

VAUGHAN METROPOLITAN CENTRE

STREETSCAPE AND OPEN SPACE PLAN



DRAFT PHASE 1 REPORT: BACKGROUND + ANALYSIS

May 2012

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Prepared For:



Prepared By:



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1.0 Introduction

1.1 Background of the Vaughan Metropolitan Centre

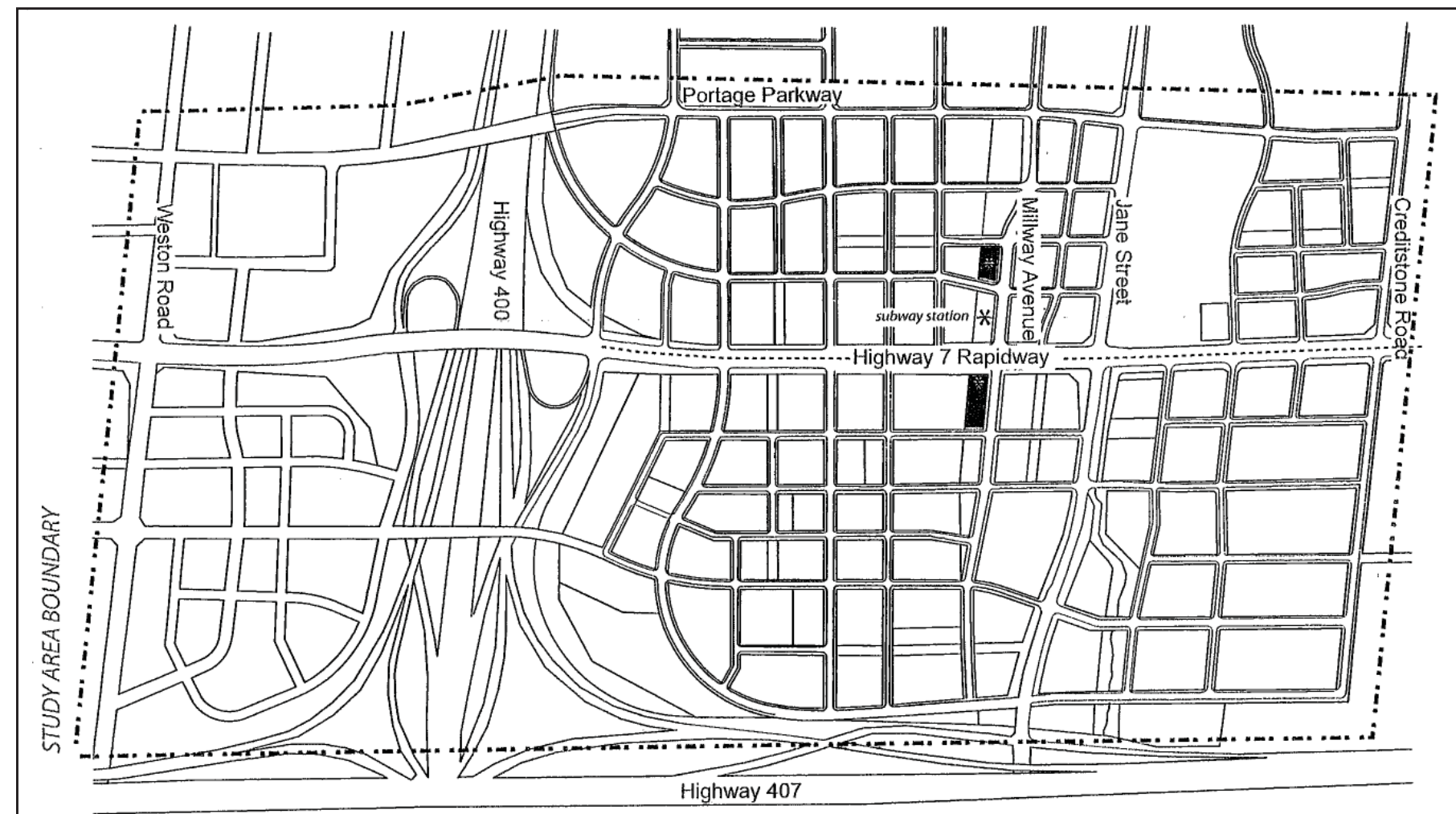
A comprehensive Streetscape and Open Space Master Plan Study was completed in 2007 for the Vaughan Corporate Centre (VCC); the Vaughan Corporate Centre has since been renamed and is now known as the Vaughan Metropolitan Centre (VMC). The original VCC Streetscape and Open Space Master Plan Study provided the design intent, guidelines, and streetscape and open space designs to inform the planning and build out of the area. It also outlined strategic implementation strategies to guide the future budgeting and construction of the streetscape, parks and open space system.

Since then, the vision has been further refined with the completion of a Secondary Plan for the Vaughan Metropolitan Centre in 2010 as part of the Official Plan Review process. The vision for the Vaughan Metropolitan Centre, as established in the VMC Secondary Plan, is to build a diverse, sustainable, pedestrian-friendly, transit-oriented downtown for the City of Vaughan – a hub of social, economic and cultural activity. In the new VMC, the spaces between the buildings are equally important as the buildings themselves, with a clearly defined and connected green infrastructure of parks, open spaces, greenways and streets. The opportunity exists to capitalize on the upcoming construction of the public realm, infrastructure, and private development to create a socially, environmentally and economically sustainable urban framework.

A number of significant public transit initiatives have moved forward since the 2007 Plan was completed, and are currently in various stages of planning and design. These initiatives include:

- vivaNext Highway 7 Rapidway – includes dedicated centre lanes and stations in roadway for Viva vehicles (Yonge Street to Pine Valley Drive). The design / build within the VMC is anticipated to be completed by 2015, in coordination with the subway station opening;
- TTC Toronto-York Spadina subway line extension with a new subway station in the VMC, at the corner of Highway 7 and Millway Avenue (opening 2015); and,
- York Region Rapid Transit bus terminal is planned on Millway Avenue, north of Highway 7 with a link to new subway station.

Combined, these initiatives create an “Anchor” Mobility Hub at Highway 7 and Millway Avenue. As defined in the Regional Transportation Plan for the Greater Toronto Hamilton Area (GTHA), a mobility hub consists of major transit stations with surrounding areas that have high development potential and to become vibrant urban destinations where all modes of transportation seamlessly come together to support an intense concentration of employment, living, shopping and recreation.



Vaughan Metropolitan Centre Streetscape and Open Space Plan Study Area

1.2 Purpose of the Plan

The main purpose of the Vaughan Metropolitan Streetscape and Open Space Plan is to provide a green infrastructure framework for the public and semi-public spaces (those spaces in between the buildings), including parks, environmental open spaces, greenways, public squares, pedestrian mews and streets.

Key goals identified for the Plan are to:

- Define and communicate a strong visual identity for the VMC's public realm, including definition between the various planned precincts within the VMC;
- Define catalytic public realm design strategies / tactics to promote cultural, social, commercial and recreational activities within the urban core, and enhance overall quality of life;
- Develop a streetscape and open space framework that is resilient and adaptable to support short, medium, and long term transformations;
- Support sustainability goals and objectives for the VMC;
- Reconnect the urban fabric with a restored Black Creek, re-establishing the landscape and watershed context;
- Integrate transit infrastructure with the transforming urban fabric;
- Support pedestrian, cyclist, transit and motorist experiences for all ages and abilities;
- Identify opportunities and implementation strategies for the incorporation of public art into the public realm;
- Encourage a high quality of urbanity, design and materials for development within VMC; and,
- Identify phasing and implementation strategies for construction of public realm elements within the VMC.



Existing Conditions of VMC looking northeast (VMC Secondary Plan, 2010)



Proposed 2031 Conditions in VMC looking northeast (VMC Secondary Plan, 2010)

“Provide a green infrastructure framework for the public and semi-private realm.”

- VMC Streetscape and Open Space Plan Terms of Reference (2011)

2.1 Introduction

A number of context documents related to the environment, economy and planning were reviewed in order to gain a full understanding of the issues and opportunities facing the VMC today. This framework provides the necessary background information as well as a solid foundation upon which to develop the Streetscape and Open Space Plan for the Vaughan Metropolitan Centre.



Selection of context documents reviewed

2.2 Environmental Framework

2.2.1 Green Directions Vaughan (2009)

Adopted by Council in April 2009, Green Directions is the Community Sustainability and Environmental Master Plan for the City of Vaughan. This document serves as the City's Integrated Community Sustainability Plan (ICSP), and establishes the principles of sustainability in Vaughan, which will ultimately be utilized in the development of master plans to achieve a "healthy natural environment, vibrant communities and a strong economy". Green Directions identifies a series of recommended actions providing direction for the community to fully realize sustainability objectives (environmental, cultural, social and economic). The key goals and actions identified within the document include the following:

- Significantly reduce the use of natural resources and amount of waste generated;
- Ensure sustainable development and redevelopment;
- Ensure that Vaughan is easy to get around with low environmental impact;
- Create a vibrant community where citizens, businesses and visitors thrive;
- Be leaders in advocacy and education on sustainability issues; and,
- Ensure a supportive system for the implementation of Green Directions.

2.1.2 Black Creek Stormwater Optimization Study (2011)

The Black Creek Stormwater Optimization Study – Municipal Class Environmental Assessment Master Plan (Ph. 1 + 2) was completed in May 2011 by AECOM Canada Ltd. The overall goal of the study is to address the ongoing flooding, water quality and channel erosion issues as identified within the Study Area (Steeles Avenue to Major MacKenzie Drive, between Keele Street and Pine Valley Drive).

The study notes that a number of proposed development initiatives are scheduled for implementation with the Study Area, which are to be considered as part of the Study. The opportunity exists to develop a comprehensive strategy to establish flood control and erosion protection works for existing properties and future / planned development with the Study Area, and improving the water quality of the Creek while enhancing the aquatic and terrestrial habitats. Recommendations and a preferred alternative regarding key issues are identified in the Study, including:

- Flooding – Regional Storm Improvements: Construction of a new naturalized channel to replace segment of Black Creek between Edgeley Pond and 407ETR and new bridges at road crossings (Highway 7, Doughton Road and interchange Way).
- Water Quality – SWM Quality Ponds: Retrofit of many existing SWM ponds and construction of at least one new SWM pond in the Area. Many of these projects have been recommended through previous studies or identified as a requirement for proposed development initiatives.
- Erosion – In-stream Restoration Measures: In-stream restoration measures to address localized erosion or bank instability issues. Further erosion control will be provided through the construction of new SWM ponds and SWM ponds retrofits identified in previous studies together with proposed development initiatives, such as VMC.

The Study acknowledges that "aside from the in-stream erosion strategies proposed along the natural portions of Black Creek, the recommended improvement measures and preferred alternatives for flooding and water quality must be coordinated with the Vaughan Metropolitan Centre (VMC) OPA 620 and Toronto-York Spadina Subway Extension initiatives".

2.3 Economic Framework

2.3.1 Economic Development Strategy (2010)

The Economic Development Strategy for the City of Vaughan was prepared by Millier Dickinson Blais in 2010. The Strategy is the starting point of a process that will be the catalyst for economic transformation of Vaughan for the next ten years, and yield long-term prosperity for the community. The strategy identifies bold action steps that require the participation of the business community, institutions and citizens in order to fully realize the vision for Vaughan. Today's economy calls for new directions, new ideas and new approaches to enhancing economic growth. The four overall goals identified in the Strategy are:

- Position Vaughan as the gateway for economic activity in the GTA;
- Develop Vaughan as the incubator of entrepreneurial activity for economic region;
- Provide best-in-class economic development services; and,
- Grow Vaughan's dynamic quality of place and creative economy.

2.3.2 Employment Sectors Strategy (2010)

The Employment Sectors Strategy was prepared by Hemson Consulting Limited in April 2010. The Employment Sectors Study is a review of the current and future employment mix in the City to determine how Vaughan can meet the needs of a growing community and encourage high quality employment opportunities. The overall purpose of this study is to identify the economic sectors and sub-sectors that the City should be targeting and provide an approach and possible implementation tools. The study recognizes that the City is working hard to take full advantage of future opportunities, in particular through its plans for the VMC – a key employment area, and objectives to accommodate more growth through intensification in transit-oriented centres and corridors.

The Employment Sectors Strategy recommends five key initiatives to be considered. Those, as related to the VMC, include:

- VMC should capitalize on higher order transit, particularly the future extension of the subway and vivaNext on Highway 7.
- Attracting large office buildings and marquee / iconic development to VMC and aiming to create a “day and night” community.
- Encourage higher employment densities.
- Seek to attract additional post-secondary educational facilities to Vaughan;
- Target certain sectors to locate in Vaughan, including: professional, scientific and technical services; tourism; information and cultural sector; and green industries which occur across a range of economic sectors.
- Aim to attract a diverse array of employees to the community to work in all sectors.

“Vaughan Metropolitan Centre should aim to attract large office buildings, and marquee and iconic development to create a ‘day and night’ community.”

- Vaughan Employment Sectors Strategy (2010)



Proposed VMC at Full Build Out (VMC Secondary Plan, 2010)

2.4 Planning Framework

2.4.1 Mobility Hub Guidelines (2011)

Metrolinx published the Mobility Hub Guidelines document in September 2011, developed in collaboration with IBI Group. It should be noted that these guidelines are intended to help implement existing policies and directions and be used as a tool to elucidate the mobility hub concept and provide direction on how to move toward successful implementation and in no way supersede municipal plans, including official plans.

The Vaughan Metropolitan Centre is identified as one of the “Anchor” Mobility Hubs in the GTHA. These guidelines will provide important and fundamental input to the Streetscape and Open Space Plan for the VMC, particularly the area immediately surrounding the planned TTC subway station at Highway 7 and Millway Avenue.

2.4.2 City of Vaughan Official Plan (2010)

The City of Vaughan Official Plan was prepared by Urban Strategies Inc. and approved by City Council in September 2010. Eight key goals are articulated in the Official Plan: Strong and Diverse Communities; Robust and Prominent Countryside; Diverse Economy; Vibrant and Thriving Downtown; Moving Around without a Car; Design Excellence and Memorable Places; Green and Sustainable City; and, Directing Growth to Appropriate Locations.

Within the Official Plan, the Vaughan Metropolitan Centre is identified as a major focus for intensification for a wide range of residential, office, retail, cultural and civic uses; and, the tallest buildings and most intense concentration of development will occur within VMC. It is categorized as an Intensification Area – it will be developed with a mix of uses and appropriate densities to support transit use and promote walking and cycling.

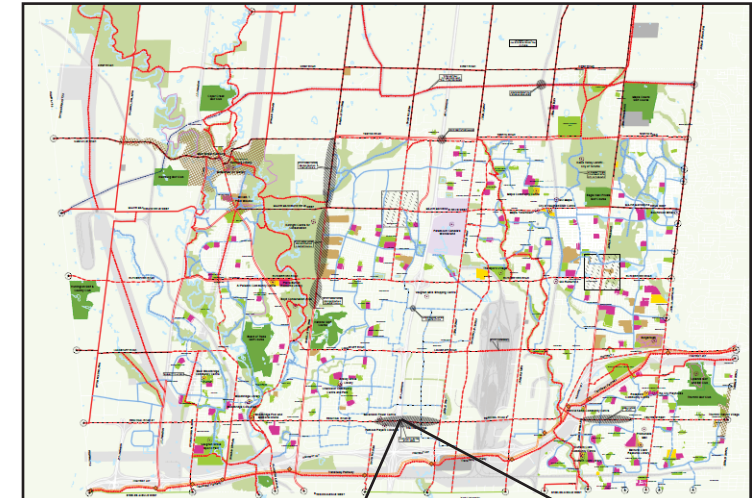
2.4.3 “Active Together” Master Plan for Parks, Recreation, Culture and Libraries (2008)

The Recreation Master Plan for the City of Vaughan was prepared in 2008 by Monteith Brown Planning Consultants. This integrated long-term strategy will guide planning for parks, recreation, culture and library facilities and services until the City’s ultimate build-out. The Plan provides recommendations for the amount / size of active and passive parkland, multi-use community centre, waterplay, outdoor courts, outdoor skating rinks, and other facilities to be located within the VMC. It is identified in the Master Plan that a community centre site be located on the transit corridor and would contain a variety of facilities; also, the VMC would be the preferred location for an “urban” community centre (i.e., vertical design, less parking, etc.) and could be developed in partnership with other parties.

2.4.4 Pedestrian and Cycling Master Plan (2007)

Prepared in 2007 by MMM Group, the Pedestrian and Bicycle Master Plan for the City of Vaughan guides improvements to existing and proposed pedestrian and cycling infrastructure in order to create a friendlier environment for those choosing to navigate the City by means other than automobile. This plan recognizes that improvements to urban design and streetscaping are critical to creating pedestrian-oriented environments in Vaughan, including the provision of pedestrian amenities along walking corridors (i.e. benches, patios, lighting, etc.).

This plan recommends a Community Bike Lane with formal pavement markings and signing along Highway 7, Jane Street and Creditstone Road within the VMC. Neighbourhood Bike Lanes with formal pavement marking and signing are recommended along Interchange Way (east-west street south of Hwy 7), Edgeley Boulevard (north-south street between Highway 400 and Jane Street), and Portage Parkway (east-west street north of Highway 7).



Proposed Bicycle Network in City of Vaughan (top) and Vaughan Metropolitan Centre (bottom).

2.0 Contextual Framework

2.4.5 VMC Secondary Plan (2010)

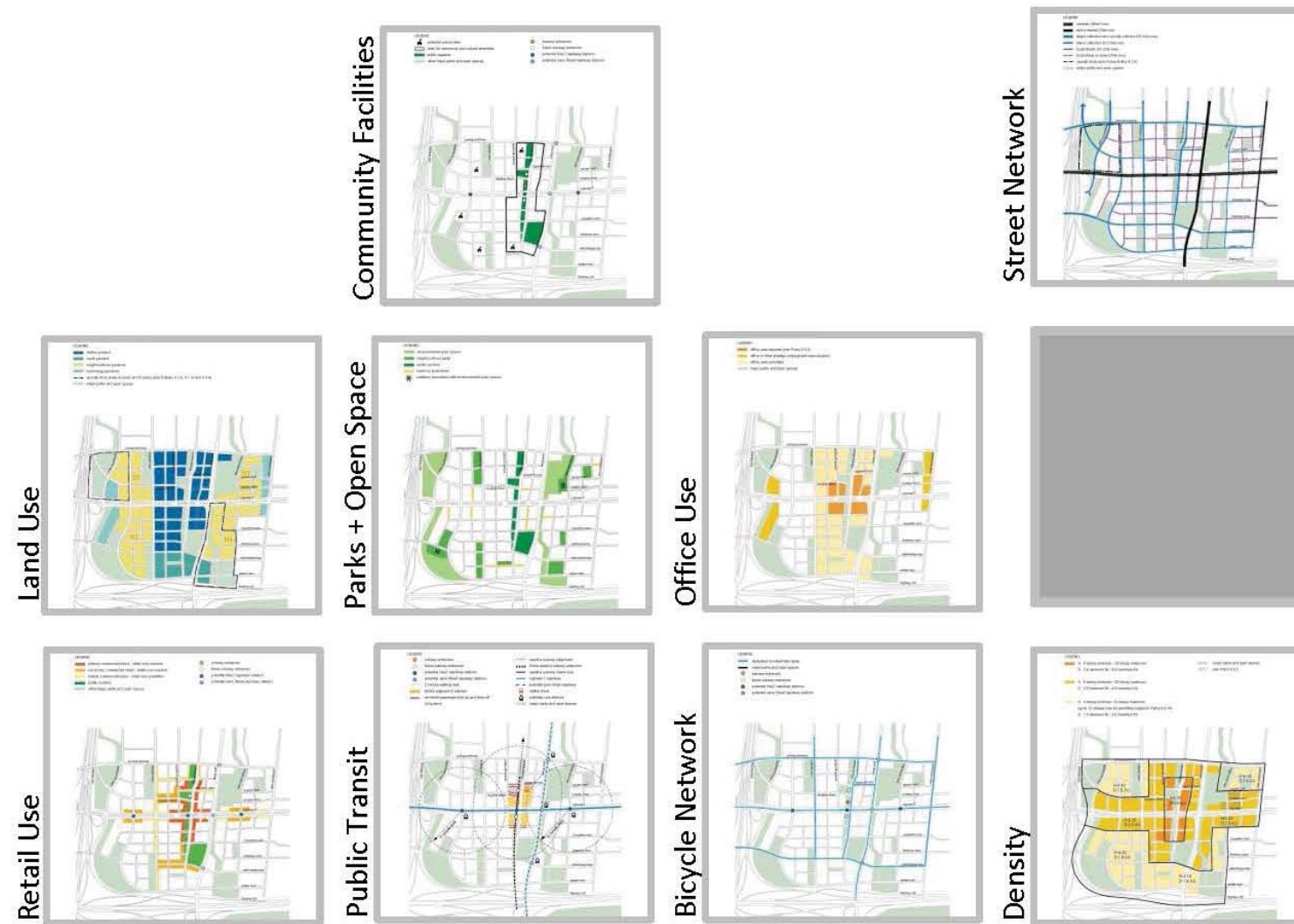
The Secondary Plan for the Vaughan Metropolitan Centre was prepared by Urban Strategies in 2010. It should be noted that this document is currently under review and will be revised as necessary. The overall vision established for the VMC is “to create a downtown – an intense dynamic community that in time will become the heart of the city, economically, culturally and physically”. Key guiding principles include transit-oriented, walkable, accessible, diverse, vibrant, green and beautiful.

A number of objectives and policies are identified for streets and transportation; energy, water and the natural environment; parks and open space; community services, cultural facilities and public art; and, land use, density and built form. These policies will provide a foundation for the Streetscape and Open Space Plan for the VMC.

2.4.6 VMC Transportation Master Plan (Draft, 2011)

The Draft Transportation Master Plan for the Vaughan Metropolitan Centre is being prepared by AECOM. It should be noted that this report is currently in draft format, and has not yet been approved by the City.

The purpose of this report is to document all of the transportation analyses which have led to a significantly different and more multi-modal transportation plan to support the new VMC. The plan identifies a number of major improvements that are currently underway or committed, including the Portage Parkway crossing of Highway 400, Spadina Subway Extension, VIVA Highway 7 BRT, and longer term transit identified for Jane Street and Highway 407. These improvements form the basis for the new multi-modal VMC transportation plan. A number of alternative road improvements for the VMC are also identified in the Plan and include widening of Creditstone Road, extension of Portage Parkway east to Creditstone Road, Millway Avenue realignment (to accommodate underground subway terminal) and southerly extension to Interchange Way, reconfigured on / off-ramps to Highway 400, Colossus Drive extension across Highway 400, and Langstaff Road / Highway 400 interchange improvements.



Schedules from VMC Secondary Plan, 2010

2.0 Contextual Framework

2.4.7 Vaughan Parking Standards Report (Draft, 2010)

A review of parking standards contained within the City of Vaughan's Comprehensive Zoning By-Law has been undertaken by IBI Group. It is noted that this Draft Parking Standards Report is a draft document and has not been approved by Council to date. This study proposes new parking standards for Vaughan's increasingly urban environment, and identifies alternative approaches to parking management, including shared parking, cash-in-lieu, and the development of public parking.

As identified within the document, the Vaughan Metropolitan Centre, a high-order transit hub, is proposed to have the lowest parking minimums (recognizing the high level of transit service), responsible parking maximums (designed to encourage transit use, promote compact development and support priced parking), as well as a high potential for public parking facilities, both on- and off-street. The document identifies proposed parking standards for various residential uses, as well as a wide variety of non-residential uses which will be present within the VMC.

2.5 Summary of Key Issues

There are a number of key policies and guidelines that are essential to be incorporated into the Streetscape and Open Space Plan for the Vaughan Metropolitan Centre, including the following:

- Integrate actions for sustainability identified in Green Directions Vaughan into the design and implementation of the streetscape and open space system within the VMC.
- Support the strategy set out in the Black Creek Stormwater Optimization Study, including the preferred alternatives identified related to flooding, water quality and erosion, ensuring coordination of these efforts with the overall development of the VMC.
- Provide the framework to ensure that the VMC enhances the bold action steps identified in Vaughan's Economic Development Strategy for the future economic transformation in Vaughan.
- Recognize and integrate the key initiatives identified for the VMC in the Employment Sectors Strategy to capitalize on higher-order transit and encourage a higher employment density.
- Recognize and incorporate guidelines for Mobility Hubs, in particular 'Anchor' Mobility Hubs, relative to seamless mobility, placemaking and successful implementation.
- Recognize that the VMC is the preferred location for an "urban" community centre. This could be developed in conjunction with / adjacent to a park or open space.
- Incorporate policies and objectives identified within the VMC Secondary Plan into the Streetscape and Open Space Plan. In particular the importance of a fine grain grid of streets and an interconnected parks and open space system.
- Integrate the transportation improvements currently underway, into the Plan, and recognize that alternative road improvements have been identified (i.e., Colossus Drive extension across Highway 400).
- Recognize that the VMC will be an urban and transportation hub and requires a new approach toward parking requirements and standards.



Perspective of Millway Avenue, VMC Secondary Plan, 2010

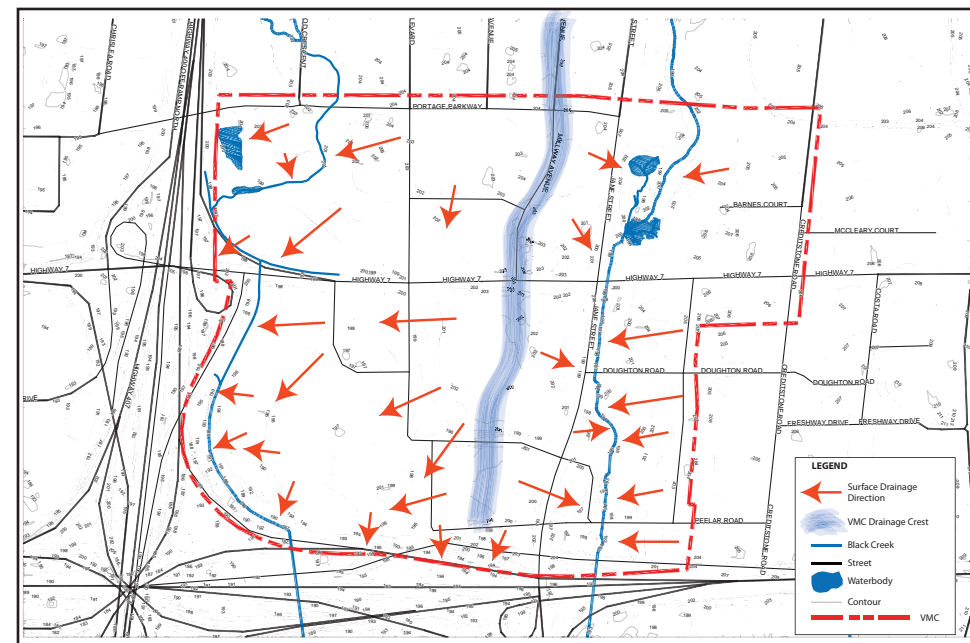
3.0 Site Inventory + Analysis

3.1 Natural Features

3.1.1 Topography and Surface Drainage

The topography of the VMC site is generally gently sloping with several small peaks. The highest contour is 207 metres above sea level, located in the eastern portion of the site, and the lowest contour is 187 metres above sea level, located in the site's southwest quadrant. Millway Avenue generally acts as a crest for drainage within the site; coincidentally the street is also a structuring spine for the VMC.

The VMC lies within the Humber Watershed. The main channel of the Black Creek runs through the site adjacent to Jane Street, while a minor tributary of Black Creek runs along the western edge of the site adjacent to Highway 400. The western portion of the site provides a gradual slope toward the watercourse; while in the eastern portion of the site has slightly more significant slopes towards the Black Creek.



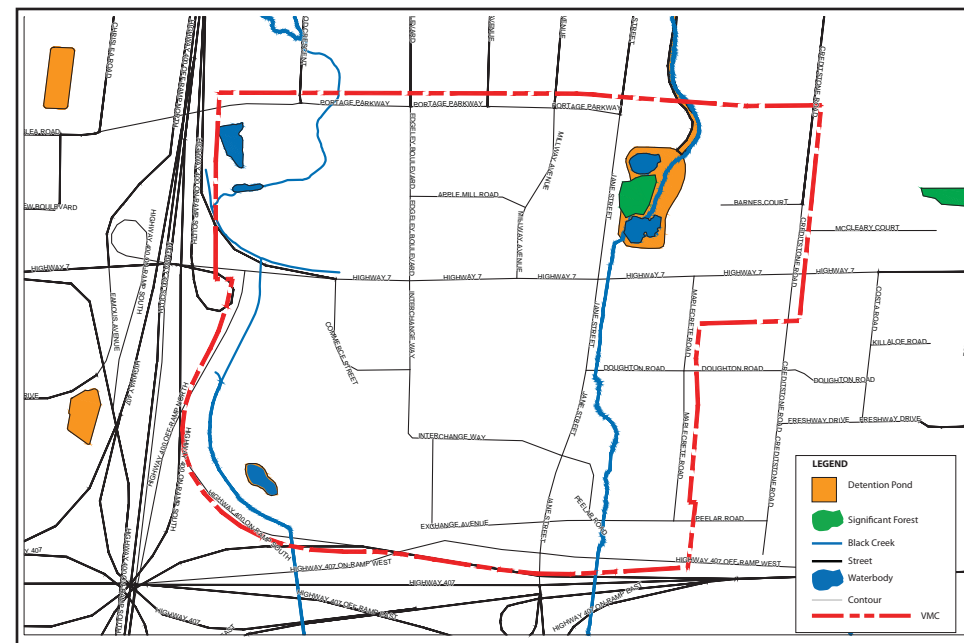
Site Topography and Drainage

3.1.2 Environment

Analysis of the area shows that there are no environmentally sensitive areas (ESAs) that require special attention. However, the naturalization of the existing detention pond in the northeast and associated Black Creek suggests that the area could be viewed as a natural feature.

There is currently not an extensive amount of vegetation on the site. Most of the open space vegetation is typical of open fields and low lying shrubs. However, there is a significant forest located between the detention pond water bodies in the northeast portion of the VMC site.

Two environmental characteristics of the site may affect the development of the VMC, namely the high water table and soil type. The soil on the site is generally clay and clay loam with 4 soil series' including Chinguacousey, Malton, Peel and Bottom Land. The Bottom Land soil series runs along the bottom of the Black Creek and varies. The soil types typically have imperfect or poor drainage which may impact how the stormwater management system is handled.

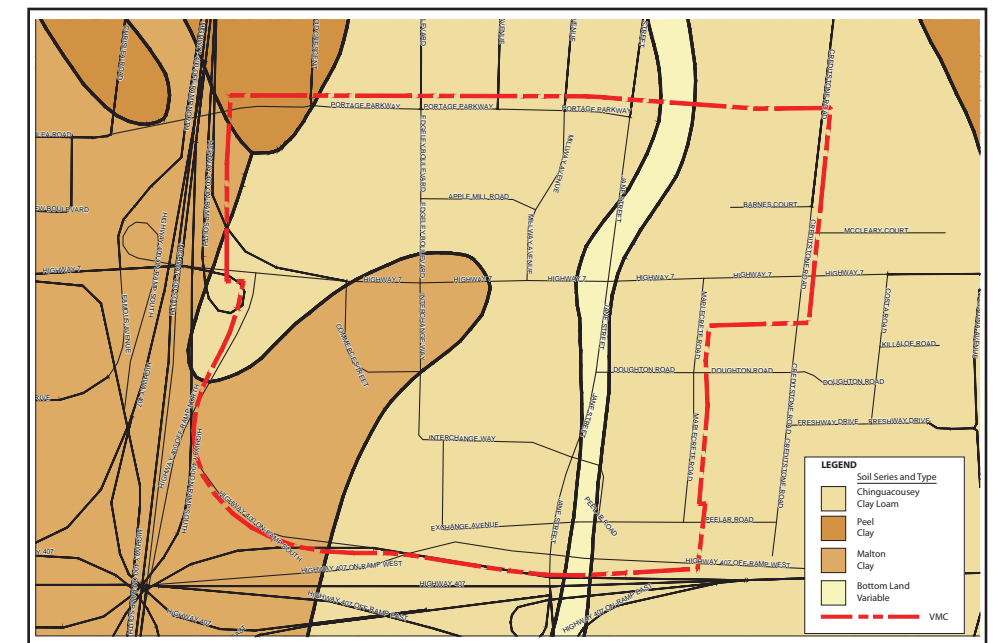


Site Detention Ponds, Water Bodies and Significant Forests

3.1.3 Micro-climate

Microclimate is largely affected by the surrounding natural features and buildings. Since the site will undergo significant change and re-development, it is difficult to predict or analyze the microclimate based on existing conditions. However, microclimate issues may be mitigated by typical streetscape elements to improve human comfort. For example, significant tree foliage will provide shade from the sun, help to break up wind patterns and provide protection from precipitation.

Beyond the typical microclimate considerations of the sun, wind, precipitation, etc., there are several issues within the VMC site created by the proximity of Highways 400 and 407. Concerns of noise, vibration and air quality from the highways may have an effect on the adjacent land uses. These concerns create unhealthy and uncomfortable environments. Salt spray will also be of concern due to the resulting damage and corrosion on vegetation. Since the west and south boundaries of the VMC front the highways, a significant amount of area is affected by these microclimate concerns.



Soils Map

3.2 Cultural Features

3.2.1 Historical Context

The Vaughan Metropolitan Centre site and surrounding area has a significant natural and cultural history. The intersection of Jane Street and Highway 7 was originally developed as the community of Edgeley. A main tributary of the Humber River, Black Creek meandered along Jane Street providing water power for the settlers in the area, mostly of Pennsylvania German decent. Edgeley's lands were fertile, and its landscape was covered in fruit trees, mainly apples, supporting the many settlers who worked the lands.

John Schmidt established a sawmill in Edgeley in the early 1800s. Later, other mills were developed for the production of cider and shingles. A steam powered shingle mill was located on the northwest corner of Highway 7 and Jane Street. A hotel was located on the northeast corner and a general store on the southeast corner, where the Edgeley post office was located until 1960.

Today, what remains of the former community of Edgeley can be found at Black Creek Pioneer Village, as many buildings were relocated and restored by the Toronto and Region Conservation Authority (TRCA), administrators of Pioneer Village.



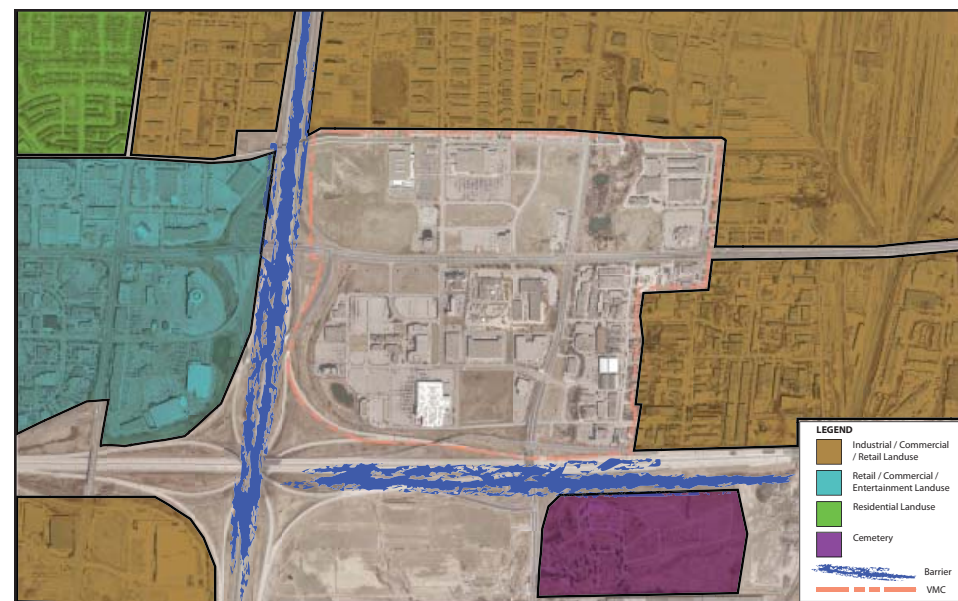
Edgeley Postcard: Jane and Highway 7 Looking South c.1900
(Source: City of Vaughan Archives Website)

3.3 Land Use and Development

3.3.1 Adjacent Land Uses

Retail, commercial and entertainment land uses can be found directly west of the VMC site, including the Colossus movie theater. Edgeley Cemetery (Mennonite) is located southeast of the site, on the south side of Highway 407. It should be noted that the adjacent land uses to the south and west are physically cut off from the VMC due to Highways 400 and 407. The large scale size, high speed and high volume traffic of Highways 400 and 407 act as significant physical barriers to access. These also create an uncomfortable surrounding environment. Care should be taken in deciding what land uses will be situated adjacent to the highways on the southern and western edges of the VMC.

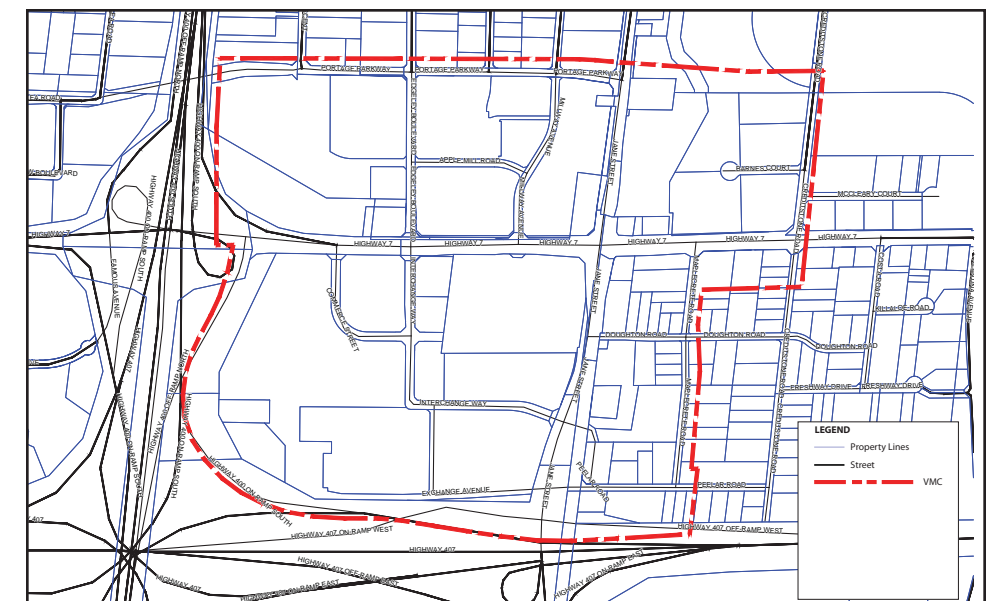
Land uses to the north and east of the VMC are mostly industrial and commercial in nature with some small retail. These surrounding land uses provide established businesses in the area, which may provide some employment opportunities for VMC residents. The industrial uses to the east are constrained by the CN Rail train track operations, located east of Creditstone Road. The train operation yard not only act as a physical barrier, but these operations will continuously provide traffic implications due to freight truck traffic loading and unloading cargo to and from trains.



Adjacent Land Uses

3.3.2 Land Ownership

Analysis of the property lines shows an irregular pattern of land areas. The north and southwest portions of the site show many large irregularly shaped land areas, while the southeast portion shows smaller properties and a semblance of regularity. The large land plots will make land acquisition for major development easier in the north and southwest. However, the smaller plots of land to the southeast may present challenges for larger development if individual property owners do not wish to sell their land. The result of this may affect street grids or create small and unusual singular plots of land in the future.



VMC Property Lines

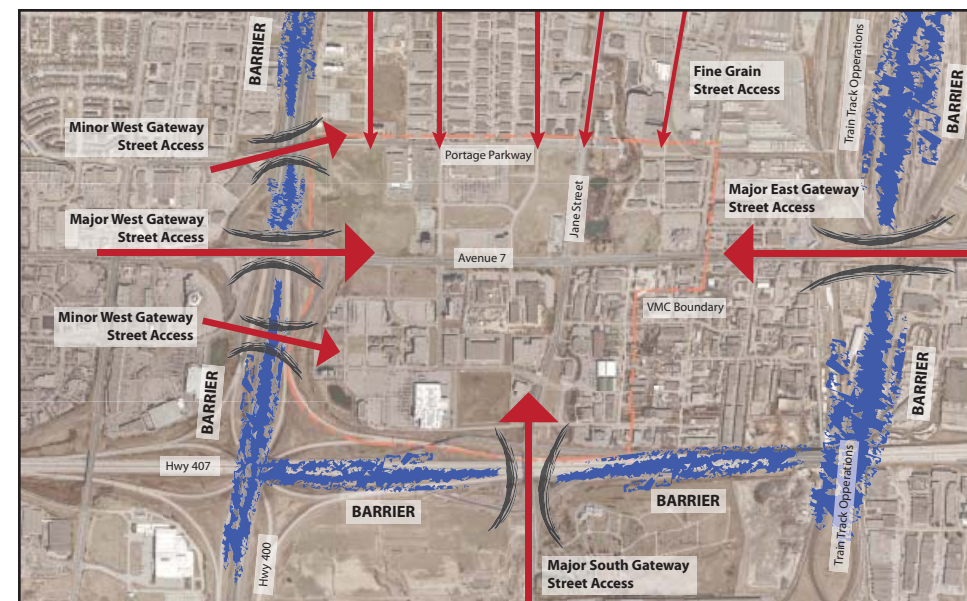
3.4 Transportation Network

3.4.1 Road Network Development

The VMC is in proximity to several major roadways. Highways 400 and 407 intersect in the southwest corner of the site creating the west and south boundaries of the VMC. These major highways provide high volume vehicular traffic access from the north and south. Highway 7, traditionally an east-west freight corridor, runs through the site, while Jane Street is a major north-south corridor. Both Highway 7 and Jane Street are Regional Roads.

Access is provided into the VMC by bridge overpasses on Jane Street (from the south), Highway 7 and Portage Parkway (from the west). According to the VMC Transportation Plan, there is a proposed extension for Colossus Drive to extend over Highway 400 from the west into the VMC, improving overall connectivity.

As previously mentioned, the VMC is surrounded by large physical barriers to the east, south and west with limited access. The northern border of the VMC provides the only fine grain street access into the site. Although the VMC Secondary Plan shows a fine grain grid of streets, the fine grain qualities are not connected into its adjacent surroundings.



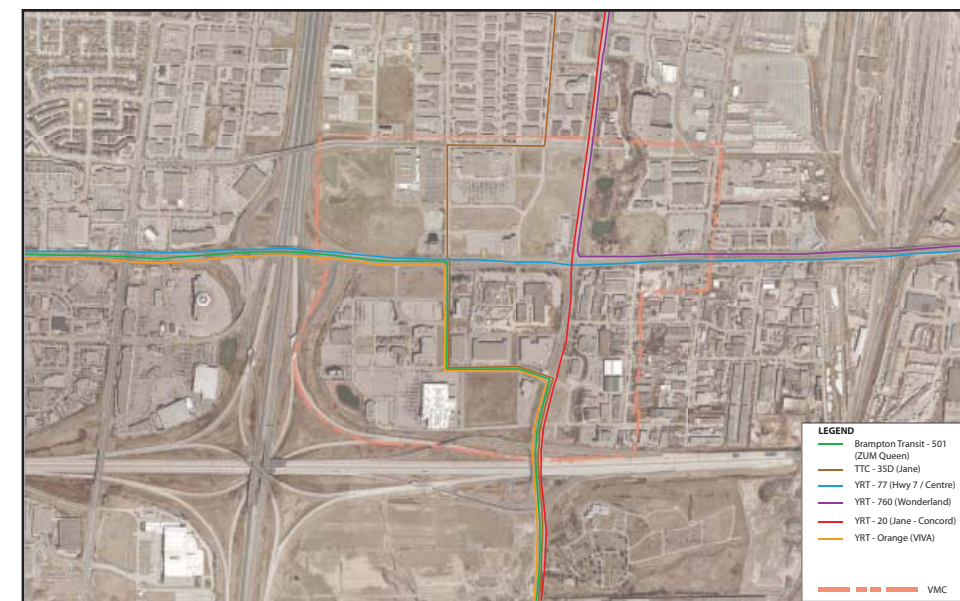
Road Network Analysis

3.4.2 Public Transit Infrastructure

Currently, 6 public transit routes service the VMC site. The routes are operated by 3 different transit agencies, York Region Transit (including VIVA), Brampton Transit (including ZUM) and Toronto Transit Commission:

Transit Agency	Route Number
Brampton Transit (ZUM)	501 (ZUM Queen)
TTC	35D (Jane)
YRT	77 (Hwy 7 / Centre)
YRT	760 (WonderLand)
YRT	20 (Jane - Concord)
YRT (VIVA)	Orange

The routes run mainly along Highway 7 and divert south onto Interchange Way to Jane Street, with the exception of route 77. Jane Street is mainly served by TTC route 35D, YRT route 20 and the YRT special weekend route 760 to Wonderland. Route 20 diverts along Millway and Edgeley Boulevard.



Existing Public Transit Routes

Bus stops are currently located at the intersections of Highway 7 and Jane Street, Highway 7 and Edgeley Boulevard / Interchange Way, and along the north-south corridors of Edgeley Boulevard and Interchange Way. The stops are generally within a 5 minute walking distance of each other.

Analysis of the route map shows that YRT 77 is the only bus route which currently runs along Highway 7 east of the VMC to Keele Street. This is likely attributed to the industrial nature of the land use with a large portion of area devoted to train operations.

4.1 Overall Structure Plan

4.1.1 VMC Structure Plan

Issue: A Clear Structure

To create a cohesive VMC streetscape language a clear structure needs to be determined. The main VMC intersection planned at Millway Avenue and Highway 7 is a good starting point. The proximity to the transit hub, public square and retail make the main intersection an ideal location to highlight it as an activity centre. However, to connect the rest of the VMC together, the rest of the structural elements need to be defined. Consequently, the structure can be defined by the following opportunity.

Opportunity: A New Streetscape Hierarchy

Creating a hierarchy of streetscapes and intersections to will help to define the VMC. Secondary intersections can be identified along Highway 7 at Jane Street and Edgeley Boulevard, and at two new intersections identified in the Secondary Plan. Minor intersections shall be located along Millway Avenue to connect the main intersection with a north and south axis to public nodes.

Gateway intersections have also been identified on Jane Street at Portage Parkway and Exchange Avenue, and along Highway 7 at Weston Road, Creditstone Road and the entrance and exit ramps to Highway 400. Through the use of street furniture, lighting, paving materials and patterns, curbs, trees, vegetation, banners, public art and a variety other streetscape elements, the intersections and gateways can be distinguished, yet cohesively designed to create an environment and identity unique to the VMC.

The design of the gateway intersections will become visual cues that one is entering and exiting the VMC, while framing the overall streetscape hierarchy.

A sense of progression through the VMC and the feeling of an overall structure at play will come from the subtle design differences between the main and secondary intersections.

The intersection of Millway Avenue and Highway 7 is the transit hub and structural centre of the VMC. Surrounded by retail and the location of the main public square, it will be the activity centre of the community and main node in the streetscape hierarchy.



Overall Structure Plan

4.1.2 Street Access into the VMC

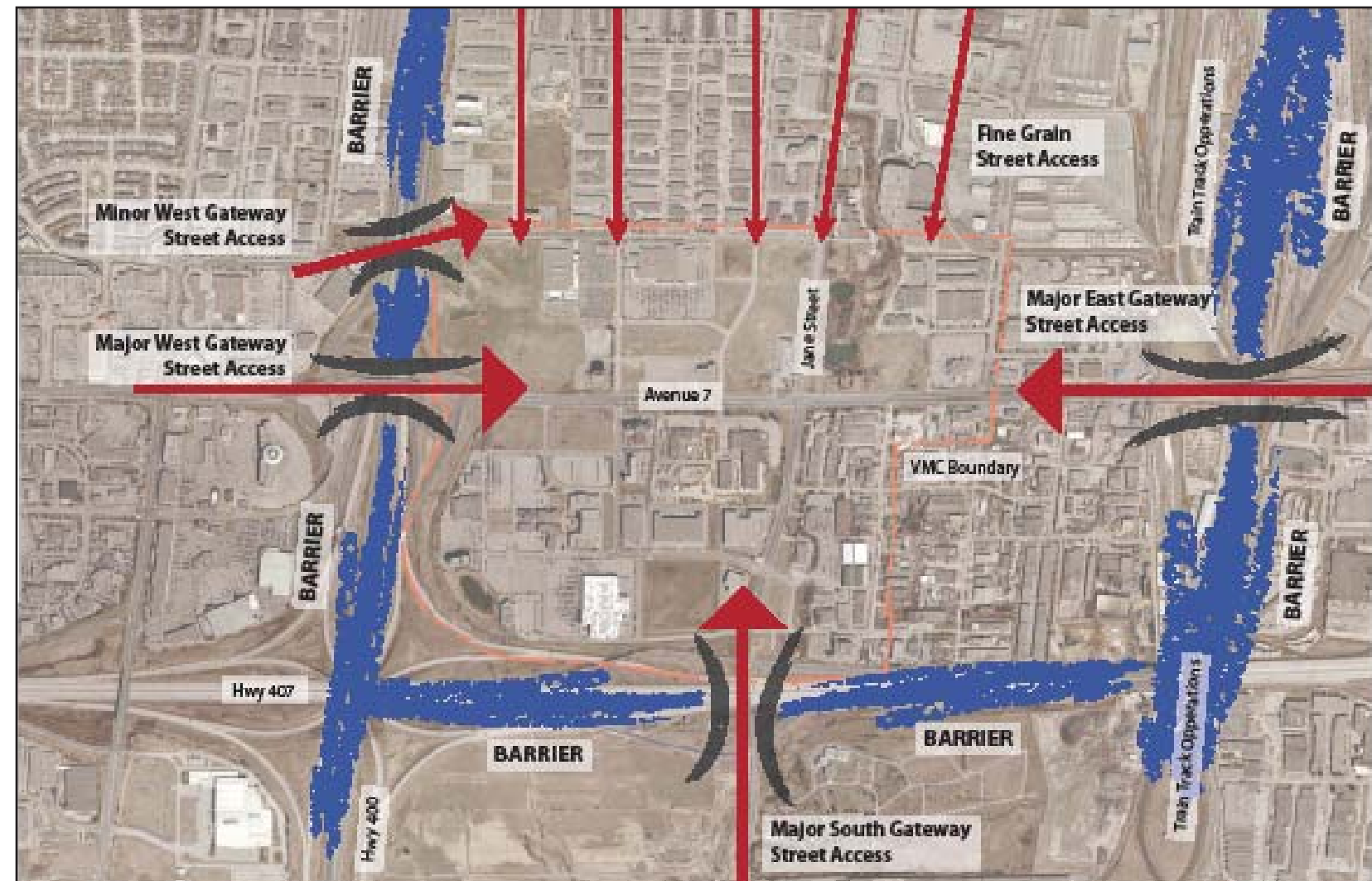
Issue: Lack of Fine Grain Access

A majority of access into the VMC will potentially be from Highway 7 and Jane Street. Although the VMC Secondary Plan shows a network of fine grained streets, the fine grain does not necessarily extend into the surroundings due to the barriers present. The barriers that Highways 400 and 407 present to the west and south respectively, and to some extent the CN rail track to the east, indicate that there will be a lack of fine grain street access to and from the VMC. The only fine grain street access to and from the VMC is found to the north which connects with existing industrial land use areas.

Opportunities: Increased Access

Treatment of the streetscapes to the north will be of special importance for the VMC to connect and integrate into its surroundings and become a connected centre within the City of Vaughan.

The proposed extension of Colossus Road on the west side of the VMC provides the opportunity for increased access from the west. Without any major development or street network on the south side of Highway 407, there will be little opportunity or incentive to connect across the highway.



Fine Grain Street Access to the North

4.1.3 Identity, Gateways and Wayfinding

Issue: VMC Identity

The VIVA bus rapid transit system has a strong brand with its initiative along Highway 7; many of the streetscape elements cater to the VIVA brand. This strong branding may conflict with the brand and identity of the VMC - Vaughan's new downtown centre. The VMC brand and identity is to be the identifying element for people travelling to the area.

Opportunity: Create a Unique VMC Identity

Set the VMC apart and create a distinction from other areas of the City, while creating harmony with the VIVA system. The VIVA identity should become secondary to the VMC identity within this core area. Elements such as signage, banners, engravings, gateways, information displays will help to define the identity of the VMC.

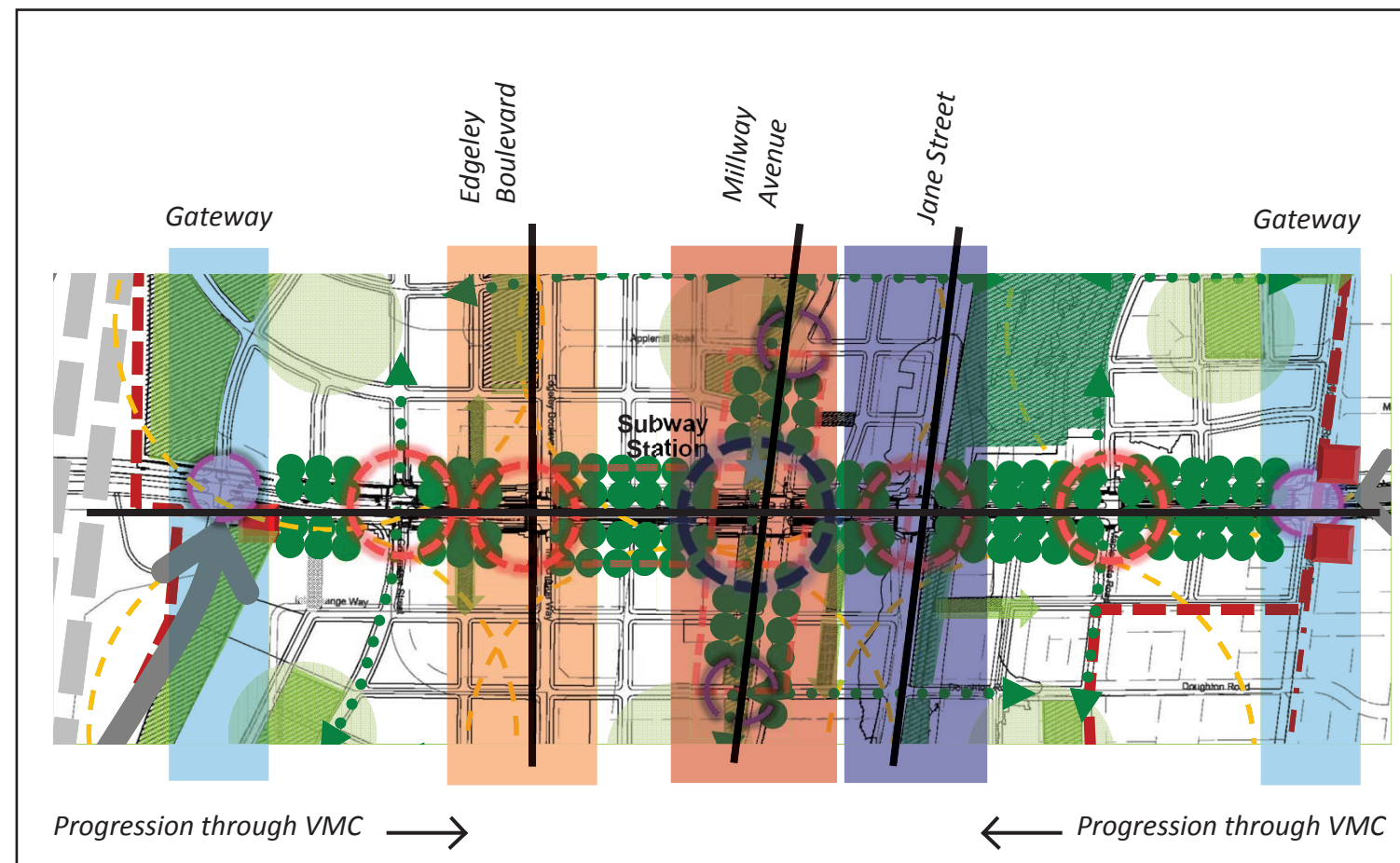
Issue: Wayfinding

Wayfinding within the VMC is currently lacking and must be addressed as development occurs to ensure that neighbourhoods, transit stations and stops, and parks and public spaces are easily navigable.

Opportunities: Street Progression

Create a unifying wayfinding element or elements within the VMC. Utilize streetscape elements or natural features to help people find their way around the city. Elements such as signage, banners, engravings, gateway elements, and information displays could be used in the streetscape as wayfinding elements.

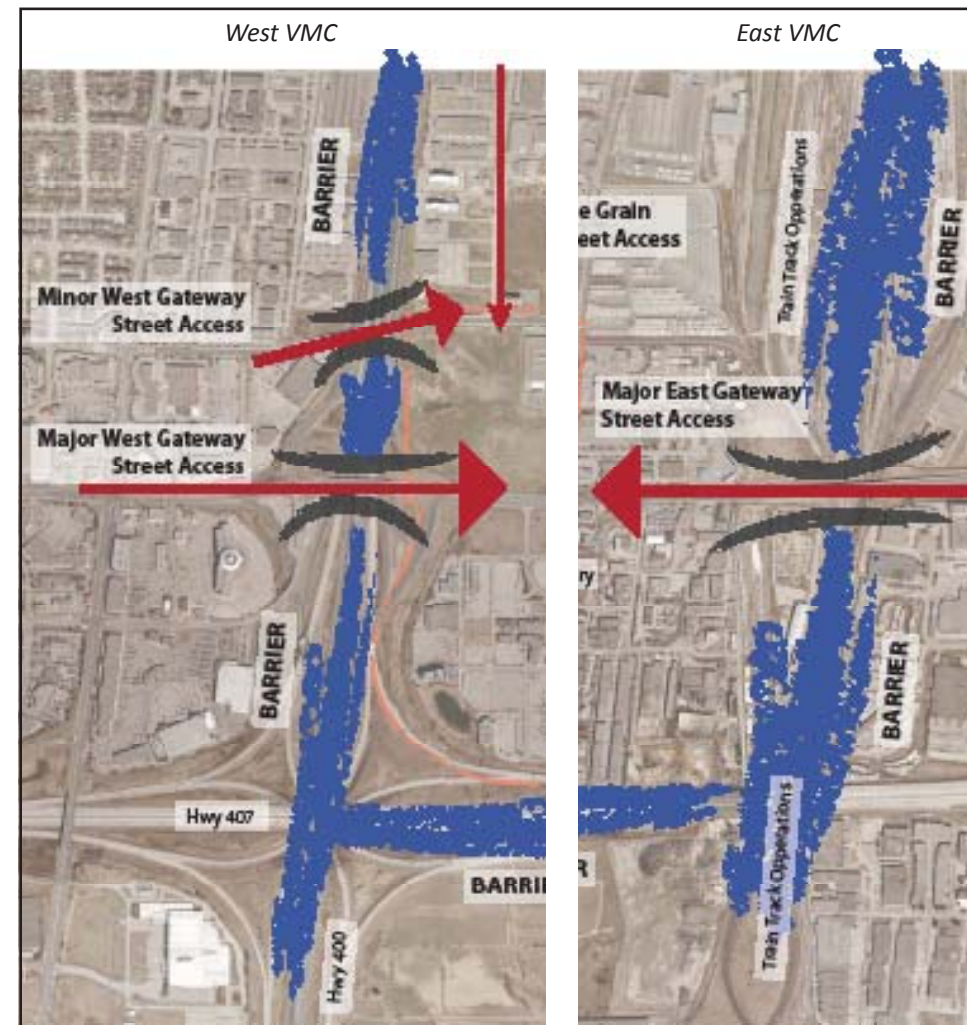
The character of certain streets as an element of progression through the area may also be used as a wayfinding technique. Each street will develop its own character and each could be treated differently in the streetscape. This will produce the experience of progressing through the VMC as the neighbourhoods change. Highway 7 is also a gateway street and as a result the sense of intense transition and progression.



Intersections as Progression through the VMC

Issue: Gateways

A lack of fine grain access into the VMC highlights the importance of the gateway treatments. Barriers from the highways and rail tracks limit traffic, both vehicular and pedestrian to specific access points (with exception of the subway). The streets rise to become bridges over these barriers. Therefore any traffic into the VMC will be constrained to Highway 7, Portage Parkway and Jane Street from the east, west and south and may possibly bottleneck at these points. As noted in the

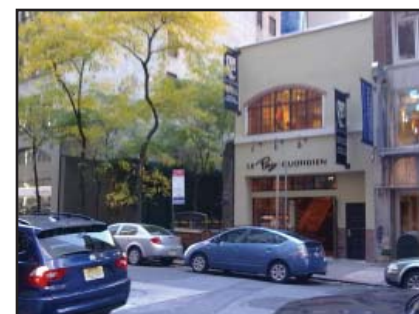


Gateway Streets Important Due to Lack of Access

VMC Transportation Plan, Colossus Drive is proposed to extend from the west of Highway 400 east into the VMC. However, Portage Parkway and Colossus Drive are not significant streets with access primarily to big box store development streets, leaving Highway 7 and Jane Street the significant VMC access streets. The identity of the VMC will largely be formed from the visual and experiential qualities while traveling along these gateway streets.

Opportunities: Bridge Overpasses

Potential to provide inviting gateway features for all users (pedestrians, cyclists, transit, vehicles, etc) on Highway 7 and Jane Street. Both of these roads are bridges overpassing the adjacent 400 series highways; how these overpasses are handled will be of great importance. To encourage pedestrians and cyclists to enter the VMC from the east, south and west, particular care must be taken into design measures to accommodate them on these access points. Streetscape treatments used on trench highways may be beneficial in this case.



On Street Parking New York, United States



On Street Parking, London, England

4.1.4 Parking

Issue: Suburban / Urban Parking Context

As identified in the *Review of Parking Standards Contained within the City of Vaughan's Comprehensive Zoning By-Law 2010 Draft Report* it is stated that Vaughan's current parking standards are too high for an urban typology as proposed in the VMC and support a vehicle centric culture. Existing standards are based upon a suburban context, while the VMC is to be an urban area and must be distinguished from the suburban context.

Issue: Integrity of Public Spaces

Currently the Secondary Plan (Section 6.2.5) states that parking shall not be located in park spaces with the exception of the provision of service vehicles. However, due to the perceived parking demand and high water table, "strata" parking under public spaces has been proposed in development plans. Ambiguity arises regarding air-rights over the public space and therefore the integrity of the public space will be compromised.

Opportunities: Urban Transit Hub

The amount of parking provided for the VMC should reflect an urban area which encourages a diverse network of transportation methods. The presence of the various public transit systems (TTC, VIVA and York Region Transit) creates a transit hub which should be taken advantage of and should play a large consideration in how much parking is allowed. Developing a new parking standard for urban conditions will play a role in changing the perception of Vaughan as an urban centre or suburb.

4.1.5 Block Pattern and Ownership

Issue: Full Block Development

A number of landowners have a stake in the development of the VMC, causing a fragmented ownership. Development of land parcels will likely to occur at different times over a range of years. This situation has the potential to leave small parcels of land unsuitable for practical development, developments which are not unified and functional.

Opportunities: Land Owners Association

Organization of the various land owners / developers to form a cohesive association in order to work collectively towards achieving the VMC vision will be significant. Small parcels of land will then have the opportunity to be developed with appropriate uses for their size, or may be incorporated into larger developments to ensure the built fabric of the VMC is unified. This will also provide the opportunity for the various development blocks to “address” each other and not seem segregated from the VMC vision.

4.1.6 Connectivity

Issue: Collective Vision

Without a collective understanding among landowners of the vision for the VMC, the vision may become altered and therefore the overall connectivity is compromised. Activities and functions may become internalized into the development blocks, not provided on the public streets, as necessary to create and maintain a vibrant city centre.

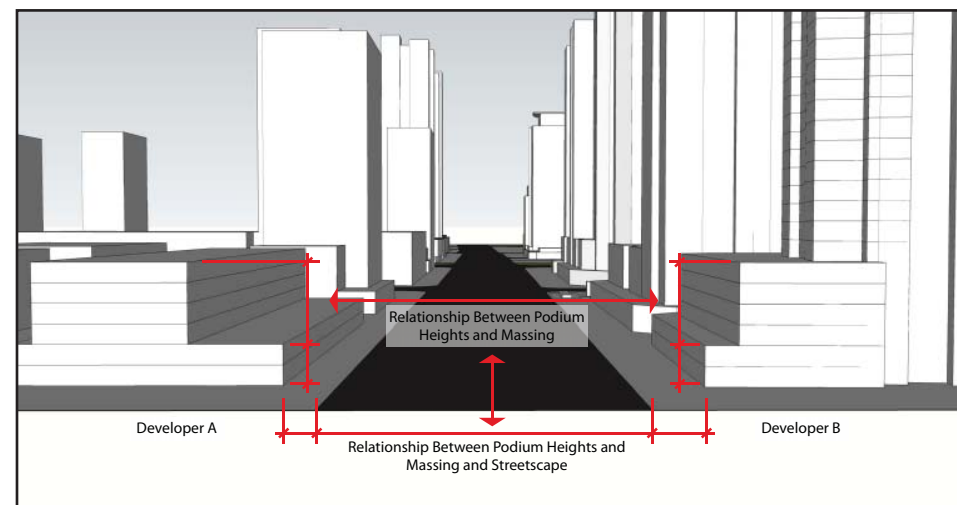
Opportunities: Cohesive Built Environment

Streets must recognize each other to protect and maintain the integral street fabric. For this to happen, developers, who will be building the local streets, must work together to ensure streets on their developments seamlessly interact with streets from adjacent developments. This will

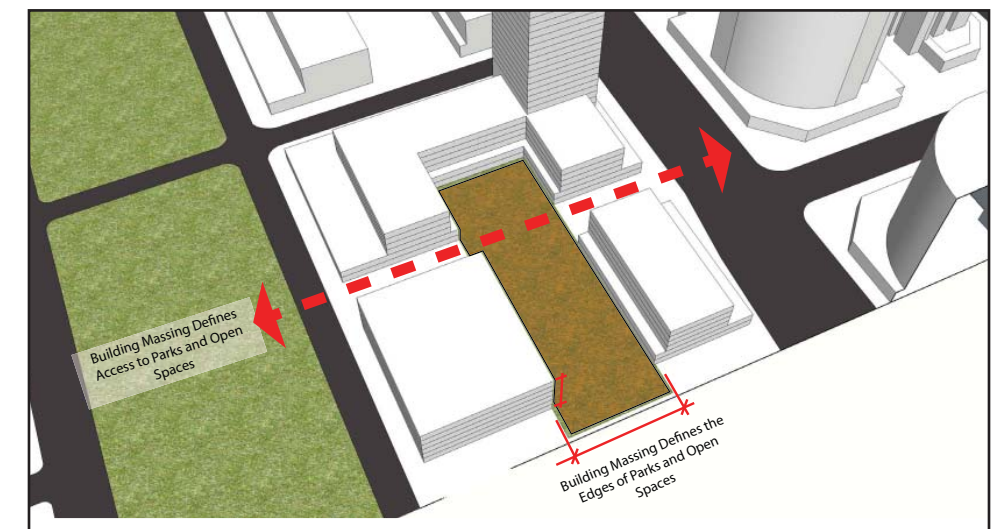
create a built environment to support connectivity and vibrancy. Additionally, developments need to recognize other surrounding developments through similar podium heights and building massings to ensure a common language framing streets and streetscapes. For the streetscape to be a unifying element, building podiums and heights need to relate to the streetscape in a similar fashion. The recognition of podium heights and building massing to the street will facilitate animation and activity.

Issue: Buildings, Parks and Open Space

Parks and open spaces are defined by physical features. In urban environments they are defined by the surrounding buildings. The proportions and scale of building massing must be sensitive to the edges of the parks and open spaces they create.



Building massing must relate to the street and adjacent buildings proportionally



Building massing defines the edges of open space

4.1.7 Constrained Future Growth

Issue: Highway Adjacent Land Uses

Highways 400 and 407 border the VMC on the west and south respectively, creating an issue of proposed adjacent land uses. As mentioned in the Section 3 analysis, noise, vibration, air quality and salt spray create an unhealthy and uncomfortable environment surrounding the highways.

Issue: Highway Adjacent Open Spaces

Several open green spaces will be located next to the highways in the Secondary Plan. These areas are not included in the area calculations allocated toward parks. Due to the proximity to highways, the human comfort and health characteristics of these open green spaces will be adversely affected. As a result, a fair amount of potential open green space will be lost.

Opportunities: Highway Buffers

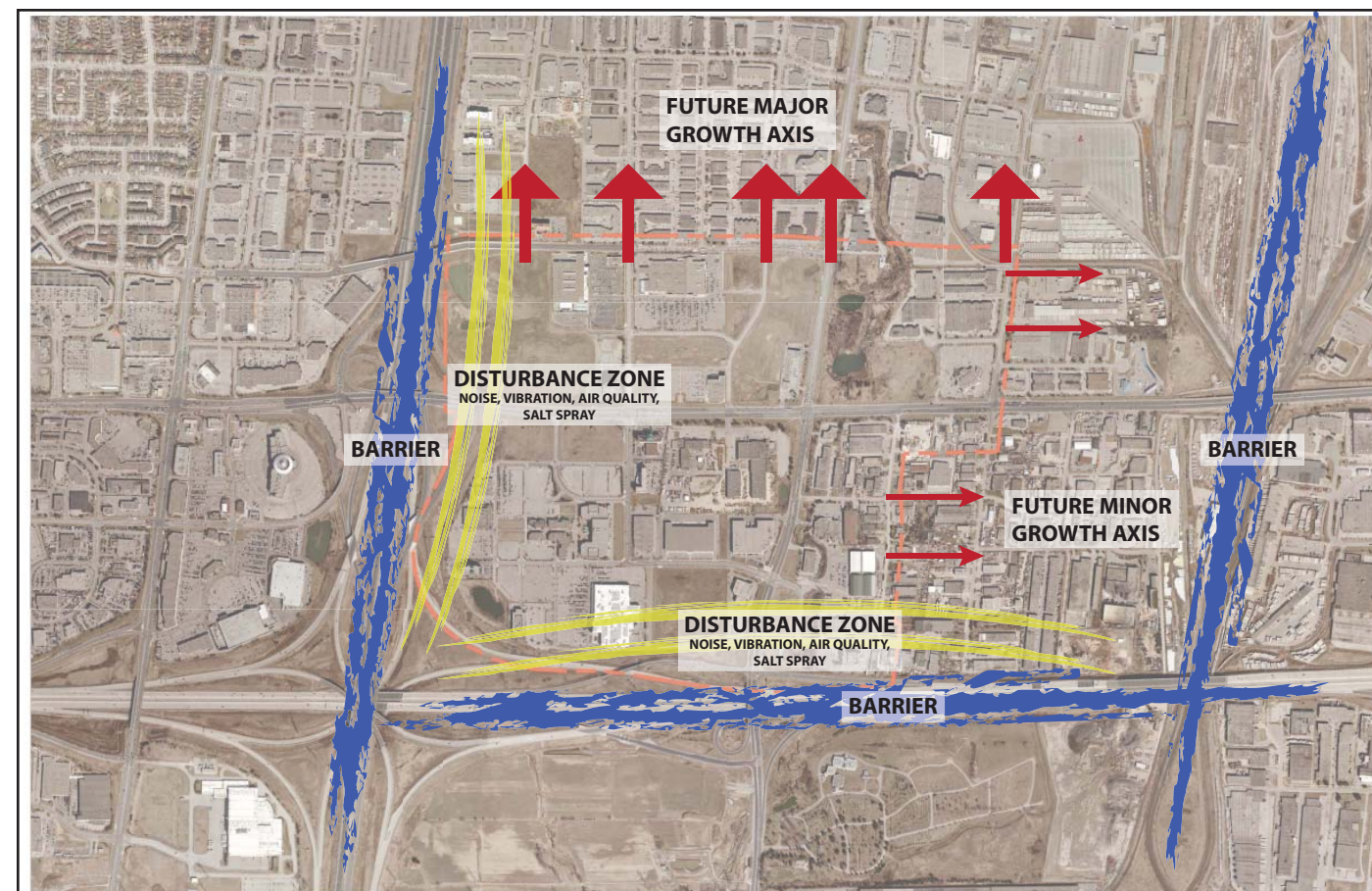
Land uses in the VMC flanking the highways must be appropriately identified, or measures must be taken to protect the land uses from the effects of the highways. Landscape berms, walls and buildings are some of the possible opportunities to protect the VMC from the issues associated with the highways. Buffer measures will also create clear boundaries and edges to the VMC.

Issue: Physical Barriers

Because of the barriers to the east, south and west, there will be little room for the VMC to organically grow outward. These constraints physically limit growth, unless creative solutions arise in dealing with the barriers. Any future VMC growth will come at the expense of the existing industrial lands to the north and will become VMC's main growth access in the far future.

Opportunities: Dense Urban Centre

Constrained growth by natural features creates opportune environments for density and as a result, vibrancy, activity and potentially well-used public transit system.



Effects of Highway Barriers on Future Growth and Adjacent Land use

4.2 Streetscape Network

4.2.1 Street Priorities

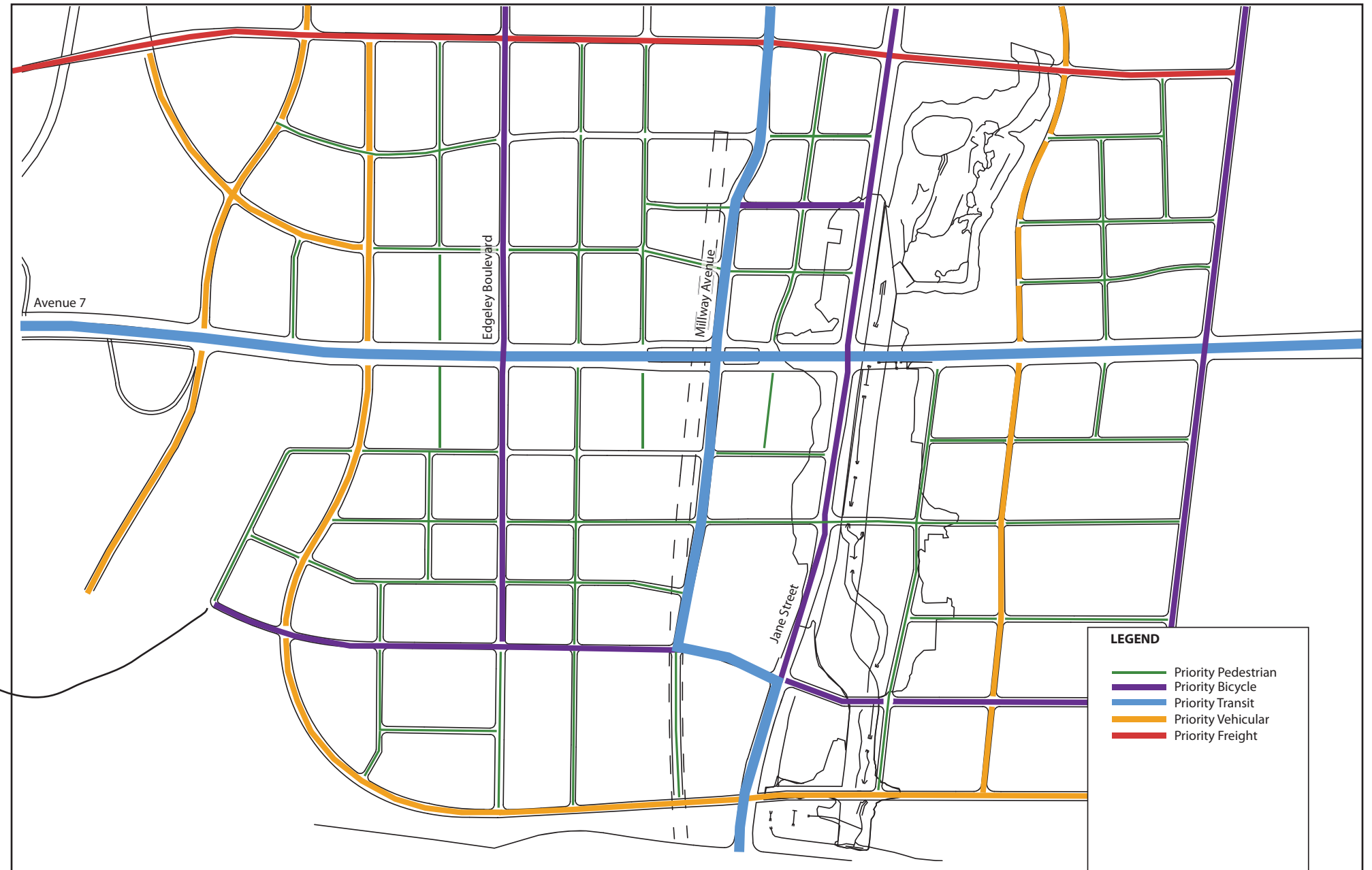
Issue: Ensure Streets Function as Intended

Developing the overall street network to function adequately for all users is imperative to the success of the VMC. Different streets have different functions, with regards to mode of transportation, and ensuring that all streets are livable, safe, comfortable and function well is crucial.

Opportunities: Complete Streets

Utilizing a “complete streets” philosophy. Prioritization of streets within the VMC in order to ensure comfort and ease of navigation for all users (see adjacent figure for proposed prioritization hierarchy). Every street should be safe for all modes of transportation, however, all streets are not everything to all users; understanding street priorities in the overall street network will clarify street function.

Using a combination of the Secondary Plan’s Proposed Bicycle Network, Retail Locations, analysis of the street hierarchy, public transit routes and street functions the following Street Priority Map was created. Pedestrians will be given priority on the majority of local streets and where significant retail and the main public square is to be located as per the Secondary Plan. Freight traffic is determined to be re-routed to Portage Parkway and Highway 7, under the VIVA initiative, will be a major public transit corridor resulting in their respective street priorities. The Proposed Bicycle Network will generally be given priority to ensure a cohesive and safe bicycle circuit. The new transit hub will change the existing public transit routes and transit priorities reflect the possible route changes.



VMC Street Priorities

4.2.3 Highway 7

Issue: Current Function of Highway 7

Highway 7 has traditionally been regarded as an east-west freight corridor and currently has a high volume of high speed transport truck traffic. Freight traffic is proposed to be diverted to bypass Highway 7 via Portage Parkway to the north, while Highway 7 will be redeveloped to provide Viva BRT transit infrastructure in the centre lanes of the roadway.

Opportunities: Highway 7 as a "Place"

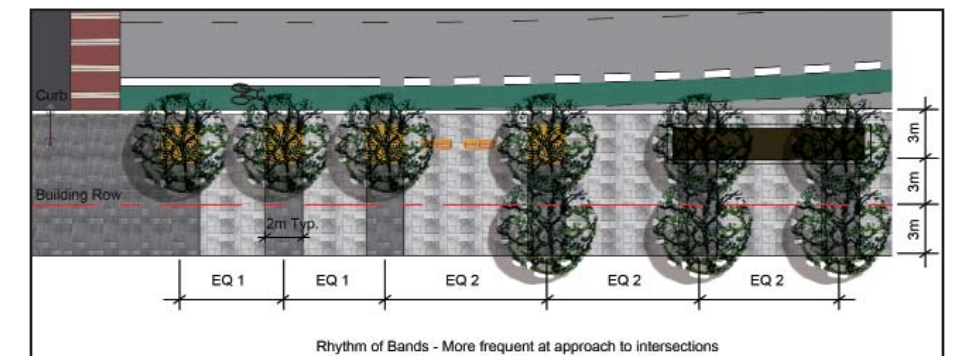
There is a unique opportunity to change the perception of Highway 7 as a transportation corridor "through" Vaughan to Highway 7 as a transportation means "to" Vaughan Metropolitan Centre. Streetscape elements need to confirm a sense of arrival to the VMC as a place. Integration with the VIVA BRT system design is necessary.

Several design opportunities for Highway 7 have been identified:

- Gateway expression at key intersections (Highway 7 at Maplecrete, Highway 400 off-ramps, and Jane Street at north and south intersections) to provide a sense of arrival, place-making and identity. Expressions will be integrated into built form, specialty paving patterns, lighting, planting and / or signage.
- Integration of bicycle lanes as part of the boulevard or road will help make cyclists feel safe and part of the road network. This will be done without ROW expansion.
- Hydro services are preferred to be located underground in this intense urban context. Locating the services underneath bike lanes or within a 3 metre setback easement will prove beneficial as opposed to above ground hydro poles.
- A street tree framework including a palette of street trees is required from the approved York Region Forestry tree species. Different tree species will be used to identify different neighbourhoods and intersections to improve the sense of progression.
- Paving system and hierarchy is required with the integration of the VIVA plan. The hierarchy will include a good, better, best quality approach where highly used public squares would receive the best quality paving, VIVA better quality and tertiary areas good quality. Some criteria will include bold and simple patterns, permeable paving with high albedo, and a continuous paving through mid-block sections.
- Design of the public and private realm should maximize opportunities for stormwater collection and recharging the groundwater through infiltration. It is recognized that this may not be feasible under Highway 7 at this time.

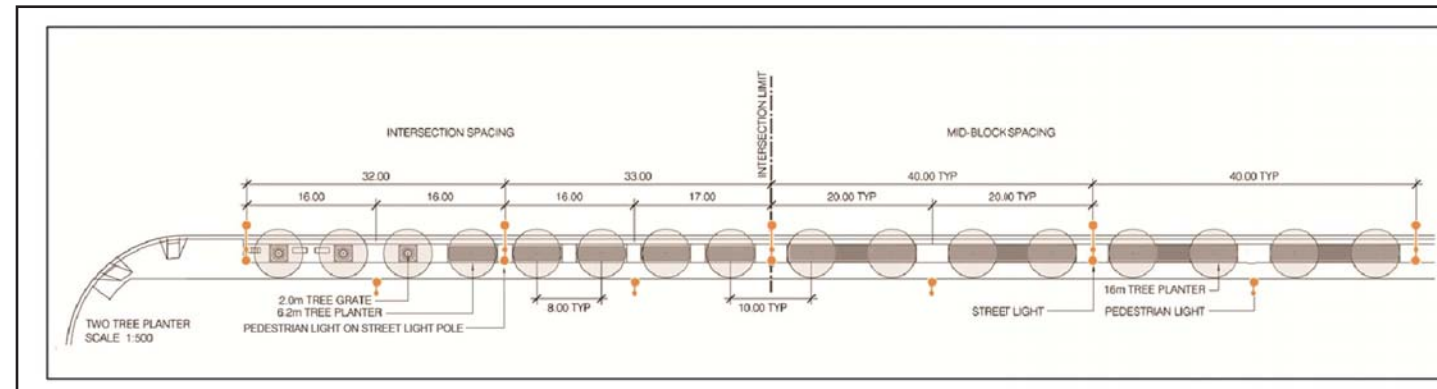


Median Treatment



Street Trees

- Pedestrian lighting system for Highway 7 to improve safety and create an active street during the night. Identification of areas with opportunities for special lighting treatments should be explored and the use of Metal halide or LED lights should be encouraged.
- A unique, yet complementary, system of signage to differentiate Highway 7 from VIVA signage is required. A distinctive district identity will arise out of the branding exercise currently being undertaken for the VMC.
- Unique and distinctive system of street furnishings that will be indicative of the VMC brand yet complimentary to the VIVA system.
- “Pedestrian-first” principles could be implemented at crosswalks and intersections. This, accompanied by a strong urban character of the VMC and the reduction of the engineered look of intersections need to be considered.
- Partnerships between the City and York Region, with the involvement of the private sector, will ensure high quality and consistent levels of operations and maintenance.
- Public art will provide visual cues of significance and place, create intrigue to stop and explore and showcase identity and culture. Integration of the City of Vaughan’s public art policy would provide a basis for a VMC policy to activate the public realm.



Pedestrian Lights shared by VMC and Private Land Owners

Benches

Manufacturer: an scape or s
 Style: est ench ac e ac less
 Material: Po ercoate Metal
 Colour: Sil er



Garbage and Recycling Receptacles

Manufacturer: an scape or s
 Style: Select itter eceptacle ou le unit soli o per orate oors
 Material: Po ercoate Metal
 Colour: Sil er o oor lac tri ring signage plate



Bicycle Racks

Manufacturer: an scape or s
 Style: ing ie ac
 Material: Po ercoate Metal
 Colour: Sil er



Digital Information Kiosks

Manufacturer: an scape or s
 Style: Sho ispla ios
 Material: Po ercoate Metal
 Colour: Sil er
 NOTE: Kiosks will be located at strategic gateway locations at a future date.



Proposed VMC Highway 7 Street Furnishing Palette

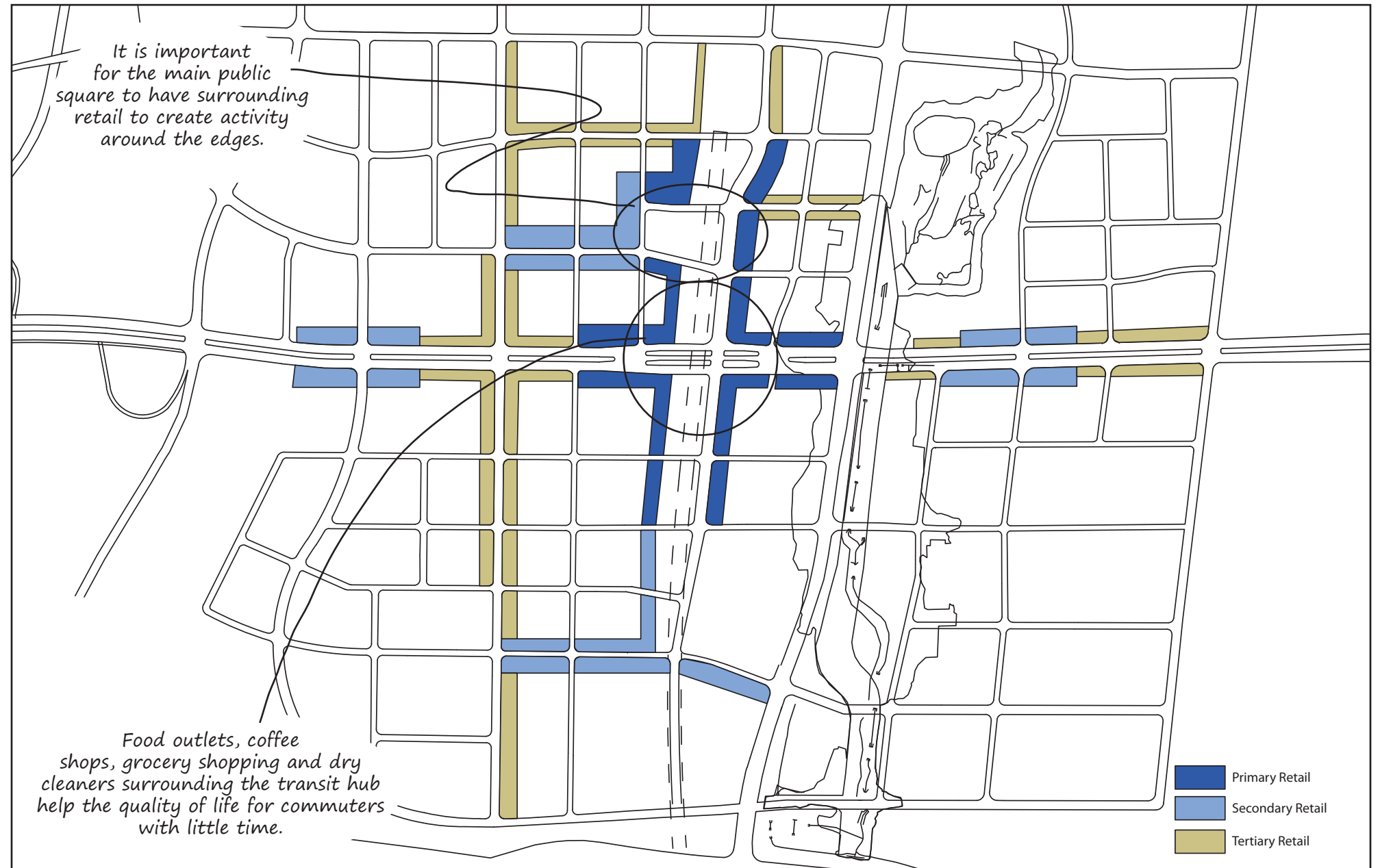
4.2.4 Retail Street

Issue: Orientation of the Retail Street

Highway 7 will adversely affect pedestrian retail traffic running north and south. The primary retail area, as identified in the Secondary Plan, is centered on the intersection of Millway Avenue and Highway 7 with a large retail component running east-west along Highway 7 and a majority of primary retail north-south along Millway Avenue. Although Highway 7 will be slowed by traffic calming measures and streetscape elements, it will still likely remain a high volume and wide traffic corridor. Crossing such a high volume and wide corridor at Millway Avenue is not conducive to pedestrian retail traffic. Additionally, pedestrian retail activity patterns along Highway 7 will likely be restricted to either side of the street rather than a combination of both sides.

Issue: Width and Nature of Millway Avenue

During the pedestrian shopping experience, ideally the pedestrian will be able to seamlessly and safely cross the street to stores on the other side. As a pedestrian shopper walks down the streetscape, their best view of storefronts is actually diagonally toward the other side rather than on the side of the street they are on. This leads to intrigue and the desire to crisscross along a shopping axis. Concern has arisen about the proposed north-south axis along Millway Avenue, due to its proposed width and green space spine adjacent to the roadway. The green open spine is a strong pedestrian element, however, it also creates a large distance between the east and west sides of the street. Pedestrian shoppers will have to cross a large distance to reach the other side which may act as a deterrent. Therefore, the shopping experience will likely remain on one side of the street.



VMC Secondary Plan Retail Areas

Opportunities: Animate Highway 7

Given the high volume of traffic and a strong sense of “urbanity” Highway 7 can still become a strong retail corridor if designed with pedestrian scale built form and amenities. Lay-bys for taxi and vehicles along Highway 7 can provide a buffer from traffic and places to stop to create activity and energy along the street. Additionally, the intersection of Highway 7 and Millway Avenue is a major transit hub which will undoubtedly provide the critical mass necessary to support a surrounding retail base. Convenience type retail will be of particular importance such as food outlets, coffee shops, grocery shopping and dry cleaners in this area.

Opportunities: Strong Pedestrian Retail Environment

A strong pedestrian shopping experience will be better served along a smaller street with pedestrian priority. Neither Millway Avenue nor Highway 7 are considered to be pedestrian priority streets. Other successful retail requirements suggest the need for:

- appropriately scaled street walls to frame street spaces;
- large floor heights to create street walls in podiums;
- small fine grained retail on ground floors with any larger retail functions on the 2nd floor or above;
- layby temporary parking; and,
- narrow streets.

An east west street of a typical width of 20m in the VMC will be ideal. Vaughan Street (as named in the Secondary Plan), located between Highway 7 and Applemill Road and east of Jane Street, provides a more favourable location for a primary pedestrian retail experience due to its pedestrian priority, smaller and easier to cross street, connection between two neighbourhood green space nodes, and connections to the proposed public square and transit hub.



Retail Street New Road, Brighton, England



Retail Street Exhibition Road, London, England

4.2.5 Exploring Alternative Design Standards

Issue: Existing Engineer Street Standards

Although the arterial streets, Highway 7 and Jane Street, may have certain limitations, local and collector streets provide the opportunity to explore alternative design standards. Existing engineer standards for streets may not be appropriate for use on all streets within the VMC.

Opportunities: Raised Bicycle Lanes

An alternative to the traditional on-road bicycle lanes, raised bicycle lanes offer greater separation and safety between bicycles and motor vehicles. Potential opportunities for raised bicycle lanes exist on streets such as Edegely Boulevard, Creditstone Road and Applemill Road, as identified in the bicycle network plan and are bicycle priority streets. Other possible streets include Millway Avenue, Highway 7 and Jane Streets due to higher vehicle speeds on these roads.

Opportunities: Raised Intersections

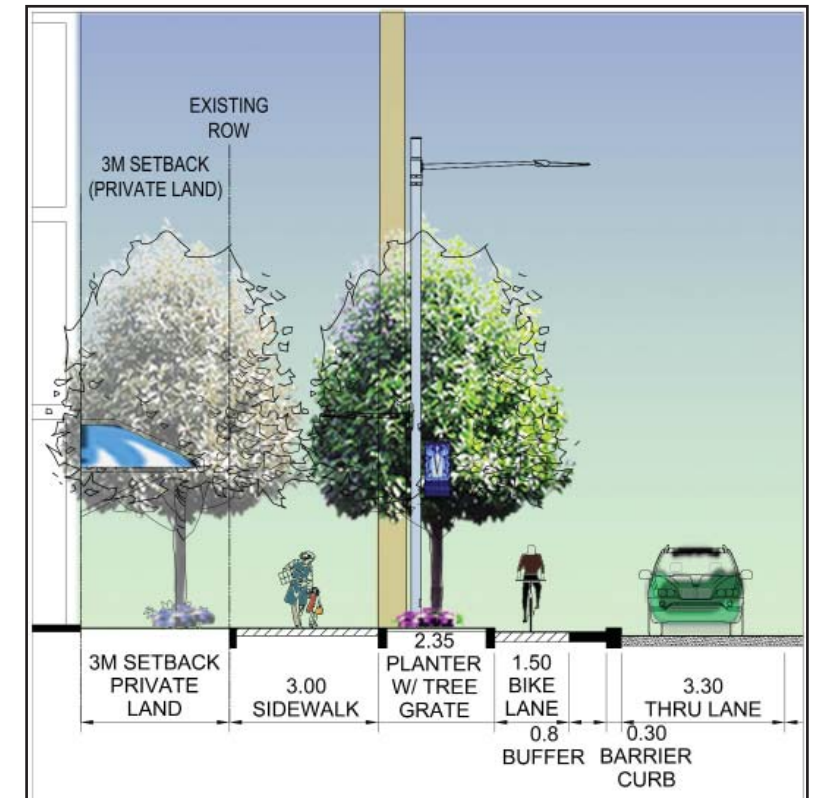
Raised intersections act as a traffic calming measure, indicating to vehicles that they are entering a pedestrian area and to slow down. Raised intersections could be utilized at specially identified intersections such as near neighbourhood centres, and provide for accessibility while integrating the element into the overall design of the entire intersection.

Opportunities: Woonerfs

Woonerfs allow for the intermingling of street uses, creating a shared space with pedestrians and cyclists having priority over motor vehicles. When applied to a retail street, it allows for the free movement of pedestrians and cyclists to follow crossing shopping patterns. The shared street space forces mutual respect for all forms of traffic. Woonerfs also allow for interesting paving patterns and a unique character and feel in comparison to other streets. It creates both an identity for a neighbourhood while being progressive in design. Pedestrian priority streets with a strong retail element are ideal for woonerfs. In the VMC, the major retail street with primary retail will be one practical location to implement this type of alternative design.



Raised Bike Lane Study Perspective on Highway 7



Raised Bike Lane Section

4.2.6 Planning for Underground Services

Issue: Visual and Functional Impacts of Above Ground Hydro

At present, hydro services throughout the VMC and along Highway 7 are identified to be located above ground. Hydro pole standards place constraints on the function of the streetscape and building massing. Functionally, hydro poles have setback requirements from both the building facades and road, limiting the locations of street trees and sidewalks. Visually, the tall hydro poles and wires stand out from the streetscape creating undesirable views.

Issue: Limitations on Street Tree Heights

Above ground hydro services will limit the allowable heights of street trees. Street trees in proximity to hydro wires are fire hazards. Consequently, tree selection becomes limited and impacts the future vision of the streetscape.

Opportunities: Pre-plan for Hydro Burial

The opportunity to pre-plan and design for the under-grounding of hydro services at some point in the future needs to be taken. Since the densities of the VMC will be considered very urban by Vaughan Standards, there will be desire and need to move these obstructing services from urban streetscape. By designing the streetscape to provide opportunity for the relocation of these services, the VMC can save money and time in the future for this work to be done.

While Highway 7 is not proposed to have hydro services placed underground, there is the opportunity to run hydro underground along local streets by developers and the private sector. Consultation with members of the private sector may present opportunities for funding to place hydro underground since benefits will easily be understood.

4.2.7 Street Network Implementation

Issue: Fragmented Implementation of Streets

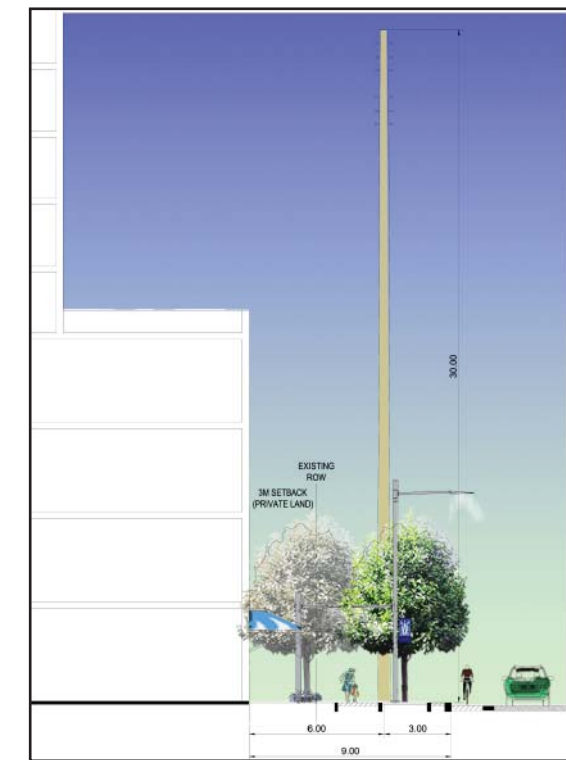
During implementation it is understood that York Region will be responsible for the redevelopment of the regional roads; the City will be responsible for the main arterials and collectors, while the local roads will be the responsibility of the developers.

Opportunities: Cohesive Vision for Street Network

The importance of standards becomes imperative when different stakeholders are responsible for implementing major structuring elements within the VMC. It is fundamentally important to provide the opportunity and ensure that all parties involved work together toward a connected and cohesive street network.



Visual Impact Study of Above Ground Hydro



Above Ground Hydro Create Visual and Functional Impacts Upon the Streetscape

4.3 Parks and Open Space Network

4.3.1 Neighbourhood Green Links System

Issue: Connectivity

According to the Secondary Plan, there will be 5 neighbourhoods being the Station Precinct, South Precinct, Technological Precinct and 2 neighbourhood precincts. After analysis of Schedule E - Major Parks and Open Spaces of the Secondary Plan, it is felt that the cohesion of the VMC could be better served by creating several nodal centers based upon open green spaces and linked by other open spaces.

Opportunities: Linked Green System

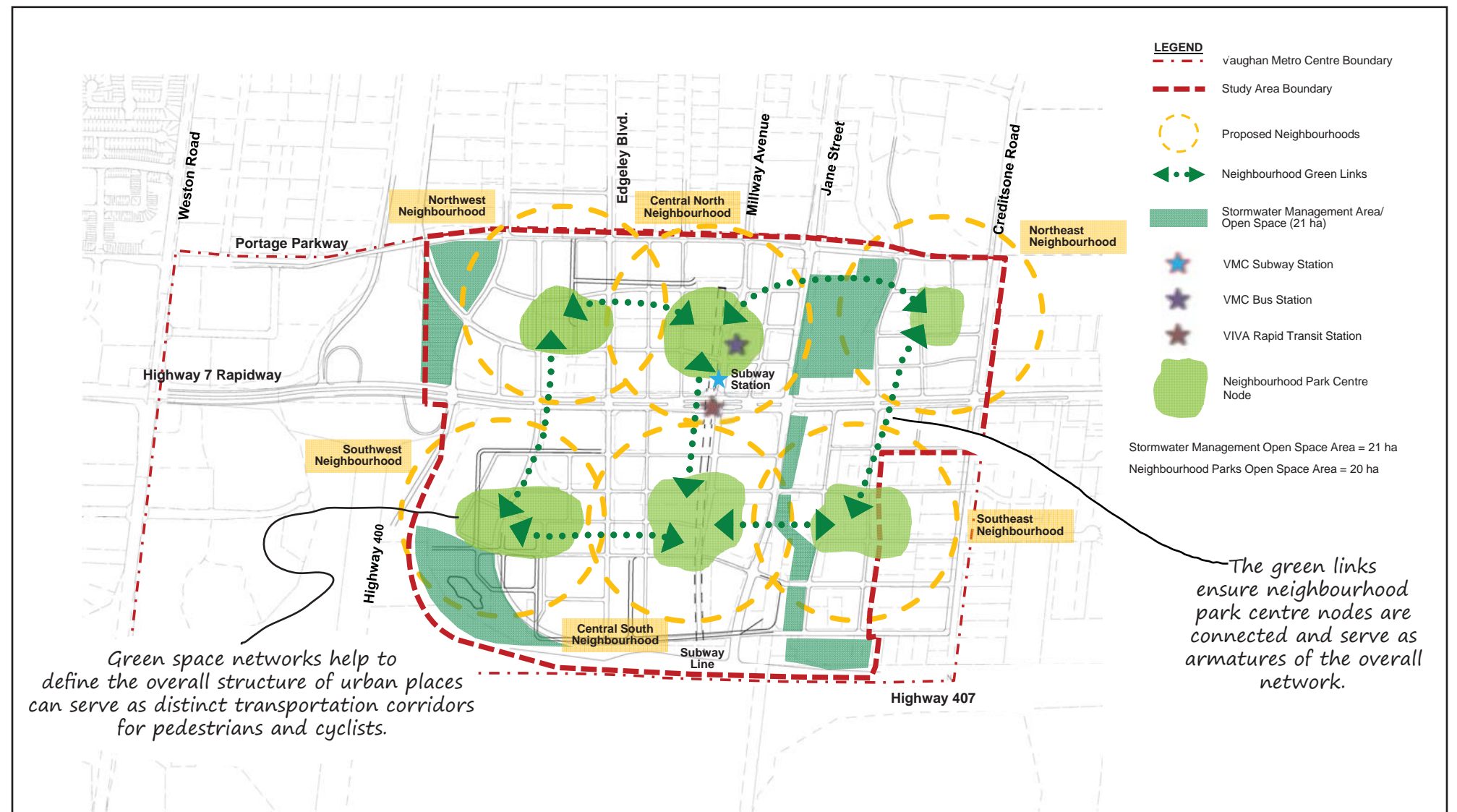
As depicted on the adjacent figure, each neighbourhood central green space will become the focal point of a distinct neighbourhood, similar to that of a public square of a town. There are 6 neighbourhoods identified surrounding central green open spaces which will be linked by other green open spaces, either along the streetscape or pedestrian ways. Each neighbourhood node will be within approximately 5 minutes walking distance from each other to create a community-wide function of connectivity and potentially city-wide where possible.

Issue: Parks Hierarchy and Programming

The parks hierarchy and associated programming of spaces currently utilized in the City of Vaughan is typically geared to satisfy the requirements of suburban built form and land use typologies.

Opportunities: Urban Open Space Hierarchy

The VMC provides the opportunity to reinvent and depart from the current park system hierarchy utilized in Vaughan. A new hierarchy of parks based on context, sizes, facilities and uses needs to be created to address the unique situation the VMC faces. The VMC will be an urban space and the current system Vaughan employs of large open parks and sports fields is better suited to the suburban context, which may not be feasible, functional or desirable here.



Neighbourhood Green Links System

Issue: New Standards Required for Parks

A new vocabulary and model is needed for the urban context. Smaller and more numerous urban parks with more intense uses would fit a more urban context.

Opportunities: Intense Urban Parks

Parks and open space within the VMC will be intensively used and be of a higher and more urban quality than those currently found in the City. As outlined in Section 6.1.2 of the Secondary Plan, acquisition of parkland adjacent to (outside of) the VMC will be possible to accommodate larger park functions such as sports fields.

Issue: Target Dedications to 20 ha

Achieving the target of 20 quality hectares dedicated to parks and open space will be a challenge due to VMC physical constraints and urban context.

4.3.2 Public Space Network and Public Facilities*Issue: Potential for a Disconnected Public Fabric*

The VMC must be looked at through one cohesive lens to ensure that public facilities are appropriately located and sited. These facilities should be connected and are integral to the green infrastructure.

Opportunities: Integration of Public Facilities

Integrate public facilities such as libraries, community centres, schools and recreational facilities within the network of public spaces. Public activities and destinations are to be easily accessible and mutually beneficial with other public spaces creating lively neighbourhoods.

The public space network has the potential to act as a framework where public facilities become nodes in conjunction with neighbourhood park centres. These nodes will become multi-use venues and serve a variety of programs while catering to a diversity of users.

4.3.3 Public Square*Issue: Size of Public Square*

At present, the Secondary Plan calls for the public square to be 10,000 sq.m (1 ha) in area. It is a significant amount of space and it will be important to work with developers to ensure the 10,000 sq.m of area allocated to a main public square will be of sufficient quality to accommodate major gathering functions.

Opportunities: Animate the Public Square

The main public square of the VMC is a special opportunity and of great significance. Traditionally, the main public square has symbolized the gathering place and the activity centre. The main public square shall be the focal point of the transit hub in the VMC and the centre of the green and open space network. The edges of the square need to be active with retail and entertainment while providing a space for large gatherings.

Ideally, public transit and at least 1 public building will front the square and be a pedestrian priority zone. The main public square will be the opportunity for the VMC to establish and showcase its identity and commitment to sustainability with innovative and sophisticated design.

4.3.4 Black Creek*Issue: Black Creek's Current State*

Currently, the Black Creek is channelized into a ditch on the east side of Jane Street. This lacks character and does not showcase the natural feature that is very prevalent in this area.

Opportunities: Showcase Natural Functions

The Black Creek is a unique feature which should be taken advantage of in the VMC. By integrating the Black Creek into the overall stormwater management system another functional component will be added to its existence. As part of design, the Black Creek will become a design feature in the urban streetscape. Adjacent to Jane Street, an identified gateway, the Black Creek will garner tremendous attention and form a part of the VMC identity.



Sherbourne Common, Toronto, Ontario

4.4 Sustainability

4.4.1 Stormwater Management System

Issue: Existing Engineer Standards for Drainage

The sizes of the stormwater ponds identified in the Secondary Plan were based on the assumption that no stormwater management measures would be undertaken in the public realm. Although standard stormwater management practices will be utilized on Highway 7, local / minor streets could be developed using Low Impact Development (LID) practices.

Opportunities:

Integrate the VMC stormwater management system into the neighbourhood green links system, building developments and streetscape. This will result in an innovative, seamlessly integrated and holistic system, which will function efficiently and passively with a high level of sophistication. Its presence in the streetscape will showcase a commitment to the environment and the pioneering attitudes of Vaughan.

At first glance, the Black Creek watercourse along Jane Street offers an opportunity to naturally display the stormwater management system in the streetscape. Bioswales and other urban hardscape opportunities, such as park water features and streetscape streams exist to make a functioning and aesthetically pleasing system.

4.4.2 Low Impact Development

Issue: Traditional Stormwater Management

Conventional stormwater management aims to slow stormwater runoff into natural streams and lakes, while LID practices aim to reduce pollutants and environmental impacts from stormwater and address it on site.

Opportunities: On-Site Stormwater Management

As a result, stormwater collected on site is often treated on site before dispersing into other water systems. Green roofs and bioswales are the most popularized elements of LID due to their visual impact. Green roofs also have other benefits of insulation and gardens for buildings while bioswales can be integrated into the streetscape. Bioretention cells and cisterns aid in water retention on site and the retained water could be treated and use for landscaping. Permeable paving could easily be used in the streetscape and on public open spaces, such as the main public square. More natural options include created wetlands or vegetated landscaping which can beautify the VMC while having a functional purpose.

It is important to understand many of these systems will be on private lands and therefore, coordination with developers and designers will be necessary. It is important to put in place LID measures in the design stages of developments to ensure coordination between the public and private realm and realize how they will work as a cohesive system. LID practices can be implemented in a number of locations throughout the VMC.



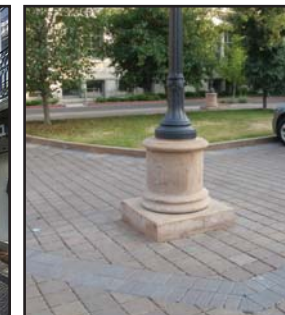
*Bioswale Sherbourne Common
Toronto, Canada*



Stormwater Management Kitchener, Ontario



*Permeable Paving
Santarem, Portugal*



*Permeable Paving UC
Berkeley, United States*

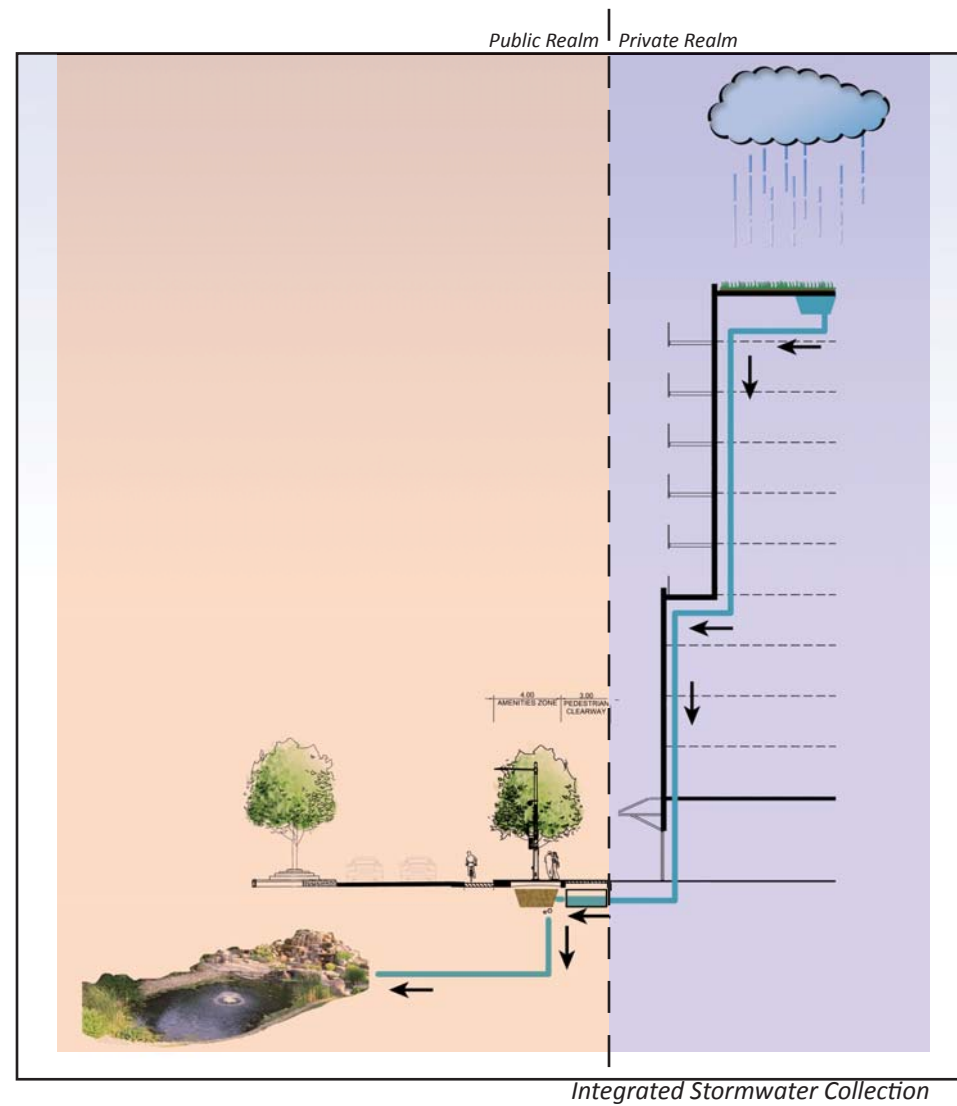


Bioretention Cell Ladue, United States

4.4.3 Integrated Sustainable Systems

Opportunity: Coordinated Effort between the Public and Private Realm

In relation to the development opportunities afforded by landowner cohesion, the prospect of implementing larger innovative and sophisticated sustainable systems is present. Innovative sustainable systems often require various components to work together holistically in a larger system framework. Unfortunately the system usually works across boundaries such as land ownership, different developers, time, policies, regions and land areas. Only when the boundaries are opened and various decision makers come together and work together can these systems be implemented and function well. In this context, if landowners and developers can be brought together and engaged, consensus and participation into designing and implementing larger sustainable and holistic systems exists. The Neighbourhood Green Links System and a holistic stormwater management system on private and public lands are two of the current possibilities which exist. Natural ventilation for buildings and bioswale water filtration could also be implemented on a large scale.



Olympic Village on False Creek, Vancouver, British Columbia