



## TABLE OF CONTENTS

1	Introduction .....	1-1
1.1	Introduction .....	1-1
1.2	Study Process and Approach .....	1-3
1.3	Study Area .....	1-3
1.4	Report Structure .....	1-5
2	Transportation Planning Context and Relevant Studies .....	2-1
2.1	Provincial Planning Policies .....	2-1
2.1.1	A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020) .....	2-1
2.1.2	Provincial Policy Statement (2020) .....	2-2
2.2	Regional Planning Policies .....	2-3
2.2.1	York Region Official Plan (2010) .....	2-3
2.2.2	York Region Transportation Master Plan (2016) .....	2-4
2.3	City of Vaughan Policy Framework .....	2-5
2.3.1	City of Vaughan Official Plan (2010 & On-going Update) .....	2-5
2.3.2	City of Vaughan Transportation Master Plan: A New Path (2012) .....	2-9
2.3.3	Vaughan Transportation Plan (2020) .....	2-10
2.3.4	Pedestrian and Bicycle Master Plan Update (2020) .....	2-10
2.4	VMC Policy Framework and Background Studies .....	2-12
2.4.1	VMC Secondary Plan (partially approved 2019) .....	2-12
2.4.2	VMC Secondary Plan Update (2020 – On-going) .....	2-13
2.4.3	VMC Transportation Master Plan (2012) .....	2-18
2.4.4	VMC and Surrounding Area Transportation Study (2013) .....	2-20
2.4.5	VMC Streetscape and Open Space Plan (2018) .....	2-21



2.4.6	VMC Urban Design Guidelines (2016) .....	2-22
2.4.7	Black Creek Renewal Detailed Design .....	2-23
2.4.8	Portage Parkway Class EA Study: Widening and Easterly Extension to Creditstone Road .....	2-23
2.4.9	Weston Road and Highway 7 Secondary Plan and Transportation Master Plan (on-going).....	2-23
2.4.10	Concord GO Centre Secondary Plan (2015), Concord GO Centre Mobility Hub Study(On-going) and Concord GO Centre Transportation Master Plan (On-going).....	2-24
<b>3</b>	<b>Existing Transportation Network.....</b>	<b>3-1</b>
3.1	Road Network .....	3-1
3.2	Existing Transit Network .....	3-5
3.2.1	York Region Transit Routes .....	3-7
3.2.2	Viva Routes.....	3-12
3.2.3	Brampton Transit Routes .....	3-13
3.2.4	Toronto Transit Commission Subway.....	3-14
3.2.5	GO Transit .....	3-16
3.2.6	Service Frequency .....	3-18
3.2.7	York Region Transit Passenger Activity.....	3-20
3.3	Active Transportation Network .....	3-26
3.3.1	Pedestrian Network.....	3-26
3.3.2	Bicycle Network .....	3-29
<b>4</b>	<b>Existing Multimodal Level of Service Analysis .....</b>	<b>4-1</b>
4.1	Pedestrian Level of Service .....	4-1
4.1.1	Pedestrian Level of Service Criteria .....	4-1
4.1.2	Existing (2020) Pedestrian Conditions.....	4-7
4.2	Bicycle Level of Service.....	4-9
4.2.1	Bicycle Level of Service Criteria .....	4-9





4.2.2	Existing (2020) Bicycle Conditions .....	4-14
5	Existing (2019) Traffic Conditions .....	5-2
5.1	Traffic Data Collection .....	5-2
5.2	Traffic Model Development and Calibration .....	5-4
5.3	Existing (2019) Intersection Lane Configuration.....	5-5
5.4	Existing (2019) Traffic Volumes .....	5-7
5.5	Existing Travel Characteristics.....	5-10
5.6	Existing (2019) Intersection Operational Analysis .....	5-11
5.7	Collision History.....	5-26





## LIST OF FIGURES

Figure 1-1: VMC TMP Update Study Area.....	1-5
Figure 2-1: VOP 2010 - Schedule 1 Urban Structure .....	2-8
Figure 2-2: VMC Separated Cycling Network.....	2-11
Figure 2-3: VMC Secondary Plan - Schedule B Transit Network .....	2-16
Figure 2-4: VMC Secondary Plan - Schedule C Street Network.....	2-17
Figure 3-1: Existing Road Network Road Hierarchy.....	3-3
Figure 3-2: Number of Lanes of the Existing Road Network.....	3-4
Figure 3-3: Existing Transit Network .....	3-6
Figure 3-4: Highway 7 - Route 77 / 77A .....	3-8
Figure 3-5: Maple - Route 26 .....	3-9
Figure 3-6: Jane - Route 20 .....	3-10
Figure 3-7: Vaughan Mills / Wonderland - Route 760 .....	3-11
Figure 3-8: Orange - Route 605.....	3-13
Figure 3-9: Queen - Route 501.....	3-14
Figure 3-10: Yonge - University (Line 1) .....	3-15
Figure 3-11: Hamilton / Richmond Hill - Route Number 40.....	3-16
Figure 3-12: 407 East - Route number 51/52/54.....	3-17
Figure 3-13: Existing VMC Pedestrian Network.....	3-27
Figure 3-14: Pedestrian Realm on New Park Place.....	3-28
Figure 3-15: Existing VMC Cycling Network.....	3-31
Figure 4-1: Existing (2020) Pedestrian Level of Service.....	4-8
Figure 4-2: Existing (2019) Bicycle Level of Service .....	4-15
Figure 5-1: VMC TMP Update and Weston 7 TMP Traffic Analysis Model Boundaries .....	5-4
Figure 5-2: 2016 Daily Trips and Modal Shares .....	5-10
Figure 5-3: Existing VMC Intersection LOS – Morning Peak Hour.....	5-18
Figure 5-4: Existing VMC Intersection LOS – Afternoon Peak Hour .....	5-25
Figure 5-5: Total Collision Distribution within VMC Study Area (2015-2019).....	5-27

## LIST OF TABLES

Table 3-1: Weekday Bus Route Service Frequency.....	3-18
Table 3-2: Weekend Bus Route Service Frequency .....	3-20



Table 3-3: VMC Study Area - Bus Route Service Boarding's (Average Weekday, Oct 2019) 3-21

Table 3-4: YRT / Viva Bus Stop Passenger Activity in the VMC Study Area (Daily) ..... 3-22

Table 4-1: Pedestrian Segment LOS Considerations ..... 4-3

Table 4-2: Pedestrian Exposure to Traffic LOS Considerations..... 4-4

Table 4-3: Illustrations of LOS for Pedestrians ..... 4-4

Table 4-4: Bicycle Segment LOS Considerations ..... 4-10

Table 4-5: Bicycle Intersection LOS Considerations..... 4-10

Table 4-6: Illustrations of LOS for Bicycles ..... 4-11

Table 5-1: Demand Adjustment Factors ..... 5-3

Table 5-2: Intersection Level of Service Criteria ..... 5-11

Table 5-3: VMC Intersection LOS Summary and Critical Movements - Afternoon Peak Hour ..... 5-19

## LIST OF APPENDICES

- Appendix A – Multi-Modal Level of Service Results
- Appendix B – Bicycle Level of Service Results
- Appendix C – Survey Dates for Turning Movement Count Data
- Appendix D – Aimsun Model Development and Calibration
- Appendix E – Detailed Summary of Microsimulation Existing Results



# 1 Introduction

## 1.1 Introduction

The City of Vaughan is carrying out the Vaughan Metropolitan Centre (VMC) Transportation Master Plan (TMP) Update in addition to two Schedule 'C' Class Environmental Assessments (EA's) Studies for the proposed extensions of Interchange Way (easterly from Jane Street to Creditstone Road) and Millway Avenue (southerly from Highway 7 to Interchange Way). The VMC TMP will build on the foundation laid by the City of Vaughan's TMP: A New Path (2012). 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. The City of Vaughan's TMP 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. 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, including the VMC.

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, centered 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. The City of Vaughan's TMP (2021) which prescribes the VMC as:

- A vibrant and sustainable downtown core with over 300 ha of mixed residential, business, recreation and commercial land uses designed to serve all Vaughan citizens;



- An “Urban Growth Centre” and a “Major Transit Station and Intensification Corridor” as identified in the provincial Places to Grow Act (enacted June 15, 2006);
- A “Regional Node”, as designated by the York Region Official Plan, which will be linked to three other regional centres by the Yonge Street and Highway 7 corridors;
- The northern terminus of the approved Spadina Subway extension, which is the cornerstone for developing a more transit-oriented downtown.

These transportation studies are being carried out concurrently with the VMC Secondary Plan Update, under a fully integrated and holistic approach to transportation and land use planning, and in a similar manner to the 2012 TMP and 2010 Vaughan Official Plan. WSP Canada Inc., has been retained by the City of Vaughan to carry out the VMC TMP Update, which is proceeding in accordance with Phases 1 and 2 of the Municipal Class EA (MCEA) process with the following objectives:

- Assess the VMC existing and future conditions to confirm the transportation needs;
- Identify a preferred transportation option based on an evaluation of preliminary options;
- Use a multimodal level of service approach to evaluate network connection and infrastructure;
- Undertake a complete mobility review of the future development scenarios for the VMC and support implementation of a public realm vision, based on building complete streets; and
- Develop an implementation plan, including recommendations to prioritize transportation infrastructure improvements, policies and programs.

Subsequent to confirming the need and justification for the improvements required in the VMC transportation network, the Interchange Way and Millway Avenue EA Studies will follow Phases 3 and 4 of the MCEA process, with the following objectives:

- Confirm the need for the extensions of Interchange Way and Millway Avenue, based on the Preferred Transportation Option;
- Develop design alternatives for the proposed extensions;
- Identify the preferred design alternative for the extensions of Interchange Way and Millway Avenue; and,
- Document the decision-making process in an Environmental Study Report (one for Interchange Way and one for Millway Avenue).



The City is undertaking other relevant studies within the vicinity of the VMC study area, including the Weston Road and Highway 7 Secondary Plan and supporting TMP (Weston 7 TMP), with the intent of carrying out land use planning and infrastructure planning/design in a fully integrated manner.

## 1.2 Study Process and Approach

The study process and approach for both the VMC TMP Update and the EA Studies includes the following:

- The VMC TMP Update will follow a two-phase process. Phase 1 will identify the existing and/ or potential transportation needs within the study area based on the projected land use and opportunities to address these needs and improve the existing transportation system. Phase 2 will generate alternative solutions and undertake an evaluation to determine a preferred transportation solution for the VMC study area.
- The Schedule 'C' Class EA Studies for the extensions of Interchange Way and Millway Avenue will be carried out concurrently and will confirm the need, evaluate alternative designs and select a preferred design, examine impacts on the social, cultural and natural environments and identify measures to mitigate those impacts, all in consultations with regulatory agencies and the public.

## 1.3 Study Area

The VMC Secondary Plan Area has been identified as an urban growth centre and an emerging downtown for the City of Vaughan, which is planned to provide a mixed-use centre with a concentration of high-density housing and employment areas.

Due to the level of planned residential and employment areas for the VMC, it is considered to be of significance compared to other primary and local growth centres adjacent to the study area, such as:

- The Weston 7 Secondary Plan Area located immediately to the west of the VMC;
- The Concord GO Centre Secondary Plan located to the east of the VMC; and
- The Vaughan Mills Centre Secondary Plan located to the north of the VMC.

The study area for the VMC TMP Update and the Interchange Way and Millway Avenue EAs is bounded by Creditstone Road to the east, Portage Parkway to the north, Highway 400 to







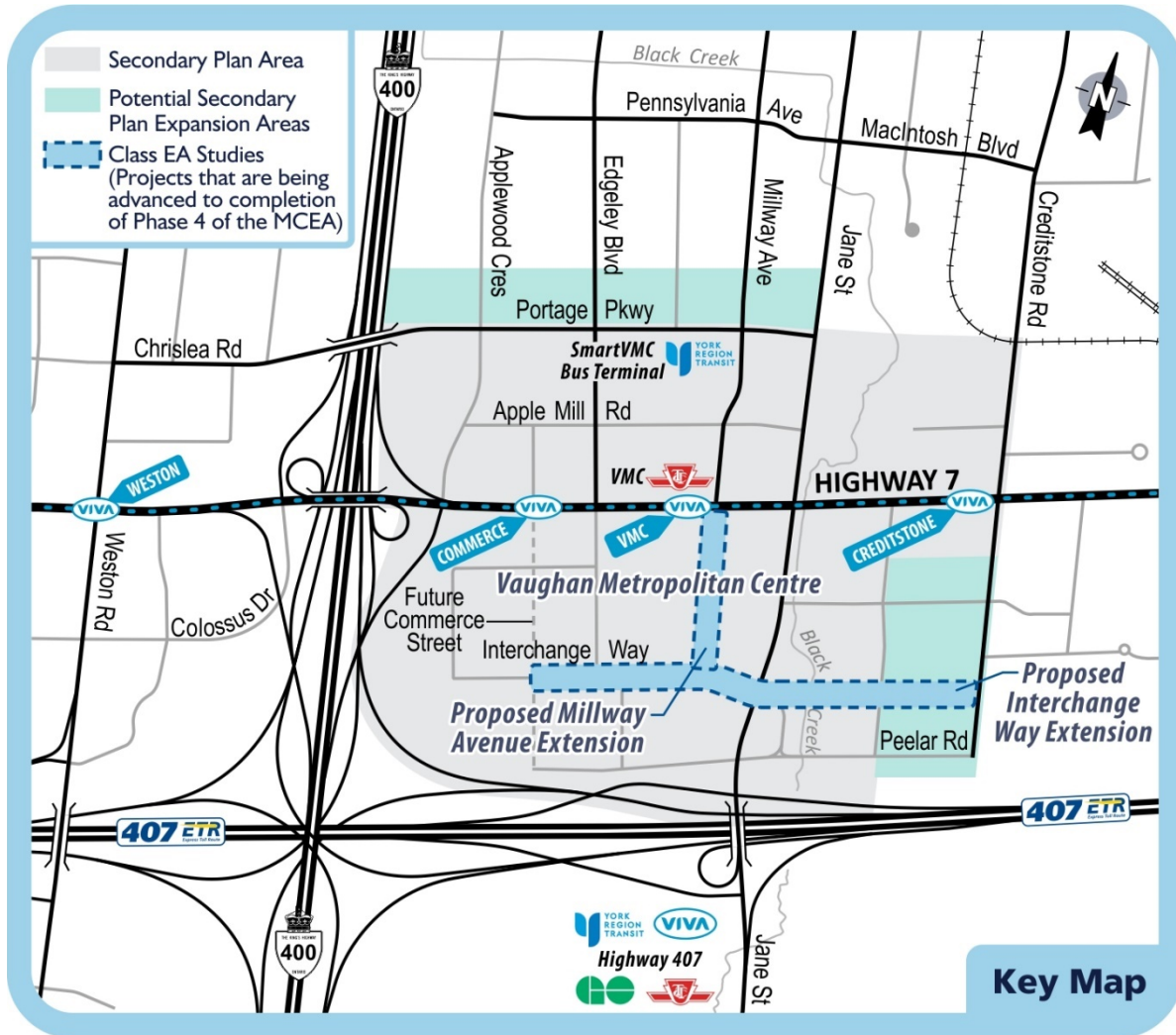
the west and 407ETR to the south. The Study limits for the Schedule 'C' Class Environmental Assessment Studies for the extensions of Millway Avenue and Interchange Way are:

1. Millway Avenue: from Highway 7 to Interchange Way; and,
2. Interchange Way: from Commerce Street to Creditstone Road.

The study areas for the VMC TMP Update and the two Class EA Studies are presented in **Figure 1-1**.



**Figure 1-1: VMC TMP Update Study Area**



## 1.4 Report Structure

The purpose of this existing conditions report is to outline the existing transportation network and the existing (2019) traffic conditions within the VMC TMP study area. The report is divided into the following sections:

- A review of relevant Planning Policies and Background Studies is provided in Section 2;





- Section 3 outlines the existing transportation network within the VMC study area, including existing road network, transit network and pedestrian and cycling network;
- The Multi-modal Level of Service Analysis for pedestrians and cyclists is presented in Section 4;
- Section 5 includes details for the existing (2019) traffic conditions, which includes traffic data collection and traffic model development, the existing intersection lane configurations and traffic volumes, a summary of the intersection operational analysis, details of collision history within the VMC study area and an outline of existing network constraints and opportunities.



# 2 Transportation Planning Context and Relevant Studies

## 2.1 Provincial Planning Policies

### 2.1.1 A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020)

A Place to Grow: Growth Plan for the Greater Golden Horseshoe (“Growth Plan”), 2019, was prepared and approved under the Places to Grow Act (2005), a legal framework that implements the Province’s vision for managing growth within the Greater Golden Horseshoe (GGH). Amendment 1 to the Growth Plan 2019 was approved by Council to take effect in August 2020.

The GGH is a dynamic and diverse area, and one of the fastest growing regions in North America. By 2051, this area is forecast to grow to, at a minimum, 14.8 million people and 7 million jobs, with Region of York accounting for 2 million people and approximately 1 million jobs. Section 2.2.3 of the Growth Plan identifies 25 Urban Growth Centres as strategic focal points for growth and intensification. Specifically, the intent of the Urban Growth Centres will:

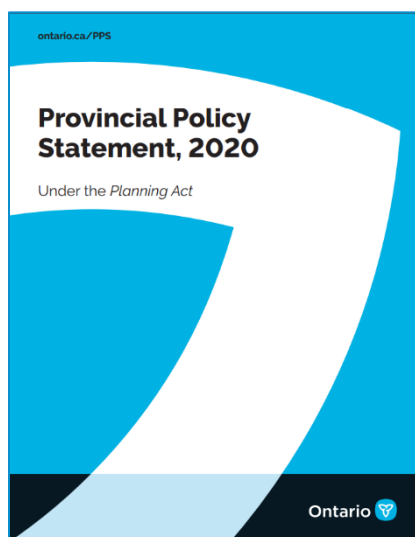
- be focal areas for investment in regional public service facilities, as well as commercial, recreational, cultural, and entertainment uses;
- accommodate and support the transit network at the regional scale and provide connection points for inter- and intra-regional transit;



- serve as high-density major employment centres that will attract provincially, nationally, or internationally significant employment uses; and
- accommodate significant population and employment growth.

The 2020 Amended Growth Plan identifies the VMC study area as an Urban Growth Centre under Schedule 4. The VMC area is to achieve a minimum density target of 200 residents and jobs combined per hectare by 2031 or earlier. It is anticipated that, as the VMC redevelops and intensifies, surrounding employment lands will also be the focus of redevelopment and intensification with increased employment growth.

### 2.1.2 Provincial Policy Statement (2020)



The Provincial Policy Statement (“PPS”), 2020, is issued under the Planning Act and supports the planning of land uses across the Province. The PPS provides policy direction for the use and management of land and infrastructure, while protecting the environment and resources, as well as to ensure opportunities for employment and residential development. Sections of the PPS that are applicable to the planning of transportation infrastructure include:

Part IV Vision for Ontario’s Land Use Planning System – The development of land should be optimized to promote efficient use of land, resources and public investment in infrastructure and public service facilities. These land use patterns promote mixed uses including residential, employment, recreation, parks and open space. The supporting transportation infrastructure is to provide choices and promote increased use of active transportation as well as transit before other modes of travel. This is in support of building livable and healthy communities.

Part V Policies – Specifically, Section 1.6.7 outlines the policies for infrastructure and public service facilities under transportation systems. The policies state that “Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs.” A multimodal transportation system is to provide connectivity within and among the transportation systems. Furthermore, land



use patterns should be planned to minimize the length and number of vehicle trips, as well as to support existing and future active transportation and transit services.

## 2.2 Regional Planning Policies

### 2.2.1 York Region Official Plan (2010)

The purpose of the York Region Official Plan (“YROP”) (2010) is to provide a long-term strategic policy framework for guiding growth and development in York Region, while providing the opportunities for more detailed planning by local municipalities. The YROP 2010 is currently undergoing a Municipal Comprehensive Review in order to ensure the Plan continues to accommodate for the future planned growth within the Region.

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

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

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

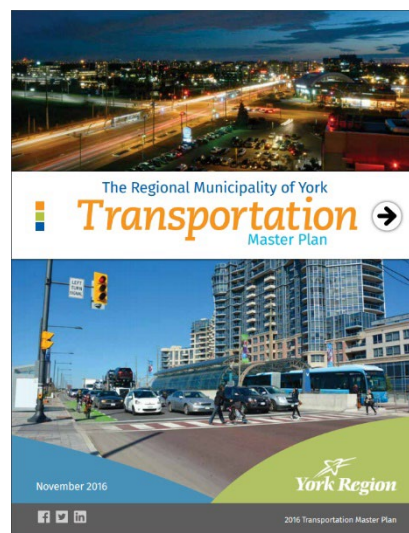




Chapter 4 of the York Region Official Plan outlines policies related to the Region’s Economic Vitality and include policies around the economic strategy, city building and planning for employment lands. Inherent in these policies is the provision of a transportation network capable of supporting the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

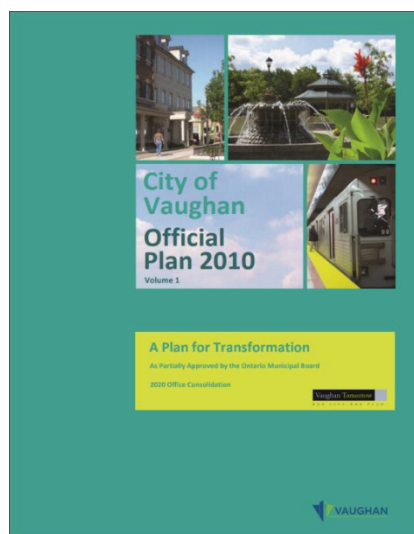
### 2.2.2 York Region Transportation Master Plan (2016)

The York Region Transportation Master Plan (“YRTMP”), 2016, builds on the Regional Official Plan and sets out the infrastructure and policy requirements required to build and maintain the transportation system. This includes planning and policies for additional road and transit infrastructure, and a system of sidewalks and trails to facilitate active transportation. The TMP is a fundamental planning / policy document addressing the capacity of the current transportation network and maintaining the quality of life for Region residents and businesses while accommodating the dramatic growth that is forecast by the Growth Plan.



The following Plan objectives include:

1. Create a World Class Transit System;
2. Develop a Road Network Fit for the Future;
3. Integrate Active Transportation in Urban Areas;
4. Maximize the Potential of Employment Areas; and
5. Make the Last Mile Work.



The VMC is recognised as a Mobility Hub in the YRTMP, as defined in the Metrolinx Regional Transportation Plan. Some of the policies and recommendations in the YRTMP state, that the Region will implement the Rapid Transit network (which has since been constructed along Highway 7) and continue to improve and expand the services outside the rapid network. It states that the Region will support local municipalities for mitigating barriers in the major collector road network for new and existing development areas. The YRTMP states that it will continue to collaborate with local municipalities as they develop and implement their active transportation plans and work with local municipalities to proactively review ways to make existing communities more complete through interventions addressing both land use and transportation systems.

In addition to the vivaNext Rapid Corridor along Highway 7 through the VMC study area, Jane Street is also identified in the Regional Viva Network Expansion Plan, with curbside stations being constructed between Highway 7 and Major Mackenzie. The Rapid transit along Jane Street is intended to provide a service connection with the Toronto-York Spadina Subway Extension.

## 2.3 City of Vaughan Policy Framework

### 2.3.1 City of Vaughan Official Plan (2010 & On-going Update)

The City of Vaughan Official Plan (“VOP”), 2010 is part of an overall Growth Management Strategy, initiated and passed by Council and partially approved by the Ontario Municipal Board, which will shape the future of the City and guide its continued transformation into a





vibrant, beautiful and sustainable City. The overall Growth Management Strategy consists of three main components:

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

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

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

With respect to the goal of a vibrant and thriving downtown, the Province identified the VMC as a provincially designated Urban Growth Centre. The VMC is envisioned to become the City of Vaughan’s downtown – the highest density node within the City and a focus for civic activities, business, shopping, entertainment and living. The VMC can accommodate a significant amount of Vaughan’s planned residential and employment growth and it is an appropriate location for major Institutional uses. Through planning, design, programming and investment, the VMC will be the focus of Vaughan’s identity.

The VMC will comprise distinct development precincts including residential neighbourhoods, office districts, employment areas and mixed-use areas, all linked by a robust system of parks, public squares and open spaces, including Edgeley Pond and Black Creek system, and a fine-grain grid pattern of streets. The Official Plan Schedule 1 Urban Structure is provided in Figure 2-1 and key aspects are summarized below:

- The Vaughan Metropolitan Centre is identified as an intensification area.
- Regional Intensification Corridors, which are Regional Roads that have been identified for major higher-order transit investments, such as Viva Rapid Transit on Highway 7, will link the VMC with other intensification areas in Vaughan and across York Region.



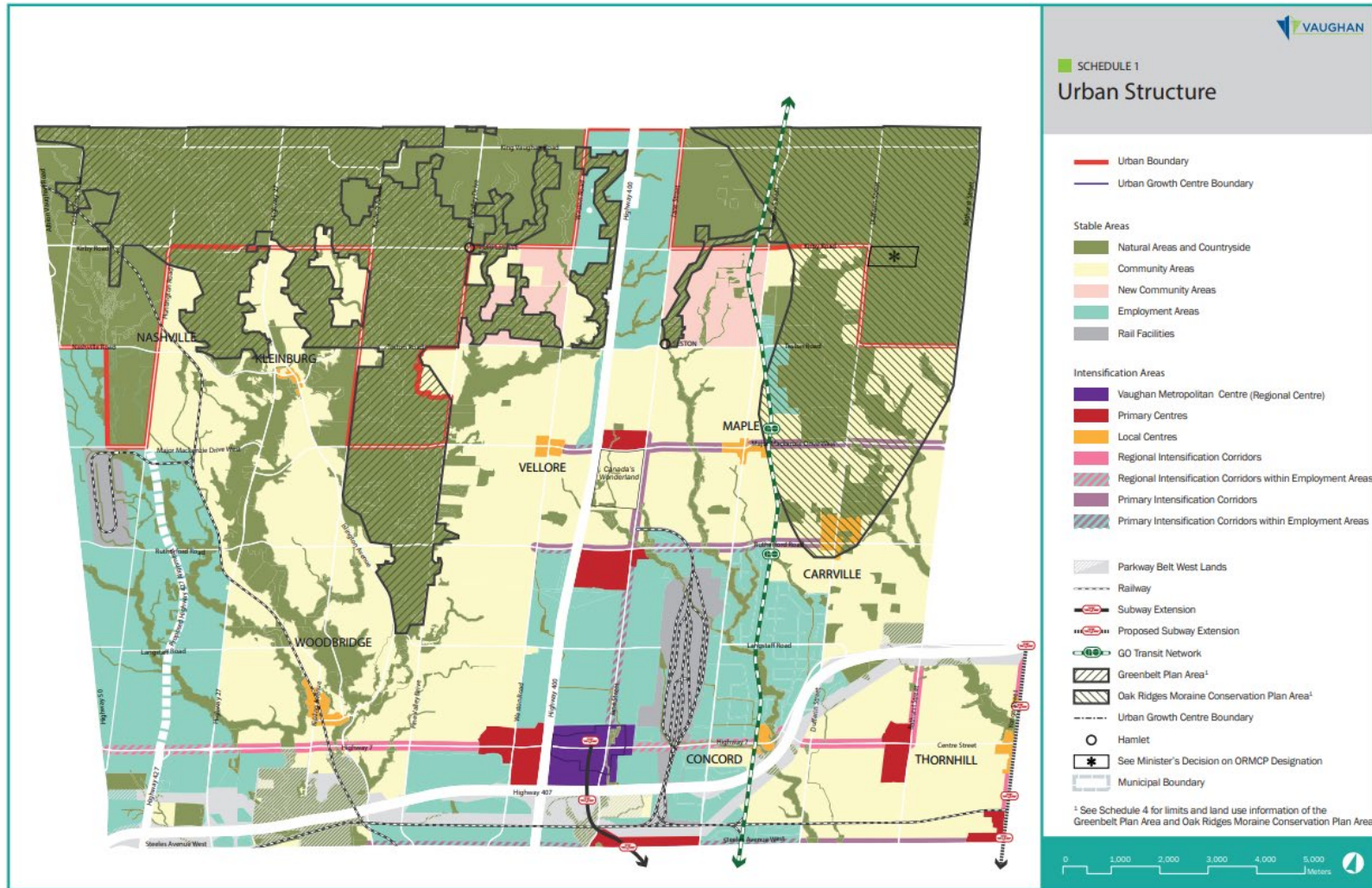
The VOP 2010 provides direction in transforming the transportation network within the City. The OP notes the following transportation policies applicable to the VMC TMP Study:

- To establish a comprehensive transportation network that allows a full range of mobility options, including walking, cycling and transit;
- Developed as a pedestrian-friendly and transit-oriented place, providing a variety of housing options and diverse employment opportunities;
- A transit-modal split of 50% during peak periods is targeted for the VMC study area and Regional Intensification Corridors by 2031;
- Land-use planning decisions within Intensification Areas should maximize the use of existing and planned transit infrastructure, taking into account potential impacts on nearby neighbourhoods; and
- To consider the coordination of central bicycle parking facilities, which may also include supporting amenities such as lockers, showers and changing facilities, in the VMC.

At the time of this Existing Conditions Report, the City of Vaughan has committed to an Official Plan Review. The Official Plan Review is intended to build on the comprehensive policy structure established by the VOP 2010. The resulting Plan will take into consideration the changing Provincial policy regime and the evolving circumstances and issues that will influence planning in the Greater Golden Horseshoe to 2041 and beyond. The intent is to produce a 'made in Vaughan' response to the future, prepared with public input and consultation on the desired long-term vision. The Official Plan is a key component of the City's overall growth management strategy to 2041.



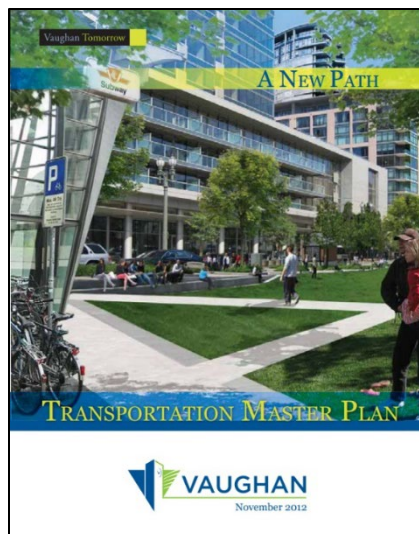
**Figure 2-1: VOP 2010 - Schedule 1 Urban Structure**



Source : Vaughan Official Plan, 2010



## 2.3.2 City of Vaughan Transportation Master Plan: A New Path (2012)



The City of Vaughan’s Transportation Master Plan (“TMP”), 2012, identified key transportation issues and provided strategic direction on options to set the stage for development of a long-range transportation vision. The City articulated a vision and policy framework for transportation in Vaughan through to the year 2031 and identified the policy and program initiatives needed to support the preferred alternative.

The VMC will be a major focus for intensification, with intensification corridors providing connections between the VMC, Primary and Local Centres and accommodating rapid transit service and nearly 45% of the City’s future population growth. The corridors will include inter-regional corridors, such as Highway 7 and Yonge Street, and regional corridors, such as sections of Jane Street, Major Mackenzie Drive, Steels Avenue, Rutherford Road and Dufferin/ Bathurst Streets.

The City’s TMP identified a number of key elements to be implemented early, in partnership with York Region, in order to support the planned level of intensification, including:

- Widening Portage Parkway from Edgeley Boulevard to Jane Street and extending it from Jane Street to Creditstone Road to provide relief for Highway 7 and function as a northern bypass (particularly for trucks);
- Altering the Highway 7/Highway 400 interchange to replace the current westbound to northbound on-ramp with a connection from the proposed local VMC road network (now Applewood Crescent);
- Widening Creditstone Road to five lanes to divert traffic away from Highway 7 and Jane Street; and
- Extending Colossus Drive across Highway 400 to increase east-west roadway capacity at the Highway 400 barrier, reduce congestion on Highway 7, improve travel times, and facilitate truck movements and enhanced transit service.





### 2.3.3 Vaughan Transportation Plan (2020)

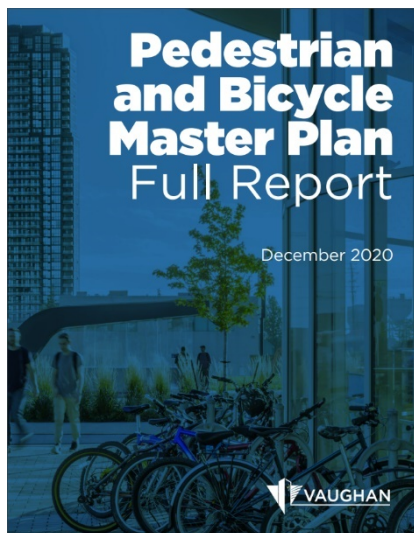
In November 2020, the City of Vaughan initiated an update to the existing Transportation Master Plan: A New Path, as part of the new Growth Management Strategy and City’s Official Plan. The City of Vaughan is a dynamic city that is growing quickly. As such, the increased population will need more options to get around. The new Vaughan Transportation Plan (VTP) will identify and highlight projects to meet the needs of current and future residents, businesses and visitors as Vaughan grows for the next 20 years, including innovative, accessible and functional transportation options. The Plan will investigate alternatives, such as new cycling infrastructure, improved use of emerging and innovative technologies and better use of new roads, to improve the quality and sustainability of travel.

The VTP will build on the foundation laid by the City of Vaughan’s 2012 TMP: A New Path. At this time, the VTP update is still ongoing; the 2012 TMP remains the applicable policy.

### 2.3.4 Pedestrian and Bicycle Master Plan Update (2020)

The 2020 Pedestrian and Bicycle Master Plan Update, which supersedes the 2007 Master Plan, focuses on creating a more walkable and bikeable community of the City of Vaughan. The updates of the Master Plan focus on the following four key themes that emerged as community priorities through the study:

— **Safety** through physically separated pedestrian and cycling infrastructure;



— **Infrastructure** will be advanced in a cost-effective yet timely manner;

— **Connectivity** through prioritizing initiatives, such as Vaughan Super Trail, VMC Separated Cycling Network, mini-networks and intensification areas; and

— **Awareness and Culture** will be fostered through ongoing education and outreach, as well as expanding active transportation policies in applicable City plans.

The Pedestrian and Bicycle Master Plan Update includes recommendations to prioritize the buildout of the VMC Separated Cycling Network (Figure 2-2), as part of the key theme ‘Connectivity’ and to implement pedestrian facilities



on both sides of every street within 800 meters of the VMC study area. The Separated Cycling Network was advanced, and a revised network plan approved by Council before the completion of the Pedestrian and Bicycle Master Plan study. It will provide access to high-quality and connected network by allocating space for cycling upfront, with more than 20 kilometres of physically separated cycling facilities and multi-use recreational trails.

**Figure 2-2: VMC Separated Cycling Network**

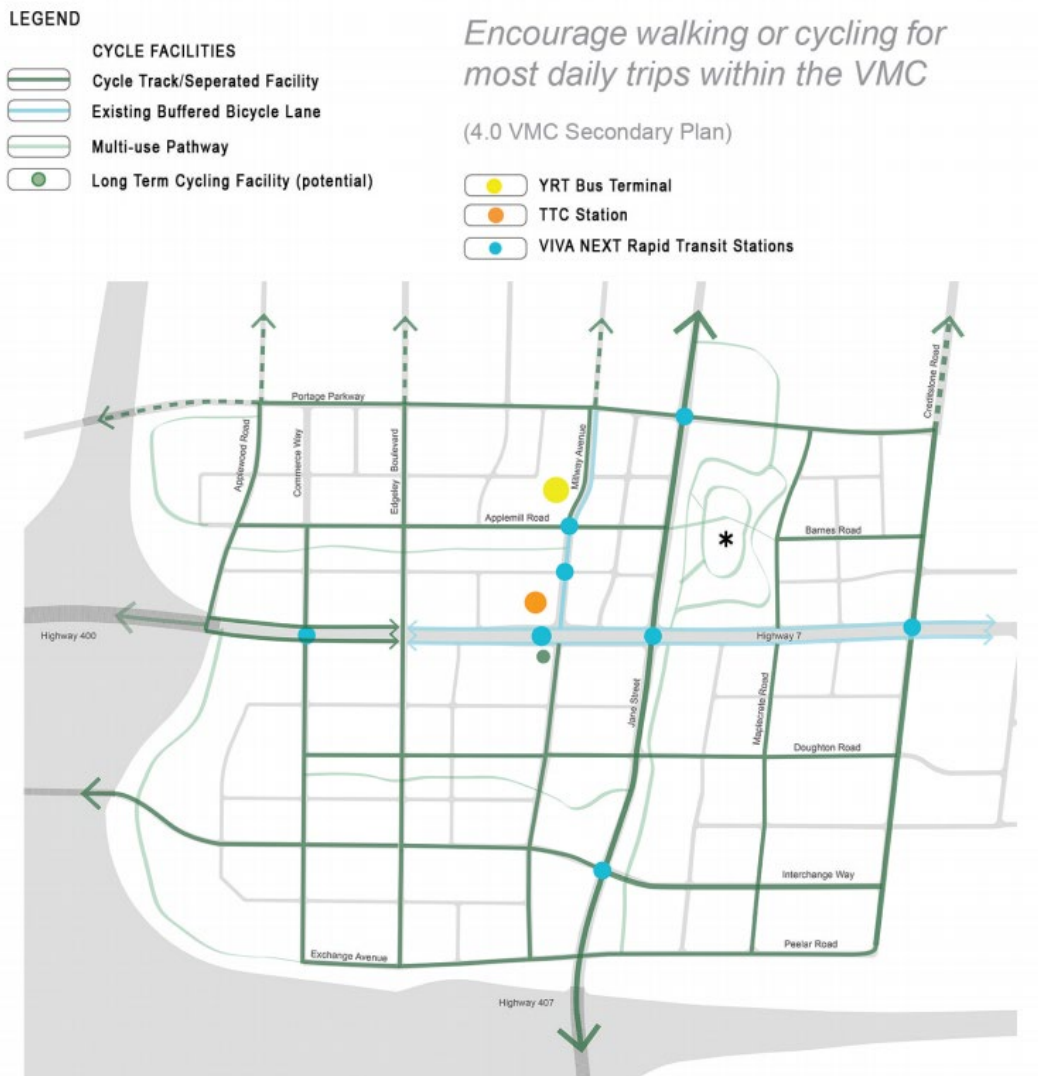


Figure 5.3: Revised Cycling Network (February 2018)

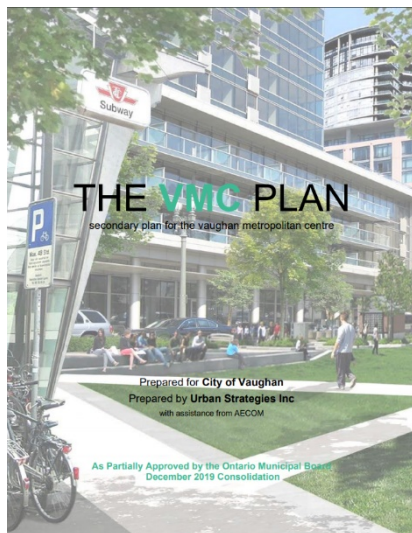
\* Refer to Approved Edgeley Pond and Park Detailed Design



Source : Pedestrian and Bicycle Master Plan, 2020

## 2.4 VMC Policy Framework and Background Studies

### 2.4.1 VMC Secondary Plan (partially approved 2019)



The VMC Secondary Plan Review began in 2008 as part of the City's Growth Management Strategy: Vaughan Tomorrow. The final Secondary Plan was approved by Council to form part of Volume 2 of the VOP 2010 and was partially approved by the Ontario Municipal Board in December 2019.

The following principles described the long-term vision for the VMC:

- Transit-oriented;
- Walkable;
- Accessible;
- Diverse;
- Vibrant;
- Green; and
- Beautiful.

Section 4 of the Plan discusses the VMC streets and transportation network and outlines specific policies regarding transportation in general, public transit, the street network, streetscaping, the bicycle network and parking. The further intent of these policies is to:

- Develop a multi-modal transportation system in the VMC that is efficient, safe and convenient and supports planned land uses;
- Encourage routine use of existing and planned transit services by residents and workers in the VMC and Vaughan citizens generally;
- Encourage walking or cycling for most daily trips within the VMC;
- Establish and maintain logical and direct connections to the surrounding network of streets and highways;
- Encourage the diversion of through traffic, particularly truck traffic, to peripheral streets;



- Ensure the provision and efficient use of parking facilities, including parking structures and on-street parking, required to support the planned land uses;
- Ensure planned and appropriate transportation infrastructure, including public transit facilities and streets, is coordinated with development and supports the urban design objectives for the VMC.

Schedule B and C of the VMC Secondary Plan includes the transit network and street network, as shown in Figure 2-3 and Figure 2-4, respectively.

### 2.4.2 VMC Secondary Plan Update (2020 - Ongoing)

In September 2020, the City of Vaughan initiated an update to the VMC Secondary Plan. The area is growing quickly, and while the current VMC Secondary Plan, 2019, provides a strong foundation that helps plan for growth and use of the downtown an update is needed to reflect new provincial and regional policies and confirm that the existing planning framework is still relevant.

The secondary plan update will also consider a boundary expansion to potentially include additional lands in the area, as well as review the current height and density permissions and land-use plan. Ultimately, this update will result in a revised secondary plan that supports the City's downtown as a complete community to 2051 and beyond.

Updates to the VMC Secondary Plan policy framework will continue to recognize the VMC as the City's priority intensification area and downtown, while ensuring the area continues to develop as a complete community and support the City's strategic priorities as outlined in the 2018-2022 Term of Council Service Excellence Strategic Plan.

The VMC TMP update will confirm the transportation needs of the VMC; the studies are being carried out concurrently.

In addition to the VMC TMP update, a number of supporting studies are taking place at the same time and will inform the VMC Secondary Plan review, including the following, discussed in further detail in the succeeding sub-sections:

1. Vaughan Official Plan Review;
2. VMC Parks and Wayfinding Master Plan; and,
3. Integrated Urban Water Plan.





## Vaughan Official Plan Review

The City of Vaughan has committed to an Official Plan Review. This is further discussed in **Section 2.3.1**.

### VMC Parks and Wayfinding Master Plan

The City of Vaughan is undertaking the VMC Parks and Wayfinding Master Plan to prepare a master plan and implementation strategy for the timely development of parks and open space in the VMC. It includes the creation of a wayfinding, signage strategy to make it easier to navigate this area.

The VMC Parks and Wayfinding Master Plan will build on existing groundwork to enable the implementation of a diverse, multi-functional, and seamlessly interconnected parks and open space network. The goals of the study are to:

1. assess the parks and open spaces proposed for the VMC
2. define the character and design of the parks and open spaces proposed for the VMC
3. create a phasing and implementation plan for the delivery of the parks and open spaces proposed for the VMC alongside development
4. develop a wayfinding strategy and design, produce prototypes and install the first signage elements for the VMC area as part of a pilot project

As outlined in the VMC Secondary Plan, a goal of the VMC Program is to develop 20 hectares of parkland in the VMC. As the downtown continues to be built out, a focus on the need to advance the planning and implementation of parks, schools, emergency services, places of worship and other social infrastructure is required to ensure the community is well supported by these necessary amenities and facilities. The development of social infrastructure is as important as the development of buildings to contribute to the placemaking that will enhance the character and identity of the VMC.

As residential development applications exceed targets in the VMC, its workforce expands and it receives increasing numbers of visitors and commuters, there is an urgent need to build its public space. The VMC Parks and Wayfinding Master Plan will address these challenges and guide the development of a connected system of parks and open spaces as well as reinforce physical and visual connections and wayfinding. The plan will embrace opportunities to make great places, enhance natural features, locate public art, improve



multi-modal mobility and increase the vibrancy of the emerging downtown. It will identify gaps in service levels and provide a pathway to implementation that guides strategic investment and supports the City of Vaughan Service Excellence Strategic Plan city-building objectives for the VMC. It will also develop and implement a coherent signage system that extends throughout the downtown's parks and open spaces and across transportation modes.

Further, the wayfinding component of this study recognizes that a comprehensive public realm signage and wayfinding system is a core service of the city for its residents, businesses and visitors. It will help to clearly define the VMC's character, assist visitors in navigating downtown and promote a vibrant city life. New and existing commuters will be better able to combine walking and cycling with public transit. Customers will more easily find local businesses, key destinations and institutions. The study will make detailed recommendations but will only implement a small component in the form of a pilot project. Future, downtown-wide implementation will follow as the VMC continues to develop.

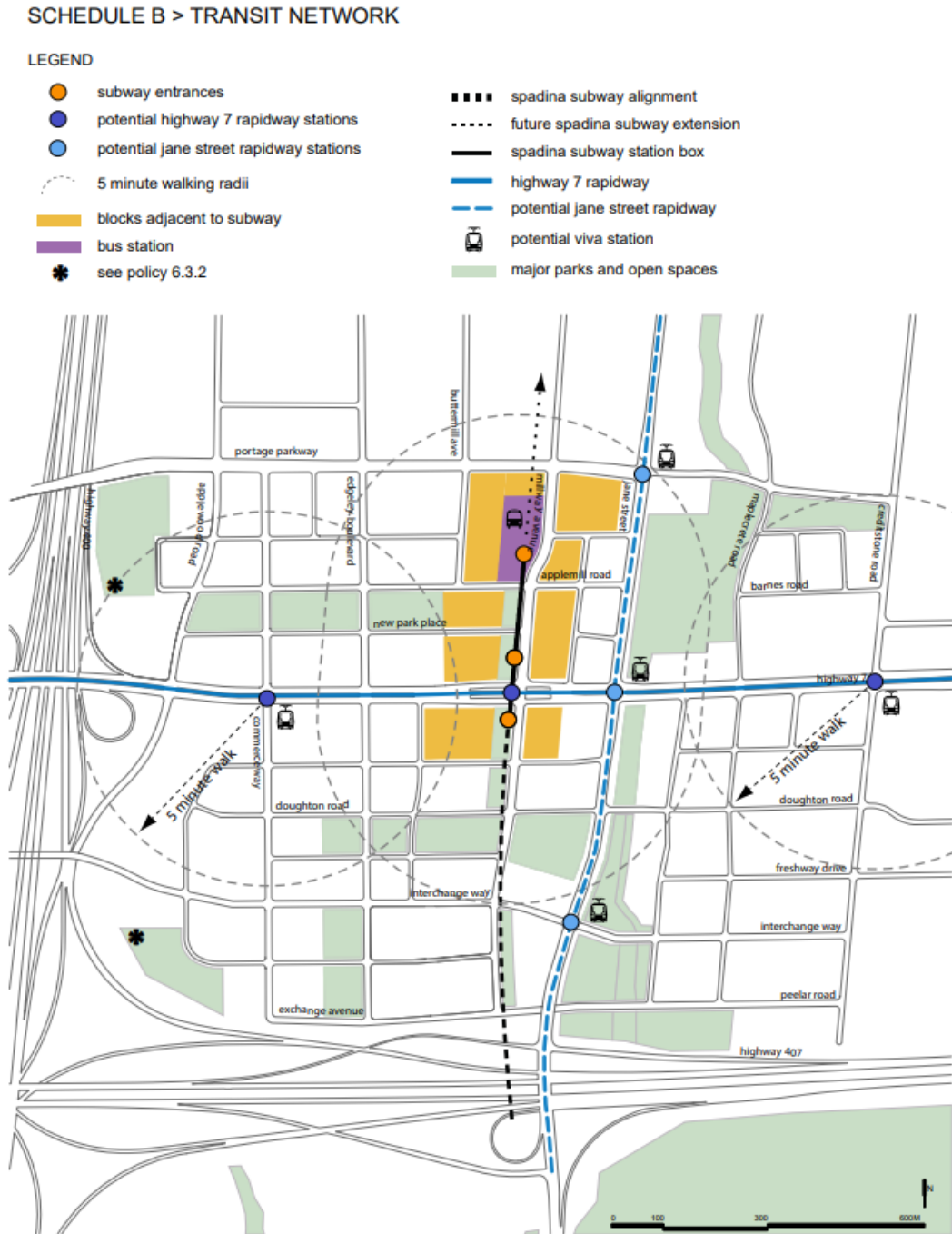
### Integrated Urban Water Plan

The Integrated Urban Water Plan study will evaluate servicing plans for current and future developments, such as the Vaughan Metropolitan Centre, and will identify alternative solutions and sustainability initiatives. The study will also integrate current sustainability, resiliency and climate change adaptation/mitigation initiatives identified in Green Directions Vaughan and the Official Plan Review. The Plan will also take into consideration Major Transit Station Areas (MTSAs), as per York Region's Municipal Comprehensive Review, to create new tools based on best practices.

Based on the findings of the study, the Integrated Urban Water Plan will include water, wastewater and stormwater strategies, and sustainable green initiatives. The study will identify and evaluate long-term strategies, initiatives, programs and projects to meet servicing needs for the growth and protection of Vaughan's Natural Heritage Network.



**Figure 2-3: VMC Secondary Plan - Schedule B Transit Network**



Source: VMC Secondary Plan, 2019





**Figure 2-4: VMC Secondary Plan - Schedule C Street Network**

**SCHEDULE C > STREET NETWORK**

**LEGEND**

- |  |  |  |  |
|--|--|--|--|
|  | arterials (width to be consistent with region of york official plan) |  | mews (15-17 m) or local streets (see Policy 4.3.16)                  |
|  | minor arterial (33 m)  |  | colossus drive overpass corridor protection area (see policy 4.3.10) |
|  | major collectors (28-33 m)   |  | major parks and open spaces  |
|  | special collector (33 m)   |  | see policy 4.3.2   |
|  | minor collectors (23-26 m)   |  | see policy 4.3.17  |
|  | local streets (20-22 m)  |  | see policy 6.3.2   |
|  |  |  | see policy 4.3.20  |



Source: VMC Secondary Plan, 2019



### 2.4.3 VMC Transportation Master Plan (2012)

The scope of the VMC Transportation Plan included identifying appropriate population and employment projections and necessary road network improvements for the 2031 planning horizon. This involved classification of roadway segments and identification of required rights-of-way, identification of TDM programs, transit and cycling initiatives. The transportation plan also addressed the needs of the 2021 planning horizon and developed an implementation strategy for the necessary improvements.

The VMC Transportation Plan identified 4 key transportation improvements that were either underway or committed at the time, that are now complete or in progress:

#### Portage Parkway Crossing of Highway 400

The Portage Parkway crossing was opened prior to the completion of the VMC Transportation Plan. The new 4-lane road provides an alternate connection between Weston Road and Jane Street to the north of Highway 7, reducing some of the congestion in the area of the Highway 400 and Highway 7 interchange.

#### Spadina Subway Extension

The VMC Transportation Plan identified the Spadina Subway extension as the most important element in support of Vaughan's downtown core. The terminal station opened in December 2017 in the heart of the Vaughan Metropolitan Centre at the northwest corner of Highway 7 and Millway Avenue. The station interfaces directly with the VIVA Highway 7 Bus Rapid Transit (BRT) and SmartVMC Bus Terminal (opened in November 2019). Highway 407 Station and Pioneer Village Station (both opened in December 2017) on the subway extension also directly serve the City of Vaughan, providing a significant supply of commuter parking – there are no formal parking facilities at VMC Station.

#### Millway Avenue Improvements

The Toronto-York Spadina Subway Extension project has identified the following base municipal infrastructure elements that will be fully funded by the project:

- Replacement of the existing three lane Millway Avenue to its new alignment from



- Highway 7 to Applemill Road and tapering back to match the existing alignment north of Applemill Road;
- Replacement of the existing Millway Avenue 26.0 metre right-of-way;
- Replacement of existing streetscape features;
- The proposed VMC Park;
- Relocation of all existing utilities as a result of the Millway Avenue realignment; and
- Temporary / permanent Passenger Pick-Up & Drop-Off (PPUDO) facilities.

The Millway realignment was completed in 2017.

### VIVA Highway 7 Bus Rapid Transit

The VIVA Highway 7 Bus Rapidway provides a dedicated median transit right-of-way along Highway 7 across York Region. The rapidway currently operates 25 stations between Wigwoss Drive/Helen Street in the west and Warden Avenue in the east. Three stations directly service the VMC: at Edgely Boulevard, at Millway Avenue (with an underground connection to the subway) and at Creditstone Road. Future expansion of the rapidway, expected to open in 2021, include 6 additional stations westward to Highway 50 and 10 additional stations eastward to Cornell Bus Terminal (Ninth Line).

### Longer Term Transit

Longer term transit plans for York Region include the previously stated future expansion of the Highway 7 rapidway which would further integrate with Brampton's "Zum" BRT service which currently operates their 501 route along the Queen Street/Highway 7 corridor.

The Region of York Transportation Master Plan identifies several other new rapid transit corridors including along Jane Street between Steeles Avenue and Major Mackenzie Drive - this project is currently unfunded.

The Province of Ontario and Metrolinx are pursuing the Highway 407 Transitway that will run parallel to the freeway through the regions of Halton, Peel, York and Durham. The project is divided into 5 segments:

- Brant Street to Hurontario Street,
- Hurontario Street to Highway 400,
- Highway 400 to Kennedy Road,





- Kennedy Road to Brock Road,
- Brock Road to Enfield Road.

Environmental Assessments have been conducted for each segment; however, the detailed designs have not been completed.

#### 2.4.4 VMC and Surrounding Area Transportation Study (2013)

The purpose of the VMC and Surrounding Areas Transportation Study (2013) was to further define the transportation infrastructure needed to facilitate planned (and potential) development within the VMC and surrounding areas, based on the approved Secondary Plan, that will ensure feasibility from a technical perspective. The Study, undertaken jointly by the City of Vaughan and York Region, reviewed transportation network issues that had been identified in previous work, including the Colossus Drive Extension (Crossing Highway 400) and Highway 400 / Highway 7 Interchange (NB Off-Ramp Extension):

##### Colossus Drive Extension (Crossing Highway 400)

The Study outlines the proposed alignment for the extension, which continues easterly from Colossus Drive, across Highway 400 where Colossus Drive connects with Interchange Way, located within the VMC study area. The Study suggests that the proposed extension would alleviate the congestion and reduce traffic flows along Highway 7 and 407ETR, respectively.

The study recommended that the Colossus Drive Extension be implemented in the 'longer-term' (Beyond 2031).

##### Highway 400 / Highway 7 Interchange (NB Off-Ramp Extension)

Four functional preliminary design options providing a northbound off-ramp extension that would connect with Applewood Crescent at Portage Parkway were developed. The realignment of the NB off-ramp and the extension / connection to Applewood Crescent have been constructed and opened to the public in 2019.

The VMC and Surround Area Transportation Study recommended that the City of Vaughan and/or York Region initiate the planning and detailed design studies required to implement the following defined Short-Term transportation infrastructure improvements (0-5 years):



1. Millway Avenue Realignment from Highway 7 to Portage Parkway (discussed in Section 2.4.3);
2. Portage Parkway Widening from Edgeley Boulevard to Jane Street (discussed in Section 2.4.3 and Section 2.4.7);
3. Portage Parkway Extension from Jane Street to Creditstone Road (discussed in Section 2.4.3 and Section 2.4.7);
4. Spadina Subway Station (discussed in Section 2.4.3);

Highway 400 Northbound off-ramp extension at Highway Highway 7 to Portage Parkway (discussed above); and,

5. Highway 7 Rapidway; VIVA stations at Commerce Street, Millway Avenue, Creditstone Road (discussed in Section 2.4.3).

## 2.4.5 VMC Streetscape and Open Space Plan (2018)

The VMC Streetscape and Open Space Plan outlines a comprehensive landscape framework for the implementation of the public realm identified for the VMC. Building on the vision and principles set out in the previous VMC Secondary Plan, detailed in Section 2.4.1, the following goals were identified for the Plan:

1. Create a unique identity for the VMC;
2. Develop a strong public realm framework and green infrastructure system;
3. Develop a connected urban centre;
4. Promote high quality design; and
5. Develop a healthy and safe community.

The Plan discusses streetscape designs for pedestrian priority zones (PPZ), the cycling and transit network and road classification landscape treatments.

### Pedestrian Priority Zones

PPZs are designed as pedestrian-first places that may include features such as flexible spaces, raised intersections, special surface and/or curb treatments, accent lighting, street furnishings, public art and weather protection. The Plan designated the following areas as PPZ:





- The primary mobility hub around the subway station, transit square, bus terminal and Millway Avenue Promenade;
- Streets around schools, community centres, cultural and civic buildings;
- Streets that run between park blocks;
- Shopping and entertainment streets to promote pedestrian activity and public life; and
- Mews are pedestrian-first streets that may or may not include vehicle traffic / service access.

### Cycling Network

Cycling facilities in the VMC street network will seamlessly connect with transit facilities, parks and open spaces to support multi-modal transit connections and to promote cycling in the new downtown. The plan recommends both on-road and off-road facilities in addition to cycling amenities, such as bike lock-up facilities and a bike-share rental program.

### Transit Network

As an Anchor Mobility Hub, the VMC is an important destination and transfer point in the regional system, integrating subway, regional rapid transit and local bus services. The VMC intends to provide appropriate walking distances (from 2.5 minutes to 10 minutes) to transit stops and/or stations.

## 2.4.6 VMC Urban Design Guidelines (2016)

The VMC Urban Design Guidelines, which were completed in 2016, are intended to facilitate the implementation of the VMC by setting a framework for built form excellence. The VMC vision and principles, as outlined in Section 2.4.1, inform these built form guidelines.

Several 'Character Areas' are outlined in these guidelines, which are based on the land use vision introduced in the previous VMC Secondary Plan precincts and share common building typologies, interfaces with proposed open spaces and approaches to access and circulation. The Character Areas relevant to the VMC TMP Update are detailed below:

- Highway 7 is planned to become the central spine of the VMC and transformed into a grand avenue. Some urban design strategies include wide setbacks to build a wide boulevard that should accommodate all users and uses; and strong and consistent streetscape design with enhanced street furnishing.



- Millway Avenue is poised to become the cultural and social spine for the VMC that connects the subway and BRT station with the bus terminal. It is intended to be a bustling pedestrian zone.

### 2.4.7 Black Creek Renewal Detailed Design

The VMC Black Creek Renewal EA Study considered different potential alignments and physical forms, following the identification of the preferred solution as part of the Black Creek Storm Water Optimization Study Master Plan Class EA, to reduce flooding and flood damages, improve water quality and limit stream bank erosion. The Environmental Study Report (ESR) was filled in 2018, and the Black Creek Renewal Detailed Design Study is currently ongoing.

### 2.4.8 Portage Parkway Class EA Study: Widening and Easterly Extension to Creditstone Road

In 2016, the City of Vaughan completed an EA Study for 2 road projects: the Portage Parkway Widening and the Extension to Creditstone Road, which was identified as a strategic network improvement from the 2012 TMP: A New Path. A portion of the Portage Parkway extension (up to BlackCreek) has been implemented east of Jane Street as part of ongoing development and detail design is currently underway for the segment west of Jane Street to Applewood Crescent with construction complete scheduled for 2022.

### 2.4.9 Weston Road and Highway 7 Secondary Plan and Transportation Master Plan (on-going)

The Weston Road and Highway 7 Secondary Plan and TMP (“Weston 7 TMP”) provides policy direction for the new Primary Growth Centre, located to the west of the VMC study area. The City of Vaughan concluded Phase 1 of the Weston 7 Secondary Plan in June 2019, which developed the vision and guiding principles for growth and development in the study area.

Following the commencement of Phases 2 and 3 of the Secondary Plan in May 2020, the City initiated the Weston 7 TMP in November 2020 to develop a long-range planning and implementing framework based on the identification of a multi-modal transportation



network, policies and phasing strategy for improved accessibility and connectivity, for all forms of transportation in support of future growth and transformation.

The Weston 7 TMP was initiated in November 2020 and is ongoing. The Weston 7 TMP is being carried out in accordance with the Municipal Engineers Association Municipal Class Environmental Assessment (as amended 2015) and will satisfy Phases 1 and 2 of the MCEA.

The TMP will develop a long-range planning and implementing framework based on the identification of a multi-modal transportation network, policies and phasing strategy for improved accessibility and connectivity. The intent is to identify opportunities for improvement for all forms of transportation in support of the future growth and transformation envisioned by the Secondary Plan.

The TMP study process is organized around:

- Phase 1: Problems and Opportunities (Transportation Needs Assessment): identify transportation infrastructure needs to support planned growth in the Weston 7 Secondary Plan area and summarize in a Problem and Opportunity Statement.
- Early Phase 2: Identify and Assess Transportation Solution Alternatives: develop and assess well-integrated transportation network options for goods and people movement including roads, sidewalks, cycling routes, transit, etc.
- End of Phase 2: Selection of the Preferred Transportation Plan: recommend a multi-modal network that best integrates with and meets the needs of the Secondary Plan.

However, the VMC TMP Update will consider the recommended transportation plan including any future projects given its proximity to the VMC study area.

### **2.4.10 Concord GO Centre Secondary Plan (2015), Concord GO Centre Mobility Hub Study (On-going) and Concord GO Centre Transportation Master Plan (On-going)**

The Concord GO Centre Secondary Plan (2015) provides policy direction for the potential new Concord GO Centre station area, located on Highway 7 east of the CN McMillan Rail Yard. In 2015, the City's Council deferred 2 areas in the Secondary Plan as the Concord GO Station was not approved by Metrolinx due to a negative business case as a result of delays



to upstream riders and low ridership concerns. As such, council directed the City to undertake a Study to provide a base case for a GO Station within Concord.

In January 2020, the City of Vaughan initiated the Concord GO Mobility Hub Study to provide a business case for a GO Station within Concord. The area is envisioned to be mixed-use commercial to support the station. o Concord is planned to be a major growth area with 10,000 people and 7,000 jobs per hectare. A Transportation Master Plan for the Concord GO Centre Secondary Plan area was initiated in January 2020 to confirm the transportation needs for Concord GO Secondary Plan Area. The Studies are being carried out concurrently.

The Concord GO Centre TMP was initiated to develop a multi-modal transportation network by assessing options for street connectivity, accessibility and mobility. The Study also considers the impact of a new potential GO Train Station in the Concord GO study area.

The Concord GO Centre TMP is ongoing. However, the VMC TMP Update will consider this future multi-modal transportation hub given its proximity to the VMC study area.





# 3 Existing Transportation Network

## 3.1 Road Network

The existing road network for the VMC TMP Update study area is presented in

and Figure 3-2. A description for the key roadways and corridors within the study area is provided below.

**Highway 7 (Y.R. 7)** is an east-west Regional Arterial corridor with a six-lane cross-section. The segment of Highway 7 under consideration for this TMP runs from the west of Highway 400 to the east of Creditstone Road. The vivaNext bus rapid transit (BRT) currently runs along the median lane from west of Ansley Grove Road to east of the VMC. Due to the median BRT lane, the Highway 7 intersections operate with a 'protected-only' phases for the eastbound-left and westbound-left movements. The posted speed limit on Highway 7 is 60 km/h throughout the VMC study area.

**Jane Street (Y.R. 55)** is a north-south Regional Arterial corridor with a four-lane cross-section. The segment of Jane Street under consideration for this TMP runs from Portage Parkway to the north and 407ETR to the south. It runs parallel to Highway 400 and provides a connection to 407ETR, via a Parclo A2-Diamond interchange. The posted speed limit on Jane Street is 60km/h throughout the VMC study area.

**Creditstone Road** is a north-south Municipal Minor Arterial corridor with a two-lane cross-section, servicing the employment areas east of Jane Street. The segment of Creditstone Road under consideration for this TMP runs from Portage Parkway to the north and 407ETR to the south. The posted speed limit is 50km/h throughout the VMC study area.

**Edgeley Boulevard** is a north-south Municipal Major Collector corridor with a four-lane cross-section. The segment of Edgeley Boulevard under consideration for this TMP runs parallel to Highway 400 and Jane Street, from Portage Parkway to Highway 7, providing



connections to the employment areas between Langstaff Road and Highway 7. The posted speed limit is 50 km/h throughout the VMC study area.

**Interchange Way** is a Municipal Major Collector corridor with a two-lane cross-section, running north-south from Highway 7 connecting east-west from Commerce Street to Jane Street. The posted speed limit is 50 km/h throughout the VMC study area. A proposed extension of Interchange Way to Creditstone Road will be considered under the EA Study.

**Portage Parkway** is an east-west Municipal Major Collector corridor with a four-lane cross-section from west of Highway 7 to Edgeley Boulevard, and a two-lane cross-section from Edgeley Boulevard to Jane Street, providing an alternative route for crossing Highway 400, north of Highway 7. The current Portage Parkway overpass has a highly elevated structure due to the short span. The posted speed limit is 50 km/h throughout the VMC study area.

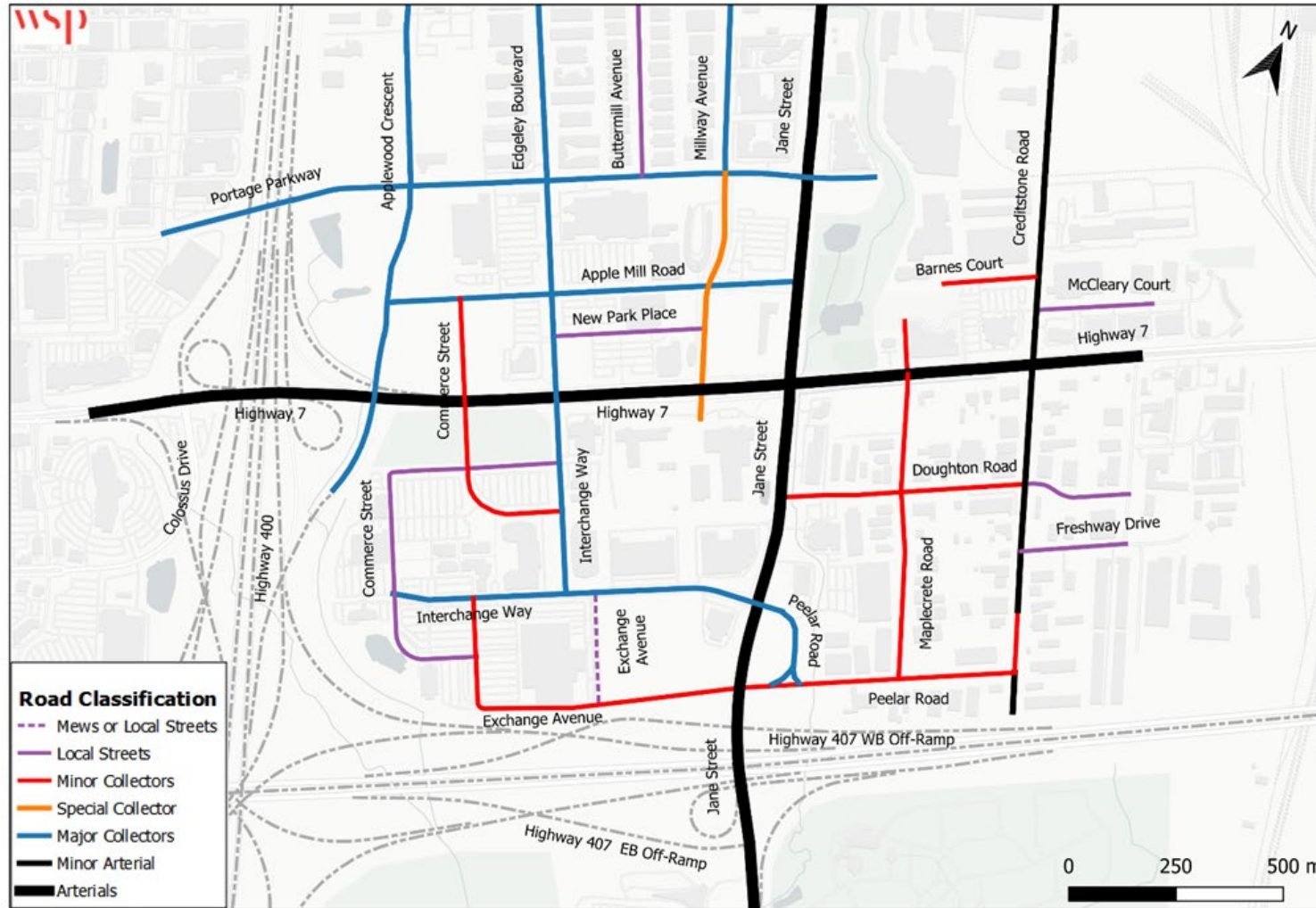
**Millway Avenue** is a north-south Municipal Special Collector that extends from Portage Parkway to the north to Highway 7 to the south, with a four-lane cross-section (two-lane cross-section north of Portage Parkway). The posted speed limit is 40 km/h throughout the VMC study area. A proposed extension of Millway Avenue to Interchange Way will be considered under the EA Study.

Other Municipal roads within the VMC study area include Applewood Crescent, Apple Mill Road, Buttermill Avenue, Commerce Street, Doughton Road, Maplecrete Road, Peelar Road and Exchange Avenue. The existing lane configurations and intersection controls are presented in Section 0.

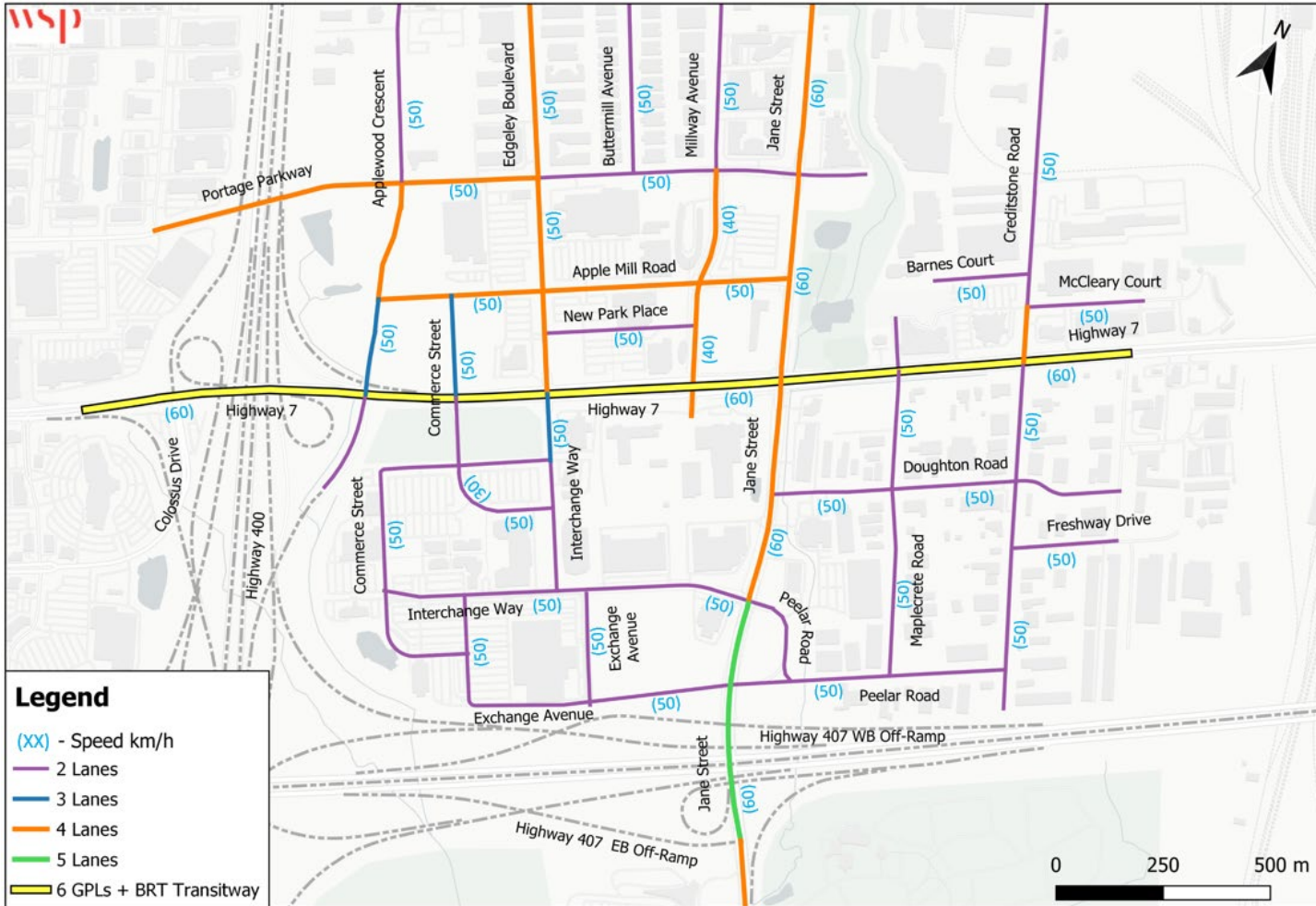




**Figure 3-1: Existing Road Network Road Hierarchy**



**Figure 3-2: Number of Lanes of the Existing Road Network**



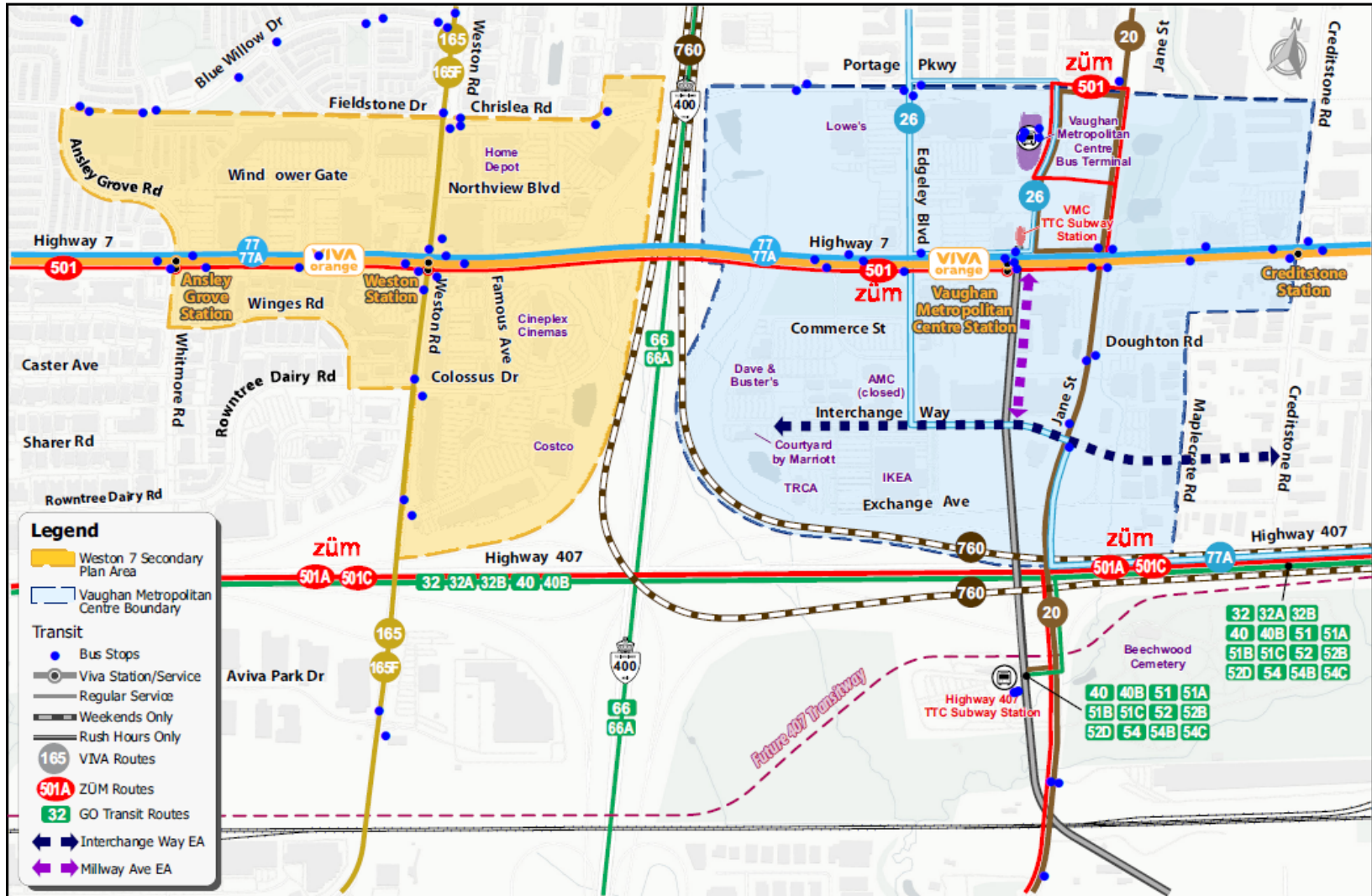


## 3.2 Existing Transit Network

The VMC study area is served by York Region Transit (YRT/Viva) – the Regional transit operator that provides bus services to various study area corridors, including Highway 7, Jane Street, Edgeley Boulevard, and Portage Parkway. A bus service on Highway 7, west of the VMC, is also being served by Brampton Transit. The VMC Bus Terminal is located at the intersection of Jane Street and Portage Parkway. The VMC Bus Terminal and transit routes within study area are presented in Figure 3-2. It is noted that due to COVID-19, the current transit routes and schedules are subject to changes.



**Figure 3-3: Existing Transit Network**



### 3.2.1 York Region Transit Routes

York Region transit (YRT) is the public transit operator in York Region, the transit agency was formed in 2001 and is headquartered in the City of Richmond Hill. YRT provides service within York Region and has connecting service to the City of Toronto, Regions of Peel and Durham. As part of its infrastructure portfolio, YRT owns a few facilities that are shared with other transit agencies including TTC and Metrolinx.

YRT routes provide a basic minimum level of service and route coverage. The routes operate in designated arterial corridors with minimal or no deviation, except at major transfer locations such as multi-modal terminals, GO stations, major shopping malls and centres to provide connections. The routes typically operate along the major travel corridors, generally perpendicular to and intersecting the Viva routes.

YRT owns one of the largest bus fleets in Ontario. The fleet currently operates 406 conventional and Mobility Plus vehicles for the YRT network. YRT has 97 specialized Mobility Plus vehicles to accommodate accessibility with features including kneeling buses with ramps and priority seating areas located close to the operator. The Viva BRT network is operated by 123 bio-diesel fuel blend buses. YRT also run electric buses in the Town of Newmarket in their quest to move towards the electrification of its bus fleet, the overall achieved benefits of this move focus on the reduction in noise, emissions, fuel and maintenance of its fleet.

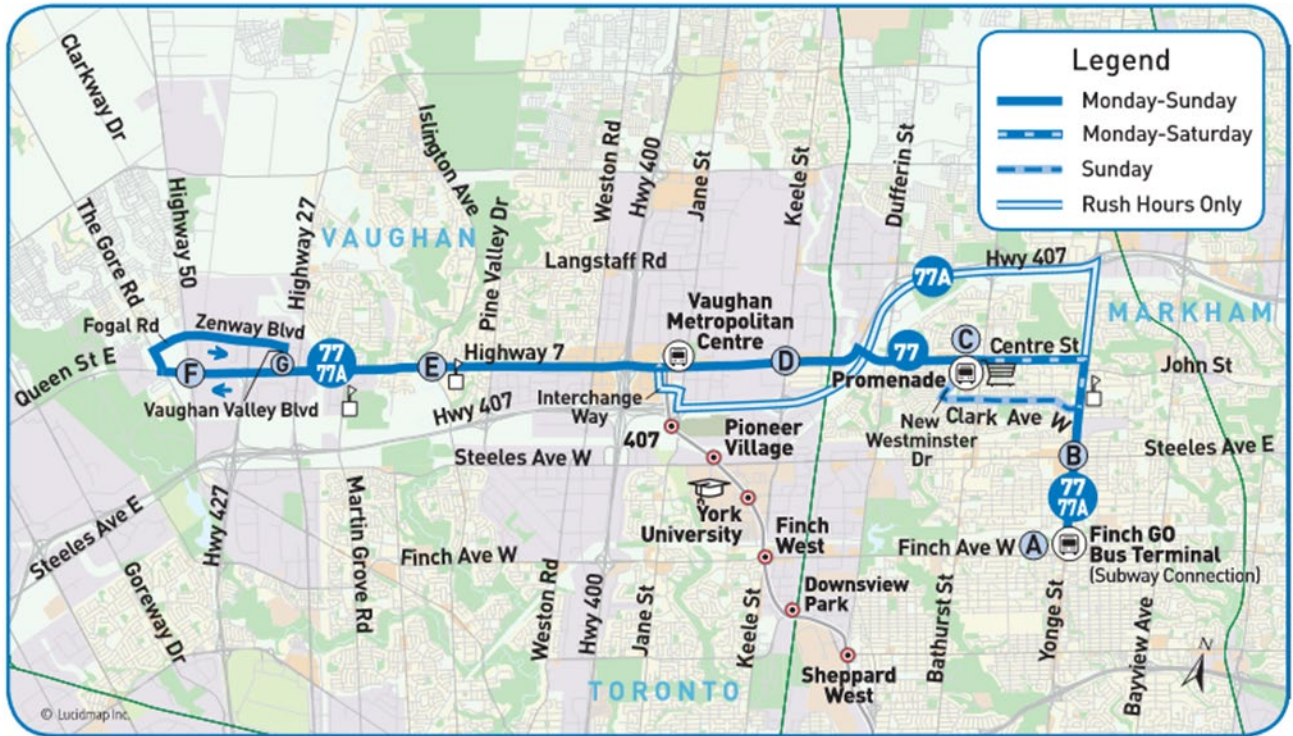
Several YRT bus routes operate through the VMC area.

#### Highway 7 - Route 77 / 77A

This route runs (predominantly) east-west, along Highway 7 and Centre Street, between the Finch GO Bus Terminal and the Gore Road in Brampton, seven days a week. It operates with an approximate headway of 30 to 40 minutes during the weekdays and Saturdays, and an approximate headway of 55 minutes on Sundays and Holidays. The route connects the Finch GO Bus Terminal with the predominantly residential lands abutting Yonge Street and Centre Street in Markham, Promenade Shopping Centre area, the Vaughan Metropolitan Centre, and the (predominantly) commercial and employment lands abutting Highway 7 from Centre Street to Highway 50. A variation on the base Route 77 identified as Route 77A operates as an express service between Vaughan Metropolitan Centre and the GO Finch Bus Terminal via Highway 407.



**Figure 3-4: Highway 7 - Route 77 / 77A**



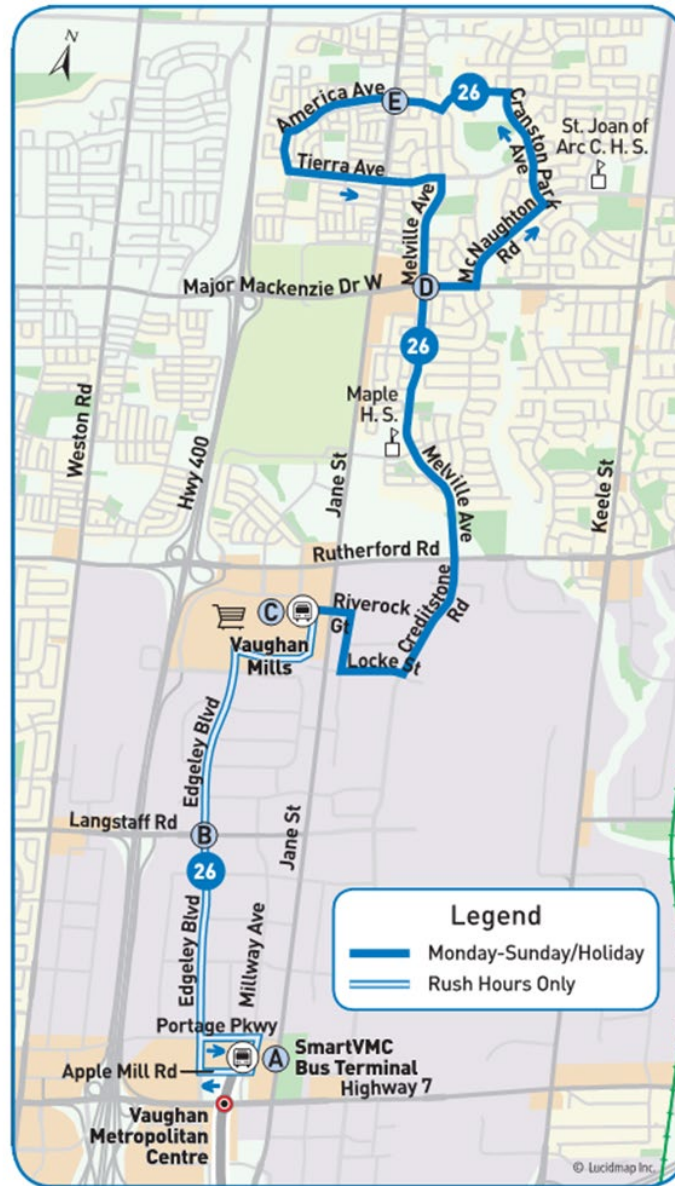
**Maple – Route 26**

This route operates along Edgeley Boulevard, Portage Parkway, Millway Avenue, Interchange Way, and Jane Street with an approximate frequency of 27 to 32 minutes during weekday peak periods. The route serves the VMC bus terminal, commercial / employment lands north of Highway 407 to Major MacKenzie Drive, Vaughan Mills Mall, and the residential lands north of Rutherford Road.





**Figure 3-5: Maple - Route 26**



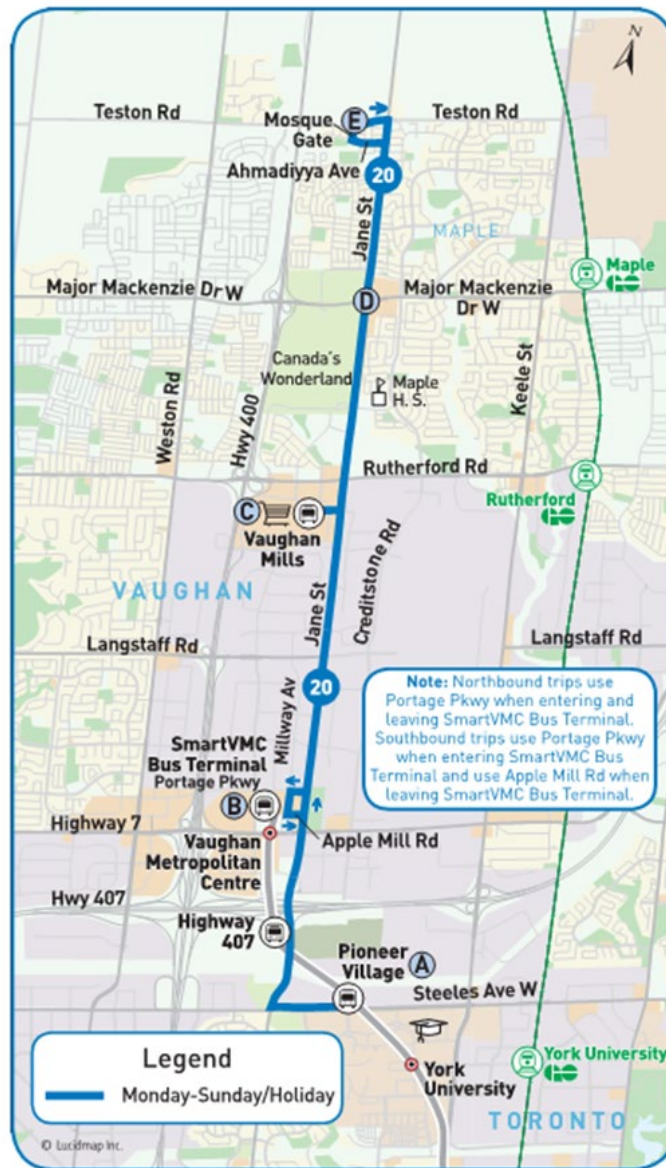
**Jane – Route 20**

This route operates between Pioneer Village and Teston Road via Jane Street, seven days a week. YRT buses on this route operate with an approximate frequency of 12 to 13 minutes during the morning and afternoon peak periods. The route Connects the Pioneer Village



Station, the commercial/employment lands abutting Jane Street north of Highway 407, Smart VMC Bus Terminal, Vaughan Mills Mall, Canada’s Wonderland, the residential lands north of Major MacKenzie Drive West, and the Baitul Islam Mosque.

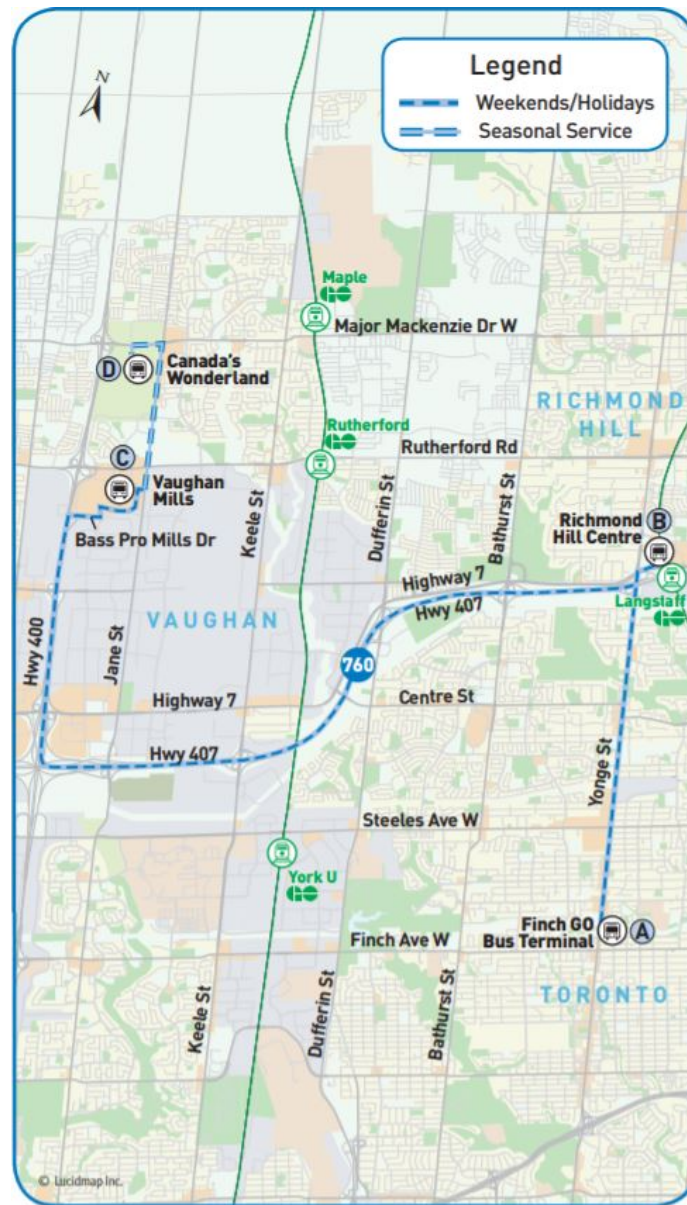
**Figure 3-6: Jane - Route 20**



### Vaughan Mills / Wonderland – Route 760

This route operates on weekends and holidays only. It operates express between Vaughan Mills Mall and the Richmond Hill Centre Bus Terminal, via Highway 400 and Highway 407, then to the GO Finch Bus Terminal via Yonge Street.

**Figure 3-7: Vaughan Mills / Wonderland - Route 760**





### **Woodbridge – Route 10**

This route is a stop-to-stop request-responsive service route. A YRT-marked vehicle will pick-up and drop-off passengers at the requested bus stop serviced. Within the VMC study area, the service runs along Ansley Grove Road, Blue Willow Drive, and Chrislea Road/Portage Parkway, during the daytime seven days a week.

## **3.2.2 Viva Routes**

### **Viva Orange Line**

Viva service commenced in 2005 and currently consists of six different service lines. The Orange line, which is the only Viva line that services and passes through the VMC study area, has a total number of fourteen stations on this line. The route operates on Highway 7 and Centre Street between the Richmond Hill Centre Terminal and Martin Grove Road, serving the Promenade Terminal, Vaughan Metropolitan Centre, and the (predominantly) commercial and employment lands abutting Highway 7 from Centre Street to Martin Grove Road. Viva Orange Line serves with an approximate frequency of 19 to 23 minutes during the weekdays and weekends/ holidays.



**Figure 3-8: Orange - Route 605**



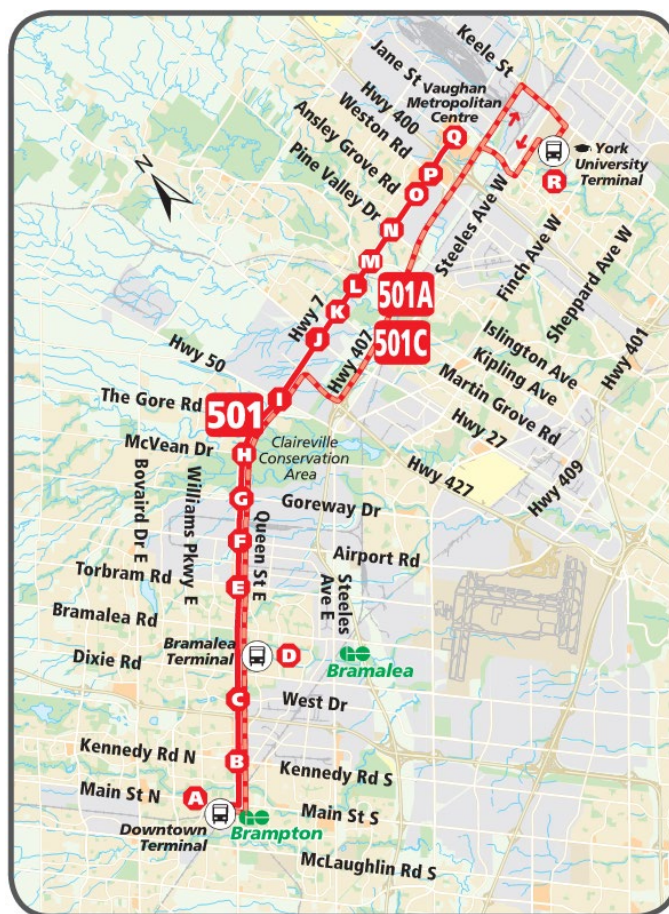
### 3.2.3 Brampton Transit Routes

#### Züm Queen – Route 501

The Züm service is a Rapid transit service operated by Brampton Transit, which provides connections to City of Mississauga, City of Toronto and York Region. The 501 route operates on Queen Street and Highway 7 between the Brampton GO Station and the Vaughan Metropolitan Centre bus terminal, seven days a week with an approximate frequency of 6 to 12 minutes during the weekday peak periods. It serves the Brampton GO Station and Downtown Brampton, the Bramalea Bus Terminal, the commercial/employment lands abutting Highway 7, and ultimately the Vaughan Metropolitan Centre bus terminal. Variations 501A and 501C operates express on Highway 407 to the York University Terminal via Kelle Street/Steeles Avenue/Jane Street.



**Figure 3-9: Queen - Route 501**



### 3.2.4 Toronto Transit Commission Subway

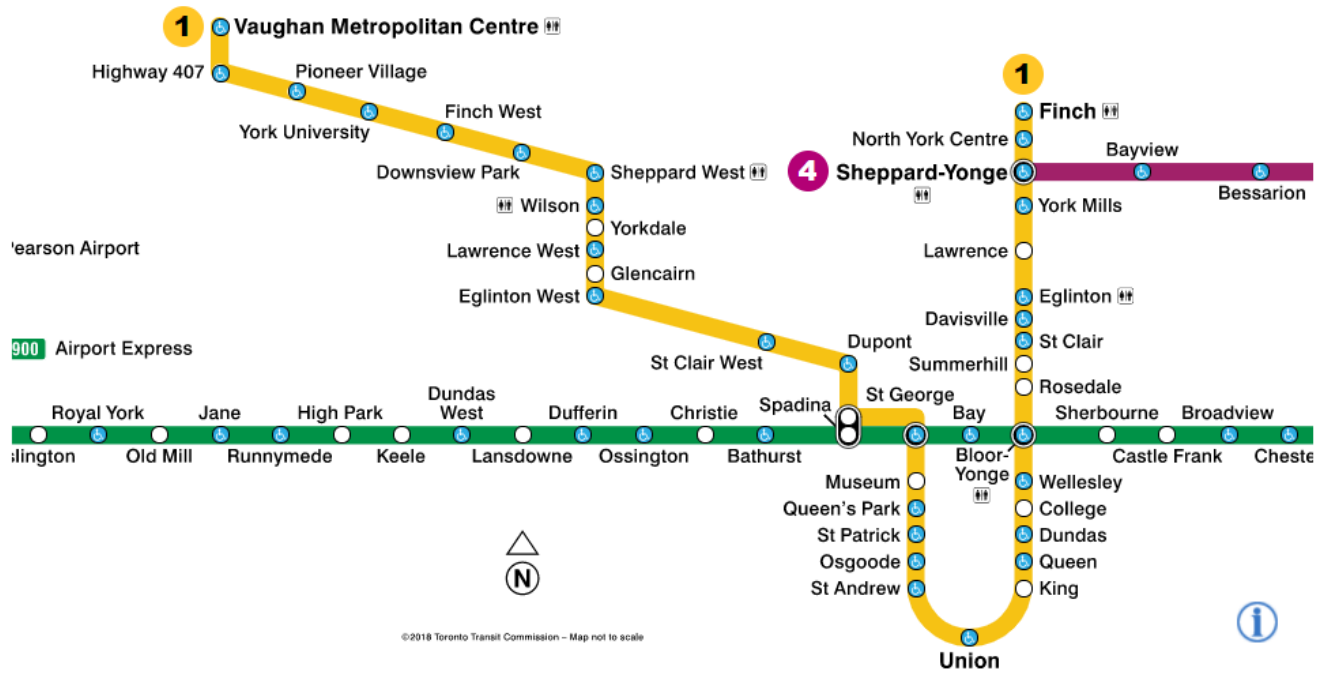
#### Yonge – University – Line 1

The VMC Toronto Transit Commission (TTC) Subway Station is located at the intersection of Highway 7 and Millway Avenue, presented in Figure 3-3. The Yonge-University Subway Line (Line 1) operates (generally) in the Spadina Avenue and Allen Road corridors between Union Station and the Vaughan Metropolitan Centre, every 2 to 3 minutes during the morning and afternoon peak periods. The route connects the VMC with key destinations in Toronto, including Pioneer Village, York University, Downsview Park, Yorkdale Mall, Eglinton West



Station, Queen’s Park, and Union Station. The route also intersects the TTC east-west subway line along Bloor Street at Spadina Station.

**Figure 3-10: Yonge - University (Line 1)**





### 3.2.5 GO Transit

There are several GO Transit bus routes that use Highway 407 and pass through the VMC study area. The following routes serve different locations in the Greater Toronto and Hamilton area, and while they do not directly service the VMC study area identified in this report, they are accessible at the Highway 407 Bus Terminal south of Highway 407.

**Figure 3-11: Hamilton / Richmond Hill - Route Number 40**

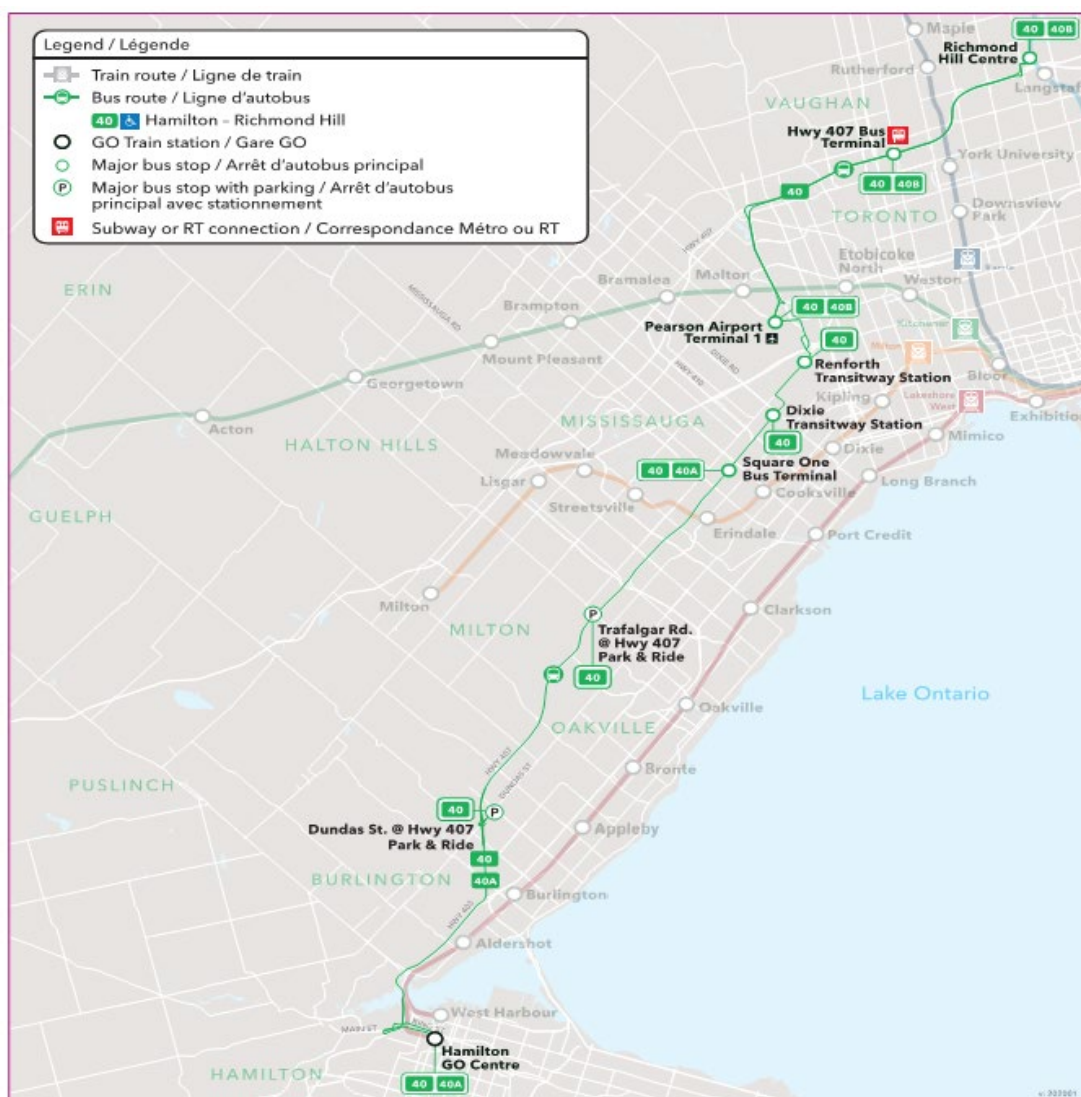




Figure 3-12: 407 East - Route number 51/52/54





### 3.2.6 Service Frequency

Table 3-1 shows route frequencies during the weekdays, for both peak and off-peak periods.

**Table 3-1: Weekday Bus Route Service Frequency**

Route Number	Route Name	Monday to Friday					
		First Start Time	Morning (6AM-9AM)	Mid-Day (9AM-3PM)	Afternoon (3PM – 7PM)	Evening (After 7PM)	Last Start Time
77/77A	Highway 7	4:04	15 min	15 min	15 min	20 min	2:19
26	Maple	4:56	25 min	40 min	25 min	25 min	8:02
20	Jane	5:17	15 min	15 min	15 min	20 min	2:25
605	Viva Orange	4:59	15 min	20 min	15 min	30 min	12:56
501	Queen	4:30	15 min	20 min	15 min	29 min	10:45
1	Yonge-University	5:51	4 min	4 min	4 min	4 min	1:04
40	Hamilton/Richmond Hill	3:05	40 min	45 min	40 min	60 min	2:05
51/52/54	407 East	6:00	20 min	20 min	20 min	20 min	12:25





Table 3-2 shows route frequencies on weekend days, during both peak and off-peak periods.



**Table 3-2: Weekend Bus Route Service Frequency**

Route Number	Route Name	Saturday				Sunday			
		First Start Time	Day	Evening (After 7PM)	Last Start Time	First Start Time	Day	Evening (After 7PM)	Last Start Time
77/77A	Highway 7	4:52	35 min	40 min	2:46	7:56	50 min	50 min	2:26
20	Jane	6:33	15 min	25 min	2:22	7:18	20 min	25 min	2:28
605	Viva Orange	5:26	25 min	25 min	1:07	7:05	20 min	25 min	12:49
501	Queen	5:45	25 min	30 min	10:45	7:14	30 min	30 min	10:46
1	Yonge-University	5:50	5 min	5 min	1:05	7:50	5 min	5 min	1:05
40	Hamilton / Richmond Hill	3:05	60 min	60 min	2:05	3:05	60 min	60 min	2:05
51/52/54	407 East	8:25	120 min	120 min	11:25	8:25	60 min	60 min	11:25

### 3.2.7 York Region Transit Passenger Activity

Overall, the YRT bus routes serving the area attract a collective ridership of approximately 975 passengers per day. Table 3-3 illustrates the average weekday boarding's within the VMC study area, by route and time of day, for transit routes serving the study area.



**Table 3-3: VMC Study Area - Bus Route Service Boarding's (Average Weekday, Oct 2019)**

Route Number	Route Name	Boarding - Weekdays				
		AM (6AM-9AM)	Mid-Day (9AM-3PM)	PM (3PM-7PM)	Evening (After 7PM)	Total
YRT Route 26	Maple	294	69	205	34	602
YRT Route 20	Jane	332	482	475	228	1,517
YRT Route 77	Highway 7	159	124	173	83	159
YRT Route 77A	Highway 7	11	1	29	0	41
YRT Route 605	Orange	157	138	200	91	586
Brampton Transit Route 501	Queen	No Data				
GO Transit Route 40	Hamilton/Richmond Hill	No Data				
GO Transit Route 51/52/54	407 East	No Data				
TTC Subway Line 1	Boarding's at VMC Station	1,404	1,494	3,557	1,734	8,189
TTC Subway Line 1	Boarding's at Highway 407 Station	196	1,158	2,389	525	4,268

Table 3-4 summarizes the YRT/Viva passenger activity (by route) at the bus stops in the VMC study area. It should be noted that the ridership information is taken from October 2019, reflecting the latest available pre-pandemic counts.



**Table 3-4: YRT / Viva Bus Stop Passenger Activity in the VMC Study Area (Daily)**

Direction	Stop Number	Stop Name	Route 605 Total		Route 10 Total		Route 20 Total		Route 26 Total		Route 77 Total		Route 77A Total		Total		
			Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Total
EASTBOUND	9859	VAUGHAN METROPOLITAN CENTRE EASTBOUND	298	223											298	223	521
	9857	HIGHWAY 7 / CREDITSTONE RD	27	26											27	26	53
	7165	PORTAGE PKWY / APPLEWOOD CRES			0	1									0	1	1
	7239	PORTAGE PWKY / EDGELEY BLVD			0	4									0	4	4
	7203	SMARTVMC BUS TERMINAL PLATFORM 3			0	115									0	115	115
	4152	HIGHWAY 7 / INTERCHANGE WAY									12	15			12	15	27
	4734	HIGHWAY 7 / MILLWAY AV									87	210			87	210	297
	4153	HIGHWAY 7 / JANE ST									35	28			35	28	63
	7216	HIGHWAY 7 / MAPLECRETE RD									5	8			5	8	13
	4154	HIGHWAY 7 / CREDITSTONE RD									22	13			22	13	35
	4152	HIGHWAY 7 / INTERCHANGE WAY											12	17	12	17	29
	3799	INTERCHANGE WAY / COMMERCE ST											1	4	1	4	5
	3800	INTERCHANGE WAY / EXCHANGE AV											1	0	1	0	1



Direction	Stop Number	Stop Name	Route 605 Total		Route 10 Total		Route 20 Total		Route 26 Total		Route 77 Total		Route 77A Total		Total		
			Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Total
	7218	INTERCHANGE WAY / JANE ST											6	7	6	7	13
WESTBOUND	9858	HIGHWAY 7 / CREDITSTONE RD	13	30											13	30	43
	9860	VAUGHAN METROPOLITAN CENTRE WESTBOUND	248	222											248	222	470
	7203	SMARTVMC BUS TERMINAL PLATFORM 3			199	72									199	72	271
	7164	PORTAGE PKWY / APPLEWOOD CRES			2	2									2	2	4
	7166	PORTAGE PKWY / CHRISLEA RD			1	6									1	6	7
	4131	HIGHWAY 7 / CREDITSTONE RD									15	33			15	33	48
	7215	HIGHWAY 7 / MAPLECRETE RD									6	5			6	5	11
	4132	HIGHWAY 7 / JANE ST									11	23			11	23	34
	4732	HIGHWAY 7 / MILLWAY AV									332	124			332	124	456
	4133	HIGHWAY 7 / EDGELEY BLVD									14	13			14	13	27
	7219	INTERCHANGE WAY / JANE ST											0	21	0	21	21
	4615	INTERCHANGE WAY / EXCHANGE AV											0	4	0	4	4
	3771	INTERCHANGE WAY / COMMERCE ST											0	2	0	2	2





Direction	Stop Number	Stop Name	Route 605 Total		Route 10 Total		Route 20 Total		Route 26 Total		Route 77 Total		Route 77A Total		Total		
			Boarding <sub>s</sub>	Alighting <sub>s</sub>	Boarding <sub>s</sub>	Alighting <sub>s</sub>	Boarding <sub>s</sub>	Alighting <sub>s</sub>	Boarding <sub>s</sub>	Alighting <sub>s</sub>	Boarding <sub>s</sub>	Alighting <sub>s</sub>	Boarding <sub>s</sub>	Alighting <sub>s</sub>	Boarding <sub>s</sub>	Alighting <sub>s</sub>	Total
	7217	INTERCHANGE WAY / HIGHWAY 7											0	17	0	17	17
SOUTHBOUND	3818	JANE ST / PENNSYLVANIA AV					20	41							20	41	61
	3819	JANE ST / PORTAGE PKWY					60	93							60	93	153
	7204	SMARTVMC BUS TERMINAL PLATFORM 2					19	25							19	25	44
	3820	JANE ST / HIGHWAY 7					258	98							258	98	356
	5109	JANE ST / DOUGHTON RD					33	38							33	38	71
	4783	JANE ST / INTERCHANGE WAY					44	50							44	50	94
	7161	EDGELEY BLVD / PENNSYLVANIA AV							2	10					2	10	12
	7162	EDGELEY BLVD STOP # 7162							0	3					0	3	3
	7221	SMARTVMC BUS TERMINAL PLATFORM 4							0	213					0	213	213
	3796	JANE ST / PEELAR RD					14	10							14	10	24
3803	JANE ST / DOUGHTON RD					1	7							1	7	8	
NORTHBOUND	3804	JANE ST / HIGHWAY 7					22	27							22	27	49
	7222	SMARTVMC BUS TERMINAL PLATFORM 6					1035	75							1035	75	1110



Direction	Stop Number	Stop Name	Route 605 Total		Route 10 Total		Route 20 Total		Route 26 Total		Route 77 Total		Route 77A Total		Total		
			Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Total
	6346	JANE ST / MACINTOSH BLVD					11	32							11	32	43
	7221	SMARTVMC BUS TERMINAL PLATFORM 4							621	100					621	100	721
	3773	EDGELEY BLVD / PORTAGE PKWAY							4	2					4	2	6
	3805	EDGELEY BLVD STOP # 3805							0	4					0	4	4
	3806	EDGELEY BLVD / PENNSYLVANIA AV							3	22					3	22	25



## 3.3 Active Transportation Network

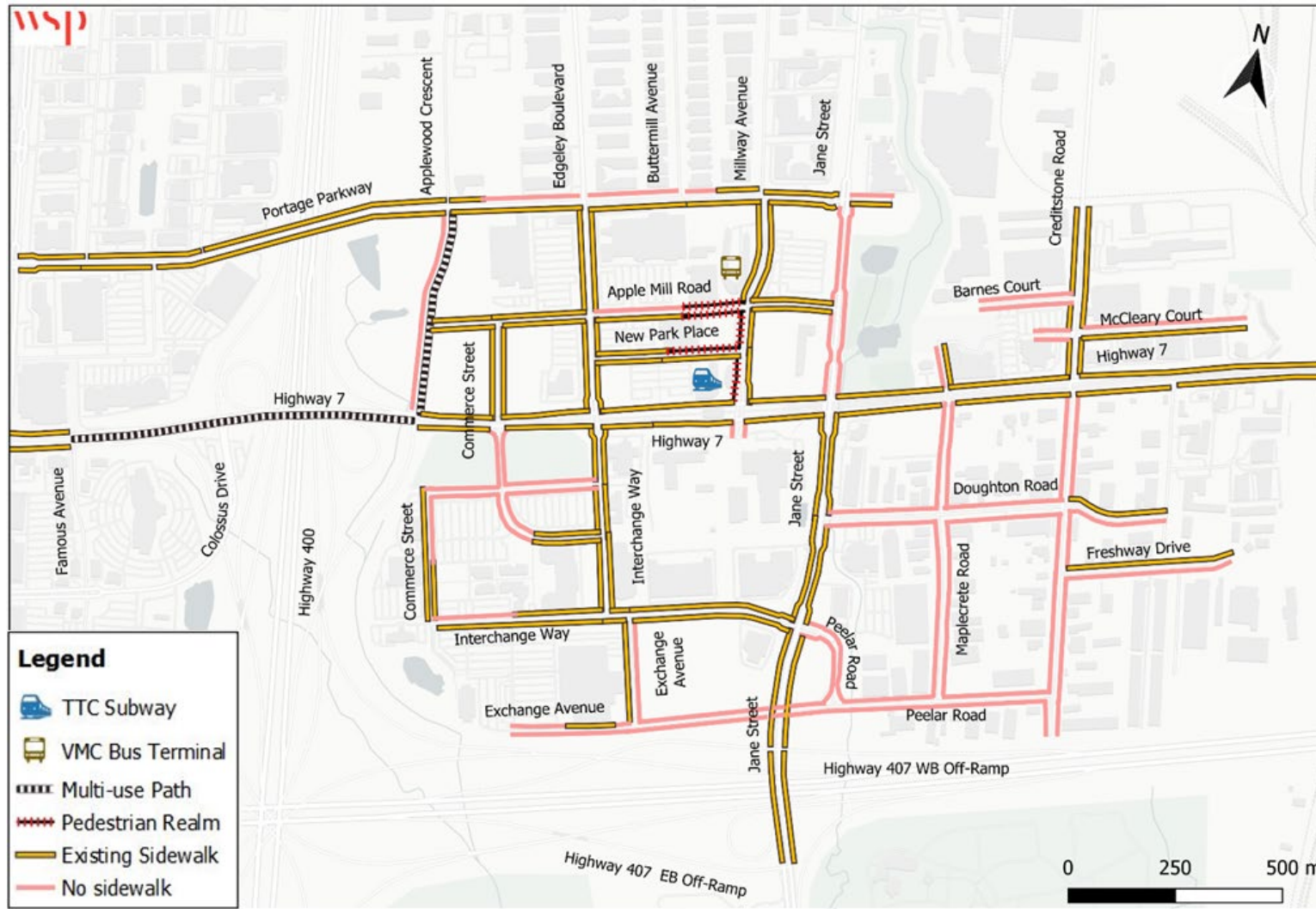
### 3.3.1 Pedestrian Network

The existing pedestrian network within the VMC study area has sidewalks on the majority of major and minor roadways, excluding the industrial areas in the south-east quadrant. Highway 7, New Park Place, Apple Mill Road and Millway Avenue, between Portage Parkway and Highway 7, have all been re-designed to provide appropriate active transportation facilities and improved conditions for pedestrians.

The existing VMC pedestrian network is presented in Figure 3-13.



**Figure 3-13: Existing VMC Pedestrian Network**



The reconfiguration of Highway 7 has vastly improved pedestrian conditions along this busy corridor, by providing a boulevard between the sidewalk and vehicle lanes, that separate pedestrians and vehicles. Additionally, a multi-use path is provided in the center of the Highway 7 overpass (over Highway 400), as presented in Figure 3-13, which includes intersections on the east and west side of the overpass to provide access to the newly constructed multi-use pathway. The multi-use path has also recently been expanded to the east side of Applewood Crescent, between Portage Parkway and Highway 7.

A pedestrian realm network, connecting to the Transit Square and TTC Plaza (associated with the subway), is located on Apple Mill Road, New Park Place, and Millway Avenue, as presented in Figure 3-13. As illustrated in Figure 3-14, a pedestrian realm is more generous than traditional sidewalks, which serve the pedestrians with wider clearways typically ranging from 2-3 meters in width.

**Figure 3-14: Pedestrian Realm on New Park Place**



The available sidewalks are at least 1.5 meters wide within the VMC study area and are separated from traffic by green space. On some streets, the sidewalks are separated by an asphalt buffer that occasionally contain street furniture or a vegetation area (commonly lined with trees). However, some of the existing sidewalks are curb-faced sidewalks (with no separation from vehicular lanes), e.g., Edgeley Boulevard's west side between New Park Place and Highway 7, Freshway Drive, and a part of Jane Street segment between Highway 7 and Doughton Road in the northbound and southbound directions.



The existing sidewalk network in the VMC study area is mostly complete, except for a few roadways with limited or no pedestrian facilities. The following arterial/collector segments do not have sidewalks:

For East-West Major Links:

- North side of Portage Parkway between Applewood Crescent and Millway Avenue, and east of Jane Street;
- North side of Apple Mill Road between Edgeley Boulevard and Transit Square;
- Both sides of Barnes Court and Doughton Road;
- North side of Interchange Way west of Social Club, connecting to Commerce Street in the north; and
- Both sides of Peelar Road and Exchange Avenue, except for a short stretch of the sidewalk on the north side of Exchange Avenue facilitating IKEA deliveries.

For North-South Major Links:

- West side of Applewood Crescent between Portage Parkway and Highway 7;
- Both sides of Commerce Street south of Highway 7, and Jane Street north of Highway 7;
- Both sides of Peelar Road and Maplecrete Road, except for the east side of Maplecrete Road north of Highway 7; and
- Both sides of Creditstone Road south of Highway 7.

### 3.3.2 Bicycle Network

There are multiple existing cycling facilities located within the VMC study area, with the highest order facilities introduced as part of the recently re-designed corridors. The cycling facilities identified in the VMC study area are:

- Multi-use path in the center of Highway 7 with physical separation extending between Famous Avenue and Applewood Crescent (i.e. across Highway 400);
- Uni-direction raised cycle tracks (physically separated bike lanes) on Highway 7 between Applewood Crescent and Commerce Street, the facility continues westbound along Highway 7;
- Bike lanes on both sides of Highway 7 east of Commerce Street, separated from traffic by a buffer;





- Pocket bike lane (bike lane sandwiched between vehicular through or left turning lanes on the left side and vehicular right turning lane on the right side) of Highway between Millway Avenue and Jane Street;
- Physically separated bike lanes on both sides of Apple Mill Road extending between Applewood Crescent and Millway Avenue;
- Multi-use path on the east side of Applewood Crescent connecting to Portage Parkway in the north and Highway 7 in the south; and
- Buffered bike lanes on the Millway Avenue segments between Portage Parkway and Highway 7 with two other cycling facilities on the west side of Millway Avenue – physically separated bike lane between Portage Parkway and Apple Mill Road, and Curbside bike lane (with no buffer) between Apple Mill Road and New Park Place.

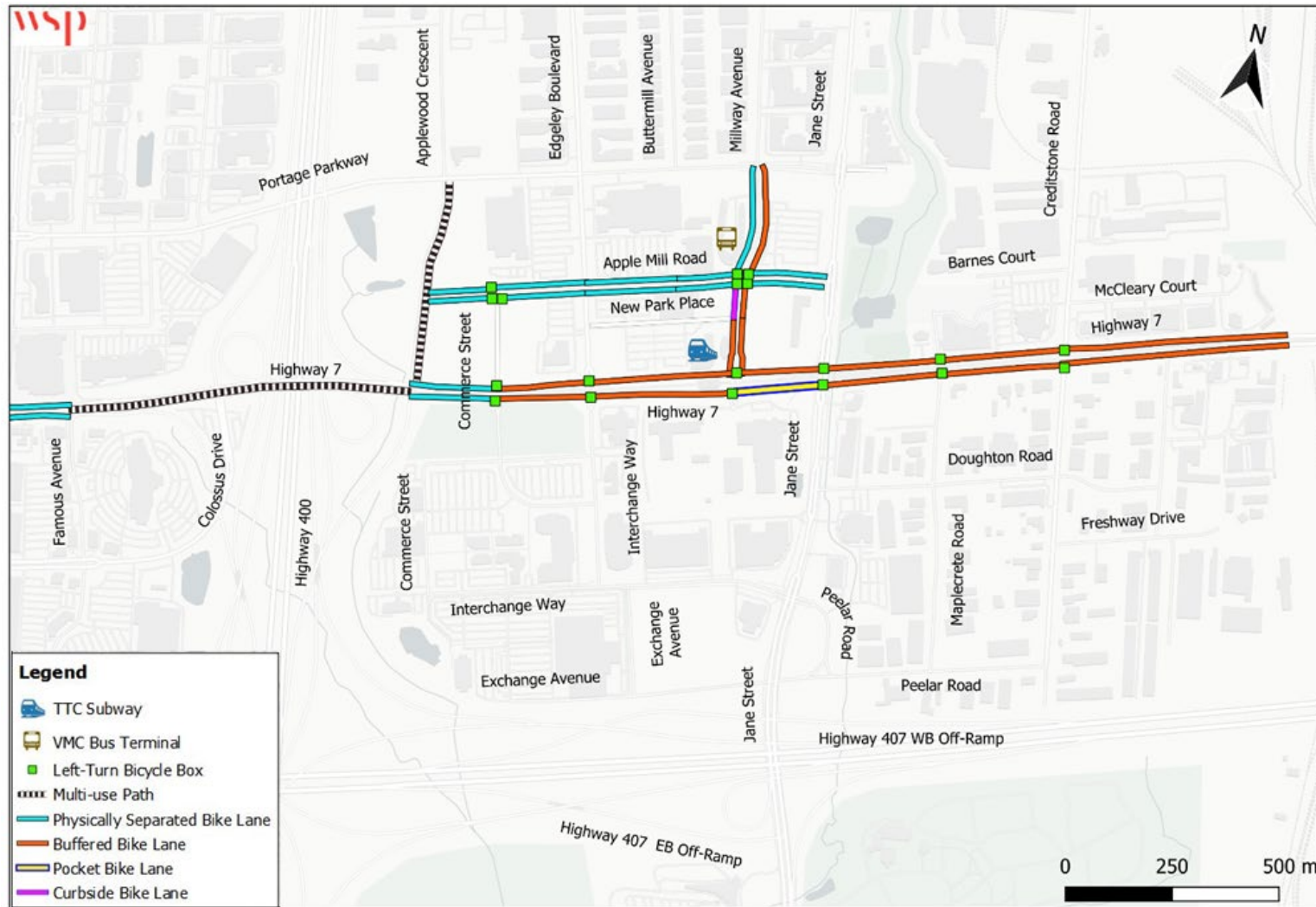
The provisions for cyclists turning left, i.e., left-turn bicycle boxes, are available at the intersections along the recently resurfaced-corridors and are listed below:

- East and west approaches of intersections located east of Applewood Crescent along Highway 7;
- All the approaches of Millway Avenue and Apple Mill Road intersection; and
- East, west, and north approaches of the Apple Mill Road intersection with Commerce Street (the intersection is currently operating as a three-leg T-intersection and is planned to operate as a four-leg intersection with the addition of a north approach, connecting Commerce Street to Portage Parkway)

The existing VMC cycling network is presented in Figure 3-15.



**Figure 3-15: Existing VMC Cycling Network**



# 4 Existing Multimodal Level of Service Analysis

The existing VMC study area is primarily a commercial hub, with many points of interest generating a substantial amount of automobile trips. The convergence of all these high-volume highways and busy regional roadways present a challenging environment for cycling and pedestrian modes of transportation. This section presents the multi-modal level of service (MMLOS) analysis, which follows the City of Ottawa’s Multimodal Analysis Guidelines, for the roadways and intersections located in the VMC study area. MMLOS is a tool that evaluates the performance of each mode – pedestrians, bicycles, transit, and autos, to provide an integrated depiction of the multi-modal levels of service. This table-based approach considers the roadway characteristics and facility type and quality for both intersections and mid-blocks (segments). This analysis will focus on pedestrian and bicycle level of service, to assist the multi-modal transportation decisions.

## 4.1 Pedestrian Level of Service

### 4.1.1 Pedestrian Level of Service Criteria

The pedestrian level of service (PLOS) analysis for the VMC Secondary Plan area was conducted following the City of Ottawa’s Multimodal Analysis Guidelines. The PLOS analysis is presented as a ranking of intersections and mid-block (segments) that a pedestrian could encounter in the study area. The PLOS methodology measures the level of traffic stress (LTS) experienced by a pedestrian for each segment and signalized intersection. Each LTS score is associated with roadway characteristics and scored (from A to F) based on the degree a pedestrian will encounter these types of stressors. The criteria for segments and intersections, respectively, are outlined below:

**Segment PLOS** considers the width of a facility and the horizontal separation between pedestrians and moving motor vehicles (Buffer/ Boulevard). The analysis also adds considerations to traffic volumes on the adjacent roadways, presence of on-street parking and roadway operating speeds. The segment overall LOS is based on the lowest quality section of the segment.





**Intersection PLOS** is based on two measures – the Pedestrian Exposure to Traffic at Signalized Intersections (PETS<sub>I</sub>) and Pedestrian Delay LOS. The evaluation of PETS<sub>I</sub> is based on crossing characteristics, such as crossing distances, and signal phasing and timing features. The evaluation of Pedestrian Delay LOS is based on a simple equation, which considers cycle length and Pedestrian Effective Walk Time. Each approach is evaluated individually, and the overall LOS for an intersection represents the worst score approach.

The inputs for the segment PLOS and Pedestrian Exposure to Traffic LOS are summarized in Table 4-1 and



Table 4-2, respectively. Table 4-3 provides examples of how the criteria were applied to roadways in the VMC study area. The details of methodology, including an example showing the calculations for the segment and intersection PLOS are provided in Appendix A.

**Table 4-1: Pedestrian Segment LOS Considerations**


<b>Sidewalk Width</b>	Is the sidewalk wide enough (i.e., 1.5 meters) to meet Provincial accessibility standards?
<b>Separation</b>	Is the pedestrian facility separated from travel lanes (e.g., vegetation zone, on-street parking, asphalt maintenance strip, bicycle lane)?
<b>Vehicular Volumes</b>	Is this a high-volume road with Average Daily Curb Lane Traffic Volumes greater than 3000?
<b>Operating Speed</b>	Are the operating speed limits lower (30-50 km/h) or higher ( $\geq 60$ km/h)?



**Table 4-2: Pedestrian Exposure to Traffic LOS Considerations**

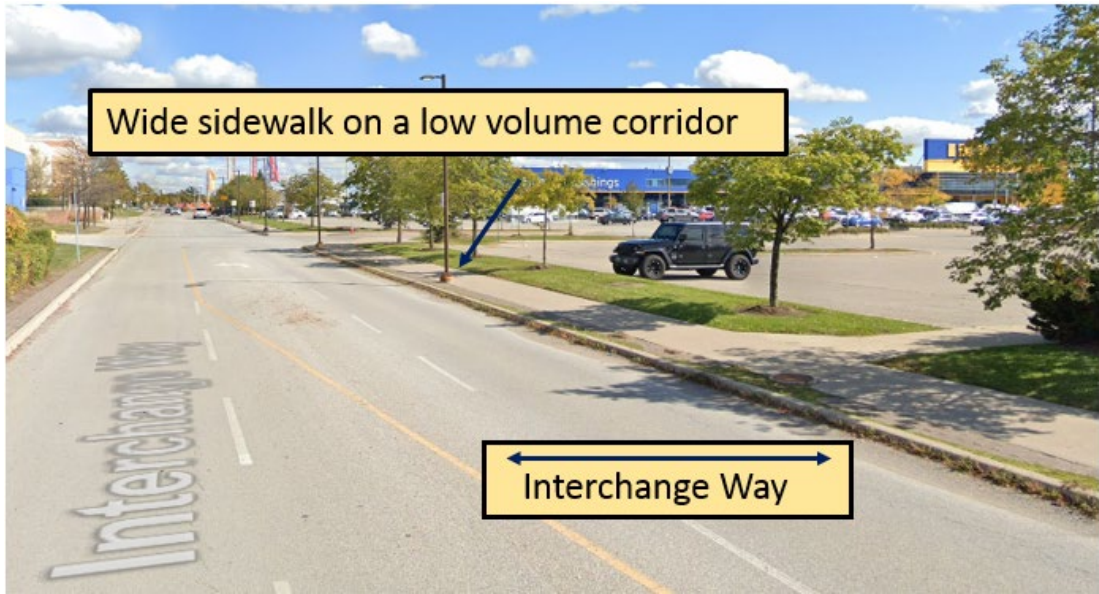

<b>Crossing Distance</b>	If the crossing side has multi-lane, is there any island refuge for safe crossing?
<b>Corner Radius</b>	Is the turning radius for vehicles wide (typically indicating an environment that is suited for movement of goods and vehicular flow as opposed to pedestrian safety)?
<b>Channelized Right</b>	Is the channelized right a smart channel (channel intersecting street at an angle of 70° or greater) or conventional right turn channel?
<b>Potential Conflicts</b>	If the conflicting left and right turning movements are allowed, what is a type of conflicting movement – e.g., Protected, Permissive, Protective/Permissive, etc.?
<b>Right turn on Red (RTOR); Leading Pedestrian Interval (LPI)</b>	Is RTOR allowed or prohibited at certain times; Is LPI allowed for minimizing the conflicts between pedestrians and vehicles?  A sample calculation is shown in Appendix A.
<b>Crosswalk Treatment</b>	Is the crosswalk raised, coloured or textured, which could increase the visibility for approaching vehicles?

**Table 4-3: Illustrations of LOS for Pedestrians**

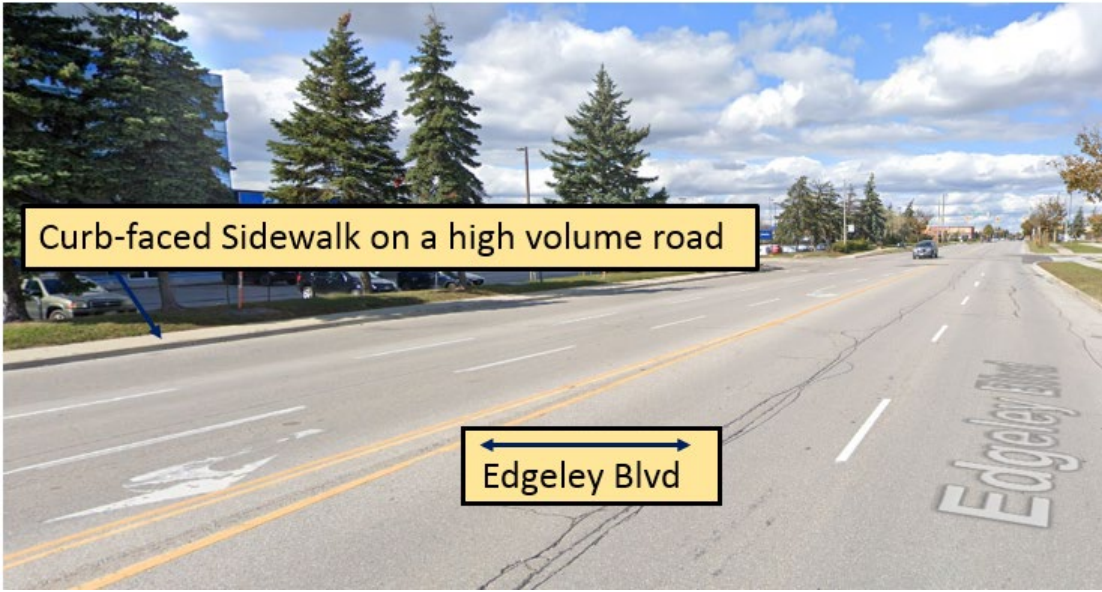
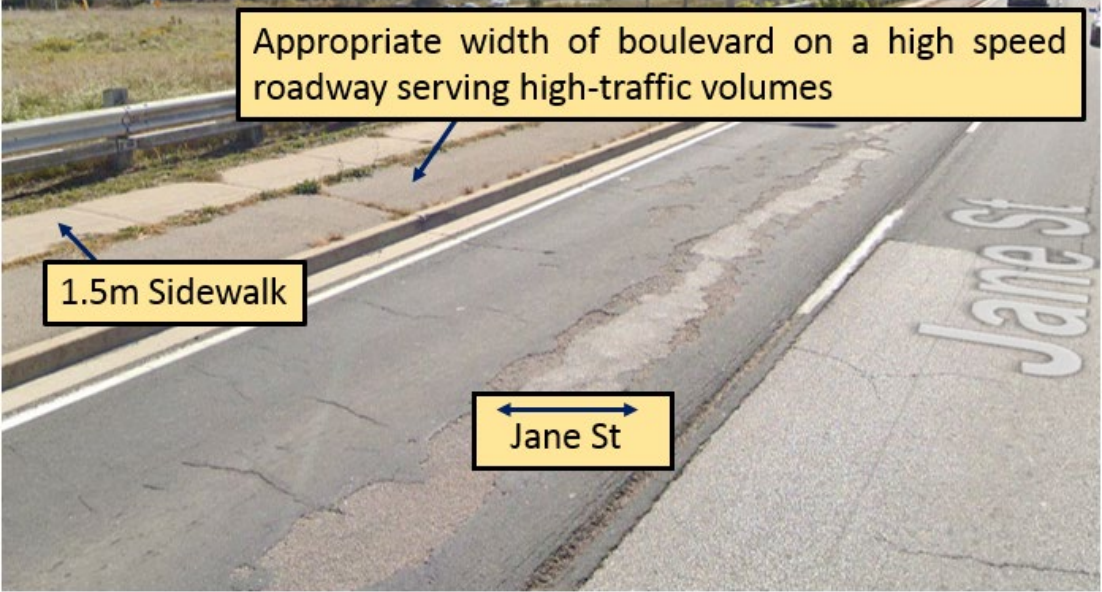
LOS	Example
A	





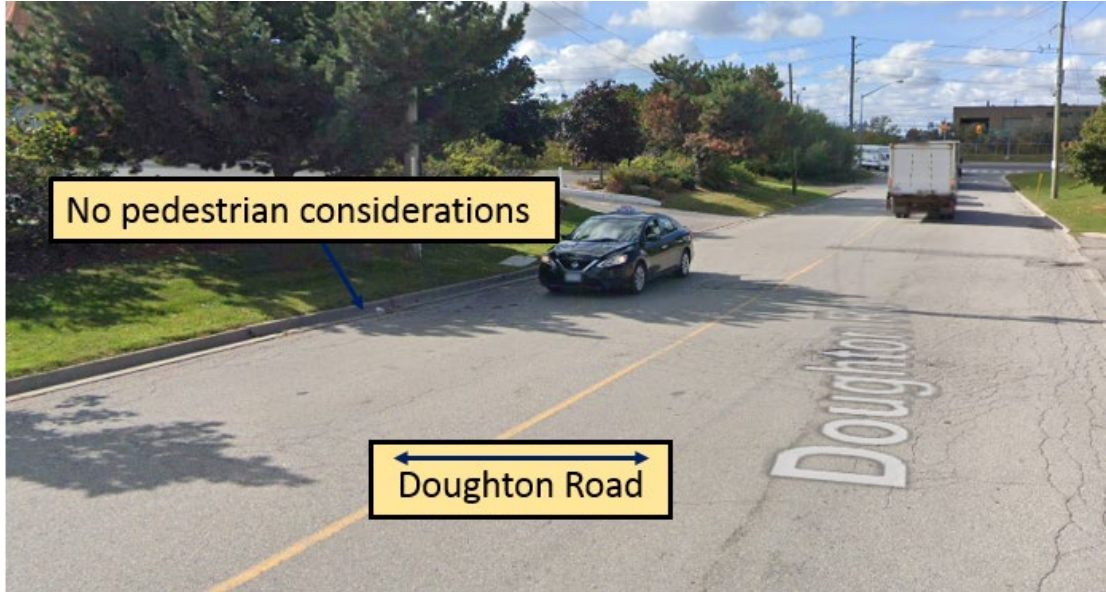
LOS	Example
B	 <p>Wide sidewalk on a low volume corridor</p> <p>Interchange Way</p>
C	 <p>Extra horizontal separation between pedestrians and travel lanes on a busy road operating at high speeds</p> <p>Sidewalk</p> <p>Highway 7</p>



LOS	Example
D	 <p>Curb-faced Sidewalk on a high volume road</p> <p>Edgeley Blvd</p>
E	 <p>Appropriate width of boulevard on a high speed roadway serving high-traffic volumes</p> <p>1.5m Sidewalk</p> <p>Jane St</p>





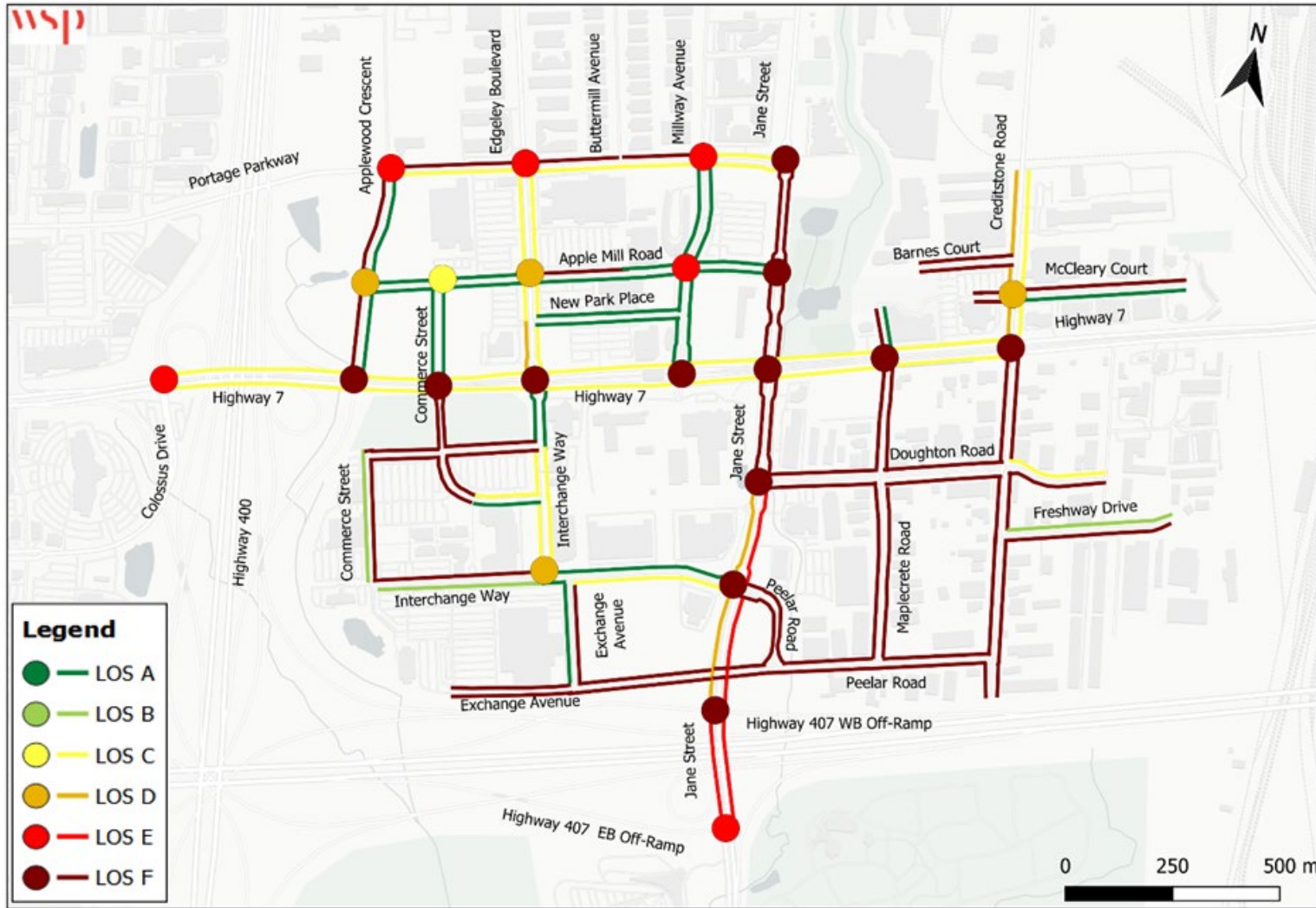
LOS	Example
F	

### 4.1.2 Existing (2020) Pedestrian Conditions

The existing (2020) pedestrian level of service analysis results for the VMC Secondary Plan Area are presented in Figure 4-1. A summary of the segment PLOS results for the east-west and north-south corridors, respectively, and the intersection PLOS results are provided in Appendix A.



Figure 4-1: Existing (2020) Pedestrian Level of Service



Within the VMC study area, most of the sidewalks are easy to navigate, due to the adequate width of sidewalks separated from the traffic by a buffer or a boulevard and have PLOS “D” or better. As presented in Figure 4-1, the improvements along Highway 7 have eased the level of stress for pedestrians, which has resulted in a segment PLOS “C” along the roadway in the VMC study area. However, the arterial roadways, which include Jane Street north of Highway 7 and Creditstone Road south of Highway 7, experience segment PLOS “F” due to the lack of pedestrian infrastructure and facilities, as well as high volumes of traffic and a higher operating speed of 60 km/h.

Furthermore, the majority of segments on Jane Street, south of Highway 7, have a number of “stressors” for pedestrians, for example, the relatively narrow sidewalks and boulevards that are not wide enough in relation to the high-volume of traffic / operating speeds. Additionally, some of the collector and local roads have an existing segment PLOS “F” due to the absence of facilities for pedestrians, as presented in Figure 4-1.

As shown in Figure 4-1, the overall pedestrian conditions at various intersections along Highway 7 and Jane Street are at PLOS “F”, mainly due to the wide crossing of these roads, e.g., Highway 7 has an eight-lane cross-section (three vehicular through lanes in each direction and two designated bus lanes). Additionally, pedestrians are experiencing higher average delays because of insufficient effective walk time. Therefore, the signalized intersections located within the study area have PLOS “E” or “F”, except for the few intersections located along Apple Mill Road, Interchange Way and McCleary Court, which all have existing intersection PLOS “D” or “C”.

## 4.2 Bicycle Level of Service

### 4.2.1 Bicycle Level of Service Criteria

The Bicycle Level of Service (BLOS) was evaluated for the VMC study area intersections and segments. The basic criteria applied to measure the BLOS is similar to the criteria used for the PLOS analysis, such as facility type and cycling-specific facilities that can improve the level of stress for cyclists at the intersection and is outlined below:

**Segment BLOS** considers the type of facility, number of travel lanes, vehicular operating speeds and parking characteristics. It also considers the blockage of bike lanes by commercial deliveries, and median refuge width at unsignalized crossings.



**Intersection BLOS** specifically identifies left turn cycling infrastructure, such as a bike box and the number of lanes crossed, and the right turn characteristics, such as the length of turning lanes and the turning speeds.

Table 4-4 and Table 4-5 below indicate the inputs for the segment and intersection BLOS, respectively, while examples of how these criteria were applied to the VMC study area network are provided in Table 4-6. The details of methodology, including an example showing the calculations for the segment and intersection BLOS are provided in Appendix B.

**Table 4-4: Bicycle Segment LOS Considerations**

<b>Conflicts with Right Turning Vehicles</b>	<ul style="list-style-type: none"> <li>– On an approach to an intersection, if the facility is at right of turning lane, which could enhance bicycle visibility and reduce the conflicts?</li> <li>– If the facility is located left of right turning lane (i.e., pocket bike lane), does it cross the turning lane?</li> </ul>
<b>Left Turn Impediments</b>	<ul style="list-style-type: none"> <li>– Does the intersection have consideration for left turning bicycles (i.e., two-stage bicycle box)?</li> </ul>

**Table 4-5: Bicycle Intersection LOS Considerations**

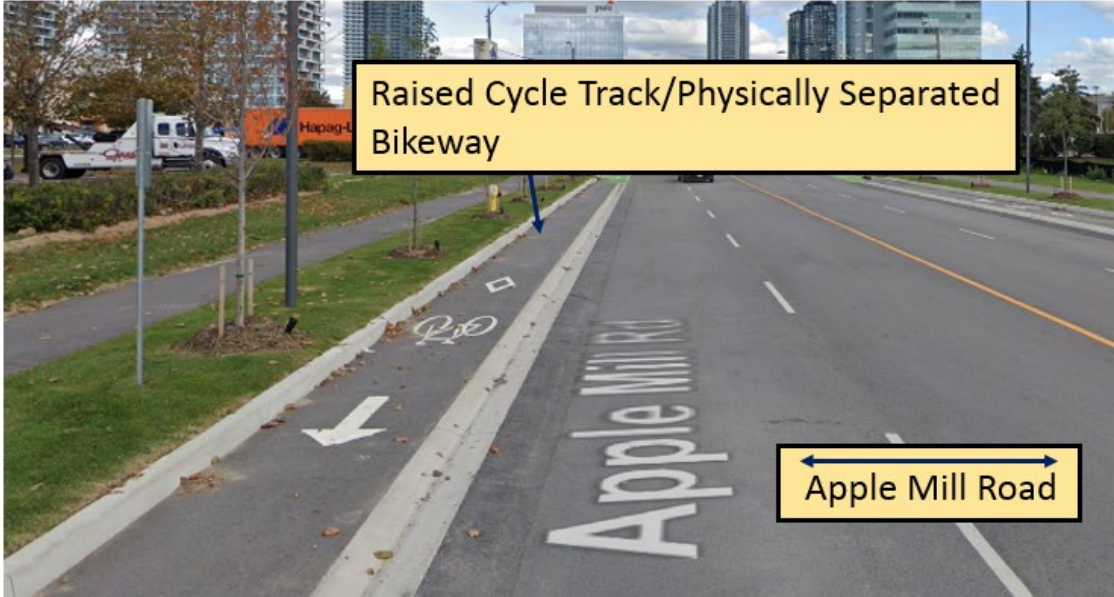
<b>Facility Characteristics</b>	<ul style="list-style-type: none"> <li>– Is the facility physically separated including cycle tracks, protected bike lanes and multi-use path?</li> <li>– Does the facility have a painted buffer?</li> <li>– Is there a parking besides bike lane or the facility is curbside bike lane?</li> <li>– Is the facility appropriately signed?</li> </ul>
<b>Street Dimensions and Vehicular Speeds</b>	<ul style="list-style-type: none"> <li>– How many vehicle lanes are there?</li> <li>– Are the operating speed limits lower (30-50 km/h) or higher (<math>\geq 60</math> km/h)?</li> </ul>
<b>Bike lane Blockage</b>	<ul style="list-style-type: none"> <li>– Is there an abundance of conflict points (i.e., parking driveways or commercial access driveways)?</li> </ul>
<b>Unsignalized Crossings</b>	<ul style="list-style-type: none"> <li>– If the crossing side has median refuge, is this appropriate for bicycle storage (i.e., <math>\geq 1.8</math> metres wide)?</li> <li>– Is the crossing side wide (<math>\geq 6</math> lanes) or narrow (<math>\leq 3</math> lanes), and what are the operating speeds on side street?</li> </ul>



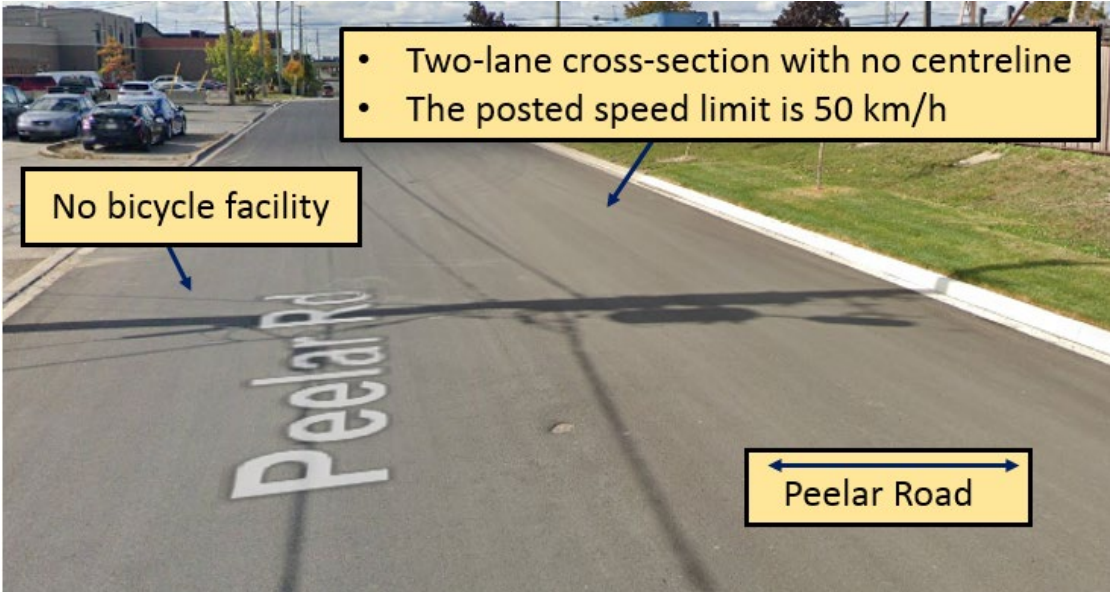
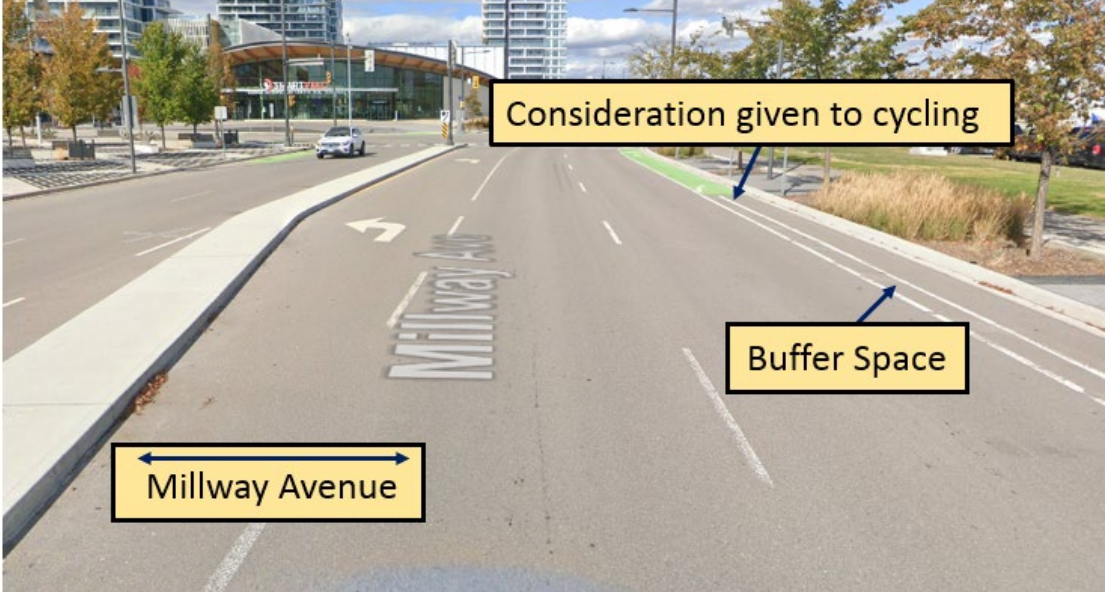


A sample calculation is shown in Appendix A.

**Table 4-6: Illustrations of LOS for Bicycles**

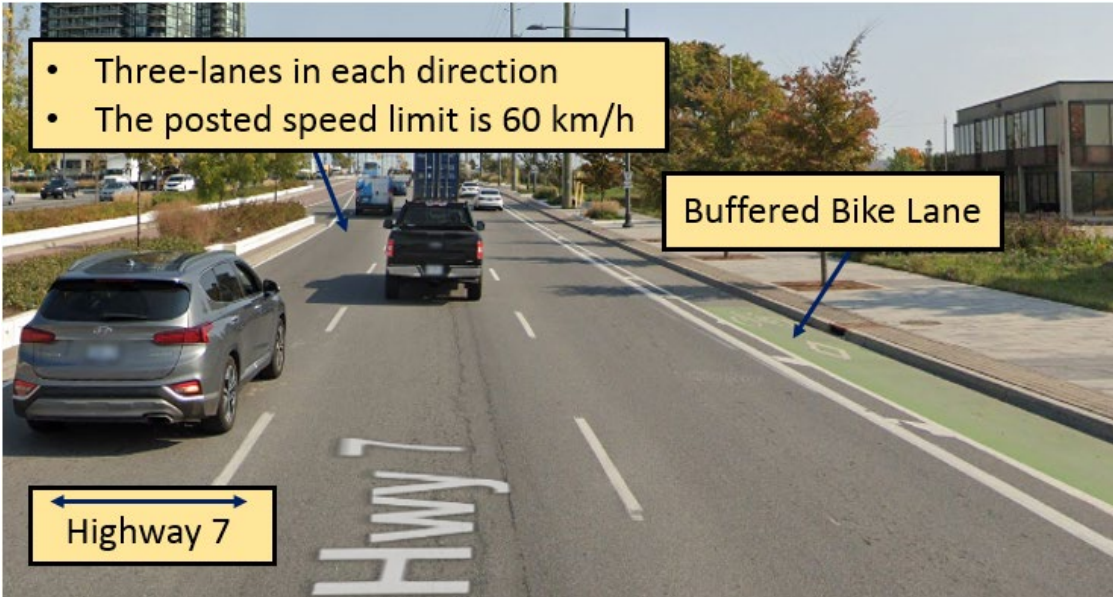
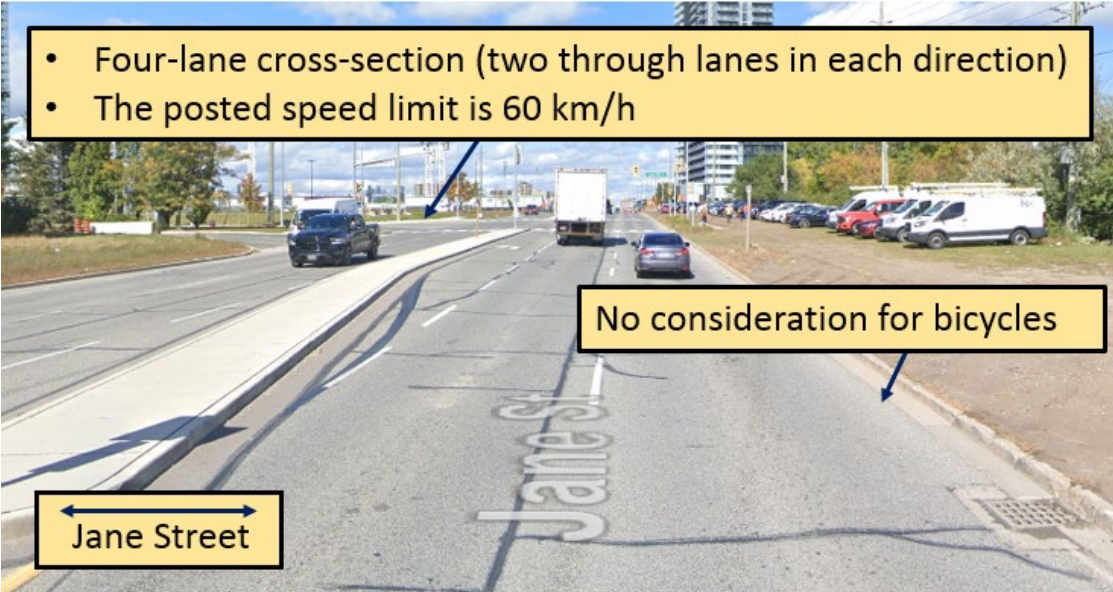
LOS	Example
A	




LOS	Example
B	 <p>• Two-lane cross-section with no centreline • The posted speed limit is 50 km/h</p> <p>No bicycle facility</p> <p>Peelar Road</p>
C	 <p>Consideration given to cycling</p> <p>Buffer Space</p> <p>Millway Avenue</p>





LOS	Example
D	 <ul style="list-style-type: none"> <li>• Three-lanes in each direction</li> <li>• The posted speed limit is 60 km/h</li> </ul> <p>Buffered Bike Lane</p> <p>Highway 7</p>
E	 <ul style="list-style-type: none"> <li>• Four-lane cross-section (two through lanes in each direction)</li> <li>• The posted speed limit is 60 km/h</li> </ul> <p>No consideration for bicycles</p> <p>Jane Street</p>



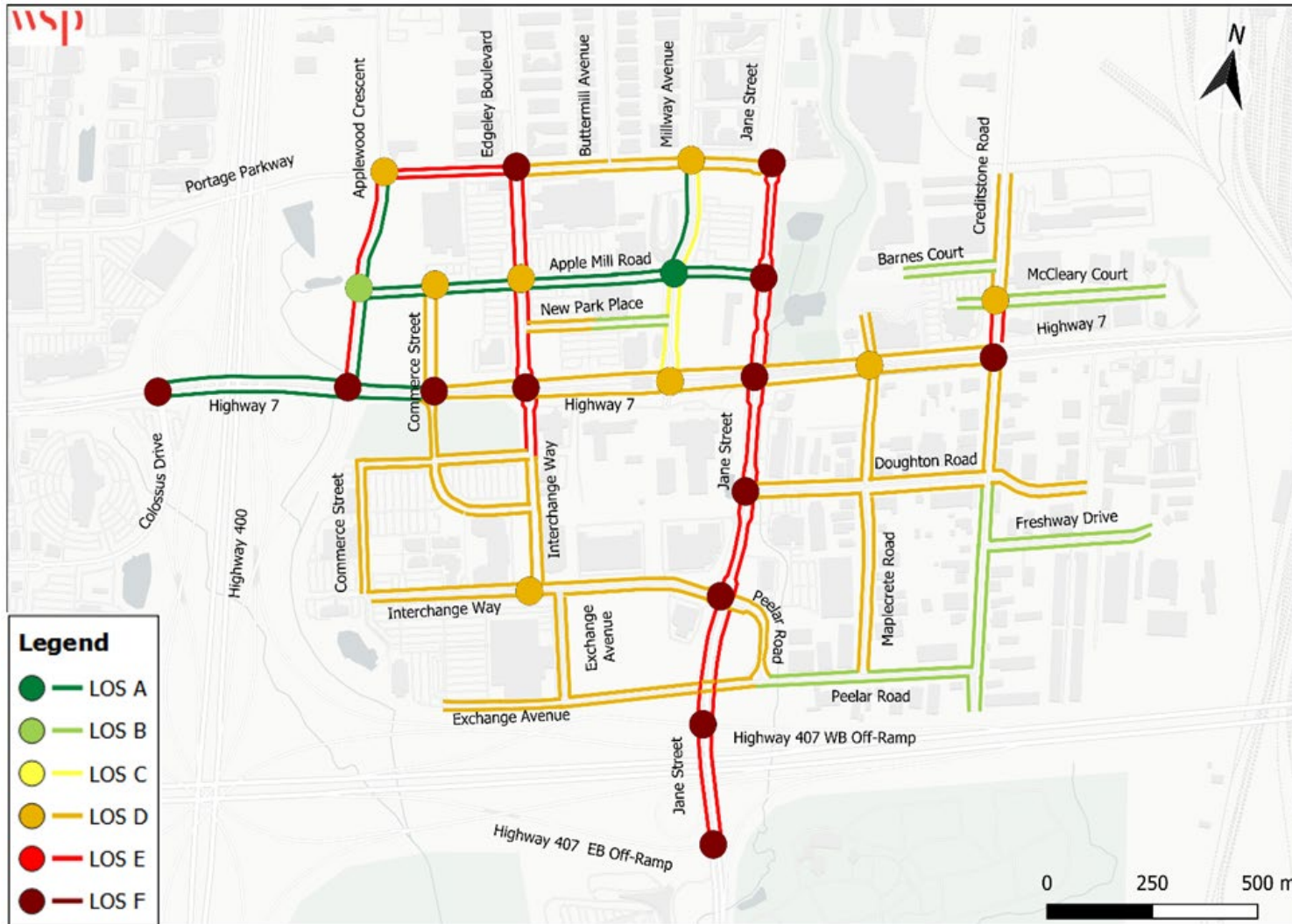
LOS	Example
F	

### 4.2.2 Existing (2020) Bicycle Conditions

The existing (2020) bicycle level of service analysis results for the VMC Secondary Plan Area are presented in Figure 4-2. A summary of the segment BLOS results for the east-west and north-south corridors, respectively, and the intersection BLOS results are provided in Appendix B.



**Figure 4-2: Existing (2019) Bicycle Level of Service**





The overall existing environment is favourable for the cyclists within the VMC study area, as the majority of the study area segments have an existing BLOS “D” or better. This is due to either the widely available cycling infrastructure, as described in Section 1.3, or the limited vehicular lanes (i.e., two-lanes with or without centreline) on roadways with no bicycle facilities. For example, eastbound and westbound segments on Peelar Road, which have no cycling facilities, experience BLOS “B” because of the existing two-lane cross-section with no centreline, as presented in Table 4-6. The following segments that experience BLOS “E” include:

- Eastbound and westbound on Portage Parkway between Applewood Crescent and Edgeley Boulevard;
- Southbound Applewood Crescent between Portage Parkway and Highway 7;
- Northbound and southbound on Edgeley Boulevard between Portage Parkway and Commerce Street, and along Jane Street within the study area; and
- Creditstone Road on both sides between McCleary Court and Highway 7.

As presented in Figure 4-2, the level of stress for cyclists is relatively high at the intersections along Highway 7 and Jane Street, and at the Portage Parkway intersection with Edgeley Boulevard. These intersections have an existing BLOS “F” due to the potential conflicts of bicycles with right-turning vehicles or lack of specific cycling infrastructure at the intersections, e.g., bicycle boxes.





# 5 Existing (2019) Traffic Conditions

## 5.1 Traffic Data Collection

Turning Movement Counts (TMCs) and Automatic Traffic Recorder (ATR) Counts for the VMC study area were provided by York Region for the Regional road intersections, by the City of Vaughan for major collector and minor collector roads, and by MTO and 407ETR for the ramp terminal intersections. Additional TMCs were collected by WSP in June 2020 and October 2020 for the intersections where TMCs were not available. A summary of the data collection dates for each study area intersection is provided in Appendix C.

To assess the potential impact of COVID-19 on the travel demand during the weekday peak hours, and to estimate traffic demand for the intersections prior to COVID-19 conditions. Additional TMCs were collected on typical weekdays in October 2020 (dates are shown in Appendix C) for the following eight key intersections:

1. Highway 7 and Ansley Grove Road;
2. Highway 7 and Weston Road;
3. Highway 7 and Highway 400 SB Off-Ramp;
4. Weston Road and Chrislea Road;
5. Weston Road and Colossus Drive;
6. Jane Street and Portage Parkway;
7. Jane Street and Interchange Way / Peerlar Road; and
8. Creditstone Road and McClearly Court.

The existing (2019/2020) traffic counts were reviewed and adjusted as follows:

1. The 2019 and 2020 traffic counts were reviewed by corridor/direction, and demand adjustment factors were calculated based on the total approaching vehicle volumes at the eight key intersections, before and after the COVID-19 impacts. Traffic counts



were adjusted for both the VMC and Weston 7 study area. The adjustment factors for the VMC study area are:

**Table 5-1: Demand Adjustment Factors**

Intersection	AM Factor	PM Factor
Jane St and Portage Pkwy	1.31	1.04
Jane St and Interchange Way/ Peelar Rd	1.71	1.25
Creditstone Rd and McCleary Ct	1.86	1.51
Hwy 7 and Jane St	1.21	1.04

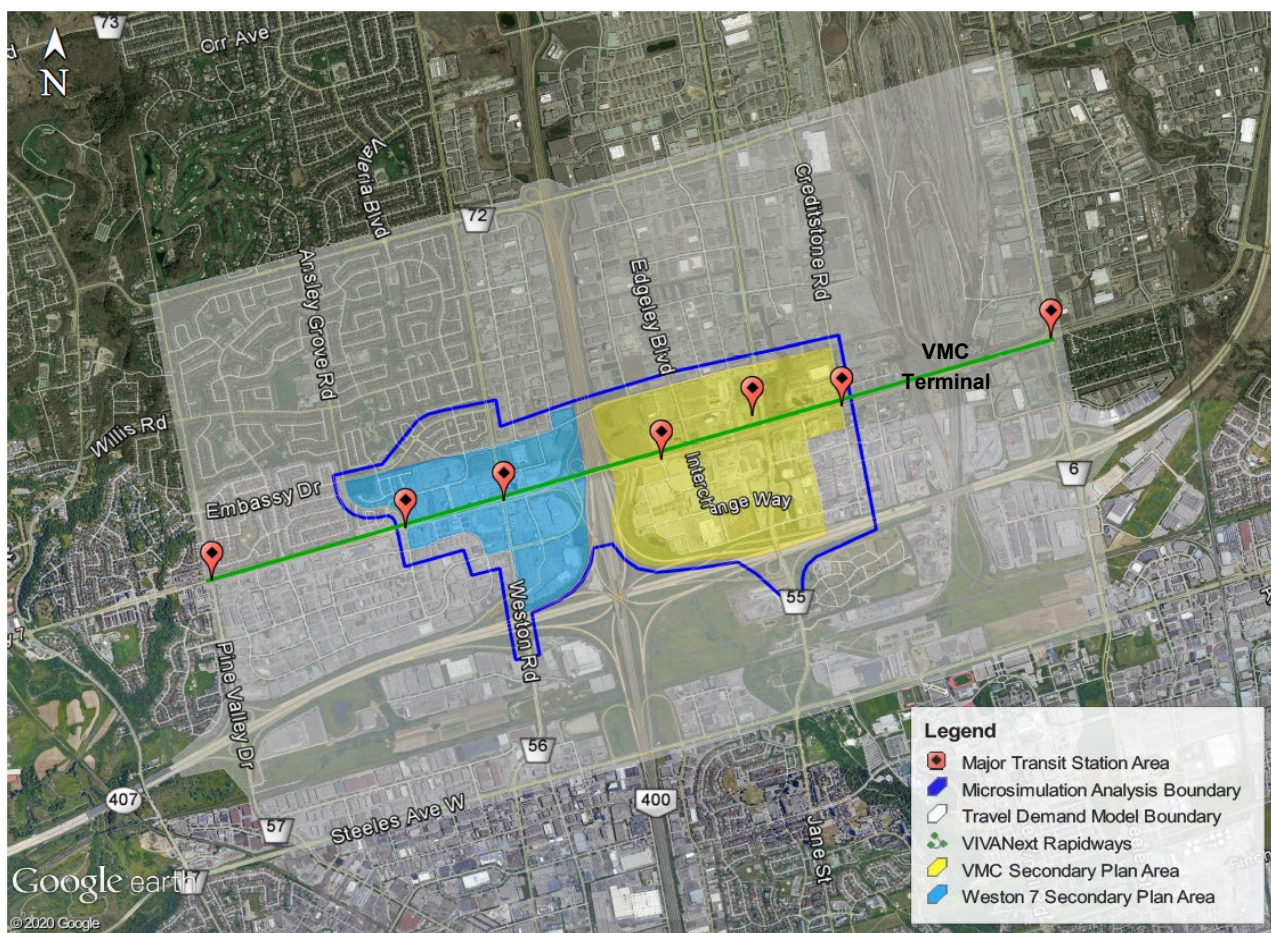
2. The demand adjustment factors were applied to the 2020 traffic counts to reflect the pre-COVID-19 conditions;
3. The traffic volumes were adjusted in both the VMC study area and Weston 7 study area, based on the controlling counts, to ensure consistency and reasonability of traffic flows along the corridors and in-between adjacent intersections.



## 5.2 Traffic Model Development and Calibration

An *Aimsun*-based micro-simulation model was developed for both the Weston 7 TMP and the VMC TMP Update study areas. The existing traffic conditions analysis will be reported and documents in a separate Weston 7 TMP Existing Conditions Report. The traffic model boundaries are presented in Figure 5-1.

**Figure 5-1: VMC TMP Update and Weston 7 TMP Traffic Analysis Model Boundaries**



Aimsun is a fully integrated traffic modelling program that incorporates macroscopic functionalities with a mesoscopic and microscopic traffic simulation. It facilitates a detailed assessment of traffic operations for different road network configuration and intersections, combined with dynamic traffic route choice assignment options related to the local road network inclusive of the study area. The Aimsun model for this study builds on information and data extracted from the York Region Traffic Demand Forecasting (YRTDF) subarea model. The model development incorporated a wide range of input data, including:

- Transportation Network - posted speed limits, number of lanes, intersection lane configurations, priority rules/conflict area, transit lanes (for Viva, BRT), etc.;
- Driving Behavior - desire speed distribution, car following and lane changing parameters;
- Traffic Controls - 'Stop' / 'Yield' signs, traffic signals, placement of 'Stop' bar, detector placement, signal timing plans, turning permissions/restrictions, etc.;
- Travel Demand Inputs (i.e. based on YRTDF model forecast) - traffic volumes, origin-destination pattern, mode share, transit routes and schedules, proportion of commercial vehicles – small/medium and heavy vehicles, variation in demand during peak periods, and
- Calibration Data - traffic counts, field observations of queue lengths at major intersections (including highway ramp terminals) during peak periods, travel time data. Field observations were conducted for the VMC study area in September 2020.

The Aimsun model was calibrated and validated to pre-covid existing traffic demands, travel time, and traffic operating speeds to closely represent the observed traffic conditions. The trip correction matrices, derived from the existing traffic modelling (i.e., the differences between the initial trip matrices derived from the Region's travel demand model and the trip matrices following matrix adjustment) were used for the future traffic demand correction. Details for the development and calibration of the Aimsun micro-simulation model are provided in Appendix D.

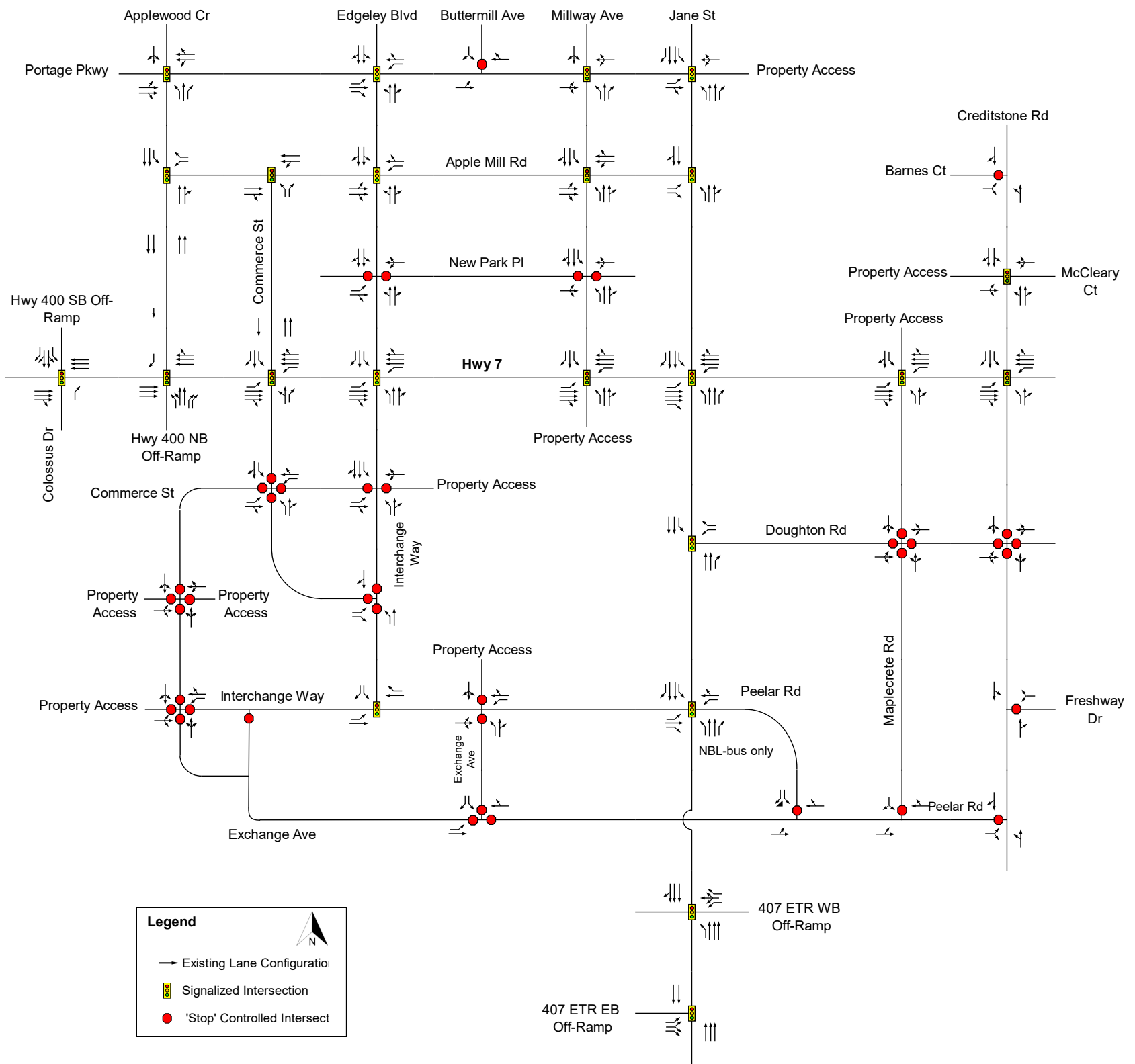
### 5.3 Existing (2019) Intersection Lane Configuration

The existing intersection lane configuration and intersection control type for the VMC study area is presented in Figure 5-2. There is a total of 22 signalized intersections and 15 stop-controlled intersections. The intersection lane configurations for the Weston 7 study area will be documented in a separate Weston 7 TMP.





**Figure 5-2: Existing VMC Intersection Lane Configuration**







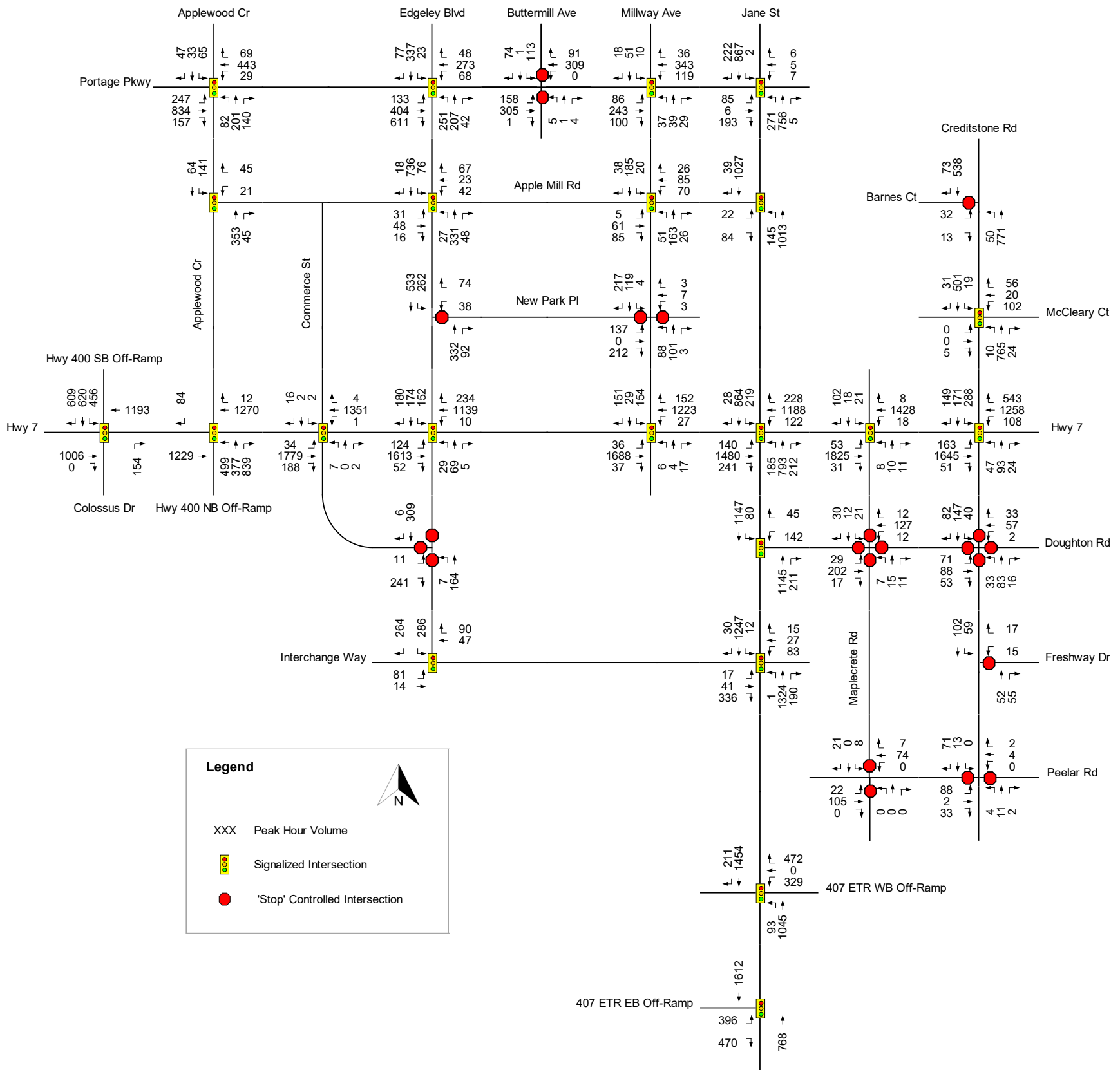
## 5.4 Existing (2019) Traffic Volumes

Figure 5-3 and Figure 5-4 present the morning and afternoon peak-hour existing traffic volumes representing a typical weekday condition in 2019 for the VMC study area. Existing traffic volumes for the Weston 7 study area will be documented in a separate Weston 7 TMP. The following morning and afternoon 3-hour peak periods and 1-hour peak hours are:

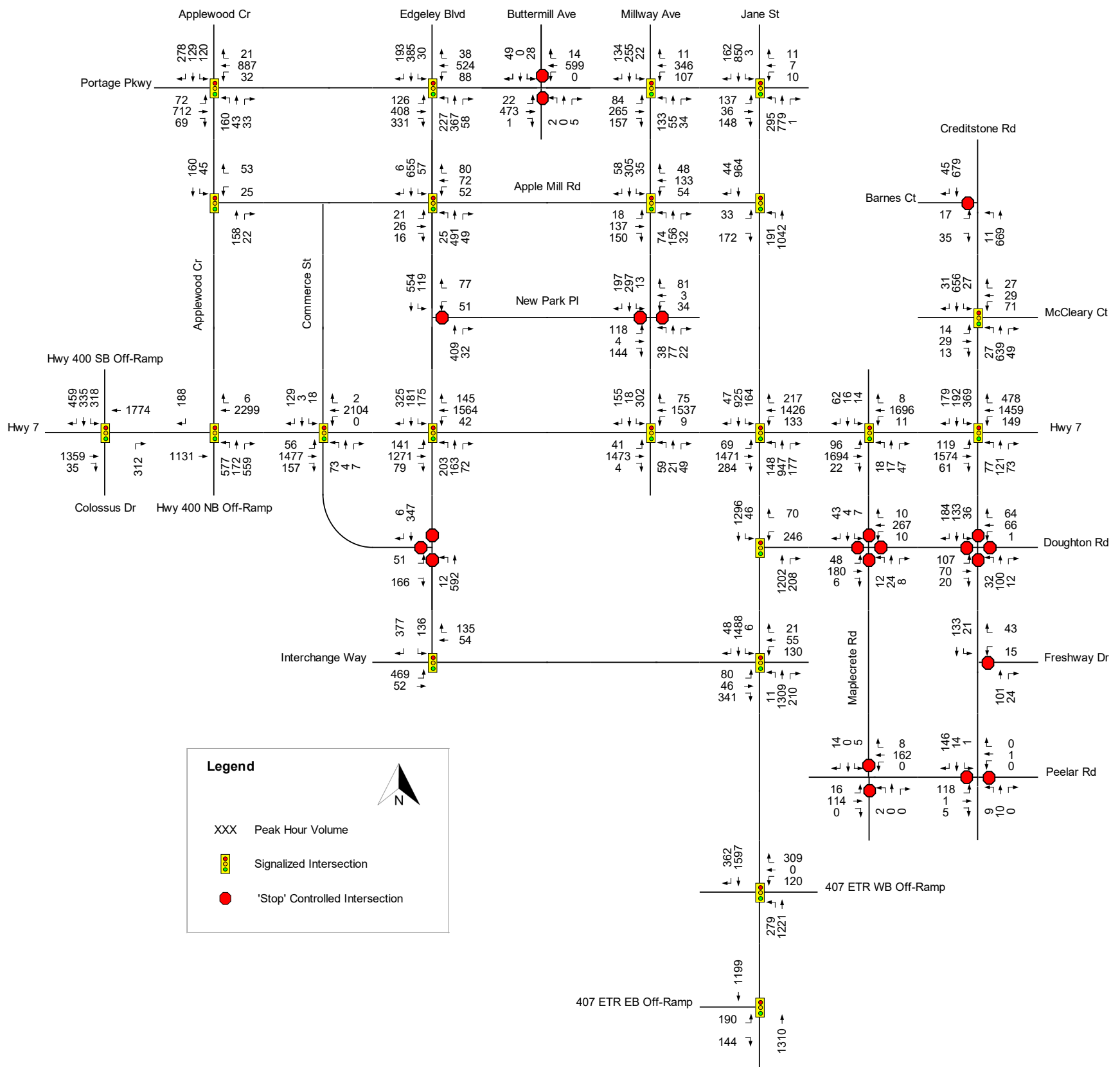
- Morning Peak Period – **07:00 am – 10:00 am**
- Morning Peak Hour – **08:00 am – 09:00 am**
- Afternoon Peak Period – **03:00 pm – 06:00 pm**
- Afternoon Peak Hour – **05:00 pm – 06:00 pm**



**Figure 5-3: Existing VMC Morning Peak Hour Traffic Volumes**



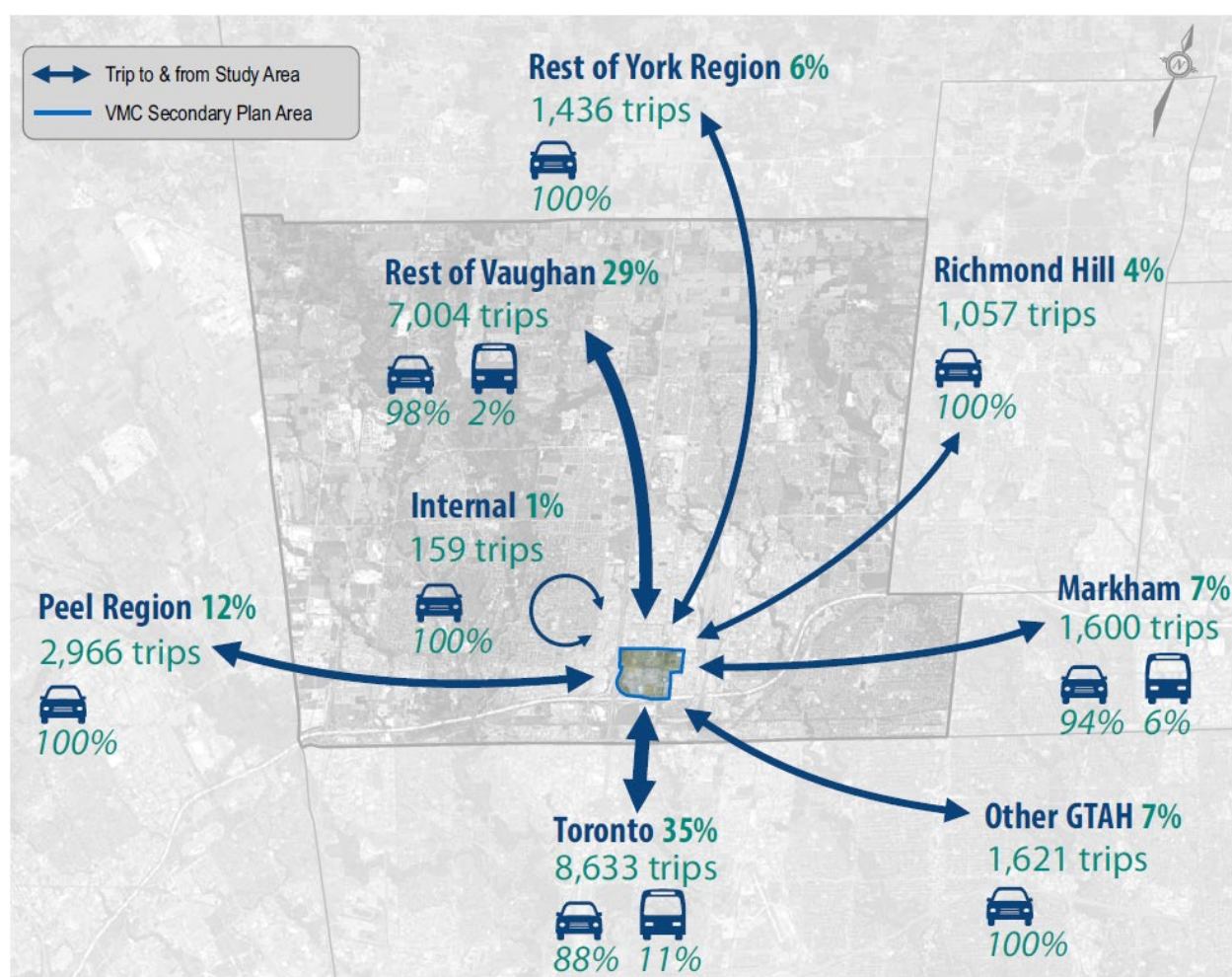
**Figure 5-4: Existing VMC Afternoon Peak Hour Traffic Volumes**



## 5.5 Existing Travel Characteristics

The existing travel characteristics of the VMC study area were reviewed using the 2016 Transportation Tomorrow Survey (TTS) data, which is the most recent data currently available. Daily traffic demands, trip distributions (i.e., origin-destination patterns) and modal shares (auto, transit and active transportation) were retrieved from the 2016 TTS data for four Traffic Analysis Zones (TAZs) within the VMC study area, as presented in Figure 5-2.

**Figure 5-2: 2016 Daily Trips and Modal Shares**



Most of the daily trips are traveling to/from the City of Toronto, at 35%, followed by the City of Vaughan, at about 30%. Approximately 11% of the trips between the VMC study



area and Toronto are transit trips; however, the transit modal share is 2% for the trips travelling between the VMC study area and the rest of Vaughan.

About 7% daily trips are observed between the VMC study area and City of Markham. Potentially contributed by the Highway 7 VIVA transit line, as 6% of these trips are using transit. Other VMC trips are auto trips (i.e., 100% auto modal share), travelling from/to Richmond Hill, the rest of York Region, Peel Region, and other GTA area, accounting for 4%, 6%, 12%, and 7% of the total daily trips, respectively.

## 5.6 Existing (2019) Intersection Operational Analysis

An evaluation of the existing operations for the intersections within the VMC study area was performed using the calibrated Aimsun micro-simulation model. The intersection operational analysis was assessed based on average vehicular delays, level of service (LOS) and queuing conditions. Table 5-2 summarizes the LOS criteria for signalised and stop-controlled intersections.

**Table 5-2: Intersection Level of Service Criteria**

Level of Service	Average Delay Per Vehicle (seconds)		Traffic Operation
	Signalized Intersections	Stop-controlled Intersections	
<b>A</b>	≤ 10	≤ 10	Acceptable Operation
<b>B</b>	> 10 and ≤ 20	> 10 and ≤ 15	
<b>C</b>	> 20 and ≤ 35	> 15 and ≤ 25	
<b>D</b>	> 35 and ≤ 55	> 25 and ≤ 35	
<b>E</b>	> 55 and ≤ 80	> 35 and ≤ 50	Marginally Acceptable – Occasional Queuing
<b>F</b>	> 80	> 50	Unacceptable – Persistent Queueing

LOS is a qualitative measure that describes operational conditions within a traffic stream. The Highway Capacity Manual (HCM) defines six levels of service, LOS 'A' through LOS 'F'. LOS 'A' represents the lower average delay, while LOS 'F' represents the higher average delay.



The highest possible rating is LOS 'A', under which the average total delay for a movement, approach or intersection is less than 10 seconds per vehicle. When the average delay exceeds 50 seconds at unsignalized intersections, or 80 seconds at signalized intersections, the movement is classified as LOS 'F'. LOS 'E' is the point at which remedial measures are considered, depending on the nature and extent of the delays. Average vehicle delays between LOS 'A' and LOS 'D' are generally considered as an acceptable level of service for signalized intersections in urban areas.

Summaries of the weekday morning and afternoon peak hour intersection operations, within the VMC study area, are provided in Table 5 3 and Table 5 4, respectively. The analysis results present the overall intersection delays and LOS, as well as the delays, LOS and 95th percentile vehicular queue lengths for the critical movements (i.e., movements operating at LOS E or F). These critical movements indicate operational issues resulting in long delays and potential congestion. A complete breakdown of delays, LOS and 95th percentile queue lengths by intersection for all turning movements in each peak hour is provided in Appendix E.

**Table 5-3: VMC Intersection LOS Summary and Critical Movements - Morning Peak Hour**

Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Highway 7 and Highway 400 SB Off-Ramp	Signalized	52s	D	NBR	78s	E	66m
				SBL	66s	E	197m
				SBT	94s	F	197m
				SBR	64s	E	198m







Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Highway 7 and Highway 400 NB Off-Ramp	Signalized	36s	D	SBR	395s	F	150m
Highway 7 and Commerce Street	Signalized	24s	C	EBL	107s	F	37m
				WBL	82s	F	15m
				NBL	61s	E	27m
				NBT	67s	E	18m
				SBL	58s	E	7m
				SBT	57s	E	7m
Highway 7 and Edgeley Boulevard	Signalized	57s	E	EBL	259s	F	163m
				WBL	90s	F	11m
				NBL	57s	E	35m
				NBT	63s	E	28m
				SBT	60s	E	91m
Highway 7 and Millway Avenue	Signalized	71s	E	EBL	96s	F	28m
				EBT	86s	F	238m
				EBR	96s	F	244m
				WBL	82s	F	21m
				NBL	64s	E	19m
				NBT	58s	E	8m
				SBL	273s	F	89m
				SBT	128s	F	46m
Highway 7 and Jane Street	Signalized	85s	F	EBL	94s	F	55m
				EBT	80s	E	157m
				EBR	64s	E	99m





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
				WBL	141s	F	94m
				WBT	96s	F	212m
				WBR	113s	F	213m
				NBL	244s	F	163m
				NBT	87s	F	174m
				SBL	66s	E	96m
Highway 7 and Maplecrete Road	Signalized	28s	C	EBL	74s	E	34m
				WBL	88s	F	23m
				NBL	98s	F	21m
				NBT	66s	E	25m
				SBL	72s	E	22m
				SBT	69s	E	36m
Highway 7 and Creditstone Road	Signalized	66s	E	EBL	333s	F	185m
				EBR	59s	E	179m
				WBL	126s	F	94m
				WBR	73s	E	215m
				NBL	97s	F	43m
				NBT	90s	F	180m
				NBR	83s	F	90m
				SBL	73s	E	89m
Jane Street and Portage Parkway	Signalized	16s	B	WBT	80s	E	11m
Jane Street and Apple Mill Road	Signalized	7s	A	EBL	73s	E	20m





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Jane Street and Doughton Road	Signalized	13s	B	WBL	70s	E	80m
Jane Street and Interchange Way	Signalized	13s	B	EBL	65s	E	25m
				EBT	63s	E	7m
				WBL	67	E	42m
Jane Street and Highway 407 WB Off-Ramp	Signalized	23s	C	-	-	-	-
Jane Street and Highway 407 EB Off-Ramp	Signalized	17s	B	-	-	-	-
Portage Parkway and Applewood Crescent	Signalized	25s	C	-	-	-	-
Portage Parkway and Edgeley Boulevard	Signalized	26s	C	NBL	103	F	99m
Portage Parkway and Buttermilk Avenue	Stop-Controlled	14s	B	SBL	38s	E	77m
Portage Parkway and Millway Avenue	Signalized	36s	D	EBL	72s	E	148m
				EBT	68s	E	148m
				EBR	63s	E	148m
Apple Mill Road and Applewood Crescent	Signalized	6s	A	-	-	-	-
Apple Mill Road and Commerce Street	Signalized	7s	A	-	-	-	-
Apple Mill Road and Edgeley Boulevard	Signalized	12s	B	-	-	-	-
Apple Mill Road and Millway Avenue	Signalized	20s	B	-	-	-	-
		10s	A	WBL	44s	E	41m





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
New Park Place and Edgeley Boulevard	Stop-Controlled			WBT	38s	E	44m
New Park Place and Millway Avenue	Stop-Controlled	28s	D	EBL	67s	F	97m
				EBT	60s	F	97m
				EBR	65s	F	97m
				WBL	46s	E	22m
Interchange Way and Commerce Street (North)	Stop-Controlled	3s	A	-	-	-	-
Interchange Way and Commerce Street (South)	Stop-Controlled	22s	C	-	-	-	-
Interchange Way and Interchange Way	Signalized	10s	A	-	-	-	-
Interchange Way and Exchange Way	Stop-Controlled	5s	A	-	-	-	-
Commerce Street and Commerce Street	Stop-Controlled	11s	B	-	-	-	-
Exchange Avenue and Exchange Avenue	Stop-Controlled	10s	A	-	-	-	-
Exchange Avenue and Peelar Road	Stop-Controlled	4s	A	-	-	-	-
Creditstone Road and Barnes Court	Stop-Controlled	18s	C	EBL	48s	E	34m
Creditstone Road and McCleary Court	Signalized	23s	C	-	-	-	-
Creditstone Road and Doughton Road	Stop-Controlled	19s	C	-	-	-	-
Creditstone Road and Freshway Drive	Stop-Controlled	1s	A	-	-	-	-





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Maplecrete Road and Doughton Road	Stop-Controlled	12s	B	-	-	-	-
Highway 7 and Highway 400 SB Off-Ramp	Signalized	52s	D	NBR	78s	E	66m
				SBL	66s	E	197m
				SBT	94s	F	197m
				SBR	64s	E	198m

<sup>1</sup> Critical Movement at LOS E or F







During the morning peak hour, all the VMC study area intersections operate at an acceptable overall LOS D or better, with the exception of Highway 7 intersections at Edgeley Boulevard, Millway Avenue, Jane Street, and Creditstone Road. These intersections operate at LOS E and/or F, with an overall vehicular delay of 57 to 85 seconds.

Critical movements that operate at LOS E or F are generally observed for left turning movements at major intersections with long cycle length (160 to 180 seconds) and high through volumes. For the intersections on the Highway 7 segment with the median BRT lane (e.g., at Jane Street intersection), the eastbound and westbound left-turning movements operate with a 'protected-only' phase, which causes heavy delays and long queues for other intersection approaches.

For the Highway 7 and Jane Street intersection, heavy eastbound and westbound traffic combined with delays on the left-turning movements result in poor operations at this intersection, with a LOS F. Average vehicular delays of up to 244 seconds for the northbound left movement and 95<sup>th</sup> percentile queues of up to 213 metres for the westbound right are observed at this intersection.

**Table 5-3: VMC Intersection LOS Summary and Critical Movements - Afternoon Peak Hour**

Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Highway 7 and Highway 400 SB Off-Ramp	Signalized	79s	E	NBR	978s	F	411m
Highway 7 and Highway 400 NB Off-Ramp	Signalized	58s	E	SBR	799s	F	194m
Highway 7 and Commerce Street	Signalized	32s	C	EBL	88s	F	22m
				WBL	107s	F	7m
				NBL	59s	E	98m
				NBT	60s	E	38m
				SBL	57s	E	20m
				SBT	64s	E	10m





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Highway 7 and Edgeley Boulevard	Signalized	57s	E	EBL	136s	F	106m
				WBL	87s	F	38m
				WBT	66s	E	154m
				WBR	79s	E	149m
				NBL	61s	E	58m
				NBT	62s	E	36m
				SBL	60s	E	83m
				SBT	74s	E	91m
Highway 7 and Millway Avenue	Signalized	69s	E	EBL	94s	F	33m
				EBT	74s	E	212m
				EBR	68s	E	214m
				WBL	107s	F	15m
				NBL	71s	E	52m
				SBL	168s	F	112m
				SBT	119s	F	55m
Highway 7 and Jane Street	Signalized	81s	F	EBL	100s	F	8m
				EBT	72s	E	158s
				WBL	151s	F	96m
				WBT	88s	F	215m
				WBR	100s	F	213m
				NBL	196s	F	126m
				NBT	81s	F	189m
				SBL	193s	F	141m
Highway 7 and Maplecrete Road	Signalized	25s	C	EBL	93s	F	53m
				WBL	93s	F	21m
				NBL	100s	F	47m





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Highway 7 and Creditstone Road	Signalized	66s	E	NBT	72s	E	100m
				SBL	62s	E	13m
				SBT	66s	E	27m
				EBL	182s	F	115m
				EBR	59s	E	163m
				WBL	146s	F	107m
				WBT	63s	E	249m
				WBR	79s	E	269m
				NBL	95s	F	52m
				NBT	95s	F	168m
				NBR	72s	E	91m
				SBL	74s	E	96m
SBT	57s	E	82m				
Jane Street and Portage Parkway	Signalized	17s	B	WBL	64s	E	6m
				WBT	56s	E	37m
Jane Street and Apple Mill Road	Signalized	9s	A	EBL	98s	F	7m
Jane Street and Doughton Road	Signalized	16s	B	WBL	91s	F	117m
Jane Street and Interchange Way	Signalized	16s	B	EBL	63s	E	37m
				EBT	68s	E	9m
				WBL	67s	E	81m
Jane Street and Highway 407 WB Off-Ramp	Signalized	38s	D	NBL	178s	F	175m
Jane Street and Highway 407 EB Off-Ramp	Signalized	10s	A	-	-	-	-





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Portage Parkway and Applewood Crescent	Signalized	16s	B	-	-	-	-
Portage Parkway and Edgeley Boulevard	Signalized	31s	C	EBL	73s	E	48m
				WBT	72s	E	183m
				WBR	78s	E	183m
Portage Parkway and Buttermill Avenue	Stop-Controlled	25s	C	SBL	79s	F	123m
				SBR	75s	F	123m
Portage Parkway and Millway Avenue	Signalized	64s	E	EBL	67s	E	148m
				EBT	68s	E	148m
				EBR	67s	E	148m
				NBL	76s	E	29m
				SBL	89s	F	184m
				SBT	93s	F	184m
				SBR	84s	F	184m
Apple Mill Road and Applewood Crescent	Signalized	65s	E	WBL	237s	F	87m
Apple Mill Road and Commerce Street	Signalized	6s	A	-	-	-	-
Apple Mill Road and Edgeley Boulevard	Signalized	14s	B	-	-	-	-
Apple Mill Road and Millway Avenue	Signalized	49s	D	WBL	86s	F	27m
				SBT	95s	F	114m
				SBR	81s	F	108m
New Park Place and Edgeley Boulevard	Stop-Controlled	8s	A	-	-	-	-
New Park Place and Millway Avenue	Stop-Controlled	111s	F	EBL	238s	F	160m
				EBT	275s	F	160m







Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
				EBR	265s	F	160m
				WBL	153s	F	52m
				WBT	216s	F	52m
				WBR	147s	F	52m
				SBL	51s	F	13m
				SBT	77s	F	57m
				SBR	42s	E	52m
Interchange Way and Commerce Street (North)	Stop-Controlled	7s	A	-	-	-	-
Interchange Way and Commerce Street (South)	Stop-Controlled	25s	C	-	-	-	-
Interchange Way and Interchange Way	Signalized	20s	B	-	-	-	-
Interchange Way and Exchange Way	Stop-Controlled	4s	A	-	-	-	-
Commerce Street and Commerce Street	Stop-Controlled	9s	A	-	-	-	-
Exchange Avenue and Exchange Avenue	Stop-Controlled	10s	A	-	-	-	-
Exchange Avenue and Peelar Road	Stop-Controlled	4s	A	-	-	-	-
Creditstone Road and Barnes Court	Stop-Controlled	16s	C	-	-	-	-
Creditstone Road and McCleary Court	Signalized	20s	B	-	-	-	-
Creditstone Road and Doughton Road	Stop-Controlled	15s	B	-	-	-	-





Intersection	Control Type	Intersection		Critical Movements <sup>1</sup>			
		Delay	LOS	Movement	Delay	LOS	95 <sup>th</sup> Queue
Creditstone Road and Freshway Drive	Stop-Controlled	2s	A	-	-	-	-
Maplecrete Road and Doughton Road	Stop-Controlled	12s	B	-	-	-	-
Highway 7 and Highway 400 SB Off-Ramp	Signalized	79s	<b>E</b>	NBR	978s	<b>F</b>	411m

<sup>1</sup> Critical Movement at LOS E or F





During the afternoon peak hour, the majority of the VMC study area intersections operate at an acceptable overall LOS D or better, with the exception of Regional intersections such as Highway 7 intersections with Highway 400 off-ramps, Edgeley Boulevard, Millway Avenue, Jane Street and Creditstone Road, Millway Avenue intersections at Portage Parkway and New Park Place and the Apple Mill Road and Applewood Crescent intersection. These intersections operate at LOS E and/or F, with an overall vehicular delay of 57 seconds to 111 seconds.

Heavy delays and congestion were observed in both directions along Highway 7 approaching Jane Street. The persistent eastbound queuing between Millway Avenue and Jane Street (intersection distance of approximately 150 metres) prevents vehicles entering Highway 7 from Millway Avenue, causing queues to back-up and high delays for the southbound traffic on Millway Avenue.

The high average vehicular delays (LOS E) at Highway 400 off-ramp terminals are mainly attributed to the local street network. Colossus Drive opposing to the southbound off-ramp and Applewood Crescent opposing to the northbound off-ramp, both currently operate with a prohibited 'right-turn-on-red' phase during both peak hours, which causes significant high delays and long queues at the ramp terminals.

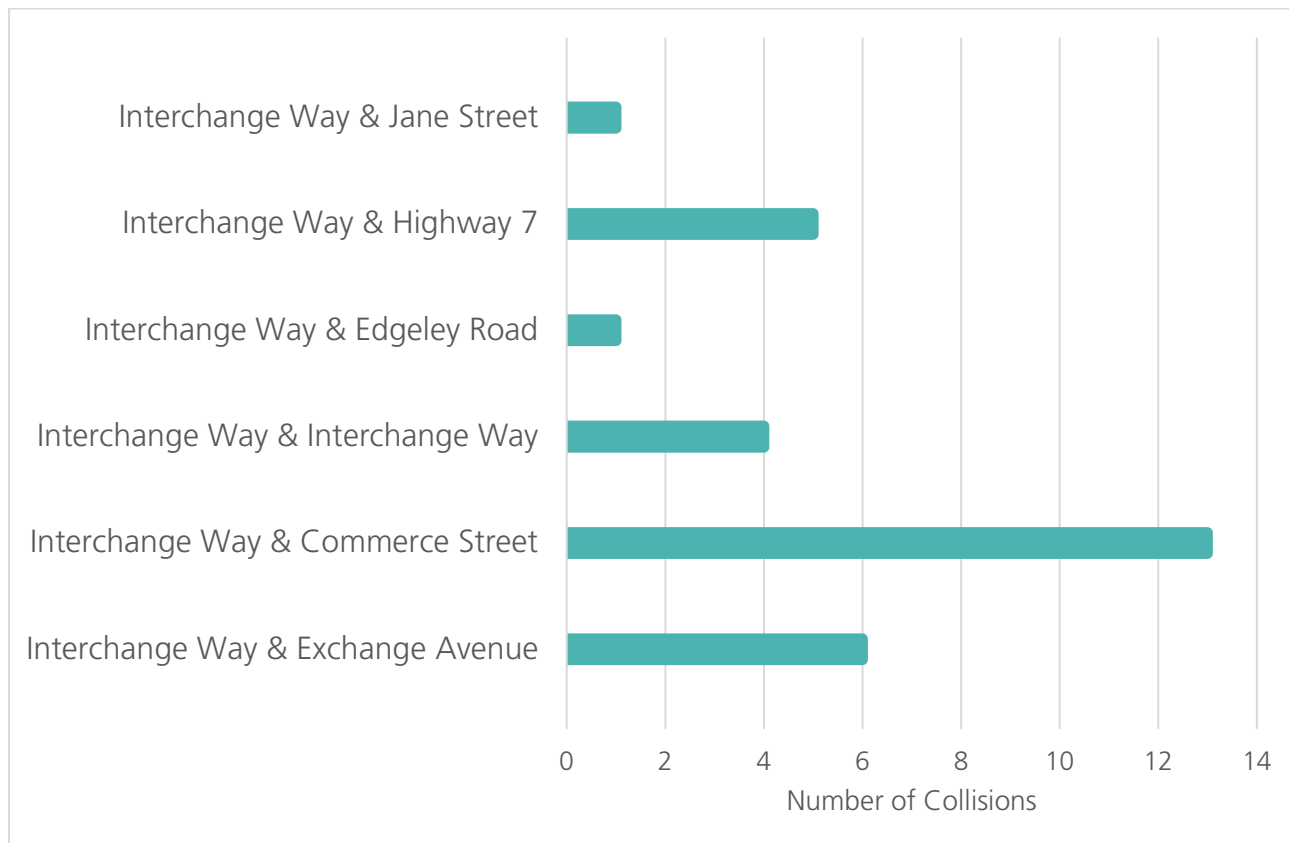
## 5.7 Collision History

Collision data for the VMC study area was provided by the City of Vaughan for a five-year period from 2015 to 2019. The collision data identifies the total number of collisions and its characteristics relating to collision severity, initial impact type and environment conditions at the time of the collision. Within the five-year period, a total of 30 collisions were recorded in the study area corridor. It is noted that the historical collision data does not identify the exact location of each collision due to the limitations in available GPS data. Therefore, the analysis was unable to identify at which precise intersection an incident had occurred. The distribution of the collisions is presented in Figure 5-5.





**Figure 5-5: Total Collision Distribution within VMC Study Area (2015-2019)**







### Pedestrian Level of Service - Segments

Sidewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume (AADT)	Presence of On-street Parking	Segment PLOS			
				Operating Speed (km/h)			
				≤30	>30 or 50	>50 or 60	>60 <sup>1</sup>
2.0 or more	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	B	N/A
			No	A	B	C	D
	0.5 to 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0	≤ 3000	NA	A	B	C	D
		> 3000	Yes	B	B	D	N/A
			No	B	C	E	F
1.8	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0.5 to 2	≤ 3000	N/A	A	B	B	D
		> 3000	Yes	A	C	C	N/A
			No	B	C	E	E
	0	≤ 3000	N/A	A	B	C	D
		> 3000	Yes	B	C	D	N/A
			No	C	D	F	F
1.5	> 2	≤ 3000	N/A	C	C	C	C
		> 3000	Yes	C	C	D	N/A
			No	C	D	E	E
	0.5 to 2	≤ 3000	N/A	C	C	C	D
		> 3000	Yes	C	C	D	N/A
			No	D	E	E	E
	0	N/A		D	E	F <sup>2</sup>	F <sup>2</sup>
	<1.5	N/A		F <sup>3</sup>	F <sup>3</sup>	F <sup>3</sup>	F <sup>3</sup>
	No sidewalk	N/A		C <sup>4</sup>	F <sup>3</sup>	F <sup>3</sup>	F <sup>3</sup>

Source: City of Ottawa's MMLOS Analysis Guidelines





## Pedestrian Level of Service - Intersections

5.1 Crossing Distance & Conditions		
Total travel lanes crossed	No median	With Median (>2.4m)
2	120	120
3	105	105
4	88	90
5	72	75
6	55	60
7	39	45
8	23	30
9	6	15
10	-10	0
Island Refuge	Points	
No	-4	
Yes	0	

5.3 Corner Radius	
Corner radius	Points
Greater than 25m	-9
> 15m to 25m	-8
> 10m to 15m	-6
> 5m to 10m	-5
> 3m to 5m	-4
Less than/equal to 3m	-3
No right turn	0
Right turn channel with receiving	-3
Right turn "smart channel"	2

5.2 Signal Phasing & Timing Features	
Left turn conflict ("Left_turns")	Points
Permissive	-8
Protected/permissive	-8
Protected	0
No left turn/prohibited	0
Right turn conflict ("Right_turns")	Points
Permissive or yield control	-5
Protected/permissive	-5
Protected	0
No right turn	0
Right turns on red ("RTOR")	Points
RTOR allowed	-3
RTOR prohibited at certain time(s)	-2
RTOR prohibited	0
Leading ped interval? ("LPI")	Points
No	-2
Yes	0

5.4 Crosswalk Treatment	
Crosswalk treatment ("Crosswalk")	Points
Standard transverse markings	-7
Textured/coloured pavement	-4
Zebra stripe hi-vis markings	-4
Raised crosswalk	0

Source: City of Ottawa's MMLOS Analysis Guidelines





Pedestrian Exposure to Traffic LOS	
Points threshold	LOS
≥90	A
≥75	B
≥60	C
≥45	D
≥30	E
<30	F

The pedestrian exposure to traffic LOS is assessed calculating the points using Tables 5.1 to 5.4. The pedestrian delay LOS is determined using the equation presented in table below.

Average Pedestrian Crossing Delay Component	
$\text{Delay} = 0.5 \times \frac{(\text{Cycle Length} - \text{Pedestrian Effective Walk Time})^2}{\text{Cycle Length}}$	
< 10 s per intersection leg	LOS A
≥10 to 20 sec	LOS B
>20 to 30 sec	LOS C
>30 to 40 sec	LOS D
>40 to 60 sec	LOS E
> 60 sec	LOS F

Source: City of Ottawa’s MMLOS Analysis Guidelines





## Bicycle Level of Service - Segments

Type of Bikeway		LOS
<b>Physically Separated Bikeway</b> (cycle tracks, protected bike lanes and multi-use paths). Physical separation refers to, but is not limited to, curbs, raised medians, bollards and parking lanes (adjacent to the bike lane along the travelled way i.e. not curbside).		<b>A</b>
<b>Bike Lanes Not Adjacent Parking Lane - Select Worst Scoring Criteria</b>		
No. of Travel Lanes	1 travel lane in each direction	A
	2 travel lanes in each direction separated by a raised median	B
	2 travel lanes in each direction without a separating median	C
	More than 2 travel lanes in each direction	D
Bike Lane Width	> 1.8 m wide bike lane (includes marked buffer and paved gutter width)	A
	≥1.5 m to <1.8 m wide bike lane (includes marked buffer and paved gutter width)	B
	≥1.2 m to <1.5 m wide bike lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 50 km/h operating speed	A
	60 km/h operating speed	C
	> 70 km/h operating speed	E
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
<b>Bike Lanes Adjacent to curbside Parking Lane - Select Worst Scoring Criteria</b>		
No. of Travel Lanes	1 travel lane in each direction	A
	2 or more travel lanes in each direction	C
Bike Lane and Parking Lane Width	4.5 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	A
	4.25 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	B
	≤ 4.0 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	C
Operating Speed	< 40 km/h operating speed	A
	50 km/h operating speed	B
	60 km/h operating speed	D
	> 70 km/h operating speed	F
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
<b>Mixed Traffic</b>		
No. of Travel Lanes and Operating Speed	2 travel lanes; ≤ 40 km/h; no marked centerline or classified as residential	A
	2 to 3 travel lanes; ≤ 40 km/h	B
	2 travel lanes; 50 km/h; no marked centerline or classified as residential	B
	2 to 3 travel lanes; 50 km/h	D
	4 to 5 travel lanes; ≤ 40 km/h	D
	4 to 5 travel lanes; ≥ 50 km/h	E
	6 or more travel lanes; ≤ 40 km/h	E
≥ 60 km/h	F	
<b>Unsignalized Crossing along Route: no median refuge</b>		
No. of Travel Lanes on Side Street and Operating Speed	3 or less lanes being crossed; ≤ 40 km/h	A
	4 to 5 lanes being crossed; ≤ 40 km/h	B
	3 or less lanes being crossed; 50 km/h	B
	4 to 5 lanes being crossed; 50 km/h	C
	3 or less lanes being crossed; 60 km/h	C
	4 to 5 lanes being crossed; 60 km/h	D
	6 or more lanes being crossed; ≤ 40 km/h	E
	3 or less lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 50 km/h	F
4 to 5 lanes being crossed; ≥ 65 km/h	F	





Unsignalized Crossing along Route: with median refuge (> 1.8 m wide)		
No. of Travel Lanes on Side Street and Operating Speed	5 or less lanes being crossed; ≤ 40 km/h	A
	3 or less lanes being crossed; 50 km/h	A
	6 or more lanes being crossed; ≤ 40 km/h	B
	4 to 5 lanes being crossed; 50 km/h	B
	3 or less lanes being crossed; 60 km/h	B
	6 or more lanes being crossed; 50 km/h	C
	4 to 5 lanes being crossed; 60 km/h	C
	3 or less lanes being crossed; ≥ 65 km/h	D
	6 or more lanes being crossed; 60 km/h	E
	4 to 5 lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 65 km/h	F

Source: City of Ottawa's MMLOS Analysis Guidelines



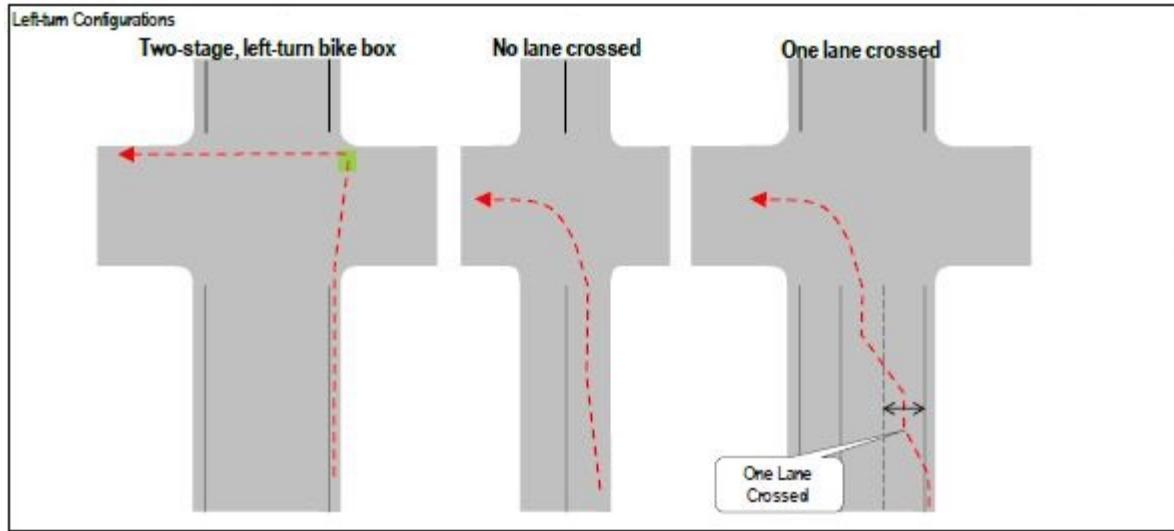




## Bicycle Level of Service - Intersections

Bikeway and Intersection Type		LOS
<b>Bike Lanes or higher order facility on a Signalized Intersection Approach</b>		
Right-turn Lane and Turning Speed of Motorists	No impact on LTS (as long as cycling facility remains to the right of any turn lane - otherwise see pocket bike lanes below)	
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; $\leq 50$ km/h	A
	No lane crossed, $\leq 50$ km/h	B
	1 lane crossed, $\leq 40$ km/h	B
	No lane crossed, $\geq 60$ km/h	C
	1 lane crossed, 50 km/h	C
	2 or more lanes crossed, $\leq 40$ km/h	D
	1 lane crossed, $\geq 60$ km/h	E
	2 or more lanes crossed, $\geq 50$ km/h	F
	All other single left-turn lane configurations	F
Dual left-turn lanes (shared or exclusive)	F	
<b>Pocket Bike Lanes on a Signalized Intersection Approach</b>		
Right-turn Lane and Turning Speed of Motorists	Right-turn lane introduced to the right of the bike lane and $\leq 50$ m long, turning speed $\leq 25$ km/h (based on curb radii and angle of intersection)	B
	Right-turn lane introduced to the right of the bike lane and $> 50$ m long, turning speed $\leq 30$ km/h (based on curb radii and angle of intersection)	D
	Bike lane shifts to the left of the right-turn lane, turning speed $\leq 25$ km/h (based on curb radii and angle of intersection)	D
	Right-turn lane with any other configurations	F
	Dual right-turn lanes (shared or exclusive)	F
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; $\leq 50$ km/h	A
	No lane crossed, $\leq 50$ km/h	B
	1 lane crossed, $\leq 40$ km/h	B
	No lane crossed, $\geq 60$ km/h	C
	1 lane crossed, 50 km/h	C
	2 or more lanes crossed, $\leq 40$ km/h	D
	1 lane crossed, $\geq 60$ km/h	E
	2 or more lanes crossed, $\geq 50$ km/h	F
	All other single left-turn lane configurations	F
Dual left-turn lanes (shared or exclusive)	F	
<b>Mixed Traffic on a Signalized Intersection Approach</b>		
Right-turn Lane and Turning Speed of Motorists	Right-turn lane 25 to 50 m long, turning speed $\leq 25$ km/h (based on curb radii and angle of intersection)	D
	Right-turn lane 25 to 50 m long, turning speed $> 25$ km/h (based on curb radii and angle of intersection)	E
	Right-turn lane longer than 50 m	F
	Dual right-turn lanes (shared or exclusive)	F
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; $\leq 50$ km/h	A
	No lane crossed, $\leq 50$ km/h	B
	1 lane crossed, $\leq 40$ km/h	B
	No lane crossed, $\geq 60$ km/h	D
	1 lane crossed, 50 km/h	D
	2 or more lanes crossed, $\leq 40$ km/h	D
	1 lane crossed, $\geq 60$ km/h	F
	2 or more lanes crossed, $\geq 50$ km/h	F
	All other single left-turn lane configurations	F
Dual left-turn lanes (shared or exclusive)	F	





Source: City of Ottawa's MMLOS Analysis Guidelines



### Example of Pedestrian and Bicycle LOS at Segment

Highway 7 Segment		Edgeley Boulevard and Millway Avenue	
		Eastbound	Westbound
Pedestrian	Sidewalk Width	≥ 2 m	≥ 2 m
	Boulevard Width	> 2 m	> 2 m
	Avg Daily Curb Lane Traffic Volume	> 3000	> 3000
	Operating Speed On-Street Parking	> 50 to 60 km/h No	> 50 to 60 km/h No
Level of Service		C	C
Bicycle	Type of Cycling Facility	Curbside Bike Lane	Curbside Bike Lane
	Number of Travel Lanes	≥ 3 each direction	≥ 3 each direction
	Operating Speed	>50 to 70 km/h	>50 to 70 km/h
	# of Lanes & Operating Speed LOS	D	D
	Bike Lane (+ Parking Lane) Width	≥ 1.8 m	≥ 1.8 m
	Bike Lane Width LOS	A	A
	Bike Lane Blockages	Rare	Rare
	Blockage LOS	A	A
	Median Refuge Width (no median = < 1.8 m)	-	-
	No. of Lanes at Unsignalized Crossing	-	-
	Sidestreet Operating Speed	-	-
	Unsignalized Crossing - Lowest LOS	-	-
	Level of Service	D	D





### Example of Pedestrian and Bicycle LOS at Intersection

Intersection		Highway 7 and Millway Avenue			
Crossing Side		North	South	East	West
Pedestrian	Lanes	5	5	9	9
	Median	No Median - 2.4 m	No Median - 2.4 m	Median > 2.4 m	Median > 2.4 m
	Conflicting Left Turns	Protected	Protected	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RTOR)?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	5-10m	5-10m	5-10m	5-10m
	Crosswalk Type	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement
	PETSI Score	49	49	-16	-16
	Ped. Exposure to Traffic LOS	D	D	F	F
	Cycle Length	169	169	169	169
	Effective Walk Time	11	11	11	11
	Average Pedestrian Delay	74	74	74	74
	Pedestrian Delay LOS	F	F	F	F
Level of Service	F	F	F	F	





Intersection		Highway 7 and Millway Avenue			
Approach		North	South	East	West
Bicycle	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	If Dedicated Right turn Lane, Then Right Turn Configuration, Else “-“	Not Applicable	-	Not Applicable	Not Applicable
	Dedicated Right Turning Speed	Not Applicable	-	Not Applicable	Not Applicable
	Cyclist Through Movement LOS	Not Applicable	-	Not Applicable	Not Applicable
	Separated or Mixed Traffic	Separated	Mixed Traffic	Separated	Separated
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	2-stage, LT box	2-stage, LT box
	Operating Speed	≤ 40 km/h	≤ 40 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h
	Left Turning Cyclist LOS	D	D	A	A
	Level of Service	D	D	A	A
D					







### Existing (2020) Segment PLOS Results for East - West Corridors

Corridor	Segment	Eastbound PLOS	Westbound PLOS
Portage Pkwy	Applewood Cres and Edgeley Blvd	C	F
Portage Pkwy	Edgeley Blvd and Buttermill Ave	C	F
Portage Pkwy	Buttermill Ave and Millway Ave	C	F
Portage Pkwy	Millway Ave and Jane St	C	C
Apple Mill Rd	Applewood Cres and Commerce St	A	A
Apple Mill Rd	Commerce St and Edgeley Blvd	A	A
Apple Mill Rd	Edgeley Blvd and Transit Square	A	F
Apple Mill Rd	Transit Square and Millway Ave	A	A
Apple Mill Rd	Millway Ave and Jane St	A	A
New Park Pl	Edgeley Blvd and TTC Plaza	A	A
New Park Pl	TTC Plaza and Millway Ave	A	A
Barnes Court	West of Creditstone Road	F	F
McCleary Court	East of Creditstone Road	A	F
McCleary Court	West of Creditstone Road	F	F
Highway 7	Colossus Dr and Applewood Cres	C	C
Highway 7	Applewood Cres and Commerce St	C	C
Highway 7	Commerce St and Edgeley Blvd	C	C
Highway 7	Edgeley Blvd and Millway Ave	C	C
Highway 7	Millway Ave and Jane St	C	C
Highway 7	Jane St and Maplecrete Rd	C	C
Highway 7	Maplecrete Rd and Creditstone Rd	C	C
Commerce St	Commerce St and Interchange Way (North)	F	F
Commerce St	Commerce St and Interchange Way (South)	A	C
Doughton Rd	Jane St and Maplecrete Rd	F	F
Doughton Rd	Maplecrete Rd and Creditstone Rd	F	F
Doughton Rd	East of Creditstone Road	F	C
Freshway Dr	East of Creditstone Road	F	B





Corridor	Segment	Eastbound PLOS	Westbound PLOS
Interchange Way	Commerce St and Interchange Way	B	F
Interchange Way	Interchange Way and Exchange Ave	A	A
Interchange Way	Exchange Ave and Jane St	C	A
Exchange Ave	West of Peelar Rd	F	F
Peelar Rd	Peelar Rd and Maplecrete Rd	F	F
Peelar Rd	Maplecrete Rd and Creditstone Rd	F	F

### Existing (2020) Segment PLOS Results for North - South Corridors

Corridor	Segment	Northbound PLOS	Southbound PLOS
Applewood Cres	Portage Pkwy and Apple Mill Rd	A	F
Applewood Cres	Apple Mill Rd and Highway 7	A	F
Commerce St	Apple Mill Rd and Highway 7	A	A
Commerce St	Highway 7 and Commerce St	F	F
Commerce St	Commerce St and Commerce St	F	F
Commerce St	Commerce St and Interchange Way	F	B
Edgeley Blvd	Portage Pkwy and Apple Mill Rd	C	C
Edgeley Blvd	Apple Mill Rd and New Park Pl	C	C
Edgeley Blvd	New Park Pl and Highway 7	C	D
Interchange Way	Highway 7 and Commerce St	A	A
Interchange Way	Commerce St and Commerce St	C	C
Interchange Way	Commerce St and Interchange Way	C	C
Exchange Ave	Interchange Way and Exchange Ave	F	A
Millway Ave	Portage Pkwy and Apple Mill Rd	A	A
Millway Ave	Apple Mill Rd and New Park Pl	A	A
Millway Ave	New Park Pl and Hwy 7	A	A
Jane St	Portage Pkwy and Apple Mill Rd	F	F





Corridor	Segment	Northbound PLOS	Southbound PLOS
Jane St	Apple Mill Rd and Highway 7	F	F
Jane St	Highway 7 and Doughton Rd	F	F
Jane St	Doughton Rd and Interchange Way	E	D
Jane St	Interchange Way and Hwy 407 WB Off-Ramp	E	D
Jane St	Hwy 407 WB and EB Off-Ramps	E	E
Peelar Rd	Interchange Way and Peelar Rd	F	F
Maplecrete Rd	North of Highway 7	A	F
Maplecrete Rd	Highway 7 and Doughton Rd	F	F
Maplecrete Rd	Doughton Rd and Peelar Rd	F	F
Creditstone Rd	North of Barnes Ct	C	D
Creditstone Rd	Barnes Ct and McCleary Ct	C	D
Creditstone Rd	McCleary Ct and Highway 7	C	D
Creditstone Rd	Highway 7 and Doughton Rd	F	F
Creditstone Rd	Doughton Rd and Freshway Dr	F	F
Creditstone Rd	Freshway Dr and Peelar Rd	F	F
Creditstone Rd	South of Peelar Road	F	F

### Existing (2020) Intersection PLOS Results

Intersection	Approach	Pedestrian Exposure to Traffic LOS	Pedestrian Delay LOS
Portage Parkway and Applewood Crescent	North	B	B
	South	E	B
	East	D	B
	West	E	B
Portage Parkway and Edgeley Blvd	North	D	B
	South	D	B
	East	C	B
	West	E	B





Intersection	Approach	Pedestrian Exposure to Traffic LOS	Pedestrian Delay LOS
Portage Parkway and Millway Avenue	North	B	C
	South	E	C
	East	B	D
	West	B	D
Portage Parkway and Jane Street	North	F	E
	South	F	E
	East	D	E
	West	D	E
Apple Mill Road and Applewood Crescent	North	D	C
	South	D	C
	East	D	C
Apple Mill Road and Commerce Street	South	C	B
	East	C	B
	West	C	B
Apple Mill Road and Edgeley Boulevard	North	D	B
	South	D	B
	East	D	B
	West	D	B
Apple Mill Road and Millway Avenue	North	E	E
	South	E	E
	East	D	D
	West	D	D
Apple Mill Road and Jane Street	North	C	F
	South	D	F
	West	D	F
Creditstone Road and McCleary Court	North	D	B
	South	D	B
	East	B	B
	West	B	B
Highway 7 and Colossus Drive	North	B	E
	West	C	E
Highway 7 and Applewood Crescent	North	F	E
	East	F	E





Intersection	Approach	Pedestrian Exposure to Traffic LOS	Pedestrian Delay LOS
Highway 7 and Commerce Street	North	D	E
	South	B	E
	East	F	E
	West	F	E
Highway 7 and Edgeley Blvd	North	D	F
	South	D	F
	East	F	F
	West	F	F
Highway 7 and Millway Ave	North	D	F
	South	D	F
	East	F	F
	West	F	F
Highway 7 and Jane Street	North	E	F
	South	E	F
	East	F	F
	West	F	F
Highway 7 and Maplecrete Road	North	B	F
	South	B	F
	East	F	F
	West	F	F
Highway 7 and Creditstone Road	North	D	F
	South	B	F
	East	F	F
	West	F	F
Interchange Way and Interchange Way	North	C	D
	East	B	D
	West	B	D
Jane Street and Doughton Road	North	D	F
	East	C	F
Jane Street and Interchange Way	North	F	F
	South	F	F
	East	B	F
	West	D	F







Intersection	Approach	Pedestrian Exposure to Traffic LOS	Pedestrian Delay LOS
Jane Street and Highway 407 WB Off-Ramp	North	F	E
	West	B	E
Jane Street and Highway 407 EB Off-Ramp	South	D	E
	West	B	E





### Existing (2020) Segment BLOS Results for East - West Corridors

Corridor	Segment	Eastbound PLOS	Westbound PLOS
Portage Pkwy	Applewood Cres and Edgeley Blvd	E	E
Portage Pkwy	Edgeley Blvd and Buttermill Ave	D	D
Portage Pkwy	Buttermill Ave and Millway Ave	D	D
Portage Pkwy	Millway Ave and Jane St	D	D
Apple Mill Rd	Applewood Cres and Commerce St	A	A
Apple Mill Rd	Commerce St and Edgeley Blvd	A	A
Apple Mill Rd	Edgeley Blvd and Transit Square	A	A
Apple Mill Rd	Transit Square and Millway Ave	A	A
Apple Mill Rd	Millway Ave and Jane St	A	A
New Park Pl	Edgeley Blvd and TTC Plaza	D	D
New Park Pl	TTC Plaza and Millway Ave	B	B
Barnes Court	West of Creditstone Road	B	B
McCleary Court	East of Creditstone Road	B	B
McCleary Court	West of Creditstone Road	B	B
Highway 7	Colossus Dr and Applewood Cres	A	A
Highway 7	Applewood Cres and Commerce St	A	A
Highway 7	Commerce St and Edgeley Blvd	D	D
Highway 7	Edgeley Blvd and Millway Ave	D	D
Highway 7	Millway Ave and Jane St	D	D
Highway 7	Jane St and Maplecrete Rd	D	D
Highway 7	Maplecrete Rd and Creditstone Rd	D	D
Commerce St	Commerce St and Interchange Way (North)	D	D
Commerce St	Commerce St and Interchange Way (South)	D	D
Doughton Rd	Jane St and Maplecrete Rd	D	D
Doughton Rd	Maplecrete Rd and Creditstone Rd	D	D
Doughton Rd	East of Creditstone Road	D	D
Freshway Dr	East of Creditstone Road	B	B





Corridor	Segment	Eastbound PLOS	Westbound PLOS
Interchange Way	Commerce St and Interchange Way	D	D
Interchange Way	Interchange Way and Exchange Ave	D	D
Interchange Way	Exchange Ave and Jane St	D	D
Exchange Ave	West of Peelar Rd	D	D
Peelar Rd	Peelar Rd and Maplecrete Rd	B	B
Peelar Rd	Maplecrete Rd and Creditstone Rd	B	B

### Existing (2020) Segment BLOS Results for North-South Corridors

Corridor	Segment	Northbound PLOS	Southbound PLOS
Applewood Cres	Portage Pkwy and Apple Mill Rd	A	E
Applewood Cres	Apple Mill Rd and Highway 7	A	E
Commerce St	Apple Mill Rd and Highway 7	D	D
Commerce St	Highway 7 and Commerce St	D	D
Commerce St	Commerce St and Commerce St	D	D
Commerce St	Commerce St and Interchange Way	D	D
Edgeley Blvd	Portage Pkwy and Apple Mill Rd	E	E
Edgeley Blvd	Apple Mill Rd and New Park Pl	E	E
Edgeley Blvd	New Park Pl and Highway 7	E	E
Interchange Way	Highway 7 and Commerce St	E	E
Interchange Way	Commerce St and Commerce St	D	D
Interchange Way	Commerce St and Interchange Way	D	D
Exchange Ave	Interchange Way and Exchange Ave	D	D
Millway Ave	Portage Pkwy and Apple Mill Rd	C	A
Millway Ave	Apple Mill Rd and New Park Pl	C	C
Millway Ave	New Park Pl and Hwy 7	C	C
Jane St	Portage Pkwy and Apple Mill Rd	E	E





Corridor	Segment	Northbound PLOS	Southbound PLOS
Jane St	Apple Mill Rd and Highway 7	E	E
Jane St	Highway 7 and Doughton Rd	E	E
Jane St	Doughton Rd and Interchange Way	E	E
Jane St	Interchange Way and Hwy 407 WB Off-Ramp	E	E
Jane St	Hwy 407 WB and EB Off-Ramps	E	E
Peelar Rd	Interchange Way and Peelar Rd	D	D
Maplecrete Rd	North of Highway 7	D	D
Maplecrete Rd	Highway 7 and Doughton Rd	D	D
Maplecrete Rd	Doughton Rd and Peelar Rd	D	D
Creditstone Rd	North of Barnes Ct	D	D
Creditstone Rd	Barnes Ct and McCleary Ct	D	D
Creditstone Rd	McCleary Ct and Highway 7	E	E
Creditstone Rd	Highway 7 and Doughton Rd	D	D
Creditstone Rd	Doughton Rd and Freshway Dr	B	B
Creditstone Rd	Freshway Dr and Peelar Rd	B	B
Creditstone Rd	South of Peelar Road	B	B

### Existing (2020) Intersection BLOS Results

Intersection	Approach	Bicycle LOS
Portage Parkway and Applewood Crescent	North	B
	South	B
	East	D
	West	D
Portage Parkway and Edgeley Blvd	North	D
	South	D
	East	D
	West	F





Intersection	Approach	Bicycle LOS
Portage Parkway and Millway Avenue	North	B
	South	D
	East	B
	West	B
Portage Parkway and Jane Street	North	F
	South	F
	East	D
	West	D
Apple Mill Road and Applewood Crescent	North	B
	South	B
	East	B
Apple Mill Road and Commerce Street	South	D
	East	A
	West	A
Apple Mill Road and Edgeley Boulevard	North	D
	South	D
	East	B
	West	B
Apple Mill Road and Millway Avenue	North	A
	South	A
	East	A
	West	A
Apple Mill Road and Jane Street	North	C
	South	F
	West	B
Creditstone Road and McCleary Court	North	D
	South	D
	East	B
	West	B
Highway 7 and Colossus Drive	North	F
	South	B
	East	B
	West	B





Intersection	Approach	Bicycle LOS
Highway 7 and Applewood Crescent	North	B
	South	F
	East	C
	West	C
Highway 7 and Commerce Street	North	F
	South	D
	East	A
	West	A
Highway 7 and Edgeley Blvd	North	F
	South	E
	East	A
	West	A
Highway 7 and Millway Ave	North	D
	South	D
	East	A
	West	A
Highway 7 and Jane Street	North	F
	South	F
	East	A
	West	D
Highway 7 and Maplecrete Road	North	D
	South	D
	East	A
	West	A
Highway 7 and Creditstone Road	North	F
	South	D
	East	A
	West	A
Interchange Way and Interchange Way	North	D
	East	D
	West	D
Jane Street and Doughton Road	North	F
	South	F







Intersection	Approach	Bicycle LOS
Jane Street and Interchange Way	East	D
	North	F
	South	F
	East	B
	West	D
Jane Street and Highway 407 WB Off-Ramp	North	C
	South	F
	East	F
Jane Street and Highway 407 EB Off-Ramp	North	C
	South	C
	West	F





### Survey Dates for Turning Movement Count Data

Intersections	Survey Dates
Highway 7 and Highway 400 SB Off-ramp	Tuesday, November 19, 2019
Highway 7 and Highway 400 NB Off-ramp	Thursday, June 4, 2020
Highway 7 and Commerce Street	Thursday, June 4, 2020
Highway 7 and Edgeley Boulevard/ Interchange Way	Thursday, June 4, 2020
Highway 7 and Millway Avenue	Tuesday, November 19, 2019
Highway 7 and Jane Street	Tuesday, November 19, 2019
Highway 7 and Maplecrete Road	Tuesday, October 20, 2020
Highway 7 and Creditstone Road	Tuesday, June 30, 2020
Jane Street and Portage Parkway	Thursday, November 22, 2018
Jane Street and Apple Mill Road	Tuesday, October 20, 2020
Jane Street and Doughton Road	Tuesday, October 20, 2020
Jane Street and Interchange Way/ Peelar Road	Tuesday, October 20, 2020
Jane Street and Highway 407 WB Off-ramp	Wednesday, January 22, 2014
Jane Street and Highway 407 EB Off-ramp	Tuesday, December 20, 2016
Creditstone Road and Barnes Court	Tuesday, October 20, 2020
Creditstone Road and McCleary Court	Thursday, October 3, 2019
Creditstone Road and Doughton Road	Tuesday, October 20, 2020
Creditstone Road and Freshway Drive	Thursday, January 19, 2017
Creditstone Road and Peelar Road	Tuesday, October 20, 2020
Edgeley Boulevard and Portage Parkway	Thursday, October 10, 2019
Edgeley Boulevard and Apple Mill Road	Thursday, June 4, 2020
Edgeley Boulevard and New Park Place	Tuesday, October 20, 2020





Intersections	Survey Dates
Interchange Way and Commerce Street	Tuesday, July 2, 2019
Interchange Way and Interchange Way	Thursday, June 4, 2020
Portage Parkway and Applewood Crescent	Thursday, June 4, 2020
Portage Parkway and Buttermill Avenue	Tuesday, October 20, 2020
Portage Parkway and Millway Avenue	Tuesday, January 16, 2018
Apple Mill Road and Applewood Crescent	Thursday, June 4, 2020
Apple Mill Road and Millway Avenue	Wednesday, March 11, 2020
Millway Avenue and New Park Place	Tuesday, March 10, 2020
Maplecrete Road and Doughton Road	Tuesday, October 20, 2020
Maplecrete Road and Peelar Road	Tuesday, October 20, 2020

