy is more important than ever. Other benefits of an updated Sidewalk policy include support for:

- Decreased reliance on the automobile through encouragement of more walk trips;
- More active and vibrant streetscapes leading to an overall improvement in quality of life; and
- Improved personal safety through more "eyes on the street".

### 2.3.4 Transportation Demand Management (TDM)

Supporting the physical transportation network are the City's Transportation Demand Management (TDM) initiatives. TDM is essentially a series of specialized policies, targeted programs and innovative mobility services and products that work to influence travel behaviour, managing the movement of "people" rather than of motor vehicles, within the transportation system.

Along with Metrolinx, York Region and the City of Toronto, the City of Vaughan is a partner in the Smart Commute North Toronto, Vaughan (NTV) program. Smart Commute is an award-winning non-profit organization that works to help commuters change their travel behaviour by providing a number of services, including: workplace-based support, such as site assessment, promotion of travel options, carpool-matching, employee vanpool programs and emergency rides home; promotion of the benefits of transit-supportive development and smart-growth strategies; and tips for travelling via walking, cycling and transit. Smart Commute NTV represents, on behalf of its partners, about 90,000 employees, students, and volunteers.

# Table of Contents



## List of Exhibits

# 3. Future Conditions

## 3.1 Introduction

Looking forward to 2031, the City of Vaughan's population and employment growth are anticipated to continue, in line with the Provincial *Growth Plan for the Greater Golden Horseshoe* and Regional forecasts. Transportation demand is expected to similarly increase with these new residents, jobs and local activity. This chapter of the Transportation Master Plan (TMP) report outlines future growth and the planned allocation of this growth, describes various current plans to improve transportation infrastructure and services, and finally presents a corridor-level picture of expected base-line travel demand and capacity deficiencies for 2031.

## 3.2 Vaughan's New Urban Structure and Official Plan

The plan for Vaughan's future transportation network will be closely tied to the City's urban structure and planned growth. The following briefly discusses Vaughan's projected growth, consistent with the new Official Plan recently adopted by the City.

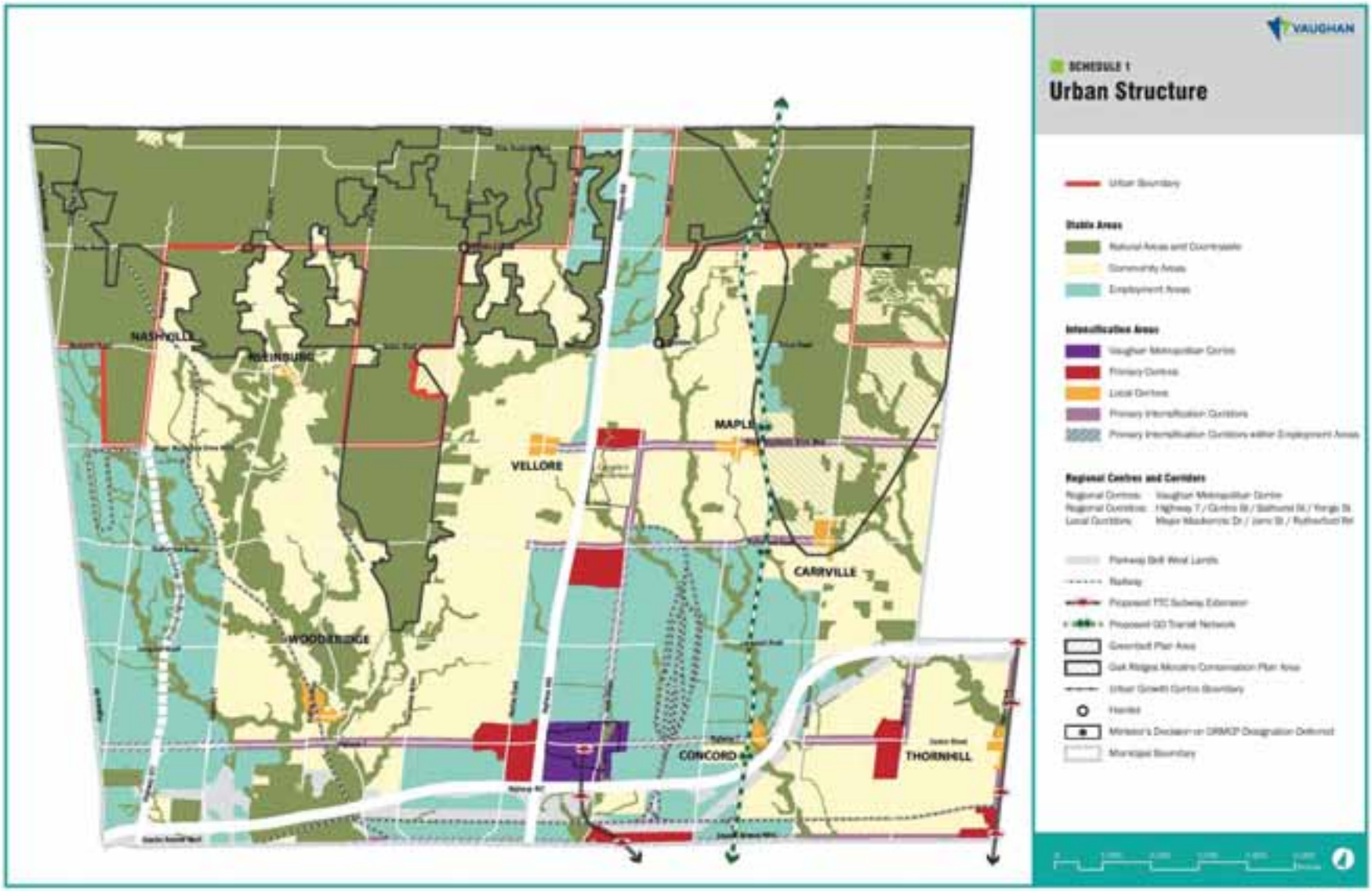
### *3.2.1 Population and Employment Projections*

As previously indicated in Chapter 2, there has been a tremendous growth in population and employment over the past 30 to 40 years within the City of Vaughan. Population and employment growth is anticipated to continue through to 2031 though at a somewhat slower pace. Using the forecasts in the Growth Plan, the Region has determined the distribution of growth amongst its nine municipalities. Vaughan's population growth is anticipated to continue at an annual rate of approximately 2% per year, to over 418,000 residents in 2031. Similarly, the City's employment is forecast to continue at an annual rate of approximately 2% per year to over 266,000 jobs in 2031. The City's target is to accommodate 45% of residential growth in intensification areas (development at higher density than is currently in place).

### *3.2.2 Allocation of Growth*

In the context of Vaughan's continued progress, the new Official Plan has introduced an updated urban structure (Schedule 1, presented as **Exhibit 3-1**) to direct future growth. The urban structure identifies a hierarchy of centres, intensification corridors, and new growth areas, in addition to the City's natural areas and countryside, communities and employment areas.

## Exhibit 3-1: City of Vaughan Urban Structure (Official Plan Schedule 1)



## Vaughan Metropolitan Centre

The Vaughan Metropolitan Centre (VMC) is at the top of the hierarchy of centres identified in the Official Plan and will be a major focus for intensification for a wide range of residential, office, retail, cultural and civic uses, including the tallest buildings and most intense concentration of development. The VMC is planned to become the City's downtown, centred on the planned future subway station at Highway 7 and Millway Avenue. Its concentration of the highest densities and widest mix of uses in the City will enable a multi-faceted and dynamic place. As much of the VMC is currently undeveloped, it provides an opportunity to develop in a pedestrian-friendly and transit-oriented manner. The VMC is an Urban Growth Centre, as identified in the *Growth Plan*, and is identified as a Regional Centre in the York Region Official Plan. It is to accommodate a minimum of 25,000 residents and 11,500 jobs by 2031 and is the subject of a detailed Secondary Plan. As part of the TMP, the VMC was subject to detailed transportation analysis, which was closely co-ordinated with the urban planning and design work.

## Primary and Local Centres

Other centres in addition to the VMC identified in the new Official Plan are Primary and Local Centres. Primary Centres are expected to evolve as distinct places of major activities developed around major destinations such as planned subways and regional shopping centers. They are locations for intensification in the form of predominantly mixed-use high- and mid-rise buildings, developed at transit- supportive intensities. Local Centres provide the mixed-use focus for their respective communities, compatible with the local context. Several future Primary and Local Centres have been identified in the Official Plan, as discussed below.

- **Vaughan Mills, Bathurst Street & Centre Street, and Weston Road & Highway 7**
  Each of these areas are shopping destinations of regional significance, which have potential for residential intensification and the introduction of additional uses through development of surface parking areas, out-parcels and eventual redevelopment or intensification of the shopping centres (Vaughan Mills, Promenade Mall and the Weston/Highway 7 power centre).

- **Yonge Street & Steeles Avenue, Steeles West (between Jane St. and Keele St.)**
  Both of these Primary Centres will evolve as transit-oriented developments around planned subway stops. Yonge & Steeles and Steeles West have significant opportunity for both residential and office uses. Steeles West also has opportunities for institutional uses, with potential for synergies with York University.

- **Jane Street & Major Mackenzie Drive**
  As the future site of the City's only hospital, the northwest quadrant of Jane Street and Major Mackenzie Drive is planned to evolve as a health care campus with associated community facilities, residential, and business uses.

- **Woodbridge, Maple, Kleinburg, and Thornhill – Yonge Street**
  These Local Centres will continue to be the main areas for local commercial activity and community facilities. Each will experience development and/or intensification to varying degrees, as befits the local context. Note that as part of the TMP, the Woodbridge Core and Kleinburg-Nashville areas were subject to additional transportation and urban planning/design analysis.

- **Vellore Village and Carrville**
  These new communities, located at Weston Road / Major Mackenzie Drive and Dufferin Street / Rutherford Road, respectively, will contribute to Vaughan's identity and create a unique sense of place. As the City's newest communities, they have an opportunity to develop as mixed-use, pedestrian-friendly places, and a focus for multi-family development.

- **Concord Centre**
  Development of lands both north and south of Highway 7 will allow for the creation of a new mixed-use focus for the well-established Concord community, and will support the significant transit hub associated with the proposed Concord GO Rail station and the 407 Transitway station.

## Intensification Corridors

Intensification Corridors, as illustrated in **Exhibit 3-1**, provide connections between the VMC, Primary and Local Centres, and accommodate higher-order transit. The corridors include the Regional Corridors (i.e., Highway 7 and Yonge Street) and local corridors (i.e., sections of Jane Street, Major Mackenzie Drive, Steeles Avenue, Rutherford Road and Bathurst Street). Intensification Corridors are expected to evolve as active and unique places in their own right, supporting a range of uses. They are the focus for planned/future transit investment, in recognition of their function as activity generators, and they will be designed to accommodate pedestrians and cyclists as well as motor vehicles. These corridors will be places for growth over time, for mixed-use and employment-related intensification.

## New Areas for Growth

While the intensification areas are slated to accommodate nearly 45% of the City's new population growth, the remainder will be accommodated in currently designated areas and two proposed urban expansion areas (Blocks 41 and 27) in the north part of the City west and east of the Highway 400 corridor, respectively. Block 41 is located between Weston Road and Pine Valley Drive north of Teston Road extending to Kirby Road in the north. Block 27 is between Jane Street and Keele Street and also extends from Teston Road to Kirby Road.

New employment growth will be accommodated in the intensification areas (residential and office-based) as well as within the Highway 400 corridor at the northern edge of the City (OPA #637). The West Vaughan Employment Area (WVEA) encompasses a large area just east of the Peel boundary (centred on the Highway 427 extension) and is to accommodate general and prestige employment uses. The WVEA was the subject of a more detailed transportation study (see **Appendix B**) to support a new secondary plan. This area is to provide for approximately 30% of the City's new employment.

## 3.3 Transportation Plans

A number of transportation improvements are planned for the City of Vaughan to 2031, with initiatives by a variety of organizations including: the City, York Region, the Province of Ontario, Metrolinx / GO Transit, and the Toronto Transit Commission (TTC). To a large extent, these initiatives will serve to provide a greater range of transportation options in Vaughan.

### *3.3.1 Road Network*


Source: Urban Strategies

A number of improvements to the road network within Vaughan are currently being pursued by the Ontario Ministry of Transportation (MTO) and York Region. These include the following:

- Highway 427 extension north to Major Mackenzie Drive, with new interchanges at Langstaff Road, Rutherford Road and Major Mackenzie Drive, and protection for a dedicated transitway (Provincial EA study recently completed); and
- Provincial GTA West corridor possibly extending throughout northwest Vaughan and terminating at Highway 400 with north-south connections to Highway 427 (currently under study).

Additionally, York Region's Western Vaughan Transportation Improvements Individual Environmental Assessment (IEA) has recently been completed. The recommended network solution includes the following road improvements in the western half of the City:

| | |
|---|---|
| **Two additional lanes dedicated for transit and/or HOV (widening from 4 to 6 lanes, plus on-road bike lanes)** | Rutherford Road between Weston Road and Highway 50 |
| | Highway 27 between Steeles Avenue and Major Mackenzie Drive |
| | Pine Valley Drive between Steeles Avenue and Highway 7 |
| | Weston Road between Steeles Avenue and Major Mackenzie Dr |
| **Four additional lanes, with two lanes for transit and HOV (widening from 2 to 6 lanes, plus on-road bike lanes)** | Major Mackenzie Drive between Highway 400 and Highway 50 |
| **Two additional lanes (widening from 2 to 4 lanes)** | Highway 27 between Major Mackenzie Drive and Nashville Road |
| **Removal of the discontinuity along Major Mackenzie Drive at Highway 27** | |

In the eastern half of the City, the Region's 10 Year Roads Construction Program includes the following widenings:

- Keele Street to 6 lanes from Steeles Avenue to Rutherford Road;
- Dufferin Street to 4 lanes from Major Mackenzie Drive to Teston Road;
- Bathurst Street to 6 lanes from Highway 7 to Teston Road / Elgin Mills Road;
- Rutherford Road from Bathurst Street to Jane Street; and
- Major Mackenzie Drive to 6 lanes from Bathurst Street to Highway 400.

In addition, the completion of the Teston Road missing link between Dufferin and Keele Streets is included, as well as interchange improvements at Highway 7 and Highway 400, and numerous key-intersection improvements. As in the case of the Western Vaughan IEA improvements, all widenings to 6 lanes would provide for dedicated transit and/or HOV lanes, as well as on-road bike lanes.

York Region's 2031 planned road network, as presented in the Region's 2009 Transportation Master Plan Update, is shown for the area within and around the City of Vaughan in **Exhibit 3-2**. It should be noted that, while not shown on Exhibit 3-2, as a result of the recently completed Western Vaughan IEA and as shown above, the section of Pine Valley Drive from Steeles Avenue to Highway 7 is being recommended for widening from 4 to 6 lanes (to support transit) as part of the network solution.

### *3.3.2 Transit*

As discussed in **Chapter 2**, transit services in Vaughan are provided by York Region Transit (YRT), the TTC, Brampton Transit and GO Transit. These service providers are continuing to move forward with variety of planned transit improvements, including a number that will benefit Vaughan, including the improvements listed below. The Vaughan and surrounding area portion of York Region's 2031 transit network (as presented in its 2009 TMP Update) is shown in **Exhibit 3-3**.


Source: York Region Transit

- **TTC Spadina subway extension** – extending from Downsview Station northwest through York University within the City of Toronto and north to the VMC, including six new stations, bus re-routing to serve the new stations, and an expected opening date of 2015;
- **VIVA upgrades along Highway 7** – extending rapidways west from Yonge Street to Highway 50, connecting to the planned Spadina subway extension. The first segment serving Vaughan is to be built around the Vaughan Metropolitan Centre (VMC), with early completion planned for 2015. The line segment from Yonge Street to Helen Street (west of Pine Valley Drive) is in VIVA's second phase planned for completion by 2020. The segment west of Pine Valley is Phase 3 with timing of completion yet to be determined;


VAUGHAN

## Exhibit 3.2:

**York Region 2031 Road Network (within the City of Vaughan)**

**Legend**

- Jog Elimination
- New or Improved Highway Interchange
- Grade Separation
- Special Study Area (see footnote)
- Anchor Hub / Regional Centre
- New Local/Regional Road
- Arterial Road Improvement for Capacity
- Arterial Road Improvement to 8 lanes
- Road improvements to support Transit
- New Provincial Road
- GTA West Corridor Concept
- Provincial Road Improvement
- Recommended New Corridor

Note:
The proposed alignment and location of specific projects remains conceptual at this time. These concepts remain subject to review and confirmation through the applicable environmental assessment process established under the Environmental Assessment Act.

Road projects identified are for capacity improvements only and do not reflect reconstruction projects in the Region's DC-Bylaw or 10-Year Roads Construction Plan.

**Note:** City of Vaughan portion of York Region 2031 Road network.

**Source:** Region of York, 2009 TMP Update

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VAUGHAN

## Exhibit 3.3:

**York Region 2031 Transit Network (within the City of Vaughan)**

**Legend**

- Existing GO Rail Station
- Proposed GO Rail Station
- Commuter / HOV Parking
- Local Gateway to Transit Network
- Gateway Hub
- Anchor Hub / Regional Centre
- Special Study Area (see footnote)
- GO Rail Service
- 407 Transitway
- Rural Links
- Expressway Bus Service
- GTA West Corridor Concept
- Subway Extension
- Rapid Transit Corridor
- Transit Priority Network
- TTC Rapid Transit
- Recommended New Corridor

Note:
The proposed alignment and location of specific projects remains conceptual at this time. These concepts remain subject to review and confirmation through the applicable environmental assessment process established under the Environmental Assessment Act.

**Note:** City of Vaughan portion of York Region 2031 Road network.

**Source:** Region of York, 2009 TMP Update

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- **TTC Yonge Street subway extension** – extending north from Finch Station to Richmond Hill Centre/Highway 7, proposed to include four stations serving Vaughan; as funding is not yet committed, an opening date is yet to be determined;
- **New Corridors for Rapid Transit** – Major Mackenzie Drive (east of Weston Road); Steeles Avenue; Jane Street (south of Major Mackenzie Drive); Dufferin Street (south of Major Mackenzie Drive); and/or segments of Bathurst Street;
- **GO Rail to Bolton** – GO Transit's 2020 Strategic Plan includes peak-period service to Bolton, including service on rail lines not currently in use, and new stations; and
- **407 Transitway** – providing longer distance inter-regional transit service across the wider GTA.

York Region Transit also has its 2010-2015 Five-Year Service Plan, which will serve as the framework for guiding the direction of transit operations in York Region over the short term, focusing on enhancing service levels and promoting ridership growth, while ensuring sound economic performance.

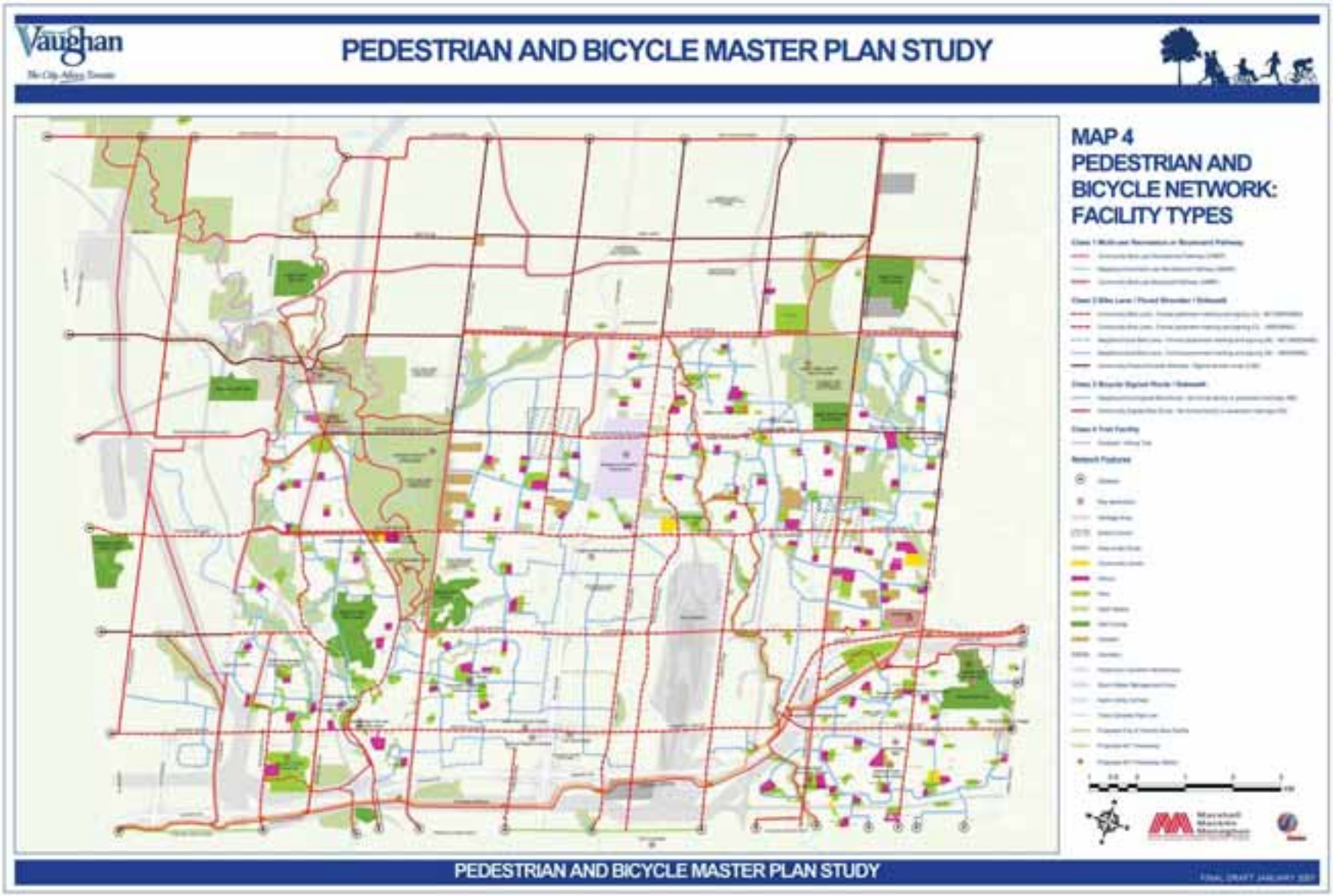
The arterial road widenings to 6 lanes being recommended in the Western Vaughan Transportation Improvements IEA will support enhanced transit with priority treatments. Similar widenings to 6 lanes in the eastern half of Vaughan include Major Mackenzie Drive, Jane Street, Dufferin Street, and Bathurst Street.

### *3.3.3 Active Transportation and TDM*

Active transportation and Transportation Demand Management (TDM) are anticipated to become increasingly important elements of the City of Vaughan's transportation system. The City's commitment to improved and expanded walking and cycling provisions for residents and workers will provide active transportation benefits as well as support transit by enabling easier access to the transit network. **Exhibit 3-4** shows the future pedestrian and bicycle network proposed in the 2007 Pedestrian and Bicycle Master Plan Study. The network concept is that of a two-tier system: a primary network, the Community System, linking adjacent municipalities and providing access to employment and residential areas; the secondary tier, the Neighbourhood System, is a local system within each secondary plan area and will form the largest portion of the network.

Through ongoing work with Smart Commute and initiatives led by Metrolinx and the Region, the City will continue its TDM efforts. Vaughan's new Official Plan includes TDM policies, including support for City-wide and local TDM programs to reduce single occupant vehicle travel. In addition, as previously mentioned, all future 6-lane Regional arterials are to incorporate HOV lanes and on-road bike lanes.

**Exhibit 3-4: 2007 Pedestrian and Bicycle Master Plan**



## 3.4 Future Baseline Transportation Conditions

Looking to 2031, it is anticipated that Vaughan's transportation system will be more balanced, with less reliance on single-occupant vehicles and more use of transit, walking and cycling. **Exhibit 3-5** shows projected 2031 mode share based on initial results from the travel demand model, which assumes that all currently planned transit capital investment projects are implemented. Transit mode share for the AM peak hour, peak directional travel is expected to increase from 10% in 2006 to approximately 15% in 2031. The percent of auto drivers is expected to only decrease slightly from 74% to 70% with auto passengers remaining virtually unchanged at 15%. It is noted that while the estimates of transit modal shares obtained from the City's travel demand model are the best available, they are considered to be on the low side due to the inability of the model to fully account for all factors in the modal split decision-making process (e.g., parking supply and pricing). Recognizing the limitations of the modelling process, modal share targets adopted by the Region and supported in the TMP (see Section 5.2 of this report) are considerably higher. The development and application of the City's travel demand model is documented in **Appendix F**.

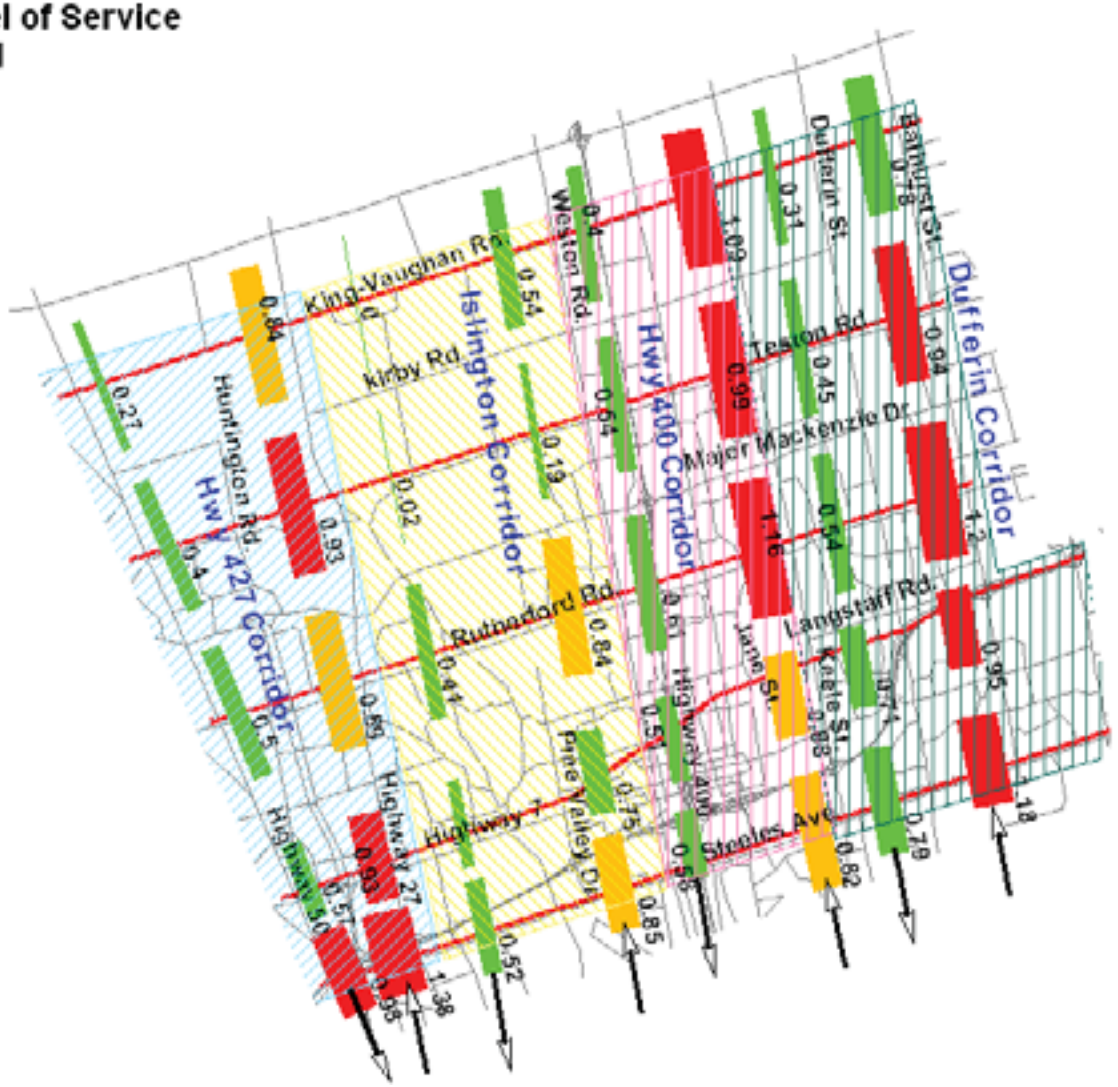
**Exhibit 3-5: 2031 AM Peak Hour Mode Shares (Southbound Direction)**

| | Modal Share (%) | | |
|---|---|---|---|
| **Year** | **2006** | **2021** | **2031** |
| **Transit** | 10 | 12 | 15 |
| **Auto Driver** | 74 | 73 | 70 |
| **Auto Passenger** | 16 | 15 | 15 |

Based on current plans to expand the road and transit networks, and the modal shifts summarized above, it is expected that the City's current congestion will continue to increase and worsen in many locations. Results of the initial 2031 road network capacity analysis indicate that currently congested corridors are likely to remain congested. As indicated by **Exhibit 3-6** and **Exhibit 3-7**, the north-south corridors of Highway 427, Highway 400 and Keele-Dufferin would continue to be congested in 2031 during the peak hour of travel. Similarly, the east-west Highway 407 and Rutherford corridors would be congested in both directions during peak periods. There are, however, some exceptions such as the Islington Avenue and Teston Road corridors which are expected to be under capacity.

Truck traffic is expected to continue to be a major contributor to roadway congestion, but will vary significantly in relation to the level of road classification, surrounding land uses and time of day. The arterial road network south of Major Mackenzie Drive and west of Dufferin Street would continue to generally carry high truck volumes as well as Highways 7 and 50. The inter-modal terminals located within this area and significant development activities expected in the area will contribute to high levels of truck traffic.

# City of Vaughan North-South Corridors
# PM Peak Hour Level of Service
# Base Scenario 2031




## Exhibit 3.6:

**2031 PM Peak Hour Base Road Network Analysis for North/South Travel**

Legend

V/C PM 2031
0.00 to 0.79
0.80 to 0.89
0.90 to 1.50
V/C PM 2031
1.5
0.75
0.375

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## City of Vaughan East-West Corridors
## PM Peak Hour Level of Service
## Base Scenario 2031

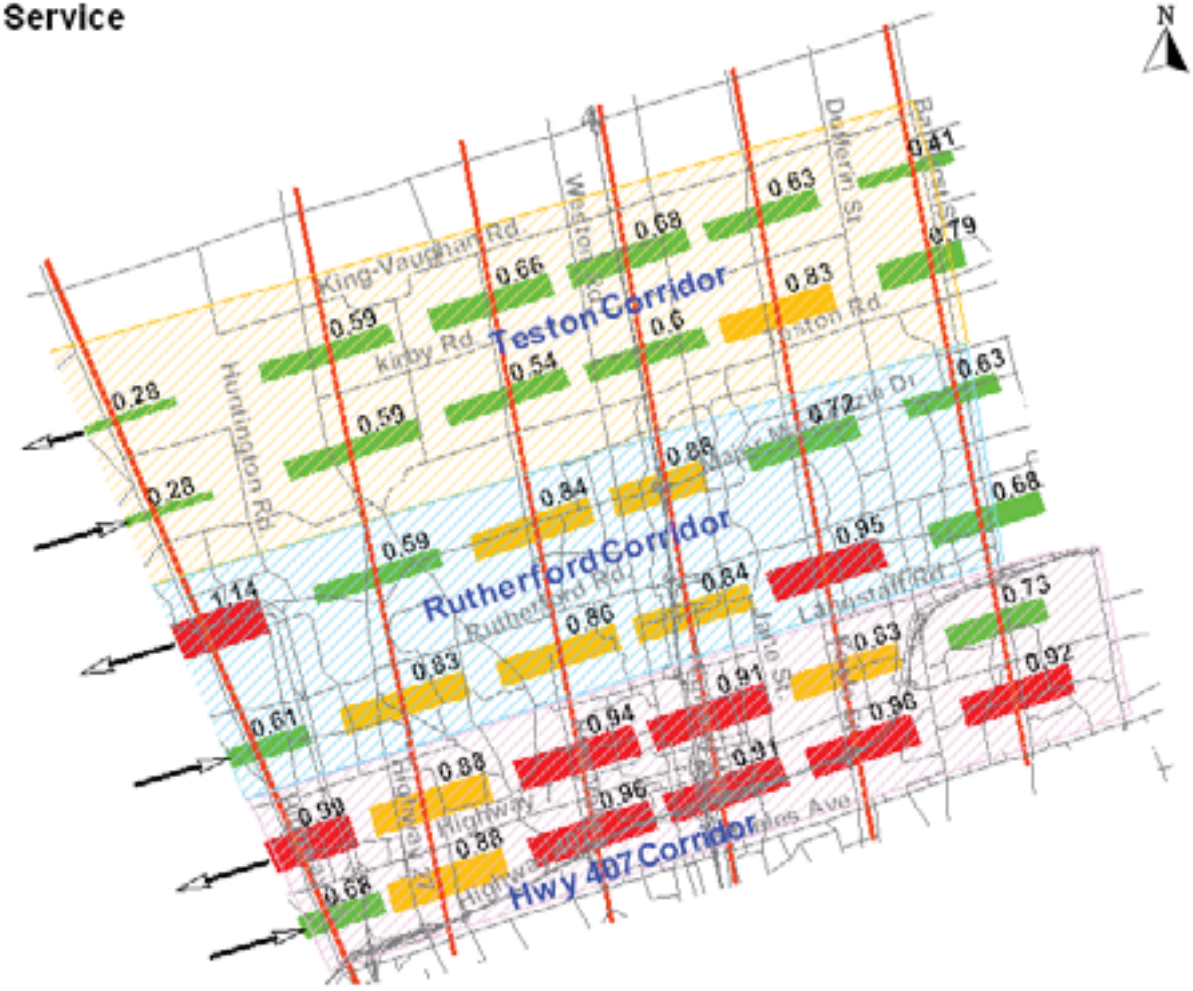


**Exhibit 3.7:**

**2031 PM Peak Hour Base Road Network Analysis for East/West Travel**

Legend

V/C PM 2031

- 0.00 to 0.79
- 0.80 to 0.89
- 0.90 to 1.50

V/C PM 2031

1.5 0.75 0.375

March 2012

In light of the expected transportation conditions within the context of Vaughan's expected growth to 2031, the City will need to play a significant role in helping to realize increased use of sustainable modes of transportation. A sustainable transportation approach focuses on promotion of public transit and alternative modes of travel, optimization of existing roads and overall reduction in the need to travel. These translate into such measures as:

1. Improved coordination of land use and transportation / transit planning, especially in areas where intensification of development within existing urbanized areas is planned, such as the Vaughan Metropolitan Centre and other designated centres and corridors.
2. Enhanced planning to ensure that the public have convenient access to planned rapid transit and bus services as well as local streets being designed to make walking and cycling more convenient and competitive by providing more direct walk routes and pedestrian/cyclist amenities.
3. More comprehensive Transportation Demand Management (TDM) programs, which could involve parking charges in areas well served by transit, provision of park-and-ride lots, carpooling programs, bicycle amenities, innovative transit fare policies and work-at-home initiatives to help minimize growth in demand.

Such actions will require a concerted effort by Vaughan's Planning and Transportation staff.

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# 4. The Transportation Vision

The results from the "baseline 2031" travel forecasts discussed in the previous chapter indicate that it will take more than just very large investments in transit infrastructure to cope with future transportation demand. A substantial change in travel behaviour (particularly modal split) will also be needed in order to manage future congestion on the road network that serves the City. It is therefore imperative for the City to develop and embrace a broad transportation vision that will provide the framework and guiding light for a major transformation in how Vaughan residents and workers travel throughout the City, and for all related decision-making by City officials and Council.

Development of a long term Transportation Vision for the City of Vaughan was therefore a key part of the Transportation Master Plan (TMP). Based on the identified transportation issues and challenges, as well as a set of sustainability principles discussed below, the Transportation Vision sets the context for a detailed TMP and can be used to guide future City decision-making regarding transportation and development.


Source: Transport Canada

The Vision has been developed with substantial stakeholder input. Two policy discussion papers were prepared for stakeholder review in anticipation of two workshops for developing the vision. The purpose of the first policy discussion paper (see **Appendix G1**), and accompanying workshop held on December 9 2009, was to stimulate discussion of the key issues and challenges that the City currently faces and subsequently the range of strategic directions open to the City to pursue. Through public reaction to this paper and the results of a special facilitated workshop, the preferred strategic direction emerged, forming the basis for the development of the City's Transportation Vision. The second discussion paper (see **Appendix G2**) set the context for a visioning exercise held on February 3, 2010 and the framework for a long-term Transportation Vision. The visioning exercise involved assessing the strategic options and identifying a preliminary Vision for the City and stakeholder's consideration. The discussion centered on three issues: increasing transit use in Vaughan; managing travel demand and encouraging more active modes of transportation; and promoting sustainability to the public.

Technical analysis concluded that the planned road network will not be able to accommodate the projected long term growth in automobile travel; consequently, significant changes in travel behaviour will be needed. Following consultation with the City and other stakeholders, a preferred Transportation Vision has emerged, focusing on ***reducing automobile dependence and moving the City closer to achieving the goal of a more livable, sustainable community***. The Vision is consistent with the transportation goals and objectives in the new Official Plan, and reflects the transit focus of the Metrolinx Regional Transportation Plan (RTP) for the Greater Toronto and Hamilton Area (GTHA) as well as the recently approved York Region Transportation Master Plan Update.

This “New Path” represents a significant policy shift compared to current trends in terms of transportation infrastructure, land use and general policy direction. A ‘transit first” approach will be used to identify and prioritize improvements and policies, and the Vision will support the following:

- New subway service, several rapid transit routes, and expanded GO Transit service;
- Higher density residential and mixed use development in key centres and along transit corridors; and
- Transformation of the Vaughan Metropolitan Centre (VMC) to a more sustainable and attractive downtown area that is transit-oriented, walkable, accessible, diverse, green and beautiful.

## 4.1 The Sustainability Imperative

Sustainability is generally defined as living and working in ways that meet environmental, economic and social needs without compromising the well-being of future generations.

As defined by Transport Canada, "sustainable transportation" means transportation that produces few, if any, air pollution emissions, such as public transport, carpools, car sharing, walking and cycling. Transport Canada’s Sustainable Development Strategy 2007-2009 focuses on three themes: urban, freight and marine transportation. The strategy includes seven strategic challenges and specific commitments to advance sustainable development and achieve results. These strategic challenges are as follows:


Source: Transport Canada

- Encourage Canadians to make more sustainable transportation choices.
- Enhance innovation and skills development.
- Increase system efficiency and optimize modal choices.
- Enhance efficiency of vehicles, fuels and fuelling infrastructure.
- Improve performance of carriers and operators.
- Improve decision-making by governments and the transportation sector.
- Improve management of Transport Canada operations and lands.

It is generally recognized that new ways of living and working will be needed in order to achieve sustainability. Among its other transportation goals, the Growth Plan for the Greater Golden Horseshoe (GGH) states that the transportation system with the GGH should be planned and managed to *‘be sustainable, by encouraging the most financially and environmentally appropriate mode for trip-making’*. The Metrolinx RTP is essentially a blueprint for a more sustainable transportation for the GTHA.

The Vaughan TMP itself forms part of the City’s overall 2031 Growth Management Strategy, initiated by Council, which will shape the future of the City and guide its ongoing transformation to a more

sustainable place. The City is already actively working toward sustainable transportation; some of its sustainability achievements include: "greening" the fleet – two hybrid vehicles and four Smart Cars; use of 25% biofuels; 2007 adoption of the City of Vaughan's Pedestrian and Bicycle Master Plan; the 2009 launch of the Active Together Physical Activity Strategy, a five year plan dedicated to fostering higher levels of physical activity among individuals who live and work in Vaughan; and completion of Green Directions Vaughan, the City's Community Sustainability and Environmental Master Plan, in April 2009.

## 4.2 Sustainable Transportation Principles and Goals

In consultation with the Policy Planning Department and key stakeholders, several sustainability principles and goals have been identified to guide the direction of the TMP. These principles and the Transportation Vision have been translated into actions, which are discussed in subsequent chapters of this Plan. The TMP's sustainability principles and goals are as follows:

**Principle 1** **Provide safe, accessible, affordable, reliable and efficient transportation for everyone.**

***Goal:*** The City of Vaughan is committed to ensuring all residents – including those with low incomes, the disabled, the elderly and others who cannot or do not own their own vehicle – are all provided safe, accessible, affordable, reliable and efficient transportation options.

**Principle 2** **Make Vaughan neighbourhoods pedestrian and bicycle friendly.**

***Goal:*** Recognizing the importance of walking and cycling to the health of its citizens, the City will provide more opportunities for all road users, and all new streets in Vaughan will be designed using "complete streets" principles.

**Principle 3** **Integrate land use and transportation planning to encourage more sustainable lifestyles.**

***Goal:*** To reduce dependency on the automobile for travel, the City will create neighbourhoods that contain the full range of development densities and land uses, including those that are compact, mixed-use, and pedestrian and bicycle-friendly.

**Principle 4** **Preserve and enhance environmental resources.**

***Goal:*** The City will avoid impacts to the natural environment to the extent possible in expanding its transportation infrastructure.

**Principle 5** **Promote reliable, convenient and seamless transit.**

***Goal:*** The City will encourage York Region, GO Transit and Metrolinx to provide high quality and seamless transit service to allow public transit to better compete with the automobile for travel to, from, and within the City of Vaughan.

**Principle 6** **Promote economic vitality.**

***Goal:*** The City will ensure its economic competitiveness by providing a safe, reliable and efficient transportation system throughout the City.

**Principle 7** **Support diverse transportation system funding.**

***Goal:*** The City of Vaughan will seek innovative funding sources and strategies to ensure a more balanced, sustainable transportation system.

**Principle 8** **Minimize use of fossil fuels.**

***Goal:*** The City of Vaughan's transportation needs must be met without generating excessive vehicle emissions that threaten public health, global climate, biological diversity or ecological systems.

**Principle 9** **Avoid unnecessary capacity improvements.**

***Goal:*** The City will work with its local and regional partners to ensure its existing transportation system operates as efficiently and reliably as possible by supporting new technologies, access management measures and transportation demand management (TDM) initiatives.

**Principle 10** **Reduce the need to travel.**

***Goal:*** The City of Vaughan will encourage work-at-home initiatives and other programs that reduce demands on the transportation system, especially at peak hours, or increase the number of persons travelling in each automobile.


Source: Urban Strategies

**Principle 11** **Encourage the efficient movement of freight and support the greater use of freight by rail.**

***Goal:*** The City will support strategies that improve freight movement within its boundaries and minimize the flow of heavy trucks through or adjacent to residential communities and designated centres.

**Principle 12** **Develop parking strategies that reduce single-occupant vehicle travel.**

***Goal:*** The City of Vaughan will develop strategies that reduce the demand for parking at existing and future designated centres and other activity nodes.

**Principle 13** **Foster awareness of sustainable transportation.**

***Goal:*** The City will develop programs and activities that enhance residents' awareness and understanding of the benefits of sustainable transportation.

## 4.3 Nodes and Corridors Urban Structure

In keeping with Vaughan's quest for a sustainable city, activity centres and corridors planned for further intensification have been identified by the preparation of the new Official Plan. These centres and corridors form Vaughan's future urban structure. As shown previously in **Exhibit 3-1**, they include: the Vaughan Metropolitan Centre (VMC), a Regional Centre; Primary Centres; Local Centres; and Primary Intensification Corridors.

As discussed in **Chapter 3**, the VMC is planned to become Vaughan's downtown, with high densities and a wide variety of land uses. Vaughan's new Official Plan targets growth of 25,000 residents and 11,500 jobs in the VMC by 2031.

Primary Centres will evolve as distinct places of major activity around planned subway stations and existing regional shopping destinations. The proposed hospital site is also positioned to evolve as a Primary Centre, given the City-wide importance of its services. Primary Centres will become mixed-use areas with residential development as well as a range of other uses that will serve residents, surrounding Community Areas and the City as a whole, including retail, institutional and office uses, community facilities and human services. They will be designed as transit-oriented and pedestrian-friendly places and include: Vaughan Mills; Thornhill Centre; Weston Road/Highway 7; Yonge Street/ Steeles Avenue; and Steeles Corridor (between Jane and Keele).

Local Centres will be the medium density cores of their respective communities. They will be predominantly residential in character but will also include a mix of uses to allow residents and the surrounding community to meet daily needs in close proximity to where they live or work. Local Centres will be pedestrian-oriented with good urban design and an intensity of development appropriate for supporting efficient transit service. Local Centres in Vaughan are generally well served by transit and they include: the Woodbridge Core; Maple; Kleinburg; and Thornhill-Yonge Street.

A number of streets in Vaughan and the lands fronting them have been identified as Primary Intensification Corridors to recognize their role in linking the VMC, Primary and Local Centres, and accommodating higher-order transit. This category includes both Regional Corridors (e.g. Highway 7 and Yonge Street) and local corridors (e.g. Jane Street and Major Mackenzie Drive).

## 4.4 "New Path" Transportation Vision

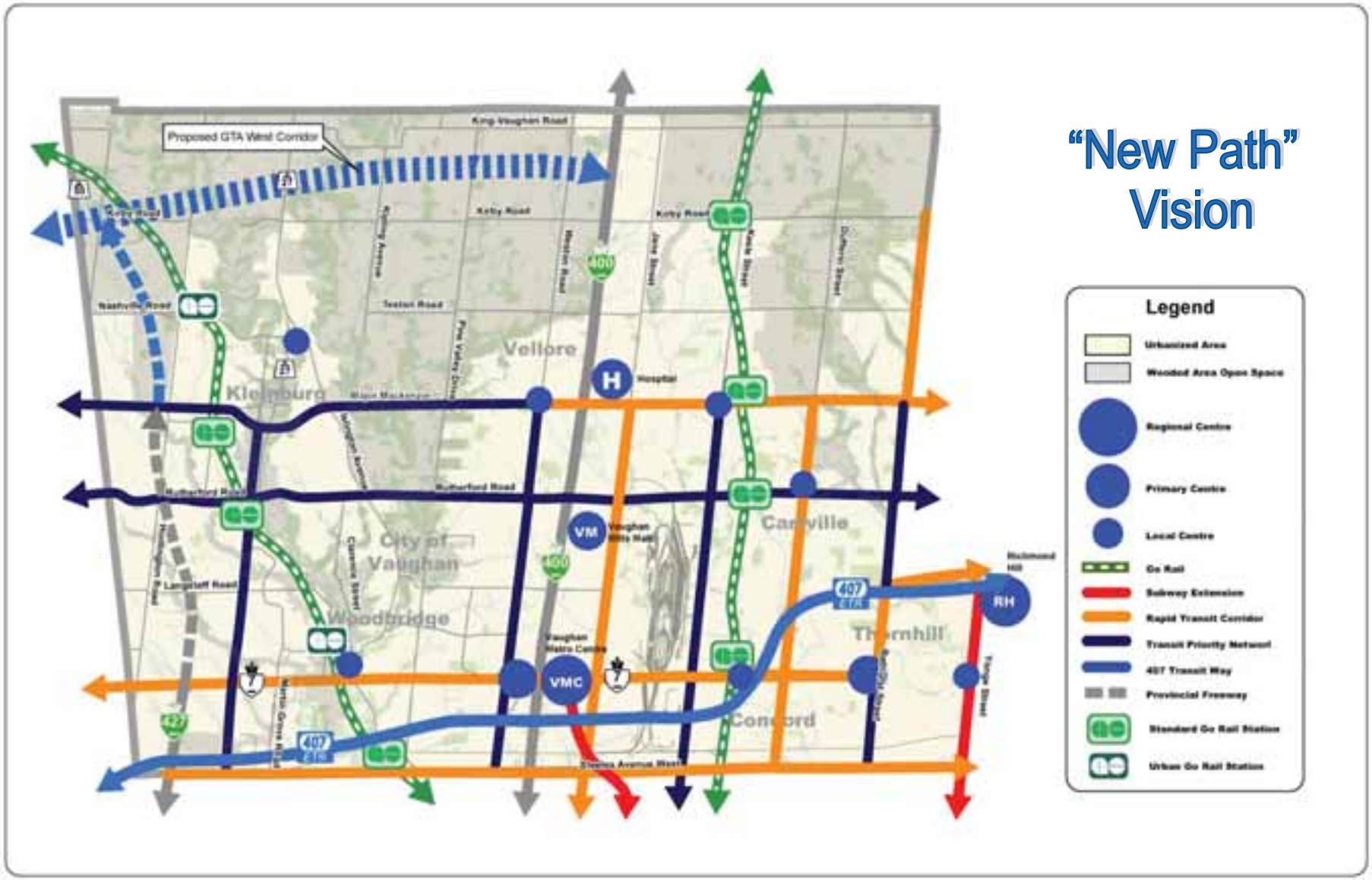
Building on the urban infrastructure are various transportation elements reflective of the transportation vision for the City. As shown in **Exhibit 4-1**, these elements include two GO Transit lines and associated stations and transit corridors. The GO Transit lines include the Barrie Line with its two proposed stations, and the proposed Bolton Line, with five stations within Vaughan. The majority of major arterial roadways within Vaughan's urban areas are proposed to be either rapid transit or transit priority corridors. The network of rapid transit corridors includes: Steeles Avenue; Highway 7; and portions of Major Mackenzie Drive, Jane Street, Dufferin Street and Bathurst Street. The transit priority corridors include: Rutherford Road; a segment of Major Mackenzie Drive; Highway 27; Weston Road; Keele Street; and Bathurst Street. The City's transit infrastructure also includes the 407

Transit- way corridor. Development along these corridors will encourage walking, cycling and the use of transit. The extensive nature of the transit network reflects the Metrolinx "Big Moves" Regional Transportation Plan and the Region of York's updated Transportation Master Plan.

Complementing this network of transit infrastructure is a strong Transportation Demand Management (TDM) strategy targeting travel demand reduction as an important part of an overall sustainable transportation system. A TDM strategy for the City is discussed in **Chapter 6.**

As noted above, the TMP vision is focused on ***reducing automobile dependence and moving the City closer to achieving the goal of a more liveable and sustainable community***. Steps toward achieving this vision are discussed next in **Chapter 5**.

**Exhibit 4-1: Vaughan's Centres and Transit Corridors**



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# 5. Strategies for Reaching the Vision

The vision for the City of Vaughan's Transportation Master Plan (TMP) focuses on ***reducing automobile dependence and moving the City closer to achieving the goal of a more liveable and sustainable community***. As this vision represents a significant policy shift, a new, long term approach to transportation will be needed. Success will require involvement of a variety of participants; City Departments (e.g., Development / Transportation Engineering, Engineering Services, Public Works, Policy Planning, Development Planning, Urban Design), government agencies (City, Regional, Provincial), and those living and working in Vaughan will all play a role in achieving a sustainable future.

## 5.1 Integration of Land Use and Transportation Planning

Integration of land use and transportation planning is critical to a successful, liveable community. There are several ways in which this can occur, and an important outcome of this TMP will be integration of these disciplines throughout the life of the Plan.

### Integrated Official Plan and TMP Development

This TMP has been developed with the new Official Plan as part of the City's Growth Management Strategy, which brings together all of the elements needed to address Vaughan's current and future challenges and opportunities. Development of the TMP has been closely integrated with the Official Plan, in terms of its overarching vision, support for the City's population and employment growth and its planned allocation to centres and corridors, and its sustainability commitment.


Source: VIVA Next

### Centres and Corridors

The City's urban structure concept of Centres and Corridors represents the close connection between land use and transportation planning in Vaughan. As discussed in **Chapter 4**, the City has identified a range of centres and corridors, including: the Vaughan Metropolitan Centre (VMC) Regional Centre; Primary Centres; Local Centres; and Primary Intensification Corridors. The Regional and Primary Centres are being planned around higher order transit and commercial and shopping areas, designed as mixed-use areas to encourage walking, cycling, and transit use. Development, transit and walking and cycling infrastructure are being planned together to ensure the following: these centres and corridors have ready access to transit; densities and land uses are designed such that a car is not required for day-to-day activities; and moving around the City is straightforward and enjoyable.

As per the *Growth Plan for the Greater Golden Horseshoe*, the City has a target to accommodate 45% of residential growth in intensification areas (development at higher density than is currently in

place). This pattern of development will allow for shorter trips, greater access to transit, and more opportunities for walking and cycling.

### 'Complete Communities'

The concept of 'complete communities' involves creating compact, mixed use neighbourhoods that provide transportation options and encourage living, working and playing within one community. Vaughan supports the ongoing development of the City where opportunities are provided for mixed uses that enable short trips, walking and cycling, as well as high quality transit services that are integrated into the community and are accessible and efficient.

### Strong Relationship between Land Use and Transportation Planning Services

Development of the TMP represents a significant step in integrating Vaughan's land use and transportation planning, and is an important step in the future direction of planning in the City. Moving forward, an ongoing close relationship is needed between Vaughan's transportation planners, engineers, urban planners and urban designers. This relationship can be fostered in a number of formal and informal ways, including joint meetings, department-head meetings, and information sharing about new developments, transportation improvements and new planning concepts.

## 5.2 Official Plan Policies and Modal Share Targets

The new Official Plan calls for a transformation in how people travel around Vaughan. It recognizes that land use and transportation are inextricably linked, and that a sustainable transportation network is critical to supporting the City's approach to growth and development.

### Policies

Working with the Official Plan study team, City representatives and other stakeholders, a comprehensive set of transportation policies has been developed to guide future transportation planning. Chapter 4 of the Official Plan, presented in **Appendix H,** sets out the following nine general policies of Council (some abbreviated):


Source: City of Vaughan Official Plan, April 2010

- to establish a comprehensive transportation network that allows a full range of mobility options, including walking, cycling and transit;
- that public transit will be the primary focus for expanding Vaughan's transportation network capacity to 2031;
- to recognize the integrated nature of land use, urban design, and transportation in land use planning decisions that support a full range of transportation options, and specifically prioritize opportunities to enhance walking, cycling and transit options;

- that Intensification Areas are priorities for transit investments:
- that the street network will be the basis for enhanced transportation opportunities, including transit, walking, cycling, and place-making initiatives;
- to support the development of a comprehensive network of on-street and off-street pedestrian and bicycle routes to facilitate walking and cycling, and to promote convenience and connectivity;
- to implement the identified long term transportation and transit networks;
- to update the Vaughan Transportation Master plan and the Pedestrian and Bicycle Master plan every five years at minimum; and
- that all transportation and transit infrastructure initiatives within the Oak Ridges Moraine and Greenbelt Plan Areas be in accordance with the policies of those Plans.

Chapter 4 also contains more detailed policies under the following headings:

- Section 4.2.1 : The Street Network;
- Section 4.2.2 : Supporting a Comprehensive Transit System;
- Section 4.2.3 : Supporting Active Transportation;
- Section 4.3.1 : Traffic Calming;
- Section 4.3.2 : Parking;
- Section 4.3.3 : Transportation Demand Management;
- Section 4.4.1 : Enhancing Rail Transportation; and
- Section 4.4.2 : Supporting Goods Movement.

The City's transportation policies are linked to its urban structure and allocation of growth. The focus of the policies centres on significantly reversing the current trend of automobile dependence, and moving the City closer to achieving sustainable transportation. In general the policies strongly support the following:

- Alternative modes of transportation;
- Multi-modal use of all roadways within, through and adjacent to Vaughan;
- Improved transit services, including cross-boundary initiatives to ensure seamless municipal boundaries; and
- Aggressive Transportation Demand Management (TDM) to minimize growth in demand for travel.

More specifically, through Vaughan's new OP policy 4.2.2.13, the City supports the Regional standards (York Region OP policy 7.2.25) that transit service be provided so that the distance to a transit stop in the Urban Area is within 500 m of 90% of residents, and within 200 m of 50% of residents.

These policies are geared toward guiding the development of the entire City of Vaughan, but with particular focus on the Vaughan Metropolitan Centre (VMC), Primary Centres, Local Centres, Intensification Corridors and other new areas designated for population and employment growth.

### Modal Share Targets

In addition to policies to support all modes of travel in Vaughan, the new Official Plan also includes transit modal split targets. **Exhibit 5-1** presents the targeted 2031 transit modal split for three different areas of the City, which are consistent with targets set by York Region. An overall transit modal split of 30% during peak periods is targeted for the City as a whole, while transit modal splits of 50% and 40% are targeted for the VMC and Rapid Transit Corridors, respectively.

**Exhibit 5-1: 2031 Transit Mode Share Targets**

| Areas | Jurisdictions | |
|---|---|---|
| | ***Regional Targets*** | ***City Targets*** |
| **VMC** | 50% | 50% |
| **Rapid Transit Corridors** | none specified | 40% |
| **City-Wide** | 30% | 30% |

Achievement of these targets is dependent upon implementation of not only an extensive network of Rapid Transit services, but also strong programs in Active Transportation and TDM, which are both highly supportive of greater transit use. These transit mode share targets should be reflected in all transportation impact studies to support new development, in broader area and corridor transportation studies, and in specific recommended infrastructure improvements and other program initiatives. While no specific targets of active transportation mode share have been set, the City is to implement a suite of new policies, programs and infrastructure improvements (consistent with the updated Cycling and Pedestrian Master Plan) to encourage active transportation usage, with a view to increasing the share significantly beyond the current 6% of peak period trips.

An effective travel monitoring program will be essential to ensure that progress is being made towards realizing the transit mode share targets.

## 5.3 'Transit First' Approach

The City of Vaughan is committed to placing a high priority on transit as the City's preferred transportation mode; this includes planning and support for transit infrastructure and services, as well as the walking and cycling links that serve them. While the road system represents by far the greatest portion of transportation infrastructure serving Vaughan, the City's sustainability and transportation goals and objectives require a multi-


Source: VIVA Next

modal approach to the use of roadway space with a focus on transit priority initiatives. If transit is to become more competitive with the car, dedicated space (lanes) within roadway rights of way (ROW) will be essential to increase transit speeds and improve reliability of service.

The 'transit first' approach will be used to identify and prioritize transportation improvements, whereby road network improvements would be limited to strategic initiatives that support transit and goods movement, improve network connectivity, or support intensification in designated centres and corridors. Local roadway improvements will also be required to provide basic vehicle access to newly developing areas and in those locations where reasonable travel options do not exist.

## Provision for Higher Order Transit

A central element in achieving the City's sustainability and transportation goals involves the provision of infrastructure for higher order transit, including Bus Rapid Transit (BRT), Light Rail Transit (LRT), subway extensions and passenger rail services. In order to make transit truly convenient, efficient and competitive with the private car, higher order transit must serve key areas of the City and be linked both to the Greater Toronto Area (GTA) network and to local transit services.

Several government agencies are involved in implementing and operating transit infrastructure and services; York Region Transit (YRT, including VIVA); the Toronto Transit Commission (TTC); and Metrolinx (GO Transit) all provide transit services to Vaughan. To provide for transit improvements, Regional Capital Plans should include provision for higher order transit as a priority, and the Province of Ontario should continue to allocate a significant share of its transportation funding to transit and associated mobility hubs and Transportation Demand Management (TDM) initiatives. It is recognized that there will be competition for funds among other Regions and for road improvement projects within York Region, and that a balance will need to be found.

While the City does not directly provide transit, it will need to continue to play its key role in supporting higher order and local transit services, advocating service expansions and improvements, directing growth to centres and corridors, and providing for access to transit, as discussed further below.

## HOV and Bicycle Lanes


Source: York Region

York Region is in the process of implementing a widespread program for the provision of High Occupancy Vehicle (HOV) lanes and bicycle lanes on all urban arterials widened to 6 lanes. This is an important step in creating a transit-oriented system, as these lanes will improve conditions for road-based transit, carpools and cycling within Vaughan. HOV lanes will improve travel times for transit and carpools, which is a key factor in travellers' mode choice; improved transit and HOV travel times will increase the attractiveness of these alternatives and their competitiveness compared to the car.

## Bus Service Expansion

In order for transit to be an effective means of transportation within and through Vaughan, bus services must be expanded and improved to meet residents' and workers' needs at all levels. The bus system comprises local services and higher order / rapid services; both are important in the transit system. More local routes will be needed to serve existing and new development areas, and to connect residence and activity areas as well as connect to higher order transit services. Higher frequency of service will also be needed on regular bus routes to ensure that transit is convenient and features limited wait times. Combined with priority measures, these improvements will increase transit's attractiveness for all types of travel. Capital funding commitments will be needed to achieve these improvements.


Source: York Region Transit

The City of Vaughan will have a key transit role in working with the Region and other transit service providers to promote expanded local services and higher bus frequencies on regular services, and to promote the early implementation of bus service into new development areas.

## Transit Fare and Service Integration

Integration of transit services is of particular importance in Vaughan, as the City shares Regional boundaries with the City of Toronto and Region of Peel. It is important that services including YRT / VIVA, TTC, Brampton Züm and GO Transit are integrated in terms of service times, routes and fares. This is an important element for enabling longer distance and cross-boundary transit travel, and making best use of the extensive transit network within and around Vaughan. The Presto 'smartcard' system, when fully implemented across the GTA, will provide fare integration and enable transfers between transit systems. To ensure integration into the future, the GTA's municipalities and transportation service providers will need to work together and understand the issues and priorities of individual municipalities. The City can have an active and leadership role through initiating a working group focused on transit in Vaughan, primarily comprising the City of Vaughan, Metrolinx / GO Transit and York Region. Such a group would meet quarterly to discuss service issues, gaps in the transit network, areas of low transit ridership, and how to successfully implement transit improvements and increase transit modal split.

## Access to Transit

While the City of Vaughan is not directly responsible for transit services, it can provide safe, attractive and convenient access to these services. Walking and cycling links to transit stops are critical to transit use and success; all transit riders are also pedestrians or cyclists, and a sustainable transportation system provides for trips from door-to-door. Planning for walking and cycling includes implementing sidewalks and bike facilities, and ensuring that access


Source: Urban Strategies

to transit is direct and well maintained. This is a key role for the City in working toward increasing transit ridership, while providing for active transportation and thereby promoting sustainable and active lifestyles.

## 5.4 Changing Travel Behaviour

The highway and road network serving Vaughan is already well developed and there are limited opportunities to improve road network capacity to serve the increasing demand for travel by car. To achieve a more sustainable transportation system, with significantly higher modal shares for transit, walking and cycling, travel behaviour must change. Recognizing that behavioural change occurs over the long term, the City needs to intensify its TDM efforts immediately.

Alongside the provision of convenient and reliable transit services and extensive walking and cycling links, initiatives are needed to encourage Vaughan's residents and workers to travel sustainably. As discussed in **Chapter 2**, Vaughan is a member of the Smart Commute Transportation Management Association (TMA) and actively engaged in Transportation Demand Management (TDM) throughout the City. Moving forward, as transit, walking and cycling facilities are improved, increased TDM initiatives will serve to highlight these improvements, and promote new travel options and encourage their use by the travelling public. Working with Smart Commute, York Region, and local employers and stakeholders, the City should use TDM activities to engage the public and promote Vaughan's sustainable transportation options.

The City's TDM initiatives should include reduced parking supplies, parking charges in centres and corridors, development review requirements, community outreach, support for employer-based programs, and other incentives to encourage changes in travel behaviour. Such initiatives are supported in the new Official Plan. An overall TDM strategy for the City is advanced early in the next chapter and the Action Plan (Exhibit 7-5) in **Chapter 7** identifies the high priority need for a more detailed City-wide TDM plan.

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# 6. Recommended Elements of the Plan

The result of the Vaughan Transportation Master Plan (TMP) process is a set of recommendations forming the key elements of the Plan. These recommendations have been developed according to the Principles, Goals and the "New Path" Transportation Vision discussed in **Chapter 4** and the specific Strategies laid out in **Chapter 5**, which are strongly connected to the policies contained in the recently adopted Official Plan. This chapter is organized around the following five key elements of the TMP:

1. Transportation Demand Management (TDM);
2. Transit Network Improvements;
3. Active Transportation (Walking and Cycling);
4. Parking Management; and
5. Strategic Road Improvements.

The TMP's implementation strategy, phasing plan, priorities and action plan follow in **Chapter 7**.

## 6.1 Transportation Demand Management (TDM)

As noted throughout the TMP, the importance of managing transportation demand cannot be overemphasized in Vaughan's effort to achieve the vision of a more sustainable transportation system. Future travel demands cannot be satisfied primarily through road improvements as has traditionally been the case. Thus, a meaningful TDM strategy with an overall goal of minimizing the growth in auto use, especially during peak travel periods, is an essential element of the TMP. Through the development of the TMP, it has been concluded that transportation demand should be managed in Vaughan by focusing on the following four objectives:

- Overall trip reduction (through initiatives to support flexible working programs such as telecommuting and 4-day work weeks);
- Mode of travel shifts (from auto to transit, cycling and walking);
- Time of travel shifts for necessary auto trips (shifting trips out of the peak periods); and
- Increases in vehicle occupancy for necessary auto trips (through car and van-pooling initiatives).

A set of TDM policies was also developed for inclusion in the City's new Official Plan (Section 4.3.3 of Chapter 4, which is contained in Appendix H to this TMP). These, together with the above four objectives, provided the foundation for a city-wide TDM strategy. The recommended strategy set out on the next page recognizes the strong TDM support by York Region and Metrolinx already operating within the jurisdiction of Vaughan. Recommended policies and physical infrastructure including road widenings for High Occupancy Vehicle (HOV) lanes and rapid transit initiatives outlined in the recently updated 2009 York Region TMP Update strongly support TDM in the urbanized parts of the Region,

including Vaughan. Similarly, the Western Vaughan Individual Environmental Assessment and the secondary plan studies for the Vaughan Metropolitan Centre (VMC) (**Appendix A1**) and Western Vaughan Employment Area (WVEA) (**Appendix B**) recommend specific TDM strategies for these respective areas. It is within this TDM-supportive context that the Vaughan TMP sets out a proposed TDM Strategy comprised of the following six initiatives for the City as a whole. The City should:

1. Support Transportation Management Associations (TMAs), promote TDM by making residents and local businesses aware of its benefits, and monitor effective implementation of TDM measures in Vaughan;
2. Work with the City's largest employers to develop and implement TDM plans to encourage / enhance the use of sustainable transportation through ongoing action before and after occupation;


Source: Ontario Ministry of Transportation

3. Leverage the development approvals process to secure TDM enhancement in new developments and require TDM plans for all new developments with greater than 2,000 square metres of office use or 50 residential units;
4. Develop and implement school based TDM programs at both the elementary and high school levels;
5. Support the integration of bicycle and public transit travel, including improved cycling access and bicycle storage at transit stops and stations, bike racks on buses and allowing bikes on subway trains; and
6. Lead by example and establish a state-of-the-art TDM program for City of Vaughan employees.


Source: Smart Commute

These initiatives should be considered in the preparation of a more detailed city-wide TDM Plan as a high priority over the next year. The City should ensure that there are adequate staff resources to implement such a City-wide plan.

## 6.2 Transit Network Improvements

A modal shift to transit is another critical element of the Vaughan TMP. This shift, together with the associated reduction in auto dependence, will require significantly improved transit service. The City of Vaughan is in full support of rapid transit expansion supplemented with widespread application of surface transit priority measures, such as exclusive bus and / or HOV lanes, traffic signal priorities and transit queue jump lanes at signalized intersections, together with a general increase in the level of transit service in terms of coverage and frequency of service throughout the City. As illustrated in **Exhibit 6-1**, the City's recommended future transit network is consistent with York Region's proposed 2031 transit improvements, discussed in **Chapter 3**. These improvements consist of:

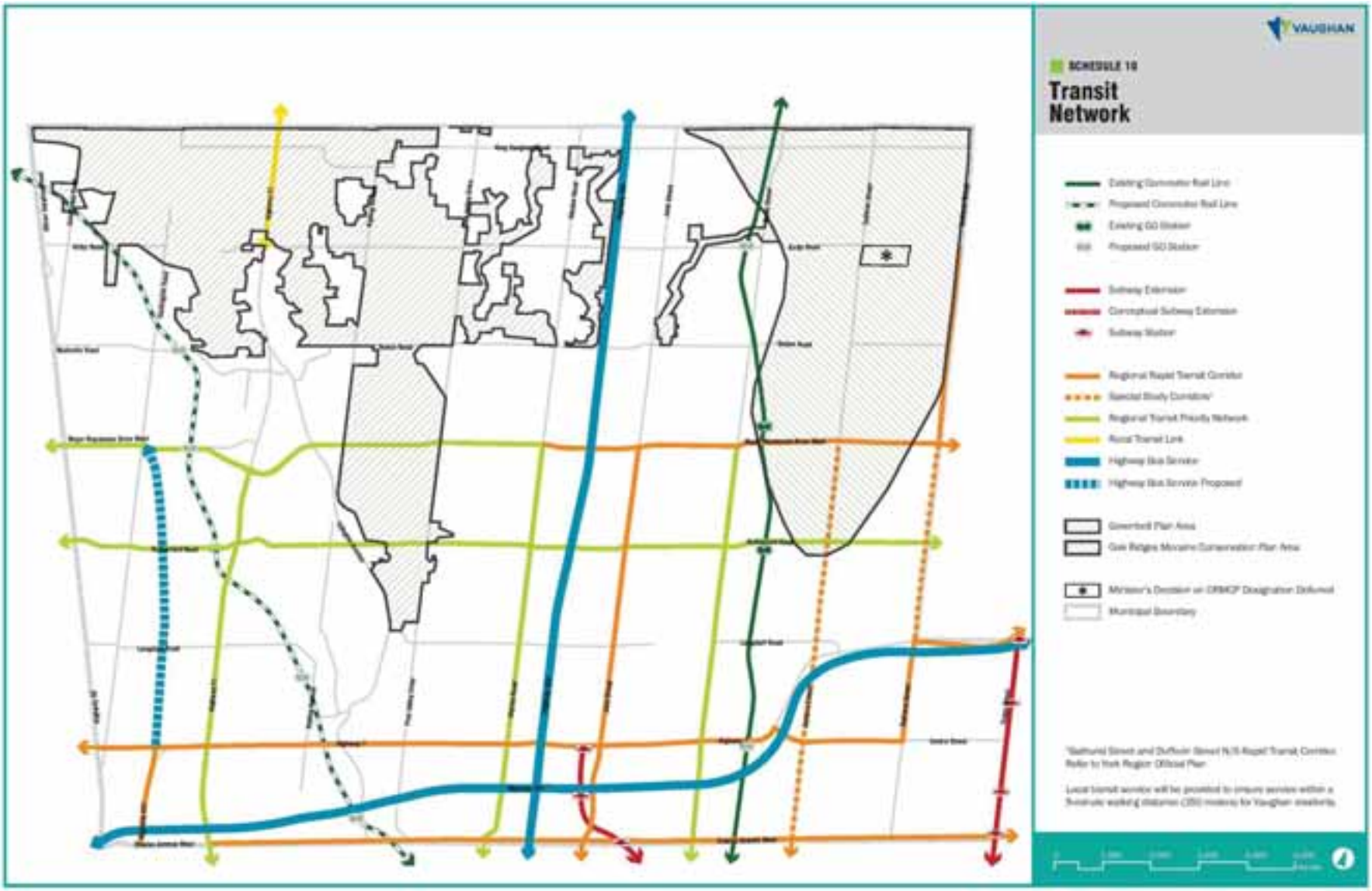
- TTC Spadina subway extension, which is currently underway with 3 proposed new stations within Vaughan, and is expected to be completed by the end of 2015.
- The planned Yonge subway extension to Highway 7 along the eastern boundary of Vaughan.
- GO Transit commuter rail service to Bolton with five proposed new stations (three supported by GO, plus additional "urban" stations in Woodbridge and in Nashville without commuter parking).
- Two proposed new GO Transit stations along the existing Barrie GO line at Highway 7 and at Kirby Road.
- Rapid Transit along segments of Steeles Avenue, Highway 7, Major Mackenzie Drive, Jane Street and Dufferin / Bathurst Streets.
- Designation of several arterial road segments as Transit Priority corridors, which may include HOV lanes, signal priority measures and queue jump lanes.
- 407 ETR Transitway across the entire City.
- Provision of expanded highway bus services on the City's 400-series highways.
- Special study corridor including Bathurst Street and Dufferin Street to determine the optimal north-south rapid transit alignment within this corridor.


Source: York Region Transit

The TMP concludes that the City needs to assume a strong support role in facilitating transit use through the following measures:

- Promote higher density and mixed-use development in centers and along transit corridors.
- Focus new office development in locations served by rapid transit or high frequency bus service.
- Provide mid-block collectors, particularly across Highway 400 and other major barriers, for local bus routes.
- Expand the pedestrian and cycling network to ensure improved transit access.
- Focus TDM programs on the need for a modal shift to transit.
- Coordinate with York Region and Metrolinx / GO Transit to ensure seamless cross-Regional boundary transit with TTC and Brampton Transit services (this will be particularly important for the new West Vaughan Employment Area (WVEA) immediately east of the Peel boundary).

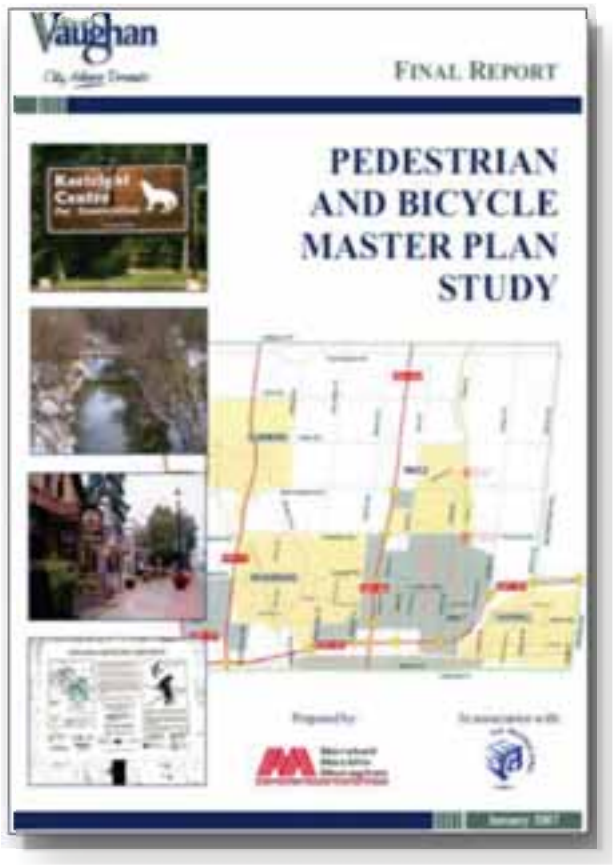
**Exhibit 6-1: Recommended Vaughan Transit Network (Schedule 10 in the recently adopted City of Vaughan OP)**



Specific recommendations for secondary plan areas are discussed in **Appendices A and B**. These recommendations generally focus on increasing transit modal share and ridership in new development areas including the WVEA. It is also recommended that new and / or improved transit service be implemented as early as possible to serve newly developing areas, so that new travel patterns can be formed in the presence of high quality transit.

## 6.3 Active Transportation

As discussed, active transportation will become an increasingly important element of Vaughan's transportation system as it moves toward sustainability. The TMP supports the recommendations of the 2007 Pedestrian and Bicycle Master Plan (PBMP) Study with its vision to develop a comprehensive and connected network of pedestrian and cycling facilities. Consisting of off-road multi-use pathways, on-road bike lanes and routes, boulevard pathways and sidewalks, this comprehensive network will help to facilitate walking and cycling in the City for leisure, commuting and other purposes.




The Pedestrian and Bicycle Master Plan is a 20-year plan that has been designed with guidelines and recommendations that will assist City staff in the development and implementation of new programs (e.g. education, encouragement and enforcement) and facilities (e.g. secure bicycle parking) to make Vaughan a more pedestrian- and cycling-friendly city. Emerging through extensive public and staff consultation, the Plan has been designed to be flexible by calling for necessary refinement of recommended routes and facility types.

Following on from the PBMP, the TMP includes recommendations to expand the proposed pedestrian and bicycle network, particularly for proposed development and new intensification areas including the WVEA, VMC, Woodbridge Core and Nashville-Kleinburg areas. **Exhibit 6-2** presents the recommended City bicycle and pedestrian network, and this should be used as the basis for a formal update of the 2007 PBMP.

As shown in **Exhibit 6-3**, the TMP recommends adding approximately 70 kilometres of bicycle and pedestrian network facilities to the 645 kilometres in the previously revised 2007 Pedestrian and Bicycle Master Plan Study, an increase of about 10%.

**Exhibit 6-2: Pedestrian and Bicycle Network: Facility Types**

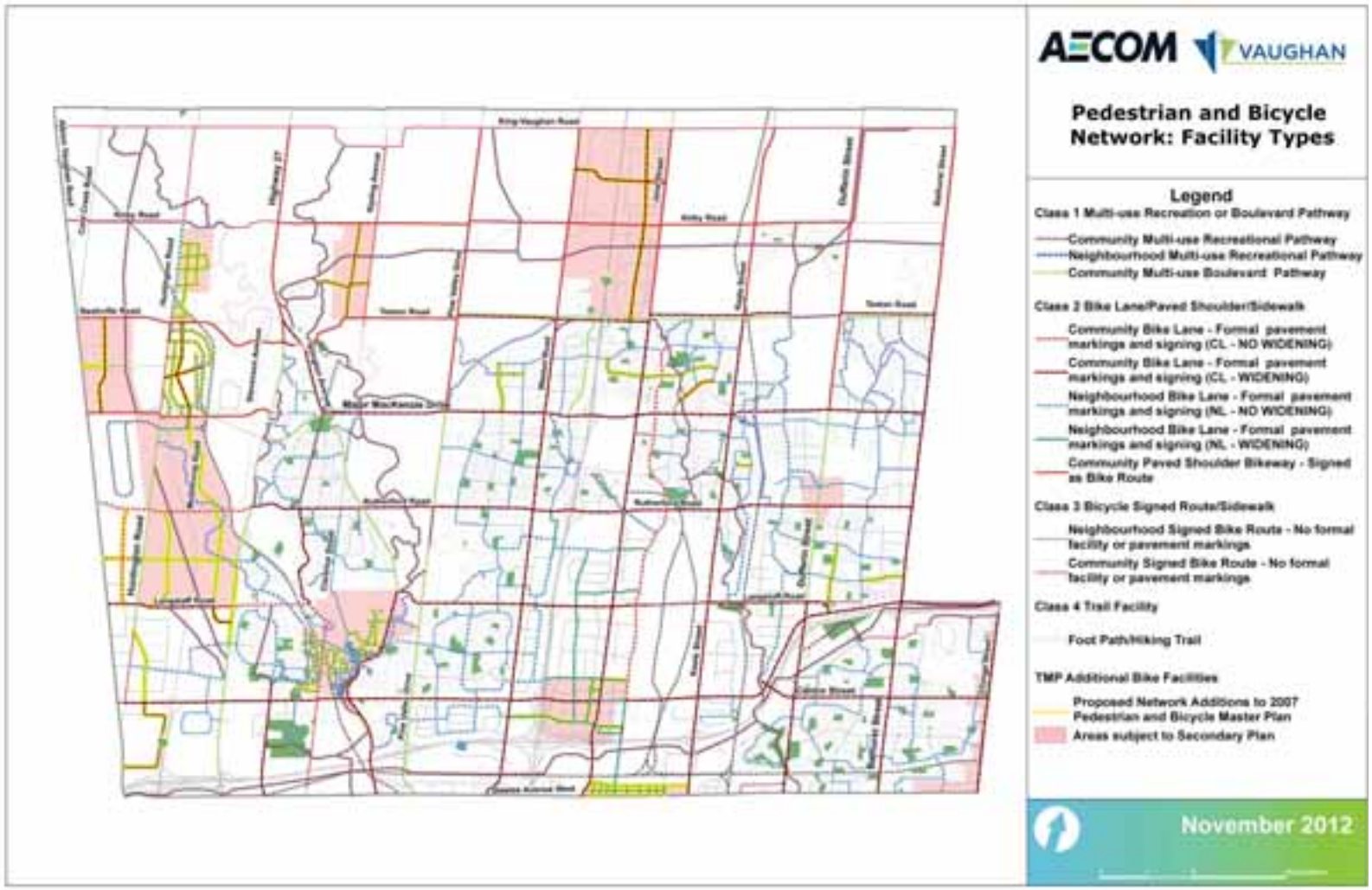


**Exhibit 6-3: Recommended Upgrades to Pedestrian and Cycling Network by Facility Type**

| Facility Type | 2007 Pedestrian and Bike Master Plan (km) | Previous Secondary Plan Additions (km) | TMP and Secondary Plan Recommendations (km) |
|---|---|---|---|
| **Multi-Use Recreational or Boulevard Pathway (Class 1)** | 210.4 | — | 239.4 |
| **Bike Lane / Paved Shoulder Bikeway (Class 2)** | 230.7 | 46.2 | 301.5 |
| **Community Signed Bike Route (Class 3)** | 140.0 | 2.7 | 158.8 |
| **Foot Path/Hiking Trail (Class 4)** | 15.5 | — | 15.5 |
| **Grand Total** | **596.6** | **48.9** | **715.2** |

In keeping with the "New Path" Vision, and to realize the full benefits of Active Transportation, Vaughan requires a more progressive sidewalk policy. Such a policy would ensure that the sidewalk network is more complete and that sidewalks are available on both sides of most streets, sufficiently wide, and safe and pleasant places to be. Major benefits of an enhanced sidewalk policy would include the following:

- **Decreased reliance on the automobile** – by building more sidewalks, additional walking is encouraged, resulting in less travel by automobile;
- **Increased quality of life** – increased walkability makes for more vibrant streetscapes and neighbourhoods and encourages more social interaction;
- **Increased public safety** – more sidewalks will remove pedestrians from roadways, plus add "eyes on the street" within neighbourhoods and communities; and
- **Improved personal health** – walking is good exercise and the more active we are, the fitter we will be.

As shown in the Action Plan in the next chapter, an updated sidewalk policy is a high priority for the City. It should be noted that it was also supported in the 2007 PBMP.

## 6.4 Parking

In keeping with the City's vision of reducing auto dependence and promoting sustainability, the TMP recommends that the City adopt parking strategies that provide lower parking requirements for new development in centres and corridors well served by transit, and promote shared parking facilities in an effort to reduce single-occupant vehicle travel. The City should assume the responsibility of constructing and managing off-street public parking in strategic locations and use generated revenue to offset costs and fund TDM initiatives.

The TMP fully supports the proposed parking standards recommended in the draft 2010 *Review of Parking Standards Contained within the City of Vaughan's Comprehensive Zoning By-Law: Final Report*. The following summarizes the key components of the proposed parking standards outlined in this study.

1. Revise existing parking standards to better reflect responsible levels of parking by balancing the need to meet parking demand without contributing to extensive oversupply and inefficient land use.
2. Eliminate and/or consolidate the current overlapping land uses for parking requirements to simplify standards and improve accuracy.
3. Consider the evolving diverse urban forms and avoid the 'one size fits all' approach of parking standards. The standards should specify alternative minimum and maximum parking requirements for different urban land uses, reflecting degrees of urbanization, levels of transit service and diverse planning objectives for these areas.
4. Consider parking demand and existing supply through application of adjustment factors tailoring parking requirements to local conditions (e.g. reduced parking for sites within close proximity to transit hubs).
5. Apply cash-in-lieu as a strategy to raise funds for development of public parking to be constructed and managed by the City. This will provide flexibility for developers to provide less parking on-site.
6. Improve parking design regarding parking space access and dimensions. This includes dimensions for typical automobile spaces, small car spaces to promote the uses of smaller, more fuel-efficient vehicles, and bicycle parking. Also provide by-law requirements regarding design aspects such as landscaping, location and layout, and stormwater management.


Source: Urban Strategies

7. Bicycle parking requirements should be specified for office, retail, restaurant, multi-unit residential, recreational and school uses, including requirements for short- and long-term spaces.
8. Adopt standards that are in line with the provisions under the Accessible Built Environment Standards being developed as part of the *Accessibility for Ontarians with Disability Act*.

Beyond these parking standards recommendations, the TMP recommends that the City work with the Region and Metrolinx / GO Transit to identify and provide a network of strategically located carpool lots to support a reduction in single occupant auto use. Shared parking with existing facilities such as recreational areas, shopping malls and large retail stores should be the first consideration in establishing carpool and / or Park-and-Ride lots. A specific need for a Park-and-Ride facility north of the VMC has been identified and alternatives suggested. The City should work with the Region to explore these alternatives which would focus on shared use facilities connected to the extended Spadina Subway via shuttle bus services.

Source: Smart Commute

The City should consider relaxing on-street parking prohibitions before establishing any large surface parking lots, particularly in designated centres. On-street parking supports retail activities while acting as a traffic calming measure. Conversely surface parking, particularly in intensification

areas, is an inefficient land use that can create gaps in the urban form. Paid on-street parking should also be implemented, particularly in intensification areas.

## 6.5 Strategic Road Improvements

It is the recommendation of the TMP that road network improvements would be largely limited to strategic initiatives that support transit and goods movement, improve network connectivity, or support intensification in designated areas. Some local improvements will also be needed to provide basic vehicle access to newly developing areas and in those locations where reasonable travel options do not exist.

Road improvements that could compete with transit should be deferred until enhanced transit services are operating and have an established ridership base. Road improvements to address future capacity deficiencies that cannot be addressed by TDM (including HOV) initiatives and enhanced transit should be identified when a corridor is forecast to exceed its practical capacity (i.e. Level of Service "E"). The recommended road improvements within the City boundary include Provincial Highways, Regional Roads and City Streets.

- **Provincial Highway Improvements**
  Serving as the primary goods movement network, improvements to the provincial highways would benefit the trucking industry and help to alleviate truck traffic on Regional and City roads. Recommended Provincial highway improvements include the proposed Highway 427 extension, Highway 400 widening and several new / improved interchanges along Highways 400 and 407. The TMP also recognizes the intent of the Ontario Government to define and designate a GTA West transportation corridor west of Highway 400 with connections to Highway 427. In this regard there is uncertainty as to the location of its interchange with Highway 400 and this may affect the amount of development and its timing within the Highway 400 employment corridor. See Metrolinx Regional Transportation Plan for further information.
- **Regional Road Improvements**
  The majority of the Regional road improvements comprise widening to 6-lanes to accommodate HOV and on-street bike lanes, thereby reducing auto dependence. Some widenings from 2 to 4 lanes, mostly in the northern portion of the City, are recommended to support local developments. Recommended new links including Langstaff Road, and Teston Road serve to complete the arterial system network and also serve strategic purposes. The Langstaff Road extension and Highway 400 interchange improvement, as well as the modifications to the Highway 400 / Highway 7 interchange, are key elements of the road network required not only to support the VMC, but also to form a central part of a future VMC truck diversion strategy. See York Region Transportation Master Plan for further information.
- **City Road Improvements**
  The recommended 2031 City of Vaughan road improvements are illustrated in **Exhibit 6-4**. The recommended City road improvements, grouped by location, are presented in **Exhibit 6-5**.

## Exhibit 6-4: Recommended 2031 Road Improvements within the City of Vaughan

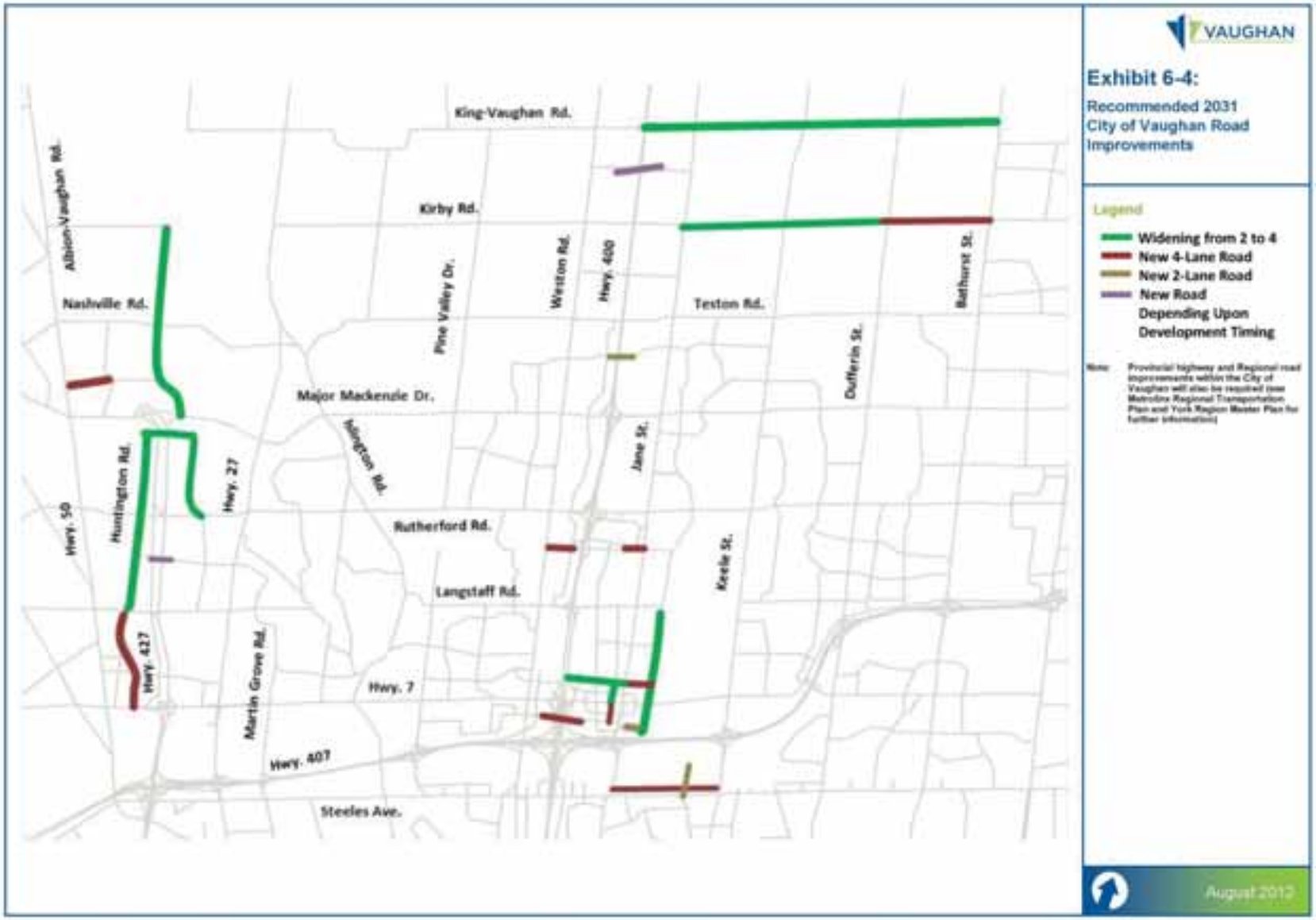
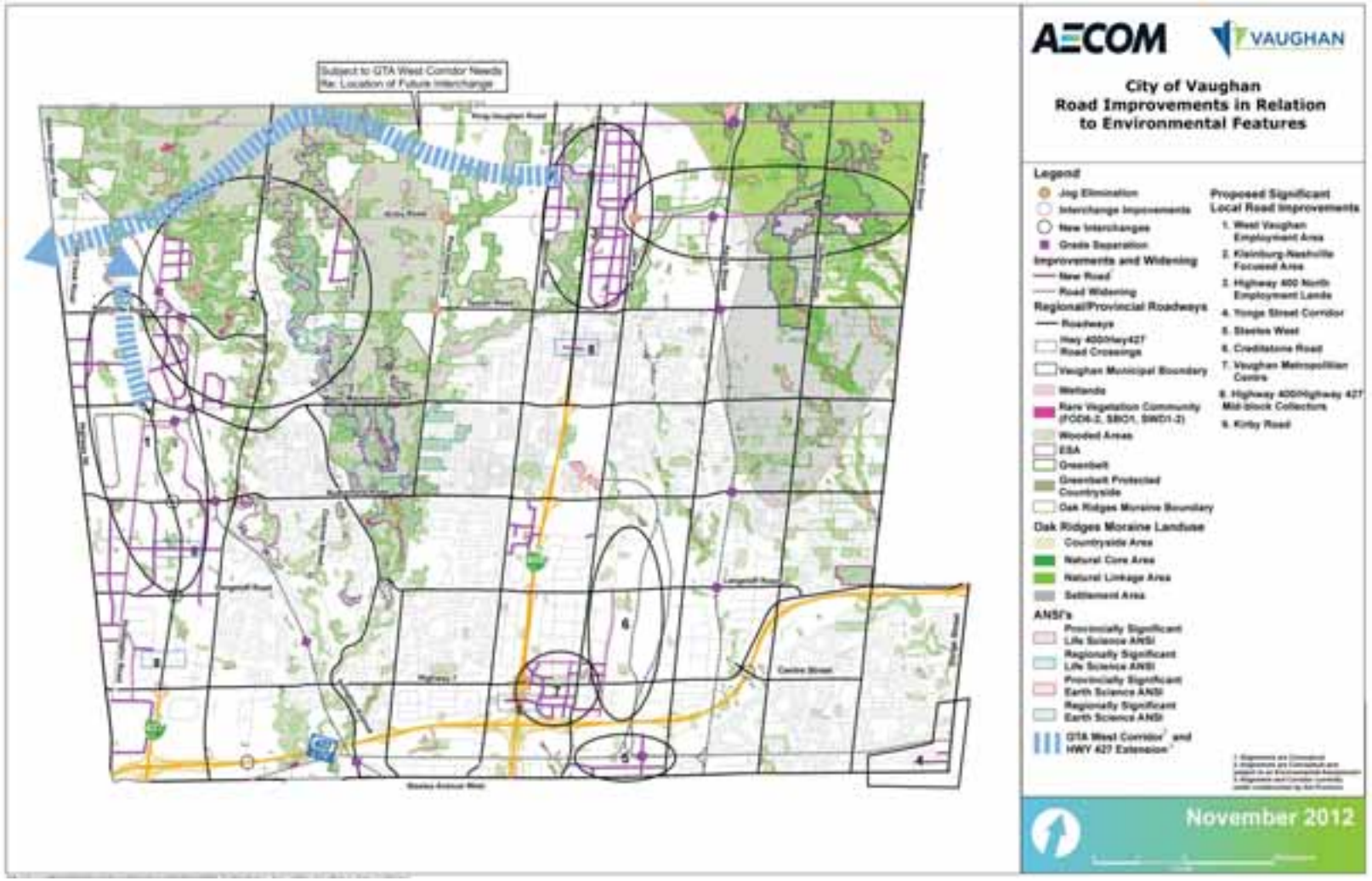


**Exhibit 6-5: Recommended City Road Improvements**



The improvements identified are based on a comprehensive corridor deficiency analysis for the year 2031 using travel forecasts from the newly developed City of Vaughan EMME/2 model, and documented in **Appendix F3**. It should be noted that the model estimated a City-wide transit modal split of only 15%, exactly half of the proposed 30% transit modal split target. While this approach may appear overly conservative, it is considered prudent given the huge capital investment required in transit infrastructure and the fact that transit infrastructure decisions are not directly within the control of Vaughan Council.

Increases in transit modal split will take a number of years to achieve and will be dependent not only on infrastructure and service improvements, but also strong policy supports in the following areas:

- Directing growth to centres and corridors well served by transit;
- Advocating transit and service integration across Regional boundaries;
- Reducing parking standards for new development;
- Charging for parking in centres and corridors;
- Providing high quality cycling and pedestrian access to transit; and
- Undertaking complementary TDM initiatives.

These are all areas under the direct control of the City and are often not adequately accounted for in computer models. Thus, the aforementioned transit modal split targets, while aggressive, are not unrealistic. The limitations of the model in forecasting transit modal splits reinforce the need for a comprehensive on-going travel monitoring program, together with regular TMP updates, where the need for the identified road network improvements can be reviewed.

The needs and justification for these grouped improvements are summarized below:

1. **West Vaughan Employment Area (see Appendix B)**
   New collector road system to provide vehicular access including transit and cycling connections, upgrade north-south spine (Huntington Road), and alleviate north-south and east-west arterial traffic.
2. **Kleinburg-Nashville Focus Area (see Appendix A3)**
   New collector road system to provide a western bypass, vehicular access including transit and cycling connections, and alleviate north-south arterial traffic.
3. **Highway 400 North Employment Lands**
   New collector road system to provide vehicular access including transit and cycling connections, and alleviate north-south arterial traffic (may be affected by the GTA West Corridor designation).
4. **Yonge Street Corridor**
   Improved collector roads to provide east-west alternatives and better local access.
5. **Steeles West**
   New collector road system to provide east-west alternative and additional north-south capacity across CN York rail line, improve vehicular access, and provide safer walking and cycling opportunities.

### 6. Creditstone Road

Roadway capacity improvements to alleviate north-south traffic, support development within the VMC, improve vehicular access, and facilitate truck travel.

### 7. Vaughan Metropolitan Centre (see Appendix A1)

New collector road system and capacity improvements to allow safer and more direct travel, improve access to transit, provide east-west alternatives, reduce truck traffic on Avenue 7[1]; and support alternative travel modes.

### 8. Highway 400 Mid-block Collectors

New road connections to alleviate traffic on east-west arterials, improve connectivity and access, and support alternative travel modes (connection between King-Vaughan and Kirby Roads may be affected by the GTA West Corridor).

### 9. Kirby Road Connection

New minor arterial road segment and capacity improvement to improve network connectivity, provide east-west alternative, improve vehicular access and provide safer walking and cycling opportunities.

### 10. Teston Road Area (Blocks 40 and 47)

New collector road system to provide vehicular access and alleviate north-south arterial traffic.

Finally, as an important part of strategic road improvements, the City and Region should eliminate at-grade rail crossings to improve public safety and reduce traffic delays. Existing at-grade rail crossings within Vaughan recommended for elimination are listed in **Exhibit 6-6** with their respective jurisdiction indicated. A few railway grade separations and jog eliminations at key intersections are also needed to improve public safety and reduce traffic delays.

**Exhibit 6-6: At-Grade Rail Crossings to be Grade-Separated**

| Rail Line Crossing | No. | At-Grade Crossings to be Eliminated | Jurisdiction |
|---|---|---|---|
| **CP MacTier Rail Line Crossings** | **1** | Huntington Road at CP Rail Line | City |
| | **2** | Nashville Road at CP Rail Line | Region |
| | **3** | Major Mackenzie Drive at CP Rail Line | Region |
| | **4** | Huntington Connector (McGillvray Road) | City |
| | **5** | Rutherford Road at CP Rail Line | Region |
| | **6** | Kipling Avenue at CP Rail Line | City |
| | **7** | Islington Avenue at CP Rail Line | Region |
| **CN Newmarket Rail Line Crossings** | **1** | King-Vaughan Road at CN Rail Line | City |
| | **2** | Kirby Road at CN Rail Line | City |
| | **3** | Teston Road at CN Rail Line | Region |
| | **4** | Rutherford Road at CN Rail Line | Region |
| | **5** | Langstaff Road at CN Rail Line | Region |
| **CN York Rail Line Crossing** | **1** | New North-South Collector (Snidercroft Road) West of Keele Street | City |

1. *The segment of Highway 7 through the Vaughan Metropolitan Centre will be designated as Avenue 7 in the future.*

The overall future (2031) road network including proposed new links, road classifications and rights-of-way is illustrated in **Exhibit 6-7.**

As an objective of this TMP is to satisfy Phase 1 and 2 Environmental Assessment requirements, **Appendix I** has been assembled to summarize justification, alternatives considered and high level social and natural environmental impacts for City of Vaughan projects.

## 6.6 Road Classification, Rights-of-Way and Geometric Design Standards

The TMP involved a review of the existing road classification system, rights-of-way and geometric design standards for roadways under the City's jurisdiction. Available industry standards and best practices of other municipalities across North America were compared with standards documented in Vaughan's Official Plan Amendment 600 (OPA 600) and its Engineering Design Standards. A particular objective was to identify a set of tighter standards more suitable for application in intensification areas where the achievement of "complete" streets is highly desirable.

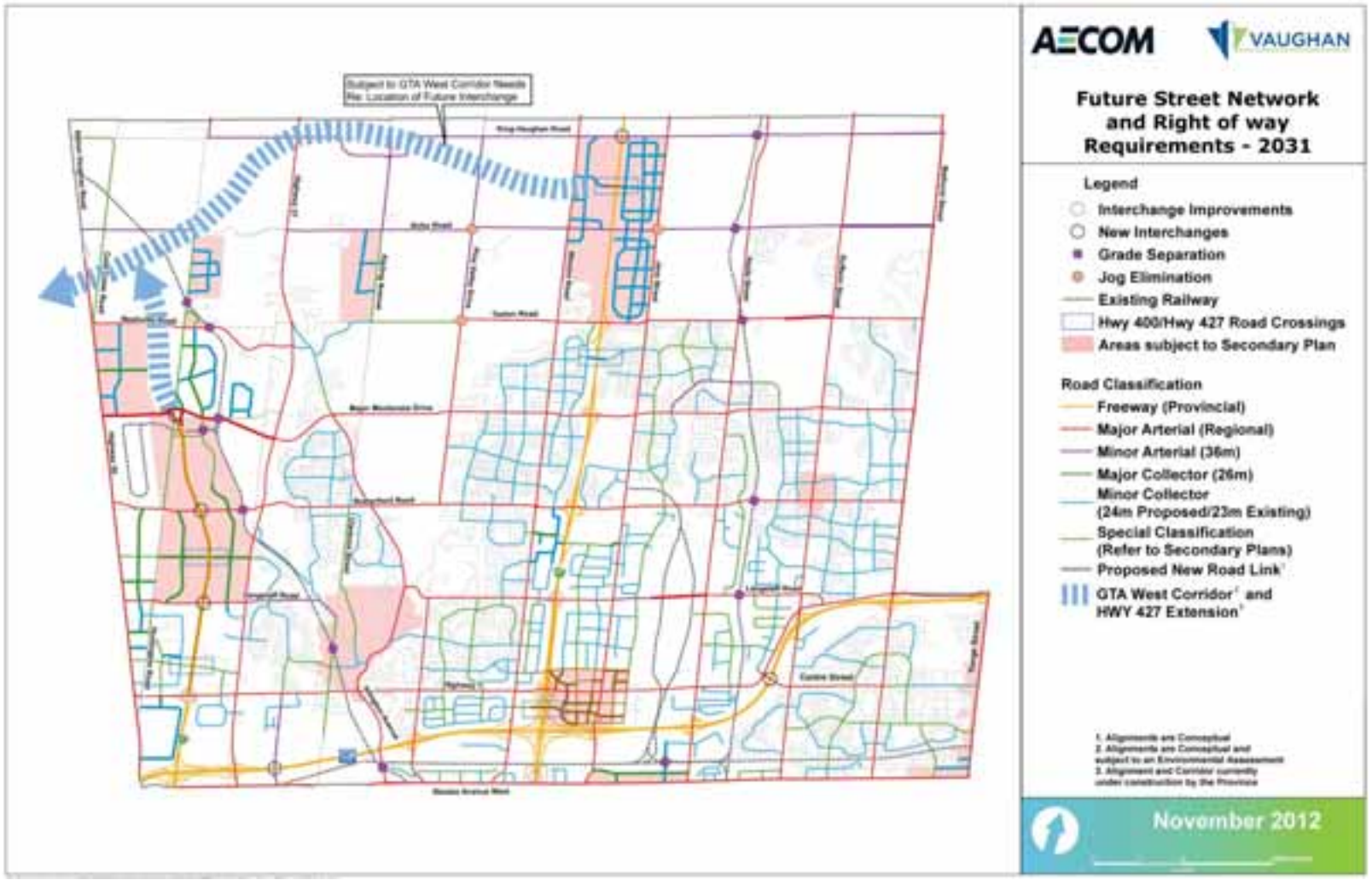
### *6.6.1 Road Classification and Rights-of-Way (ROW)*

It is recommended that the City road classification system be simplified to include four basic types: Minor Arterials; Major Collectors; Minor Collectors; and Local Roads. Typical mid-block cross-sections were developed to assist in determining appropriate rights-of-way for each roadway type. The sections are illustrated in the figures that follow. In the case of Minor Arterial, the existing right-of-way standard of 35 m was increased to 36 m, since these roads are candidates for future assumption by the Region of York and its standard is 36 m. For Major and Minor Collectors, the rights-of-way provide for on-street bike lanes, as needed. These cross-sections are typical for mid-block conditions and therefore represent a minimum for each roadway type. The specific allocation of elements within the right-of-way can be tailored to the specific environment, depending on the composition of traffic to be accommodated and the need for wider sidewalks and boulevards.

**Minor Arterial Roads**

With the exception of McNaughton Road, all Minor Arterial Roads are rural and aligned with the Regional Road grid system. It is recommended that the existing ROW of 35 m be maintained to provide for their possible assumption by the Region. Any roadway improvements within the right-of-way would likely assume the characteristics of a Major Collector, albeit with wider boulevards.

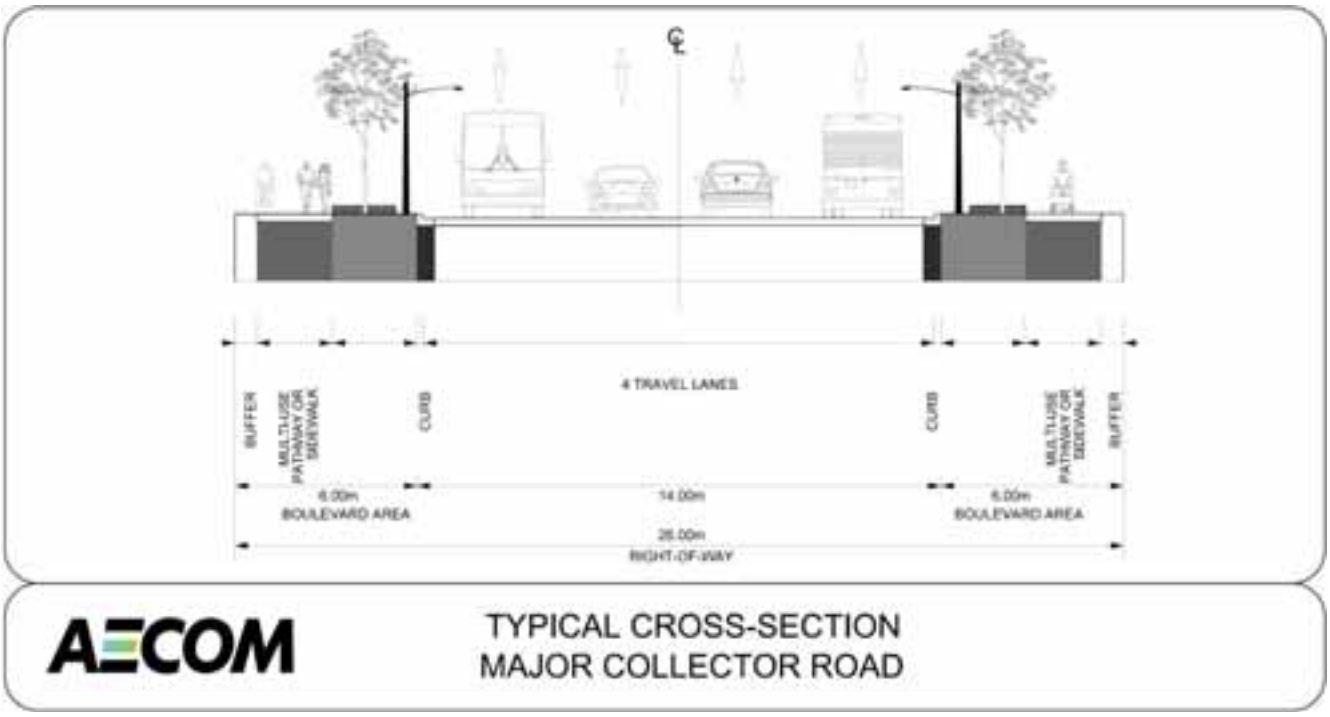
**Exhibit 6-7: Future Street Network and Right of Way Requirements - 2031**



## Major Collector Roads:

**Exhibit 6-8** shows a typical mid-block cross-section for a Major Collector.

### Exhibit 6-8: Typical Cross-Section – Major Collector Road



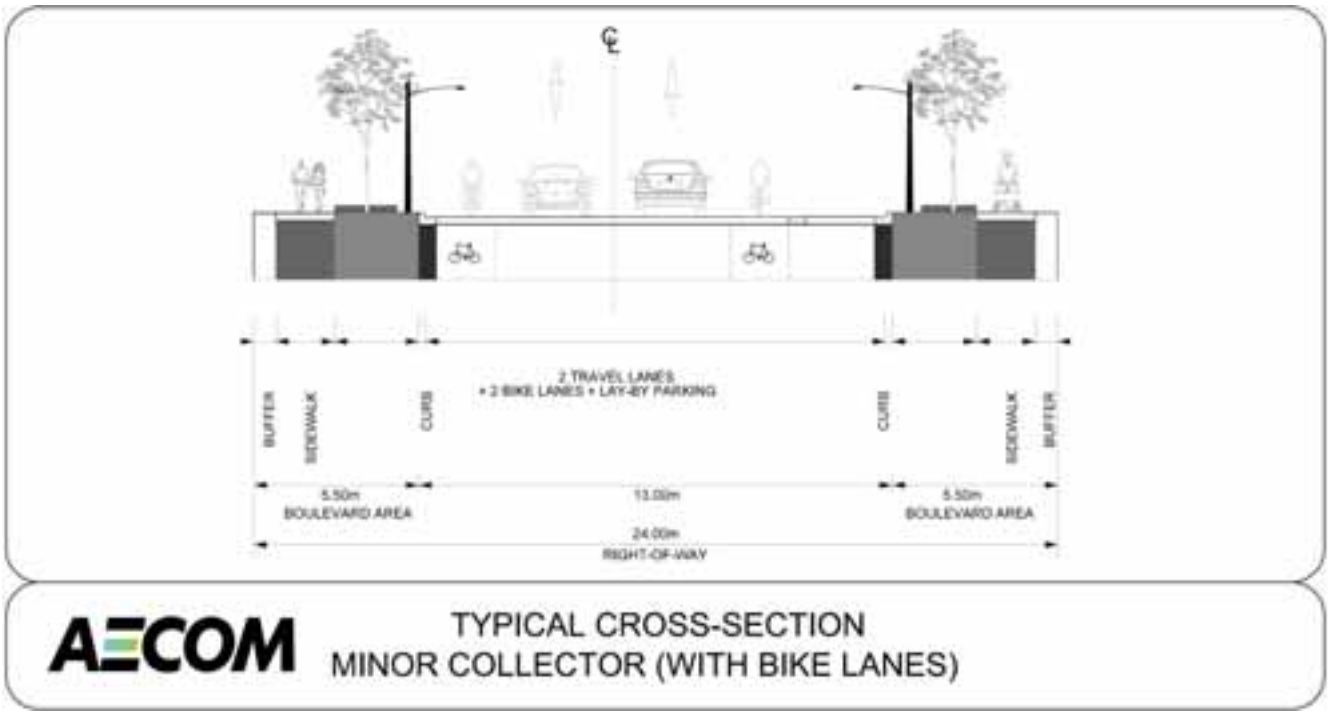

*Notes:*

1. *Major Collector Roads shall have a minimum ROW width of 26 m*
2. *Boulevards on both sides of the pavement area shall be a minimum of 6.0 m and will include a grass verge, street trees and a minimum 1.5 m sidewalk on both sides or 3.0 m multi-use pathway(s);*
3. *Transit service and related facilities will be accommodated on Major Collector Roads*

## Minor Collector Roads:

**Exhibit 6-9** shows a typical mid-block cross-section for a Minor Collector.

### Exhibit 6-9: Typical Cross-Section – Minor Collector (With Bike Lanes)



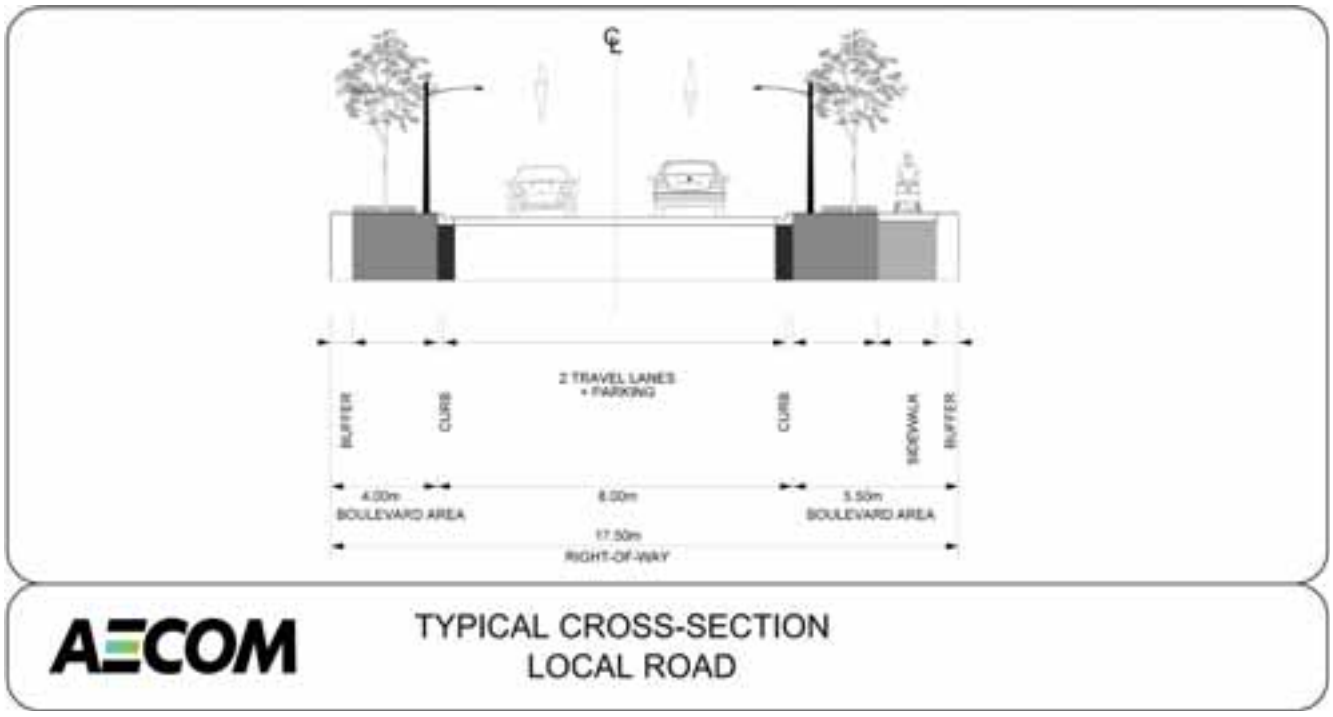

*Notes:*

1. *Minor Collector Roads shall have a minimum ROW of 24.0 m*
2. *Provision will be made for parking on at least one side of the road*
3. *The road surface is typically 10.5 m including a 1.5 m bike lane on each side, as needed, and additional 2.5 m lay-by parking*
4. *Boulevards on both sides of the pavement area shall be a minimum of 5.5 m, and will include a grass verge with street trees and a minimum 1.5 m sidewalk on both sides*
5. *Transit service and related facilities may be located on any Minor Collector Road*
6. *The lane widths of a Minor Collector will be decreased to 3.25 m where there is no need to accommodate buses or heavy trucks*
7. *Lay-by parking is typically 2.5 m, or double row of trees where lay-by is not feasible*

## Local Roads:

**Exhibit 6-10** shows the recommended mid-block cross-section for local roads.

### Exhibit 6-10 Typical Cross-Section – Local Road




*Notes:*

1. *Local Roads shall have a minimum ROW width of 17.5 m;*
2. *Parking will be accommodated on at least one side of the road*
3. *Boulevards with sidewalks shall be a minimum of 5.5 m and will accommodate a grass verge with street trees. Boulevards without sidewalks shall be a minimum of 4.0 m.*
4. *Local Buffer Roads or Local Roads with a single lane in each direction of travel may be designed with a 15.0 m ROW, and a reduced boulevard abutting the stormwater management feature, open space, parkland or an environmental feature.*

### 6.6.2 Pedestrian and Cycling Needs

To support greater emphasis on Active Transportation, the TMP review ensured that the recommended ROW provided sufficient space for the needs of pedestrians and cyclists, particularly in intensification areas.

**Bicycle Lanes:**

On-street bicycle lanes may be a desirable addition on all but local and high-speed roads. A minimum bike lane width of 1.5 m is recommended for minor collector roads, consistent with the recommendation of the 2007 City of Vaughan Pedestrian and Bicycle Master Plan. Bike lanes should be delineated from the motor vehicle travel lanes and parking lanes with solid white lines.

**Sidewalks:**

It is recommended that the City consider sidewalk width requirements based on expected pedestrian volumes and the nature of adjacent land uses. For example, at higher order transit hubs, along intensification corridors, or in high density residential areas and commercial/entertainment areas, wider sidewalks will be desirable. The City should further investigate site specific sidewalk design details for each of these areas and consider measures to improve pedestrian safety including the provision of consistent and visible crosswalk markings, change in materials (e.g., brick or concrete with colour contrast to asphalt), refuge islands, sidewalk extension, and raised crosswalks/intersection. The sidewalks should be located as far as practical from the travelled way and usually close to the ROW limits. A minimum width of 1.5 m sidewalk is recommended, but widths up to 3 m may be appropriate, depending on the area and availability of ROW.

**Medians:**

Medians can provide refuge for pedestrians at intersections with wide crossing distances. Median widths are recommended to be a minimum of 1.2 m with a desirable width of 1.8 m. High-contrast detectable warning surfaces are recommended to be installed within the channel for visually impaired people. The minimum width to accommodate left-turn lanes should be 3.5 m. Thus, the recommended centre median width is 5 m (face of curb to face of curb) inclusive of landscaping area and 0.75 buffer strips. In addition, the median or the median nose adjacent to a turn lane should extend to the crosswalk. Medians can end prior to the crosswalk for a continuous pedestrian crossing or can extend through the crosswalk if a channel at street grade or a ramp is provided through the median. In the latter case, median noses extending through the crosswalk provide a refuge area for pedestrians.

### 6.6.3 Reduced Geometric Design Standards for Intensification Areas

**Lane Widths:**

Lane widths for intensification areas are recommended based on roadway type, transit requirement, bicycle facilities, desired operating speed and context area. Narrower lanes are generally recommended to avoid excessive pavement width, reduce pedestrian crossing distance and act as a traffic calming measure. Sources considered in recommending narrower lane widths include York Region's "Towards Great Regional Streets – A Path to Improvement", Region of Waterloo's Context Sensitive Regional Transportation Corridor Design Guidelines, City of Mississauga's Standard Drawing No. 2211.120, New Jersey's and Pennsylvania's Smart Transportation Guidebook, Washington State's DOT, TAC, AASHTO Green Book and NCHRP Report 612 on Urban Roadside Treatments. The recommended lane widths for intensification areas are as follows:

| Lane Type | Minimum Width (M) | Range |
|---|---|---|
| **Curb Lane** | 3.5 | 3.5 – 4.0 |
| **Through Lane** | 3.0 | 3.0 – 3.5 |
| **Centre Lane** | 3.5 | 3.50 – 4.8 |
| **On-street Parking Lane - Local Road** | 2.0 | 2.0 – 2.5 |
| **On-street Parking - Collector Road** | 2.2 | 2.2 – 2.7 |
| **Bike Lane** | 1.2 | 1.2 – 1.8 |
| **Shared Use Lane (including bicycle facility)** | 3.0 | 3.0 – 4.25 |

**Intersections Geometrics:**

A review of the available standard criteria indicates that the City of Vaughan is applying comparable criteria as those of other municipalities across Canada. However, areas of improvement may include the incorporation of bicycle and pedestrian design standards with intersection designs. Close attention should be paid to Visibility / Sight Triangles, Curb Radii, and Curb Ramps.

**Visibility / Sight Triangles:** It is critical that pedestrians on the corner have a good view of the travel lanes and that motorists in the travel lanes can easily see waiting pedestrians. Based on a review of several sources such as TAC, City of Portland's Pedestrian Design Guide, San Diego's Street Design Manual, Metrolinx's Draft Mobility Hub Guidelines, the AASHTO Green Book and Institute of Transportation Engineers (ITE) documents, it is recommended that no obstructions (on-street parking, big signs, etc.) to pedestrian visibility (and their line of sight) particularly that of young children and those in wheelchairs be present within 9.0 m of an intersection or 4.5 m of a driveway.

**Curb Radii:** In general, a smaller curb radius is recommended for pedestrian benefits. A tight curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crosswalk, and requires vehicles to slow more as they turn the corner. Curb radii should be co-ordinated with crosswalk distances or special designs should be used to make crosswalks efficient for pedestrians. The following table presents recommendations for

optimum curb radii based on a review of AASHTO Green Book, City of Portland's Pedestrian Design Guide and the practices of other municipalities.

| Type | Recommended | Current Vaughan |
|---|---|---|
| **Residential Local to Residential Local** | 6.0 m | 10 |
| **Residential Local to Minor Collector** | 6.0 – 7.5* m | 10 |
| **Minor Collector to Minor Collector** | 7.5 – 9.0** m | 12 |
| **Minor Collector to Major Collector** | 7.5 – 9.0** m | - |
| **Local to Major Collector** | 7.5 – 9.0** m | 12 |
| **Intersections with High Volume of Trucks (in excess of 5%) and/or Bus Turns (more than twice per hour)** | 10.0 – 12.0 m | - |

*Notes: * The recommended width is 7.5 m or greater with a substantial volume of turning trucks and / or buses and encroachment into the opposing lane is unacceptable.*
*** The recommended width is 9.0 m or greater with a substantial volume of turning trucks and / or buses and encroachment into the opposing lane is unacceptable.*

**Curb Ramps:** Curb ramps should facilitate wheelchair, bicycle, and pedestrian street crossings at intersections as recommended by TAC, City of Portland's Pedestrian Design Guide, San Diego's Street Design Manual, Metrolinx's Draft Mobility Hub Guidelines, the AASHTO Green Book and the Institute of Transportation Engineers (ITE). It is recommended that the designer consult these sources for best practices. The TAC Geometric Design Guide includes drawings that show the details of curb ramps. As per this Guide, curb ramps require a minimum width of 1.5 m with a maximum grade of 6%. According to the Americans with Disabilities (ADA) Act requirements and Portland's Pedestrian Design Guide, the maximum ramp slope in the right-of-way is 1:12 with a cross-slope of no more than 1:50 (2%) and landing areas both at the top and the bottom. As noted in the TAC Geometric Design Guide, sidewalk ramps and curb cuts have the disadvantage of making the curb line difficult to detect for people who are visually impaired. With detectable warnings, effective uniform texturing or similar treatment an appropriate definition of the ramped area can be achieved. The textured surface also assists in providing a non-skid surface for persons in wheelchairs.

# Table of Contents



## List of Exhibits

# 7. Implementing the Plan

This chapter of the Transportation Master Plan (TMP) considers the various factors involved in developing an implementation strategy and phasing plan, and in establishing top priorities and an immediate action plan for the City. This chapter also defines a transportation decision-making framework for the City, recognizing that the implementation of the TMP will be the responsibility of all four levels of government (Federal, Provincial, Regional and City).

## 7.1 Costs of Transportation Infrastructure Improvements

The capital cost of all of the infrastructure improvements identified in this TMP is approximately $7.3 billion. This is a huge requirement and will need to be shared by all levels of government, including the Federal Government, as well as the private sector through development charges, joint development opportunities and new financing mechanisms.

A summary breakdown of the capital costs (construction only) is shown in **Exhibit 7-1**, broken down by the following infrastructure types: highways and roads; rapid transit; railway grade separations; and active transportation. **Exhibit 7-1** also provides an initial estimate of the breakdown of costs by jurisdiction. This shows that almost 95% of the total infrastructure costs will need to be funded by senior levels of government – York Region, Ontario and Canada. These costs and the availability of funding at the various levels of government over the 20-year period of the TMP will have a significant bearing on the Plan implementation and its phasing. The City must, therefore, work together with the Region, the Province and the Federal Government to ensure that continuous and necessary transportation investments are made within the City of Vaughan over the next 20 years.

The sharing of costs among the jurisdictions assumes existing arrangements continue and specifically that the federal government would formalize an on-going program to contribute 1/3 of the capital costs of rapid transit projects. **Appendix K** provides greater context and documents key assumptions.

In addition to the capital costs of infrastructure improvements, there will be additional on-going operating and maintenance costs to be incurred by the Province, Region and the City that will also be very substantial. These annual operating costs will not only apply to the maintenance of new and improved infrastructure, but also to new transit services (including maintenance of vehicles and supply of operators for significantly improved levels of bus service), as well as to expanded Transportation Demand Management (TDM) and new parking management programs. The latter will be difficult to cost until such time as more detailed plans are developed by Vaughan staff. Furthermore, with the aging of infrastructure and transit vehicles, there will be asset management issues to be addressed leading to major investments in rehabilitation/replacement of existing buses, roadways and bridges.

## Exhibit 7-1: TMP Capital Cost Estimates by Jurisdiction

| | TMP Improvements | Per km or Unit Cost | Distance (km) within Vaughan or # of Units | Cost (in Millions) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Federal | Province | Region | City | Total |
| **A** | **Rapid Transit** | | | | | | | |
| 1 | **Spadina Subway Extension to VMC – north of Steeles Avenue (expected completion by end of 2015)** | | 2.4 | $195.0 | $243.0 | $352.0 | | $790.0 |
| 2 | **Highway 7 BRT West to Pine Valley Drive** | $30M | 14.0 | $140.0 | $140.0 | $140.0 | | $420.0 |
| 3 | **Yonge Subway Extension – north of Steeles Avenue** | | 4.7 | $477.0 | $572.0 | $858.0 | | $1,907.0 |
| 4 | **GO Rail to Bolton (3 full + 2 urban stations proposed)** | $5M each | 5 | | $25.0 | | | $25.0 |
| 5 | **Additional GO Stations on Barrie Line (2 proposed)** | $5M each | 2 | | $10.0 | | | $10.0 |
| 6 | **407 Transitway (From Highway 50 to Yonge Street)** | $60M | 21.0 | | $1260.0 | | | $1,260.0 |
| 7 | **Highway 7 BRT (Pine Valley to Highway 50)** | $30M | 6.0 | $60.0 | $60.0 | $60.0 | | $180.0 |
| 8 | **Major Mackenzie LRT (Bathurst to Weston portion)** | $50M | 8.0 | $133.3 | $133.3 | $133.4 | | $400.0 |
| 9 | **Jane Rapid Transit (Steeles to Major Mackenzie)** | $67M | 8.0 | $178.7 | $178.7 | $178.6 | | $536.0 |
| 10 | **Dufferin/Bathurst Rapid Transit (Steeles to Gamble)** | $25M | 12.0 | $100.0 | $100.0 | $100.0 | | $300.0 |
| **B** | **Highways and Roads** | | | | | | | |
| 1 | **Highway 427 Extension (including 3 new & 1 improved interchanges)** | | 5.3 | | $172.5 | | | $172.5 |
| 2 | **Highway 400 Widening** | | 10.2 | | $27.0 | | | $27.0 |
| 3 | **Partial Interchanges on ETR 407 @ Martin Grove Road and Centre Street** | $25M each | 2 | | $50.0 | | | $50.0 |
| 4 | **Highway 400 Interchange Improvements @ Steeles Avenue, Highway 7 and Langstaff Road** | $15M each | 3 | | $45.0 | | | $45.0 |
| 5 | **New 400 Highway Crossings** | | | | | | | |
| | ▸ *2 New Crossings(North Maple bridge and within the Highway 400 North Employment Lands)* | $15M each | 2 | | | $10.0 | $20.0 | $30.0 |
| | ▸ *Special Case – Colossus Crossing (South of Highway 7)* | $40M | 1 | | | $13.3 | $26.7 | $40.0 |
| 6 | **New Regional Roads (Teston and Langstaff)*** | | 3.9 | | | $85.0 | | $85.0 |
| 7 | **Regional Road Widenings*** | | | | | | | |
| | ▸ *Regional Road Widenings – Western Vaughan* | $9.575M | 51 | | | $488.0 | | $488.0 |
| | ▸ *Regional Road Widenings – Eastern Vaughan* | $9.575M | 25 | | | $240.0 | | $240.0 |
| 8 | **New City Roads**** | | | | | | | |
| | ▸ *4 Lanes* | $5M | 12.0 | | | | $60.0 | $60.0 |
| | ▸ *2 Lanes* | $3.8M | 3.5 | | | | $13.3 | $13.3 |
| 9 | **City Road Widenings (2 Lanes to 4 Lanes)** | $2.5M | 28.0 | | | | $70.0 | $70.0 |
| **C** | **New Railway Grade Separations (13)** | | | | | | | |
| 1 | **CP** *(Islington, Kipling, Rutherford, Huntington Connector, Major Mackenzie, Nashville, Huntington)* | $4.5M each | 7 | $15.75 | | $9.0 | $6.75 | $31.5 |
| 2 | **CN** *(King-Vaughan, Kirby, Teston, Rutherford, Langstaff, Snidercroft)* | $4.5M each | 6 | $13.5 | | $6.75 | $6.75 | $27.0 |
| **D** | **Active Transportation/TDM** | | | | | | | |
| 1 | **Cycling Paths/Facilities** | | | | | | | |
| | ▸ *Multi-Use Recreational or Boulevard Pathway (Class 1)* | $225K | 210.9 | | | | $47.4 | $47.4 |
| | ▸ *Bike Lane (Widening) / Paved Shoulder (Class 2)* | $150K | 32.5 | | | | $4.9 | $4.9 |
| | ▸ *Bike Lane (No Widening)* | $20K | 54.4 | | | | $1.1 | $1.1 |
| 2 | **Sidewalks and Pedestrian Paths** | $110K | 15.5 | | | | $1.7 | $1.7 |
| 3 | **Carpool Lots (10 sites) and Additional Park-n-Ride Lot** | $2M each | 11 | | $10.00 | $11.00 | $1.0 | $22.0 |
| | **Total** | | | **$1,313** | **$3,027** | **$2,685** | **$260** | **$7,284** |

*Note: * See text on page K-2 for assumptions.*
*** Excludes development driven local roads.*

## 7.2 Financing Infrastructure Improvements

With such huge costs involved, funding the plan at all levels of government will undoubtedly be the most significant challenge in realizing its implementation. In this regard, it is noted that the Metrolinx Plan references the MoveOntario 2020 Plan which commits the Province to fund two-thirds of identified rapid transit projects with the remaining one-third anticipated from the Government of Canada. This will fund the first third of the $50 billion Metrolinx Plan; a new funding strategy for the remaining parts of the Plan is to be finalized within the next 2 to 3 years by Metrolinx in cooperation with all Regions within the Greater Toronto and Hamilton Area. Such a new funding strategy will address most if not all of the major projects at the Provincial and Regional levels. At the City level, several financing alternatives are available, which are briefly discussed below:

- ***Improved Development Charges Act***

  Development charges are currently employed by the City (as well as the Region) and these are a legitimate and equitable form of taxation to pay for public infrastructure required to support new developments. At the City level, Development Charges are a major source of funding capital infrastructure, including road network improvements. Many municipalities, including the Region of York, are pushing for amendments to the *Development Charges Act* to provide more support for transit and other sustainable transportation services, including Active Transportation and TDM initiatives. The City of Vaughan should support such amendments.

- **Tax Increment Financing (TIF)**

  The Province of Ontario has recently passed legislation to permit TIF tools to incentivize development opportunities. The principle of a TIF is to use the potential of higher property taxes resulting from proposed improvements (e.g., rapid transit) to partially finance the improvements themselves.

  The Region may consider such a mechanism and the City should indicate its willingness to jointly pursue such opportunities within Vaughan.

- **Joint Development Opportunities**

  Developers can profit from being close to transit due to higher density zoning, reduced costs through lower parking requirements, and targeting their development to even more popular Transit Oriented Development settings. Thus, they should be prepared to integrate transit facilities (e.g., stations and pedestrian connections) into their developments, with the potential to reduce public infrastructure costs and to increase transit ridership.

- **Parking Fees**

  Parking fees are another potential mechanism to subsidize transportation budgets and influence transit ridership. Typical examples are paid on-street parking, public parking garages in urban centres and public parking lots in smaller retail centres.

Policies such as payment-in-lieu of parking can also benefit development intensification programs. This involves developers making a lump sum payment to the City rather than building the required amount of on-site parking. Such payments are grouped together to help fund central public parking facilities, which in turn minimizes over-supply and relieves developers of the burden of constructing and maintaining parking. For tight residential sites, this promotes intensification where otherwise site constraints related to parking may prevent development.

Other mechanisms such as vehicle license fees, fuel taxes and congestion pricing schemes would be better applied at the Regional or GTHA levels. These and others will undoubtedly be addressed by Metrolinx in its new funding strategy.

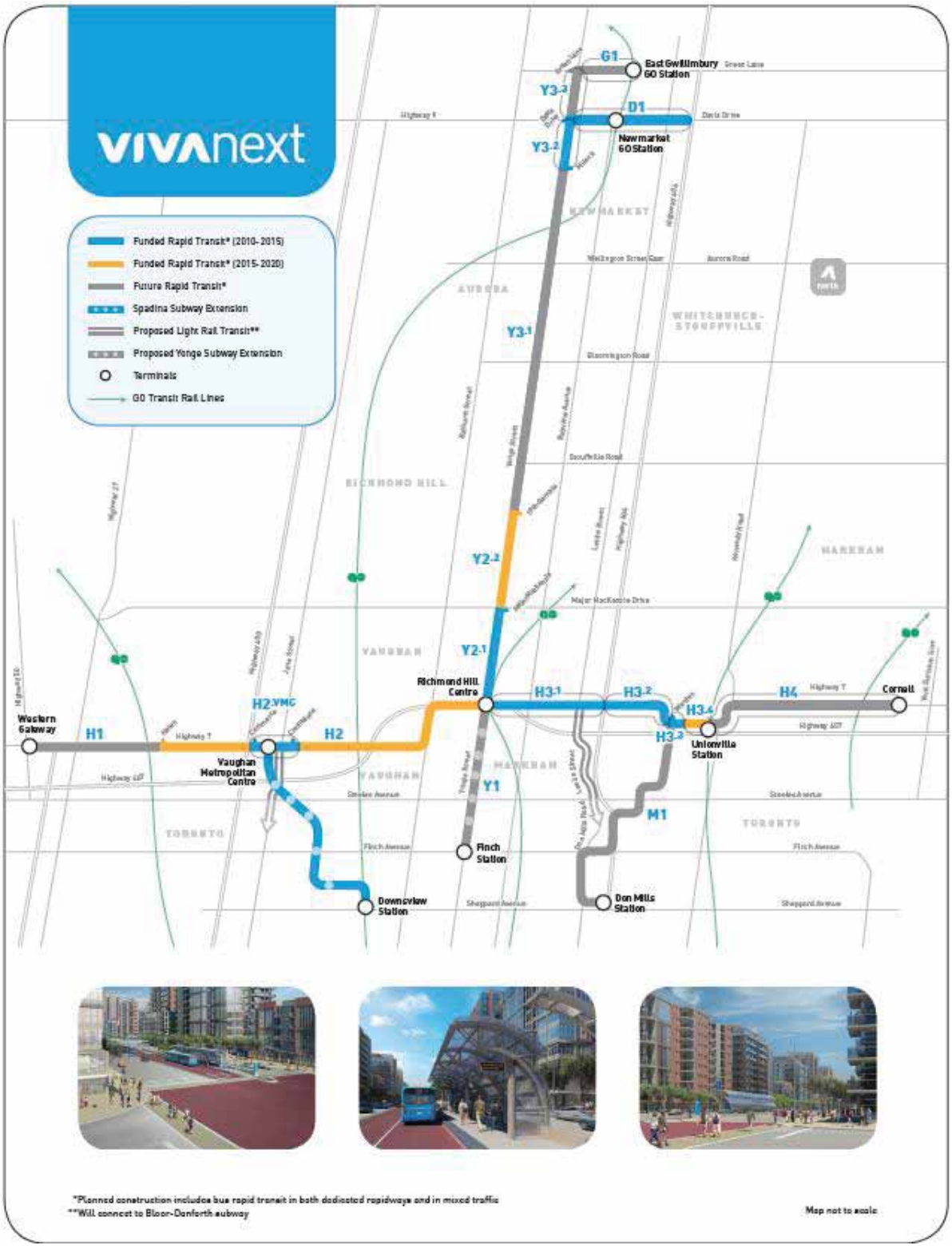
## 7.3 Medium Term (2021) Transportation Needs

The timing associated with the transportation needs is also a critical aspect that influences TMP implementation. Furthermore, prioritization of competing major projects within the GTA (including all rapid transit projects) and within York Region (including major arterial roads), could also have an important bearing on the timing of implementation. In the case of the former, it is the overall responsibility of Metrolinx to prioritize major projects, ensure cost-effective business cases are in place, and secure and approve funding arrangements.

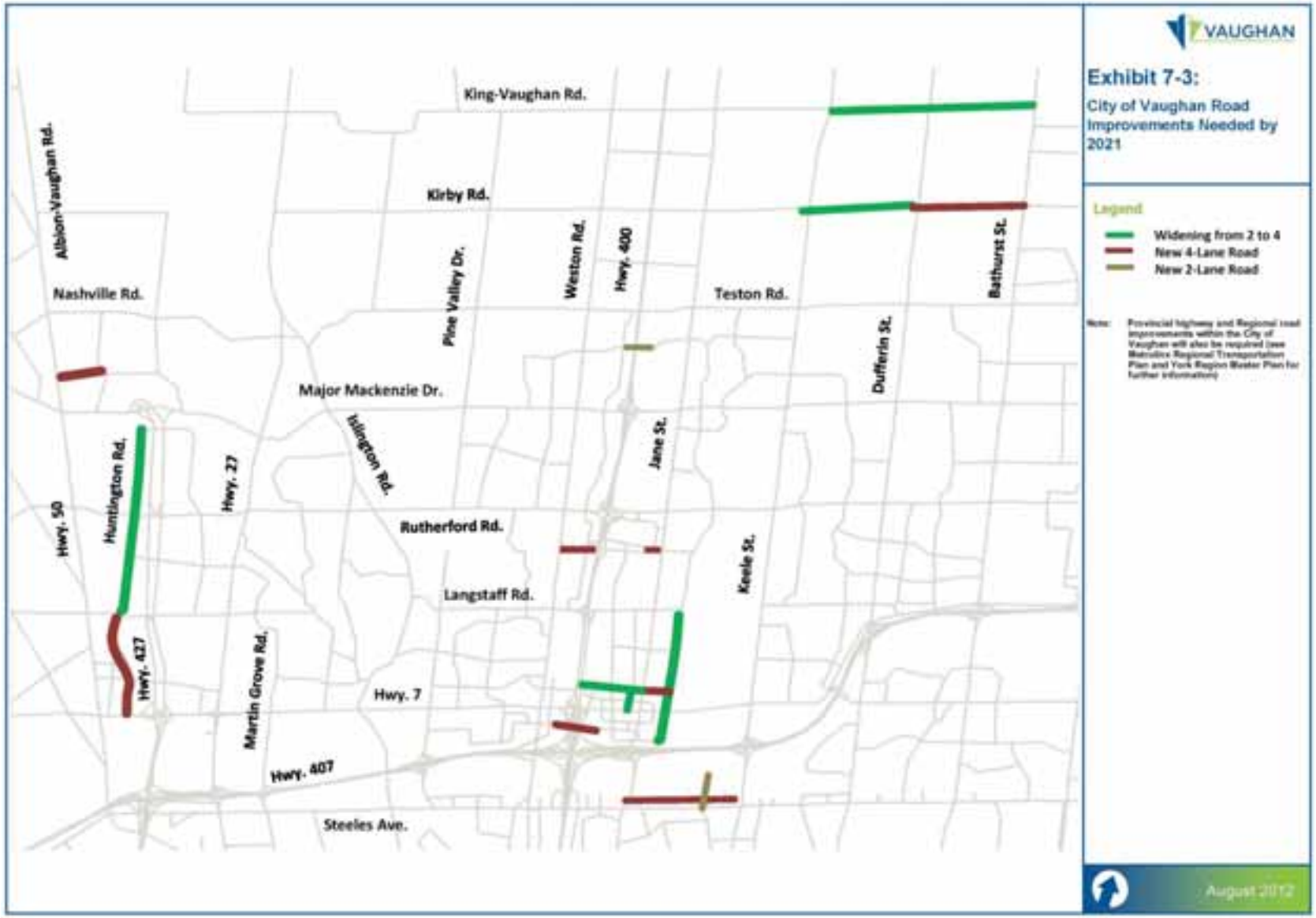
The City's transportation needs for the year 2021 were assessed with the aid of the new EMME/2 travel demand model developed for the City as part of this TMP effort. The results of this 2021 assessment are documented in **Appendix L**. While the model testing assumed that all of the TMP rapid transit network would be in place by 2021, it was recognized that in reality (due to funding constraints), this would not be likely. For example, through recent discussions, Metrolinx has committed funding for VIVA Phases 1 and 2 rapid transit projects only. In Vaughan, these include Highway 7 Bus Rapid Transit (BRT) as far west as Pine Valley Drive only (see **Exhibit 7-2** for the current VIVA phasing plan). From the perspective of impacts on the road network, the 2021 model run represented a best case scenario (i.e., it shows the least demand on the road network). Still, given the expectation that virtually all of the City's population growth and 2/3 of its employment growth will occur by 2021, most of the highway and road improvements included in the TMP will be needed by 2021. The necessary 2021 City of Vaughan road network improvements are shown in **Exhibit 7-3** and the associated capital costs (construction only) are shown in **Exhibit 7-4**. **Exhibit 7-4** also shows the capital costs associated with the York Region and Provincial improvements within the City of Vaughan as per the York Region Transportation Master Plan and Metrolinx Regional Transportation Plan. This exhibit also shows that of the $7 billion cost for the entire TMP, about $2.2 billion would be needed by 2021.

The availability of this level of funding required from senior levels of government (particularly the Province and York Region) is uncertain; therefore, some of the rapid transit infrastructure improvements assumed for 2021 have been shifted into the 2021-2031 period to arrive at a more realistic set of funding requirements. Specific rapid transit projects include the Yonge Subway extension, the Bolton GO rail service, the western part of the Highway 7 VIVA BRT line and the planned rapid transit services for Major Mackenzie Drive, Jane Street and Dufferin/Bathurst Streets. Should all the funding partners agree, any one of these projects might be started before 2021 but, given other commitments, it is unlikely that any could be completed by this time.

## Exhibit 7-2: VIVA Phasing Plan



## Exhibit 7-3: City of Vaughan Road Improvements Needed by 2021



## Exhibit 7-4: TMP Capital Costs to 2021

| | TMP Improvements | Per km or Unit Cost | Distance (km) within Vaughan or # of Units | Cost (in Millions) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Federal | Province | Region | City | Total |
| **A** | **Rapid Transit** | | | | | | | |
| 1 | **Spadina Subway Extension to VMC – On the Vaughan Side (expected completion by 2015)** | | 2.4 | $195.0 | $243.0 | $352.0 | | $790.0 |
| 2 | **Highway 7 BRT West to Pine Valley Drive** | $30M | 14.0 | $140.0 | $140.0 | $140.0 | | $420.0 |
| 3 | **GO Rail to Bolton (3 full + 2 urban stations proposed)** | $5M each | 5 | | $25.0 | | | $25.0 |
| 4 | **Additional GO Stations on Barrie Line (2 proposed)** | $5M each | 2 | | $10.0 | | | $10.0 |
| **B** | **Highways and Roads** | | | | | | | |
| 1 | **Highway 427 Extension (including 3 new & 1 improved interchanges)** | | 5.3 | | $172.5 | | | $172.5 |
| 2 | **Highway 400 Widening** | | 6.1 | | $18.0 | | | $18.0 |
| 3 | **New Partial Interchange on ETR 407 at Martin Grove Rd.** | $25M | 1 | | $25.0 | | | $25.0 |
| 4 | **Highway 400 Interchange Improvements @ Steeles Ave., Highway 7 and Langstaff Road** | **$15M each** | 3 | | $45.0 | | | $45.0 |
| 5 | **New 400 Highway Crossings** | | | | | | | |
| | ▸ *2 New Crossings (North Maple bridge and within the Highway 400 North Employment Lands)* | *$15M Each* | 2 | | | $10.0 | $20.0 | $30.0 |
| | ▸ *Special Case – Colossus Crossing (south of Highway 7)* | *$40M* | 1 | | | $13.3 | $26.7 | $40.0 |
| 6 | **Regional Road Widenings*** | | | | | | | |
| | ▸ *Regional Road Widenings – Western Vaughan* | $9.575M | 23 | | | $240.0 | | $240.0 |
| | ▸ *Regional Road Widenings – Eastern Vaughan* | $9.575M | 19 | | | $182.0 | | $182.0 |
| 7 | **New City Roads**** | | | | | | | |
| | ▸ *4 Lanes* | $5M | 11.5 | | | | $67.5 | $67.5 |
| | ▸ *2 Lanes* | $3.8M | 3.0 | | | | $19.0 | $19.0 |
| 8 | **City Road Widenings (2 Lanes to 4 Lanes)** | $2.5M | 14.0 | | | | $69.0 | $69.0 |
| **C** | **New Railway Grade Separations (4)** | | | | | | | |
| 1 | **CP** *(Rutherford, Major Mackenzie)* | $4.5M each | 2 | $4.5M | | $4.5M | | $9.0 |
| 2 | **CN** *(Rutherford, Langstaff)* | $4.5M each | 2 | $4.5M | | $4.5M | | $9.0 |
| **D** | **Active Transportation/TDM** | | | | | | | |
| 1 | **Cycling Paths/Facilities** | | | | | | | |
| | ▸ *Multi-Use Recreational or Boulevard Pathway (Class 1)* | $225K | 210.9 | | | | $47.4 | $47.4 |
| | ▸ *Bike Lane (Widening) / Paved Shoulder (Class 2)* | $150K | 32.5 | | | | $4.9 | $4.9 |
| | ▸ *Bike Lane (No Widening)* | $20K | 54.4 | | | | $1.1 | $1.1 |
| 2 | **Sidewalks and Pedestrian Paths** | $110K | 15.5 | | | | $1.7 | $1.7 |
| 3 | **Carpool Lots (10 sites) and Additional Park-n-Ride Lot** | $2M | 11 | | $10.00 | $11.00 | $1.0 | $22.0 |
| | **Total** | | | **$344** | **$689** | **$948** | **$258** | **$2,248** |

*Note: * See text on page K-2 for assumptions.*
*** Excludes development driven local roads.*

## 7.4 Implementation Strategy

Based on the "New Path" vision, the need to support intensification in Centres and Corridors, 2021 transportation needs as outlined in the preceding section, and the overall imperative to change travel behaviour, an Implementation Strategy has been developed comprised of the following five elements:

### a) Transit First Approach

Recognizing the need to shift modal share significantly to transit, aggressive transit modal share targets have been incorporated into Vaughan's new Official Plan, and major infrastructure investments in rapid transit are being pursued by Metrolinx and the Region of York. Transit solutions should therefore be top of mind, with Vaughan staff and Council. Every transportation and land use decision should consider the critical role of transit as outlined in this TMP, and all transportation planning should explicitly address the transit modal share targets.

### b) Mobility Choices in New Developments

When people move to a new place of residence or work, there is a great opportunity for their travel behaviour to change. It is therefore important for reasonable transit service, sidewalks and cycling infrastructure to be in place early in newly developing areas so that travel by auto is not the only choice. Vaughan's new Official Plan includes transit accessibility policies, but it is critical that the infrastructure and transit service that enables mobility choices be put in place at the time of occupancy before "hard-to-break" auto-related travel habits are established.

### c) Much Higher Priority for Pedestrian and Cycling Infrastructure

To provide greater mode choice and reduce dependence on the automobile, walking and cycling need to be considered as viable means of travel. While specific modal share targets for walking and cycling have not been established, greater infrastructure investment is needed to support greater use of these active modes of transportation. Consistent with the first two elements outlined above, the initial focus should be on improving walk and bike access to bus stops and new rapid transit stations as they are opened. In addition, all new streets should be designed as "complete streets", explicitly providing for walking and cycling as legitimate and sustainable modes of travel.

### d) Immediate Focus on Transportation Demand Management

The work of the TMP has shown conclusively that congestion in Vaughan is (and will always be) a fact of life. In the future, managing congestion will be the overall challenge for the City's transportation professionals. In this regard, a top priority for the City is to support initiatives to reduce the growth in travel demand. Through such initiatives, the need for costly transportation improvements can also be minimized. Since most TDM initiatives are employer based, and the City (through its Economic Development and Planning Departments and through its Chamber of Commerce) is usually the first point of contact, the City is in the best position among public sector agencies to assume a leadership role. With support from Metrolinx and the Region of York, a full time City TDM co-ordinator is needed to lead these priority efforts.

### e) Priority for Infrastructure Improvements to Support the VMC

Through the Official Plan Review and development of this TMP, a substantially new plan for the City's future downtown has been created. The VMC will be the City's pre-eminent "Centre" and area for intensification. The centre's emergence will represent the scale and nature of change required to transform both the city as a whole and the travel behaviour of its residents and workers. While the new transportation plan is heavily supported by committed rapid transit projects (i.e., the Spadina Subway extension and the Highway 7 VIVA BRT line), there are key new road network elements that are also needed to support growth and to provide alternative truck routes to Highway 7, the centre's main east-west "avenue". To promote intensification and early achievement of the City's downtown, a number of strategic road improvements should receive attention as top priorities.

## 7.5 Phasing, Priorities and Action Plan

Following on from understanding the transportation needs for 2021 and funding limitations, and in line with the preceding Implementation Strategy, the following key initiatives (summarized by jurisdiction) are needed for the 2021 time horizon.

### a) Province/Metrolinx

- Spadina Subway extension
- Expanded GO Rail service on the Barrie line
- Highway 427 extension to Major Mackenzie Drive
- Improved Highway 400 interchanges at Steeles Avenue, Highway 7 & Langstaff Road
- New 407 ETR interchange at Martin Grove Road and interchange improvements at Centre Street

### b) Region of York/YRT

- Highway 7 VIVA BRT service westerly to Pine Valley Drive
- HOV / transit priority lanes on Major Mackenzie Drive, and Jane and Dufferin Streets south of Major Mackenzie
- General increases in bus service (both coverage and frequency)
- Carpool and Park-and-Ride lots

### c) City of Vaughan

- Portage Parkway widening and extension to Creditstone Road
- Creditstone Road widening
- Colossus Road crossing of Highway 400
- Huntington Road widening and urbanization
- North Maple Bridge (crossing of Highway 400)
- TDM and Parking initiatives

The fact that this list contains so many Provincial and Regional projects reinforces the multi-jurisdictional aspect of this TMP's implementation and the need for the full support of senior levels of government. It will, therefore, be paramount for the City to work closely with these governments to ensure not just funding availability, but also a well co-ordinated implementation effort.

With these key needs in mind, an action plan for the City has been formulated and is presented in **Exhibit 7-5** for the 0-5, 5-10 and 10-20 year timeframes, under the following six headings:

- Active Transportation;
- Transit Support Initiatives;
- Travel Demand Management;
- Parking;
- Strategic Road Initiatives; and
- TMP Monitoring and Review.

The specific 0-5 year initiatives under each category represent the next steps to be taken by Vaughan staff to kick-start implementation of the TMP.

## 7.6 Decision-Making Framework

This new Master Plan will form the basis for all major transportation decisions made by Vaughan staff and Council. However, given the multi-jurisdictional nature of the Plan (and responsibilities for its implementation), mechanisms for external as well as internal coordination will be essential to ensure the timely implementation of the TMP.

### *7.6.1 Internal Decision-Making at the City*

This TMP includes transportation policies and programs in addition to infrastructure improvements, and encompasses all modes of travel as well as the management of travel demand (TDM). With this very wide scope, the TMP relates to and influences many key City processes. These are identified and the relationship shown schematically in **Exhibit 7-6**. From a strategic and planning perspective, the key linkages are with the Growth Management Strategy, the Official Plan, and the Development Review process. From a City infrastructure perspective, the key linkages are with the Environmental Assessment and Capital Planning and Funding approval processes. Strengthened roles and programs in the areas of Transportation Demand Management (including Active Transportation) and Parking Management are also recognized. A TMP monitoring and review process rounds out the extensive set of relationships involved with the TMP and its implementation.

## Exhibit 7-5: City of Vaughan Action Plan

| Plan Element | Short Term (2011-2016) Action Plan | Medium Term (2016-2021) Action Plan | Long Term (2021-2031) Action Plan |
|---|---|---|---|
| **A. Active Transportation (Cycling & Walking)** | | | |
| **1. Update City Sidewalk Policy** | • Update in context of new OP, TMP and PBMP policies and directions<br>• Prepare report and submit to Council | • Review sidewalk policy and revise if necessary | • Review sidewalk policy and revise if necessary |
| **2. Update Pedestrian and Bike Master Plan (PBMP)** | • Analyze pedestrian and cycling access issues/needs as they relate to York Region Pedestrian and Cycling Master Plan and planned YRT/VIVA projects<br>• Update Pedestrian and Bicycle Master Plan if required | • Based on monitoring results and additional improvements identified, assess need to update PBMP | • Based on monitoring results and additional improvements identified, assess need to update PBMP |
| **3. Accelerate Implementation of PBMP Network** | • Increase annual capital budgets for 2012-2016<br>• Synchronize PBMP phasing with TMP phasing, and identify projects that can be advanced<br>• Implement initial phase improvements | • Implement next phases of the PBMP | • Budget for and implement the remaining elements of the updated PBMP |
| **4. Accelerate Construction of Missing Sidewalk Links on Regional Roads and other Key Pedestrian Community Linkages (with focus on access to YRT Bus Stops)** | • Increase annual operating budgets for 2012-2016<br>• Identify projects that can be advanced<br>• Implement | | |
| **5. Implement Access Improvements at VIVA Rapid Transit Stations and new GO Rail Stations** | | • Incorporate project and funding needs into City budgets<br>• Implement in logical and co-ordinated manner<br>• Analyze pedestrian and cycling issues/needs as they relate to VIVA projects | • Incorporate project and funding needs into City budgets<br>• Implement in logical and co-ordinated manner |
| **6. Assess Need for Access Improvements to Stations along New BRT Routes** | | | • Analyze pedestrian and cycling issues/needs as they relate to stations along future BRT corridors (e.g., Major Mackenzie, Jane) |
| **B. Transit Support Initiatives** | | | |
| **7. Support Early Extension of Spadina Subway** | • Work with York Region and TTC to expedite design and ensure early implementation of the Spadina subway extension to Highway 7 | | |
| **8. Advocate New GO Rail Service to Bolton** | • Work with Metrolinx and York Region to pursue additional local (smaller scale) stations in Woodbridge Core and Nashville, and advocate for early service implementation | • Work with York Region and Metrolinx to secure funding commitments from Provincial Government for early implementation | |
| **9. Support Improved GO Rail Service to Barrie** | • Work with Metrolinx and York Region to expedite improved service and to support new stations at Highway 7 and Kirby Road | | |
| **10. Support New Development and Redevelopment in Centres and Transit Corridors** | • Expedite new secondary plan for Weston/Highway 7 Primary Centre<br>• Ensure that new development in Centres and Corridors is transit oriented | • Ensure that new development in Centres and Corridors is transit oriented | • Ensure that new development in Centres and Corridors is transit oriented |
| **11. Develop New Traffic Level of Service Standard for Centres** | • In co-operation with York Region, establish appropriate level of traffic service standard to support new development in Centres and Corridors | | |
| **12. Advocate Early Implementation of Transit Service to New Development Areas** | • Work with York Region, Metrolinx and YRT to provide new/improved transit service to all recently occupied subdivisions and employment areas | • Continue to work with York Region, Metrolinx and YRT | • Continue to work with York Region, Metrolinx and YRT |
| **13. Advocate and Support Yonge Subway Extension and New BRT Lines** | • Work with York Region to articulate the benefits and promote transit supportive development in the Yonge corridor | • Work with York Region, TTC and Metrolinx to secure funding commitments from Federal and Provincial Governments for early implementation and design for Yonge Subway Extension and New BRT Lines | • Work York Region, TTC and Metrolinx to expedite design and ensure early implementation of the Yonge Subway Extension and New BRT Lines |
| **14. Advocate for Fare Integration and Service Co-ordination** | • Work with York Region and various transit operators to promote the seamless integration of transit services across Regional boundaries | | |
| **C. Travel Demand Management (TDM)** | | | |
| **15. Confirm City Role in TDM, Support TMAs and Monitor TDM Benefits** | • Meet with Metrolinx and York Region to agree on respective roles and responsibilities within a strengthened 3-way partnership | • Based on the demand in concentrated employment areas, and the benefits of cross-pollination among employers, assess the need for additional area specific TMAs with Metrolinx and York Region | • Based on the demand in concentrated employment areas, and the benefits of cross-pollination among employers, assess the need for additional area specific TMAs with Metrolinx and York Region |
| **16. Develop City-wide TDM Plan** | • Develop a comprehensive TDM Plan to look at areas such as promotion, the community, schools, institutions and workplaces<br>• Prepare plan and submit to Council | • Update City-wide TDM Plan if necessary | • Update City-wide TDM Plan if necessary |
| **17. Develop TDM Program for City Employees** | • Conduct an internal review of existing programs/services<br>• Survey staff<br>• Review programs from other municipalities<br>• Develop state-of-the-art program for consideration by Council | • Update TDM Program if necessary | • Update TDM Program if necessary |

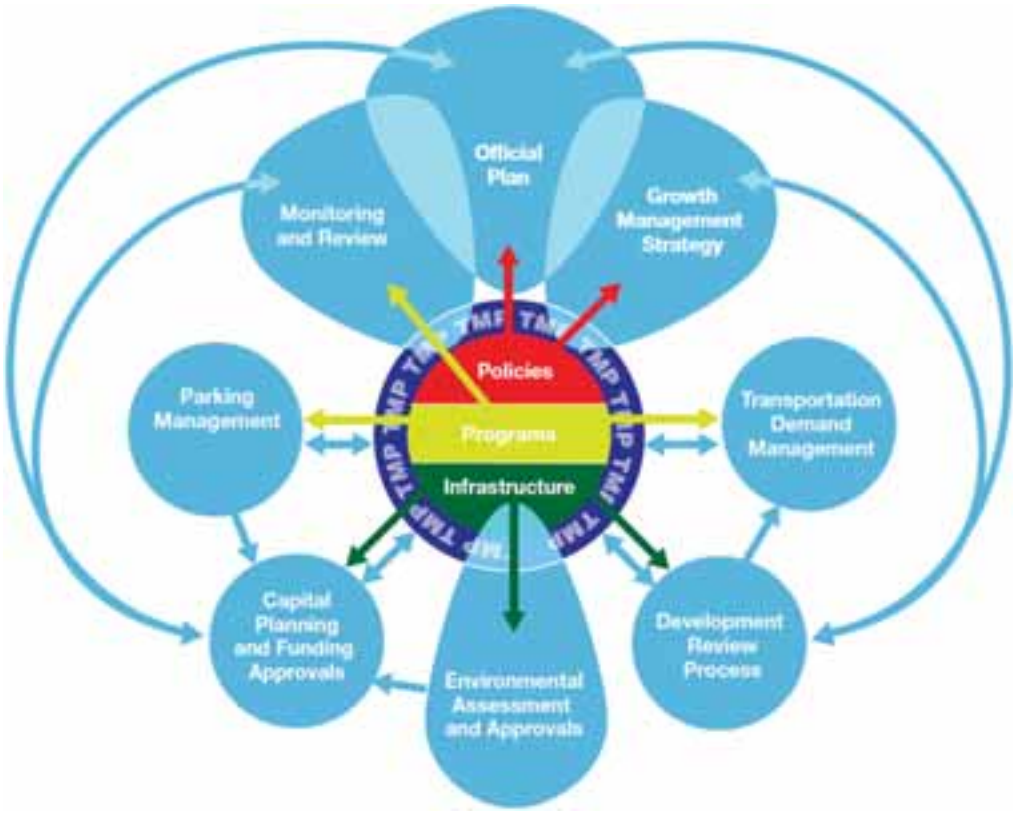
## Exhibit 7-5: City of Vaughan Action Plan

| Plan Element | Short Term (2011-2016) Action Plan | Medium Term (2016-2021) Action Plan | Long Term (2021-2031) Action Plan |
|---|---|---|---|
| **18. Support New and Existing Vaughan Employers in Initiating TDM Programs** | • Create guidelines document including a menu of employer based programs/services<br>• Promote menu with new and existing large City employers, in co-operation with Vaughan Chamber of Commerce | • Provide staff assistance in promoting, planning and implementing employer specific plans | • Provide staff assistance in promoting, planning and implementing employer specific plans |
| **19. Develop and Implement Pilot School TDM Program** | • Provide staff assistance in promoting, planning and implementing a pilot school TDM program, and begin roll-out across Vaughan Elementary and High Schools | • Develop and implement TDM programs for Elementary and High Schools and provide staff assistance in promoting, planning and implementing school specific plans | • Provide staff assistance in promoting, planning and implementing and updating school specific plans |
| **20. Require TDM Plans and related building facilities as a Condition of Development Approvals** | • Secure TDM related facilities (e.g., showers, secure bike parking) in new developments<br>• Require that TDM plans be prepared in conjunction with traffic impact studies for all significant new developments | • Secure TDM related facilities (e.g., showers, secure bike parking) in new developments<br>• Require that TDM plans be prepared in conjunction with traffic impact studies for all significant new developments | • Secure TDM related facilities (e.g., showers, secure bike parking) in new developments<br>• Require that TDM plans be prepared in conjunction with traffic impact studies for all significant new developments |
| **21. Support Integration of Bicycle and Public Transit Travel, including improved cycling access and bicycle storage at transit stops, bike racks on buses and allowing bikes on subway trains** | • Work with the Region, TTC and Metrolinx to ensure integration related to Spadina subway extension and Highway 7 BRT line | • Work with the Region, TTC and Metrolinx to ensure integration related to Yonge subway extension and westerly extension of Highway 7 BRT line | • Work with the Region, TTC and Metrolinx to ensure integration related to longer term rapid transit projects in Vaughan |
| **D. Parking** | | | |
| **22. Finalize 2010 Draft Parking Report and Prepare a Revised Parking Zoning By-law** | • Finalize 2010 parking report for Council adoption<br>• Prepare revised zoning by-law that supports the report | | |
| **23. Develop City Mandate for Parking Management** | • Prepare report to Council recommending elements of a parking management mandate and associated staff responsibilities | | |
| **24. Develop Network of Carpool Lots for Vaughan** | • Work with the Region and the Province to define general locations for carpool lots in the City<br>• Amend the Regional and City TMPs accordingly | | |
| **25. Implement a Park-and-Ride Lot North of the Vaughan Metropolitan Centre (VMC)** | • Work with the Region and YRT to identify and assess alternative sites for commuter parking oriented to the Spadina subway<br>• Report to Council with results and recommendations | | |
| **26. Establish a Vaughan Parking Authority** | | • Assess experience elsewhere and relate to Vaughan situation<br>• Prepare a report to Council on costs/benefits and mandate/role of a parking authority (or separate unit of the City administration) | |
| **27. Plan for and Implement a Municipal Parking Facility in the Vaughan Metropolitan Centre** | | • Assess demand, identify and evaluate alternative sites, prepare cost estimate, and report to Council | |
| **28. Implement Paid On-Street Parking in the VMC** | | • Confirm street segments, assess fee collection options and implement | • Confirm street segments, acquire equipment and install |
| **29. Assist York Region and MTO in Implementing Carpool and Park-n-Ride Lots** | | • Assist the senior levels of government in selecting and acquiring (possibly through the development approvals process) suitable sites | • Assist the senior levels of government in selecting and acquiring (possibly through the development approvals process) suitable sites |
| **30. Implement New Municipal Parking Facilities in Vaughan Centres** | | | • Assess demands, identify and evaluate alternative sites, prepare cost estimates, and report to Council |
| **E. Strategic Road Initiatives** | | | |
| **31. Conduct Joint VMC and Surrounding Area Transportation Study with York Region** | • Partner with Region to complete the study in early 2012<br>• Report to Council with Study recommendations | | |
| **32. Develop Comprehensive VMC Truck Strategy and Implementation Plan** | • Develop Terms of Reference jointly with York Region and retain consultant | • Work with York Region and MTO to implement various components of the Plan | |
| **33. Complete and implement Class EA for North Maple Community Bridge (Block 33)** | • Work with consultants and Council to address outstanding issues<br>• Report to Council with Study recommendations | • Following EA approval, secure funding for implementation<br>• Implement | |
| **34. Initiate Class EA Studies (Phases 3 & 4) for Priority Road Improvements**<br>**a) Portage Parkway Extension & Widening**<br>**b) Huntington Widening and Urbanization** | • Develop Terms of Reference<br>• Retain consultants to conduct the studies | • Following EA approval for Huntington Road widening and Portage Parkway extension, secure funding for implementation<br>• Implement | |
| **35. Implement New Collector Roads through the Development Approvals Process** | • Work with developers to complete EA studies, if required, and implement collectors needed to support new development | • Continue to work with developers to secure necessary approvals and phased implementation, in conjunction with new development | • Continue to work with developers to secure necessary approvals and phased implementation, in conjunction with new development |

## Exhibit 7-5: City of Vaughan Action Plan

| Plan Element | Short Term (2011-2016) Action Plan | Medium Term (2016-2021) Action Plan | Long Term (2021-2031) Action Plan |
|---|---|---|---|
| **36. Develop a Program for Evaluation and Implementation of Railway Grade Separations** | • Based on the recommended TMP road network, develop a program for evaluation and implementation of 5 railway grade separations with Vaughan roads<br>• Work with York Region to expedite the completion of 6 railway grade separations with Regional roads | | |
| **37. Implement Railway Grade Separations** | • As warrants are met, initiate Class EA studies for high priority Vaughan projects | • Secure funding commitments from Federal and Provincial Governments for high priority railway grade separations<br>• Design and construct high priority railway grade separations<br>• As warrants are met, initiate Class EA studies for medium priority Vaughan projects | • Secure funding commitments from Federal and Provincial Governments for medium railway grade separations<br>• Design and construct medium priority railway grade separations<br>• As warrants are met, initiate Class EA studies for low priority Vaughan projects |
| **38. Initiate Class EA Studies (Phases 3 and 4) for Jog Eliminations** | • Concurrent with the travel needs of new development, initiate EA studies for jog eliminations along Pine Valley Drive at Teston Road and Kirby Road. | • Following EA approval, secure funding for implementation<br>• Implement | |
| **39. Support York Region Goal to Eliminate Jog at Jane Street and Kirby Road** | • Work with Region to expedite the jog elimination at Jane Street and Kirby Road | | |
| **40. Connect New Collector Road to Bass Pro Mills Drive Crossing of (and Interchange with) Highway 400** | • Concurrent with new development on the west side of Highway 400, extend collector road to the existing Bass Pro Mills Drive overpass | | |
| **41. Support Completion of Stage 1 of the GTA West Corridor EA Study and Advocate Initiation for Stage 2 of the EA Study for New Corridor** | • Following completion of Stage 1 of the GTA West Corridor EA Study, work York Region and MTO to expedite the determination of the routing for the GTA West Corridor.<br>• Work With MTO and York Region through Stage 2 of the EA Study to secure OPA 637 interchange connection(s) with Highway 400 together with a Regional arterial connection | | |
| **42. Initiate Class EA (Phases 3 and 4) Studies**<br>**a) Creditstone Widening**<br>**b) Colossus Road Extension across Highway 400 and Improvements easterly to Creditstone Road** | | • Develop Terms of Reference<br>• Retain consultants to conduct the studies<br>• Following EA approval, secure funding for implementation<br>• Implement | |
| **43. Reassess Need for and, if confirmed, Initiate Class EA (Phases 3 and 4) Studies for King-Vaughan Road Widening** | | • Develop Terms of Reference<br>• Retain consultants to conduct the studies<br>• Following EA approval, secure funding for implementation | • Implement King- Vaughan Road widening |
| **44. Initiate Class EA (Phases 3 and 4) Studies for Kirby Road Extension and Widening** | | • Initiate class EA for Kirby Road<br>• Following EA approval, secure funding for implementation<br>• Implement Kirby Road extension and widening | |
| **45. Reassess Need for and, if Confirmed, Initiate Class EA (Phase 3 and 4) Studies for Snidercroft Road Extension** | | | • Develop Terms of Reference<br>• Retain consultants to conduct the studies<br>• Following EA approval, secure funding for implementation<br>• Implement |
| **F. Monitoring & Review** | | | |
| **46. Initiate Travel Monitoring (including City Cordon Count Program)** | • Undertake detailed planning in consultation with the Region<br>• Assemble and analyze data from TTS and other sources<br>• Prepare first City Travel Monitoring Report for Council | • Conduct City Cordon Count Program in appropriate years in co-operation with York Region, and assess results<br>• Prepare travel monitoring report and submit to Council | • Conduct City Cordon Count Program in appropriate years in co-operation with Region, and assess results<br>• Prepare travel monitoring report and submit to Council |
| **47. Update the City Travel Demand Model** | • Recalibrate model based on 2011 Census, GTA-wide Transportation Tomorrow Survey (TTS), 2011 cordon counts, and 2011 travel time surveys<br>• Update land use, road and transit networks and other model inputs | • Recalibrate Model (Based on 2016 Census and TTS)<br>• Update land use, road and transit networks, and other model inputs | • Recalibrate Model (Based on 2021 and 2026 Census and TTS)<br>• Update land use, road and transit networks, and other model inputs |
| **48. Establish Mechanisms for Inter-Jurisdictional Transportation Co-ordination** | • Meet with senior officials of the Province, Metrolinx and York Region to agree on mechanisms for ongoing liaison regarding planning and implementation of transportation infrastructure and programs | | |
| **49. Strengthen Transportation Planning/Engineering Staff Capability** | • Secure additional staffing resources as required to reach minimum strength by 2014 (as outlined in Chapter 7 of the TMP report) | | |
| **50. Determine Need for TMP Update** | | • Based on monitoring and assessment of TMP progress, policy changes, and GTA context, determine need for update | • Based on monitoring and assessment of TMP progress, policy changes, and GTA context, determine need for update |

**Exhibit 7-6: Transportation Master Plan – Centrepiece to Vaughan's Decision-Making Framework**




### *7.6.2 Relationships with Senior Levels of Government*

As noted above, the implementation of the TMP will be the responsibility of all levels of government, including Federal, Provincial and Regional as well as the recently formed Metrolinx, which has the overall responsibility for the implementation of the Regional Transportation Plan (RTP) for the entire Greater Toronto and Hamilton Area (GTHA) (see **Exhibit 7-7** below).

**Exhibit 7-7: TMP Elements and Implementation Responsibilities**

| Jurisdiction | TMP Plan Elements | | | | | |
|---|---|---|---|---|---|---|
| | *Roads* | *Railway Grade Separations* | *Transit* | *Active Transport* | *TDM* | *Parking* |
| **City of Vaughan** | X | X | | X | X | X |
| **York Region/YRT** | X | X | X | X | X | X |
| **Metrolinx/GO** | | | X | | X | X |
| **Province** | X | X | X | | | X |
| **Federal Government** | | X | X | | | |

It will therefore be critical for Vaughan to formalize an on-going and coordinated relationship with officials at all levels. A high level inter-jurisdictional transportation coordinating committee could meet once or twice a year to ensure key initiatives were being pursued and capital plans were being

prepared in a coordinated manner in the context of the overall Greater Golden Horseshoe Growth Plan, the Regional Official Plan and the City's new Official Plan. Political representation through appropriate Committee of Council chairs for both Vaughan and York Region would be appropriate in addition to relevant department heads and directors.

## 7.7 Staffing Implications

To successfully implement this TMP, Vaughan's staffing capabilities in transportation planning will need to be significantly upgraded. There are four functional areas for which the City should have expertise to ensure that the TMP Action Plan can be pursued without delay. These areas are briefly described below:

**1 Development and Traffic Calming**

With the large number of development applications before the City and the importance of securing transportation infrastructure improvements to accommodate new growth, this is a very important function probably requiring two full-time dedicated transportation professionals.

**2 Sustainable Transportation**

TDM is recommended as a key component of the TMP and an increased City role is seen as necessary to drive initiatives within the City. The Action Plan sets out many areas for City involvement, including the preparation of an overall plan based on the strategy proposed as part of this TMP. A Sustainable Transportation Specialist would also be involved in Active Transportation, implementation of the Pedestrian and Bicycle Master Plan, development review and co-ordination with Metrolinx and Regional staff to ensure a united front on TDM matters.

**3 Transportation Corridor and Area Studies**

The volume of study activity is such that a full-time dedicated staff resource is needed to both lead City studies and represent the City's interests in Regional and Provincial studies. City led studies would focus on area studies to support secondary plans and EA studies to secure environmental approvals. Involvement in studies led by senior levels of government is critical and would include studies such as the Provincial GTA West Corridor study and the joint study with the Region on the Vaughan Metropolitan Centre and Area Transportation Study.

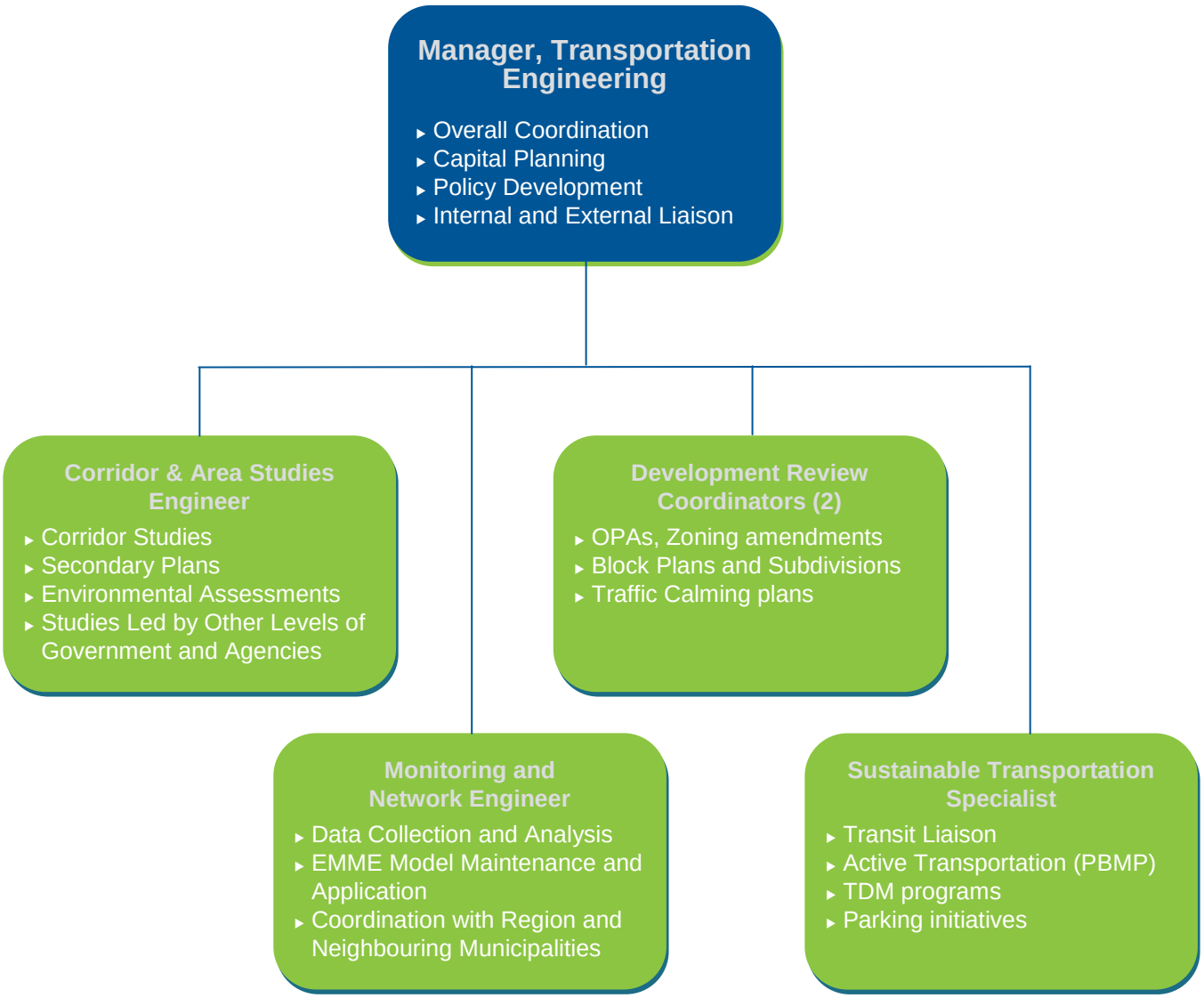
**4 Network Analysis and Monitoring**

With the completion of the TMP, the City has its own computerized travel demand model and a suggested program for monitoring travel through and within the City. The model will need to be kept current in order to be effective. This will involve liaising with the Region to ensure the latest projections of population and employment are incorporated, updating the existing and planned road and transit networks, and updating other travel behaviour characteristics, such as peak hour factors, auto occupancies, modal splits, and origin/destination patterns. These activities are very closely related to the key components of the travel monitoring program and since neither area would require a full-time person, the combined functions would be a good fit for a transportation engineer.

To coordinate and guide all of the above functions, it is recommended that a full time transportation planning manager position be established. This position would also take responsibility for senior level liaison with officials from the Province, Metrolinx and Region of York.

A suggested organization chart for the City of Vaughan Transportation Planning team is shown in **Exhibit 7-8**.

**Exhibit 7-8: Proposed Staffing Needs for Transportation Planning/Engineering**



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## List of Exhibits

# 8. Measuring Success

The travel demand models and the resultant travel forecasts prepared for the City of Vaughan's TMP have been developed based on several assumptions and premises pertaining to the materialization of the future population and employment projections as set out in the City's and the Regional Official Plans, along with travel behaviour characteristics (transit modal share, auto occupancy level, etc.) and expected improvements to the road and transit networks. While all of the assumptions and premises were considered carefully and represented the best possible set of inputs at the time, there is always some level of uncertainty associated with these assumptions. It is therefore critical that a monitoring program be designed to identify key variables and measures and track them over time in order to assess how well transportation program objectives are being achieved.

## 8.1 Levels of Monitoring

In order to obtain a full picture of Vaughan's future population, employment and travel patterns, monitoring must be conducted at two levels: City-wide; Centres and Corridors. The growth of the City of Vaughan is closely dependent on the balanced investments in all modes of transportation including transit services at various levels, roads to serve auto travel and goods movement, and active transportation systems across the City. Therefore a City-wide monitoring process which employs several indicators and measures is required to determine whether the objectives of the TMP are being met.

The major new initiative of the new Vaughan Official Plan is the development of an urban structure based on centres and corridors to which a substantial proportion of the City's new growth will be directed. These centres and corridors will be supported by major investments in rapid transit to encourage a significant shift in travel from auto to transit. It is therefore necessary for the monitoring program to explicitly track changes in travel to these centres and corridors, and to relate these changes in travel to growth in population and employment.

## 8.2 Objectives and Key Indicators

As indicated above, comprehensive system monitoring must be included as an important part of the transportation planning process. For monitoring purposes and in order to show the areas of deficiency or potential for improvements, a set of measurable indicators needs to be defined. Each indicator in turn can be quantified through the use of a set of measures. It is essential to note that such indicators and measures should relate to objectives, which in turn relate to a set of principles (identified and described earlier in Chapter 4 of this Report). The objectives for the monitoring activities are briefly discussed in this section under the following sub-headings. Unlike principles for which no test for fulfillment can be readily applied, these objectives are specific and measurable statements that relate to the attainment of the principles. As can be seen further in **Exhibit 8-2**, one objective could help to support multiple principles. Compared to the principles, the objectives have a higher degree of specificity to this transportation master plan and, thus, a better ability to measure success in its implementation.

### a) Increase Mobility

Mobility is defined as the ability to travel from one location to another in a reasonable amount of time and for acceptable costs. Increasing individual mobility is an important objective of the Plan. This can be measured by using indicators such as road network congestion and freight transport efficiency. Indicators such as daily and peak-period volume-to-capacity ratios on major roads / arterials at screenlines (available from Regional Cordon Count Program), "Travel Time Indices" (available from the Ontario Ministry of Transportation (MTO) Travel Time Survey) and peak-period average freight transport speeds (obtained from Travel Time Survey) are only examples of the measures that can be adopted to quantify and assess the level of mobility with regard to auto and goods movement.

### b) Improve Safety

Enhancing transportation safety is another objective as part of the City's monitoring program. Although it is considered as a proactive indicator, traffic collisions and fatalities are used to measure the success in achieving this objective. Annual number of collisions per capita for different modes of travel (auto, bicycle, pedestrian, etc.) available from the City and Regional collision databases are the measures that can be used to quantitatively evaluate the level of transportation safety within the City of Vaughan's transportation network.

### c) Improve Reliability

Reliability / consistency of travel time is another important objective from the transportation (transit and road) system users' perspective and therefore included in the monitoring program. Variation in average speed (and travel times) for typical auto trips and adherence to transit route schedules are the two indicators chosen for measuring the reliability of the transportation system for auto and transit respectively. "Buffer Time Index" (BTI) defined as the extra travel time (or buffer) that a motorist needs to consistently arrive on time with a high degree of confidence (available from MTO Travel Time Survey) is one of the measures identified to quantify reliability of auto travel.

### d) Increase Accessibility

Providing access to more and better choices for travel within the City and to / from Regional and Primary Centres and serving special access needs for all people, including youth, the elderly, and the disabled is another objective of the TMP and therefore needs to be monitored on an on-going basis. Changes in commuting behaviour and travel patterns are the indicators selected for achieving this objective. Proportion of transit and cycling trips to / from Regional and Primary Centres (e.g. Vaughan Metropolitan Centre, etc.) which can be obtained from the Transportation Tomorrow Survey (TTS) database and the transit coverage over the urbanized portion of the City are examples of the measures that are proposed for this category.

### e) Meet TDM / TSM Objectives

The proposed monitoring process was designed in a way to be capable of estimating the public's interest and participation in active transportation and meeting other TDM / TSM (Transportation Systems Management) objectives. Reduction in auto dependency, modal shift to transit, carpooling, and non-motorized modes (e.g. walking, cycling, etc.) among others are the indicators used to measure the success in carrying out TDM / TSM initiatives as proposed in the Plan.

There is an inventory of potential measures that can be employed to quantify the success of the Plan in achieving the proposed TDM / TSM objectives. It is essential to note that some of those measures require that the data available from current data sources (TTS, Regional Cordon Count Program, etc.) be supplemented with some additional data. For instance, there is a recommendation on including the measurement of travel time on High Occupancy Vehicle (HOV) lanes separately from that of general-purpose lanes as part of the Travel Time Survey for those major / arterial roads within the City with HOV lanes.

**f) Achieve Sustainable Built Environment / Land Use**

Cervero and Kockelman (1997) found that "density, mixed land use (what they referred to as "land-use diversity"), and pedestrian-oriented [road network] designs generally reduce trip rates and encourage non-auto travel in statistically significant ways" and this is directly related to their influence on accessibility and perceived convenience of walking and cycling trips. Therefore, achieving a sustainable built environment has also been included in the proposed City monitoring program. Number of residents and jobs per unit of land area within Regional and Primary Centres (e.g. VMC, etc.) and overall urbanized portion of the City along with "self-containment" (portion of trips that start and end within the City) and proportion of local streets within 500 meters of transit stops with sidewalks on both sides are examples of the measures proposed to quantify and assess the success of the City towards achieving a sustainable built environment.

**g) Reduce Environmental Impacts**

Protecting air and water quality and promoting energy conservation is another objective included as part of the City's monitoring program. Auto vehicle-kilometres of travel on the road network within the City available from the TTS database is the only readily available surrogate measure for quantifying transport-related Greenhouse Gas (GHG) emissions. While the other proposed indicators such as annual transport-related GHG per capita or fuel consumption per capita / VKT or PKT are not available from the existing sources of data, they are included as part of the City's monitoring process in the hopes that they highlight the importance of measuring those indicators in the future.

## 8.3 Key Data Sources and Proposed Monitoring Program

This monitoring would be implemented over the entire City and the proposed program has been mainly built upon various surveys now being conducted such as the TTS, undertaken every five years, the full Regional Cordon Count Program (also conducted every five years timed to coincide with the TTS survey) and an interim survey within these five years. This Cordon Count program yields both auto occupancy and modal split information which can be summarized by direction across screenlines for defined corridors.

Other important sources of data to be used as part of the proposed monitoring process include the following: biennial MTO Travel Time Survey (in which York Region has participated since 2008); York Region Transit (YRT) and VIVA Ridership Reports; on / off boarding count programs; City and Regional collision databases; and databases of GO Transit and Transportation Safety Board of Canada.

Additionally, in order to track the changes in all parts of the City at a corridor level, it is necessary that a few additional screenlines be defined to supplement the Regional Cordon Count Program. The proposed screenlines are illustrated in **Exhibit 8-1** and are located in the following locations: west of Bathurst Street and Yonge Street (south of Highway 7); east of Highway 27 (between Islington Avenue and Highway 27); north of Rutherford Road; and at the CN Rail line east of Keele Street. These supplemental surveys are recommended to be conducted every two or three years during the months of May and June, at the same time as the Region's Cordon Count Program is conducted.

**Exhibit 8-1** also shows additional shorter screenlines around the VMC required for capturing the traffic data (mode of travel, traffic volume, auto occupancy, etc.) to / from the VMC. These proposed screenlines are as follows: north of Highway 407 between Highway 400 and the rail line east of Creditstone Road; east of Credit Stone Road (railway) between Highway 407 and Portage Parkway; and north of Portage Parkway between Highway 400 and the rail line east of Creditstone Road.

It is important that before such cordon count programs are undertaken, a thorough analysis of the proposed screenlines is completed.

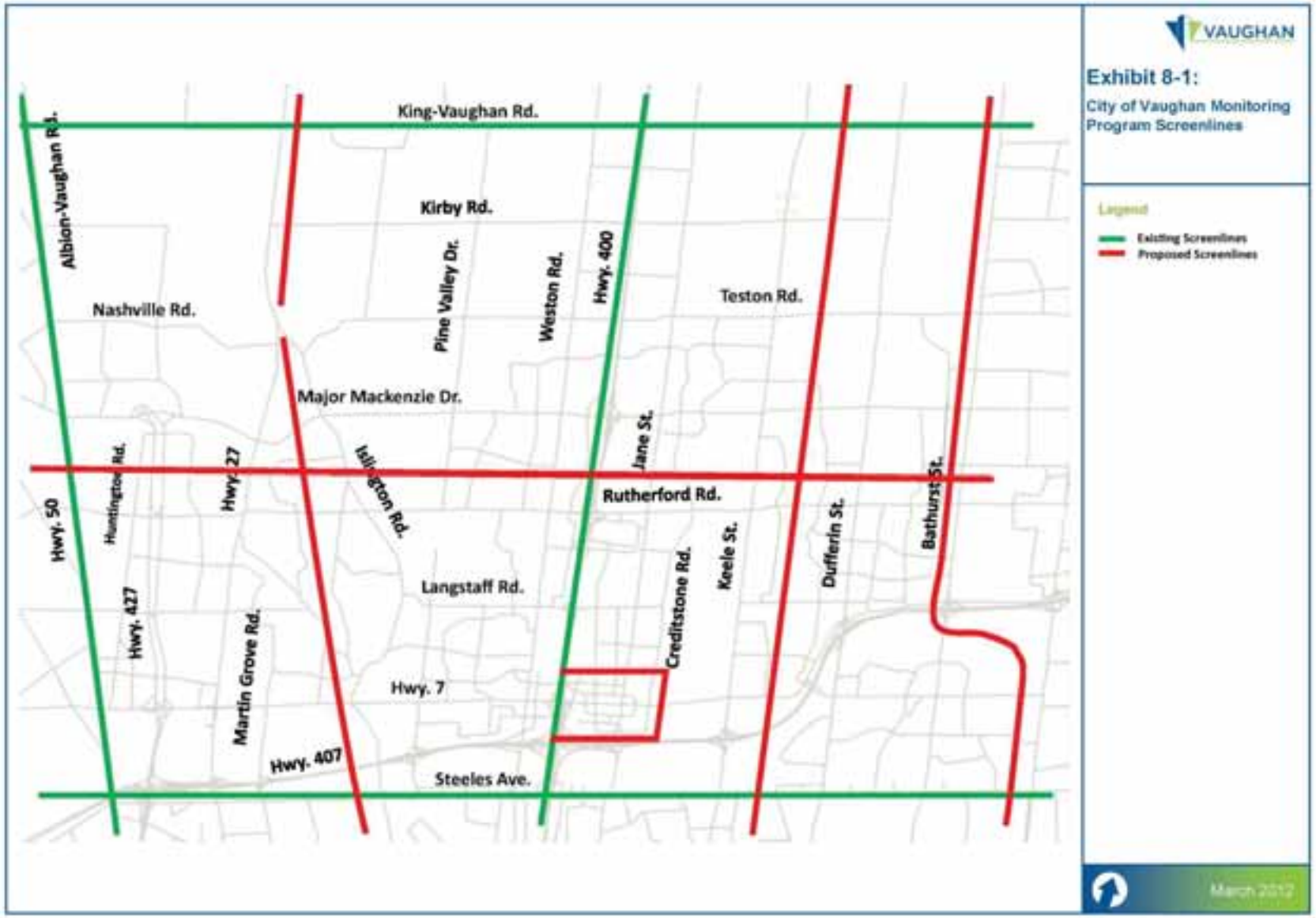
The monitoring program measures would also be useful for general transportation planning purposes. These include improving travel surveys and traffic counts in cooperation with York Region by developing common measuring and reporting tools to collect better information on non-motorized travel, travel by children and people with disabilities, fuel consumption, and GHG emissions.

**Exhibit 8-2** details the proposed City-wide monitoring program. The table sets out the objectives (as well as related principles defined in Chapter 4), the indicators and the specific measures, the sources of data for each along with information on any additional / new required surveys, their timing and frequency. These surveys should be integrated with on-going monitoring activities undertaken by the City and the Regional Planning Departments, particularly as related to population and employment growth.

## 8.4 Costing

The costs of the monitoring program to the City can be minimized through close coordination with York Region and the Data Management Group. For example historically as part of the full Regional Cordon Count program, York has undertaken counts along a minor screenline immediately west of Bathurst Street between Major Mackenzie Drive and Steeles Avenue that can potentially provide part of the count data required and recommended to be obtained at locations along the proposed screenline at the eastern boundary of the City. Essentially, the costs to the City will be for the additional cordon / screenline counts to ensure adequate City-wide coverage. Based on costs incurred by the Region, it is estimated that the cost to the City would be about $120,000 every 2/3 years. There would also be additional staff time required for coordinating the conduct of the counts, assembling and analyzing data, and preparing reports to Council.

## Exhibit 8-1: City of Vaughan Monitoring Program Screenlines



## Exhibit 8-2: Proposed City of Vaughan-wide Monitoring Program

| Objective and Supporting Principles | Indicator | Measure | Data Source and Frequency | Additional / New Surveys Required? | Recommended Vaughan Surveys | | |
|---|---|---|---|---|---|---|---|
| | | | | | What? | When? | How Frequent? |
| **Increase Mobility**<br>Principle 1: Provide Safe, Accessible, Affordable, Reliable, and Efficient Transportation for Everyone<br>Principle 6: Promote Economic Vitality<br>Principle 11: Encourage Efficient Movement of Freight and Support Greater Use of Freight by Rail | Road Network Congestion | Daily and peak-period volume-to-capacity ratio on major roads / arterials at screenline | Cordon Count Program – Every 2 or 3 years, however it is essential to note that full cordon count surveys are conducted every five years and are timed to coincide with other programs such as the GTA wide Transportation Tomorrow Survey (TTS) and the Federal Statistics Canada Census but there is one interim survey within every five years. | Yes | New screenlines to supplement the Region of York's Cordon Count Program to capture information for major / arterial roads and those crossing eastern border of the City. Therefore the proposed screenlines are located at west of Bathurst Street and Yonge Street (south of Hwy. 407), east of Highway 27 (between Islington Avenue and Hwy. 27), north of Rutherford Road, and at the CN Rail line east of Keele Street | During the months of May and June – At the same time the Region's Cordon Count Program is conducted | 2 Years |
| | | Travel Time Index (TTI) for 400-series Highways and Regional arterial roads (Hwy. 7, Rutherford Road, Yonge Street and sections of Hwy. 27, Major Mackenzie Drive, Weston Road, Jane Street, and Dufferin Street | Travel Time Survey – 2 Years | | | | |
| | | Average delay per signal along the arterial roads | Travel Time Survey – 2 Years | | | | |
| | | Percentage of the intersections that function at or above capacity | City of Vaughan Databases | | | | |
| | Freight transport efficiency | Peak-period average freight transport speed | Travel Time Survey – 2 Years | No | | | |
| **Improve Safety**<br>Principle 1: Provide Safe, Accessible, Affordable, Reliable, and Efficient Transportation for Everyone | Traffic collisions and fatalities | Annual number of collisions per capita (total and severe) | City of Vaughan and Region of York Collision Databases | No | | | |
| | | Annual number of collisions at rail / road grade crossings | GO Transit and Transportation Safety Board of Canada Collision Databases | | | | |
| | | Annual number of pedestrian / bicyclist collisions | City of Vaughan and Region of York Collision Databases | | | | |
| **Improve Reliability**<br>Principle 1: Provide Safe, Accessible, Affordable, Reliable, and Efficient Transportation for Everyone<br>Principle 5: Promote Reliable, Convenient, and Seamless Transit<br>Principle 6: Promote Economic Vitality | Variation in average speed (and travel times) for typical auto trips | Buffer Time Index (BTI) for 400-series Highways and Regional arterial roads | Travel Time Survey – 2 Years | No | | | |
| | Adherence to transit route schedule | Average speed for buses, compared to schedules speed on busy transit routes | Travel Time Survey – 2 Years<br>YRT and VIVA Databases | No | | | |
| **Increase Accessibility**<br>Principle 1: Provide Safe, Accessible, Affordable, Reliable, and Efficient Transportation for Everyone<br>Principle 5: Promote Reliable, Convenient, and Seamless Transit<br>Principle 6: Promote Economic Vitality<br>Principle 7: Support Diverse Transportation System Funding<br>Principle 9: Avoid Unnecessary Capacity Improvements | Changes in commuting behaviour and travel patterns | Transit coverage over the urbanized portion of the City<br>Average lag time for transit service to be provided to new residential areas | Through overlaying of a map showing buffer zones of 800 meters around bus stops on top of a map showing the places or residence, employment, study, etc. within the City<br>City's staff to work with the urban planners and transit agencies | Yes | It requires an on-going liaison with YRT, VIVA, and the City's Planning Department | | |
| | Access to Centres | Proportion of transit and cycling trips to / from Regional and Primary Centres (e.g. VMC, etc.) | TTS – 5 Years | No – However Centres would have to be defined as aggregation of TTS traffic zones | Also for the VMC, three additional screenlines need to be defined as follows:<br>North of Highway 407 between Highway 400 and the rail line east of Creditstone Road;<br>East of Credit Stone Road (railway) between Highway 407 and Portage Parkway; and<br>North of Portage Parkway between Highway 400 and the rail line east of Creditstone Road | During the months of May and June – At the same time the Region's Cordon Count Program is conducted | 2 Years |

## Exhibit 8-2: Proposed City of Vaughan-wide Monitoring Program

| Objective and Supporting Principles | Indicator | Measure | Data Source and Frequency | Additional / New Surveys Required? | Recommended Vaughan Surveys | | |
|---|---|---|---|---|---|---|---|
| | | | | | What? | When? | How Frequent? |
| **Meet TDM / TSM Objectives**<br>Principle 2: Make Vaughan Neighbourhoods Pedestrian and Bicycle Friendly<br>Principle 5: Promote Reliable, Convenient, and Seamless Transit<br>Principle 7: Support Diverse Transportation System Funding<br>Principle 9: Avoid Unnecessary Capacity Improvements<br>Principle 10: Reduce Need for Travel<br>Principle 12: Develop Parking Strategies that Reduce Single-Occupant Vehicle Travel<br>Principle 13: Foster Awareness of Sustainable Transportation | Modal shift to transit | Daily and peak-period modal share of transit overall and per purpose (HB-Work, HM-School, HM-Discretionary, Non-HB, etc.) | TTS – 5 Years | Yes | New screenlines to supplement the Region of York's Cordon Count Program to capture information for major / arterial roads and those crossing eastern border of the City. Therefore the proposed screenlines are located at west of Bathurst Street and Yonge Street (south of Hwy. 407), east of Highway 27 (between Islington Avenue and Hwy. 27), north of Rutherford Road, and at the CN Rail line east of Keele Street | During the months of May and June – At the same time the Region's Cordon Count Program is conducted | 2 to 3 Years |
| | | Peak-Period proportion of transit usage crossing the City borders and other screenlines | Cordon Count Program – 2 or 3 Years | | | | |
| | | Daily transit trips per person | TTS – 5 Years | | | | |
| | | Transit weekday boarding per capita along busy routes (VIVA lines, Hwy 7, Rutherford, Bathurst, etc.) within the City limits | TTS – 5 Years | | | | |
| | | Transit weekday boarding per revenue vehicle hour (total # of paying passengers, plus transfers, divided by total number of revenue-vehicle hours in service) along VIVA routes within the City limits | TTS – 5 Years and VIVA On / Off Passenger Counts and other VIVA Databases – Monthly Reports are available | | | | |
| | | Proportion of full-time student population over 16 years of age with transit passes (VIVA, YRT, GO Transit, TTC pass, combination, etc.) | TTS – 5 Years | | Including the measurement of bus travel time on HOV lanes separately from that of GPL as part of the Travel Time Survey for major / arterial roads within the City with HOV lanes accommodating transit vehicles | At the same time the Travel Time Survey is conducted | 2 Years |
| | | Bus travel time on HOV lanes to auto travel time on adjacent GPL for major / arterial roads within the City with HOV lanes accommodating transit vehicles | Potential inclusion in Travel Time Survey – 2 Years | | | | |
| | Modal shift to non-motorized modes (e.g. walking, cycling, etc.) | Kilometres of municipal roads with sidewalks / cycling route (must be used in combination with other measures) | City of Vaughan Databases | Yes | Including cycling trip counts into future Cordon Count Programs | | |
| | | Daily and peak-period modal share of walking and cycling trips | TTS – 5 Years | | | | |
| | | Cycling counts along key cycling routes and across screenlines | Potential inclusion in Cordon Count Program | | | | |
| | | Proportion of internal trips with the Regional and Primary Centres with walking as the primary mode of travel | TTS – 5 Years | | | | |
| | | Percentage of population who live and work within 800 m (median walk trip length in the GTA based on 2006 TTS) of transit stops | TTS – 5 Years | | | | |
| | Modal shift to carpooling | Travel time on HOV lanes to travel time on adjacent GPL | Travel Time Survey – 2 Years | Yes | Including the measurement of travel time on HOV lanes separately from that of GPL as part of the Travel Time Survey for major / arterial roads within the City with HOV lanes | At the same time the Travel Time Survey is conducted during the months of May and June | 2 to 3 Years |
| | | Daily and peak-period average auto occupancy crossing the City borders and other screenlines | Cordon Count Program – 2 or 3 Years | | | | |
| | | Daily and peak-period modal share of auto-passenger trips | TTS – 5 Years | | New screenlines to supplement the Region of York's Cordon Count Program to capture information for major / arterial roads and those crossing eastern border of the City. Therefore the proposed screenlines are located at west of Bathurst Street and Yonge Street (south of Hwy. 407), east of Highway 27 (between Islington Avenue and Hwy. 27), north of Rutherford Road, and at the CN Rail line east of Keele Street | At the same time the Region's Cordon Count Program is conducted | 2 Years |
| | Reduction in Cost for Road Improvements | Annual Cost of Road Improvements within the City of Vaughan (must be used in combination with other measures) | City of Vaughan | No | | | |
| | Increase in Tele-working | Proportion of Residents of the City working from home | TTS – 5 Years | No | | | |
| | Charge for parking in Centres and Corridors well-served by transit | Proportion of HM-Work trips destined to the City of Vaughan along with the Regional and Primary Centres with free parking available at person's usual place of work | TTS – 5 Years | No | | | |

## Exhibit 8-2: Proposed City of Vaughan-wide Monitoring Program

| Objective and Supporting Principles | Indicator | Measure | Data Source and Frequency | Additional / New Surveys Required? | Recommended Vaughan Surveys | | |
|---|---|---|---|---|---|---|---|
| | | | | | What? | When? | How Frequent? |
| | Reduction in auto dependency | Vehicle availability per household or per adult (> = 16) for residents of the City | TTS – 5 Years | No | | | |
| | | Proportion of adults (>=16) without driver's license) | TTS – 5 Years | | | | |
| | | Daily and peak-period non-auto modal share of trips by purpose for City residents | TTS – 5 Years | | | | |
| | | Daily and peak-period auto trips per person total and per purpose for the residents of the City | TTS – 5 Years | | | | |
| | | Daily and peak-period non-auto modal share of inbound trips towards the City | TTS – 5 Years | | | | |
| **Achieve Sustainable Built Environment / Land Use**<br>Principle 2: Make Vaughan Neighbourhoods Pedestrian and Bicycle Friendly<br>Principle 3: Integrate Land Use and Transportation Planning to Encourage More Sustainable Lifestyles<br>Principle 5: Promote Reliable, Convenient, and Seamless Transit<br>Principle 10: Reduce Need for Travel | Population and employment densities | Number of residents and jobs per unit of land area within Regional and Primary Centres (e.g. VMC, etc.) and overall urbanized portion of the City as well | TTS – 5 Years | No | | | |
| | Mixed land use | Self-containment (portion of trips that start and end within the City) place of work employment to resident labour force ratio | TTS – 5 Years | No | | | |
| | | Employment minus employed labour force | TTS – 5 Years | | | | |
| | | Median trip length per purpose for the residents of the City | TTS – 5 Years | | | | |
| | | Jobs within walking distance (1 kilometre: median walk trip length) of places of residents | TTS – 5 Years | | | | |
| | | Daily and peak-period median trip lengths (straight line distance) per mode per purpose (HB-Work, HM-School, HM-Discretionary, Non-HB, etc.) for residents of the City | TTS – 5 Years | | | | |
| | Road network design | Proportion of local streets with 500 meters of transit stops (as proposed in the City's Official Plan) with sidewalks on both sides | City's databases | No | | | |
| **Reduce Environmental Impacts**<br>Principle 2: Make Vaughan Neighbourhoods Pedestrian and Bicycle Friendly<br>Principle 3: Integrate Land Use and Transportation Planning to Encourage More Sustainable Lifestyles<br>Principle 4: Preserve and Enhance Environmental Resources<br>Principle 5: Promote Reliable, Convenient, and Seamless Transit<br>Principle 8: Minimize Use of Fossil Fuels<br>Principle 9: Avoid Unnecessary Capacity Improvements<br>Principle 10: Reduce Need for Travel<br>Principle 13: Foster Awareness of Sustainable Transportation | Transport-related GHG emissions | Transport-related GHG per capita<br>Annual transport-related GHG emissions<br>Auto vehicle-kilometres of travel on the road network within the City | Not collected<br>Not collected<br>TTS – 5 Years | Yes | Measuring the GHG emissions at certain stations within the City | | |
| | Energy efficiency | Fuel consumption per capita / VKT or PKT and per mode | Not collected | Yes | | | |

## 8.5 Reviewing the Need for TMP Updates

Since certain elements of the monitoring program would only be collected every 5 years (e.g. TTS), it is proposed that 5-year reviews of the need for TMP updates be undertaken. A review would likely take place in the year following the availability of the TTS data. The 5-year interval would only trigger an assessment of the need to review the TMP; if through the monitoring program, it is clear that key objectives are being met, a TMP update might not actually be required. Nevertheless, within each 5-year period, monitoring should be conducted and results considered as part of the 5-year review.