



Vaughan Metropolitan Centre
Streetscape and Open Space Plan



Place de la République, Paris, TVK





Vaughan Metropolitan Centre Streetscape and Open Space Plan

NOVEMBER 2015

Acknowledgements

The Streetscape and Open Space Plan for the Vaughan Metropolitan Centre (VMC) is the product of collaborative input from the City of Vaughan, land owners, and key stakeholders. Thank you to those who made an effort to participate in the design and consultation process to help shape the Plan's ideas, guidelines, and recommendations. The result is intended to be a practical Streetscape and Open Space Plan to guide future development in the Vaughan Metropolitan Centre.

Consultants

EDA Collaborative Inc. commenced this study in January 2012. This document provides a landscape concept, streetscape and open space guidelines, and public realm implementation strategies. EDA provided overall project management, stakeholder consultation, and streetscape and open space design components.

Giannone Petricone Associates Inc. Architects provided architectural expertise for this study, with particular attention to the public-private interface.

Brad Golden + Co. provided a public art strategy for the integration of public art into the streetscape, parks and open space framework.

GENIVAR Ontario Inc. provided active transportation and traffic engineering assessment.

Water's Edge Solutions Inc. identified opportunities for sustainable water management in the public realm.

Participating Stakeholders

Landowners

The City of Vaughan and the design team would like to thank all the stakeholders involved in the process for their invaluable input and support.

Agencies

- The Province of Ontario Ministry of Transportation
- The Province of Ontario Ministry of Infrastructure
- Power Stream
- The Regional Municipality of York
- vivaNext
- York Region Transit
- Toronto Transit Commission
- Toronto and Region Conservation Authority

Table of Contents

VOLUME 1 :

1.0	Framework	3
1.1	Purpose of the Plan	5
1.2	Inspiration	7
1.3	Vision + Principles	8
1.4	Goals + Objectives	10
1.5	Design Process + Consultation	12
<hr/>		
2.0	Context + Structure	17
2.1	Policy Context	19
2.2	Existing Conditions	27
2.3	Land Ownership	30
2.4	Natural Heritage Context	32
2.5	Cultural Heritage Context	37

VOLUME 2 :

3.0 Concept 41

3.1 Landscape Concept 43

4.0 Parks + Open Space 55

4.1 An Urban Approach for the Future 57
4.2 Ten Landscape Strategies 62
4.3 Classifications 80
4.4 Public / Private Network 92
4.5 Design Guidelines 96

5.0 Streetscapes 99

5.1 Vision 101
5.2 City-Wide Streetscape Manual 102
5.3 Streetscape Types 106
5.4 Pedestrian Priority Zones 110
5.5 Cycling Network 112
5.6 Transit Network 116
5.7 Road Classification Landscape Treatments 118
5.8 Landmarks, Views + Intersections 132
5.9 Public - Private Interface 138
5.10 Lighting Strategy 140
5.11 Highway 7 Streetscape Design 145

6.0 Design Guidelines 161

6.1 Public Realm Design Components 163
6.2 Public Art 188
6.3 Water 194
6.4 Community Gardens 204
6.5 Utilities 206

7.0 Implementation 209

7.1 Implementation Strategies 211
7.2 Operations + Maintenance 224

Appendix 227

A Region of York Top Performing Street Tree Species 229
B Region of York Notable Street Tree Species for Select Planting Sites 231
C City of Vaughan Street Tree List 235
D VMC Planting Palette 246



Volume 1

Background

1.0 Framework

- 1.1 Purpose of the Plan
- 1.2 Inspiration
- 1.3 Vision + Principles
- 1.4 Goals + Objectives
- 1.5 Design Process + Consultation

1.1 Purpose of the Plan

The Metropolitan Experience

This Vaughan Metropolitan Centre Streetscape and Open Space Plan outlines a comprehensive landscape framework and design guidelines for the implementation of the public realm in the Vaughan Metropolitan Centre (VMC).

The spaces between buildings will define the character, identity and experience of the new downtown as much as the buildings themselves. The public realm is infrastructure for social, cultural, environmental, transportation and economic functions in a city. It provides common and democratic spaces for daily life as well as a platform for those special moments and experiences in a city.

The Secondary Plan for the Vaughan Metropolitan Centre outlines the vision for a walkable, transit-oriented, accessible, diverse, vibrant, green and beautiful public realm. The VMC Streetscape and Open Space Plan is a place making document that provides a landscape vision, strategies and guidelines for the gradual, long term build-out of a seamlessly connected and high performance public realm comprised of great parks, open spaces, streets and mews. The Plan builds upon the significant public sector investments in transit, including the new subway and bus rapid transit lines.

Critical to the success of the public realm, will be the close spirit of partnership and design coordination between the public and private sectors. Through partnerships, planning, investment and creativity, the VMC has great potential to transform into an exciting urban centre that offers a high quality lifestyle and diverse urban experiences - “The Metropolitan Experience” - that will attract people and investment.

Promoting design excellence, leadership, and coordinated project implementation, the VMC Streetscape and Open Space Plan provides design guidance for city staff, the development community and other stakeholders for the improvement and development of streets, parks and open spaces in the Vaughan Metropolitan Centre.

Streetscapes in the Plan are coordinated with the City-Wide Streetscape Implementation Manual and Financial Strategy, which should be consulted for additional information.



“A city, like a **living thing**, is a united and continuous whole.”

(Plutarch, AD 50-120, Moralia)

1.2 Inspiration

The City of Vaughan is located at the transect between rural and urban. The Landscape Concept for the Vaughan Metropolitan Centre reflects the best qualities of both lifestyles – a forward-looking and holistic urbanism that is connected to community, family, active living, culture, local food networks, and urban nature.

Within the new downtown, a network of public and publicly accessible outdoor spaces and routes will gradually evolve over time to offer a variety of spaces for contemporary urban life.

A robust green framework of public infrastructure acts as an armature for the buildings, systems, creative endeavours and social networks that form a city. The green framework ties individual development projects together to ultimately create a sum greater than its parts.

A city is an organic and constantly evolving amalgam of public and private endeavours. A successful public realm requires the support of private development and vice versa – they are mutually supportive and integral to creating that “living thing” as a “united and continuous whole”.

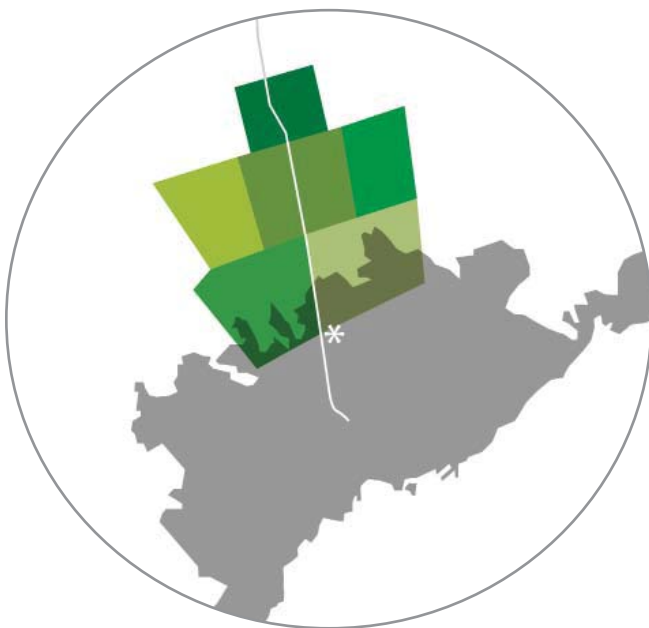


Figure 1.1: Rural Urban Transect

1.3 Vision + Principles

Establishing a widely-supported and clear vision for the public realm from the outset is a critical requirement for its successful development. The VMC Secondary Plan provides a plan for a strong, connected parks and open space system linked together with a fine-grained street and mews network. Parks are not left over spaces, but rather a vital part of the framework of public infrastructure that will knit the VMC community together.

Vision

“The City of Vaughan plans to create a downtown — an intense, dynamic community that in time will become the heart of the city, economically, culturally and physically.”

(2.0 VMC Secondary Plan)

Principles

Green
Beautiful
Transit-Oriented
Walkable Accessible
Vibrant Diverse

Vision Statement

The Streetscape and Open Space Plan for the Vaughan Metropolitan Centre will result in the creation of a public realm framework that is distinctly urban and vibrant; green and sustainable; and that achieves a mutually supportive relationship between the public and private realms.

Urban + Vibrant

Public realm spaces - streets, parks, and open spaces - will distinguish the Vaughan Metropolitan Centre through a contemporary expression of design excellence.



Green + Sustainable

Public realm spaces will be multi-functional and high performance, incorporating sustainable design innovation and green infrastructure. This includes the natural environment, social environment, and economic environment.



Mutually Supportive Implementation

The implementation strategy focuses on achieving the long term design intent for the streetscapes, parks, and open spaces through a consistent, cooperative, and seamless blend of public and private investment.



1.4 Goals + Objectives



Goal #1: Create a Unique Identity for the VMC

Objectives:

1. Build on natural and human history
2. Create destination places and character defining spaces
3. Develop distinct neighbourhoods
4. Establish strong gateways



Goal #2: Develop a Strong Public Realm Framework and Green Infrastructure System

Objectives:

1. Develop a streetscape hierarchy
2. Ensure parks and open spaces are place-makers
3. Define new urban park classifications
4. Apply Low Impact Design measures and sustainable Storm Water Management



Goal #3: Develop a Connected Urban Centre

Objectives:

1. Ensure connected and accessible spaces
2. Support an integrated way-finding system
3. Integrate transit infrastructure and active transportation facilities
4. Create strong street and park interfaces



Goal #4: Promote High Quality Design

Objectives:

1. Express a sophisticated quality of design
2. Utilize high quality materials
3. Include unique and distinctive site furnishings
4. Develop an urban planting palette
5. Encourage public art and landscape installations



Goal #5: Develop a Healthy and Safe Community

Objectives:

1. Design guidance to create comfortable and engaging public spaces
2. Design guidance for safe and secure public spaces
3. Ensure effective, efficient lighting
4. Promote community programs and events

1.5 Design Process + Consultation

The concept design and following work was developed based on a three-part consultation program that included the following events:

- Presentation to the Vaughan Metropolitan Centre Sub-Committee of Council (January 26, 2012)
- Visioning Session (April 16, 2012)
- Design Charrette (August 21, 2012)
- Presentation to the Vaughan Metropolitan Centre Review #1 by the City of Vaughan Design Review Panel I (January 31, 2013)
- Presentation to the Vaughan Metropolitan Centre Sub-Committee of Council (February 14, 2013)
- Stakeholder Meeting (March 4, 2013)
- Presentation to the Vaughan Metropolitan Centre Sub-Committee of Council (June 11, 2014)
- Presentation to the Vaughan Metropolitan Centre Review #2 by the City of Vaughan Design Review Panel I (June 26, 2014)
- Stakeholder Presentation on the draft VMC Streetscape and Open Space Plan and City-Wide Streetscape Implementation Manual and Financial Strategy Plan (July 23, 2014)
- A series of consultations with the City of Vaughan, York Region, vivaNext, Toronto Region and Conservation Authority, and other stakeholders throughout the design process

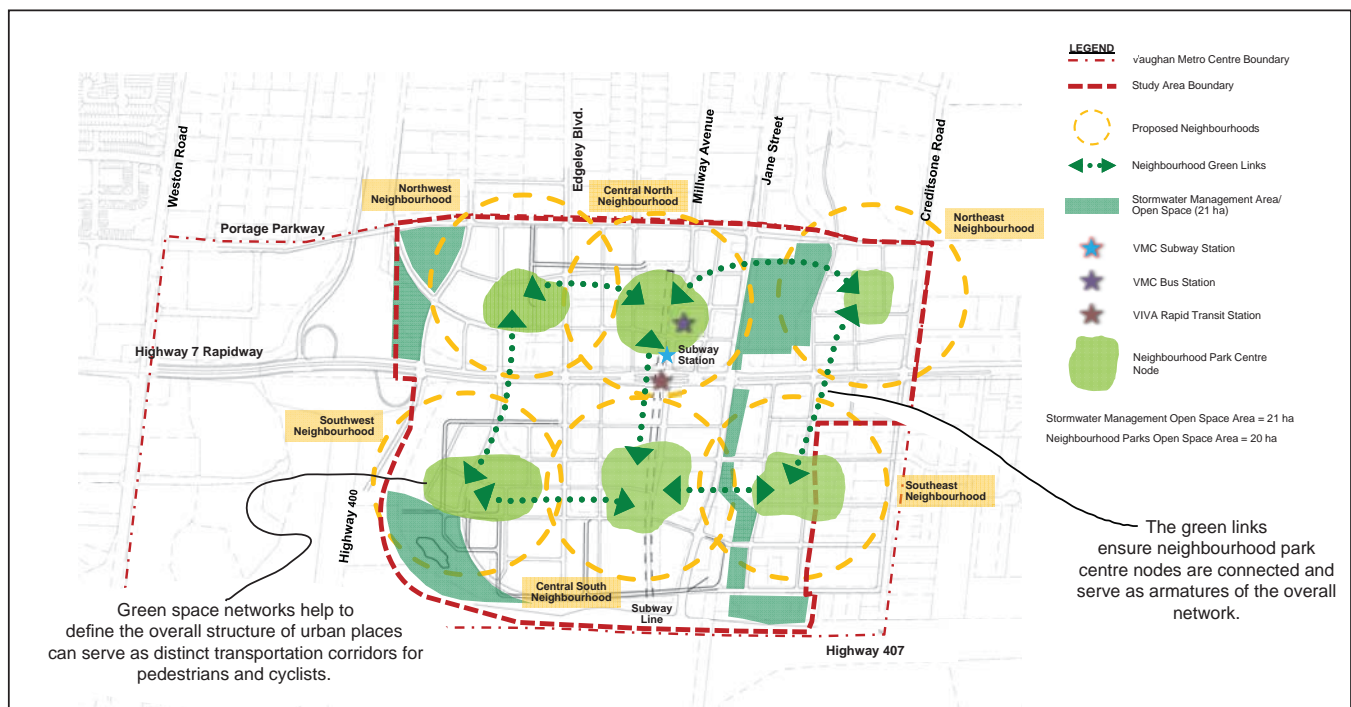


Figure 1.2: Design Structure - Green Links System

Visioning Session

In the Visioning Session, the design team focused on the overall vision and identity for the Vaughan Metropolitan Centre’s public realm. The following key themes emerged:

Identity + Design

- Well-designed streets, parks, and open spaces make a place “memorable”. Spaces define the character of a place.
- Design public realm spaces to contribute to the social life and culture of the city.
- Use landscape themes rooted in the natural history of the area to support the evolution of an identity that is unique, meaningful and authentic.

Spatial

- The public realm system can connect people and places together - emotionally and physically.
- A strong landscape framework creates an armature for future development and allows for the evolution of the downtown over generations.
- A hierarchical series of spaces allows for a variety of urban experiences (scales, functions, and significance).
- Use public spaces to help create “complete neighbourhoods” with a strong social fabric.
- Strategically integrate the public realm with development to create, “The whole greater than the sum of its parts” (Aristotle).

Economic

- A “green downtown” will support healthy urban living and help to attract talent, investment, and visitors.
- The public realm network needs to promote adjacent uses and programs (transit hub, commercial, retail, recreation and culture).
- The public realm needs to be designed to leverage and showcase programming and events.

Social

- Celebrate the seasons!
- Design a public realm that is also comfortable for children and the elderly.
- Healthy community.
- Provide social spaces.

Environmental

- “Green living theme” – Infuse every space, action, and detail with environmentally effective and forward-looking solutions.
- Water is an important feature of the VMC – showcase and celebrate water in the public realm with creative and innovative water management.

Stakeholder Meetings

On March 4, 2013, the Landscape Concept was presented to VMC Stakeholders for feedback and the generation of additional ideas. The following is a summary of the discussion.

“What aspects of the concept do you support, and what aspects would you like to see incorporated that may be missing?”

- Would like to see a big vision for the VMC that looks to the future – a concept that creates a special identity for the VMC that will differentiate it as a place.
- The Plan should identify the major landscape elements needed to make it such a place.
- Would like to see iconic landscape elements, such as an “iconic fountain or sculpture in the piazza”.
- Would like to see a strong lighting concept and strategy which will support summer and winter activity.
- The Edgeley stormwater management pond / land parcel at the north-east corner of Highway 7 and Jane Street is owned by the City. This creates a chance to create an urban park that could be implemented in the short term. This park could have a regional draw and be a focal point.
- The integration of green spaces and pedestrian connectivity is important.
- Provide clarity on what is meant by a blue street or a green street, what are associated guidelines for implementation.
- Bicycle considerations are needed for the VMC and should be detailed in this plan.
- Provide clarity on the design component matrix and how it is implemented to coordinate the incremental build out of the public realm network.

- Highway 7 and Jane Street is a very important intersection, a gateway, which creates identity for the VMC. See it as both natural and urban. What is going to make this place so different, with a special identity? Water is an opportunity.
- There is a lack of community linkages to connect the east and west sides of Jane Street – in terms of uses, programming, walking, bike trails etc. Need to create an interesting place where people can cross. In the immediate term envision grade level linkages, but in the longer term can envision elevated linkages across Jane Street.

“What qualities of a great downtown do you think should be included in the VMC?”

- Squares are places for people to congregate - food, gathering, hosting special events etc. They should be strategically located throughout the downtown to minimize walking distances between them. The Plan should highlight potential opportunities where these places should occur.
- The exact locations of public squares should be determined as the downtown develops organically, so that they are at locations that make sense with the context and where people will naturally gravitate towards. The VMC Streetscape and Open Space Plan should include guidelines to identify what will make these squares work as successful places.
- Great downtowns are multi-layered and have a fine grain – how do we get to the right scale?

A final meeting was held with VMC Stakeholders on July 23, 2014 to present the draft final version of the VMC Streetscape and Open Space Plan and City-Wide Streetscape Implementation Manual and Financial Strategy Plan.

2.0 Context + Structure

- 2.1 Policy Context
- 2.2 Existing Conditions
- 2.3 Land Ownership
- 2.4 Natural Heritage Context
- 2.5 Cultural Heritage Context

2.1 Policy Context

Healthy, active communities should be promoted by: planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and facilitate active transportation and community connectivity.

PPS Policy 1.5.1.a, 2014)

Places to Grow

The Growth Plan for the Greater Golden Horseshoe (*Places to Grow*), enacted in 2006, is a Provincial plan that directs how long-term growth and development should be managed in the Greater Golden Horseshoe. The Vaughan Metropolitan Centre is identified as an Urban Growth Centre, a strategic focal point for growth and intensification. The Province supports prosperity and appropriate growth by providing a number of benefits and incentives to encourage developers and investors to make location decisions that support the growth plan.

The Big Move

Metrolinx's Regional Transportation Plan, *The Big Move* (2008), outlines a 25 year plan for the Region's Rapid Transit and Highway network. Top transit priorities outlined in *The Big Move* include the VivaNext Highway 7 rapid transitway through York Region and the Spadina Subway extension to the Vaughan Metropolitan Centre.

Combined, the transit initiatives create an "Anchor Mobility Hub" centered at Highway 7 and Millway Avenue. The mobility hub sets the stage for building a transit-oriented downtown.

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 the potential to become vibrant urban destinations where all modes of transportation seamlessly come together to support an intense concentration of employment, living, shopping and recreation.

Anchor Mobility Hubs are envisaged as the "anchors" of a successful regional transportation network.

Mobility Hub Guidelines

Metrolinx has developed Mobility Hub Guidelines (2011) to guide the planning and development at mobility hubs throughout the GTHA. The guidelines focus on elements that contribute to the development of successful mobility hubs as places, including land use and urban design surrounding rapid transit stations. The guidelines also address funding and implementation. The Streetscape and Open Space Plan for the VMC incorporates these guidelines where applicable to contribute to a cohesive and accessible public realm.

Key VMC Transit Initiatives

- [vivaNext Highway 7 Rapidway](#) includes three stations located within the Vaughan Metropolitan Centre. Dedicated centre lanes for transit vehicles create bus rapid transit connections between Markham and Vaughan.
- [Toronto Transit Commission Toronto-York Spadina Subway Line Extension](#) includes a new subway station located in the Vaughan Metropolitan Centre at the corner of Highway 7 and Millway Avenue. The subway connects Vaughan to downtown Toronto.
- [York Region Transit \(YRT\) Bus Terminal](#) will be located on Millway Avenue north of Highway 7 with an underground link to the new subway station.

Region of York Official Plan

The Region of York Official Plan (December 2009), calls for the creation of a system of Regional Centres strategically located in Markham, Newmarket, Richmond Hill and Vaughan. Regional Centres will be linked by rapid transit along the Yonge Street and Highway 7 Regional Corridors. The Vaughan Metropolitan Centre is one of the four designated Regional Centres.

In the Official Plan, “Regional Centres are planned as the most important and intense concentration of development within the Region. They are vibrant urban places for living, working, shopping, entertainment, cultural identity and human services.”

To require high-quality urban design and pedestrian-friendly communities that provide safety, comfort and mobility so that residents can walk to meet their daily needs.

(The Regional Official Plan, Section 3.1 Human Health and Well-Being)

Region of York Pedestrian and Cycling Master Plan

“The York Region Pedestrian and Cycling Master Plan (PCMP) is intended to guide the Regional Municipality of York as it works with local municipalities over the next 25 years and beyond to implement a comprehensive pedestrian system and on and off road region-wide cycling network. The PCMP also includes a set of supporting policies and programs to promote walking and cycling in the Region.

...The purpose of the PCMP is to build upon the existing network of on and off-road pedestrian and cycling facilities as well as supporting programs in York Region. This will help to improve walking and cycling conditions and encourage more people to walk and cycle more often.”

York Region Pedestrian & Cycling Master Plan Study, April 2008, Version 1.4

Region of York Great Streets: A Context Sensitive Approach

“York Region’s draft Context Sensitive Solutions (CSS) design guidelines recognize that street design should be sensitive to surrounding land uses and community needs. Instead of a “one size fits all” approach to classifying and designing Regional streets, the guidelines introduce six street typologies and offer design solutions that are catered to each street type.

Context Sensitive Solutions will help planners and transportation engineers tailor the design of Regional streets.”

Designing Great Streets: A Context Sensitive Solutions Approach, 2013

City of Vaughan Official Plan

The City of Vaughan's Official Plan provides a comprehensive framework for guiding growth in Vaughan. It includes a hierarchy of Intensification Areas, with the Vaughan Metropolitan Centre as the Regional Centre.

2.2.5 Intensification Areas

"The Vaughan Metropolitan Centre will become the City's downtown. It will be a place of regional importance centered on the planned subway station at Highway 7 and Millway Avenue. The Vaughan Metropolitan Centre is a strategic location for the concentration of the highest densities and widest mix of uses in the City, allowing it to become a multi-faced and dynamic place to live, work, shop and play, attracting activity throughout the day.

Because of its significant size, the Vaughan Metropolitan Centre will be comprised of 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 and a fine-grain grid pattern of streets."

The Vision for Transformation: Goals for the Official Plan

1. Strong and Diverse Communities
2. A Robust and Prominent Countryside
3. A Diverse Economy
4. A Vibrant and Thriving Downtown
5. Moving Around without a Car
6. Design Excellence and Memorable Places
7. A Green and Sustainable City
8. Directing Growth to Appropriate Locations

Great cities can all boast of a vibrant public realm. Vaughan is committed to building a truly remarkable public realm throughout the City.

(City of Vaughan Official Plan, Elements of a Great City 9.1.1)

VMC Secondary Plan

The goal of the Secondary Plan for the Vaughan Metropolitan Centre (2013) is to create a vibrant and sustainable downtown.

The Secondary Plan includes the following objectives that are important for the VMC Streetscape and Open Space Plan:

- Establish a distinct downtown for Vaughan by 2031 containing a mix of uses, civic attractions and a critical mass of people.
- Optimize existing and planned investments in rapid transit.
- Develop a generous and remarkable open space system.
- Make natural features and functions a prominent part of development.
- Ensure development incorporates green infrastructure and green building technologies.
- Establish a hierarchical, fine-grain grid network of streets and pathways linked rationally to the larger road system.
- Ensure all development exhibits a high quality of urbanity, materials and design.

The Streetscape and Open Space Plan for VMC will build upon the policies, streetscape network, and parks and open space network established by the Secondary Plan.

VMC Transportation Master Plan

The VMC Transportation Master Plan was approved in 2012. The Streetscape and Open Space Master Plan for the VMC will accommodate the outlined road and transit improvements in the VMC Transportation Master Plan (Portage Parkway Crossing of Highway 400, The Spadina Subway Extension, VivaNext Highway 7 Bus Rapid Transit), ensure “connectedness”, and recognize that alternative road improvements have been identified (i.e. the Millway Avenue Realignment and Southerly Extension and the extension of Colossus Drive across Highway 400).

City of Vaughan Active Together Master Plan

The Active Together Master Plan, updated in 2013, provides recommendations for the amount and size of active and passive parkland, multi-use community centres, waterplay, outdoor courts, outdoor skating rinks, and other facilities to be located within the Vaughan Metropolitan Centre.

The Vaughan Metropolitan Centre is planned to become a dense urban centre, thereby requiring a new approach to the provision of urban parks, open space, and recreational facilities.

City of Vaughan Pedestrian and Cycling Master Plan

Prepared in 2007, the Pedestrian and Bicycle Master Plan guides improvements to existing and proposed pedestrian and cycling infrastructure in order to create a friendlier environment to navigate the City by means other than the automobile. This plan recognizes that improvements to urban design and streetscaping are critical to create pedestrian-oriented environments in Vaughan.

A 20 year plan designed to make Vaughan one of the most pedestrian and cycling friendly cities in Canada.

Black Creek Stormwater Optimization Study Municipal Class Environmental Assessment Master Plan

Completed in 2012, Phases 1 and 2 of the Black Creek Environmental Assessment identifies a number of proposed initiatives to meet the study goals of identifying flood improvement alternatives, water quality alternatives, and channel erosion improvement alternatives. These initiatives have been considered as part of the VMC Streetscape and Open Space Plan. Phases 3 and 4 of the VMC Black Creek Renewal Environmental Assessment are underway at the time of this Study.

Black Creek is a unique feature with the opportunity to be a focal point of the VMC. The VMC Streetscape and Open Space Plan aims to help ensure that the revitalized Black Creek becomes an integral part of the green public infrastructure within the Vaughan Metropolitan Centre in its design concept and through the provision of design guidelines.

VMC Municipal Servicing Class Environmental Assessment Master Plan

This study, completed 2012, assessed the VMC’s future needs for water supply, sanitary and stormwater services. All new private development will be required to ensure that the peak flow generated by storms up to and including the 100-year return period event are attenuated to the 2-year post development flow rate. In addition, the volume management target is the capture and retention of 15 mm of every rainfall event over the proposed building footprint and landscaped area.

vivaNext Rapidway Streetscape Design

Working in partnership with Metrolinx and Infrastructure Ontario, vivaNext is designing and building a bus rapid transit (BRT) system along Highway 7, including within the VMC. The BRT system has the capability to be converted to a fixed-guided technology, such as light rail transit (LRT), once ridership reaches levels capable of supporting the capital and operating costs. “The Rapid Transit network is at the heart of the Region’s Centres and Corridors strategy. The Rapid Transit network is the infrastructure backbone supporting the transformation of York Region into a mature urban area by concentrating growth and development within designated urban areas and along the Rapid Transit corridors that connect them.”

(Report No. 4 of the Rapid Transit Public / Private Partnership Steering Committee, Regional Council Meeting of April 24, 2008.)



Figure 2.1: VMC rapid transit stations as part of the Regional VivaNext system

VMC TTC Subway Station

An important development catalyst for the new downtown is the construction of a new subway station in the VMC as part of the Toronto-York Spadina Subway Extension. The VMC subway station will become the northern terminus on the University Spadina Subway Line, and as a result will serve a regional catchment base. The VMC subway station will be surrounded by high density mixed-use development and connected to the YRT Bus Terminal, the vivaNext rapidway, transit square, and a special pedestrian-oriented local retail street on the north side of the station.

The subway station will also connect to the primary retail along Millway Avenue and its associated urban parks. Together these public and private initiatives have the potential to create an exciting mobility hub destination at the heart of the Vaughan Metropolitan Centre. To complement the mobility hub and the large density of people it will draw, a rich pedestrian, cycle and vehicular network is required.



Vaughan Metropolitan Centre Station

Located at the Highway 7 and Millway Avenue intersection

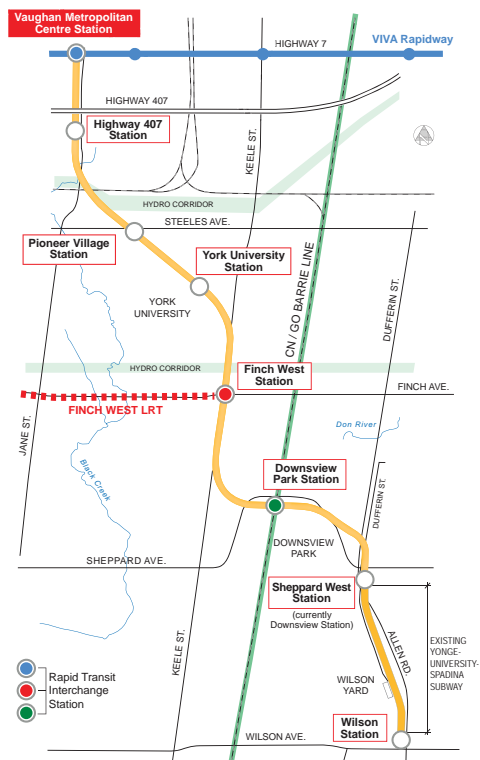


Figure 2.2: VMC as Part of TTC System (Map illustration © TTC and TYSSE)

2.2 Existing Conditions

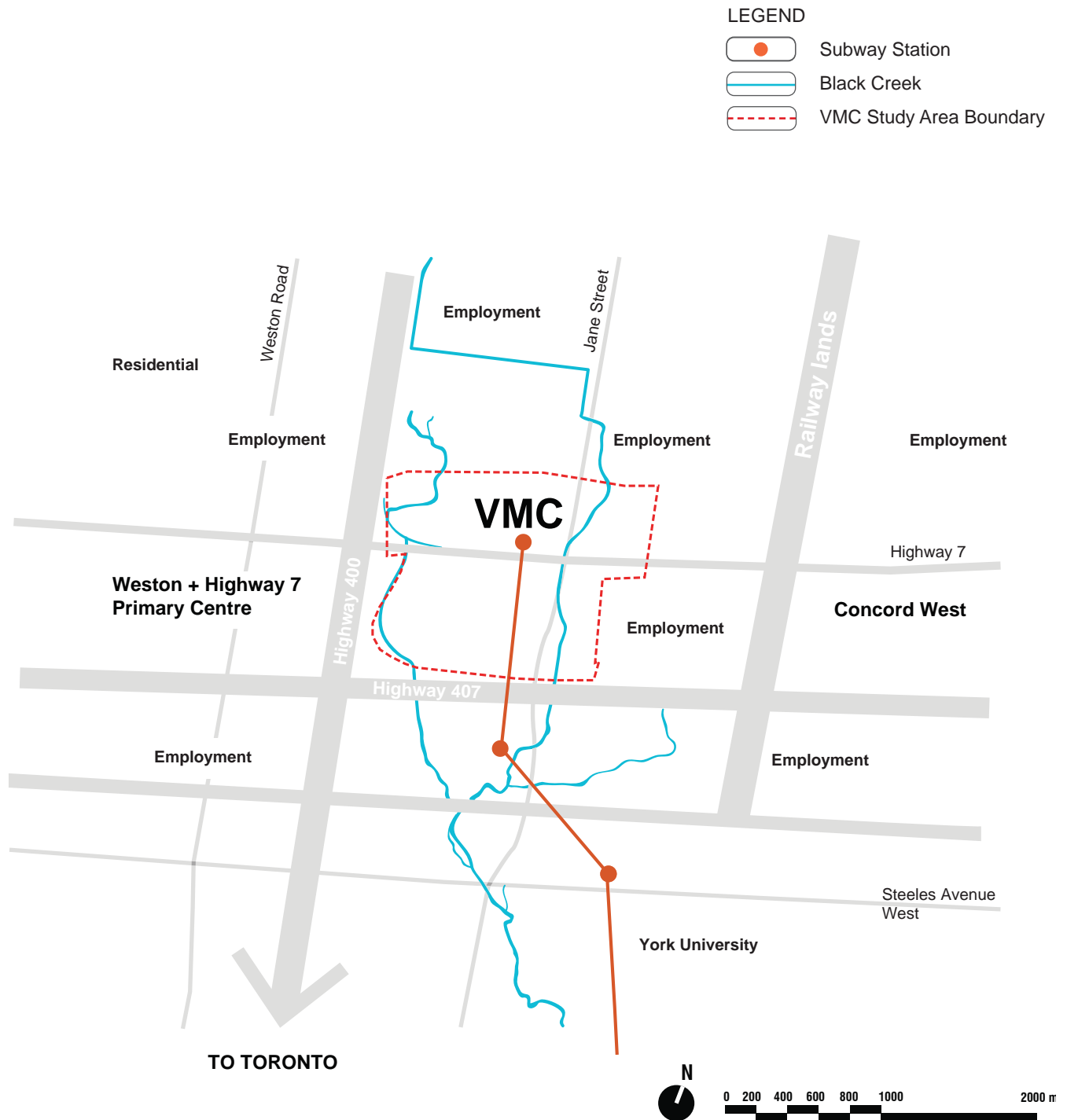


Figure 2.3: Existing Surrounding Land Use

Surrounding Land Use

The VMC is embedded in the heart of a major regional industrial area and transportation network. Highway 407 bounds the southern edge and Highway 400 bounds the western edge. A planned Primary Intensification area is located on the west side of Highway 400. The Concord West community is located eastwards of the VMC, separated by the MacMillan Rail Yard and employment lands.



Figure 2.4: Aerial Photo of Surrounding Land Uses

Existing Site Conditions

The Site is currently a combination of developed commercial property, light industrial development property, and undeveloped land. There are few areas where a consistent street edge is discernible due to discontinuous built form interspersed with vacant lots and surface parking lots. The site as a whole is characteristic of suburban or fringe development with large areas of undefined space. The streets do not promote urban life consistent with the stated ambitions of urban intensification, and the existing site lacks any cohesive qualities or sense of identity.

Existing development includes a large manufacturing/ distribution plant, a six storey office building built approximately 25 years ago, and a number of smaller industrial and retail - commercial uses. More recent development includes a wide range of large-scale retail formats (big box), hotels, smaller office buildings, and various entertainment and restaurant uses in an entertainment complex. Black Creek runs north-south through the site in a severely degraded condition.

For more information on the existing conditions, refer to the Phase 1 Report : Background & Analysis, as well as to Section 2.4 Natural Heritage Context.

Comparative Scale How Big is the VMC?

At full build-out, the Vaughan Metropolitan Centre will be comprised of over 30 city blocks. This scale is similar to an area of downtown Toronto bounded by Dundas Street to the north, Front Street to the south, Spadina Avenue to the west and, Church Street to the east.

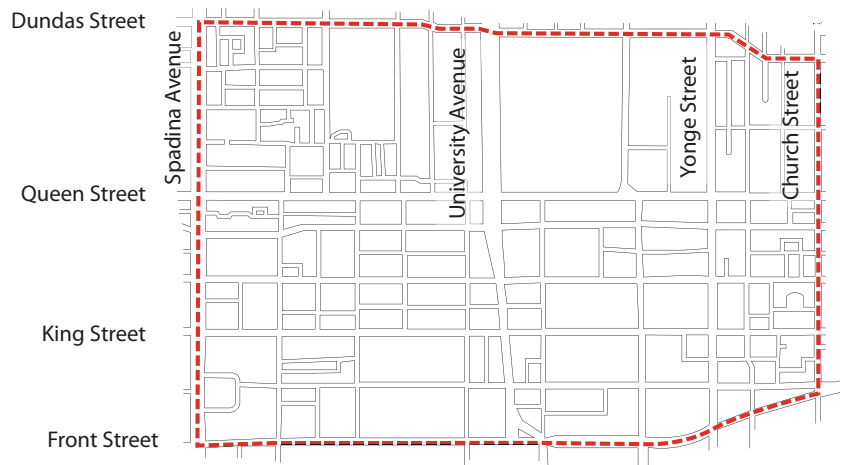
The VMC is approximately
190 hectares

0 200m 400m

Approx. 5 Minute Walking Distance (500m)

Approx. 1.7 km (1,700 m)

Downtown Toronto



Vaughan Metropolitan Centre



Figure 2.5: Comparative Scale

2.3 Land Ownership

The majority of land within the Vaughan Metropolitan Centre is privately owned. In terms of public ownership, the City of Vaughan owns existing stormwater management facilities in the south west and north east quadrants of the VMC. The Province of Ontario owns lands along the highways and fronting Jane Street. The Region of York owns lands along Highway 7 and Jane Street.

The relatively large scale of many land holdings, paired with their future development and redevelopment potential, presents an important opportunity to implement coordinated sustainable infrastructure systems including storm water management, transportation, landscape and energy infrastructure.

Coordination between landowners poses the most creative implementation challenge to establish a cohesive and connected public realm. The lands that are required to create the framework of the public streets, parks and open spaces envisioned by the Secondary Plan will need to be acquired and dedicated through the land development process as it occurs over time.

Partnerships between landowners and between private enterprises and the City / Region are essential to create a sum greater than its parts. For the Secondary Plan vision to be realized, a vision must be shared and supported by both the public and private stakeholders.



Figure 2.6: Existing Site Conditions (Source: Google Earth)



Jane Street at Interchange Way (looking west)



Highway 7 at Jane Street (looking south)



Highway 7 at Edgeley Boulevard (looking east)

2.4 Natural Heritage Context

Vegetation Communities

The City of Vaughan is in a transition zone between the Great Lakes – St. Lawrence and Carolinian floristic regions. Both floristic regions fall within the Mixed Wood Plains ecozone. The natural cover in this zone is predominately deciduous and mixed deciduous forest, with lesser amounts of meadow, thickets and wetland communities.

Situated near the southernmost edge of the City, the Vaughan Metropolitan Centre is located in Ecodistrict 7E-4. Ecoregion 7E corresponds to the Carolinian Forest Region which is also called the Deciduous Forest Region. The Carolinian forest region covers the southern-most portion of the province and Vaughan is at its northernmost edge. This ecoregion includes indigenous tree species such as Sugar Maple, American Beech, Eastern White Pine, Yellow Birch, Red Maple, Basswood, and Red Oak.

Vaughan is located within Zone 5b of the Natural Resources Canada Plant Hardiness Zone Map.

(Vaughan Tomorrow, City of Vaughan Natural Heritage in the City, AECOM, Urban Strategies Inc., April 2010)

(Black Creek Stormwater Optimization Study Municipal Class Environmental Assessment Master Plan Report (Phases 1 and 2), AECOM, May 2011)

Fauna

In the past, the following bird and butterfly species have been identified either within or in the vicinity of Vaughan Metropolitan Centre:

- Monarch Butterfly
- Red-tailed Hawk
- Northern Mockingbird
- American Kestrel
- Barn Swallow
- American Goldfinch
- Golden-winged Warbler
- Canada Warbler
- Common Nighthawk
- Bobolink
- Eastern Meadowlark
- Chimney Swift

(Viva Next H2 VMC, Highway 7, Vaughan Natural Sciences Report)

Caveat: Not all lands in the VMC have been fully surveyed, and significant development infrastructure work has taken place since the above reference findings. As development occurs, the Toronto and Region Conservation Authority recommends that updated data be collected.

The Regional landscape provides the basis for the identification of “Landscape Archetypes” in the Plan that will inform the planting palette in the VMC

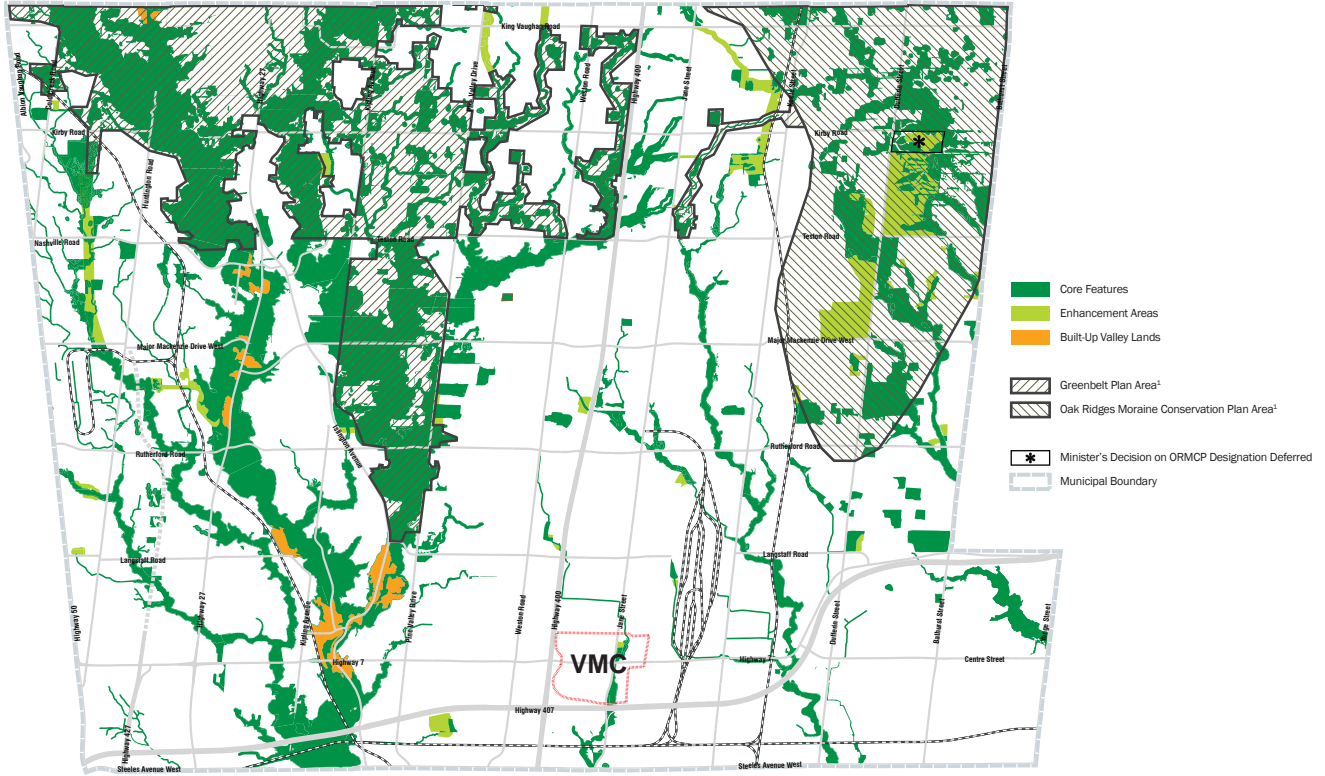


Figure 2.7: City of Vaughan Official Plan Natural Heritage Network



Sugar Maple



American Beech



Barn Swallow*



Monarch Butterfly*



Tulip Tree



Eastern White Pine



Northern Mockingbird*



American Goldfinch*

The species marked with an asterisk (*) are priority species for conservation that can be found in cultural meadow habitat within the study area.

Ensure development in the VMC both anticipates impacts from and mitigates potential impacts on climate change.

(5.0 VMC Secondary Plan)

Climate

The Humber watershed experiences a continental climate. The Great Lakes moderate temperatures surprisingly far inland from Lake Ontario, decreasing summer temperatures and increasing the number of frost free days. This allows for the growth of plant species, such as the Carolinian species present in the Vaughan Metropolitan Centre that otherwise occur at lower latitudes.

The watershed is influenced by warm, moist air masses from the south and cold, dry masses from the north. In an average year, precipitation in the Humber watershed typically ranges from 798 to 933 mm. The most precipitation occurs during the summer months (June, July and August).

Trees play an important role in mitigating human health risks associated with air pollution as well as mitigating climate change.

Global climate change is likely to affect the climate of southern Ontario. The weather is expected to become more unpredictable, with greater variations in precipitation and increases in extreme weather. The implementation of green infrastructure in the Vaughan Metropolitan Centre is an important move in order to mitigate the causes and effects of climate change.

(Humber River Watershed Plan - Pathways to a Healthy Humber Toronto and Region Conservation Authority, 2008)

Microclimate

Seasonal Winds

In the winter months (November - April), winds from the west, north, west-southwest and north-northwest directions prevail. Stronger winter winds are most prevalent from the westerly and northerly directions. For blowing snow events (snowdrifting), winds from the southwest through north to east directions are the most important design considerations.

In the summer months (May - October), winds from the west, north, and north-northwest are the most frequent.

During summer and winter seasons, westerly winds are prevalent.

Air Quality

Particulate matter (PM) air pollutant sources range from industrial smokestacks to automobile exhaust pipes. Between 2003 and 2012 in York-Durham Region, 14 smog advisories were issued by the Province.

Trees play an important role in mitigating human health risks associated with air pollution as well as mitigating the causes and effects of climate change. Trees and shrubs in Vaughan remove approximately 350 metric tonnes of air pollution (CO, NO₂, O₃, PM₁₀ and SO₂).

(“Expanding the Urban Forest – One Tree at a Time”, November 2012, Parks & Forestry Operations, City of Vaughan)

Topography

The topography of the site is generally flat, though the site slopes slightly from north to south with a north-south ridgeline roughly aligning with Millway Avenue.

Black Creek

Black Creek is a tributary of the Humber River, and is included in the Natural Heritage Network identified within the City of Vaughan Official Plan. Black Creek is one of the many watercourses that cut across the South Slope / Peel Plain physiographic region, draining southward to Lake Ontario.

The headwaters of Black Creek begin north of the Vaughan Metropolitan Centre in the City of Vaughan, and the remaining larger area of the subwatershed is located in the City of Toronto. Many of the historical tributaries of Black Creek have been eliminated as a result of past agricultural and urban development practices.

The Toronto and Region Conservation Authority recommends that further study and potential restoration of the tributary of Black Creek located along the western boundary of the VMC area be undertaken. This tributary may provide important green space, ecological function and is a natural hazard.

Fish

Black Creek provides warm water habitat for fish. Detailed field investigations carried out during the 2010 for the proposed Toronto-York Spadina Subway Extension identified a number of fish species that currently inhabit a segment of Black Creek within the VMC. The species include Blacknose Dace, Bluegill, Brook Stickleback, Common Carp, Common Shiner, Creek Chub, Golden Shiner, Horneyhead Chub, Pumpkinseed and White Sucker. Historically, Black Creek supported more than 18 species of fish. However, the system was highly altered by development when reaches of Black Creek were channelized to mitigate flooding.

Current Condition

The Black Creek subwatershed has approximately 48% impervious cover. As a result, flooding has become a significant hazard and runoff is flashy with relatively high peak flows during storm events. Continued urbanization in the Black Creek subwatershed is increasing surface water runoff, total flow volumes, watercourse instability and erosion. Surface water quality in the Black Creek is currently classified as very poor. The Black Creek experiences warm, unstable thermal conditions and has significant in-stream barriers.

(Black Creek Stormwater Optimization Study Municipal Class Environmental Assessment Master Plan Report (Phases 1 and 2), AECOM, May 2011)

(Humber River Watershed Plan - Pathways to a Healthy Humber Toronto and Region Conservation Authority, 2008)

Depth to Groundwater

Groundwater is an important consideration to the planning and design of development projects within the Vaughan Metropolitan Centre.

In the Vaughan Metropolitan Centre, shallow groundwater may vary from approximately 1 to 5 meters below ground surface in the Upper Sand / Silt deposits. Groundwater in the Lower Till is significantly lower at approximately 25m below ground surface.

In the 1980's, an artesian well condition was found at Jane Street and Highway 7 when sewer line work was undertaken.

The segment of Black Creek running through the Vaughan Metropolitan Centre is classified by the TRCA as "Highly Sensitive" hydrogeological sensitivity (Glacial Lake & Outwash Deposits).

(Humber River Watershed Plan - Pathways to a Healthy Humber Toronto and Region Conservation Authority, 2008)

Soils

The VMC is located within the South Slope/ Peel Plain physiographic region of southern Ontario. The VMC is covered by a gently rolling plain of glacial soils such as till and glaciolacustrine deposits. In places in the VMC, till contains isolated and thin lenses of sand, silty sand and gravely sand which could serve as a shallow overburden aquifer.

The surficial soils within the VMC are predominately comprised of sandy, silty, clayey till and fine-textured glaciolacustrine deposits. Available mapping indicates that the native soils consist of Chinquacousey Clay Loam, Halton Clay and Peel Clay. The clay is heavy in texture, medium acidic and more calcareous than the underlying shaley till. The soil has imperfect drainage.

(Black Creek Stormwater Optimization Study Municipal Class Environmental Assessment Master Plan Report (Phases 1 and 2), AECOM, May 2011)

2.5 Cultural Heritage Context

The landscape within the Vaughan Metropolitan Centre has been transformed in recent human history from an agricultural landscape, to an industrial landscape, to the commercial uses that are predominant today.

At the intersection of Jane Street and Highway 7, the community of Edgeley was established circa 1800 by settlers from Somerset County, Pennsylvania.

Edgeley's lands were fertile, and Edgeley became well known for **growing fruits**, mainly apples. Almost the entire landscape of Edgeley was covered in **orchards**, most notably around today's Edgeley Boulevard.

A sawmill was first established 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. Black Creek provided water power for the settlers in the area. Some of the buildings from the former community of Edgeley can be found today at Black Creek Pioneer Village, administered by the Toronto and Region Conservation Authority.

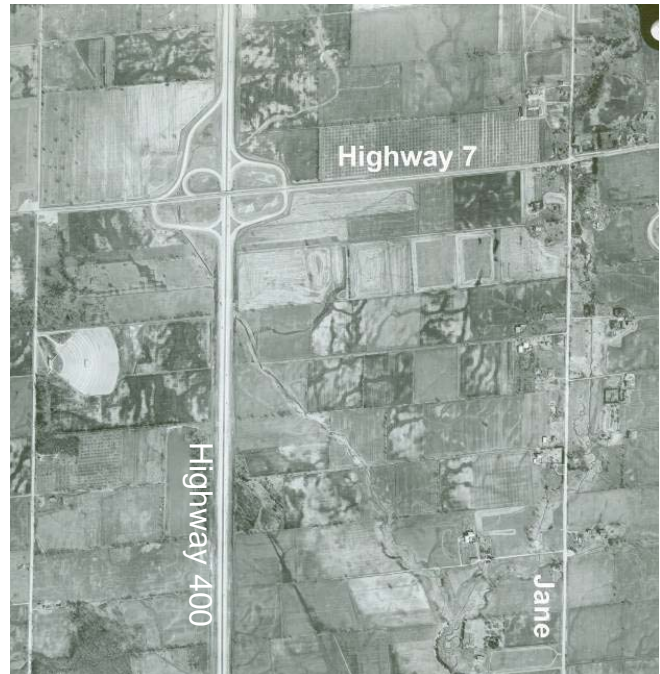


Figure 2.8: Pre-1978 (Agricultural)



Figure 2.9: 1978 (Industrial)



Volume 2 Streetscape and Open Space Plan

3.0 Concept

3.1 Landscape Concept



3.1 Landscape Concept

The Landscape Concept is a story of great streets, parks, open spaces and mews working together as a **Blue-Green-Mews** Network. Together, this network is a layered landscape system of places and connections for people where leisure, recreational, cultural and environmental functions mix and overlap at various scales and intensities. The network will develop incrementally over time with investment and development.

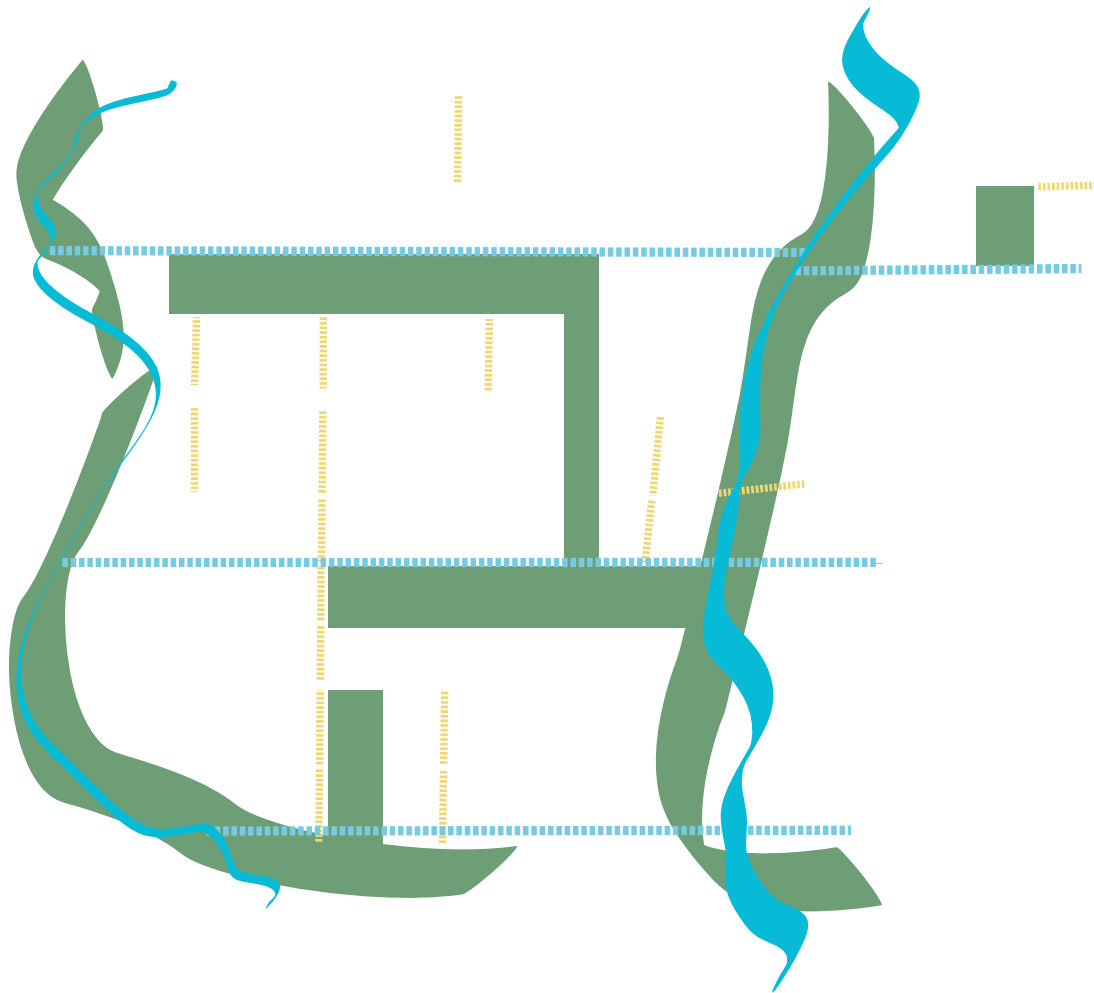


Figure 3.1: Landscape Concept

The **Blue Network** celebrates the presence of water in the Vaughan Metropolitan Centre, both above and below the ground. The Blue Network is a concept centered on Black Creek and the incorporation of landscape-based stormwater management into the public realm. Water is both an amenity for people to experience as well as a natural resource to respect and work with in the design of a city. The incorporation of landscape-based stormwater infrastructure into the public realm system can make a positive contribution to the health of the watershed and increase the resiliency of the downtown to future climate change.

Revitalize + Re-Connect with Black Creek

The most prominent natural heritage feature in the downtown is Black Creek. A secondary tributary of Black Creek runs along the western boundary of the VMC. Black Creek has the potential to be transformed into an exciting central destination for people that combines ecology, flood protection, storm water management, trails, urban recreation spaces and cultural program. This revitalization is a long term city-building move to support the Vaughan Metropolitan Centre's growth and economic competitiveness. A revitalized Black Creek can unlock significant economic development potential by providing:

- Flood protection
- Improvements to environmental quality, wildlife habitat and water quality
- The creation of social and recreational spaces (urban amenity)
- A strong landscape identity for the downtown

Blue Streets

Extending laterally outwards from Black Creek, Blue Streets are public streets where Low Impact Development measures can be most easily implemented to improve stormwater quality and incrementally reduce stormwater quantity with maximum benefit. These special streets are envisioned to treat water as both a resource and as a design feature. They are strategically located to leverage the adjacent east-west urban parks in their design.

To maximize the stormwater management benefits that street trees can provide, trees need to be planted in conditions that will allow them to grow to mature size. In certain locations where space is constrained, the use of below-grade structural soil cells will allow for the capture, conveyance, filtration and storage of stormwater.

Parks + Open Spaces

Large-sized parks and open spaces are important landscape areas to infiltrate, filter and store water. Stormwater management facilities and water features can be designed as both aesthetic and functional components of parks and open spaces.

Individual Development Sites

Private developments are encouraged to contribute to the blue network through the integration of water into their site designs. Stormwater volume and quality performance goals for new development and redevelopment will provide enhanced protection for water resources.

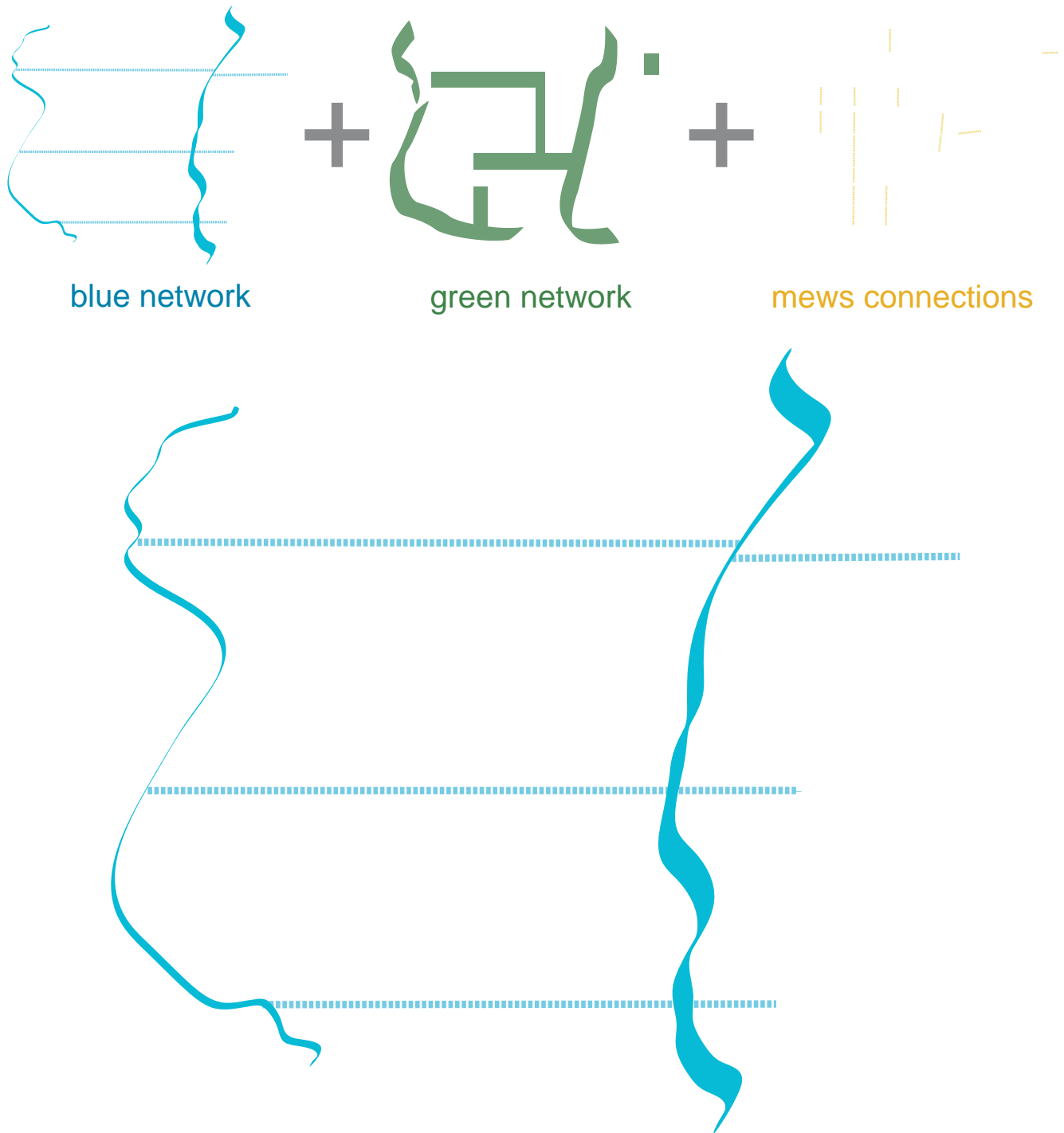


Figure 3.2: Blue Network (Black Creek and Blue Streets)



Somerset House Courtyard, London



“Cities are an expression of our collective will, a potent mix of economics and environment, private visions and public dreams”

David Biello, Scientific American

The **Green Network** is a connected series of public open air destinations, including parks and environmental open spaces.

Parks

Urban parks, neighbourhood parks, public squares and Black Creek are social and recreational hubs for people in the VMC . They also function as performative landscapes to provide essential ecosystem services including improvement to air quality, water quality, visual quality, heat island reduction and noise buffering.

Environmental Open Spaces

At the western and southern edges of the VMC, the Environmental Open spaces are functional and visual separators between highways and urban fabric. They provide a landscape foreground to the urban skyline. As part of the new downtown's visual identity, the scale of landscape works should be bold. Dense tree planting will contribute significantly to the tree canopy coverage target for the VMC.

The **Mews Connections** provide additional connectivity within the urban fabric in support of the street, Blue and Green networks.

Mews

Mews Connections are a fine-grain circulation layer that link together streets, parks and open spaces into a seamless pedestrian and cycling network. As destinations, their design can be integrated into the built environment to create permeability, ease of movement and legibility of the city at the pedestrian and cycling scale.

30% Tree Canopy Target

- The establishment of a robust urban forest is vitally important to create a healthy and desirable environment for people to live, work and visit - especially given the proximity of the new downtown to highways, rail infrastructure, and light-industrial uses.
- The target tree canopy coverage is 30%, based on mature canopy size, for the VMC public realm, including trees planted in parks, open spaces and along streets. Private developments are encouraged to incorporate tree canopy coverage as much as possible.

The Many Benefits of Trees

- The urban forest is green infrastructure that provides environmental, social, health and economic benefits for the urban ecosystem.
- Trees contribute to reduced stress and improved physical health of people.
- Street trees extend pavement surface life through shading, provide more comfortable microclimates for pedestrians, and create a buffer between moving traffic and pedestrians.
- Trees actively remove carbon dioxide and other greenhouse gases from the air, prevent soil erosion, provide food, nesting, cover and shelter wildlife, shade hard surfaces to reduce the heat island effect, shade buildings to reduce energy use, and mitigate air, dust, noise, heat and chemical pollution.
- Trees and plants play an important role in the management of surface water, reducing runoff by intercepting rain, retaining stormwater, and allowing for infiltration.
- The evapotranspiration capacity for trees is closely tied to the canopy size and therefore the health and longevity of trees to maturity must be carefully considered and monitored in the VMC.



Figure 3.3: Green Network and Mews Connections



8 House, Copenhagen, BIG Bjarke Ingels Group

Food Network

The City of Vaughan has a living cultural heritage connected to growing food. This living food network includes farms, urban farmer's markets, local food-related businesses, nurseries, and a widespread sense of pride for growing fruit trees, vegetables, and beautiful gardens. The City of Vaughan Community Gardens Policy encourages a community culture that places a priority on sustainability and promotes the cultivation of local, healthy and affordable food within the community. Within the VMC, the connection to with the local food network can be implemented through:

- Community gardens
- Farmers markets
- Planting palette that supports biodiversity and cultural heritage
- Public realm spaces that are designed to support social activities associated with the local food network
- Landscape connections to the orchards of the historic Village of Edgeley



Sustainable Urbanism

Downtown will be a model of sustainable development.

(2.0 VMC Secondary Plan)

A sustainable approach to city-building will support the City's economic development strategy to attract residents, employees, employers and visitors to a vibrant, urban, mixed-use downtown. Together, we are in a unique position to create a kind of urbanism that speaks to a holistic approach to life, including social and environmental responsibility, contributions to the community, a place for families, and the appreciation of beauty, art and culture.

A successful public realm provides a multitude of social, environmental and economic benefits to the downtown, including:

- Connecting people together into community
- To create a desirable and healthy quality of life that attracts people and investment
- To support entrepreneurship, productivity, and social collaboration
- To support commercial, entertainment, retail, cultural and living spaces
- To increase the resiliency of city systems for climate change (future-proofing the city)

Figure 3.4 provides a graphic summary of the initiatives and innovations related to urban sustainability planned for the Vaughan Metropolitan Centre. These initiatives are recommended to support the environmental, social and economic resiliency of the new downtown.



Figure 3.4: Sustainable Initiatives and Innovations in the VMC

4.0 Parks + Open Space

- 4.1 An Urban Approach for the Future
- 4.2 Ten Landscape Strategies
- 4.3 Classifications
- 4.4 Public - Private Network
- 4.5 Design Guidelines



Develop a **generous
and remarkable**
open space system.

(3.7 VMC Secondary Plan)

The Lurie Garden in Millennium Park, Chicago
Gustafson Guthrie Nichol Ltd, Piet Oudolf and Robert Israel

4.1 An Urban Approach for the Future

Building upon the Secondary Plan, the VMC Streetscape and Open Space Plan outlines an urban approach to public parks, including new parkland classifications.

The future health and well-being of people in the Vaughan Metropolitan Centre starts with clean air, access to green space, access to sunlight, recreational trails and facilities, and the design of complete neighbourhoods.

Great parks enhance surrounding development and attract people. The potential benefits of parks to private development include improved rentability and saleability of properties and units, marketing and promotional opportunities, and higher property values.



The development of
parks and other open
spaces in the VMC will
be as important
as the development of
buildings.

(6.0 VMC Secondary Plan)



The Lurie Garden in Millennium Park, Chicago
Gustafson Guthrie Nichol Ltd, Piet Oudolf and Robert Israel

LEGEND

- Environmental Open Space
- Black Creek
- Urban Parks
- Neighbourhood Parks
- Mews
- Public Squares
- Potential School Site
- Potential Community Facility

Everyone who lives within the VMC should be within a 5 minute walk of a park.

(3.7 VMC Secondary Plan)



Figure 4.1: Parks and Open Space Network

A Layered System at Multiple Scales

The parks and open space system is envisioned to become a layered collection of places at different scales, knit together with a pedestrian and cycling-friendly street network and transit system. The public realm must be designed for the experience of people, and to encourage a culture of walking and outdoor activities through all seasons. The thoughtful design of scale is a first step to building a successful public realm.

The VMC is both a city centre and a regional centre, given its strategic position as the new downtown for the City of Vaughan and an urban centre in the Region of York. This Plan considers the different scale relationships of people to places.

At the REGIONAL Scale:

- The revitalization of Black Creek creates a structuring landscape feature for the urban fabric that is connected to the Regional watershed.
- The parks and open space vision reflects the Toronto and Region Conservation Authority's commitment to healthy rivers, green space and biodiversity, sustainable communities and business excellence.
- Subway connects Vaughan and Toronto.
- Jane Street and Highway 7 provide multi-modal regional connections including the regional cycling network and transit.
- A language of regional landscape archetypes provides a design palette for the public realm. Through this approach, urban ecosystems are rooted into the larger landscape of the region.

At the CITY Scale:

- Urban parks, major public squares, environmental open spaces and Black Creek are planned as Vaughan Metropolitan Centre amenities and destinations.
- Millway Avenue Promenade is a primary retail street and urban park destination with direct access to the mobility hub. The Promenade is poised to become the cultural and social spine for the downtown.
- Black Creek is envisioned as the central blue spine and landscape feature for the VMC, designed in coordination with the future conversion of Jane Street to a rapid transit corridor. Fingers of blue are planned to extend laterally outwards from the creek to connect water into all the neighbourhoods (blue streets).
- A robust forest boundary is envisioned to provide a green backdrop for the downtown's western and southern boundaries along the highway edges.

At the NEIGHBOURHOOD Scale:

- Neighbourhood parks and local public squares will become defining elements and centres of social activity for each neighbourhood within the VMC.
- Everyone will live within a five minute walk to a park.
- Mews create local destinations and connections.

At the SITE Scale:

- Privately Owned Publicly-accessible Spaces (POPS), such as courtyards, pocket parks, passageways, and gardens, should link into the public realm network and create fine grain interest.

4.2 Ten Landscape Strategies

1. **SENSORY LANDSCAPES**
To create memorable experiences in all seasons
2. **FOCUS ON NEIGHBOURHOODS**
Build neighbourhoods around parks and squares
3. **CONNECT**
A seamless and legible network
4. **MOBILITY HUB**
A central destination for every day urban life
5. **PLANT TREES**
For a liveable and healthy urbanism
6. **CELEBRATE WATER**
Re-connect people with Black Creek
7. **URBAN HYBRIDS**
Mix people, functions and programs together
8. **SOCIAL SPACES**
To foster community and cultural exchange
9. **TEMPORARY INSTALLATIONS**
Immediate interventions to shape new urban space and spark excitement
10. **LANDSCAPE ARCHETYPES**
Performative urban spaces rooted in the regional landscape



Jubilee Gardens, London, England

1 Sensory Landscapes

A memorable public realm identity is created through sensory landscapes that people connect with in tangible and intangible ways. The identity and brand of the downtown - “The Metropolitan Experience” - will develop over time through the accumulation of people’s shared and individual experiences.

- Sensory-rich landscapes appeal to the perceptions of touch, sound, scent, movement, temperature, sight and luminosity to create a consciousness and memory of place.
- Make spaces that delight and restore the spirit.
- Material selection and high quality design are important to achieve the shared vision for the public realm.
- Engage the dynamic qualities of urban nature to bring a unique character and visual intensity to public landscapes in all seasons.



Sensory-rich
landscapes create
a memorable
experience of
place

2 Focus on Neighbourhoods

Each neighbourhood in the VMC will have its own park and urban square as an outdoor “living room” where children play and people meet as part of daily metropolitan life.

- The character of each neighbourhood will be reflected by its park, and conversely the character of the park will be influenced by its neighbourhood.
- Development should be designed around the parks and squares as focal points. Buildings frame public space and provide either grade-related residences or amenities, such as cafes, restaurants, shops and destinations that contribute to public life in the parks and streets around them.

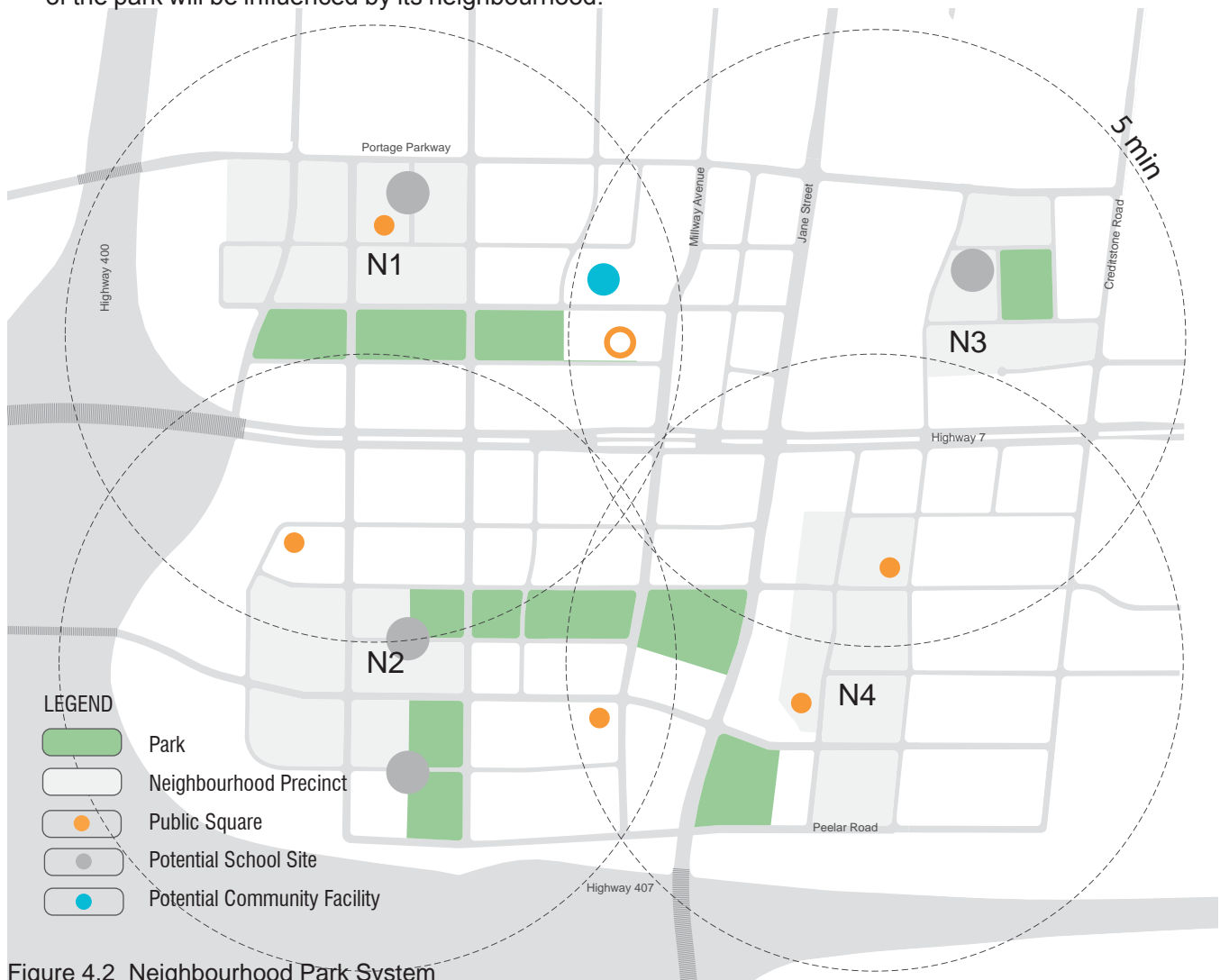


Figure 4.2 Neighbourhood Park System

3 Connect

A highly interconnected, legible, generous, and seamless network of streets, trails, parks and open spaces gives people a comfortable option to walk and bike.

- Neighbourhoods will be connected to each other through a system of green links outlined in the VMC Secondary Plan.
- Landscape interventions and special treatments will be necessary to both visually and physically “stitch” parkland blocks together across those streets that bisect parks. Examples of landscape interventions that increase pedestrian safety and connectivity are: raised intersections, narrowed road widths, enhanced pedestrian crossings, pedestrian and feature lighting, and special paving, planting and wayfinding features.
- Create visual connections between destinations.
- Connect interesting destinations together with “The Loop” exercise path.
- Space circulation routes to optimize pedestrian and cycling movement.
- Public parks and streets should be linked with privately owned publicly-accessible open spaces (POPS) through both visual and physical connections. As the downtown develops, this layered system of public and private outdoor spaces will grow more connected, permeable and diverse over time.



The LOOP

The Loop is an idea to create an iconic recreational pedestrian and cycling path that weaves through the four precincts in the VMC. It responds to the desire for physical fitness, and links together a variety of destinations into a larger Metropolitan Experience.

- The Loop should have a recognizable and coherent identity. However, the design should also respond to the various contexts it passes through - from the high intensity mobility hub to naturalized open spaces.
- Enhanced tree planting, accent lighting, wayfinding and other design elements should be designed to create an unforgettable walking, jogging or cycling experience in all seasons.

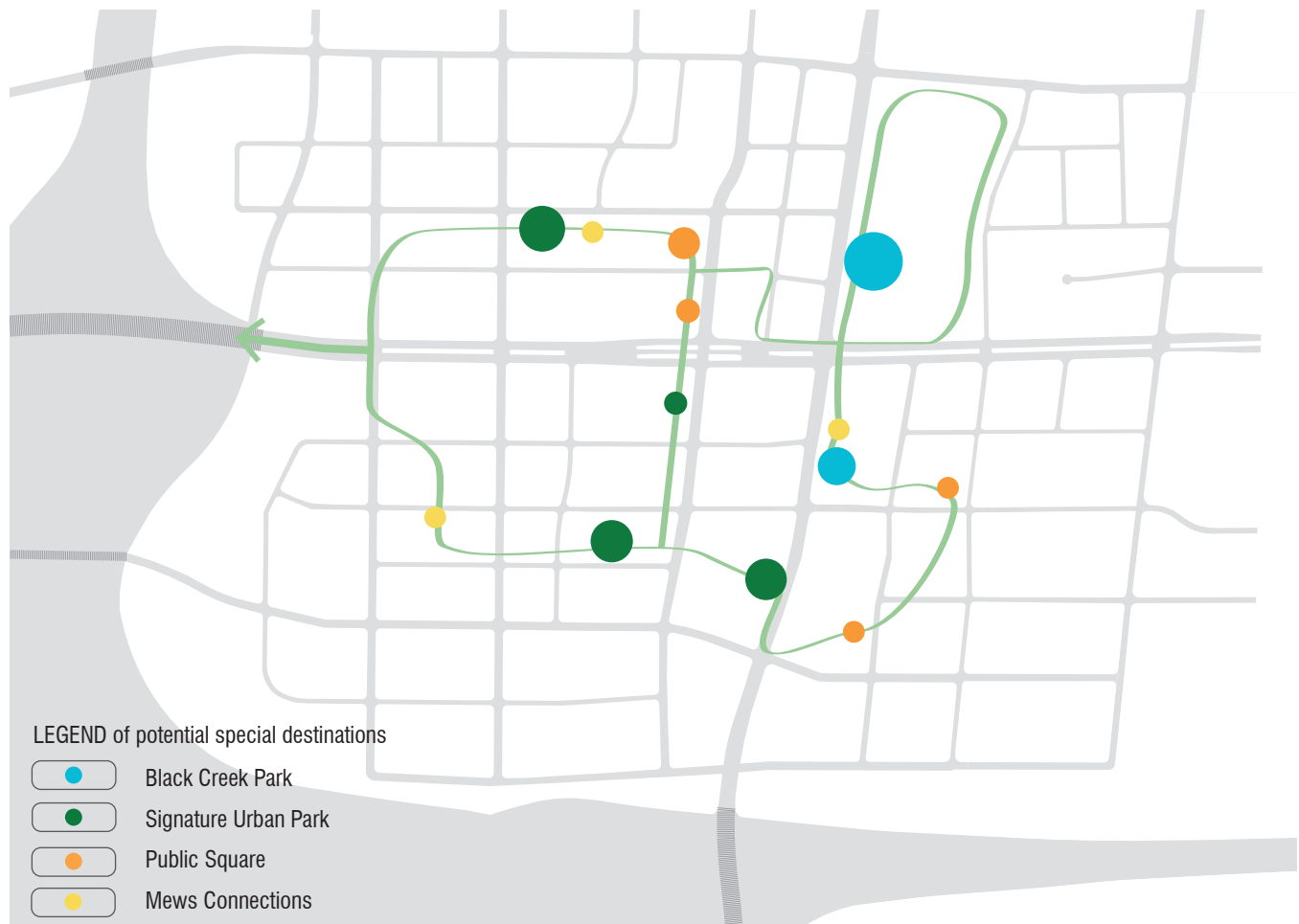


Figure 4.3: Illustration of a potential route for The Loop based on parks and open spaces, key destinations, and the cycling network.

4 Mobility Hub

The mobility hub is a central destination in the VMC where regional and local transportation systems intersect with daily life.

- Integrate and connect transportation facilities, public spaces, and mixed-use development to create a comfortable and memorable destination that is not only for travelers passing through, but also hub for daily urban life and special events.
- Hub developments should enhance the public character of the mobility hub.
- Transit Square is designed as a central destination in the Vaughan Metropolitan Centre.
- New Park Place is a pedestrian-first street that stitches together the subway station and Transit Square.
- Millway Avenue Promenade is envisioned as a four season social and cultural spine, activated by a strong retail edge and amenities.



Figure 4.4: The Mobility Hub

5 Plant Trees

Planting trees is an easy first move to define space, direct views, and create a healthy and liveable downtown.

- The development of a robust urban tree canopy will provide vital ecosystem services for the downtown as it develops into a dense urban fabric.
- To support healthy trees that can grow to maturity in urban conditions, **investment in infrastructure and tree planting systems** is required.
- Overall target of **30% tree canopy coverage** for the public realm in the VMC.
- Street trees will be planted according to soil, species and planting guidelines to increase health and longevity.
- **Tree Islands** and **Moveable Planters** are innovative ideas for tree planting in hardscape areas, as well as use of tree planting technologies, such as a structural soil cells.
- The large size urban parks and environmental open spaces provide big opportunities for a robust tree growth. Strata parking should be minimized to allow for large, healthy trees that will grow to maturity.



30% tree
canopy coverage

6 Celebrate Water

In the VMC, water will be respected and celebrated as an important placemaking opportunity and natural resource.

- Black Creek is the central landscape feature, with the TRCA also identifying the westerly tributary of Black Creek as an additional important enhancement opportunity within the urban fabric.
- Blue Streets extend laterally from Black Creek into all four neighbourhoods.
- Water conservation, infiltration, collection and harvesting in streets, parks and open spaces.
- Enhancement and improvement of the western tributary of Black Creek as part of the natural heritage / hazard system.

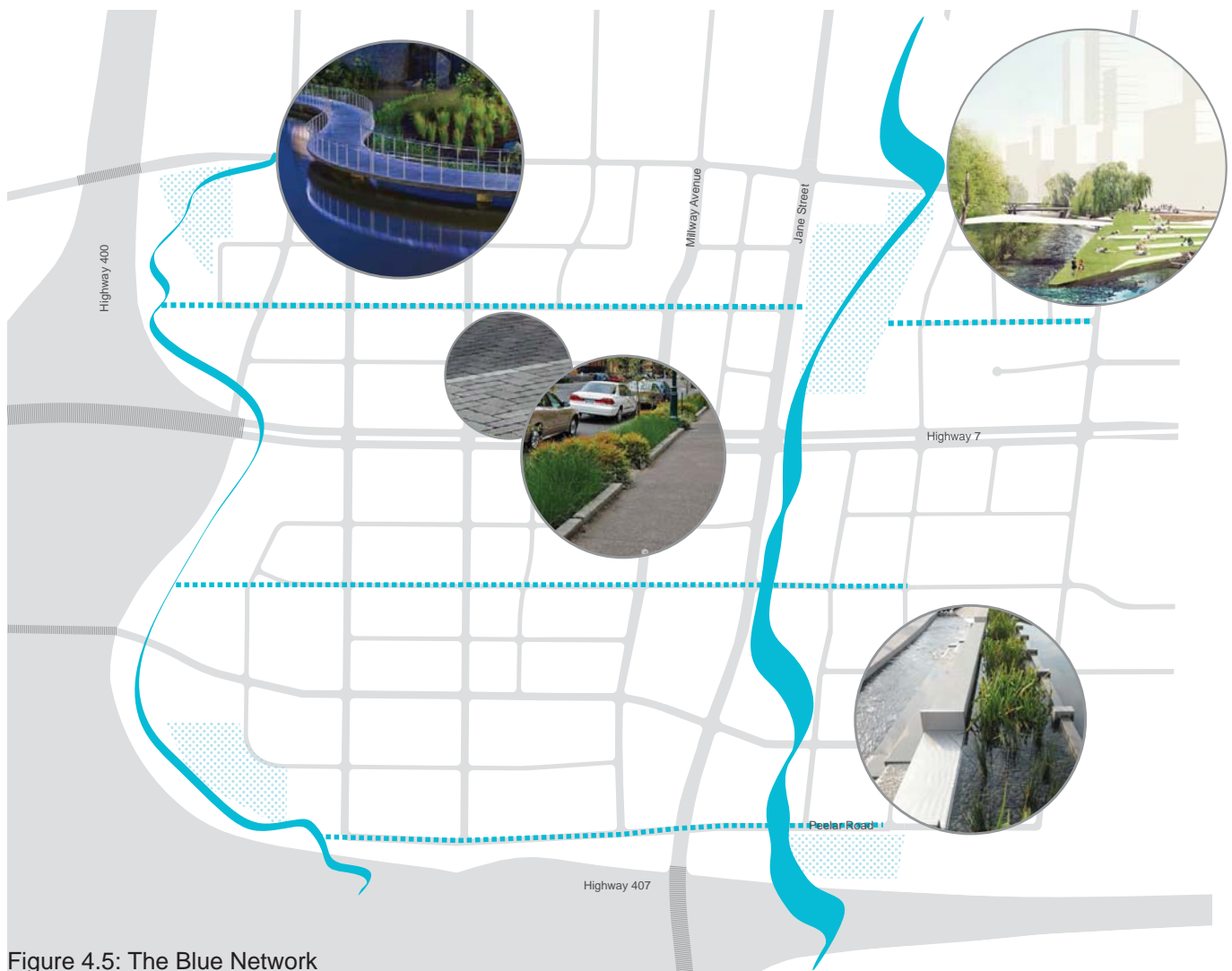


Figure 4.5: The Blue Network

7 Urban Hybrids

Imaginative and integrated design solutions will be needed to achieve the full potential and sustainability of the public realm network.

- **Urban format parks** will replace conventional suburban recreation facilities in order to maximize the use of land, build a resilient and sustainable urban ecosystem, and to respond to the changing needs of people as the VMC evolves over time.
- The basis for contemporary urban park and open space design in the VMC will be:
 1. Sustainable design strategies
 2. Layering of urban programmes and functions
 3. High quality materials
 4. Spatial design in relation to the planned urban context
- The revitalized Black Creek should be designed as a signature performative landscape with social, recreational, storm water management and ecosystem service functions.
- Urban recreation trails and pathways will connect with streets as part of a holistic, connected pedestrian and cycling network.
- Cross-disciplinary design will be used to engage the dynamic qualities of urban nature in public landscapes.



“Placemaking inspires people to **collectively reimagine and reinvent public spaces** as the heart of every community.”

- *Project for Public Spaces*

8 Social Spaces

Create spaces for gathering, socialization and celebration.

- Neighbourhoods will include a variety of social spaces, including public realm, parks and publicly-accessible private spaces (POPS).
- Regardless of size or type, all outdoor spaces should have a focus on making people feel comfortable. This includes consideration of seasonal winds and weather, sun and shade, access, views, safety, and useability for all ages and abilities.
- Locate elements within the park or square in a way that fosters social activity.



“Sociability,
once attained, becomes
an **unmistakable**
feature of a space.”

- *Project for Public Spaces*

9 Temporary Installations

Landscape is a powerful tool to shift perceptions and engage citizens with the immediate build-out of the Vaughan Metropolitan Centre.

The VMC is a long term transformation over generations. Today we can seed ideas and possibilities through temporary installations as platforms for social and cultural exchange.

- **Spatial definition during the downtown's transition:** Temporary and permanent landscape interventions immediately provide spatial definition and structure to what is today a large-scale, ambiguous and undefined landscape of transition. Creative installations or the simple act of planting trees, for example, are interventions that will help to define spaces at a pedestrian scale and create a sense of place that will evolve and intensify as the VMC develops over time.
- **Public Realm programming:** On an ongoing basis, public realm design and programming will use temporary landscape components that are moveable or less permanent in nature for adaptable streetscapes and parks. Temporary ice rinks, kiosks, and warming stations create social hubs in the winter months. Moveable seating and planting may be inserted to activate commercial areas in warm weather. Moveable planting tubs allows for less hardy trees to be moved to more protected areas in the cold winter months. Temporary works also allow for experimentation, to see how people respond, how a space or elements within it are used, and what new ideas emerge.



- **Marketing:** Exciting landscape installations may be utilized as part of a marketing strategy to attract people and interest to individual developments, and to the VMC as a whole. Temporary installations immediately create interesting destinations and nodes of social activity.

10 Landscape Archetypes

The archetypal landscapes of the region provide a rich design palette and common language for the Vaughan Metropolitan Centre public realm.

Archetypes can be mixed, superimposed, and creatively synthesized with contemporary design, urban programme, architecture, and infrastructure to create urban places that are multi-functional, responsive, and connected to the larger regional landscape matrix. For example, a public square may collect and store water (wetland). An urban park may employ rows of flowering trees to structure space and celebrate spring (orchard). An undeveloped block of land could be planted as a meadow as an interim solution to enhance the first phase of a development. Incrementally, the public realm becomes a mosaic of performative spaces.

- Designers may choose to **mix and synthesize** the qualities + functions of the Landscape Archetypes with contemporary urban programme, operations and design languages to create new kinds of metropolitan landscapes.
- This is a **performative approach** to landscape combining aspects of infrastructure, art, design, biodiversity, social interaction and culture.
- A **series of stories** are envisioned to develop over time as these public realm landscapes are built and connected together.

Archetype

arche|type

*An original which has been imitated;
a prototype* (Oxford Dictionary)



Mixed Deciduous Forest

The mixed deciduous forest is associated with dynamic qualities such as the seasonal appearance and disappearance of the tree canopy, layered forest understory, changes of leaf colour, the play of light and deep shadow, and the sound and movement of birds. The Archetype may be applied to clean air, attenuate noise, sequester carbon, create microclimates, mitigate urban heat island, and to generate and renew soil and vegetation.

Functions

- Capture and infiltrate rainwater
- Shelter from northwest winter winds
- Light shade from summer sun
- Filter air pollution
- Filter noise pollution
- Habitat and food source for biodiversity
- Define spaces and boundaries
- “Green” for psychological health and visual quality
- Visual screening

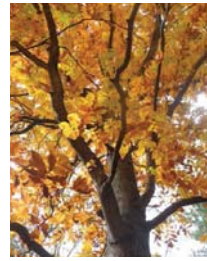
Potential Expressions

- Mixed deciduous and coniferous trees may be used to provide buffering from the highways, and as a structuring device to define the edges of the downtown
- Connections for wildlife
- Use of topography and berms
- Combined with recreational trails and interpretive features
- Potential for public art, especially at gateway locations

** Planting palette provides examples only. Refer to Appendix D for a full list of recommended species and select species for site conditions.*

Planting Palette

- *Pinus strobus* (White Pine)
- *Carya cordiformis* (Bitternut Hickory)
- *Quercus macrocarpa* (Bur Oak)
- *Amelanchier canadensis* (Serviceberry)
- *Tilia cordata* (Little Leaf Linden)
- *Populus tremuloides* (Trembling Aspen)



Woodland Grove

The Woodland Grove is characterized by dappled sunlight and seasonal changes in colour and texture. The Archetype may be applied to capture and infiltrate rainwater, provide light shade protection, shelter from northwest winter winds, and to define urban spaces.

Functions

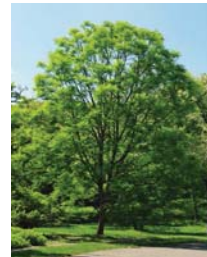
- Capture and infiltrate rainwater
- Shelter from northwest winter winds
- Light shade from summer sun
- Filter air pollution
- Filter noise pollution
- Habitat and food source for biodiversity
- Define spaces and boundaries
- “Green” for psychological health and visual quality
- Visual screening

Potential Expressions

- Deciduous trees are a light visual screen that may define structured yet permeable edges and spaces in urban parks and public squares
- Urban experiences of refuge and contemplation
- On blue streets, combine trees with L.I.D. measures and pedestrian amenities

Planting Palette

- *Tsuga canadensis* (Hemlock)
- *Gymnocladus dioicus* (Kentucky Coffeetree)
- *Quercus rubra* (Red Oak)
- *Quercus bicolor* (Swamp White Oak)
- *Amelanchier laevis* (Downy Serviceberry)
- *Asclepias tuberosa* (Butterfly Milkweed)



* Planting palette provides examples only. Refer to Appendix D for a full list of recommended species and select species for site conditions.

Meadows, Grasslands + Hedgerows

The archetypes of meadows, grasslands and hedgerows are rich in possibilities for invention, transformation and experience in the VMC. Meadows, grasslands and hedgerows could be used to bring the strong agricultural ties of Vaughan into the contemporary downtown. Re-contextualized into an urban landscape, meadow landscapes function to capture and infiltrate water for groundwater recharge and provide important food and habitat for butterflies, bees and birds. A meadow could also be a temporary, impermanent landscape designed to give character to spaces in between buildings until (re)development occurs.

Functions

- Habitat and food source for biodiversity (including butterflies, bees, birds)
- Capture and infiltrate surface water
- Soil regeneration
- Flexible space

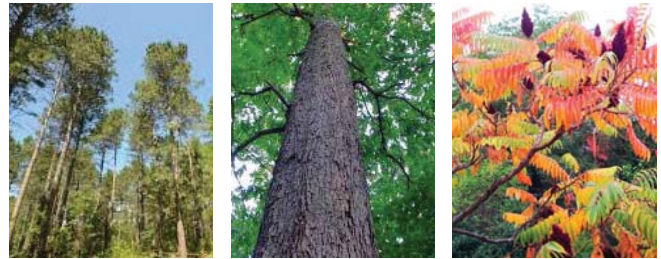
Potential Expressions

- Open landscape spaces that may include lawn areas and/or pathways to enrich the recreational trail system
- May be re-contextualized into ecological-based planting strategies for urban streetscapes and parks
- Provide flexible sites for sculpture and artists working in the landscape

** Planting palette provides examples only. Refer to Appendix D for a full list of recommended species and select species for site conditions.*

Planting Palette

- *Pinus resinosa* (Red Pine)
- *Quercus alba* (White Oak)
- *Rhus typhina* (Staghorn Sumac)
- *Cerastium arvense* ssp. *strictum* (Field Chickweed)
- *Geum triflorum* (Prairie Smoke)
- *Schizachyrium scoparium* (Little Bluestem)



The Orchard

The Orchard is a cultural landscape that reflects the heritage of Edgeley, a historic settlement established circa 1800 at Jane Street and Highway 7. Edgeley's fertile soils were extensively planted with fruit trees including apple orchards. Today's street names, Applemill, Buttermill, Applewood and Edgeley, recall this cultural past.

Functions

- Structure spaces
- Define pedestrian flows
- Habitat and food source for biodiversity
- Food production/ market

Potential Expressions

- Rows of medium-sized ornamental flowering trees to create and structure space and direct pedestrian flows
- Flowering ornamental street trees on selected local streets to celebrate the heritage of Edgeley
- Farmers market opportunities
- Public art opportunities
- Community gardens

Planting Palette

- Malus (Crabapple)
- Prunus (Cherry, Plum)
- Pyrus calleryana (Callery Pear)
- Fragaria virginiana (Common Strawberry)
- Lavandula angustifolia (Lavender)
- Monarda fistulosa (Wild Bergamot, Bee Balm)



** Planting palette provides examples only. Refer to Appendix D for a full list of recommended species and select species for site conditions.*

Wetlands

Wetlands are places where terrestrial and aquatic habitats meet. They are nutrient-rich ecosystems that are either seasonally or permanently covered by shallow water. Wetlands improve the quality of our waters. They slow drainage flows from developed areas, reducing floods, filtering out pollutants and trapping sediments.

Functions

- Store, filter and infiltrate surface water
- Recharge/ discharge of groundwater
- Flood buffer by absorbing peak flows
- Habitat for plants, fish and wildlife

Potential Expressions

- Constructed wetlands, seasonal wetlands, and infiltration features
- With stormwater management ponds
- Within floodplains along Black Creek
- Passive recreational trails, viewing areas and interpretive features
- Blue Streets – paving and planting, L.I.D. measures

Planting Palette

- *Thuja occidentalis* (White Cedar)
- *Cornus foemina* (Gray Dogwood)
- *Salix discolor* (Pussy Willow)
- *Asclepias incarnata* (Swamp Milkweed)
- *Lysimachia ciliata* (Fringed Loosestrife)
- *Juncus tenuis* (Path Rush)



Erie Street Plaza, Milwaukee, USA
Stoss

* Planting palette provides examples only. Refer to Appendix D for a full list of recommended species and select species for site conditions.

The Creek

The flows of water, both above and below ground, are a valuable natural resource in the Vaughan Metropolitan Centre. The qualities of water - continuous movement, light reflection, sound, and cooling – are important placemaking elements for the contemporary urban environment.

Functions

- Transport water
- Cooling of the air in summer
- Aquatic and riparian habitat

Expression

- Black Creek renewal as public amenity
- Bioswales and rain gardens along Blue Streets and adjacent parks leading to the stormwater management ponds
- Water play and water features within parks and squares
- Trees and shrub planting along the watercourses

Planting Palette

- *Salix amygdaloides* (Peachleaf Willow)
- *Sambucus racemosa* (Red Elderberry)
- *Baptisia alba* (White Wild Indigo)
- *S. novae-angliae* (New England Aster)
- *Carex atherodes* (Awned Sedge)
- *Scirpus cyperinus* (Cotton Grass Bulrush)



* Planting palette provides examples only. Refer to Appendix D for a full list of recommended species and select species for site conditions.

4.3 Classifications

Classifications

Parks and Open Spaces within the Vaughan Metropolitan Centre are categorized into the following classifications to outline their intended purpose, design guidelines, development targets and typical facility elements:

Urban Parks

Public Squares

Neighbourhood
Parks

Environmental
Open Space

Black Creek

Urban Parks



The Urban Parks include two large east-west parks and the Millway Avenue Promenade. They are large and interconnected spaces that offer a wide range of active and passive recreational opportunities. These Urban Parks are envisioned to become important civic gathering spaces for the Vaughan Metropolitan Centre.



Purpose

- Landscape platforms to build the cultural and social fabric of the downtown
- Highly programmed outdoor spaces for urban recreation and activities, passive leisure, cultural programming, public art, large gatherings and events
- Collect, infiltrate, filter and harvest water
- Provide substantial mature tree canopy

Targets

East – West Parks

- Greater than 1 hectare in size
- Within a 10 minute walk of the majority of surrounding community
- Gathering spaces for approximately 2,000 – 3,000 people
- Include passive water features and storm water management in coordination with Blue Streets
- 70% softscape / 30% hardscape
- Maximize the permeability of hardscape surfaces where possible
- Minimum 30% tree cover
- Strata parking under parks will significantly compromise the long term growth and survival of trees to their natural mature size. Therefore strata conditions are not appropriate under parkland where trees are intended to grow to their full maturity.
- Parkland landscape with strata should incorporate a minimum soil depth of 1.5 m. It may be determined during design that a greater soil depth than 1.5 m is required to ensure healthy tree growth.

Millway Avenue Promenade

- Greater than 1 hectare in size
- 20% softscape / 80% hardscape
- Soil volume for trees accommodated in structural soil cells below pavement

Design Guidelines

East-West Parks and Millway Avenue Promenade

- Designed to frame views and vistas
- Framed and animated by the surrounding architecture
- Connect park blocks together across streets
- A unified design vision across park blocks
- Integrate park features and facilities, such as child play, into the park design
- Accommodates day-to-day uses and special events
- Includes flexible space for cultural programming and large gatherings
- Includes public art and temporary installations
- Ties into The Loop trail system for pedestrians and cyclists
- Provides linkages to transit facilities, community facilities and to the broader open space network
- Designed and programmed for year-round use
- Microclimatic design, including consideration of wind and sun/shadow
- High quality, durable materials
- Consider water and electrical servicing needs



Typical Elements

East-West Parks

- Creatively designed series of distinct, scaled spaces
- Potential to incorporate vertical landform
- Significant water features such as waterbodies and fountains
- Outdoor skating in winter
- Spaces for passive, informal recreation including open lawn areas
- Large scale canopy trees and ornamental planting
- Open space for unstructured play and unique children's play opportunities
- Spaces for social gathering, cultural and event programming
- Large-scale event space (shade structure, performance area, stage, utilities)
- Water infiltration / harvesting / cisterns connecting with Blue Streets
- Pedestrian and cycling pathways
- Pedestrian amenities and feature lighting
- Short term bicycle parking at key locations
- Public access to washrooms
- Signage and wayfinding
- Storage and maintenance facilities



Millway Avenue Promenade

- A well-lit, 24/7 pedestrian-first “urban spine” connected with the mobility hub
- Millway Avenue and the adjacent pedestrian promenade will be designed together as one space
- The success of the promenade as a destination will be dependent upon the quality and character of the built form edge. Animate with active, publicly-accessible uses at grade, including shops, restaurants, cafes and cultural and social destinations.
- Movement, light and materiality are envisioned to shape the architecture of the space
- Design to support social innovation - creative initiatives, collaborations and entrepreneurship. Could include commercial concessions (i.e. food kiosks/open air cafes) and modular kiosks to support creative entrepreneurship + design shows.
- Structured planting to define promenade edges and the north-south view corridor
- Year-round adaptability and comfort for seasonal festivals, events and landscape themes

Premium design and materials to support high volumes of pedestrian activity in four seasons:

1. Iconic tall vertical lighting elements
2. Accent lighting
3. Distinctive and durable stone paving
4. Unique furniture that promotes social activity (i.e. long benches and platforms)
5. Large scale planters
6. Water feature(s)
7. Bike parking
8. Signage and wayfinding
9. Wi-Fi capabilities

TTC subway infrastructure is located both above and below ground within the Millway Avenue Promenade and will therefore need to be integrated into the design. Detailed design for the Millway Avenue Promenade, including tree planting, will be subject to TTC’s Technical Review Process to protect the subway infrastructure with consideration of sufficient depth and waterproofing.



Jubilee Gardens, London



Figure 4.6: Conceptual Rendering of Millway Avenue Promenade south of Highway 7



Neighbourhood Parks



Neighbourhood Parks are “green” focal points within each neighbourhood that are part of community life.

Purpose

- Neighbourhood meeting and relaxation space
- Everyday child play
- Green space for aesthetics, clean air, microclimate control
- Water management
- Contribute to biodiversity
- Active recreation

Targets

- 0.75 - 5 hectares in size
- Within a 5 minute walk of all residences in each neighbourhood
- High visibility public frontage – approximately 50% of park perimeter, where feasible
- Inclusion of L.I.D. measures
- +30% tree canopy
- 70% permeable surface

Design Guidelines

- Design will both reflect and inform the character of the surrounding neighbourhood precinct
- Provide connections to the bicycle and pedestrian networks and local community facilities
- Focus on local recreational needs, including multi-use active and passive recreation facilities
- Incorporate spaces for small community gatherings
- Integrate play value into park design; non-traditional playscapes
- Use plants as part of the play environment and passive recreation
- Durable and high quality materials

Typical Elements

- Junior and senior playground facilities
- Active recreational facilities and play courts
- Informal, flexible lawn space
- Comfortable seating areas
- Bicycle parking at park entrances
- Pockets of rain-gardens with full infiltration with reservoirs showcasing native plants
- Pedestrian lighting
- Durable materials to support high intensity usage
- Permanent, flexible use of park shelter to provide shade and accommodate group uses
- Skate zones
- Fitness equipment



Public Squares



Public Squares are social spaces for daily urban life, framed by the surrounding architecture. Squares may include either VMC-wide facilities or neighbourhood-scale facilities, depending on their size and context.

Purpose

- Social space and amenities for daily life
- Activities relate to surrounding uses: cafes, shops, cultural and transit facilities etc.
- Larger size squares: community gatherings, temporary markets etc.

Targets

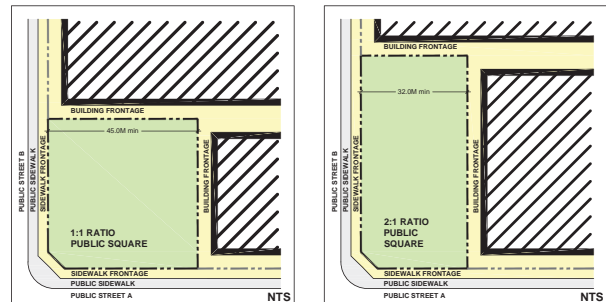
- 0.2 to 1 hectare in area
- Development frontage –50%
- Public frontage – 50%
- Average width to be no less than 45 metres when using a 1 to 1 ratio, and no less than 32 metres when using a 2 to 1 ratio
- Maximize sunlight access (locate on south side of buildings)
- Durable materials for high volume pedestrian use

Design Guidelines

- At highly visible locations; well connected
- Defined by surrounding built form edges
- Animated by active commercial edges at grade
- Strong interface with the adjacent public streets
- May be large or small scale urban spaces
- Multi-use programmable space
- Design for year-round use
- High quality materials and special features
- Consider water and electrical servicing needs

Typical Elements

- Potential commercial concessions (food kiosks/ open air cafes) in the square or in adjacent uses
- Fountains / water features
- Seating
- Contemporary LED lighting
- Public art installations
- Gardens and contemporary planting
- Outdoor game areas
- Wi-Fi capabilities







Hoxton Square, London (1683)

Black Creek



Black Creek is the major natural feature of the Vaughan Metropolitan Centre. The shared vision for a revitalized Black Creek is to create an iconic landscape destination that creates value and identity for the new downtown.

Purpose

- Watershed and urban ecosystem health
- Storm water management / flood control
- Landscape character and identity
- Re-connect people with the creek
- Provide urban amenity
- Enhance biodiversity
- Microclimate and air quality improvement
- Acoustic buffering from traffic noise
- Provide substantial mature tree canopy

Targets

- 60% tree cover in planting areas
- Maintain existing high quality vegetation where possible to protect and enhance natural heritage
- Integrate design with stormwater management and flood control

Design Guidelines

Create an iconic landscape destination that:

- Creates a “blue spine” for the VMC
- Offers a gradient of experiences from urban to natural
- Performs as a sustainable and resilient system (socially, economically, environmentally)
- Demonstrates sustainable water management
- Provides a unique frontage opportunity for surrounding development
- Is well integrated with the urban fabric, with thoughtful consideration of edges, connectivity and programme
- Designed with multi-layered spaces and functions: biodiversity, ecology, water management, urban interface, active and passive urban programme
- Provides year round public amenities and uses
- Includes pedestrian and cycling linkages
- Includes a hierarchy of defined pedestrian connections and permeability (N/S and E/W), ensuring public access throughout the system
- Design with consideration of microclimates and improvements to environmental qualities, such as traffic noise reduction
- Includes distinctive design elements and public art
- Builds the identity and character of the VMC

Typical Elements

- Native and adaptive planting
- Pedestrian promenade/ boardwalk
- Pedestrian amenities and structures
- Strong pedestrian connections at street intersections
- Spaces for gathering
- Sculpted landform (acoustic control and water management)
- Feature lighting
- Cycling and pedestrian amenities
- Public art
- Wayfinding signage
- Interpretive signage for environmental education

Environmental Open Space



Environmental open spaces are primarily naturalized landscape areas that protect, renew, and enhance environmental features and functions, including the management of water and providing suitable habitats for plant and animal species.

Purpose

- Safeguard environmental functions
- A delineated edge and visual boundary
- Buffer (mitigation of noise and air pollution)
- Accommodate storm water management facilities
- Biodiversity
- Passive recreation
- Accommodate tributaries of Black Creek and its natural features and functions

Targets

- 60% tree cover in planting areas
- 95% permeable surface
- Improvement of the watercourse and associated floodplain along the westerly edge
- Accommodate flood flows during a regional storm event

Design Guidelines

- Naturalized planting / ecological communities
- Provide a visual separation and buffer between the VMC and Highways 400 and 407
- Stormwater management facilities designed as amenities within the landscape
- Manage and monitor soil and tree health
- Enhance natural heritage system and biodiversity
- High quality materials

Typical Elements

- Passive recreational facilities and amenities
- Pedestrian bridges and trails
- Native plant species and landscaping that supports biodiversity and ecological functions of VMC connecting to the regional landscape
- Potential feature lighting
- Interpretive signage for environmental education
- Wayfinding signage
- Potential tree planting and soil remediation demonstration site next to highways



4.4 Public - Private Network

Privately Owned Publicly-Accessible Spaces (POPS)

In addition to the city's public realm network, private outdoor amenity spaces and Privately Owned Publicly-accessible Spaces (POPS) are located within private development sites.

POPS are a specific type of outdoor space which the public are invited to use, but remain privately owned and maintained. As such, the location and design of POPS are planned to both enhance the development and complement the larger public realm network. Therefore, it is important to design POPS with consideration of the planned public realm, including streets, parks and open spaces.

Forms and functions of POPS vary. POPS may be smaller, more enclosed spaces that provide refuge and microclimatic comfort, such as a courtyard, garden, children's play area, or a pocket park, or they may be more open and social gathering spaces and thoroughfares, such as a forecourt, urban square or pedestrian passageway.

Purpose

- To enhance the urban structure and support city-building
- To connect with and expand the public realm, creating additional variety and scales of outdoor space in the VMC
- To create fine grain interest and interaction at the community and pedestrian scale
- To enhance pedestrian connectivity
- To provide microclimatic comfort
- To provide on-site water treatment to control and manage storm water at source

Design Guidelines

- Inviting and accessible to the public
- Prominent and direct visual and physical access from adjacent public streets, parks or other public spaces
- Connect and coordinate the design of POPS with mid-block pedestrian walkways
- Optimize siting and design to enhance landmarks, views and view corridors
- Provide seating, pedestrian scale lighting and other amenities as required for comfort, safety and animation
- Orient and design to create a comfortable microclimate for sitting
- Building frontages, entrances and uses should activate and engage the space, creating animation and safety

Typical Elements

- Partially enclosed by building facades
- Potential for water features to create ambient noise and a tranquil environment
- Public art
- Pedestrian scale lighting, seating areas and trees for shade
- Creative changes of elevation as a source of play or seating
- Signage

*Refer to the POPS (Privately Owned Publicly-accessible Space) Guidelines in the VMC Urban Design Guidelines for more detail.



Publicly Accessible Private Space, London

Public - Private Interface

The interface between private development sites and public parks and open spaces is an important design consideration. The transitional landscape treatments between private development sites and adjacent parks and open space is largely determined by the uses located at grade and within the podium levels of the development site.

- For residential land uses, protection of privacy is a priority and shall be addressed through design of appropriate setbacks and landscape architectural devices including tree planting, walls and grade changes adjacent within the property line adjacent to parks and open spaces. Soft buffers should be used for residential land uses adjacent to environmental open spaces, while a more urban buffer should be used for residential land uses adjacent to parks and squares. Fencing and gates may be used; however only in appropriate locations.
- Buildings interfacing parks or open space should maximize outlook from balconies and windows
- Ensure that public-private interfaces and ground-level facades are designed to provide interest and high levels of amenity to the public realm

Public - Private Interface Zones at Parks

Land Use	Zones	Objective
Retail	Public / Semi-Public / Private	Animate
Office / Commercial	Public / Semi-Private / Private	Integrate
Residential	Public / Semi-Private (includes landscape buffer) / Private	Protection of Privacy



Public - Private Interface (Retail at Public Square), London

4.5 Design Guidelines

Parks - General Guidelines

Park Design

- Parks should be used as a primary organizing element within the urban fabric / development with respect to street and block layout, land use configuration and built form character
- Design spaces that encourage physical activity, wellness, and informal use to promote spontaneous play and recreation
- Distinctive landscape and built form elements should be located at view corridors across parks and terminating on parks
- Elements such as furnishings, public art, and water features should be located to visually enhance and animate the park and provide for pedestrian comfort and interest
- Design in accordance with TRCA's Living City policies

Access and Connectivity

- Prominent visual and physical access:
 1. Urban and neighbourhood parks should have approximately 50% street frontage, where feasible
 2. Locate parks at grade, connected to the public realm network
- Include pedestrian and cycling routes and connections with the street network
- Formalized paths within parks should connect to sidewalks and respond to pedestrian desire lines
- Accessible for all ages and abilities and subject to AODA criteria

Environmental Sustainability

- Design parks to be sustainable, including water management, planting, materials, and sustainable maintenance practices
- Showcase environmental stewardship initiatives in parks
- Design parks to deliver ecosystem goods and services
- Design parks for urban biodiversity

Adjacent Development

- Surrounding uses and built forms should address and be oriented to parks to enhance their animation and safety
- Development frontage on parks should provide animated uses and high levels of transparency for engaging with the park space
- Adjacent development should be massed and configured to minimize shadow and microclimatic impacts

Play Facilities

- Play facilities should be integral to the landscape design of the park
- Naturalized play facilities and non-traditional play structures should contribute to the identity of the VMC

Water Features

- Water features should be incorporated into park design wherever possible to provide educational and interpretive opportunities
- Water features will provide on-site management of storm water, utilizing LID measures including bioswales, underground storage tanks, etc.
- Utilize captured storm water for irrigation within the park or open space



Safety and Security

- Design concepts should establish surveillance and access management that reinforce Crime Prevention through Environmental Design (CPTED) principles
- When water features are incorporated with park design, it is important to ensure that the design protects the public and property from flooding (ie - locate structures outside the floodplain)
- Incorporate appropriate safety signage into parks, trails and other open spaces that are at risk of flooding



Parks - Furnishings and Materials

- Contemporary design expression
- Sustainable (environmental, economic, social)
- Use materials that are durable, high quality and mindful of future maintenance and operational requirements
- Use materials that reduce the heat island effect
- Furnishings and amenities for comfortable use in four seasons



5.0 Streetscape Design

- 5.1 Vision
- 5.2 City-Wide Streetscape Manual
- 5.3 Streetscape Types
- 5.4 Pedestrian Priority Zones
- 5.5 Cycling Network
- 5.6 Transit Network
- 5.7 Road Classification Landscape Treatments
- 5.8 Landmarks, Views + Intersections
- 5.9 Public - Private Interface
- 5.10 Lighting Strategy
- 5.11 Highway 7 Streetscape Design

5.1 Vision

The Vaughan Metropolitan Centre street network is laid out in an urban grid pattern to maximize flexibility for a range of future development and redevelopment scenarios. The grid patterns also allows for a highly interconnected, walkable circulation network.

Streets are places of multi-modal movement, as well as places of social, cultural and economic activity. Thus streets must be designed as both destinations and corridors to promote a culture of walking, cycling and public transit in the VMC.

The streetscape design philosophy for the VMC is rooted in place-making, with the pedestrian experience as the primary consideration. Streets will incorporate features and amenities that support pedestrian and cycling comfort, convenience and activity. To be a sustainable city, the car must lose its priority and the pedestrian and cyclist privileged.

The following design considerations have informed the development of the VMC Streetscape and Open Space Plan:

- To create a walkable and bike-able city, all streets will be designed to encourage active transportation.
- The primary mobility hub (Pedestrian Priority Zone) is at the center of the downtown. The hub is both a point of exchange between regional transit networks and a local destination connected into the parks and open space network.
- Transit infrastructure will be integrated with the public realm for seamless connections, amenity, and convenience.
- A fine grain pedestrian and cycling connections will be created through a system of local streets and mews. Privately-owned pedestrian passageways through developments are encouraged as an additional layer to the circulation network to support pedestrian activity.
- Streets that run between park blocks will receive special treatments for safe pedestrian and cyclist crossings, and to visually stitch the park blocks together.
- Special designs, features and amenities will be included in Pedestrian Priority Zones (around schools, community centers, parks, public institutions, the primary mobility hub, and for special shopping and cultural streets).
- A VMC-wide multi-use trail system, “The Loop”, will provide a recreational trail for the downtown, linked to the larger City and Regional trail system.
- Neighbourhood streets are envisioned as green and safe places for children to play - comfortable and pedestrian-oriented to support community life.
- Streets have been designed to include planting and amenities to create comfortable microclimatic conditions for pedestrians.

5.2 City-Wide Streetscape Manual

Streetscape design within the Vaughan Metropolitan Centre should be guided by both the VMC Streetscape and Open Space Plan and the Vaughan City-Wide Streetscape Implementation Manual and Financial Strategy (City-Wide Streetscape Manual) together.

The City-Wide Streetscape Manual is applicable to Intensification Areas and Heritage Conservation Districts in Vaughan, including the Vaughan Metropolitan Centre. It provides the City with a framework to:

- support active transportation
- design streetscapes appropriate to their context
- provide and maintain a consistent quality of streetscape design
- support city building and economic development
- inform budgeting and financial resources

The VMC Streetscape and Open Space Plan adds additional layers of design to the structuring framework provided by the City-Wide Streetscape Manual.

As a summary the design framework of the City-Wide Streetscape Manual takes into account considerations of context, design and cost and includes the following structuring elements of the streetscape:

- Road Classification
- Streetscape Type
- Level of Service

Streetscape Structuring Elements

Road Classification and Streetscape Type

The road classification and streetscape types deal with the context and character of the streetscape. Both elements inform the appropriate design for the streetscape context and are further described in Sections 5.4 and 5.5.



Figure 5.1: Streetscape Structuring Elements

Level of Service and Streetscape Components

The City-Wide Streetscape Manual applies three new levels of service for streetscapes in Intensification Areas, including the Vaughan Metropolitan Centre: Standard Urban, Enhanced and Premium.

Standard Urban is the “typical” urban streetscape and new minimum level of service for Intensification Areas. It includes a 2.0 m wide concrete sidewalk, the option for a hardscape (concrete) boulevard in place of sod to expand the width of the pedestrian zone, and the option for understory planting within the amenity zone.

Enhanced streets are those with additional pedestrian and cycling amenities, character and/ or environmental features, such as the Blue Streets, Green Streets, Retail Streets, Mews and Pedestrian Priority Streets. Enhanced streetscapes may contain street furnishings, special paving, special planting, pedestrian lighting, L.I.D. measures and/ or structural soil cells for street trees.

Premium streets are iconic streets with community or civic significance, such as Millway Avenue. A Premium street is the highest level of service, and may incorporate custom design elements, accent lighting, and special furnishings to create a significant, unique and memorable public destination.

The City-Wide Streetscape Manual outlines the criteria to determine the streetscape level of service, applied on a block-by-block basis.

The City-Wide Streetscape Manual includes a menu of streetscape design component options for each level of service that a designer may choose from as part of the streetscape design process.







Special Streets

Special Streets are Enhanced and Premium levels of service following criteria in the City-Wide Streetscape Manual.

At this early stage of development, the following special streets have been identified in the Vaughan Metropolitan Centre:

- Millway Avenue is at the centre of the mobility hub and is envisioned as the primary retail street, social and cultural corridor of the VMC. The design of Millway Avenue is in concert with transit facilities, Transit Square and the Millway Avenue Promenade. It is a Premium street.
- Blue Streets will extend laterally outward from Black Creek into all neighbourhoods in the VMC incorporating low impact development features.
- Green Streets provide robust pedestrian and green infrastructure, including such elements as double rows of trees, furnishings and structural soil cells, to support healthy tree growth, transit use and walkability on the Regional arterials. Green streets will connect to the revitalized Black Creek.
- Flex Streets, designed as Pedestrian Priority Zones can be introduced on local streets and mews in high pedestrian traffic areas, such as the primary mobility hub.
- Mews are Pedestrian Priority spaces that create enhanced connectivity in the downtown, animated by active edges. They may also be thoughtfully designed to accommodate traffic access and service uses. Mews may incorporate special design components, such as custom surface treatments, moveable planters, furnishings, accent lighting, and / or installations between buildings.
- Retail Streets may include additional pedestrian amenities and lighting to create unique destinations and support social activity.

LEGEND

-  Primary Retail Street
-  Flex Street
-  Blue Street
-  Green Street
-  Mews
-  TTC Station

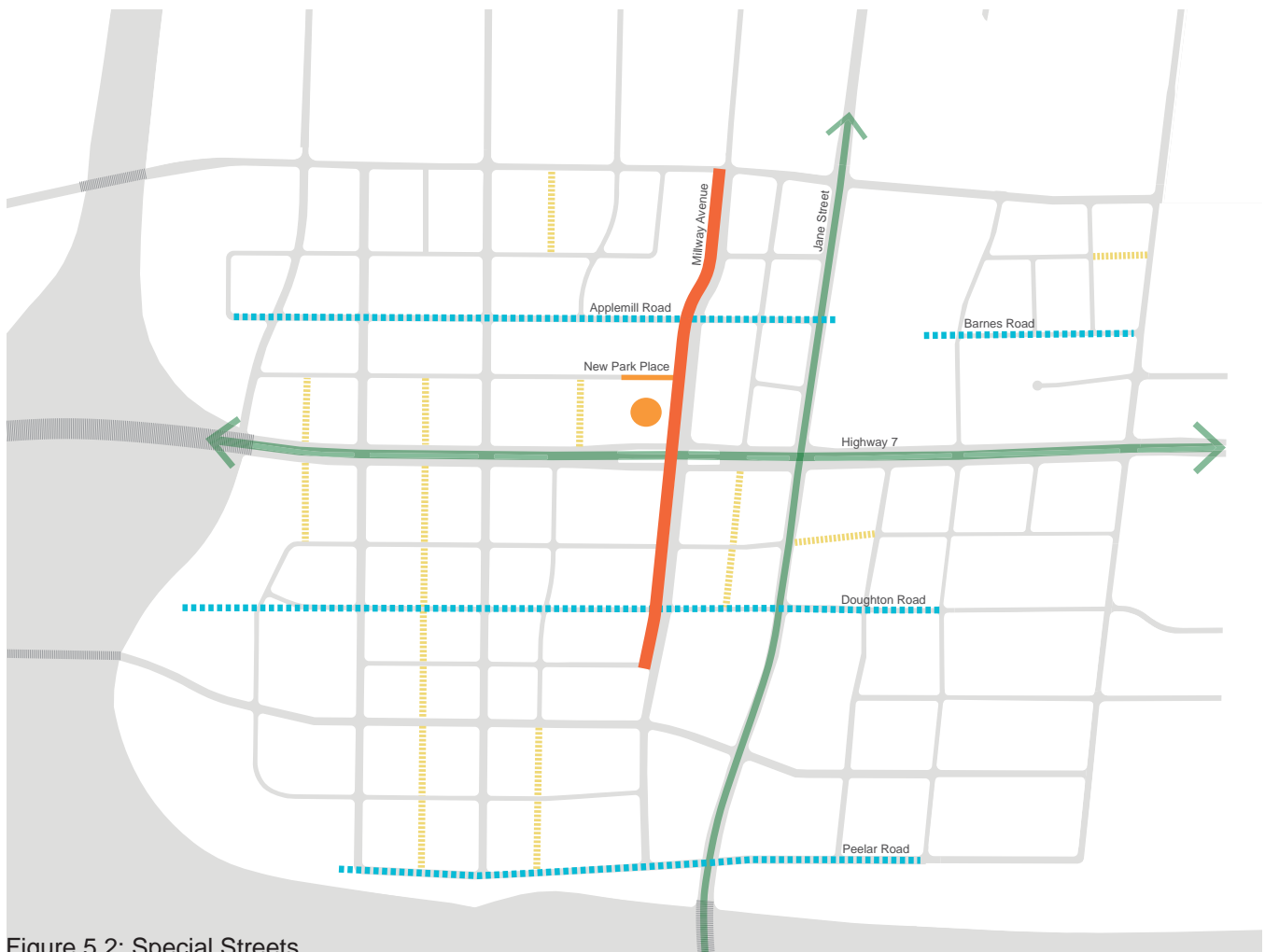


Figure 5.2: Special Streets

5.3 Streetscape Types

Streetscape Types describe the character of the streetscape as experienced by the pedestrian and are designed to relate to the context, character, adjacent land use and buildings, and the function of the associated street.

The Streetscape Types that will be incorporated into the VMC are: Mixed-Use Commercial, Transit Intensification Corridor, Technology/Office and Neighbourhood. The following pages provide a breakdown of each type, and include a description of their function, typical adjacent land use and unique design expression. For details related to Streetscape Types refer to the City-Wide Streetscape Manual.



Mixed-Use
Commercial



Transit
Intensification
Corridor



Technology
/ Office



Neighbourhood

Mixed-Use Commercial



Description

Mixed-Use Commercial represents the most active and diverse of the streetscape types. This streetscape type accommodates high pedestrian, bicycle and transit levels including zones which require specific interaction between the roadway and boulevard, such as passenger pick-up/drop-off areas.

Typical Land Use

- Mixed-Use
- High Intensity Retail / Commercial
- High Density Residential
- Restaurants and Sidewalk Cafes
- Cultural and Entertainment
- Institutional
- Pick-Up / Drop-Off
- Mews
- Parks and Public Spaces

Design Expression

- Special pedestrian crossings
- Large pedestrian clearway to accommodate high volumes of pedestrian traffic
- Activity from adjacent land use encouraged to spill onto pedestrian boulevard
- Pedestrian, cycle and transit amenities
- Street trees in continuous trench tree planters, covered by concrete

Transit Intensification Corridor



Description

Transit Intensification Corridor streetscape types typically occur along Regional roads with transit running through Intensification Areas. These roads serve as regional connections between urban intensification centres for vehicular traffic. Right-of-ways are typically larger along Transit Intensification Corridor streetscapes and require additional design amenities to protect pedestrians from vehicular traffic, vehicular noise and other micro-climate considerations.

Typical Land Use

- Retail / Commercial / Office
- Mixed-Use
- High Density Residential
- Parks & Public Spaces
- Mews

Design Expression

- Special pedestrian crossings (specialty and tactile paving)
- Larger pedestrian clearways with special paving patterns to accommodate pedestrian traffic
- Pedestrian, cycle and transit amenities (benches, waste receptacles, bicycle racks, pedestrian lighting)
- Double row of street trees, raised planters

Technology / Office



Description

Technology / Office streetscape types occur in urban employment areas fronting office, technology and commercial land uses. Low to medium pedestrian activity and traffic will occur on Technology / Office streetscapes. Commercial truck traffic may be diverted along these streetscapes in urban intensification areas requiring provisions to deal with noise, water and air pollution.

Typical Land Use

- Commercial / Office
- Low Intensity Retail
- Employment
- Parks and Public Spaces
- Mews
- Convention Centre / Hotel
- Institutional

Design Expression

- Some separation between the public and private realm through landscape and / or architectural definition
- Lay-by parking and short-term parking zones

Neighbourhood



Description

Neighbourhood streetscape types primarily front urban medium and high density residential land uses, parks and heritage areas. These streetscapes support local pedestrian activity including children playing and community socializing and are designed to promote walkability. The design focus occurs at the transition between the frontage zone and either the private property or public park. While residential streets will provide a semi-public / private transition across the right-of-way, parks will provide seamless transition between the pedestrian boulevard and the public park.

Typical Land Use

- Residential
- Local Retail
- Institutional
- Parks & Public Spaces
- Mews

Design Expression

- Some separation between the public and private realm through landscape and / or architectural definition
- Street trees in continuous trench tree planters, covered by concrete or turf grass

VMC Streetscape Types Summary Matrix

Road Classification	Streetscape Types				Applicable Streets
	Transit Intensification Corridor	Mixed Use Commercial	Neighbourhood	Office / Technology	
<i>per Secondary Plan Street Network</i>					
Major Arterials	✓				<ul style="list-style-type: none"> Jane Street Highway 7
Minor Arterials				✓	<ul style="list-style-type: none"> Creditstone Road
Major Collectors		✓	✓	✓	<ul style="list-style-type: none"> Portage Parkway Interchange Way Edgeley Boulevard (Portage Parkway to Interchange Way) Applewood Road
Special Collectors		✓	✓	✓	<ul style="list-style-type: none"> Millway Avenue
Minor Collectors		✓	✓	✓	<ul style="list-style-type: none"> Applemill Road Maplecrete Road Peelar Road Barnes Road Doughton Road Commerce Street (south of Applemill Road) Millway Avenue (south of Interchange Way) Edgeley Boulevard (south of Interchange Way)
Local Streets		✓	✓	✓	<ul style="list-style-type: none"> New Park Place Freshway Drive McLeary Court Buttermill Avenue Applemill Road (Applewood to NW stormwater management pond) Commerce Street (north of Applemill Road) New local streets as per VMC Secondary Plan
Mews		✓	✓	✓	<ul style="list-style-type: none"> Mews as per VMC Secondary Plan

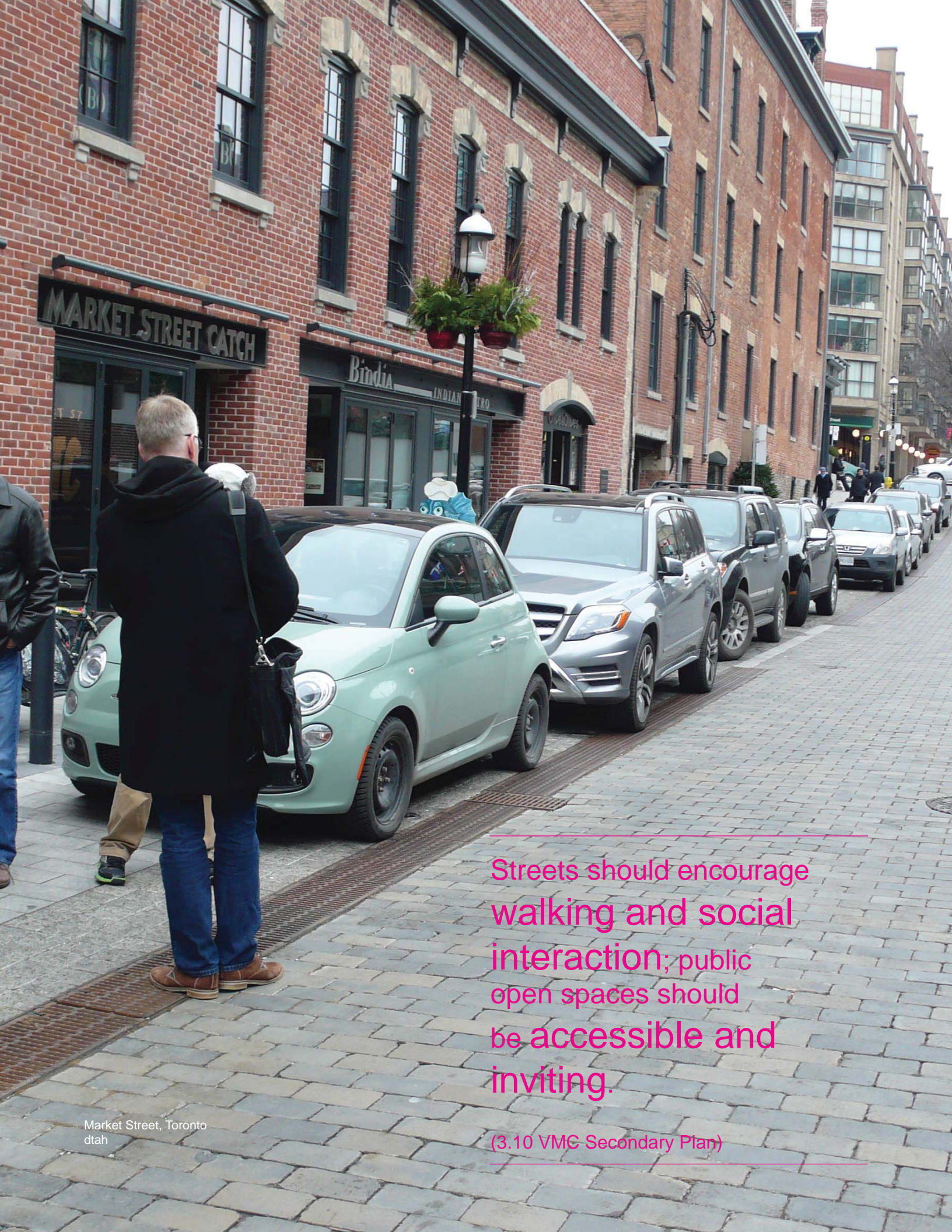
Table 5.1: VMC Streetscape Types Summary Matrix

5.4 Pedestrian Priority Zones

Pedestrian Priority Zones (PPZ)

Pedestrian Priority Zones are designed as pedestrian-first places that may include such features as flexible spaces, raised intersections, special surface and/or curb treatments, accent lighting, street furnishings, public art, and weather protection.

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



Streets should encourage walking and social interaction; public open spaces should be accessible and inviting.

5.5 Cycling Network

Regional and Local Cycling Connections

- The cycling network in the VMC connects with the York Region Cycling and Pedestrian Master Plan and the City of Vaughan Cycling and Pedestrian Master Plan as both a regional and local system.
- As an “Anchor Mobility Hub”, 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.
- Cycling access over major barriers such as Highway 400, will be addressed through dedicated cycle tracks on Highway 7, and the inclusion of both pedestrian and cycling facilities on the future Colossus overpass crossing Highway 400.

On-Road Facilities

- The VMC Streetscape and Open Space Plan incorporates cycling facilities into the street network to build a cohesive and permeable cycling network.
- On-street cycle facilities may be raised and separated by a 0.5 m mountable curb (a “Cycle Track”) or be marked cycle lanes that are flush with the roadway (a “Bicycle Lane”). On a “Signed Route”, cyclists travel in the same lane as motor traffic.
- Highway 7, Jane Street, Creditstone Road, and the major collectors will include on-street “Bicycle Lanes” flush with the roadway pavement, located between the curb and vehicular lanes (as per the VMC Secondary Plan). However, given the wide right-of-way and high volume of traffic along both Jane Street and Highway 7, the Plan recommends that the bicycle lane is shifted into the boulevard with cyclists separated from both motor traffic and pedestrians by planting zones.

- Applemill Road will have dedicated on-street cycle facilities.
- Best practices will be considered into the VMC to integrate walking and cycling into road design, including scramble intersections, bike boxes and signal prioritization.

Off-Road Facilities





- Major parks and open spaces will include multi-use recreational trails linked to the street network.
- “The Loop” recreational trail network will include cycling facilities and amenities.

Recommended Cycling Amenities

- Bike lock-up facilities at public destinations such as parks, schools and community centres.
- Sheltered bike lock-ups at subway and bus station entrances (in coordination with transit authorities).
- Bike-share rental program (pilot project opportunity) to promote active transportation, key destinations and attractions.

LEGEND

CYCLE FACILITIES

-  Cycle Track/Separated Facility
-  Existing Buffered Bicycle Lane
-  Multi-use Pathway
-  Long Term Cycling Facility (potential)

Encourage walking or cycling for most daily trips within the VMC

(4.0 VMC Secondary Plan)




-  YRT Bus Terminal
-  TTC Station
-  VIVA NEXT Rapid Transit Stations



Figure 5.3: Cycling Network





Parking Lot, Copenhagen

5.6 Transit Network

Anchor Mobility Hub

The Vaughan Metropolitan Centre is an “Anchor Mobility Hub” in the Greater Toronto and Hamilton Area (GTHA), integrating subway, regional rapid transit and local bus service in the mixed-use urban fabric. As an Anchor Hub, the VMC is an important destination and transfer point in the regional system, and has “the potential to transform the regional urban structure and act as anchors in the regional transportation system.” (Metrolinx Mobility Hub Guidelines). This investment in transit provides the essential foundation for a sustainable downtown where people can walk and cycle to home and work.

The Mobility Hub encompasses all of the Vaughan Metropolitan Centre, with the Primary Mobility Hub at its core.

- Primary Mobility Hub – 250m from subway station (2.5 minute walk)
- Secondary Mobility Hub – 500m from subway station (5 minute walk)
- Tertiary Mobility Hub – 800 m from subway station (10 minute walk)

In accordance with the Metrolinx Mobility Hub Guidelines, priority must be given to pedestrian, cycling and transit access over all other modes of transportation.

Meaningful pedestrian connections need to be made between Highway 7 and the VMC subway station.

Bus Routes

Highway 7 and Jane Street are designated in the Official Plan as Regional Rapid Transit Corridors. There are also a number of existing and planned local bus routes within the VMC, as illustrated on the Mobility Hub Zones and Potential Future Bus Routes diagram.

All neighbourhoods are within a **10** minute walk of the subway and most are within a **5** minute walk of a transit stop



Rendering © TTC and TYSSE

LEGEND

-  TTC Subway Station
-  VivaNext Rapid Transit Stations
-  YRT Bus Terminal
-  VivaNext Rapid Transit Routes
-  York Region Transit Bus Routes
-  Primary Mobility Hub
-  Secondary Plan Urban Growth Centre

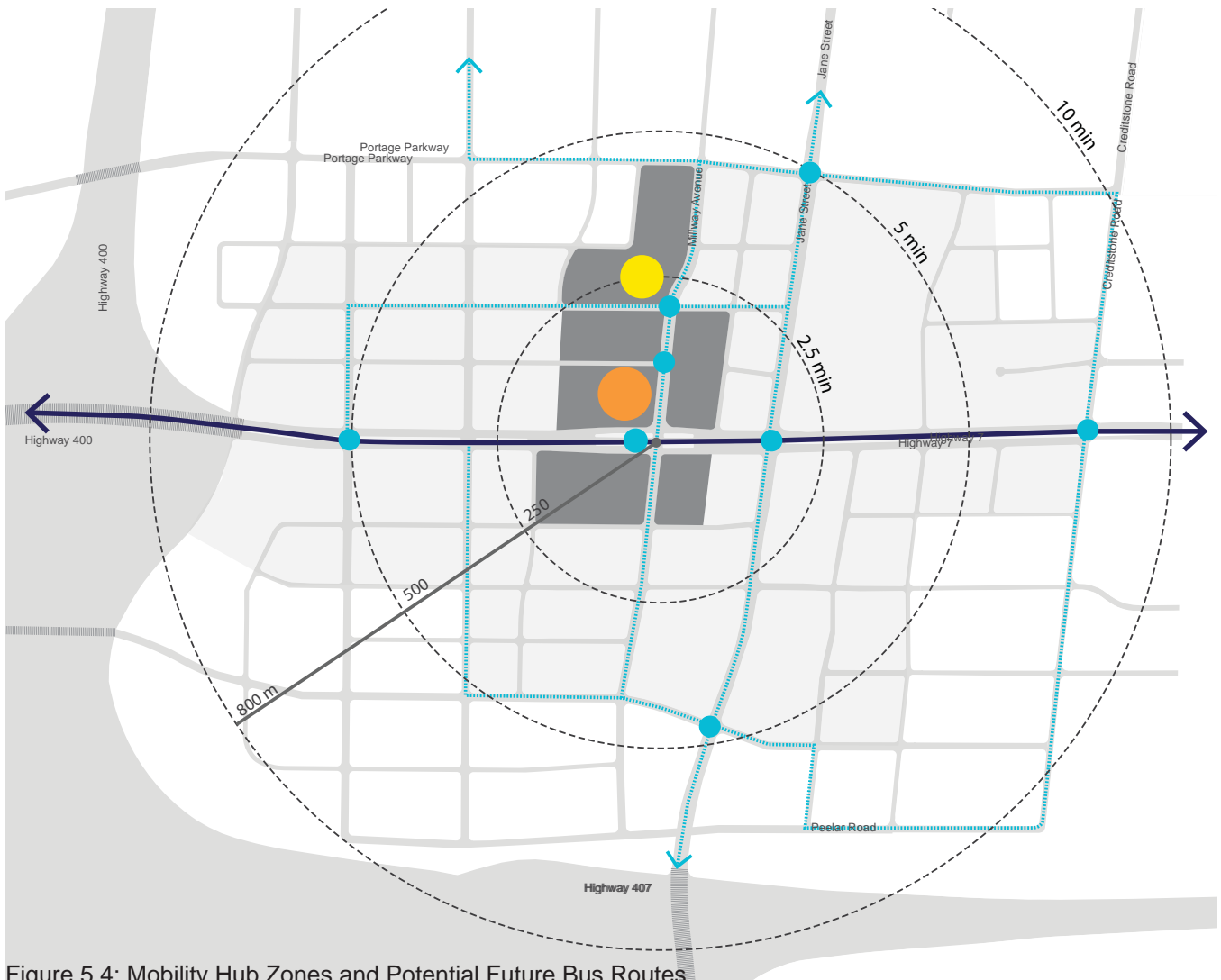


Figure 5.4: Mobility Hub Zones and Potential Future Bus Routes

5.7 Road Classification Landscape Treatments

A hierarchy of interconnected arterial, collector and local streets will disperse traffic and help ensure it moves to, through and around the VMC without having an adverse impact on land uses.

(3.6 VMC Secondary Plan)

The street provides a social space, a corridor for the movement of people and goods, connections between the public and private realm, access to private space and access to and continuity with public space destinations.

Road Classification

The Streetscape Types build upon the following Road Classifications to design a streetscape that is appropriate to its planning and land use context:

- Major Arterial
- Minor Arterial
- Major Collector
- Special Collector
- Minor Collector
- Local
- Mews



Old Street Promenade of Lights, London

Major Arterial



Highway 7 (Regional Road 7)

- A grand urban avenue that balances rapid transit, pedestrians, cycling and vehicles.
- Large size canopy street trees in scale with the street should be planted.
- Regional Viva Next rapid transit corridor.
- Provide robust green infrastructure: A double row of street trees for pedestrian comfort, structural soil cells to support urban tree health, understory planting in the pedestrian boulevard, and planted medians.
- Distinctive VMC boulevard paving pattern.
- Refer to the Highway 7 Streetscape Design section for further detail.
- Enhanced level of service streetscape.

Jane Street

- Characterized as a generous green corridor and gateway, the design of Jane Street will be informed by the Black Creek revitalization.
- Jane Street will include generous pedestrian and bicycle lanes with look out points and connections to Black Creek and the mews network.
- It is envisioned that rich topographical variation and a successional planting strategy will redefine the creek edge and bring the presence of Black Creek into the centre of the downtown.
- Identified by the Region as a transit intensification corridor with Viva Next rapid transit.
- Enhanced level of service streetscape.

Minor Arterial



Description / Purpose

- Major north-south street connection at the edge of the VMC.
- A transitional zone connecting the urban centre with surrounding employment lands.
- Bicycle lane.
- Reinforced landscape edge for the VMC with a double row of large scale street trees, additional understorey planting and potential for topographic manipulation to mitigate traffic noise.
- Apply elements to both sides of the street to create a consistent look.

Typical Elements

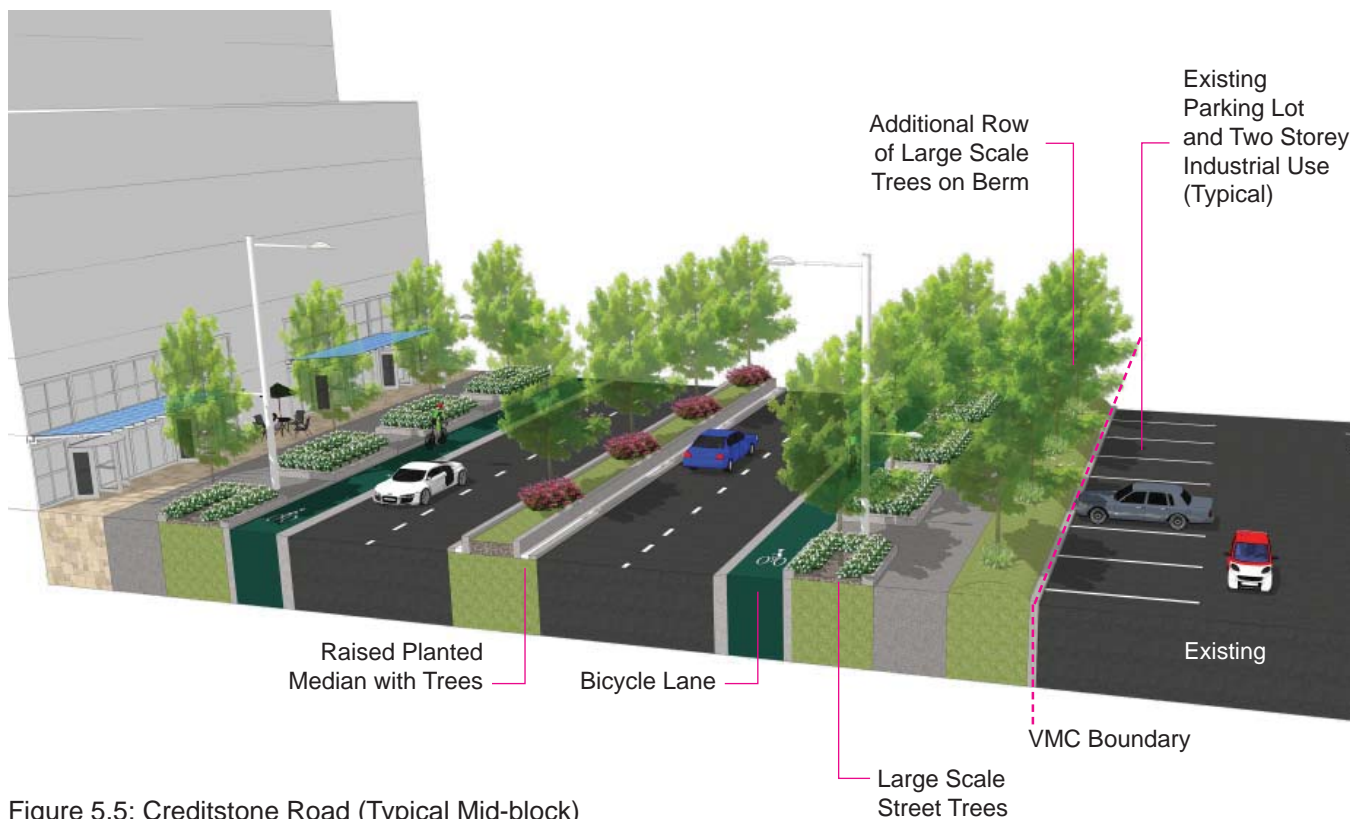
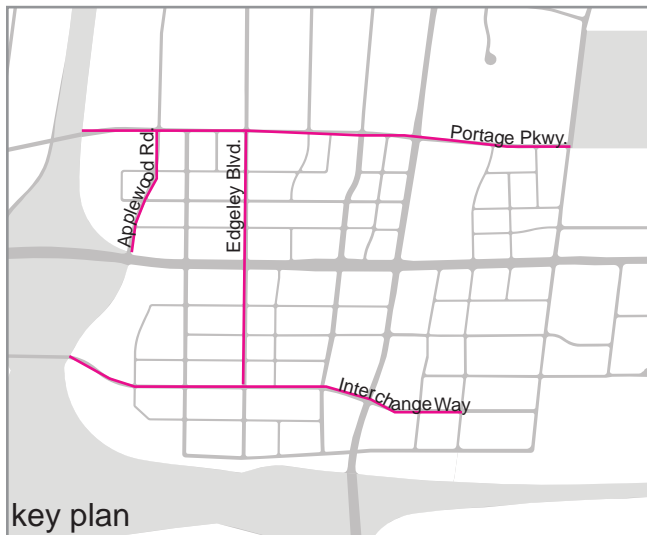


Figure 5.5: Creditstone Road (Typical Mid-block)

Major Collector



Description / Purpose

- Multi-modal streets that accommodate transit and provide generous pedestrian and cycling infrastructure (cycle tracks or cycle lanes).
- Pedestrian priority zones between park blocks and around schools.
- Portage Parkway is a reinforced landscape edge for the VMC with a double row of large scale street trees, additional understorey planting and potential for topographic manipulation to mitigate traffic noise.
- Apply elements to both sides of Portage Parkway to create a consistent look and strong edge.

Typical Elements

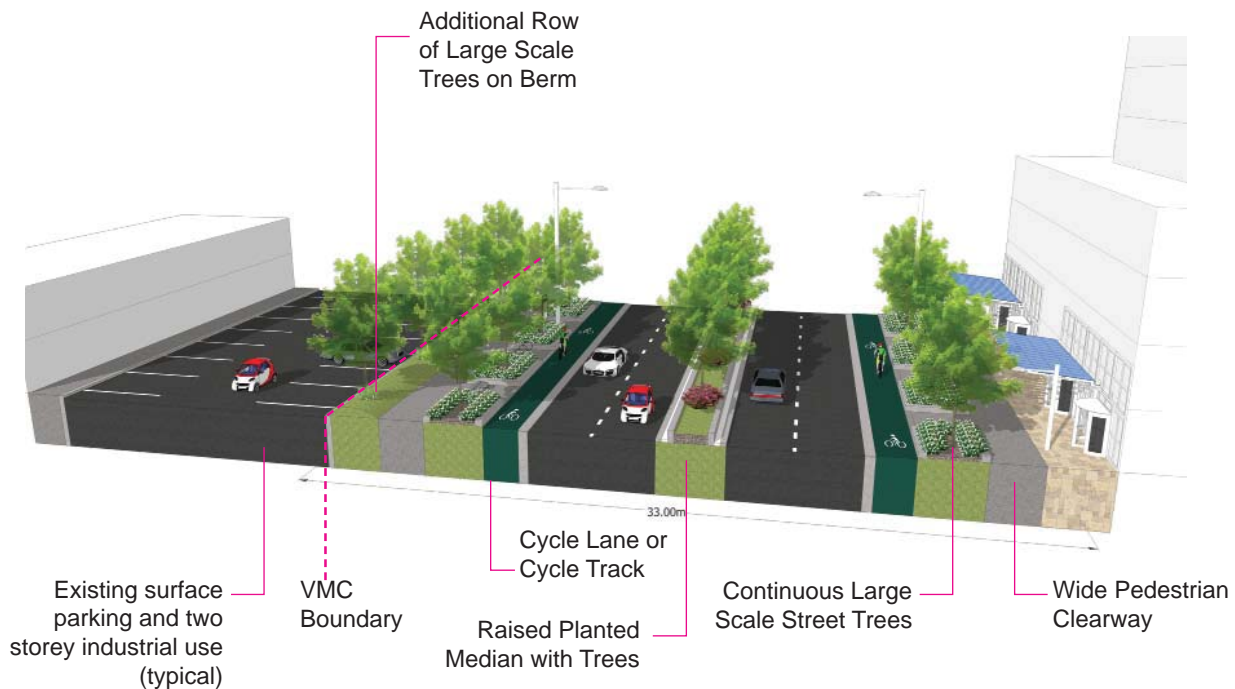


Figure 5.6: Portage Parkway (Typical Mid-block)

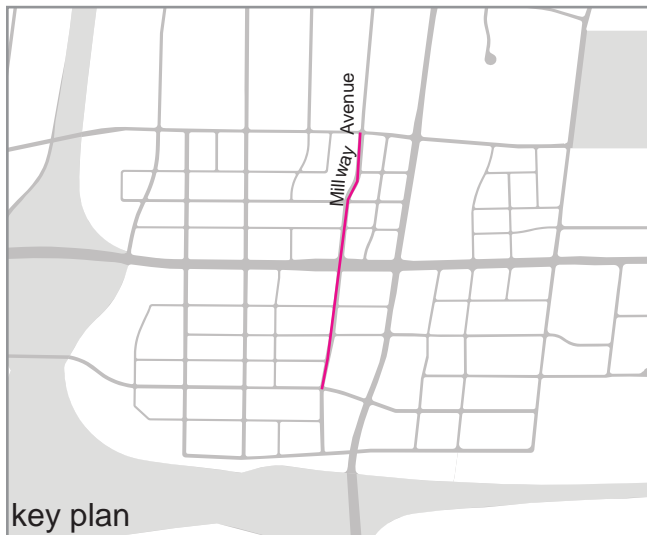


Figure 5.7: Major Collector (Typical Mid-block)



Figure 5.8: Edgely Boulevard at East-West Urban Park

Special Collector



Description / Purpose

- Millway Avenue is envisioned as the social and cultural spine of the VMC.
- A transit corridor (one of the main access points to the bus terminal).
- As a destination, Millway Avenue will be activated by the mobility hub and adjacent retail, commercial, high density residential and public spaces.
- Design of Millway Avenue right-of-way should be integrated with adjacent public spaces (Transit Square, Millway Avenue Promenade, Urban Park).
- A focus on pedestrian amenities and design components to attract people in all four seasons.
- Raised intersections between park blocks south of Highway 7 for pedestrian connectivity.
- Premium level of service streetscape.

Typical Elements



Figure 5.9: Millway Avenue at East-West Urban Park (south of Highway 7 Mid-block)

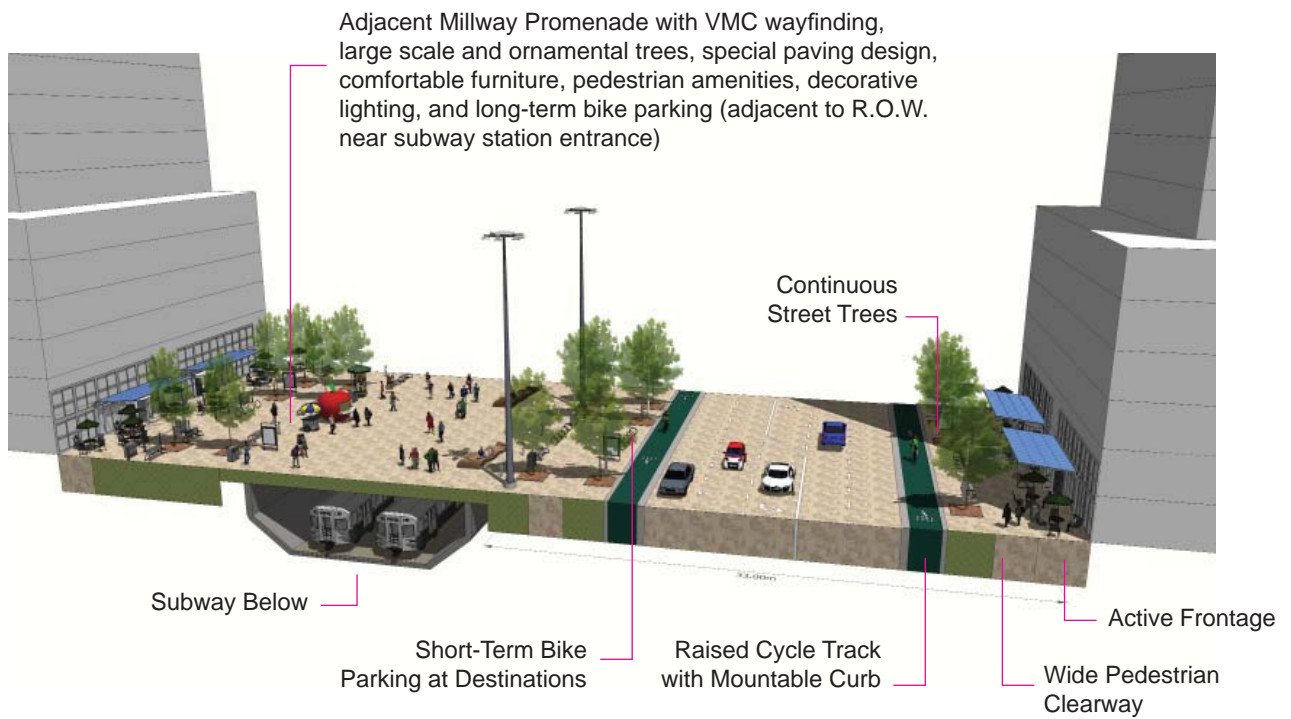
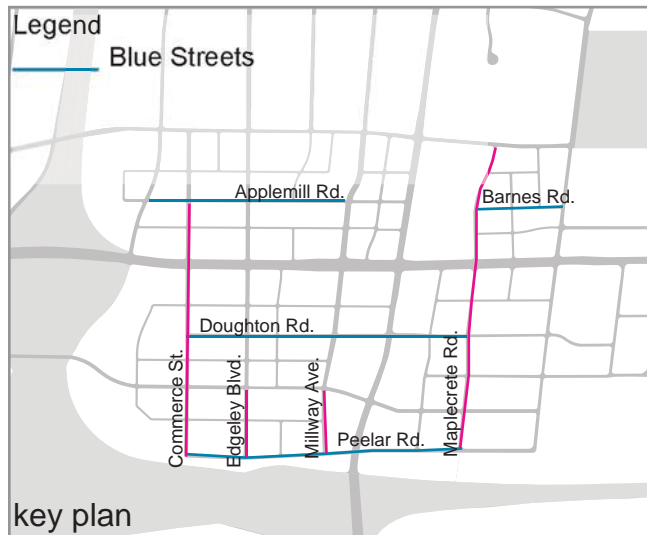


Figure 5.10: Millway Avenue Pedestrian Promenade (Typical Mid-block)



Figure 5.11: Millway Avenue south of Freshway Drive (Mid-block)

Minor Collector



Description / Purpose

- Medium scale streets, slower than the arterials and major collectors.
- Accommodate retail, school and park connections.
- Generous cycling and pedestrian infrastructure (cycle track or signed route).
- A main pedestrian entrance to the bus station will be located on Applemill Road, visually connected to Transit Square.
- Blue Streets (Barnes Road, Applemill Road, Doughton Road, Peelar Road) and adjacent parks designed through integrated planning.

Typical Elements

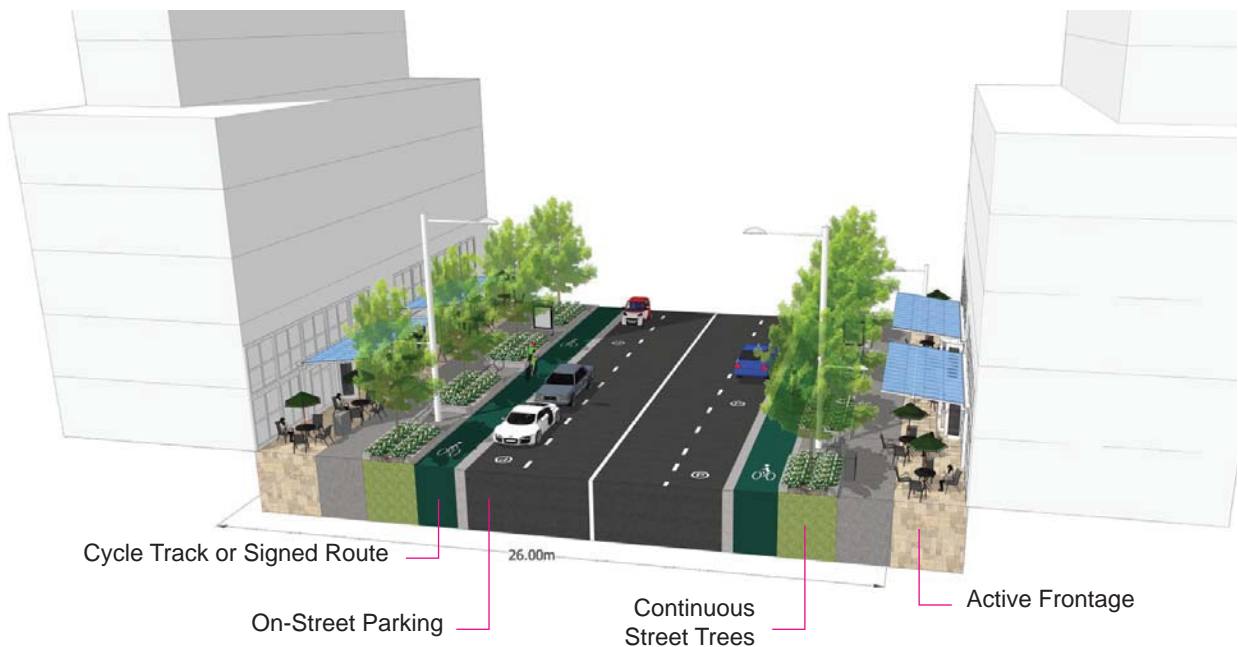


Figure 5.12: Minor Collector with Retail (Typical Mid-block)

Blue Streets

- A pilot project for the implementation of **Next Generation Infrastructure**: An integrated engineering + landscape-based approach to stormwater management.
- Innovation to build the city's resiliency for climate change.
- High functioning landscapes developed through a multi-faceted, systems approach targeted at water, ecology and air quality.
- Pilot project program to include planning, coordination, implementation, maintenance and monitoring.

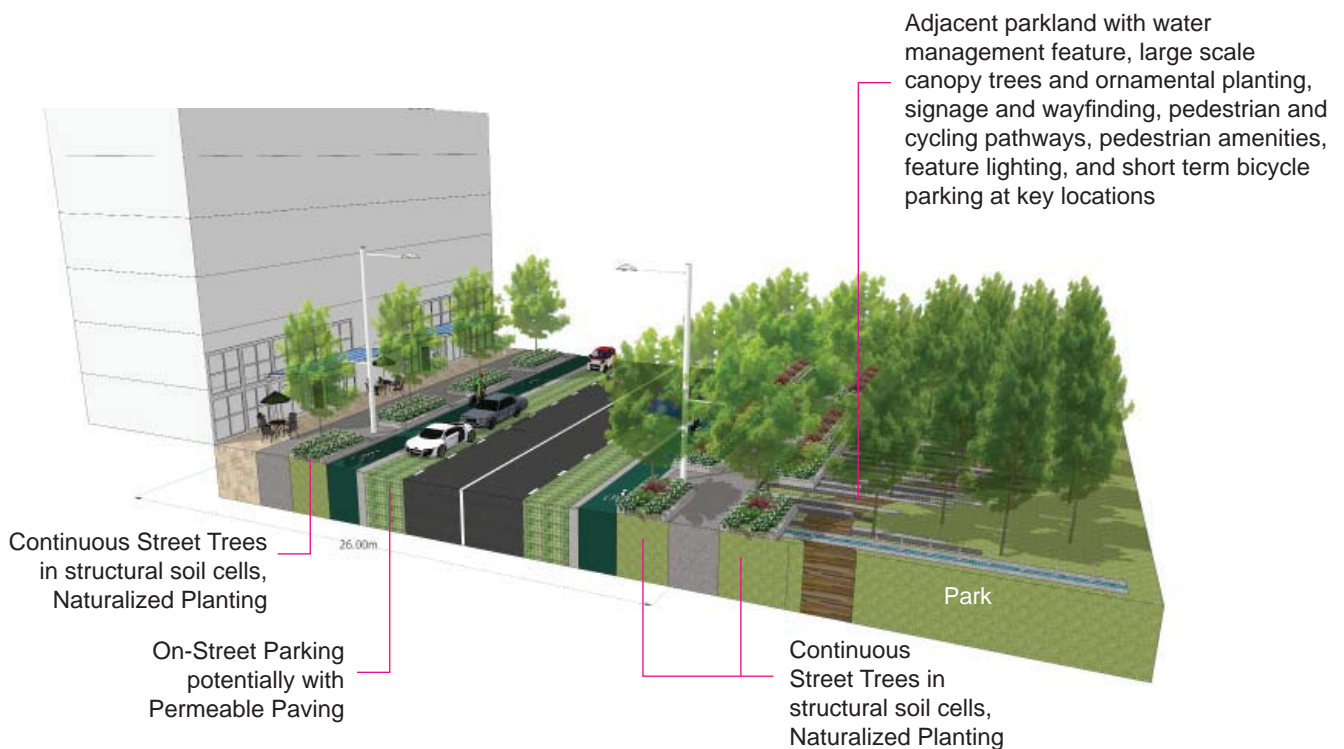
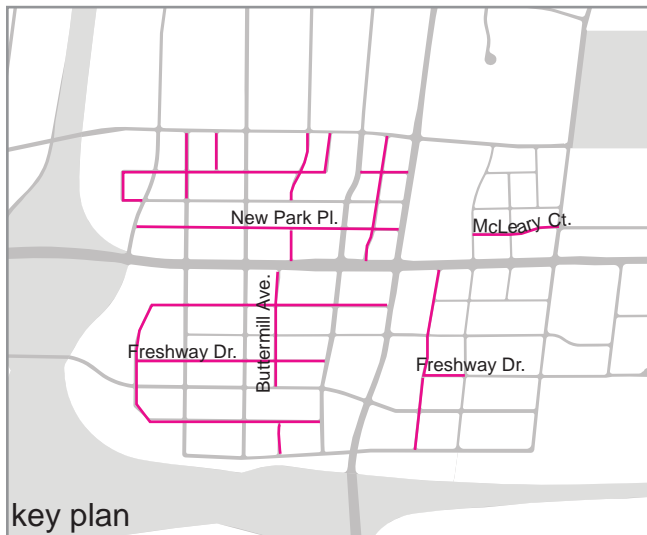


Figure 5.13: Blue Street at Park Interface (Typical Mid-block)

Local Street



Description / Purpose

- Smaller scale local streets serving the neighbourhood.
- Pedestrian/social interaction zone.
- Provides pedestrian / cycling linkages to parks and open space system.
- Pedestrian Priority Zones (raised roadway) between park blocks.

Flexible Streets

- Consider for areas with high pedestrian activity (retail streets, parks, mobility hub).
- Mixed space for multi-modal demand, prioritizing the pedestrian.
- Continuous specialty paving across roadway indicates to vehicles and bicycles to slow down and share the space.
- May be designed to optimize space for seasonal uses (i.e. parking in winter and cafe seating in summer).

Typical Elements

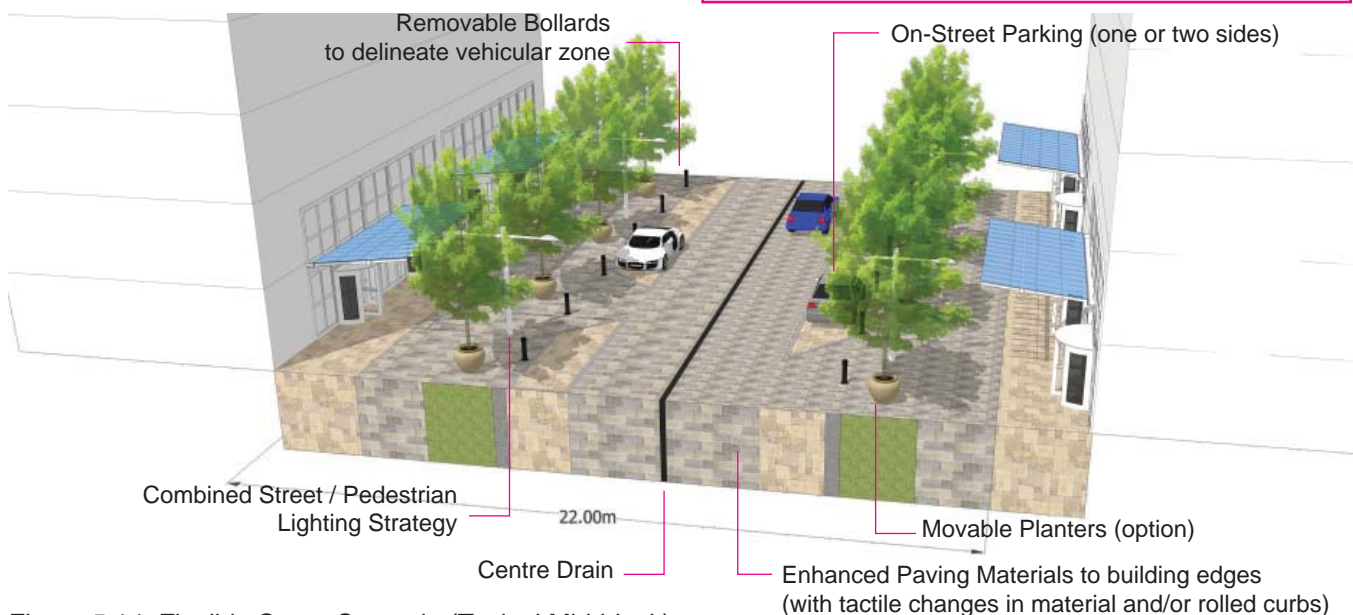


Figure 5.14: Flexible Street Scenario (Typical Mid-block)

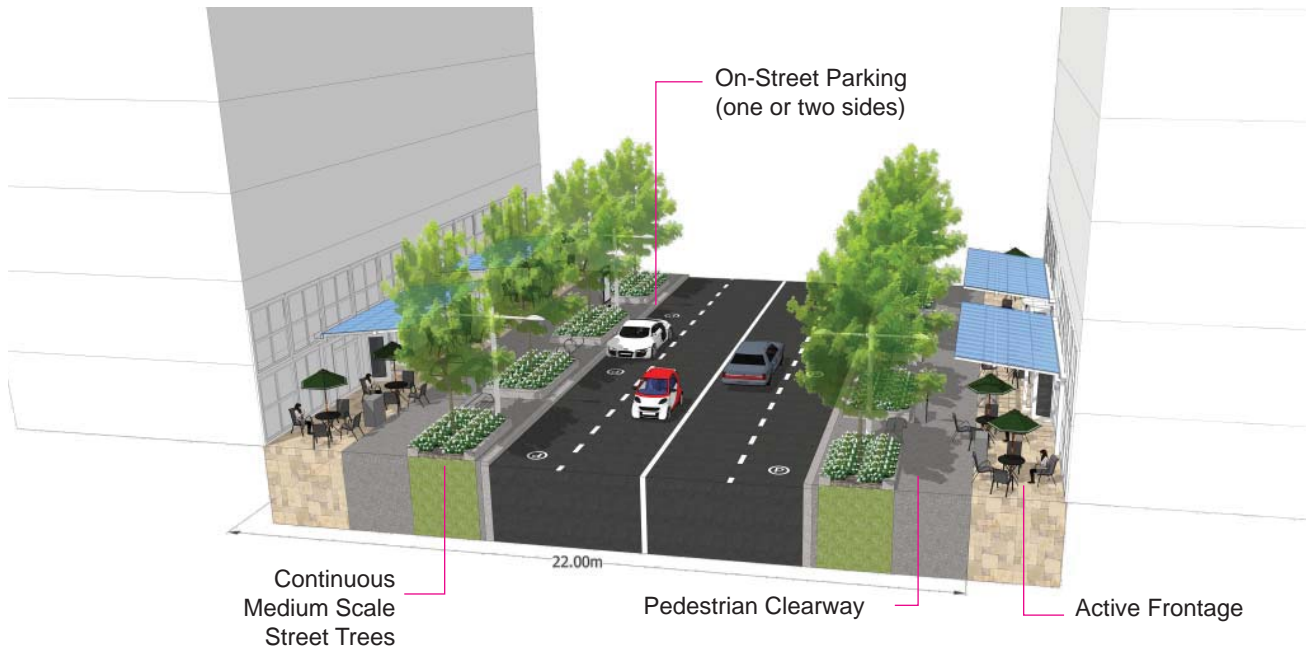


Figure 5.15: Local Street with Retail (Typical Mid-block)



Figure 5.16: Local Street with Pick-Up / Drop-Off Area (Typical Mid-block)

Mews



Description / Purpose

- A small scale, pedestrian-oriented neighbourhood street that is primarily for pedestrians but may also be designed to accommodate servicing and access.
- Primary function is to provide access to the front of individual sites, and for pedestrian socialization rather than to serve through traffic.
- Provides fine grain connectivity to support walkable neighbourhoods.
- Provides pedestrian connectivity to the parks and open space system and to key destinations as part of a contiguous parks and open space network.

Typical Elements

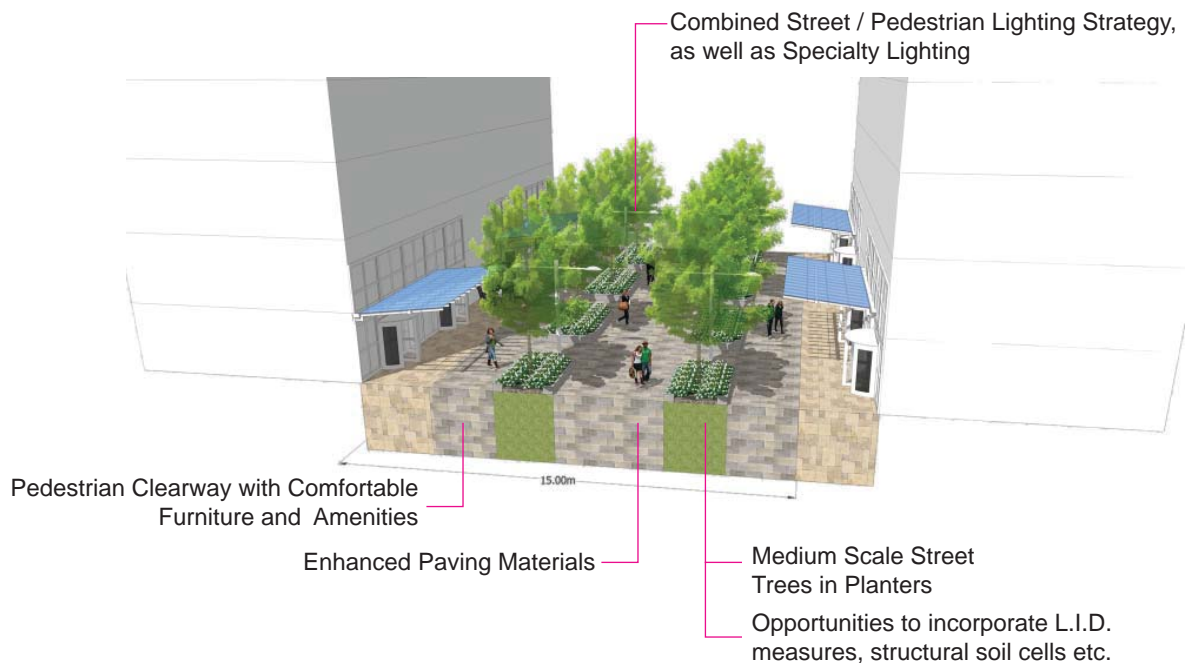


Figure 5.17: Mews (Typical Mid-block)

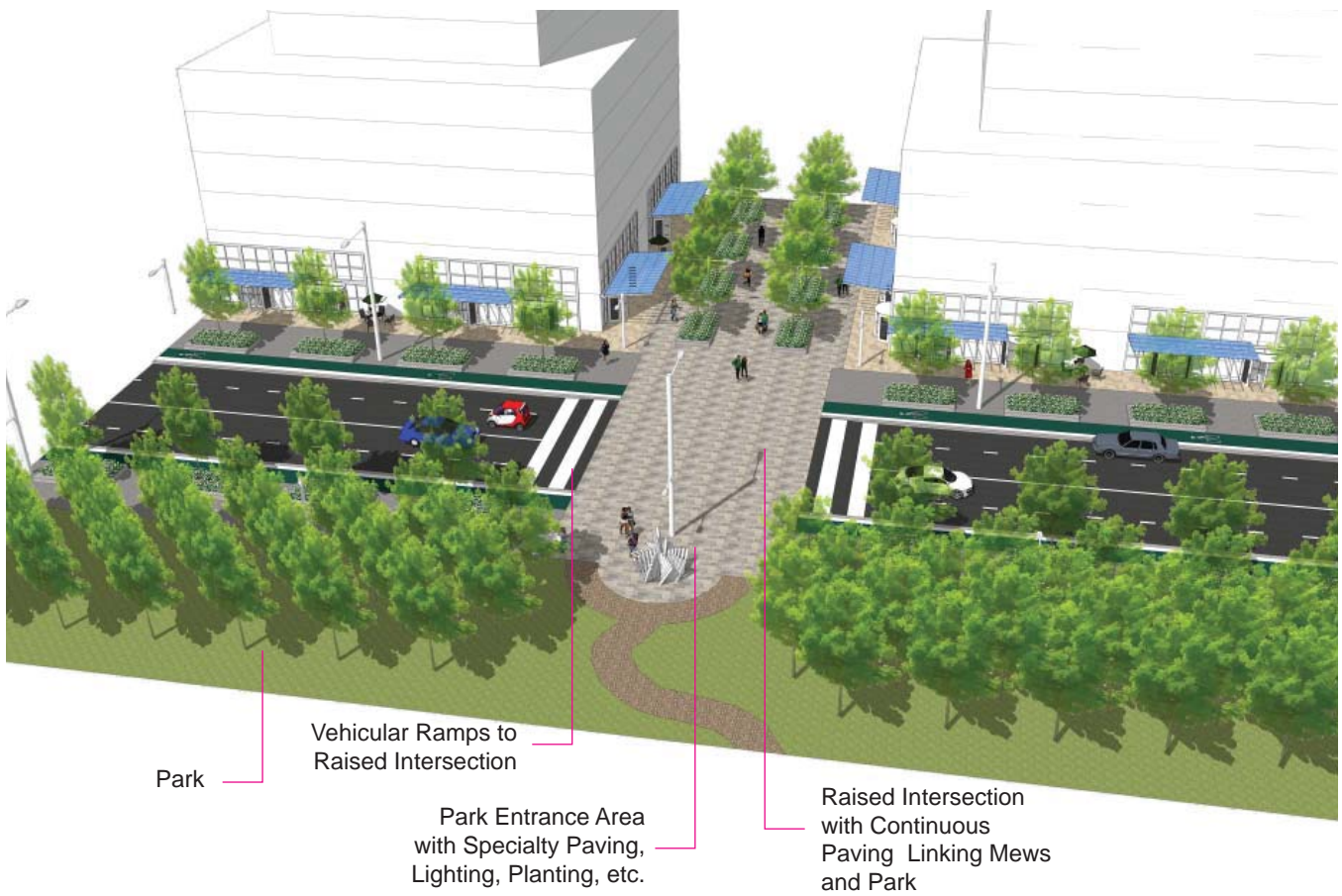


Figure 5.18: Mews at Intersection with Park (Typical Mid-block)

5.8 Landmarks, Views + Intersections

Buildings, streets and open spaces should be designed and built for permanence and elegance.

(3.10 VMC Secondary Plan)

Landmarks

A landmark is an object or feature that is easily seen and recognized from a distance. Landmarks help orient people within the city for navigation, and also contribute to the sense of place.

- Black Creek
- Transit building entrances
- Transit square
- Parks and public squares
- Public art
- Gateway designs
- High-rise buildings that showcase architectural excellence

Views

Spatial definition within the city is achieved through the structuring of buildings and the spaces between them. This relationship is enhanced and complemented when special view corridors are created and protected through planning.

The Intersections and Views diagram highlights important views within the public realm structure of streets, parks and open spaces defined through the Secondary Plan. As development progresses, these important view corridors should be protected and enhanced.

LEGEND









-  Mobility Hub Gateway Intersection
-  Gateway Intersection
-  Major Intersection
-  Minor Intersection
-  Mews Intersection
-  View Corridor
-  Park Network
-  Mews



Figure 5.19: Intersections and Views

Intersections

Intersections act as the joints of the streetscape network, connecting together different Streetscape Types. At intersections, multiple modes of transportation interact as they cross and change direction, therefore thoughtful design is required to ensure safety and comfort for all.

The type and density of intersections in the circulation network has a significant impact on how people move around for their daily tasks, whether by foot, bike, public transit or car.

4 types of intersections in the VMC:

Gateway Intersections

Gateway Intersections are located at highly visible locations where people cross over a threshold into the Vaughan Metropolitan Centre. They convey a sense of arrival and are distinguishable places of change within the city fabric. Gateway intersections are achieved through an architectural articulation of space and the introduction of specialty features, such as accent lighting, special paving, and public art. Gateways should follow the design guidelines in Section 6.0.

The Mobility Hub Gateway Intersection is the most significant gateway within the VMC. Located at Millway Avenue and Highway 7, this gateway is part of the core mobility hub which is an arrival and departure point and central gathering destination.

Major Intersections

Major Intersections are located at key locations in the VMC. They will be designed to accommodate a high volume multi-modal traffic, including transit interfaces.

Minor Intersections

Minor Intersections are generally found between local streets with neighbourhood traffic. The role of minor intersections is to connect the local neighbourhood street fabric.

Mews Intersections

Mews Intersections are a special development condition where breaks are introduced into the block to allow for enhanced pedestrian connectivity, including links with parks. With the focus on pedestrians and cycling, the intersection design at these locations must be designed for public pedestrian and cycling access, safety and interest.

Gateway Intersections

Description

Gateway intersections are major intersections with public/private space adjacent to the pedestrian corner treatment. Higher amounts of non-local traffic can be found in gateway intersections which provide the first and strongest streetscape indications of the VMC brand. Streetscape elements at gateway intersections will signal a change in place and identity.

The public / private space allows for greater design expression of identity change and prominent signage. Design of the public / private space should be complimentary to the pedestrian corner treatment with places to sit, bike parking, pedestrian and accent lighting, waste receptacles, shade and the VMC branding and identity.

Expression

- Integrate special architectural and lighting features into buildings located at these intersections
- Enhanced, high quality materials on the lower floor facades of the buildings surrounding the gateway intersections
- Enhanced site and landscape treatments including special paving, plant materials and landscape features
- Enhanced streetscape lighting of the intersections
- Special pedestrian paving on sidewalks, crosswalks and adjacent public and private spaces

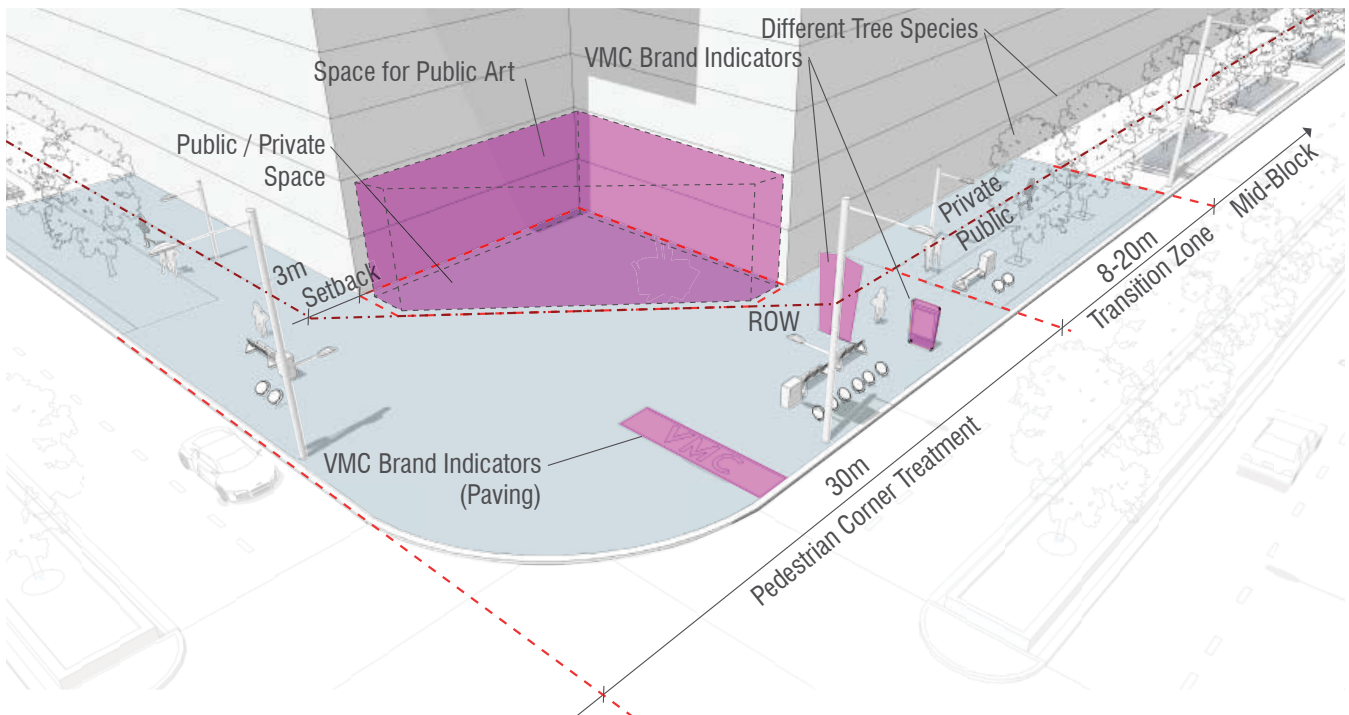


Figure 5.20: Corner Treatment for Gateway Intersections

Major Intersections

Description

Major intersections are separated into two sections: the pedestrian corner treatment and transition zone. The pedestrian corner treatment is large in major intersections to accommodate larger pedestrian traffic volumes waiting to cross the intersection. The transition zone sits between the pedestrian corner treatment and mid-block and acts as a visual indicator to pedestrians that care must be taken at the impending intersection.

Expression

- Pedestrian corner treatment to extend 30 m from intersection curb and consist of unit paving and accent design
- Transition zone to extend 8 to 20 m from the pedestrian corner treatment with similar unit paving along the pedestrian sidewalk
- Transition zone to have a different tree spacing rhythm from that of the mid-block, different planter design, and different yet complimentary paving design to that of the pedestrian corner treatment
- Mid-block zone to be 38 to 50 m from the intersection curb with typical mid-block design

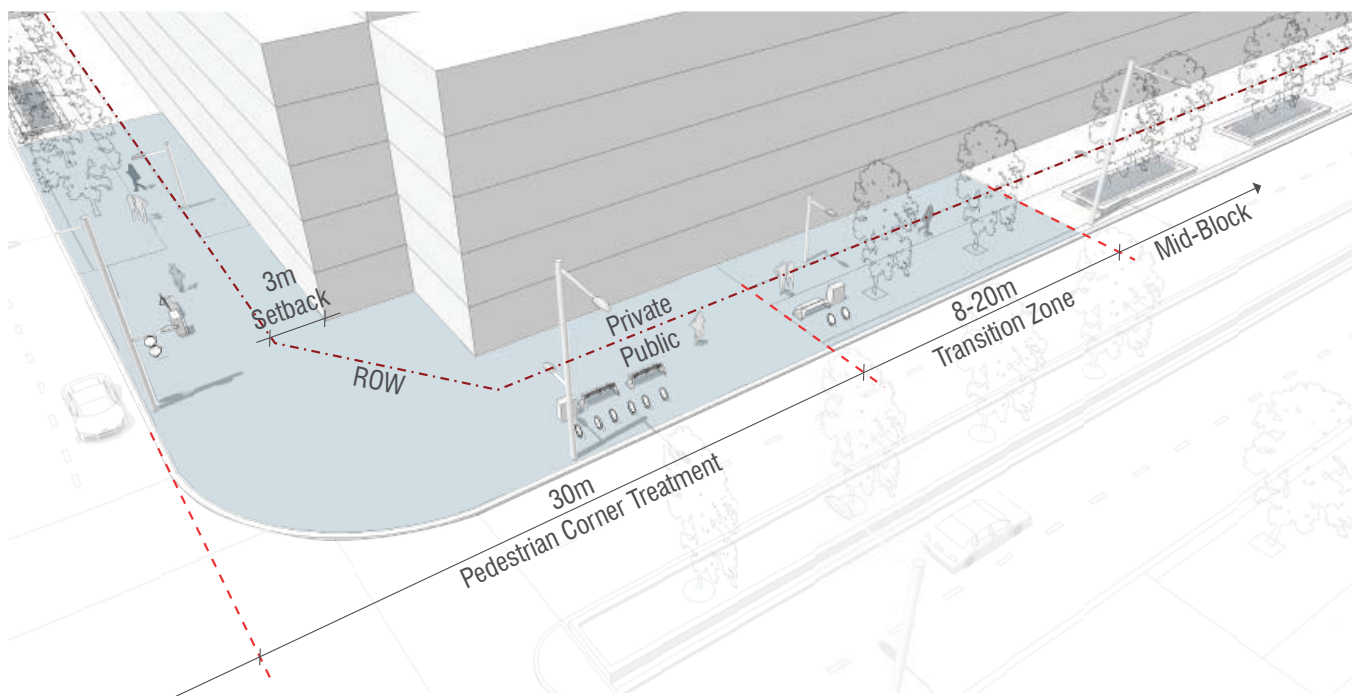


Figure 5.21: Corner Treatment for Major Intersections

Minor Intersections

Description

Minor intersections typically consist of only the pedestrian corner treatment adjacent to the mid-block. The absence of the transition zone is due to lower vehicular and pedestrian traffic volumes. Design of the pedestrian corner treatment is unique to that of the mid-block to visually cue that safety precautions must be taken at the intersection crossing.

Expression

- Pedestrian corner treatment to extend 10 m from intersection curb and consist of unit paving and accent design
- There is no transition zone present in minor intersections
- Mid-block zone to start 10 m from the intersection curb with typical mid-block design

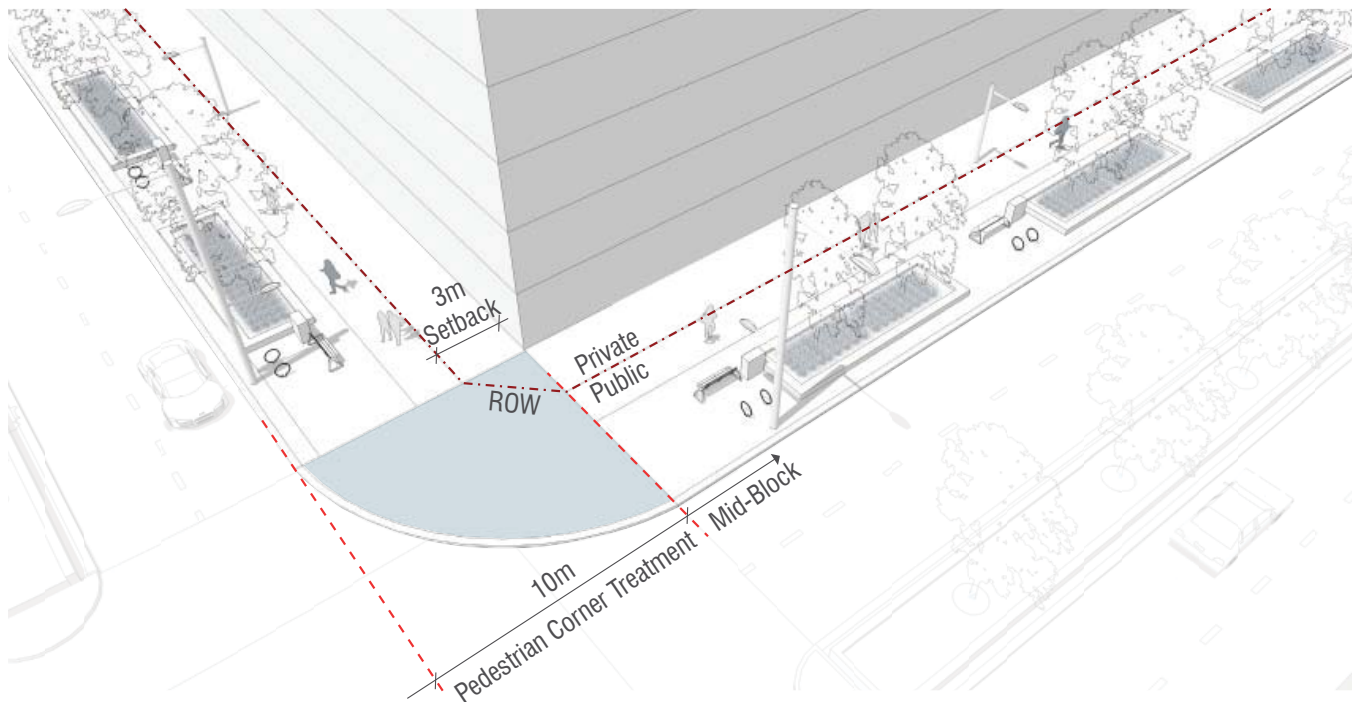


Figure 5.22: Corner Treatment for Minor Intersections

5.9 Public - Private Interface

The Public-Private Interface is the space between the sidewalk and the building frontage. This area can be used for building entrances, bike parking, seating, outdoor cafes, retail displays and arrival courtyards, depending on the adjacent land use. The VMC Urban Design Guidelines provides more detailed guidance for the successful design of public / private interfaces.

Key design considerations include:

- Consideration for the full street and right-of-way when designing the interface zone will create more vibrant and comfortable streetscapes.
- Encourage active uses at ground level oriented towards and engaging with the street.
- For retail land uses, interaction and animation of the street is a priority, and shall be addressed through the use of building articulation, furnishings, landscape features, cafes and patios, ensuring a clear area for store entrances.
- Office and commercial land uses require seamless integration with the street, providing an area for people to move in and out of the pedestrian flow to easily enter and exit the building. Often, plazas and squares provide appropriate public-private interface spaces.
- For residential land uses, the protection of privacy is a priority, and shall be addressed through the design of appropriate setbacks and landscape architectural devises including arrival semi-private courtyards, walls, decorative fencing and gardens within the property line adjacent and to the public street right-of-way.

Land Use	Zones	Objective
<i>Retail</i>	<i>Public / Semi-Public / Private</i>	<i>Animate</i>
<i>Office / Commercial</i>	<i>Public / Semi-Private / Private</i>	<i>Integrate</i>
<i>Residential</i>	<i>Public / Semi-Private (includes landscape buffer) / Private</i>	<i>Protection of Privacy</i>

Table 5.2: Public / Private Interface Zones



Retail Semi-Public Interface



Residential Semi-Private Interface



Office / Commercial Semi-Private Interface

5.10 Lighting Strategy

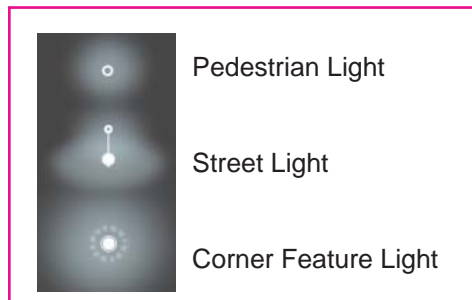
Street lighting is important both from a functional as well as an aesthetic perspective. Lighting can create a special sense of place in addition to increasing pedestrian, cycling and vehicular safety.

Street lighting of the VMC must meet City, Regional and Transportation Association of Canada (TAC) Guide for the Design of Roadway Lighting standards for public safety. It must contribute to the quality of the surrounding night environment, whether it is on roads, walkways, buildings or in open spaces.

For each of the typical roadway classifications, a lighting strategy(s) has been developed:

The Traditional Strategy (Option A) has separate streetlights and separate or integrated pedestrian lights

The Unified Strategy (Option B) emphasizes a strong discipline, organization and structure of lighting. Option B is provided as a variation for Minor Collector and Local Streets.



Minor Arterial

Street Lights

- Standard locations and heights
- 6-7 m pole height, 25-35 m on centre of pole
- Parallel / opposite pattern
- Semi-cutoff with apparent night presence

Pedestrian Lights

- Aligned with street lights
- 4-5 m pole height, 10-14 m on centre of pole
- Alternate pattern

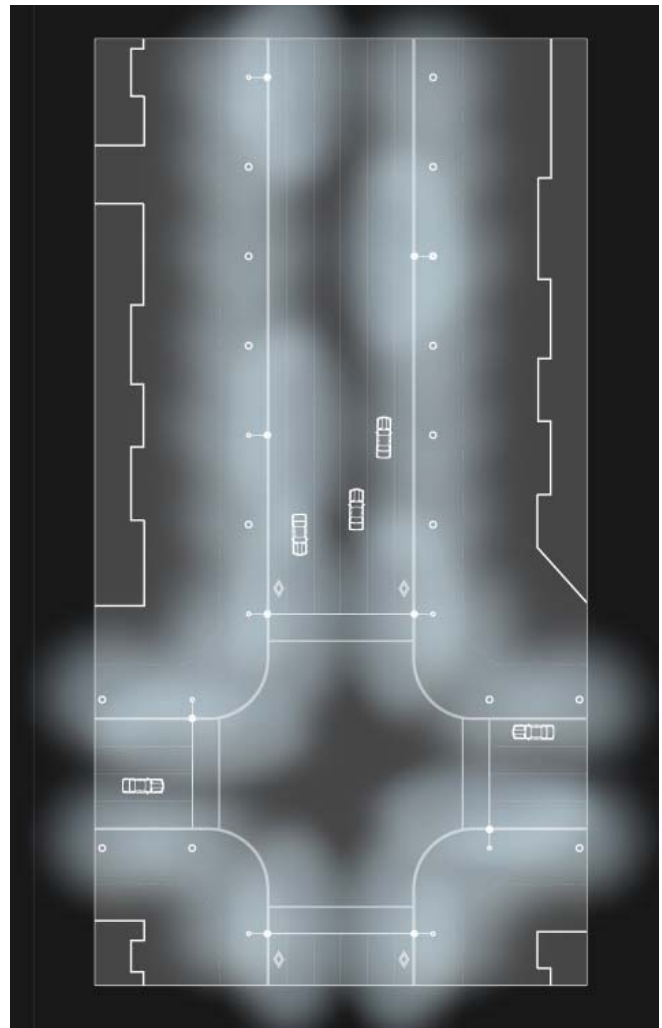


Figure 5.23: Minor Arterial Lighting Strategy

Major Collector

Street Lights

- Standard locations and heights
- 6-7 m pole height, 25-35 m on centre of pole
- Parallel / opposite pattern
- Semi-cutoff with apparent night presence

Pedestrian Lights

- Aligned with street lights
- 4-5 m pole height, 10-14 m on centre of pole
- Alternate pattern

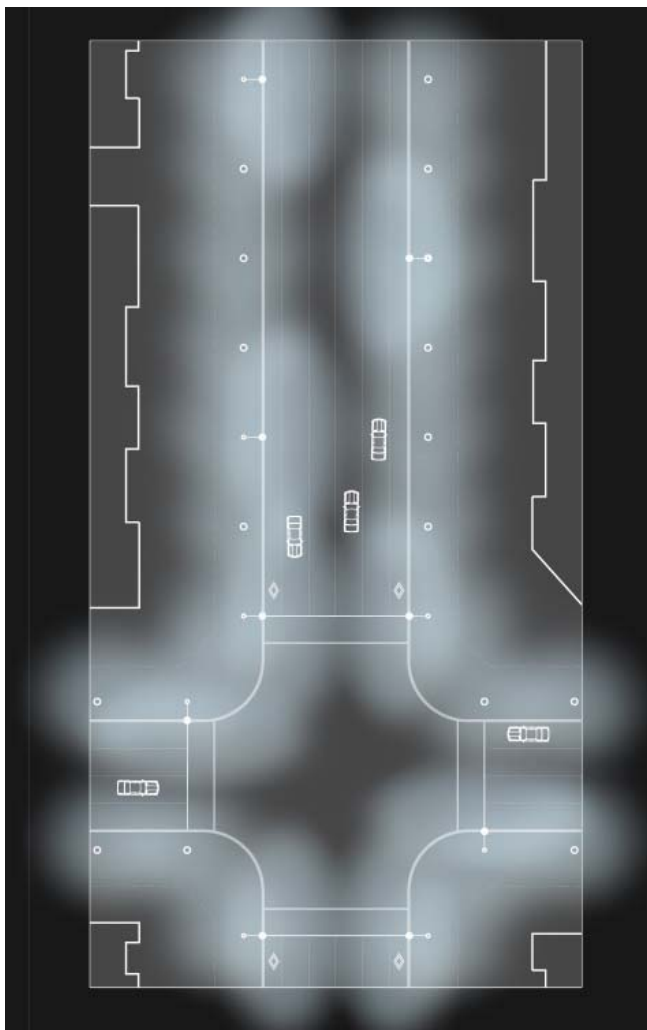


Figure 5.24: Major Collector Lighting Strategy

Special Collector

Street Lights

- Standard locations and heights
- 6-7 m pole height, 25-35 m on centre of pole
- Parallel / opposite pattern

Pedestrian Lights

- Aligned with street lights
- 4-5 m pole height, 10-14 m on centre of pole
- Parallel / opposite pattern

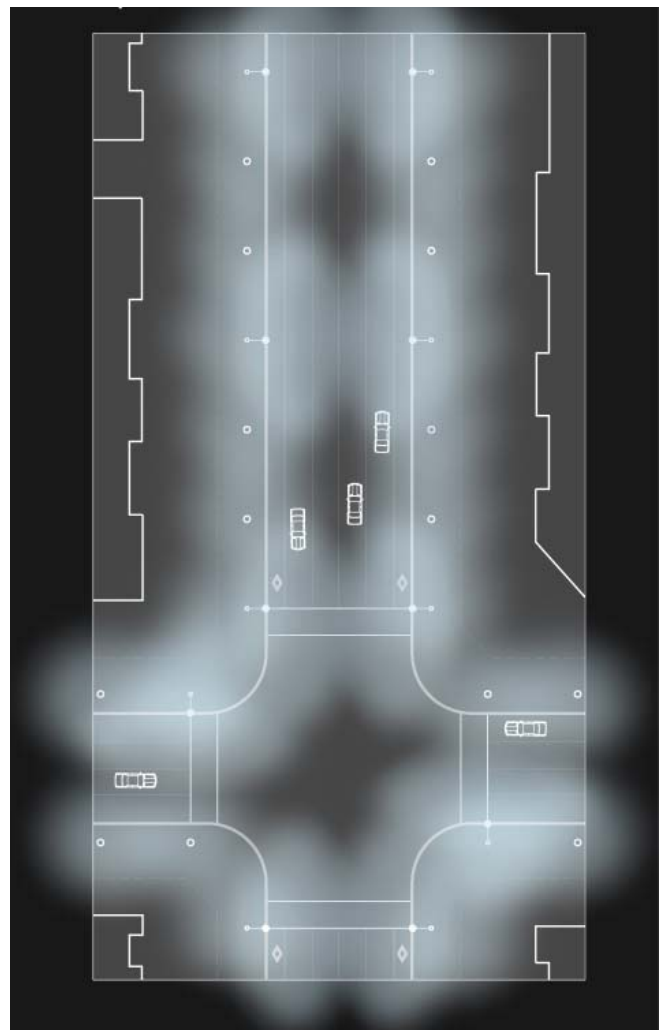


Figure 5.25: Special Collector Lighting Strategy

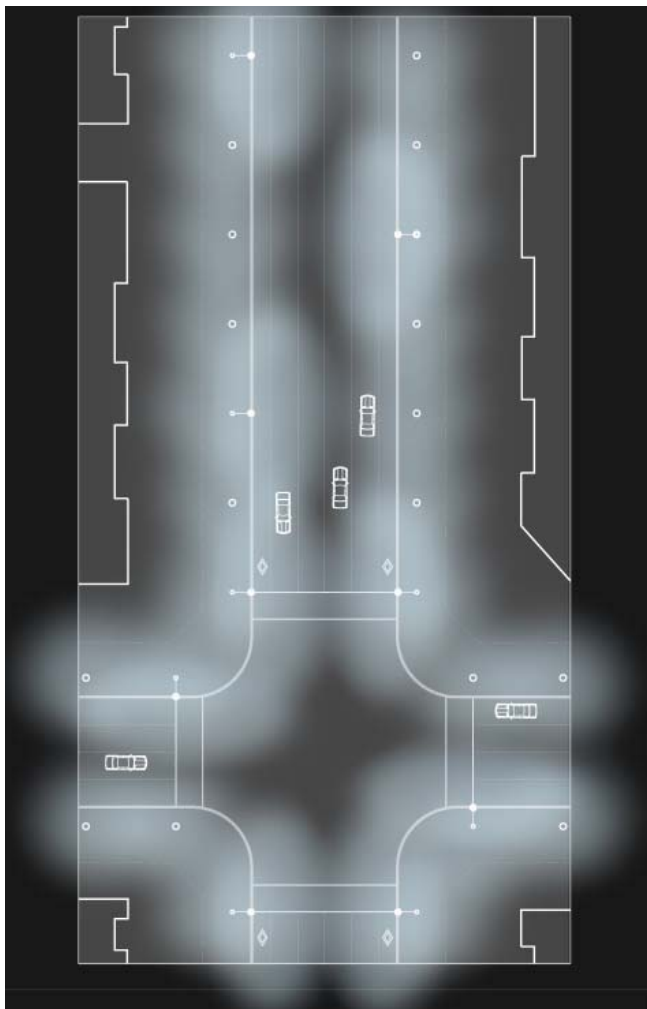
Minor Collector - Option A

Street Lights

- Standard locations and heights
- 6-7 m pole height, 25-35 m on centre of pole
- Parallel / opposite pattern
- semi-cutoff with apparent night presence

Pedestrian Lights

- Aligned with street lights
- 4-5 m pole height, 10-14 m on centre of pole
- Alternate pattern



Minor Collector - Option B

Street / Pedestrian Lights

- Special urban character areas
- 4-5 m pole height, 10-14 m on centre of pole
- Parallel / opposite pattern
- Semi-cutoff with apparent night presence

Feature Lights at Corners

- Special design
- 8-10 m pole height at signalized crosswalks
- Strong night presence

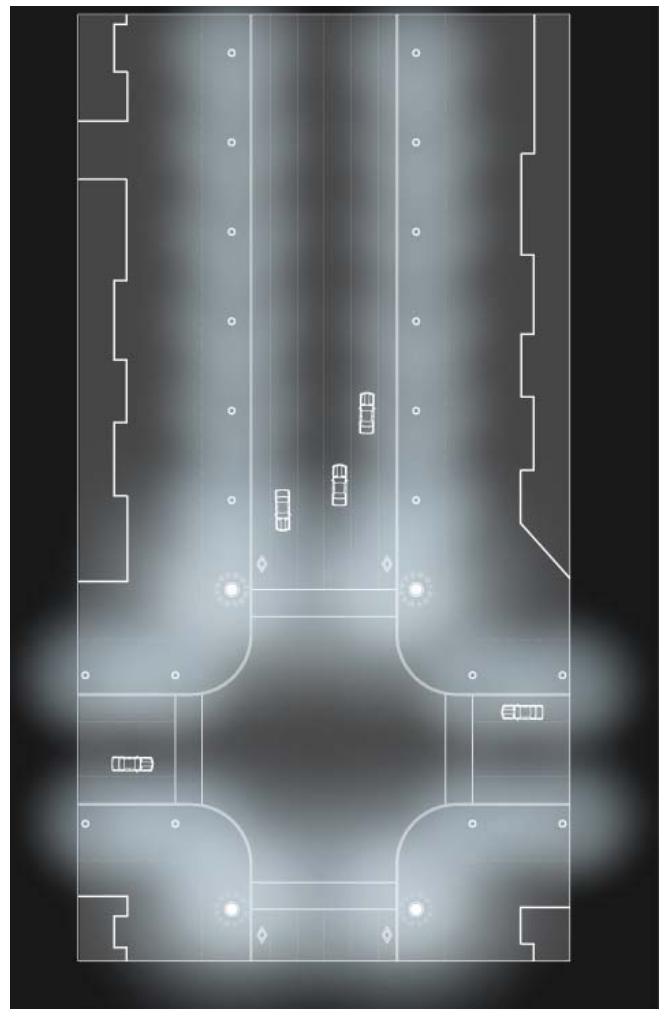


Figure 5.26: Minor Collector Lighting Strategy - Option A

Figure 5.27: Minor Collector Lighting Strategy - Option B

Local Street - Option A

Street Lights

- Standard locations and heights
- 6-7 m pole height, 25-35 m on centre of pole
- Parallel / opposite pattern
- semi-cutoff with apparent night presence

Pedestrian Lights

- Aligned with street lights
- 4-5 m pole height, 10-14 m on centre of pole
- Alternate pattern

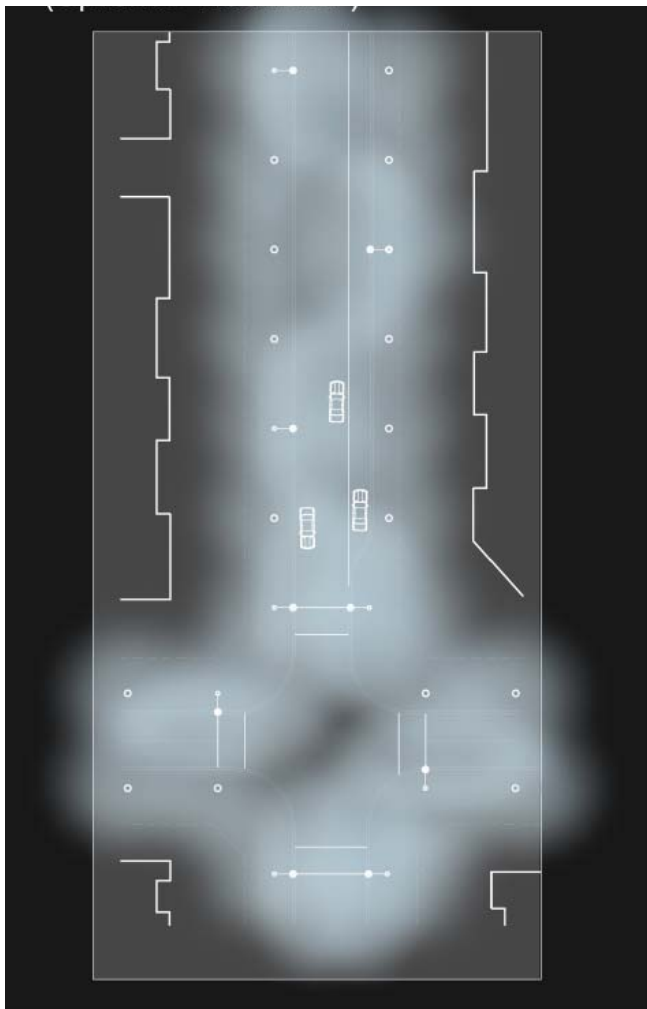


Figure 5.28: Local Street Lighting Strategy - Option A

Local Street - Option B

Combined Street / Pedestrian Lights

- Special unified design
- 4-5 m pole height, 10-14 m on centre of pole
- Parallel / opposite pattern
- semi-cutoff with apparent night presence

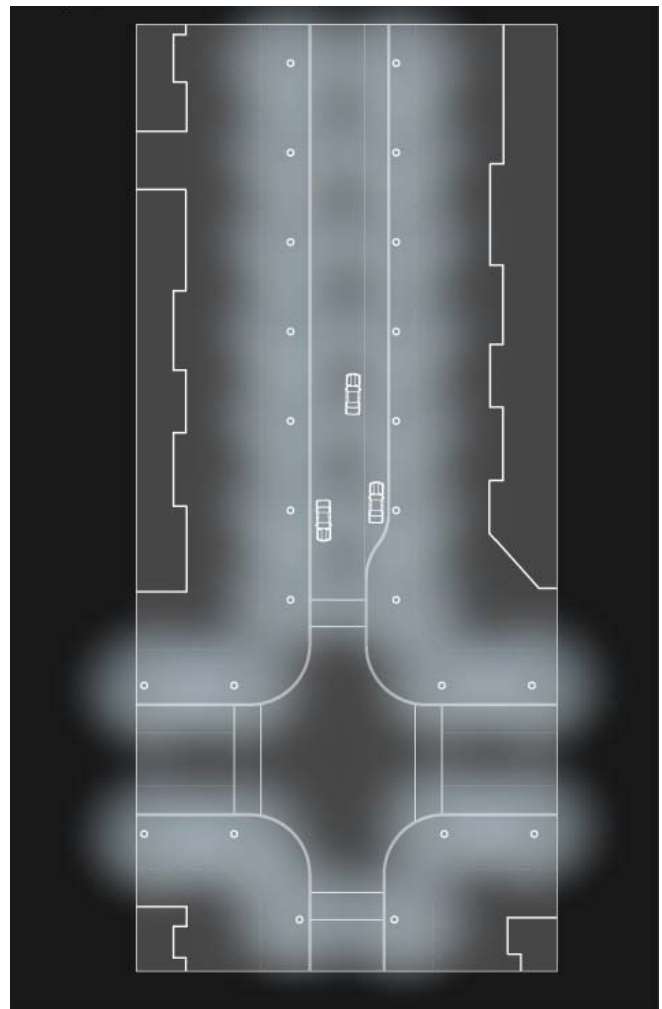


Figure 5.29: Local Street Lighting Strategy - Option B

Mews

Combined Street / Pedestrian Lights

- 4-5 m pole height, 10-14 m on centre of pole
- Single-sided placement
- semi-cutoff with apparent night presence

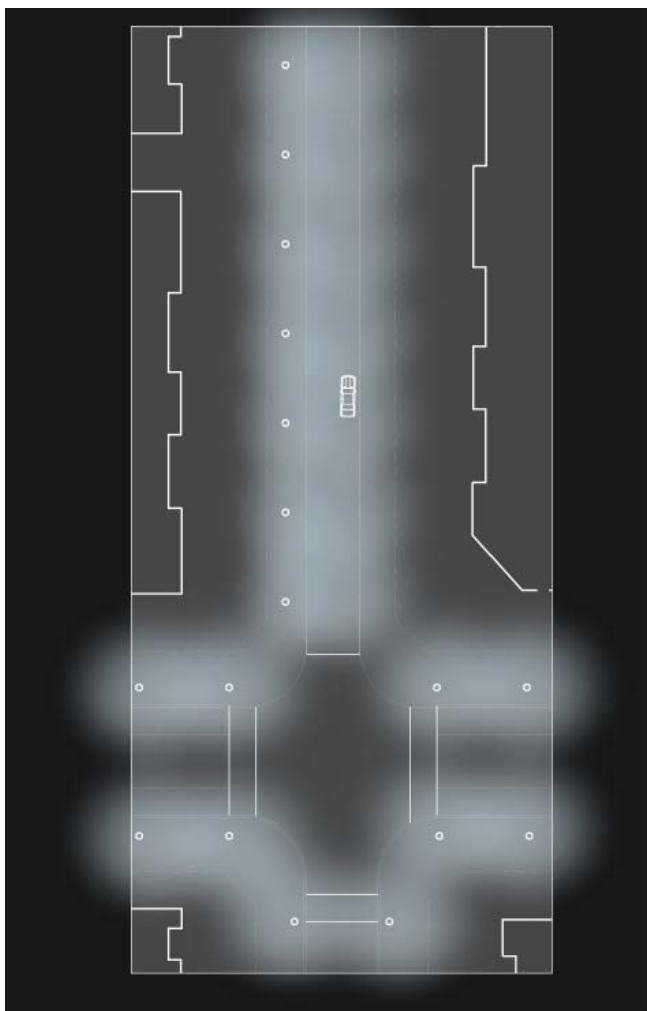


Figure 5.30: Mews Lighting Strategy

5.11 Highway 7 Streetscape Design

Concept: A Green Avenue

The large scale of the Highway 7 rapidway requires equally bold pedestrian and cycling infrastructure. The Avenue des Champs-Élysées in Paris serves as a scale study and design inspiration, with its cinemas, cafés, shopping and double row of clipped trees (Horse Chestnut and London Plane). In 1994, this famous Avenue was redesigned to convert the side traffic lanes into pedestrian zones. Cars now only occupy half the width of this grand avenue and the once 12 m wide sidewalks are now 24 m wide.

The most important landscape move along Highway 7 in the VMC is to introduce a double row of street trees along the length of the streetscape. These trees create a more human-scale space for pedestrians to inhabit within the boulevards, provide micro-climatic protection, noise buffering, and other ecosystem services. As an interim condition with above-ground hydro lines, these street trees are required to be smaller scale species, however the long term vision is to plant large scale canopy trees that will be more in scale with the street.

Maximize street tree canopy along Highway 7 in order to:

- Create a human scale experience of the street
- Visually enhance the public realm with green
- Create a pleasant environment that will support primary retail uses located along the street
- Provide a more pleasant micro-climate for pedestrians (wind and shading)
- Reduce solar gain and storm water runoff

The streetscape enhancements incorporated into the VivaNext Highway 7 design are a unique paving pattern and the addition of pedestrian lighting.

The enhanced streetscape design integrates the north-south streets that intersect with Highway 7 for a unified public realm. Special streetscape treatments at public realm areas along Highway 7 will need to be funded as separate projects and must harmoniously link with the Highway 7 streetscape design. Special treatments may include signage, park heads, nodes and lookouts. The interface of Black Creek with Highway 7 and the intersection of Millway Avenue promenade with Highway 7 are two examples.



Figure 5.31: Conceptual Rendering of Highway 7 Streetscape (Typical Mid-block)

Design Opportunities

Boulevard Paving

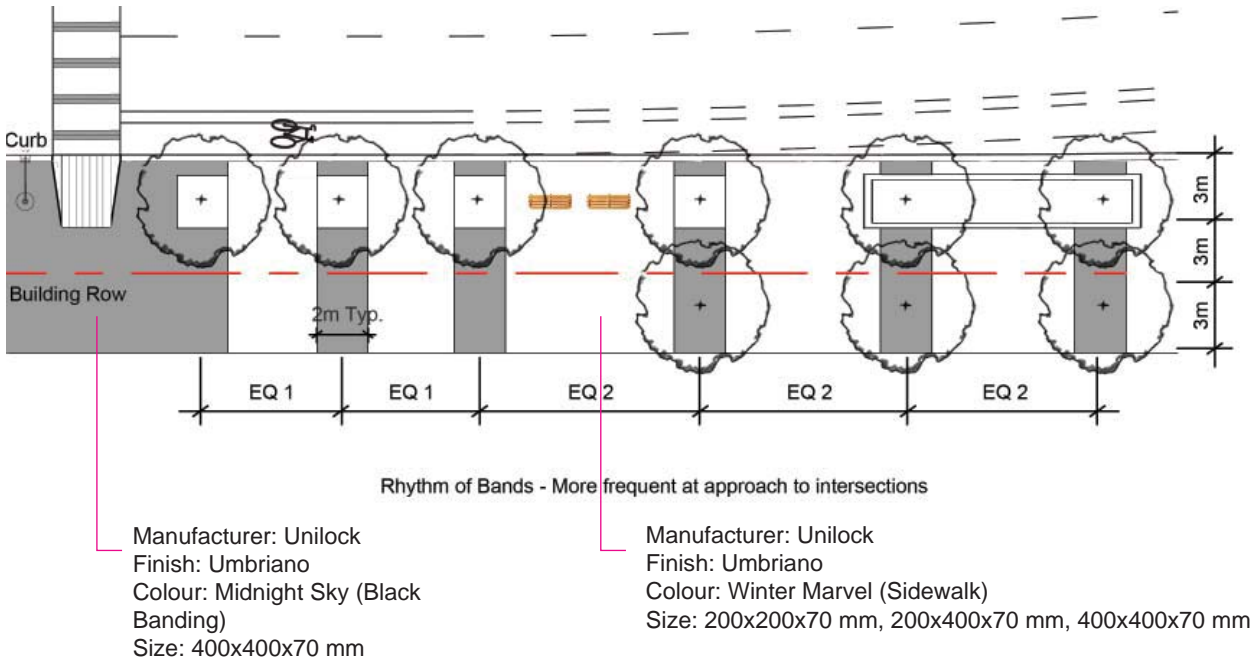


Figure 5.32: Paving Rhythm near Intersections

Street Trees - Double Row in R.O.W.

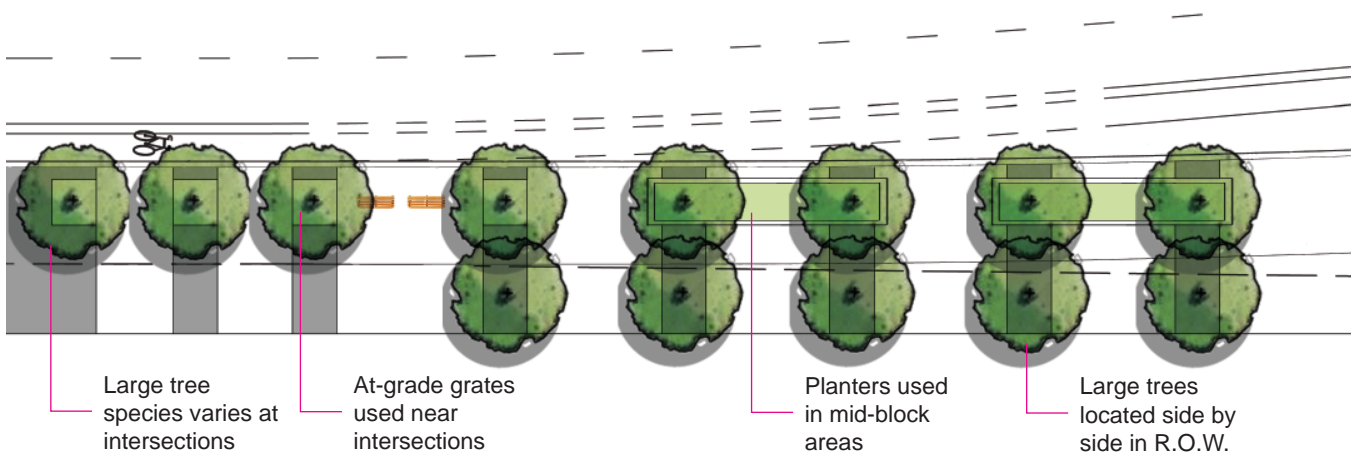


Figure 5.33: Double Row of Street Trees in R.O.W.

Street Trees - Double Row in Private Setback

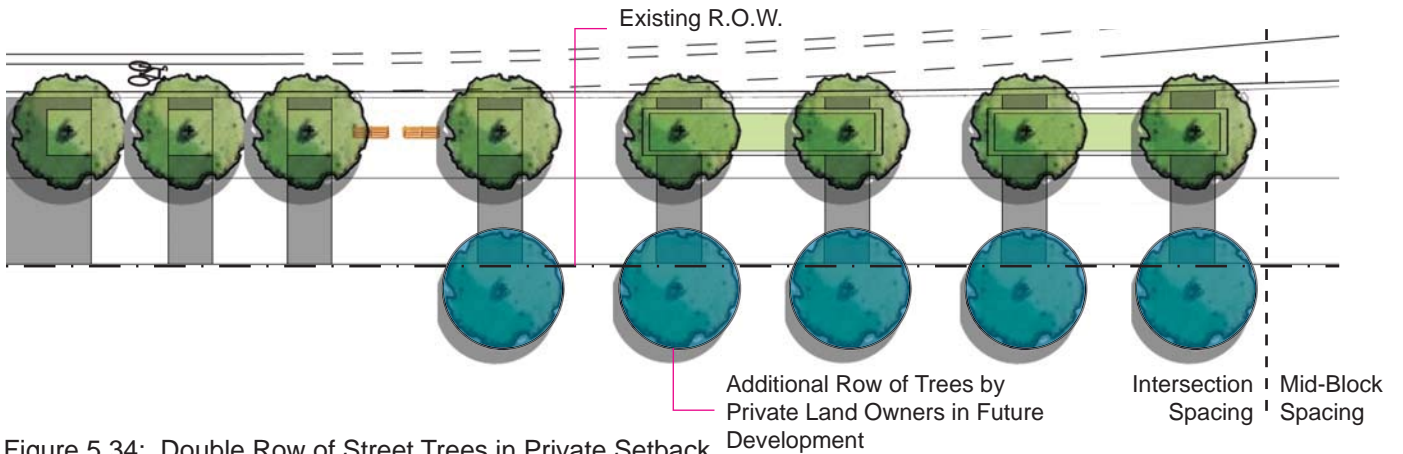


Figure 5.34: Double Row of Street Trees in Private Setback

Street Trees - Double Row Locations

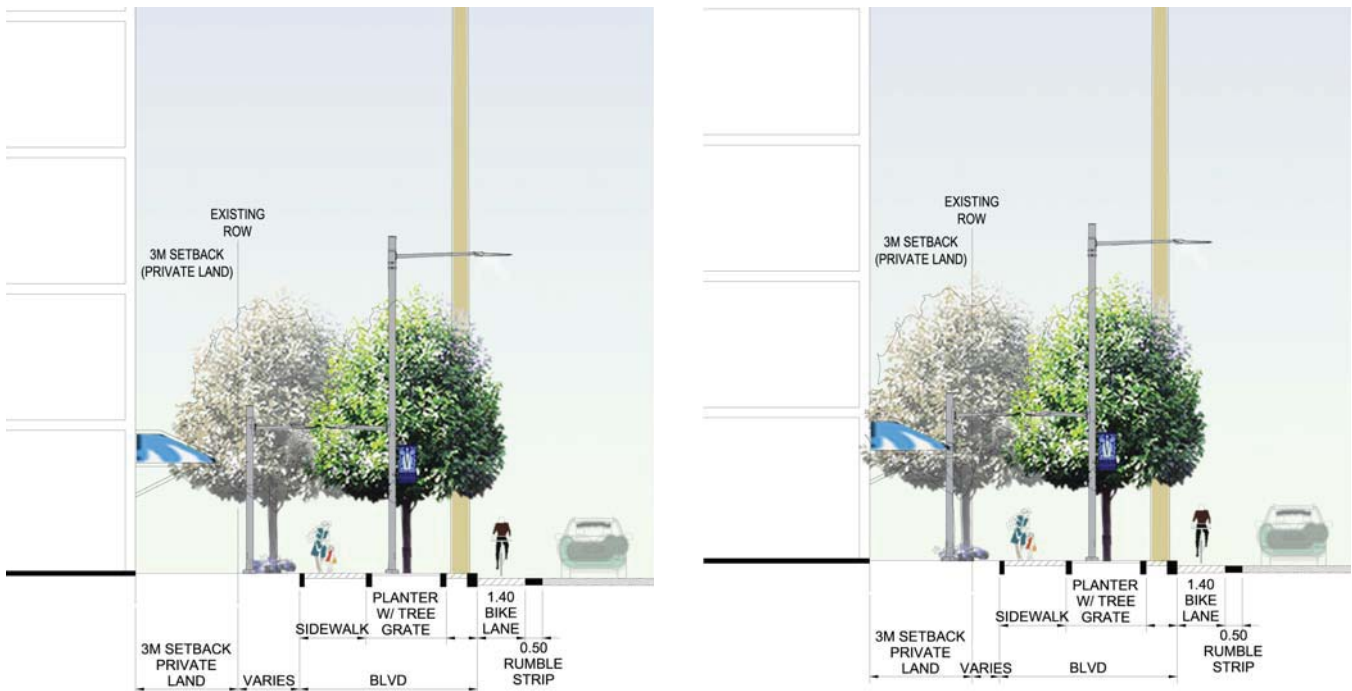


Figure 5.35: One Additional Row of Trees in Existing R.O.W. Figure 5.36: One Additional Row of Trees in Setback

Note: Location of additional row of trees according to specific site conditions / R.O.W. width

Median / Roadway

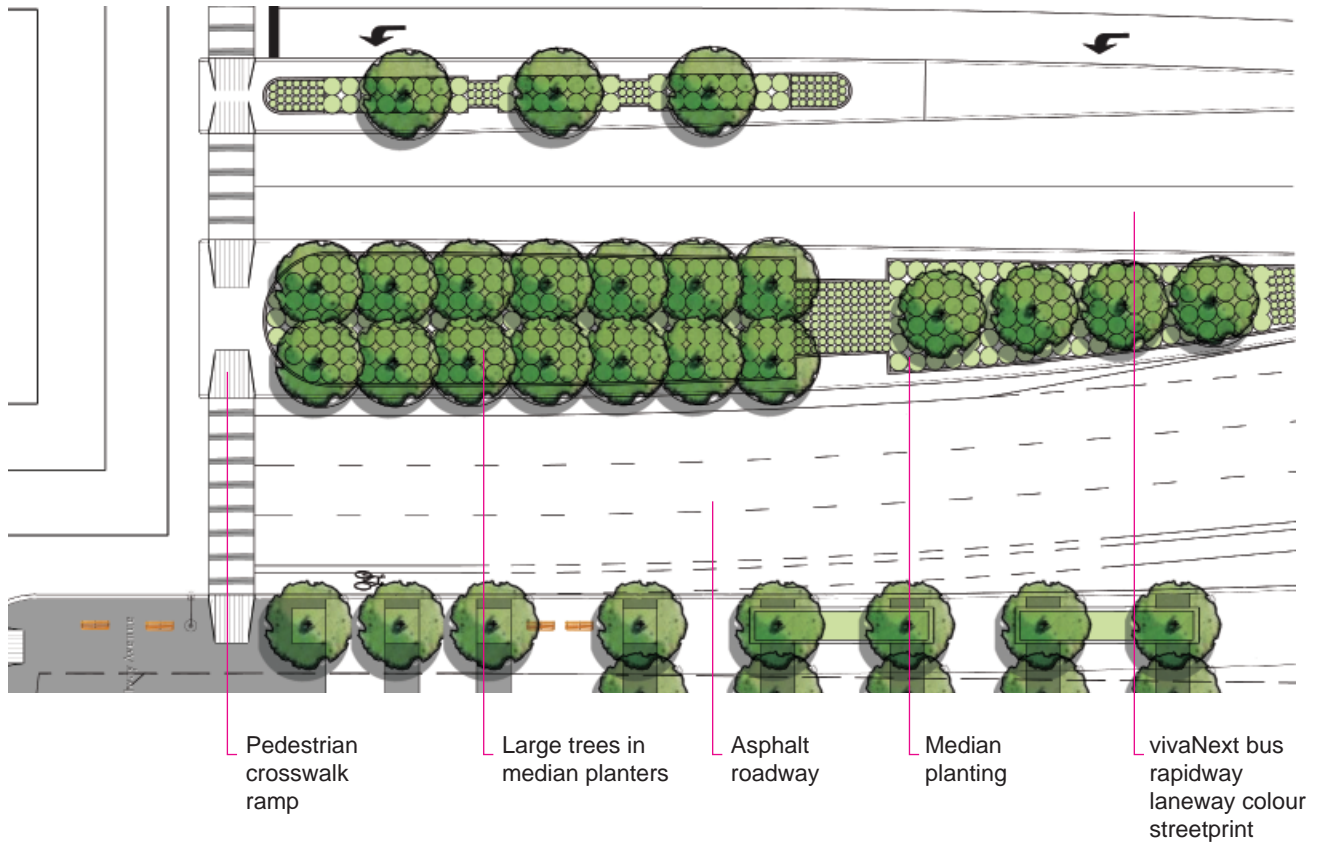


Figure 5.37: Median / Roadway Design Opportunities

Street and Pedestrian Lighting

- LED light source recommended.
- Pedestrian lights - on pedestrian poles and streetlight poles - to be recognized and included to coincide with viva lighting layout.
- Pedestrian lighting on street poles alternate with pedestrian lighting on pedestrian poles.

Alternating Pedestrian Lighting

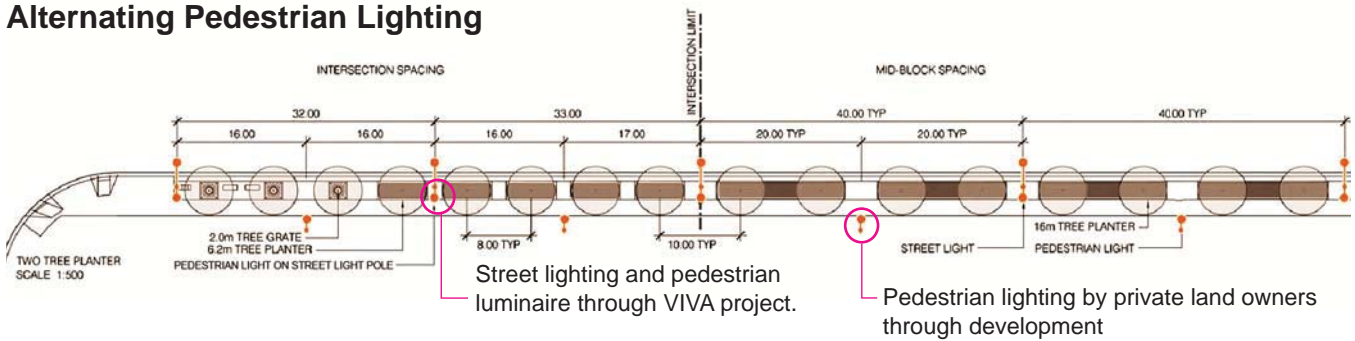
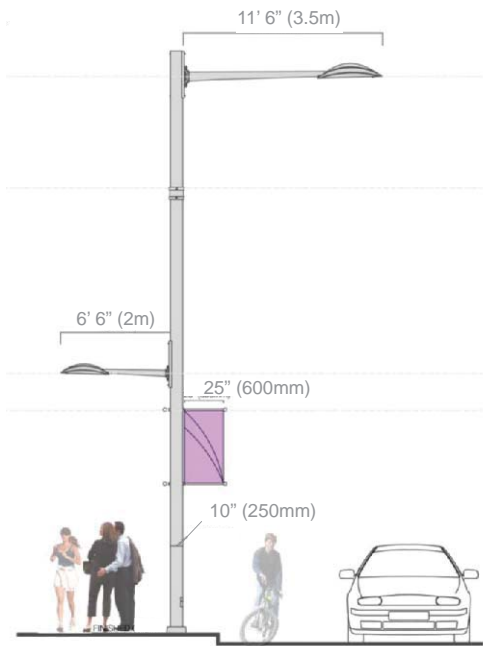


Figure 5.38: Alternating Pedestrian Lighting Layout



Streetlight and pedestrian luminaire to be provided through VIVA project with City enhancements.



Additional pedestrian lighting within R.O.W. and / or on private lands to be provided by private developer.

Overhead Hydro Poles / Wires

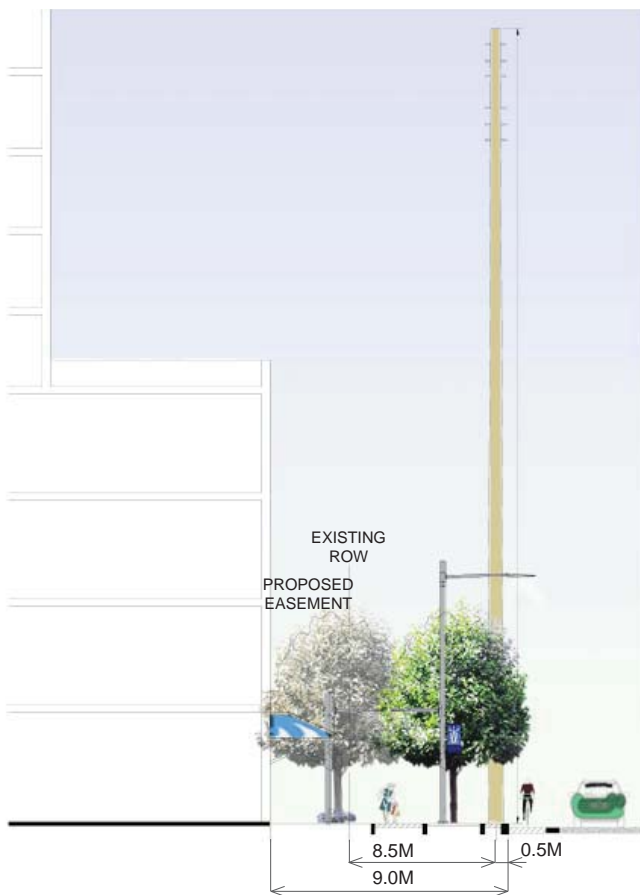


Figure 5.39: Typical Overhead Utility Locations

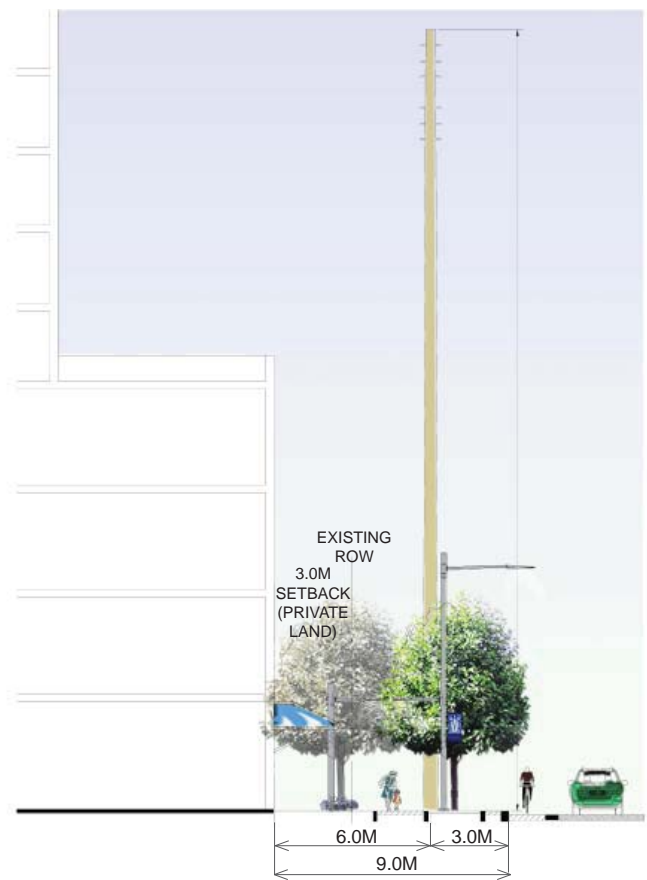


Figure 5.40: Hydro poles located 0.5m from curb - for roadways with speed of 60 kph and barrier curb

Underground Services

Typical Below-Grade Utility Locations

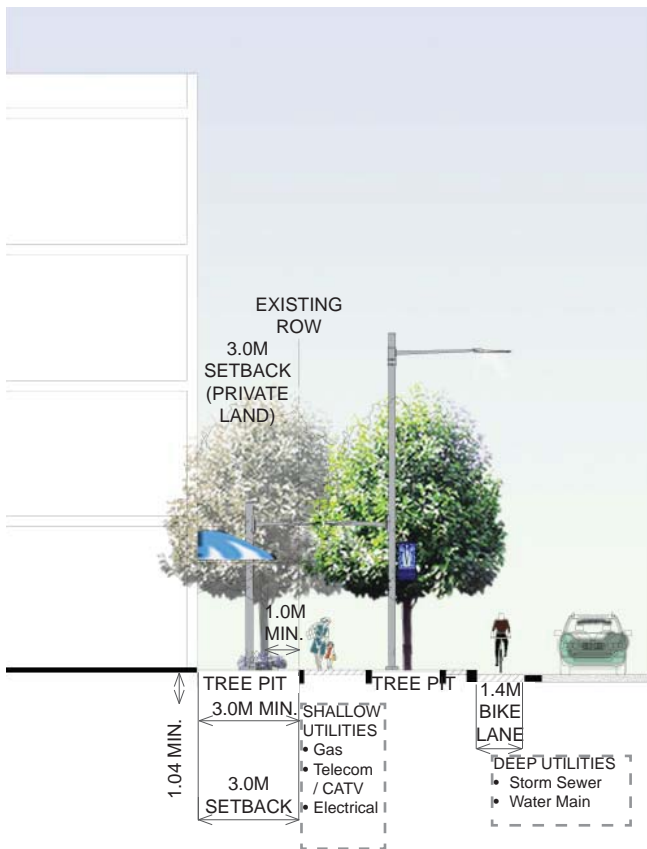


Figure 5.41: Shallow utilities located in proposed setback, based on 10m tree intervals (as per vivaNext design). Tree pit on private land only.

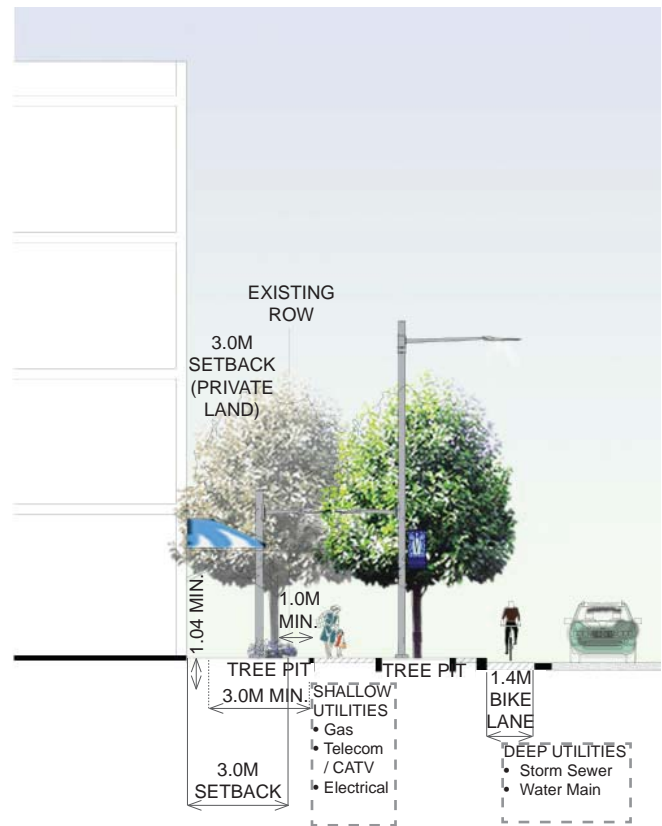


Figure 5.42: Shallow utilities located under sidewalk, based on 10m tree intervals (as per vivaNext design). Tree pit crossing public and private lands.

Operations and Maintenance Division of Responsibilities

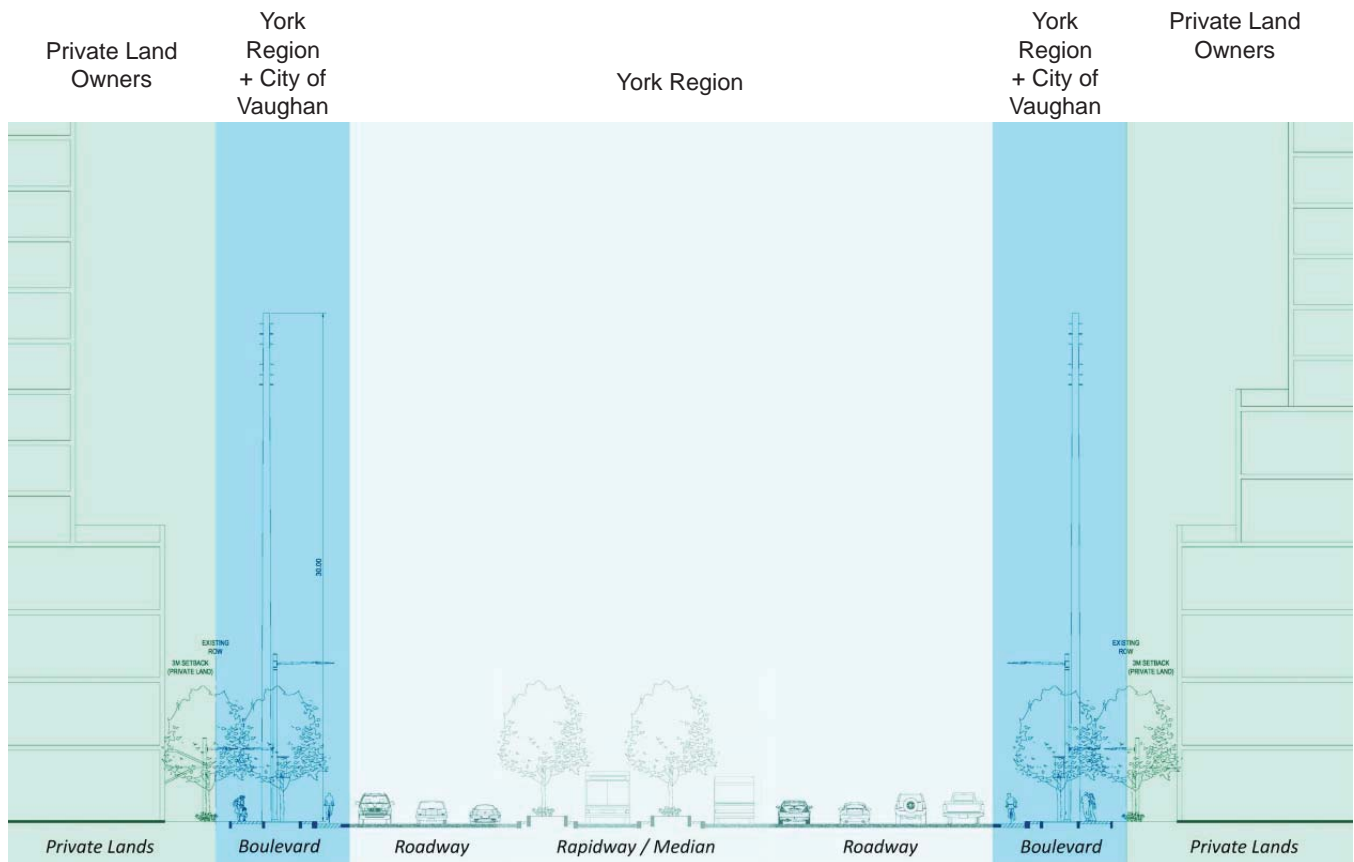


Figure 5.43: Division of Operations and Maintenance Responsibility

Design Demonstration Applications

Typical Cross Section Highway 7 at Edgeley Boulevard



Figure 5.44: Highway 7 at Edgeley Boulevard (Typical Mid-block)

Typical Plan Areas Highway 7 and Millway Avenue

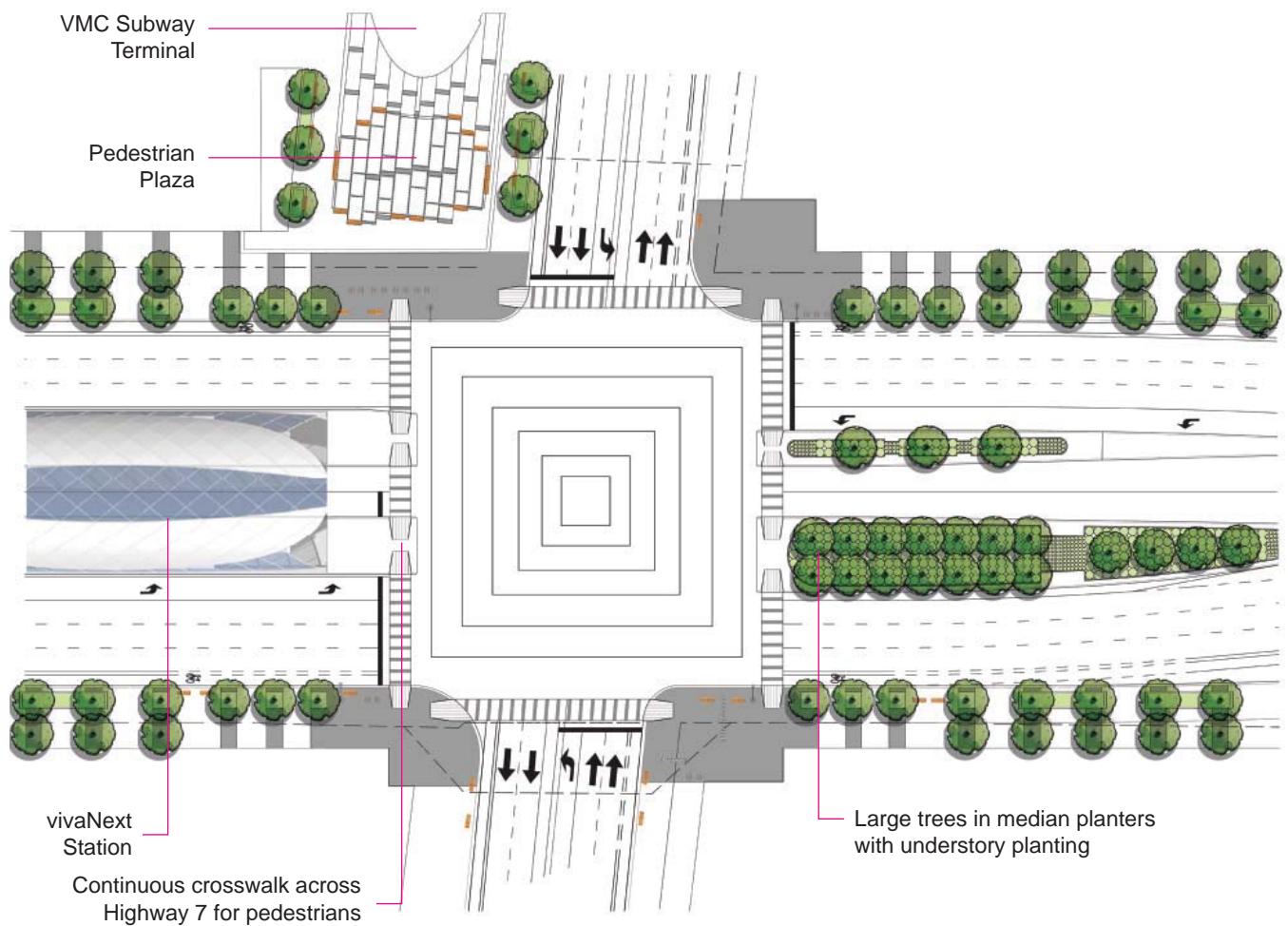


Figure 5.45: Main Intersection / Mobility Hub Demonstration Plan

Corner Treatment

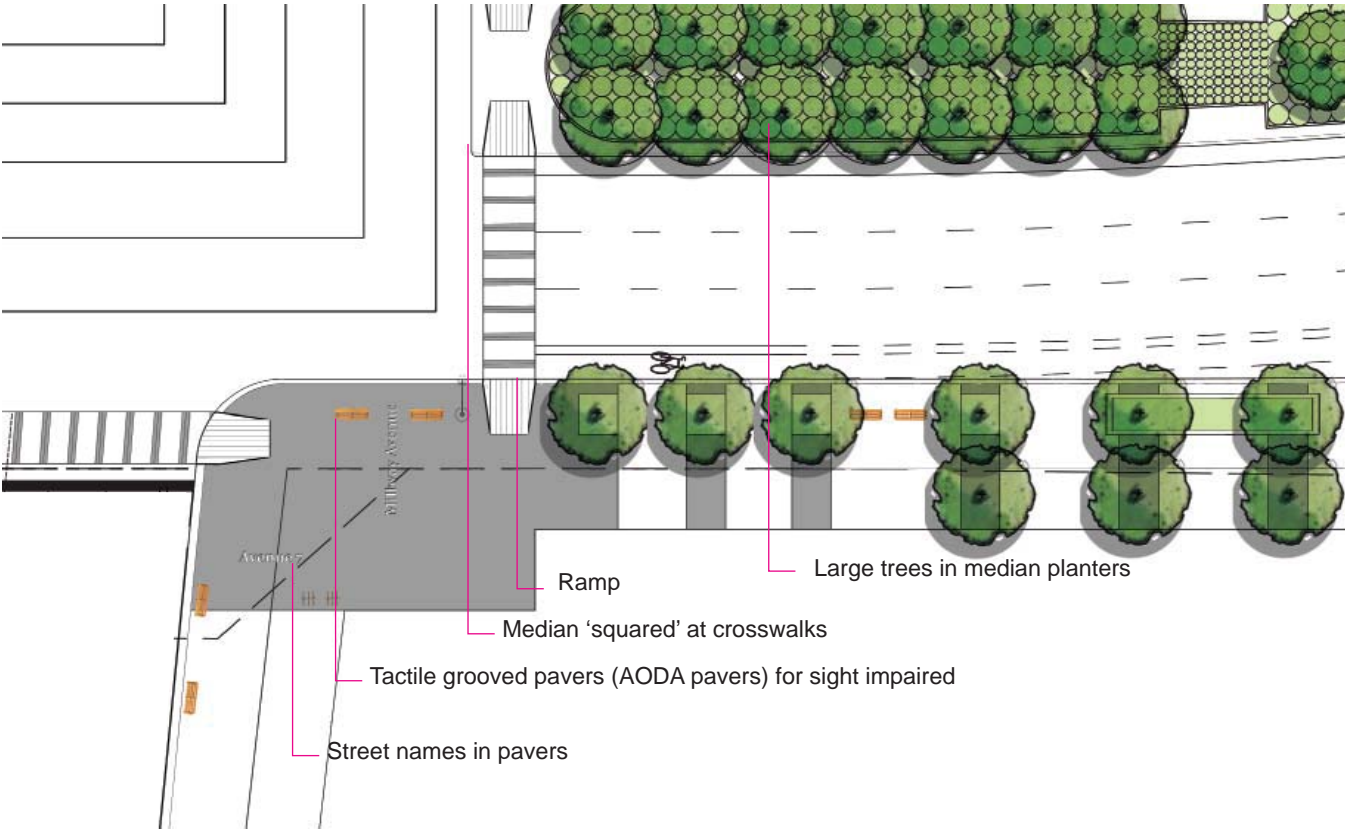


Figure 5.46: Typical Corner Treatment Demonstration Plan

Gateways

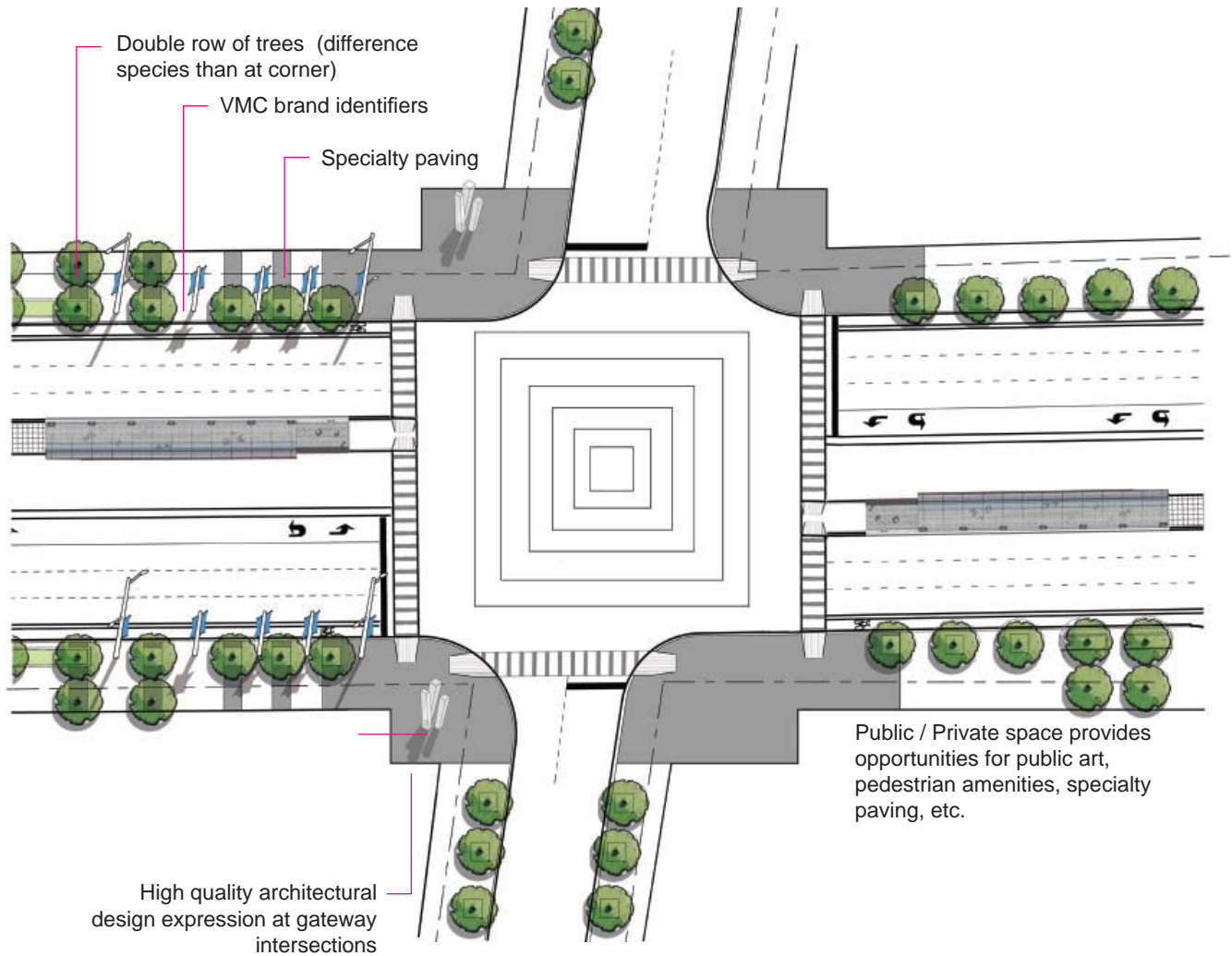


Figure 5.47: Gateway Demonstration Plan - Highway 7 and Creditstone Road

Alternative Cycling Proposal

Boulevard

Raised Bike Lane with Barrier Curb

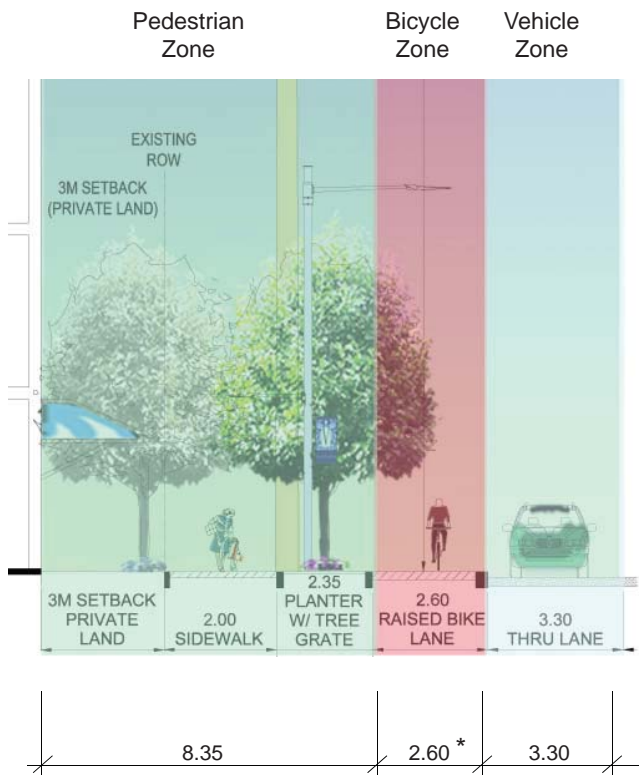


Figure 5.48: Raised Bike Lane with Barrier Curb

*Note: The desired width for a one way raised cycle tracks is 2.0m, with a 0.6 m splash pad between the curb and the raised cycle track differentiated by a material change.

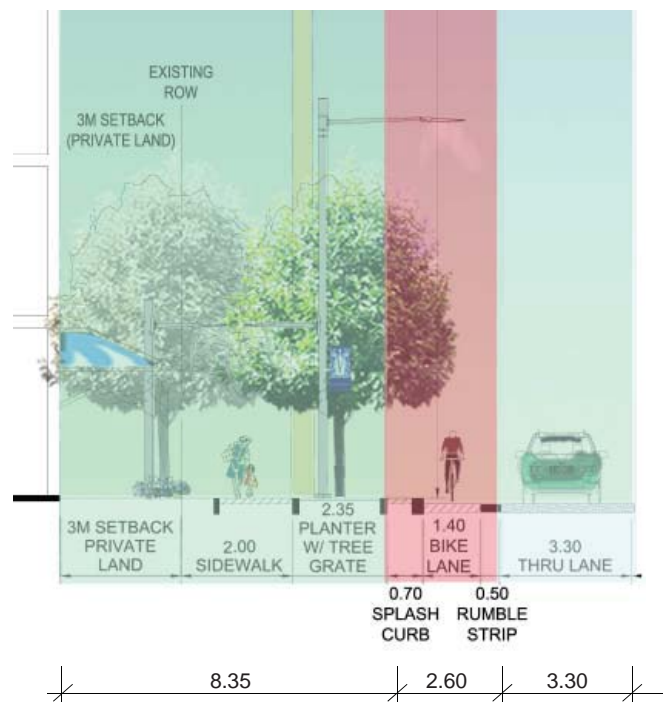


Figure 5.49: Typical Bike Lane



Figure 5.50: Views of Highway 7 Boulevard with Alternate Cycling Proposal

6.0 Design Guidelines

- 6.1 Public Realm Design Components
- 6.2 Public Art
- 6.3 Water
- 6.4 Community Gardens
- 6.5 Utilities

6.1 Public Realm Design Components

Approach

- The VMC design components palette is contemporary in style and approach, embracing forward-looking innovation and sustainability (environmental, social and economic).
- The character of the VMC's design components palette is based upon good design, craftsmanship, and authenticity of materials. Natural materials, such as wood and natural stone are combined in the design matrix with leading-edge composite materials, recycled plastics, powder coated and stainless steel. Through this combination, the contemporary design palette for the VMC emerges.
- Temporary landscape installations in streetscapes, parks and open spaces are a recommended strategy to establish nodes of social activity during the build-out of the downtown. These landscape installations may include public realm design components that are moveable or less permanent in nature.
- The range of products in the design components matrix is streamlined to create a coherent public realm identity, to reduce clutter, and for ease of maintenance and operations (financial sustainability).
- Design components for public parks and open spaces will be determined on an individual project basis in order for each park to have its unique identity and to respond to its neighbourhood context.
- Enhanced and premium streets will contain higher levels of pedestrian amenities (design components) than standard urban streets, following the City-Wide Streetscape Implementation Manual.

Ensure all development exhibits a high quality of urbanity, materials, and design... Buildings, streets and open spaces should be designed and built for permanence and elegance.

(3.10 VMC Secondary Plan)

Individual design components for streets, parks and open spaces are complementary to one another to create a cohesive, consistent, and high quality public realm. The key design components include:

- Furnishings
- Planting
- Surface treatments
- Lighting
- Wayfinding and community identifiers

General Public Realm Guidelines

- Provide generous furnishings and amenities to create a comfortable and enjoyable pedestrian and cycling experience for all ages and abilities.
- All design components should be of high quality contemporary design and materials.
- Each material should be authentic to its nature.
- Group streetscape furnishings in clusters when advisable to reduce visual and physical clutter.
- Street furnishings should be coordinated to avoid conflict with building at-grade use, pedestrian clearway, planting, utilities, driveways and crossings.
- Furnishings should be comfortable and accessible for use throughout all four seasons.
- Furnishings should be durable products that are resistant to weathering and vandalism, and be easily replaceable.
- Site furnishings should be surfaced fixed with tamper-proof fixing systems.
- The selection of sustainable products and materials is recommended.
- For components containing wood, FSC Certified wood selections are recommended. The FSC label provides assurance that the raw materials in wood and paper products have come from sustainably managed forests where attention is given to ecological, social and economic aspects and bio-diversity is effectively protected.



Streetscape Benches



Series of Bicycle Stands

Furnishings

Street furnishings will be used as unifying landscape elements throughout the Vaughan Metropolitan Centre to help establish a strong identity for the public realm. Streetscape furnishings shall be selected for functional and durable use, while being contemporary and elegant in style. A family of unified furnishings has been developed to be used strategically throughout the Vaughan Metropolitan Centre.

Seating

- Streetscape seating is provided within enhanced and premium level of service streetscapes, following the City-Wide Streetscape Implementation Manual.
- Seating is also encouraged to be located within the streetscape private frontage zone.
- Benches should be located along the street where people tend to gather or to provide rest points, usually at corner intersections, transit stops, mid-block, and potentially extending public or publicly-accessible open space into the streetscape.
- The actual locations of benches should be verified during the design phase.
- Benches should be at least 1.5 metres long in order to seat 2 strangers or 3 friends comfortably.
- Seating should be surfaced fixed with tamper-proof fixing systems.
- Freestanding or moveable seating may be included in gathering spaces for increased spatial flexibility or for temporary landscape installations.
- Seating should be durable and comfortable under the most extreme environmental conditions.
- Wood seating materials is recommended to be of FSC hardwoods and selections should be reviewed for cracking, availability colour and discolouration.

- No finish should be applied to exterior woods for lower maintenance requirements; exterior woods will weather to a warm, pewter grey.

Bicycle Parking

Bicycle Stand: *A single vertical unit which can support either one or two bicycles.*

Bicycle Rack: *A unit with multiple vertical elements to support several bicycles. A bicycle rack can be created by mounting several bicycle stands on a metal rail or platform.*

- Bicycle stands / racks are provided within enhanced and premium level of service streetscapes, per the City-Wide Streetscape Implementation Manual.
- Bicycle stands / racks are also encouraged to be located within the streetscape private frontage zone.
- Convenient access to safe and visible bicycle parking will encourage bicycle use as a mode of transportation. Stands and racks should be located at nodes and key locations as appropriate, such as park entrances, outside schools, civic and community buildings, and along mixed-use commercial and transit intensification corridor streetscapes.
- They should be located as close as possible to building entrances without inhibiting pedestrian flows, and be clearly visible along major building approach lines.
- They should be located with adequate clearance around them, typically within the amenity zone.
- The material should be powder coated steel for durability.
- They should be installed on a hard surface and be held firmly in place with in-ground mount(s).
- Bicycle stands should support the bicycle upright by its frame in two places, and enable the

- bicycle frame and both wheels to be secured.
- The design of stands and racks should be space efficient, allowing many bicycles to be parked in a small area.
- If possible, locate stands and racks in a sheltered area to protect bicycles from the elements.

Bicycle Locker

Bicycle Locker: An enclosed and weather-protected locker or box in which a single bicycle can be placed and locked within. They are usually placed where numerous cyclists need parking for extended times. Bicycle lockers protect users and their bicycles from theft and vandalism.

- Bicycle lockers should be located at transit station entrances for all day protected storage.
- Bicycle lockers should be secured using a key, a combination code, or a coin or credit card operated lock.
- The design and material for lockers should be durable and be able to withstand regular use and intense weather conditions.
- The design should support the bicycle upright and prevent it from tipping over within the storage unit.
- Bicycle lockers should be placed to have adequate door clearance so there is no conflict with pedestrians or parked vehicles.
- Bicycle lockers should be located as close as possible to building entrances without inhibiting pedestrian flows, and be clearly visible along major building approach lines.
- Coordinate with YRRTC or the appropriate transit authority

Bicycle Stations

Bicycle Station: A building or structure designed as a high capacity, secure, long-term bicycle parking facility.

- Bicycle stations should be considered in proximity to major transit hubs, educational campuses, and high-density employment areas (i.e. near land uses that generate a very large number of trips)
- Bicycle stations may be standalone structures, either above ground or underground, or may be placed within another structure, such as an existing garage or building.
- Bicycle stations may offer additional facilities such as bicycle repairs. Such facilities may be developed in partnership with private sector development.
- Coordinate with YRRTC or the appropriate transit authority

Waste and Recycling Receptacles

- Waste and recycling receptacles are provided within enhanced and premium level of service streetscapes, following the City-Wide Streetscape Implementation Manual.
- Receptacles should be two streams for waste and recycling.
- Receptacles should be durable and easy to use for people under the most extreme environmental conditions.
- Receptacles should have a front or rear hinged door for staff to unload waste and recycling without lifting, with interior bins easily washable.
- Receptacles should be weatherproof, including a top that prevents weather from entering the bins.
- The design, material, colour and graphics of receptacles should be vandal-proof against destruction and defacing.
- Solar powered compactor type models may be considered for future implementation.

Bollards

- Bollards should have a durable and vandal-resistant finish and a concealed mounting.
- Bollards are considered to be a design element, and as such, the selected design should positively contribute to the public realm environment.
- Removable or drop down bollards should be located where necessary for bus, emergency, or service functions.

Bus Shelters

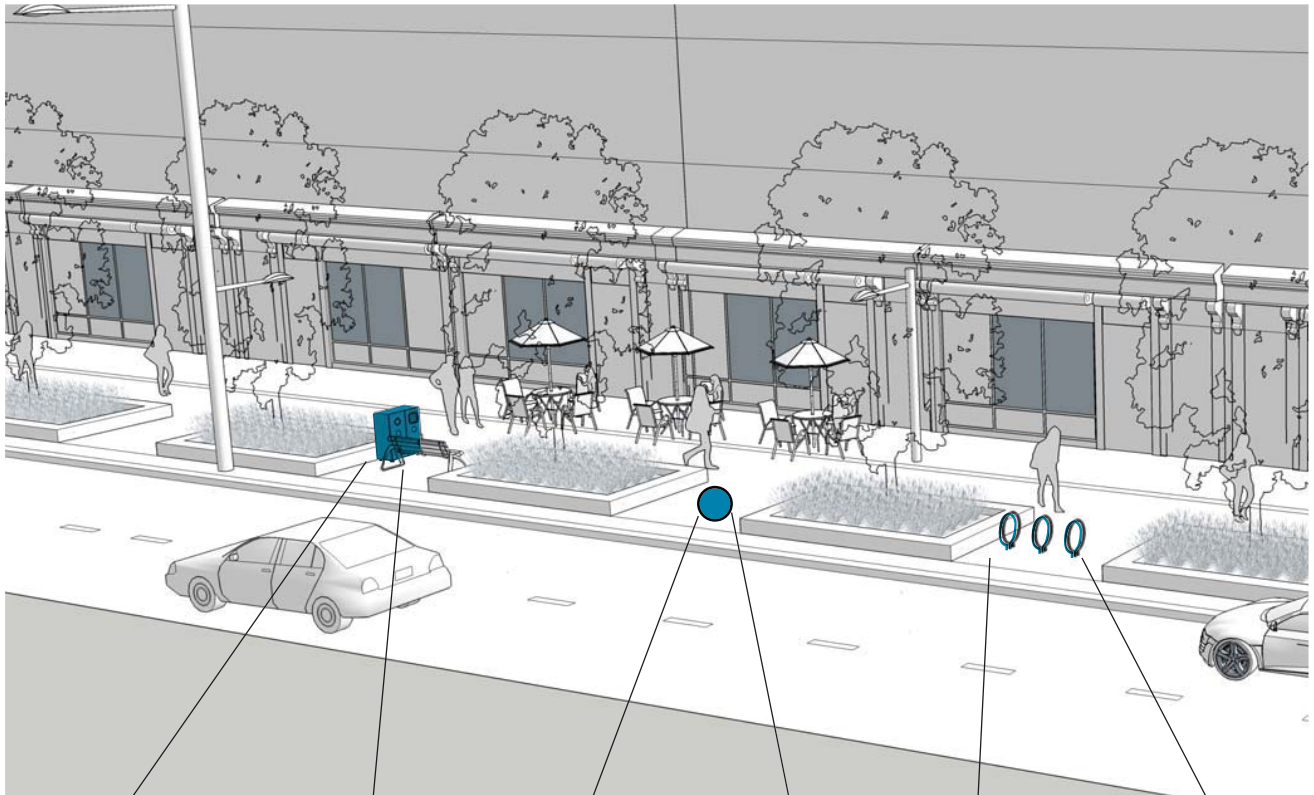
- All streetscape designs with transit facilities should be coordinated with York Region.
- Coordinate site designs including pedestrian circulation and building entrances to integrate seamlessly with bus shelters locations.
- Provide sufficient space for wheelchair circulation and easy access to transit vehicles.



Bicycle Station

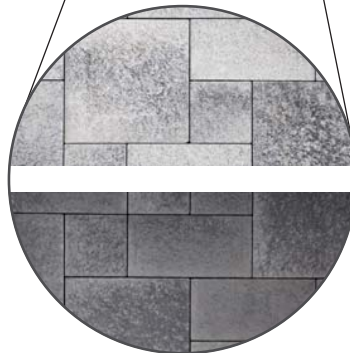


Bollard with LED Light



Waste Receptacles

Manufacturer: Landscape Forms
 *or approved equivalent
 Style: Select Letter Receptacle
 (double unit, solid body,
 perforated doors)
 Material: Powdercoated Metal
 Colour: Silver (body, door), Black
 trim ring, signage plate)



Paving

Specialty Paving Field Palette
 Manufacturer: Unilock
 *or approved equivalent
 Series: Unbriano
 Colour: Winter Marvel

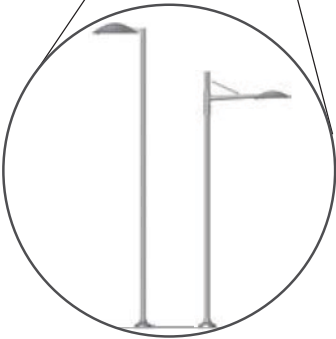
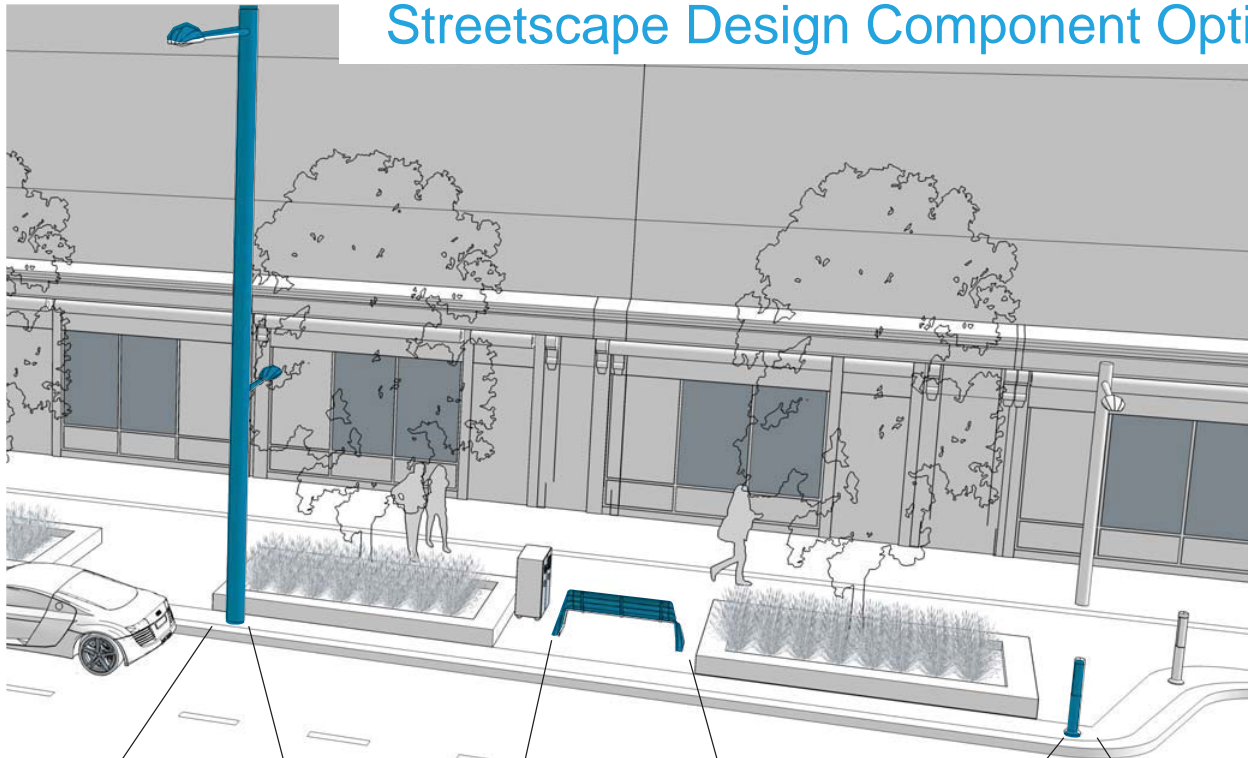
Specialty Paving Accent Palette
 Manufacturer: Unilock
 *or approved equivalent
 Series: Unbriano
 Colour: Midnight Sky



Bike Racks

Manufacturer: Landscape
 Forms
 *or approved equivalent
 Style: Ring Bike Rack
 Material: Powdercoated
 Metal
 Colour: Silver

Streetscape Design Component Options



Streetscape Lighting

Manufacturer: Philips LUMEC
*or approved equivalent
Style: Capella
Pole Type: Straight Round Pole



Streetscape Bench

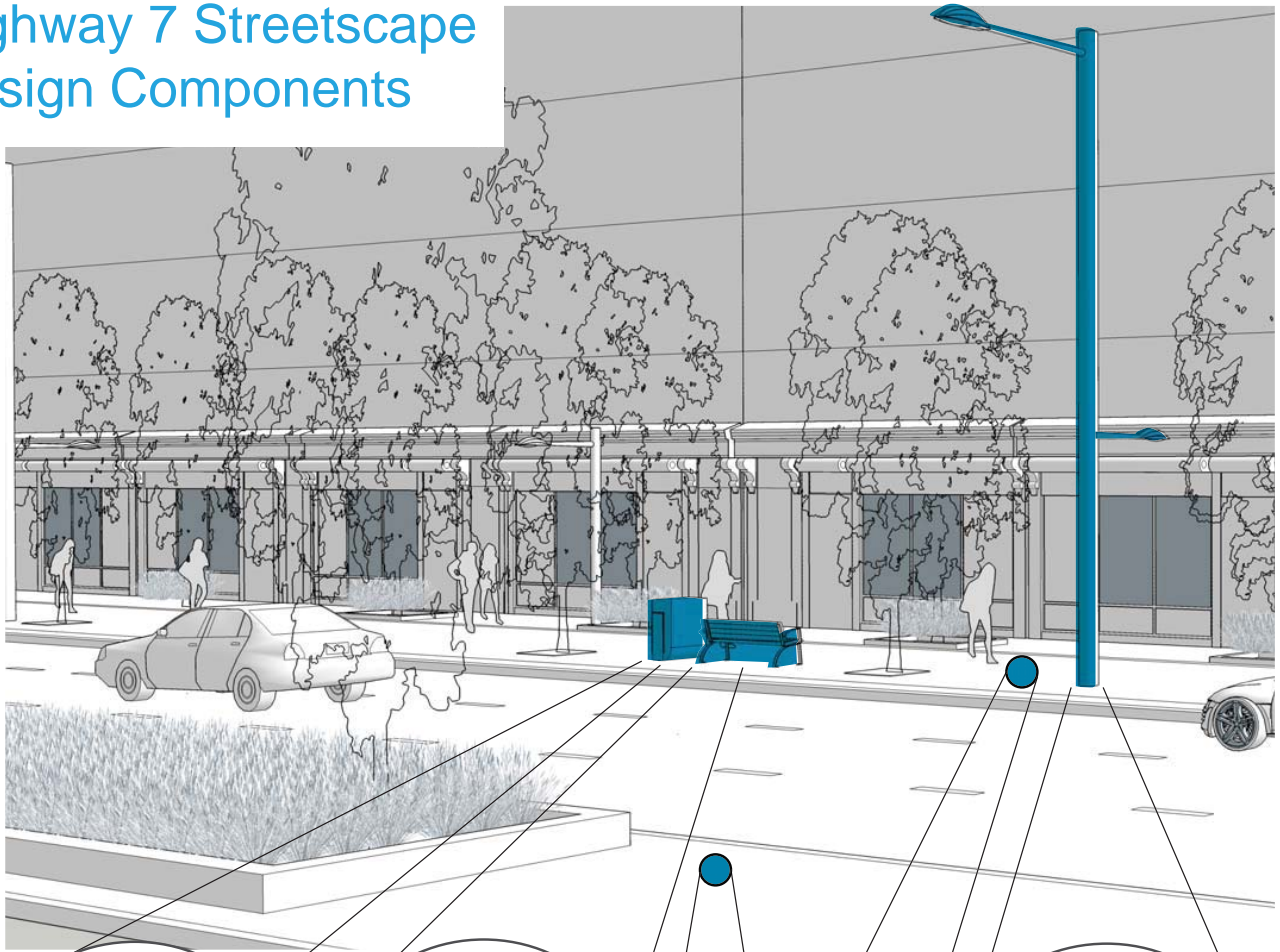
Manufacturer: Landscape Forms
*or approved equivalent
Style: NeoRomantico Bench
Material: Metal / Wood
Colour: Aluminum Finish /
Jarrah Wood



Bollards

Manufacturer: Landscape Forms
*or approved equivalent
Style: Sentinel Bollard
Materials: Powdercoated Metal
Colour: Silver

Highway 7 Streetscape Design Components



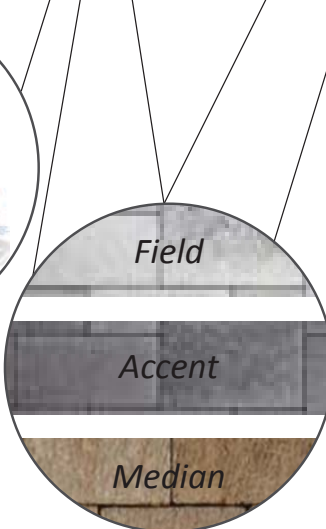
Public ROW Waste Receptacles

vivaNEXT Receptacles



Public ROW Bench

vivaNEXT Bench



Public ROW Paving

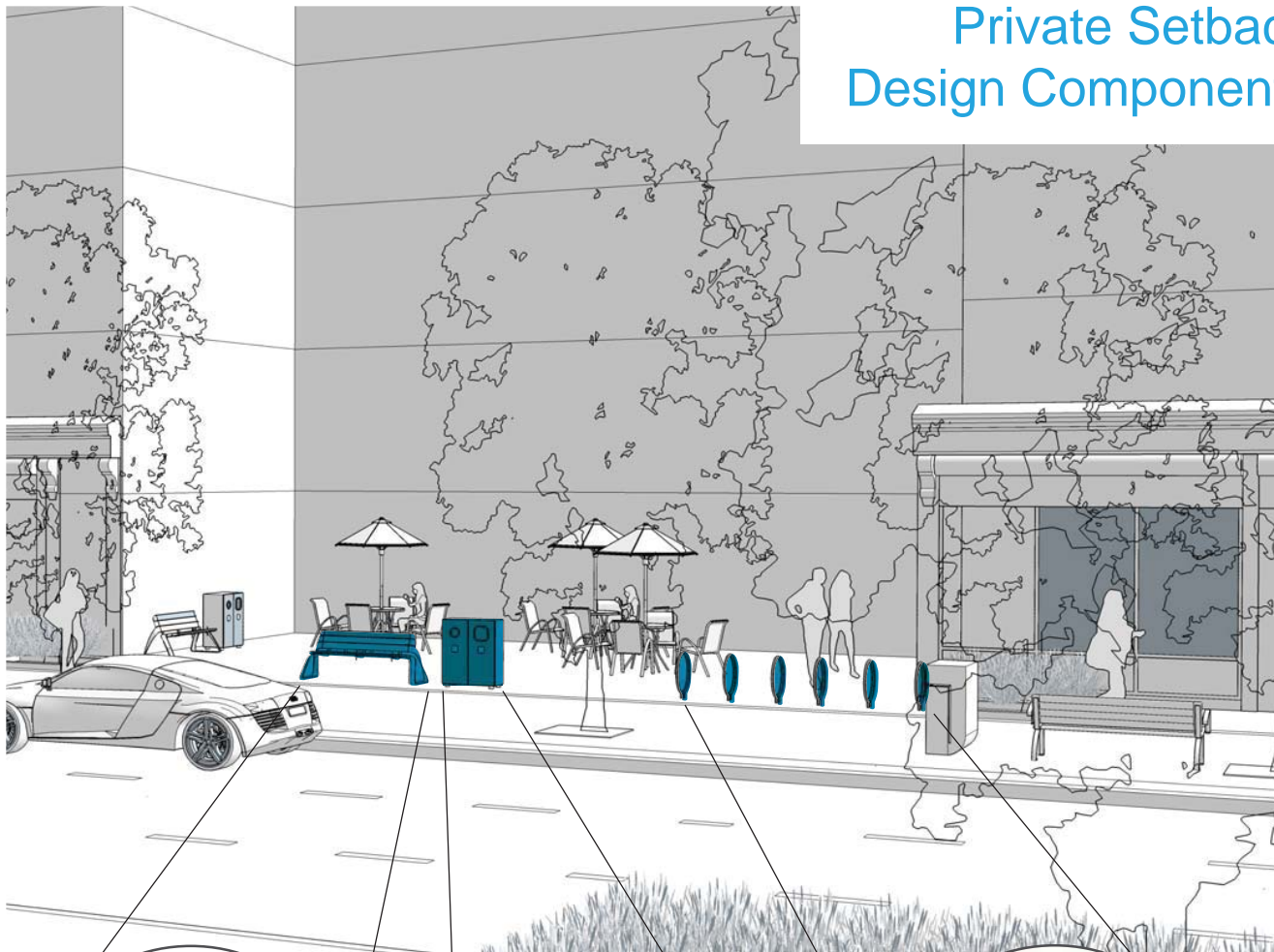
Manufacturer: Unilock
 *or approved equivalent
 Field Series: Umbriano
 Accent Series: Umbriano
 Accent Series: Il Campo
 Field Colour: Winter Marvel
 Accent Colour: Midnight Sky
 Median Colour: Conestoga



Public ROW

Streetscape Lighting
 Manufacturer: Philips LUMEC
 *or approved equivalent
 Style: Capella - Straight Poles
 Pole Type: Straight Round Pole

Private Setback Design Components



Private Setback Bench

Manufacturer: Landscape Forms
 *or approved equivalent
 Style: Rest Bench (backless or backed style)
 Material: Powdercoated Metal
 Colour: Silver



Private Setback Waste Receptacles

Manufacturer: Landscape Forms
 *or approved equivalent
 Style: Select Letter Receptacle (double unit, solid body, perforated doors)
 Material: Powdercoated Metal
 Colour: Silver (body, door), Black (trim ring, signage plate)



Private Setback Bike Racks

Manufacturer: Landscape Forms
 *or approved equivalent
 Style: Ring Bike Rack
 Material: Powdercoated Metal
 Colour: Silver

Planting

Approach

Contemporary

In the Vaughan Metropolitan Centre, a contemporary approach to urban planting will help achieve sustainability goals and objectives of the VMC. Natural processes and ecological communities may be integrated into the landscape design.

Green Infrastructure

Plants are part of the green infrastructure of the city to support city systems and ecological services. The urban forest includes any landscaping planted in the public right-of-way, including trees and understory plantings. Trees and landscaping not only enhance the aesthetics of urban streets, but also make important contributions to the urban environment by reducing air pollution, sequestering carbon, ameliorating urban heat islands, contributing to wildlife habitat, and improving hydrologic conditions.

Landscape Character

Planting should reflect and enhance the essential character of the place. Drawing upon the Landscape Archetypes, the experience of urban nature connects people into the larger landscape matrix of the region. The public realm planting approach will reflect a unique character of place and celebrate seasonal changes.

Biodiversity

Biodiversity is key to achieving a healthy environment, strong community, and thriving economy in the Vaughan Metropolitan Centre.

To support regional biodiversity, priority should be placed on avoiding the planting of invasive species and focusing on the planting of native species to support desired wildlife. Additional strategies include:

- Maintaining natural heritage and aquatic corridors
- Utilizing development techniques and strategies that prevent pollution
- Ensuring that buildings and lighting designs do not cause or increase bird mortality during migration
- Design strategies that respond to the nature of the varying spaces in the VMC, from Black Creek and naturalized open spaces to urban parks and streetscapes
- Opportunities should be explored for the creation of habitat spaces as an integrated part of the built urban environment

Key Planting Considerations

- Essential landscape character and experience
- Ecosystem services
- Green infrastructure functions including LID
- Biodiversity
- Seasonal change
- Microclimates
- Human health and wellness
- Resiliency in urban conditions
- Design for economical maintenance, including fewer resource inputs

Plant Species Selection

Regional Landscape Archetypes Plant Palettes

Parks and open spaces will draw upon the Landscape Archetype plant palettes for inspiration. In applying an Archetype, such as The Meadow, the opportunity is to design ecologically-based plant communities that can be managed primarily by simple non-selective techniques applied to all the plants in a community. The selection of plants within a planting palette should be in response to context, design, and site conditions.

Streetscape Planting

Street trees and understory plants along streetscapes should reference the City of Vaughan Street Tree List for municipal streets and Regional Municipality of York Street Tree list for Regional roads. Street trees are species with a high tolerance for drought, heat and salt. Regional roads and higher traffic

“We all strive for a higher standard of living... none of that counts unless we have a healthy, **biodiverse** environment.”

Jon Grant, Chair of the Ontario Biodiversity Council

volume municipal streets present a challenging environment for street tree establishment and growth - Only a select group of hardy tree species establish and thrive in this environment.

To diversify the plant list, plants that are more salt and heat sensitive may be planted in more protected and low speed places such as in parks, environmental open spaces, public squares, local streets, and mews. On local streets, these species, even if they do receive some road salt during the year, will be exposed to less salt spray than plants near a higher speed road, which is typically salted more often than the smaller local streets.

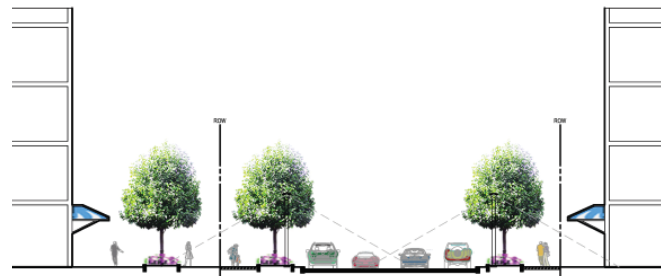


Figure 6.1: Four-Storey Buildings with Small Trees (mature size 8m)

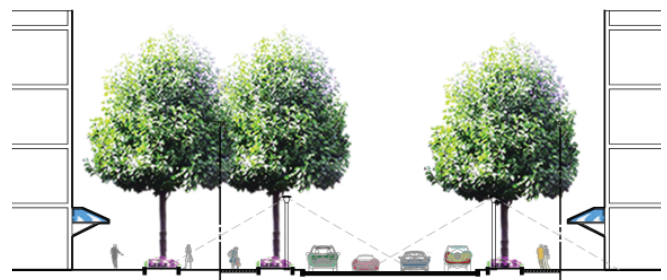
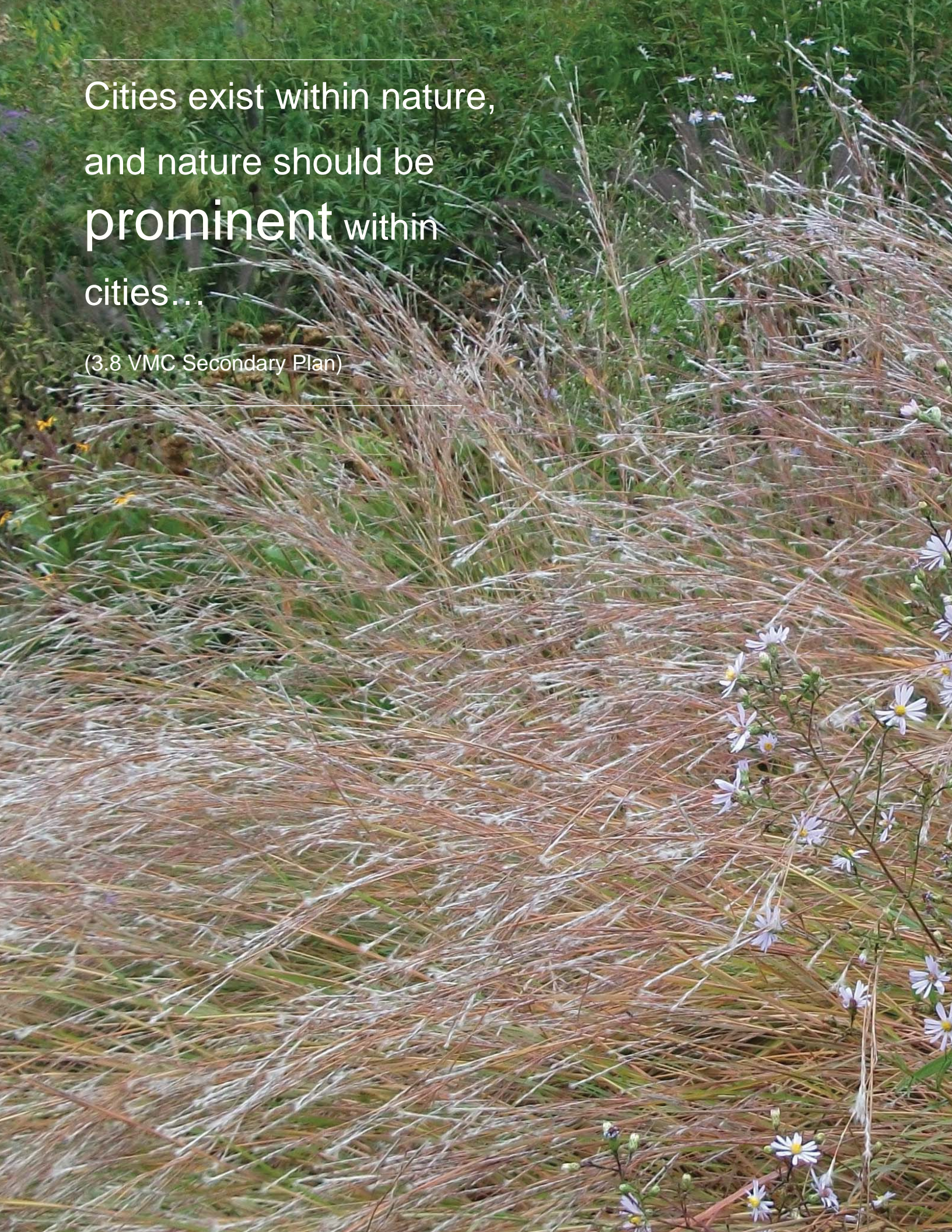


Figure 6.2: Four-Storey Buildings with Large Trees (mature size 17m)

Cities exist within nature,
and nature should be
prominent within
cities...

(3.8 VMC Secondary Plan)





Street Tree Lists

York Region's "Top Performing Street Tree Species" list represents species which have desirable characteristics and are tolerant of the harsh growing environment present along Regional roads. These species will form the majority of species planted within Regional road allowances. At a minimum, 75% of trees planted along Regional roads will come from the Region's top performing street tree species list. In road side locations where conditions are particularly harsh, up to 100% of species planted may come from the top performing street tree species list.

The Region has also developed a list of "Notable Street Tree Species for Select Planting Sites". This list represents species which have many desirable characteristics and tolerances, but are sensitive to specific environmental conditions (exposure to prevailing winds, de-icing salt etc.). Their use is limited to specific sites where the environmental conditions are ideal for their initial survival and long term performance. These species will form a minor component of species planted within Regional road allowances.

Refer to Appendix A and B for York Region's species lists.

Tree Species Diversity

The City of Vaughan provides the following guidelines for tree species diversity:

- No single species to represent more than **5%** of the tree population
- No genus to represent more than **10 %**; and,
- No family to represent more than **20%**

Tree Size

Medium to large size trees are appropriate in scale for the VMC in response to the building heights set out in the Secondary Plan, and the substantial size of transportation/ transit infrastructure located within the VMC. Large trees with over-arching canopies are generally appropriate on wider streets and boulevards. Medium or large trees are appropriate on neighbourhood residential and mixed-use streets.

Small tree species are appropriate for narrower or smaller spaces, such as pocket squares, fore courts and mews to create a more intimate scale composition, or to supplement large and medium size trees. The Region requires the use of small tree species on Regional roads where conflicts with overhead hydro exist.

Overall, larger trees are recommended.

Planting Guidelines

General

- Select species according to specific growing conditions, biodiversity targets, and microclimates within the site.
- Retain existing large trees and incorporate them into the site design where possible.
- Provide street trees with the recommended soil volumes (at minimum) and maintain them to support their mature growth.
- Planting of trees on strata conditions should have a minimum soil depth of 1.5 m.
- The design of planting areas should consider including appropriate conditions for improved stormwater detention and infiltration. Consider LID and water-conserving irrigation systems to enhance plant survival and plant growth and to support sustainability.
- Use native and adaptive plant materials that require lower resource inputs. Any plant species selected should be adapted to soil and microclimatic conditions.
- Native plants and trees should be used when a native species is suited to the site and will serve the roles for which the planting is intended, such as areas of habitat value and stormwater plantings.
- Consideration should be given to the food value of different trees and plants to wildlife as certain species can play an important role as food plants for a number of birds and mammals living within the city.
- Use screen planting related to utilities, service and other functional facilities.
- Plant in accordance with CPTED guidelines for public safety.

Street Planting Guidelines

- Along high traffic volume streetscapes, planting may be used to separate and buffer vehicular traffic from the pedestrian clearway.
- Curb height and seat height planters may be located in areas with more space for planting.
- Planting design must consider the planned locations for street snow storage to protect plant health and longevity.
- Continuous trench planting with tree grates should be located in areas of high pedestrian activity, such as at key nodes, intersections and other urban areas. The specified net soil volume within these areas may be accommodated using a soil cell system that provides structured rooting space.
- Provide drainage for each planter.

Street Trees

- Tree spacing should create a continuous canopy and buffering effect between the roadway and sidewalk. In general, street trees should be spaced 5 - 9 m apart on centre depending on expected spread at maturity. Small trees should be planted 5 m on centre, Medium trees should be planted 7 to 8 m on centre, and large trees should be planted 8 – 9 m on centre. These spacing guidelines should be considered general targets that may be adjusted to local street conditions.
- Where site constraints prevent exact spacing of street trees, it is better to place a tree slightly off the desired rhythm than to leave a gap in the planting pattern.
- Provide sufficient soil volume and area to support a healthy tree to maturity. The minimum soil volume is 16 m³ per tree with direct access to an additional 14 m³ per tree.
- Provide continuous street tree pits for maximum soil area for roots to spread, and water and air to penetrate.

- Coordinate street planting with utility location to minimize disruption and ensure adequate space and growing conditions for trees.
- Install tree guards to protect tree trunks from damage in high pedestrian use areas.
- When locating trees or landscaping in the boulevard near corners, they should be located to assure visibility of traffic signals, signs and sight lines.
- Allow sufficient room for tree canopies to grow and develop without conflict with other buildings or sidewalk elements.
- Trees should be planted a minimum of 2.0 m from the curb (2.5 - 3.0 m is recommended).
- Where applicable, double rows of trees should be planted in parallel to enhance the pedestrian realm and identify the importance of the street.
- Trees are especially valuable to pedestrians at intersections, however this need must be balanced with sight lines and clear views of traffic control devices. Strategic placement of trees is important to improve pedestrian and motorist conditions. The four trees at each intersection (one on each corner) should be large canopy species with high branching to visually enclose the intersection while maximizing visibility. Street trees should not be planted closer than 9 m on centre from the intersecting curb face.
- Street lighting should be coordinated with tree selection, placement and pruning so that they do not conflict with each other. Street lights should be generally placed half-way in between trees.

Trees in Medians

- Trees should only be planted in median strips that are 4 m or wider, including the curbs.
- Trees planted in medians should have canopy structures that provide visibility or be upright and columnar in form.

Continuous Trenches

- Pits, trenches or planting beds should have a topsoil layer with an organic matter content of 10 to 15 % by dry weight and a pH of 6.0 to 8.0. The topsoil layer should have a minimum depth of 60 cm.
- Subsoil should have a minimum total un-compacted soil depth of 90 cm.
- Minimum soil volume is 16 m³ per tree with direct access to an additional 14 m³ per tree.

Structural Soil Cells

In urban conditions of high pedestrian activity and space limitations, the use of alternative planting methods must be taken into consideration. This includes the use of enhanced planting strategies such as structural soil cells. Use of soil cells should also be considered for landscapes constructed over structured parking.

Planting Methods

A variety of planting methods for street trees are to be utilized within the VMC in appropriate locations. These include:

1. Continuous trench planting with:
 - a) Tree grate
 - b) Curb height wall
 - c) Seat height wall
2. Tree Tubs and Planting Islands

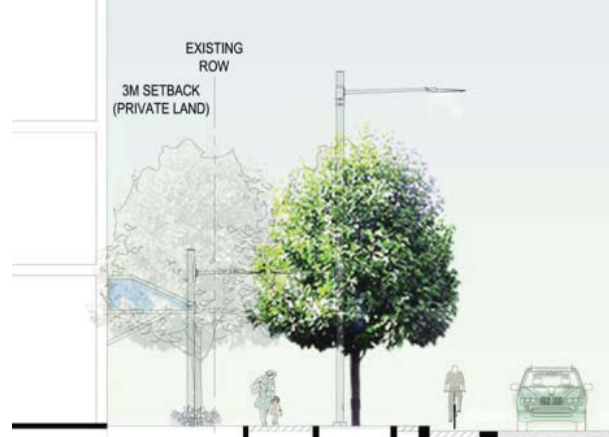


Figure 6.3: Continuous Flush Hard Surface for High Traffic Pedestrian Zones

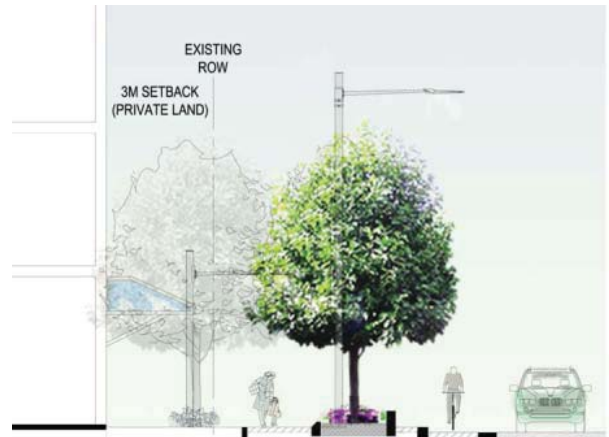


Figure 6.4: Continuous Curbed Tree Trench with Groundcover (optional 0.45 m wall)



Figure 6.5: Seat Wall Height Planter

Surface Treatments

Design guidelines for surface treatments have been developed to add interest and visual coherency to streetscapes through surface pattern, colour and texture. The intention is to ensure physical unity between development projects along a street, and between the public and private frontage zones within the boulevard, through the application of a common palette of paving materials and specific paving details. The City-Wide Streetscape Implementation Manual should be referenced with respect to paving material options for standard urban, enhanced and premium level of service streets.

Guidelines

- Surface materials and colour palette should reinforce the unique identity of the VMC.
- On streets that run between park blocks, special surface treatments should highlight pedestrian priority and connectivity.
- Surface materials could be used as an identifier and branding for “The Loop”.
- Concrete will be used as the major material for sidewalks.
- Where concrete paving and natural stones are appropriate, they shall be large and durable.
- Paving should be non-slip when wet.
- Permeable surfaces will be used as the major material for trails and pathways in Environmental Open Spaces.
- Trails and pathways in parks and open spaces will coordinate with the other surface treatments in the park design.

Cohesive Surface Treatments

A series of cohesive surface treatments will be implemented within the VMC for a unified public realm, including the following elements:

1. Permeable paving
2. Continuous surface paving connections between park blocks
3. Paved crosswalks
4. Corner paving
5. Accessible ramps

Permeable Paving

- Permeable paving is a low impact development measure that may be used in streetscapes, parks, and open spaces. Maintenance of permeable paving is minimal but essential to maintain its water infiltration function. Interlocking concrete paving requires annual maintenance such as vacuuming and low-pressure washing to clear out voids and to extend the paver’s functional life.
- Permeable paving will be applied to Blue Streets and the Highway 7 streetscape within the VMC (the continuity strip of the vivaNext rapidway).

Continuous Surface Paving Connections between Park Blocks

- Continuous surface treatments across the right-of-way, on the flexible streets and mews for example, provide a comfortable and spacious pedestrian environment, indicating to vehicles to slow down and share the street.
- Specialty paving extends across the street and sidewalk zones providing a visually consistent space and indicating a pedestrian-first space.
- Use of colour and tactile qualities of the surface treatment indicate areas of vehicle passageway for the visually-impaired.
- Sidewalk paving is flush with road paving or use of a modified curb.

Bold paving patterns can be used for continuous street paving on Millway Promenade, flexible streets, and at raised intersections.

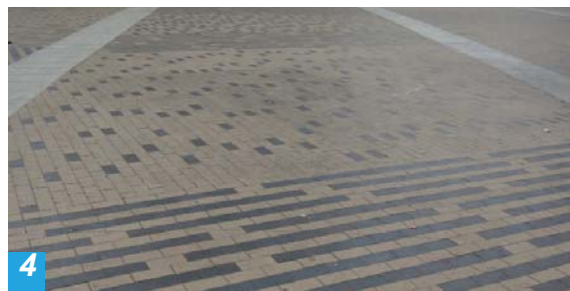
Paved Crosswalks

- Crosswalks shall have a distinct surface treatment from the roadway to delineate the crossing area, improve visibility and comfort for pedestrians, and slow traffic.
- Paved crosswalks should be located adjacent to schools and community facilities.
- Crosswalks should be 2.5 m in width, minimum.
- Paving should be flush with adjacent street paving.
- Paving should align with accessible curb ramps.
- On Regional roads, a thermoplastic paving surface is preferred.



Corner Paving

- Specialty paving with distinct colour / texture should be considered at street corners - this allows for a hint of texture and color without being too costly.
- The corner paving area should extend a minimum of 10 m in both directions from the intersection corner and extend into private streetscape.
- Corner paving should incorporate accessible ramps and should be flush with adjacent sidewalk paving.



Accessible Ramps

- All streets must be fully accessible through curb ramps, scored surface, and clear passageway.
- Cast-in-place concrete, with anti-slip finish.
- Ramps should not exceed a 5% slope, with handrails where appropriate.
- Tactile surfacing and a minimum 70% contrast level with surrounding paving.



Lighting

Guidelines

- All lighting standards of the local region and municipality will apply
- All street, pedestrian, and feature lighting should be coordinated with adjacent building uses in order to provide appropriate illumination levels
- Street lighting poles should be in line with street trees
- Lighting fixtures should be durable, vandal-resistant, and easily replaceable
- LED lighting should be utilized for all streetscape and park lighting
- Ensure energy efficiency by using light only where needed for the task, for the periods of time required. A lighting control system will assist in saving energy by turning lights off and on as required for various functions
- All lighting should strive for and meet AODA standards



Street Lighting

Lighting Types

Street Lighting

- Contemporary style
- Capable of incorporating pedestrian scale light fixtures and street banners

Pedestrian Lighting

- Contemporary style
- Convey character and reinforce pedestrian scale
- Coordinated with street lighting

Parks and Open Space Lighting

- Steel or aluminum material
- Contemporary style
- Fixtures selected as part of park design process

Feature Lighting

- Feature lighting that spans the street could be considered for the Millway Avenue pedestrian promenade
- Feature lights should be considered at corners on select Minor Collector roadways
- 'High-Tech' lighting such as fiber optic cable should be considered



Pedestrian Lighting

Lighting Requirements

Safety, Security and Comfort

- Full colour, glare free light
- Provide adequate vertical illumination levels to avoid shadowing and dark areas

Lighting Hardware

- High-quality lighting hardware from a major manufacturer for ease of replacement of parts and fixtures, and maintenance considerations

Light Poles

- Street light poles are between 6 and 7 metres high
- Pedestrian light poles are between 4 and 5 metres high
- Tall 'mast' light poles, recommended for Millway Avenue pedestrian promenade, should be between 20 and 25 metres high
- Avoid using light poles for traffic signals and signage

Luminaire Criteria

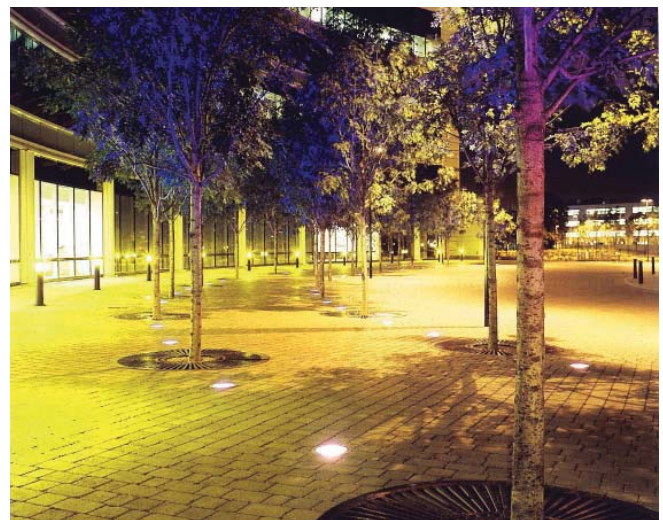
- A low level of horizontal luminance (1000 - 4000 cd/sm) is necessary
- Excessive brightness, over 4000 cd/sm, must not go above a 65 degree angle from the vertical
- For streets, the TAC Guide for the Design of Roadway Lighting should be followed

Lamp and Illumination Criteria

- Avoid glare through proper lighting design management

Trespass and Pollution

- Ensure that light is not wasted into the sky contributing to light pollution
- TAC standards shall be followed for light trespass and pollution considerations



Feature Lighting

Wayfinding and Community Identifiers

Wayfinding

Urban wayfinding elements include signs, paving patterns and textures, street furniture, symbols, building numbers, banners, and signboards. Good wayfinding signage and information planning is a key requirement to provide a successful, user- friendly experience for citizens and visitors to the Vaughan Metropolitan Centre. The basic objective is to develop a comprehensive information system that serves as many people as possible, according to the following guidelines.

- Information clues (Architectural + Graphic + Tactile) provide environmental information to help people understand and navigate the spaces effectively. Wherever possible attention to creating opportunities to deliver environmental information clues to further the communication of the information is warranted.
- A hierarchy of wayfinding and identity elements is recommended to be developed for all of the urban wayfinding elements, from the west and east gateways at Highway 7 to the street furniture, signs, symbols, building numbers, banners, and signboards. A number of examples are set out pertaining to some of the street signage and identity elements that could form an important part of the project.
- Highway 7 and Millway Avenue should be given special prominence through lighting, signage and boulevard materials.

The City should pursue a sign by-law for the Vaughan Metropolitan Centre as part of the implementation process.

Architectural Communication

- Clearly identified gateways and routes
- Landmarks are easily identifiable
- Public information points located at key decision points
- Use of materials, lighting, paving surfaces

Graphic Communication

- Use of standardized words, terms and names
- Messages and signs are sized appropriately for viewing distances
- Letterforms selected shall conform to AODA guidelines
- Use of standardized maps and right-reading orientation

Tactile Communication

- Provide Grade 2 level braille and use raised symbols on signs identifying permanent destinations
- Establish tactile 'pathways' to information areas using textural paving and different materials



1



2



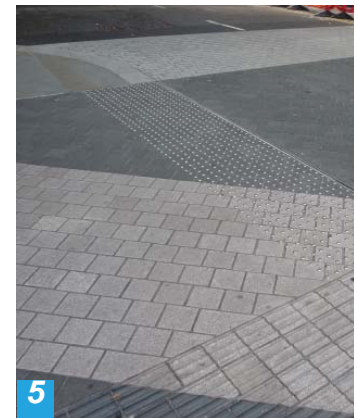
3



3



4



5

Effective Wayfinding

A number of information clues shall be in place to help people navigate the VMC, including:

1. Identifiable landmarks
2. Lighting for wayfinding
3. Standardized maps
4. Easily viewable signage
5. Textured paving

Community Identifiers

Street Banners

Street Banners are a sign constructed of a pliable material and typically installed on a street pole on a temporary basis. Banner locations, design, fabric, size, mounting heights, attachment specifications and duration must be approved by the City. Banner designs should be approved by Council prior to production.

- Banners should be designed to complement the public realm and surrounding environment.
- Designs should be easily read by pedestrians and motorists. Graphic are most effective when they are large, bold, simple and visually pleasing. Graphic symbols are preferable to text. Title blocks and text should be kept to a minimum. Text should be large point size for easy readability at a distance.
- Banners should be clean and free of fading, rips or tears.
- Materials should be selected for durability and dimensional stability.
- Colour pigments or dyes should be selected for exterior applications and be resistant to fading or colour bleeding.
- Banners should not obscure or interfere with regulatory traffic signage, pedestrian crossings or traffic control signals.

Information Kiosks

Information kiosks are small free-standing structures that provide free information to residents, visitors and tourists, such as maps and pamphlets.

- Information kiosks should be designed to complement the street furniture palette and the public realm within the VMC.
- Kiosks should be strategically located in areas with high pedestrian traffic, particularly along Highway 7 and Millway Avenue, at high profile locations, and at key decision points.
- Material should be durable and vandal resistant for durability and maintenance.

Building Signage

Building signage is primarily utilized for retail, commercial and office uses. The City should pursue a sign by-law for the Vaughan Metropolitan Centre, as part of the implementation process.

- Building signage should identify and be simple rather than “busy”.
- The overall design of a sign, including its size, shape, material, texture, colour, and method of lighting, should be compatible with the building’s architecture.
- Wood, metal, and glass signs are preferred materials. Plastic signs are less desirable.
- Back-lit fluorescent illumination is not recommended, except for individual channel letters.

Accent Identification Plaques / Pavers

Accent plaques and pavers are embedded or laid flush in the streetscape paving material. These can provide directional cues, interpretive material, neighbourhood identification, and landmark / node identification.

- Accent plaques and pavers should be designed to complement the design palette and public realm within the VMC.
- Plaques should be of a high quality and durable metal material, such as bronze.
- Pavers should be of a high quality and durable stone material, such as granite.
- Overall design should be simple and easy to identify.
- Accent plaques or pavers should be strategically located at key intersections, landmarks, special places in areas with high pedestrian traffic.



1. Street Banners
2. Information Kiosks
3. Building Signage
4. Accent Identification Plaques / Pavers

6.2 Public Art

Public art will be an important element of the VMC's public realm, adding culture, beauty and interest

(4.4.8 VMC Secondary Plan)

Public Art Strategy

The public art strategy for the Vaughan Metropolitan Centre creates a site-related spatial framework to accommodate public art initiatives within the VMC planning area. The strategy focuses on the public open spaces and streets and considers their integration with publicly-accessible private spaces. This strategy recommends that artists participate on the design teams for the public realm project opportunities throughout the VMC.

Refer to the VMC Culture and Public Art Framework for more detail.

Art Integration

The seamless integration of public art into the streetscape, parks and open space framework will elevate the design quality and visual interest within the VMC. The sustainable use of water, being a key theme within the landscape concept, is an important aspect that should integrate public art elements.

In addition, integrating temporary expressions of art throughout the development of the VMC will reinforce the vision of an exciting and vibrant urban centre.

Publicly Accessible Private Spaces (POPS)

Individual Development Sites

Location and Significance

There are numerous sites along major streets and publicly accessible spaces within private development projects.

Purpose and Function

Public artworks located on private lands increase visual interest along streets and within publicly accessible private spaces.

Potential Themes

Opportunities to relate to neighbourhood character and landscape spatial themes as noted for the specific public spaces as follows.



Artist: Linda Covit. An example of a private sector, percent for art project that enhances the streetscape while providing detail and interest for the building that the artwork was commissioned for.

Public Spaces

Black Creek Park

Location and Significance

A continuous north-south, public open space stretching from the existing stormwater management pond north of Highway 7, south to Highway 407. Located directly adjacent to Jane Street, a high-order regional arterial street, this green corridor occupies a prominent location in the centre of the VMC.

Purpose and Function

Stormwater management corridor and public open space including the rehabilitated Black Creek, two stormwater management ponds, pedestrian bridges and a linear urban park.

Potential Themes

Public art and landscape development intertwined to tell the story of water in the VMC related to the natural heritage of the Black Creek / Humber River watershed.



Artist: Jill Anholt. An example of a multi-disciplinary design team addressing on site water treatment as a public demonstration of the principles of water management while proving public amenity through the creation of a public park.

Urban Park North

Location and Significance

A connected east-west public open space north of Highway 7, stretching from Millway Avenue on the east to Applewood Road on the west and bounded by New Park Place to the south and Apple Mill Road to the north. With its prominent location directly associated with the KPMG office building, subway station and bus terminal at Millway Avenue and New Park Place, it occupies a prominent place within the transit hub.

Purpose and Function

An urban park and square bounded on all sides by public streets.

Potential Themes

Public art and landscape development throughout the spaces on a block-by-block / point-by-point basis focusing on interaction and movement through the space and connecting with the Millway Avenue / subway station promenade.



Artist: Ian Sandler. An example of a public artwork that engages water as a narrative device to tell the story of a submerged watercourse (Taddle Creek).

Urban Park South

Location and Significance

An east-west open space south of Highway 7, stretching from Jane Street on the east to past Edgeley Boulevard on the west and from Doughton Road on the north to Freshway Drive on the south. Located in the centre of the “south of 7” community it connects to the Black Creek Park, Millway Avenue and Jane Street, and provides a central open space focus for this area of the VMC.

Purpose and Function

A connected urban park that intersects with Millway Avenue promenade and Jane Street with an opportunity to link, via a proposed pedestrian bridge, to the Black Creek Park. This larger urban park has the potential to be an important focal point for the community and region, engaging linear and sequential routes through the park.

Potential Themes

Public art and landscape focusing on a regional landscape theme including wetlands, meadows and forests as represented in the landscape archetypes, connecting to the Black Creek Park.



Olympic Park, Seattle Washington. This sculpture park takes the form of an extended pedestrian route while providing multiple opportunities for permanent and temporary artworks.

Boundary Forest

Location and Significance

A linear edge along the western and southern boundaries of the VMC immediately adjacent to (and potentially within) the Highway 400 and 407 corridor rights-of-way. This location provides a high profile boundary for the VMC which is highly visible from these inter-regional highways.

Purpose and Function

A boundary landform and vegetated corridor surrounding and buffering the VMC from the surrounding highways.

Potential Themes

An opportunity to create an integrated landscape, boundary forest and public art initiative along this highly visible edge condition to the VMC.



La Promenade Samuel-De Champlain, Quebec. An example of a linear park combining landscape design and public art while providing opportunities for permanent artwork installations and temporary sculptural exhibits.

Neighbourhood Parks

Location and Significance

Smaller scale parks are located within the VMC and associated with each neighbourhood quadrant.

Purpose and Function

Neighbourhood parks serve recreational and social interaction functions at the local level.

Potential Themes

An opportunity to derive unique landscape and public art themes in each neighbourhood based on the location of each park relative to their open space and community contexts within the VMC.



Artists: Anne and Patrick Poirier. An example of a multi-component artwork that defines public space while providing interest along the streetscape.

Streetscape and Public Squares

Location and Significance

The entire streetscape network and numerous squares through the VMC are potential areas for the consideration of public art opportunities, particularly at gateway intersections, in public realm squares and publicly-accessible private spaces.

Purpose and Function

Streetscapes and squares serve important social interactions functions at the neighbourhood and community-wide level.

Potential Themes

An opportunity to support and integrate landscape and public art themes within each neighbourhood to create a unique identity.



Artist: Eldon Garnet. An example of an artwork that supports and integrates landscape and public art themes within a neighbourhood to create unique identity.



Planning authorities should
promote green infrastructure
to complement infrastructure.

(PPS Policy 1.6.2)



6.3 Water

The local hydrological system will be designed to minimize waste and run-off and maximize positive impacts on the natural environment.

(2.0 VMC Secondary Plan)

Water is an important theme in the Vaughan Metropolitan Centre

Water, both surface and sub-surface, is a significant feature of the site where the Vaughan Metropolitan Centre is located. Therefore, a sustainable approach to water management is needed to build a resilient city.

Innovative storm water collection and harvesting systems and other green technologies are part of the creation of sustainable landscapes. In the VMC, parks, open spaces and streetscapes should be designed where possible to collect, filter, infiltrate, store and, in some cases, harvest rain water for re-use.

Combining sustainable storm water management into the design of the public realm will contribute to sustainable urbanism. Water should be highlighted and celebrated as a design signature for all seasons.

Low Impact Development (LID)

The goal of LID is to reduce and/or mitigate any negative impacts to the hydrology of a watershed affected by development. By employing various measures, LID manages the removal of storm water from urban areas in a manner that emulates nature. LID manages storm water at its source using distributed micro-scale source controls as opposed to a centralized control in traditional practices. By doing so, the natural hydrologic characteristic of the watershed can be maintained even with urban development. Ultimately, LID can maintain and restore the watershed's hydrologic and ecologic function.

In addition to slowing down the runoff, LID also improves runoff quality. By relying on natural features and processes, LID uses natural hydrologic functions which lead to simple and low cost methods. The integration of storm water management in the site planning process enables LID to contribute to preventative storm water management techniques as opposed to mitigative.

Blue Streets

- Pilot projects to move forward sustainable management of storm water
- Located adjacent to parks to leverage public space
- Must be coordinated with development

Blue Streets in the Landscape Framework

As part of the landscape framework, Blue Streets have been conceptually located to leverage and coordinate with the planned park and open space system. Blue Streets extend laterally east-west from the Black Creek spine.

Typically, Blue Streets are associated with parks and open space areas on at least one side, while the other side of the Blue Street are development sites.

Developments manage storm water on their individual sites through the use of green roofs, underground storage tanks or other means of detention. The adjacent public streetscape boulevards typically manage storm water through the traditional system of catch basins along the street.

However, the Blue Streets will be designed as pilot projects with LID storm water management measures as part of the streetscape and park design.

“Typically, Blue Streets are associated with parks and open space areas on at least one side”

Recommended LID Measures for Blue Streets

Streetscapes on the Development Block Side of the Blue Street may include:

- Permeable paving within on-street parking lanes
- Permeable paving within amenity areas in the boulevard
- Planters supporting street trees and associated shrub and perennial planting which will allow infiltration to groundwater
- Structural soil cells to provide additional subsurface storage and treatment of storm water run-off
- Overflow drains connected to storm sewer system
- Rainwater harvesting system for irrigation

Streetscapes on the Park Side of the Blue Street may include:

- Permeable paving within on-street parking lanes
- Permeable paving within amenity areas in the boulevard
- Planters supporting street trees and associated shrub and perennial planting which will allow infiltration to groundwater
- Structural cell structures (or approved equal) to provide additional subsurface storage and treatment of storm water run-off
- Surface related as well as subsurface connections from planters and other infiltration to in-park bio-swales and pond systems
- Use of grade changes and subsurface and surface related structures is encouraged to provide visual amenities and habitat within park and open spaces
- Rainwater harvesting system for irrigation

Detailed geotechnical work and an integrated design and monitoring process will be required to finalize the location, design, operation and maintenance of Blue Streets.



Figure 6.6: Conceptual Rendering of a Blue Street and the adjacent Park incorporating Storm Water Management Features (D



oughton Road)

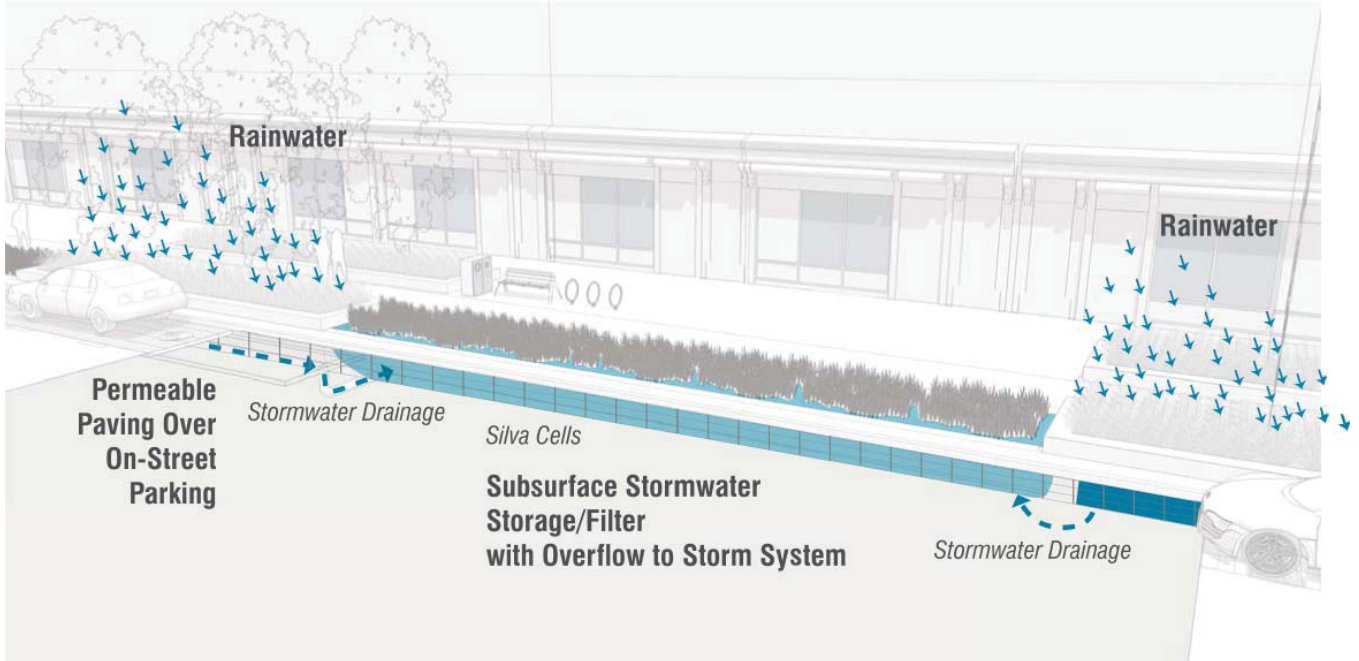


Figure 6.7: Potential Stormwater Management Measures on North Side of Blue Streets

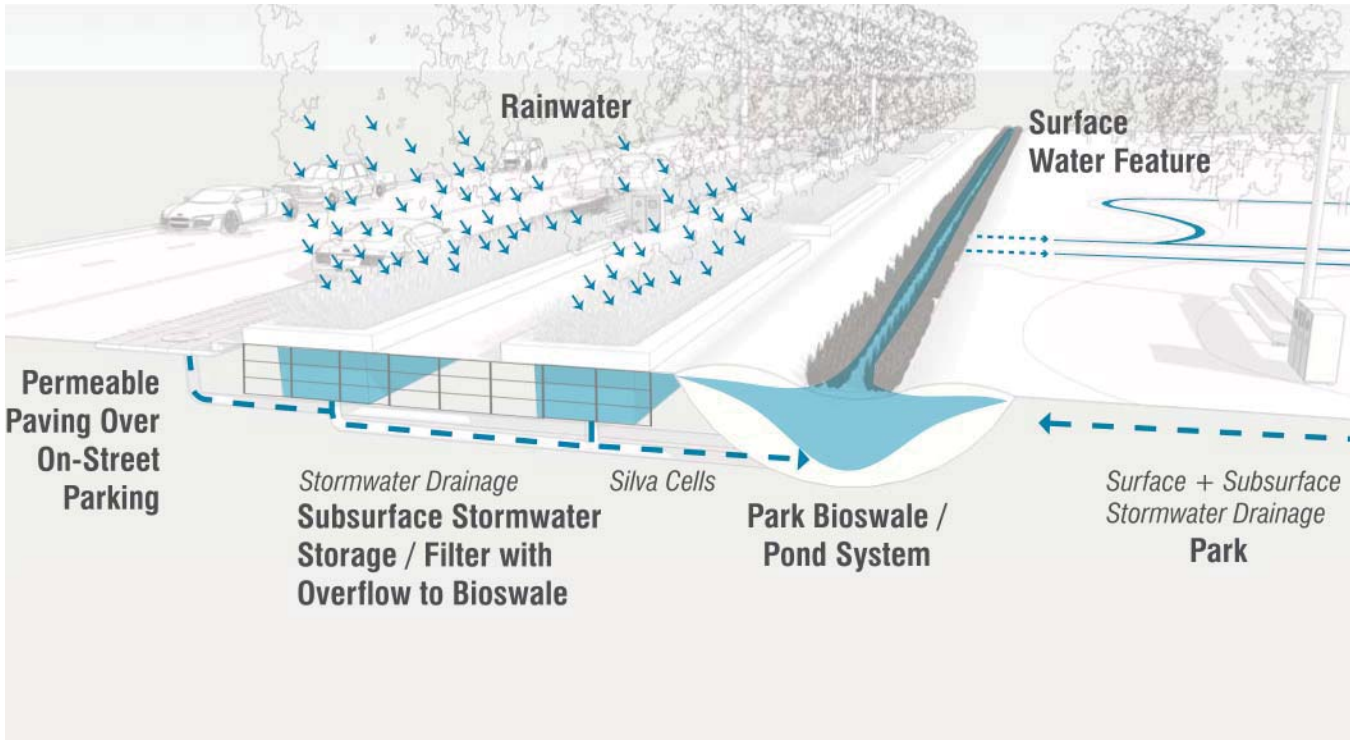


Figure 6.8: Potential Stormwater Management Measures on Blue Streets at Parks

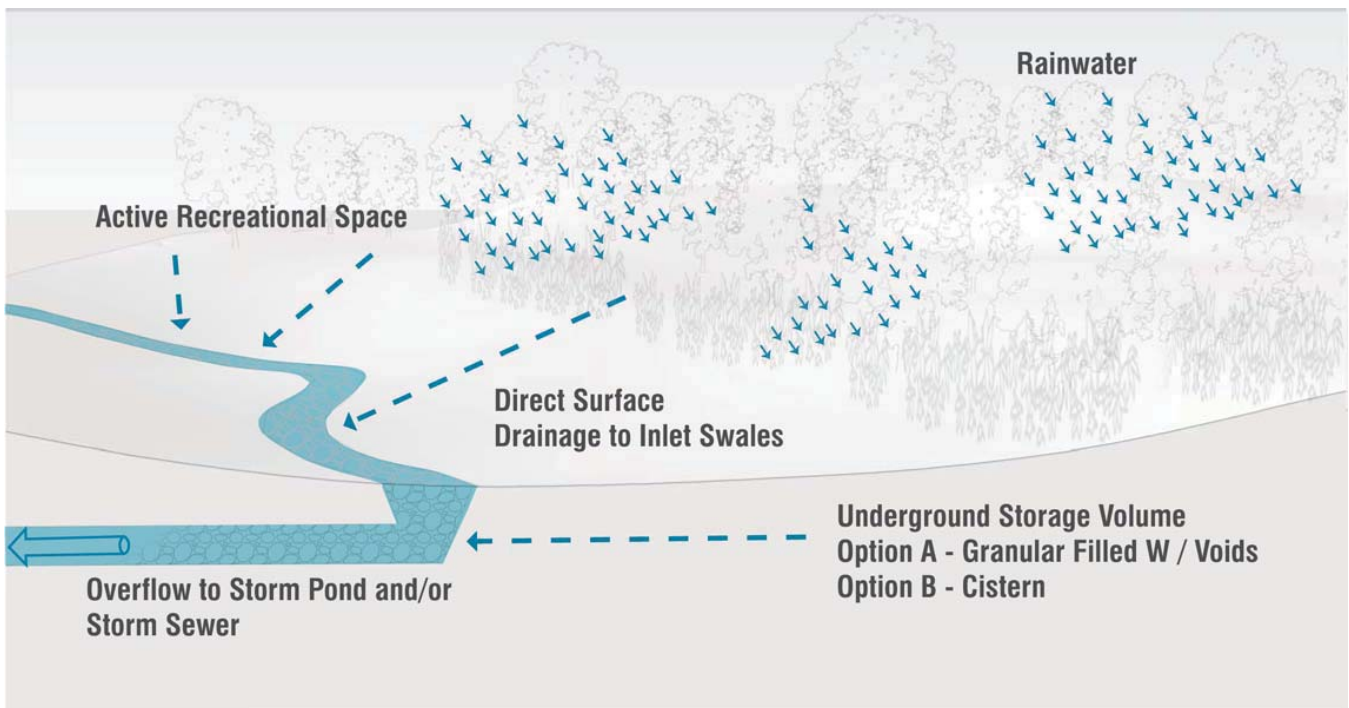


Figure 6.9: Potential Stormwater Management Measures for Parks

Other Potential LID Measures

A landscape-based approach to storm water management including Low Impact Development (LID) measures are encouraged to improve water quality and to promote infiltration.

These practices, often used as pre-treatment for other stormwater management practices, slow runoff and reduce peak flows, settle particulates, reduce pollutants and increase groundwater recharge.

1. Structural Soil Cells

Subsurface soil cell systems combine tree planting and stormwater management. Soil cells may be used to reduce peak flows and pollution, and also enable runoff to be used to irrigate the trees instead of using potable water.

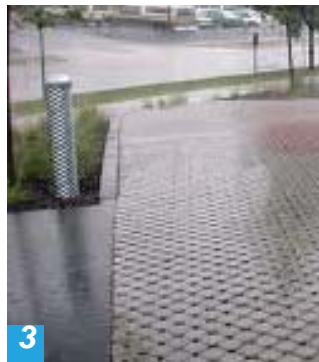
The soil cell structures provide a void space for tree planting soil to support tree root growth under loaded hardscapes such as sidewalks, squares, and parking lay-bys.

Soil cells may also be used for rainwater filtering, detention and retention with a system of perforated and solid rainwater distribution lines. By using a bioretention mix, the soil also acts as an on-site stormwater management system, providing a source control for the stormwater that flows off the road and sidewalk. Curb cuts, catch basins, porous pavers, and roof leader disconnections are all examples of options to provide an access point for water to enter the soil cell system via the tree trenches after which it is distributed through the soil in the soil cells through a piping system.

In addition to managing the rate and volume of stormwater (Peak Flow Reduction), the soil also improves the water quality, acting as a filter to remove Total Suspended Solids (TSS) and other pollutants such as Nitrogen and Phosphorus before discharging the water through a drain line to a catch basin.

2. Infiltration Trenches (Bio-swales)

- Allows water to infiltrate on site
- Reduces volume of stormwater and reduces quality issues in receiving streams
- Removes particulates and pollutants through soil absorption



3. Permeable paving

- Paving material made without fine aggregate allowing water to infiltrate through paving
- Minimizes volume of surface runoff

4. Constructed Wetlands

- Shallow pools developed for stormwater treatment by wetland plants
- Constructed to improve water quality
- Minimizes pollution entering water bodies

5. Detention Ponds / Dry Ponds

- Shallow depression that collects stormwater temporarily while slowly releasing it
- Reduces flooding by holding stormwater in a pool, delaying discharge
- Removes limited amounts of pollutants

6. Retention Ponds / Wet Ponds

- Ponds that maintain a permanent pool of water as well as detaining stormwater temporarily
- Allows settling of suspended solids to bottom and associated vegetation removes pollutants

7. Eco-Roofs

- Eco-roofs may be either green roofs which support vegetation, or cool roofs which reflect the sun's thermal energy
- Should be installed on washroom / change room facility buildings in parks and open spaces
- Eco-roofs are also encouraged to be installed on both public (community centre, libraries, schools, etc.) and private buildings (office, residential, etc.)
- Provides educational opportunities and helps to reduce the urban heat island effect

8. Landscape and Vegetative Practices

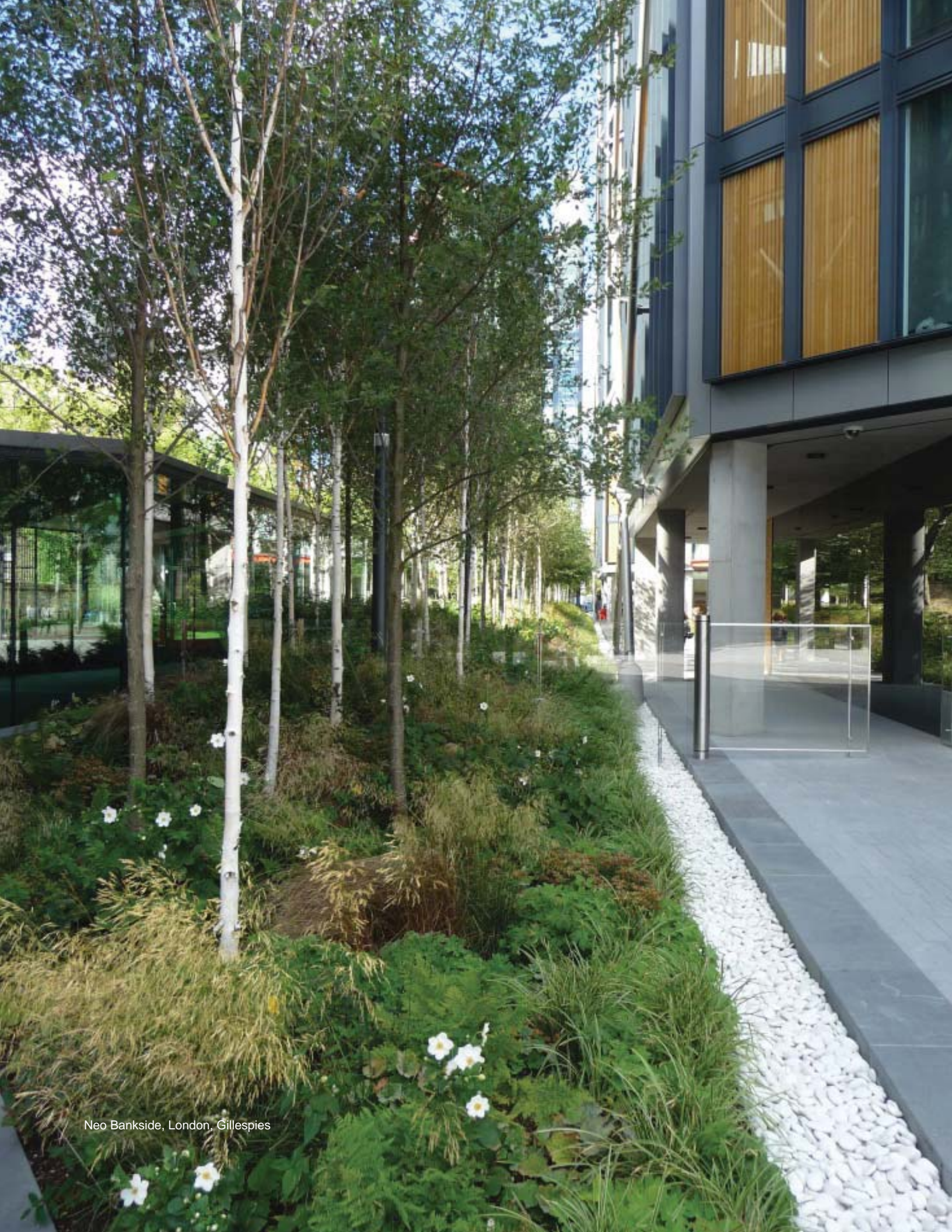
Sustainable landscape and vegetative practices can include:

- Vegetative buffer strips
- Band of vegetation, grass or shrubs around streams or ponds
- Grassed swales
- Shallow grass-covered channels



Low Impact Development Guidelines

- Design rainwater, stormwater, and water features as aesthetic and functional parts of the streetscapes, parks, and open spaces to contribute to the quality of life and sense of place in the VMC
- Water provides opportunities for education, interpretation, and public art
- Rainwater /stormwater-capture systems and subgrade to minimize run-off and provide irrigation is required
- 5:1 ratio of drainage area to infiltration bed is recommended
- Infiltration beds should be designed with buffer strips of clear gravel around the perimeter and a substantial drainage layer (clear gravel wrapped in permeable non-woven geotextile and a perforated drain pipe with filter sock) designed to store at least a 3 cm rain event and discharge excess water to larger detention basins
- Infiltration beds should also provide for overflow
- Ensure input from different disciplines early in the schematic design phase to assist in identifying potential areas for subsurface infiltration
- A geotechnical engineer shall be contracted to ensure success of the installation
- Amend existing soils to increase porosity as necessary
- Do not use infiltration techniques if there is insufficient depth to groundwater table
- Collect water from high-pollutant activities and provide water quality treatment measures before runoff areas drain elsewhere
- Ensure that permeable paving is constructed in the appropriate subgrade and the materials are free draining away from adjacent road base



Neo Bankside, London, Gillespies

6.4 Community Gardens

A community garden is a shared space where people meet and grow fruits, vegetables, herbs, flowers, ornamental plants, and fruit bearing trees and shrubs collectively. Community gardens may incorporate a range of community amenities, food production, education, operations and management approaches.

The City of Vaughan Community Garden Policy provides additional information related to community gardens.

Design Considerations

1. The garden should receive a sufficient amount of sunlight per day in spring, summer and fall. A minimum of six hours of direct sunlight is recommended.
2. Soils should be tested in accordance with Ontario Ministry of Environment standards to ensure that the soil is free from contaminants and the site is suitable for gardening and food production. Contaminated sites may consider the use of raised beds, container planting, and fresh soil.
3. Orient plots for optimal growing conditions, with consideration of wind patterns, sun/shade patterns, drainage patterns, overhead tree canopies and proximity to toxic tree species (such as Black Walnut) which inhibit growth of many garden plants.
4. Rotation of garden plots and crops to minimize the impact and infestation of disease and insect outbreaks.
5. The inclusion of companion plants which naturally deter unwanted insects and/or plants that provide habitat for beneficial insects such as bees, ladybugs, praying mantis, spiders, etc.
6. Use of solar pathway lighting and entrance lights to provide visibility and enhanced safety during evening hours.
7. The provision of common spaces for rest areas, children's play, group activities (school groups, picnic area etc.), and stroller parking.
8. Areas of shade within the garden site to provide places of comfort for garden users on hot summer days.
9. The provision of bicycle parking.
10. Adjacent space for a loading zone (deliveries and pick-ups).
11. Access to washroom facilities for community garden users.

Design Guidelines

1. Ensure physical accessibility, where possible, in accordance with the principles of universal accessibility design of pathways and ramps for all ages and abilities.
2. The garden should be visible from the public realm and/ or from publicly-accessible pedestrian areas.
3. The perimeter of the garden site should be designed to harmoniously integrate with the surroundings.
4. Storage areas, compost facilities, rain barrels, and structures (sheds, greenhouses etc.) should be sited and designed with consideration of adjacent land uses and comply with all building standards and permit applications.
5. Garden sites must be able to access existing municipally managed water infrastructure. As water is a limited resource, garden sites are encouraged to use water resources sparingly and/or implement a rainwater collection system for irrigation, pending the City's guidance, review and approval.
6. Fencing must comply with City of Vaughan By-laws.
7. Posted signage must comply with City of Vaughan Signage By-law.
8. The garden should be kept clean and well maintained at all times throughout the year.



6.5 Utilities

The Streetscape Plan for the VMC envisions an urban approach to streetscape design requiring greater emphasis on a higher quality pedestrian and social environment as well as places for cyclists, on-street parking and transit. These increasing demands for space within the right-of-way also place additional coordination requirements on utilities and municipal services.

Utilities

Hydro poles and utilities have a significant negative impact on the public realm in terms of visual effect and spatial impacts. Undergrounding existing services will create a significant improvement to the quality of the overall street network and the pedestrian environment; recognizing that there is a major cost involved to do so.

The VMC Secondary Plan identifies a number of policies related to underground and above ground utilities, as follows:

- Generally, all electrical and telecommunication cabling within right-of-ways, including proposed piping for district energy, shall be located underground.
- The integration of necessary above ground utility infrastructure in adjacent buildings shall be encouraged.
- Any utility boxes required within the right-of-way shall be well integrated with the design of the streetscape.

Typical locations of underground utilities have been identified in the Typical Below-grade Utility Locations diagram. The placement of these utilities should conform to the City of Vaughan Engineering Design Criteria and Standards.

Street trees are considered an integral part of the streetscape infrastructure, and as such coordination between street trees and utilities must be integrated early in the process.

District Energy

It is recommended that infrastructure related to a district energy system is placed under the pedestrian sidewalk zone of the streetscape, where feasible, to aid in snow clearing and sidewalk maintenance during winter months.

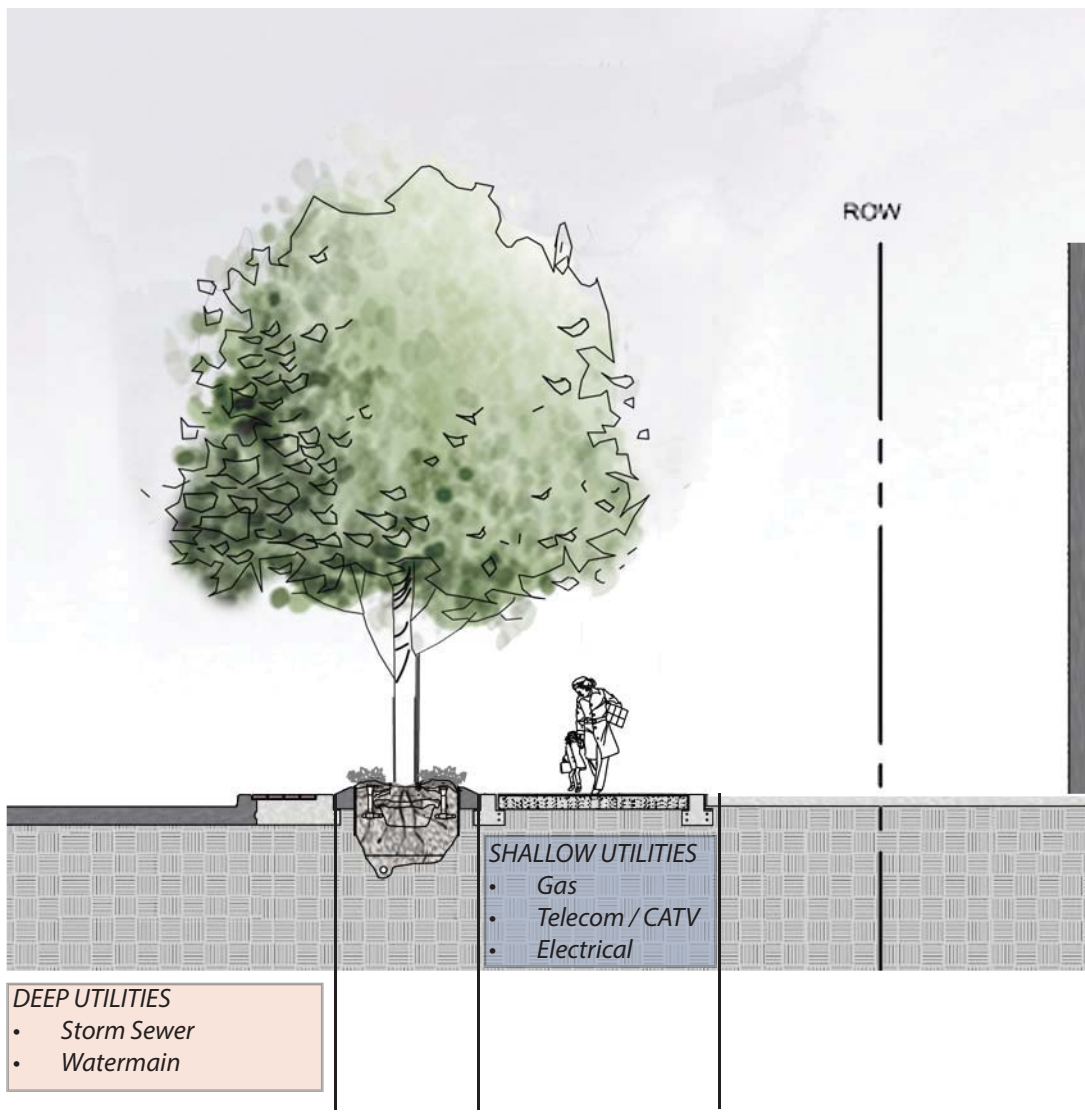


Figure 6.10: Typical Below-grade Utility Locations

7.0 Implementation

- 7.1 Implementation Strategies
- 7.2 Operations + Maintenance

7.1 Implementation Strategies

The Streetscape and Open Space Plan is organized around the principles of contemporary city building where public realm and private development are mutually supportive and integrated. The City of Vaughan’s Streetscape Implementation Manual and Financial Strategy will provide additional information on level of service, streetscape design guidelines, costing methodology, funding and implementation strategies.

Streetscapes, parks and open spaces are essential infrastructure components for the Vaughan Metropolitan Centre, not simply the icing on the cake. As such, it is important that they are implemented as early in the process as possible, ideally in advance of development or in coordination with on-going private and public development as it occurs.

Benefits of this approach are that these components create an attractive and functioning public realm environment for future communities, much in the same way that park

components, such as Cork Town Common, have been developed well in advance of the West Don Lands community in Toronto.

In order to ensure that the vision for VMC is achieved in the long term, a special reserve fund should be established for public art, programming and long term operations of the VMC. This will be developed through the Cultural Framework and Public Art Plan for the VMC.

Strategies

1. Public Private Partnerships
2. Public Ownership
3. City - Region Partnerships
4. Creating Connectivity
5. Design Competitions
6. Development Information Centre
7. Temporary Installations
8. Utility Coordination
9. Construction Management
10. Site Protection and Rehabilitation



Public Private Partnerships

Essential to the successful realization of the VMC is the need to understand the importance of establishing strong public private partnerships. Neither the public sector nor the private sector can achieve the vision of the VMC Streetscape and Open Space Plan on their own. Positive and mutually supportive public private partnerships are key components of the successful implementation of the streetscape, parks and open space network.

Partnership Strategies

- The City will work with the development industry to prepare design guidelines and standard specifications for developer-build parks.
- Partnerships, joint ventures and other related service delivery initiatives will be required.
- Investigate multi-use, integrated service delivery and shared financing opportunities.
- Where applicable, coordinate parkland with the York Region School Board to maximize the integration between facilities and the efficiency of shared space use.
- A business plan shall be required for all capital park projects which will form the basis for the incorporation of the initiative into the City's capital budget forecast.
- Performance measures and monitoring techniques shall be developed to track the achievement of desired outcomes.
- An example of a current City of Vaughan partnership program is the award winning Dazzle Me! Challenge which invites community groups to bring forward ideas and initiatives that will improve public spaces in our City.

Public Ownership

Public ownership of parks and open spaces in the VMC relies largely on a strategy of private land development and conveyance of land for the creation of public space. A key part of this strategy will be the negotiation of parkland dedication in conformance with this Plan and the VMC Secondary Plan for conveyance to the City together with the necessary cash-in-lieu of parkland dedication so that the design and development of parks and open space lands can be initiated as soon as possible.

Parkland dedication and / or payment of cash-in-lieu of parkland dedication shall be in accordance with the Planning Act and Section 7.3.3 of Volume 1 of the City of Vaughan Official Plan. The Official Plan directs these funds to be used by the municipality to acquire parkland. Publicly accessible privately-owned open spaces shall not count toward parkland dedication.

successful realization of the
VMC requires strong public
private partnerships

LEGEND

- Existing Buildings
- Property Lines
- Proposed Urban Blocks
- Parks and Open Space
- Mews
- Public Square



Figure 7.1: Key Areas of Required Partnerships (overlay of existing buildings and property boundaries onto planned streets, parks and open spaces)

City - Region Partnerships

There are a number of opportunities for the City of Vaughan to partner with York Region for the implementation of certain aspects of the VMC. These include but are not limited to:

VivaNext

VivaNext has responsibility for developing bus rapid transit and associated streetscapes along Highway 7 through the VMC study area. Through an early deliverable for this study, an enriched streetscape design for Highway 7 associated with the BRT was undertaken as part of the infrastructure within the roadway. As such, the implementation of the streetscape as part of this plan will be dovetailed with the BRT program and funded jointly through the VivaNext development program and the City of Vaughan. The VivaNext portion provides the complete streetscape components with additional customization and special identity features added by the City of Vaughan.

York Region Municipal Streetscape partnership Program (MSPP)

In 2006, York Region established a cost-sharing program for streetscape projects on Regional roads to encourage partnerships with local municipalities for a higher level of streetscape design on Regional roads. This is a capital streetscape funding model which offers tiers of funding ranging from 25% to 50% funding based on the project's location and relation to the 10-Year Capital Roads Construction Program. Projects are initiated by local municipalities and applications made to York Region to fund capital improvements such as sidewalk paving treatments, median treatments, enhanced landscaping and street tree planting, decorative light standards, water features, and public art. It should be noted that as a condition of funding, the local municipality will assume the operations and maintenance of these streetscape enhancements.

The Municipal Streetscape Partnership Program reinforces the importance of partnerships and collaboration between York Region and its local municipal partners on these primary urban corridors and throughout the Region.

York Region Pedestrian and Cycling Municipal Partnership Program (PCMPP)

The Pedestrian and Cycling Municipal Partnership Program offers local municipalities, conservation authorities and other agencies the opportunity to cost-share on the implementation of local pedestrian and cycling infrastructure that promotes active transportation. Like the Municipal Streetscape Program, the Pedestrian and Cycling Municipal Partnership Program supports Regional priorities but focuses on trail infrastructure both inside and outside of the Region's road right-of-way.

Similar to the Municipal Streetscape Program, the Pedestrian and Cycling Municipal Partnership Program, policy includes criteria that must be met for an application to be considered including that the local municipality must take over all maintenance responsibilities for the proposed infrastructure.

The Pedestrian and Cycling Municipal Partnership Program contributes up to 50% of eligible construction costs. As Regional roads, the cycling infrastructure proposed along Highway 7 and Jane Street is eligible for this program.

Other Partnership Opportunities

The City and Region could also partner on other initiatives including York Region Greening Strategy through the greening of the environmental areas of VMC and educational temporary installations or pilot projects throughout the development of VMC.

Creating Connectivity

Development of land parcels in the VMC will occur incrementally over time. The connection between different developments and with the public realm network is instrumental to achieving the vision for the VMC, given the scenario of separate pockets of development over separate phases. The following strategies promote connectivity:

Defined edges to streets, parks and open spaces

A common built form language of massing and scale is needed to frame streets, parks and open spaces in the VMC. Proportions, scale and details of buildings define the urban environment and set the stage for pedestrian animation.

Build parks early in development phases

Establishing public destinations early in development phases will help to establish a social network and physical connections between places.

Unified Streetscape Design

The Design Components Matrix includes lighting, furnishings, paving and planting. Individual developments should reference this matrix to construct a coherent public realm along the street.

Coordinated Interface between Public and Private

The design components matrix outlines common design components and materials to articulate the VMC's public realm. The interface between private frontage and private is connected with this palette and the coordination of landscape systems. The VMC Urban Design Guidelines, to be developed as a future study and design tool, will provide additional design guidance on development interfaces.

Pedestrian Mews and Passageways

Create mid-block connections for pedestrian movement with pedestrian and/ or cycling passageways.

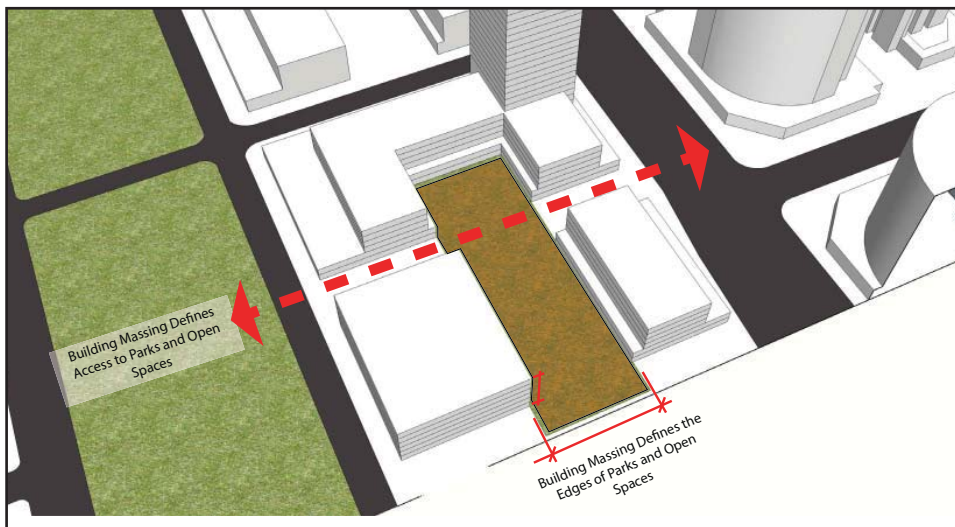


Figure 7.2: Building massing defines the edges of open spaces and provides mid-block linkages

Connecting pedestrian mews outlined in the VMC Secondary Plan street network between development parcels.

Cycling Network

A connected cycling network as outlined in the Plan integrates bicycle use in to the multi-modal transportation system.

The Loop

A recreational trail system that connects destinations within the VMC.

Sustainable Infrastructure

Collaboration between developers and with the City is necessary to implement sustainable infrastructure, such as district energy, between development blocks.

Design Competitions

Design competitions are typically initiated to explore innovative approaches to complex design problems and/or to rethink development areas of high interest within the public profile. Design competitions promote design excellence by:

- Generating new ideas and innovative design solutions
- Stimulating public interest and engagement
- Highlighting an important or unusual site
- Raising publicity for a project
- Selecting the best design and/or project team through a competitive process

Holding a design competition signifies that the sponsor (public agency or private developer) is open to exploring bold concepts about development and dedicated to leading catalyst projects in the City. Competitions promote design excellence by attracting talented and creative design, engineering, and specialized professionals, often at a national and international reach, and will be a great tool in helping to elevate design excellence and raise the profile of the VMC.

Development Information Centre

Demonstrating the City's commitment to building the VMC and telling the story of its growth and transformation is an essential public communications strategy. The City of Vaughan has already developed a dedicated website and is planning to develop a newsletter to this end. A physical information facility located within the VMC site will be a complimentary forum of communication and marketing tool that will provide critical information and updates to visitors, potential investors and future residents. As either a stand-alone facility or integrated within the ground floor of one of the prominent new buildings, the Development Information Centre would be a highly visible, attractive and readily accessible feature within the VMC that communicates the vision and growth strategy for the downtown.

Two current examples of this include the Visitor Centre at the Regent Park Re-Development in downtown Toronto and the interpretive displays for the re-development of the 2012 Olympic Site in the London suburb of Stratford, England.



On-Site Information

An On-site Information Centre may include information communicating the following:

- What is the vision of the VMC?
- Who is involved in building it?
- How is it going to be developed?
- What are the milestones and timelines?



East Village London E20 Development Information Centre, 2012 Olympic Site, Stratford, England

Temporary Installations

Raising the profile of the VMC and creating a sense of its urban character and contemporary identity early in the process is an important strategy to gain public awareness and participation in the development of the downtown throughout its transformation.

The use of temporary installations as a strategy and catalyst to achieve this will require a major programming and coordination effort, but the benefits will create the “buzz” that is needed to elevate City wide awareness and promote activity and vibrancy in the VMC from the beginning.



Temporary Hoarding, 2012 Olympic Site, Stratford, England



Farmers Market, Santa Clara County, California

Installation Strategies

Installations may take many different forms including, but not limited to:

- **Temporary landscapes:** adaptive landscapes related to regional landscape character or hardscaped outdoor rooms
- **Community gardens:** allotments for urban agriculture or demonstration gardens
- **Markets or fairs:** regularly scheduled farmers markets or special events and fairs
- **Pop-up uses:** a cluster of small scale shelters featuring local arts and crafts or services
- **Seasonal facilities:** temporary facilities such as a summer beach setting or a winter skating rink
- **Staged events:** an outdoor performance facility for performing arts
- **Temporary hoardings:** highly graphic hoardings that create spaces that evoke the future ambiance of the VMC and provide useful, multi-use areas to support the above activities
- **Temporary scaffolding + building shrouds:** temporary expressions of art through the construction process to reinforce the impression of urban development to come



Temporary Window Box Gardens, South Bank, London, England



Temporary Outdoor Screenings, London, England



Temporary Installation, Copenhagen

Construction Management

The phased development of the VMC will involve a number of specific projects involving both public realm and private development sites. It is anticipated that construction activity will continue in the VMC for many years to come. It is therefore important to carefully plan for, recognize and actively manage these activities and their anticipated impacts on the character and function of the VMC.



Informative Construction Hoarding, London, England

Construction Strategies

Key considerations:

- Create site hoarding that minimizes views to the site activities and adds to the character and quality of the VMC through the use of colourful and well-designed solid screening material
- Minimize storage of excess fill materials on the site
- Create compact lay-down and storage areas
- Maintain public access to public amenities, parks, trails and other features
- Consider phased openings so that facilities and site areas are completed and opened as quickly as possible
- Control noise and dust impacts to the highest urban standards
- Identify routes for deliveries and heavy trucks that minimize traffic and community impact

Monitor **protection measures** during and after construction to minimize adverse environmental impacts and contribute to **ensuring sustainability**.

Site Protection + Rehabilitation

Designers should endeavor to preserve existing natural features on site, including slopes and plant groupings. Existing topography should be maintained to the greatest extent possible, and natural drainage ways, such as ephemeral streams, should be protected.

For all construction projects, a site protection plan must be prepared based on a thorough assessment of the existing site conditions. Preservation is an important consideration, as established plant material provides ecological benefits and gives an area more character than a community that has been newly planted. Where appropriate, native plants may sometimes be carefully removed, protected and returned to the site later in the development process. Rehabilitating on-site soil is better both ecologically and financially than importing soil mixes from elsewhere. Native soils have established communities of micro-organisms necessary for healthy soils and plant growth. Moreover, using on-site materials reduces costs for hauling, which also decreases production of greenhouse gases.

Soil Testing

A soil report will need to be prepared that not only assesses the structural stability of soil formations to support buildings, but also assesses its suitability for stormwater management systems and plant growth. While it is known that the soils in the area of the VMC are poorly draining and that the water table is approximately three metres below the surface, the subtleties of the soil composition and structure in a specific area will need to

be assessed for every site and project. Soil testing is to be carried out at the beginning of the design phase for every area that is to receive a softscape treatment. Tests should include: particle size analysis, nutrients and trace minerals, susceptibility to erosion, biological contents (bacterial, fungal, organic content), percolation (through subsoils) and infiltration (into ground) tests.

Vegetation Protection

- Trees to remain should be watered and fertilized during and after construction to offset the stresses of construction.
- If it is necessary to lower the grade in a root protection zone, porous fills should be used (sand or aggregate to a depth of 30 cm for trees considered tolerant, or 15 cm for organically rich loam).
- Hand digging methods should be employed in the root protection zone, with use of tunneling or an air spade to excavate for utility lines.

Soil Protection and Remediation

- No traffic or storage of materials should be allowed in areas that will eventually be planted or that will serve as part of the stormwater management treatment train.
- Haul routes, storage areas and vegetation protection zones should be clearly delineated.
- Low ground pressure equipment should be used to avoid compaction.
- Exposed soils should be stabilized with permanent vegetation whenever possible. Otherwise use of mulch, geotextiles or seeding should be employed on a temporary basis.
- For deep scarification of compacted soils use a deep “rip” or tine machine to 1.5 times the depth of the bottom of the compaction zone when soil is dry.

Soil Stockpiling

- In situ soils must be tested and topsoil stockpiled when topsoil exists on the site.
- Soil should not be piled over 2 metres high.
- Soil should be covered with erosion protection.
- Creative temporary artistic installations can be made out of soil stockpiles.

Contractor Tasks

Contractor maintenance tasks for softscape shall typically include:

- Ensure that the irrigation system is functioning correctly, as applicable.
- For coniferous plant material, water thoroughly in late fall prior to freeze-up to saturate soil around the root system.
- Remove weeds from the base of trees and shrubs, and from all planting areas, monthly.
- Remove dead, broken or hazardous branches and suckers from plant material.
- Keep trunk protection (if specified) and other hardware in proper repair and adjustment. Remove any stakes after one year.
- Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
- Replace or re-spread damaged, missing or disturbed mulch.

Utility Coordination

The planning, design and detailed coordination of utilities and service installations, operation and maintenance requires a consistent and integrated approach that reflects and supports the VMC Streetscape and Open Space Plan. This is especially important to assist in the achievement of the streetscape design intent as well as in the management of on-going efforts to reduce the frequency and impact of right-of way construction related to utilities and services. These coordination efforts are required for above-grade utilities, such as electrical services and below-grade utilities such as water, communications, gas, sewer and other utilities.

Above grade electrical poles and wires on Regional streets within the VMC represent a major visual and functional negative relative to high quality urban streetscape development. It should be noted that electrical services are to be located below grade on municipal streets within the VMC. The concept of establishing pre-determined, mutually exclusive and coordinated priority zones for underground services as well as streetscape components is a requirement for successful streetscape development.

7.2 Operations + Maintenance

Operations and maintenance personnel should be consulted early in the design process, so the designer understands their concerns and they understand the sustainability and other design objectives for the project. Ongoing training and education of maintenance staff is also useful.

Business Improvement Areas, development corporations, adjacent land owners, concessions and non-profit support groups should be considered as sources of funding for operations and maintenance.

The operations and maintenance guidelines presented below should be synchronized with the level of service being recommended for each street. Refer to the City-Wide Streetscape Implementation Manual and Financial Strategy Plan for details.

As-Built Drawings

- As-built drawings should be produced for every design project.
- As-built drawings are a most helpful resource for reference and budgeting purposes in the future.

Maintenance Plans

- A maintenance plan and budget should be an integral part of every design project.
- Maintenance plans should include measures to control invasive species and weeds.
- Consideration for the Black Creek channel, stormwater management ponds and any other infrastructure incorporated into Black Creek must address flooding as part of the Maintenance Plan

Tree and Planting Maintenance

Soil Quality Monitoring

- Maintain the quality of soil by annual application of good quality mulch, such as composted pine bark mulch.
- Monitoring of soil and vegetation should occur regularly and remedial action (fertilization, insect and disease control and corrective pruning) taken as required.

Tree Watering

- York Region has decided to water trees 14 times a year (Street Tree Program Update, March 2011).
- Along Highway 7 and Jane Street (Regional roads within VMC) this will be manual watering during the crucial three year establishment period and during periods of drought thereafter; however, automated irrigation should be considered for use on medians and urbanized boulevards (tree grates, raised planters).
- This schedule should be adequate to all plant needs if drought tolerant shrubs and perennials are selected. However, if droughty conditions exist during plant establishment period, additional watering may be required.

Tree Wrapping

- Tree wrapping with burlap is appropriate for soft-barked species such as maples, but it must only remain on the tree during the winter and be removed the following spring.
- Avoid the use of tree stakes and guy wires. If necessary use rubber or polypropylene bands and flexible stakes, below ground tree staples or anchors.

Perennials and Turf Alternatives

- Perennials should be cut back in early spring to make room for new growth.
- Turf alternatives (Including eco-lawn) may need to be mowed in spring or late fall.

Spring Flushing

- Vegetated stormwater management practices are to be flushed with 6" of water every spring after removal of contaminated mulch. Replace mulch with quality originally specified.

Fertilizer

- Fertilizer should only be used when a soil test shows a deficiency for the type of planting or species of tree selected.

Streetscape Maintenance

Road Sweeping

- Roads, boulevards and medians should be swept and washed in early spring to remove dirt that builds up over winter.
- Roads should also be swept after motor vehicle accidents, spills and construction.
- For public safety, developers and general contractors are responsible for keeping roads near their sites clear of mud and debris.

Structural Soil Cells

- If the structural soil cell system is accidentally unearthed by future excavation in the area, excavation is to be ceased immediately and the as-built drawings consulted to determine the limits of the system.

- The impacted portion of the soil cell system should be exposed using hand tools only, inspecting the frames and decks for any signs of damage.
- Replace any damaged soil cell frames or decks and reconstruct any disturbed portion of the system as per the approved supplier's installation guidelines.

Permeable Paving

- Establish a best practices maintenance program to ensure longevity of the paving before restorative action is required.
- Below is a preventative maintenance time line that includes four maintenance suggestions:
 1. After the snow melt - broom, blow, rotary brush or sweep entire surface; clean debris from paver surface in location of snow stockpile area; and, replenish joint aggregate material after cleaning. Every fifth year, vacuum or power wash problem areas and refill joint material.
 2. Late spring - broom, blow, rotary brush or sweep debris from paving area, and replenish joint aggregate material as necessary.
 3. Late Summer - broom, blow, rotary brush or sweep debris from paving area, and replenish joint aggregate material as necessary.
 4. Late Fall - broom, blow, rotary brush or sweep debris; replenish joint aggregate material as needed.
- For winter maintenance and de-icing, do not use magnesium chloride; do not use sand for anti-skid with permeable pavers as it will clog the joint material

8.0 Appendix

- A Region of York Top Performing Street Tree Species
- B Region of York Notable Street Tree Species for Select Planting Sites
- C City of Vaughan Street Tree List
- D VMC Planting Palette

Appendix A: Region of York Top Performing Street Tree Species

Regional road allowances (Highway 7 and Jane Street within the VMC) present an extremely harsh environment for street tree establishment and growth. Only a select group of hardy tree species establish and thrive in this environment. The Regional Municipality of York has developed the following street tree species lists and guidelines to ensure that only those hardy tree species proven to establish and thrive along Regional roads are planted.

The Region continually reviews these lists and guidelines in efforts to ensure they reflect the most current knowledge and are as broad as possible. The Region is continually trying new species and varieties in controlled trials to identify additional species for the lists.

Top Performing Street Tree Species

The Regional Municipality of York has developed a list of “Top Performing Street Tree Species” based on an extensive literature review, results of recent street tree health assessments and anecdotal records of species performance in Regional road allowances.

The following list represents species which have desirable characteristics and are tolerant of the harsh growing environment present along Regional roads. While being sensitive to species diversity, this list has been developed to ensure that trees planted meet performance expectations and achieve the expected benefits for Region residents. These species will form the majority of species planted within Regional road allowances.

At a minimum, 75% of trees planted along Regional roads will come from the Region’s top performing street tree species list. In road side locations where conditions are particularly harsh, up to 100% of species planted may come from the top performing street tree species list.

Table A1: Top Performing Small Form (Hydro Acceptable) Species List

Species Name	Native ²	Characteristics
Shubert cherry (<i>Prunus virginiana</i> 'Shubert') ¹	Yes	<ul style="list-style-type: none"> • Very susceptible to black knot, requires annual pruning to control fungus • Prone to suckering from base of tree
Ivory silk lilac (<i>Syringa reticulata</i>)	No	<ul style="list-style-type: none"> • Showy lilac-like blooms in early summer, followed by seed capsules that persist on the tree • Fairly pest and disease resistant

Table A2: Top Performing Full Form Species List

Species Name	Native ²	Characteristics
Silver maple (<i>Acer saccharinum</i>) ¹	Yes	<ul style="list-style-type: none"> • Develops large crown, therefore plant in locations with adequate space
Ohio Buckeye (<i>Aesculus glabra</i>) ¹	Yes	<ul style="list-style-type: none"> • Showy flower spikes followed by seed husks covered in soft spines • Less susceptible to leaf scorch and leaf blotch than horsechestnut
Horsechestnut (<i>Aesculus hippocastanum</i>) ¹	No	<ul style="list-style-type: none"> • Showy flower spikes, less seed production than Ohio buckeye, seed husks covered in soft spines • Susceptible to leaf scorch and leaf blotch
Honeylocust (<i>Gleditsia triacanthos</i> var. <i>inermis</i>)	Yes	<ul style="list-style-type: none"> • Small leaves provide a filtered shade • Can be susceptible to defoliation by leafhoppers • Acceptable cultivars for Regional roads include: Shademaster
Kentucky coffee tree (<i>Gymnocladus dioicus</i>) ¹	Yes	<ul style="list-style-type: none"> • Coarse branching structure, large double-compound leaves with small leaflets • Dioecious tree with male and female plants, male tree preferred

Notes:

¹ Spring planting only

² A native tree is defined as a tree whose natural range is within Ontario and/or the northern U.S lake states.

Appendix B: Region of York Notable Street Tree Species for Select Planting Sites

The Regional Municipality of York has developed a list of “Notable Street Tree Species for Select Planting Sites” based on an extensive literature review, results of recent street tree health assessments and anecdotal records of species performance in Regional road allowances.

This list represents species which have many desirable characteristics and tolerances, but are sensitive to specific environmental conditions (exposure to prevailing winds, de-icing salt, etc.). Their use is limited to specific sites where the environmental conditions are ideal for their initial survival and long term

performance. These species will form a minor component of species planted within Regional road allowances.

The Region has developed a series of street tree species fact sheets that provide additional information on many of these species. These are available upon request from the Region.

Table B1: Notable Small Form (Hydro Acceptable) Species List

Species Name	Native ²	Characteristics
Hedge maple (Acer campestre)	No	<ul style="list-style-type: none"> Sensitive to desiccation from winter winds. Use in locations sheltered from prevailing winds.
Ornamental pear (Pyrus calleryana) ¹	No	<ul style="list-style-type: none"> Sensitive to desiccation from winter winds. Use in locations sheltered from prevailing winds. Acceptable cultivars for Regional roads include: Chanticleer Pear
Columnar Norway maple (Acer platanoides ‘Columnare’)	No Invasive	<ul style="list-style-type: none"> Species suitable for planting adjacent to overhead hydro due to its narrow width. Must be planted a minimum of five (5) metres from overhead hydro
English pyramidal oak (Quercus robur ‘fastigiata’) ¹	No	<ul style="list-style-type: none"> Species suitable for planting adjacent to overhead hydro due to its narrow width. Must be planted a minimum of five (5) metres from overhead hydro Should always be planted behind sidewalk / pedestrian zone

Notes:

¹ Spring planting only

² A native tree is defined as a tree whose natural range is within Ontario and/or the northern U.S lake states.

Table B2: Notable Full Form Species List

Species Name	Native ²	Characteristics
Norway maple (<i>Acer platanoides</i>)	No Invasive	<ul style="list-style-type: none"> • Develops large crown, therefore plant in locations with adequate space. • This species is invasive. Although some of the cultivars are less invasive, it is not to be planted near natural areas.
Autumn Blaze maple (<i>Acer x freemanii</i> 'Autumn Blaze') ¹	Yes	<ul style="list-style-type: none"> • Sensitive to desiccation from winter winds. Use in locations sheltered from prevailing winds.
Hackberry (<i>Celtis occidentalis</i>) ¹	Yes	<ul style="list-style-type: none"> • Sensitive to de-icing salts (airborne spray). Use in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m +) on the north and west sides of roads.
Swamp white oak (<i>Quercus bicolor</i>) ¹	Yes	<ul style="list-style-type: none"> • Of the oak species, this has shown the greatest tolerance to Regional road conditions. Still considered sensitive to de-icing salts (airborne spray). Use in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m+) on the north and west sides of roads.
Bur oak (<i>Quercus macrocarpa</i>) ¹	Yes	<ul style="list-style-type: none"> • Has shown tolerance to Regional road conditions. Still considered sensitive to de-icing salts (airborne spray). Use in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m+) on north and west sides of roads.
Littleleaf linden (<i>Tilia cordata</i>)	No	<ul style="list-style-type: none"> • Sensitive to desiccation from winter winds and de-icing salt. Plant in locations where exposure to salt spray will be minimized, e.g. wide boulevards (6 m+) on the north & west sides of roads and in a location sheltered from prevailing winds. • Acceptable cultivars for Regional roads include: Glenleven and Greenspire.
Accolade elm (<i>Ulmus japonica</i> x <i>Ulmus wilsoniana</i>)	No	<ul style="list-style-type: none"> • Initial plantings of this species have shown tolerance to the growing conditions on Regional road allowances. Experience with this species is limited and it should be used in limited quantities until further evaluation of its performance is completed.

Table B2: Notable Full Form Species List (Cont'd)

Species Name	Native ²	Characteristics
Colorado spruce (<i>Picea pungens</i>) ¹	No	<ul style="list-style-type: none"> • Sensitive to desiccation from winter winds and de-icing salt. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location. • Should always be planted behind sidewalk / pedestrian zone. • Susceptible to yellow-headed spruce sawfly defoliation.
White spruce (<i>Picea glauca</i>) ¹	Yes	<ul style="list-style-type: none"> • More sensitive to desiccation from winter winds and de-icing salt than Colorado or Norway spruces. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location. • Can be susceptible to yellow-headed spruce sawfly defoliation.
Norway spruce (<i>Picea abies</i>) ¹	No	<ul style="list-style-type: none"> • Sensitive to desiccation from winter winds and de-icing salt. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location. • Should always be planted behind sidewalk / pedestrian zone. • Fairly pest and disease resistant.
Austrian pine (<i>Pinus nigra</i>) ¹	No	<ul style="list-style-type: none"> • Sensitive to desiccation from winter winds and de-icing salt. Plant a minimum of 6 m from edge of road, and preferably in a sheltered location. • Should always be planted behind sidewalk / pedestrian zone. • Susceptible to Diplodia, blight, select locations with good air flow and avoid mass plantings of this tree.

Notes:

¹ Spring planting only

² A native tree is defined as a tree whose natural range is within Ontario and/or the northern U.S lake states.

Appendix C: City of Vaughan Tree + Plant Species List

The City of Vaughan has developed a list of Tree and Plant Species that are currently acceptable to be planted in the City of Vaughan's public realm, including streets, parks and open spaces.

City of Vaughan Parks and Forestry has adopted a City-wide planting policy that focuses on diversification of the tree canopy for a successful Urban Forest.

The planting and management of a diverse tree canopy will minimize the effects of invasive pests and diseases. Diversification, species selection according to conditions, and proper planting techniques including the provision of generous soil volumes will build a resilient urban tree canopy in the City of Vaughan.

Table C1: Coniferous Trees (WB typical)

Species Name	Common Name	Size	Notes
Abies alba	Silver Fir	150 to 300cm ht.	
Abies balsamea	Balsam Fir	150 to 300cm ht.	
Abies concolor	White Fir	150 to 300cm ht.	
Juniperus virginiana	Eastern Red Cedar	150 to 300cm ht.	
Larix laricina	American Larch	150 to 300cm ht.	
Picea abies	Norway Spruce	150 to 300cm ht.	
Picea glauca	White Spruce	150 to 300cm ht.	
Picea omorika	Serbian Spruce	150 to 300cm ht.	
Picea pungens	Colorado Spruce	150 to 300cm ht.	(limit use due to Y.H. Sawfly)
Picea pungens	Colorado Blue Spruce	150 to 300cm ht.	(limit use due to Y.H. Sawfly)
Picea pungens 'Fat Albert'	Fat Albert Spruce	150 to 200cm ht.	
Pinus nigra	Austrian Pine	250cm ht.	(limit use due to Diploidia)
Pinus resinosa	Red Pine	175 to 300cm ht.	
Pinus strobus	Eastern White Pine	175 to 300cm ht.	
Pinus sylvestris	Scots Pine	200 to 300cm ht.	
Pseudotsuga menziesii	Douglas Fir	175 to 300cm ht.	
Thuja occidentalis	Eastern White Cedar	150 to 200cm ht.	
Tsuga canadensis	Eastern Hemlock	175 to 200cm ht.	limit to protected, moist locations

Table C2: Deciduous Trees (60 mm cal WB typical)

Species Name	Common Name	Size	Notes
Acer griseum	Paperback Maple	50mm cal.	Sheltered location
Acer platanoides 'Columnar'	Columnar Maple	60mm cal. Typical	limit use
Acer platanoides 'Crimson King'	Crimson King Maple	60mm cal. Typical	limit use
Acer platanoides - 'Royal Red.'	Royal Red Maple	60mm cal. Typical	limit use
Acer rubrum	Red Maple	50 to 70mm cal.	avoid high pH, clay soils
Acer rubrum 'Autumn Spire'	Autumn Spire Maple	60mm cal. Typical	
Acer rubrum 'Karpick'	Karpick Maple	60mm cal. Typical	
Acer rubrum 'Red Sunset'	Red Sunset Maple	60mm cal. Typical	
Acer saccharinum	Silver Maple	60mm cal. Typical	
Acer saccharum	Sugar Maple	60mm cal. Typical	requires large root zone
Acer spicatum	Mountain Maple	200 cm ht.	
Acer tataricum	Tatarian Maple	60mm cal. Typical	
Acer x freemanii	Swamp Maple	60mm cal. Typical	avoid overplanting
Acer x freemanii 'Autumn Blaze'	Autumn Blaze Maple	60mm cal. Typical	
Acer x freemanii 'Firefall'	Firefall Maple	60mm cal. Typical	
Acer x freemanii 'Jeffersred'	Autumn Blaze Maple	60mm cal. Typical	
Aesculus carnea 'Briotii'	Red horse-chestnut	60mm cal. Typical	
Aesculus glabra	Ohio Buckeye	60mm cal. Typical	
Aesculus hippocastanum	Horse-chestnut	60mm cal. Typical	

Table C2 Continued: Deciduous Trees (60 mm cal WB typical)

Species Name	Common Name	Size	Notes
Aesculus hippocastanum 'Baumannii'	Baumann's Horse Chestnut	60mm cal. Typical	
Alnus incana ssp. Rugosa	Speckled Alder	125cm ht.	
Amelanchier canadensis	Serviceberry	250cm ht. multi stem or 45 to 60mm cal	
Amelanchier x grandiflora	Serviceberry	45 to 60mm cal.	
Amerlanchier arborea	Downy Serviceberry	45 to 60mm cal.	
Betula alleghaniensis	Yellow Birch	50 to 60mm cal or could be multistem and by Ht. 250cm	
Betula papyrifera	Paper Birch	50 to 60mm cal	
Carpinus betulus 'fastigiata'	Pyramidal European Hornbeam	50 to 60mm cal	
Carpinus caroliniana	Blue Beech	50 to 60mm cal	
Carya Cordiformis	Bittenut Hickory	or by 250cm ht.	
Catalpa speciosa	Northern Catalpa	60mm cal. Typical	
Celtis occidentalis	Hackberry	50 to 60mm cal	
Cercidiphyllum japonicum	Katsura	60mm cal. Typical	protected locations only
Cercis canadensis	Eastern Redbud	45 to 60mm cal	protected locations only
Eucommia ulmoides	Hardy rubber tree	60mm cal. Typical	
Fagus grandiflora	American Beech	60mm cal. Typical	
Fagus sylvatica "Dawyck Purple"	Dawyck Purple Beech	60mm cal. Typical	
Gingko biloba	Maidenhair Tree	60 to 70mm cal.	
Gleditsia triacanthos inermis	Thornless Honeylocust	60 to 80mm cal.	
Gleditsia triacanthos inermis 'Shademaster'	Shademaster Honeylocust	60 to 70mm cal.	

Table C2 Continued: Deciduous Trees (60 mm cal WB typical)

Species Name	Common Name	Size	Notes
Gleditsia triacanthos inermis 'Shademaster'	Shademaster Honeylocust	60 to 70mm cal.	
Gleditsia triacanthos inermis 'Skyline'	Skyline Honeylocust	60 to 70mm cal.	
Gleditsia triacanthos Var. inermis 'Ruby Lace'	Ruby Lace Honey Locust	60 to 70mm cal.	
Gleditsia triacanthos Var. inermis 'Suncole'	Suncole Honey Locust	60 to 70mm cal.	
Gymnocladus dioica	Kentucky Coffee Tree	60mm cal. Typical	
Juglans nigra	Black Walnut	60mm cal. Typical	
Liriodendron tulipifera	Tulip Tree	60mm cal. Typical	
Malus 'Royalty'	Royalty Crabapple	45 to 60mm cal	limit use
Ostrya virginiana	Ironwood/Hop Hornbeam	60mm cal. Typical	
Plantanus occidentalis	Sycamore	60mm cal. Typical	
Platanus acerfolia 'Bloodgood'	Bloodgood London Plane Tree	60mm cal. Typical	
Populus balsamifera	Balsam Poplar	45 to 60mm cal	
Populus nigra var Betulifolia 'Italica'	Lombardy Poplars	60mm cal. Typical	limit use
Populus grandidentata	Big-Toothed Aspen	60mm cal. Typical	
Populus tremuloides	Trembling Aspen	60mm cal. Typical	
Prunus serrulata 'Kwanzan'	Kwanzan Ornamental Cherry	45 to 60mm cal	
Pyrus calleryana 'Aristocrat'	Aristocrat Ornamental Pear	45 to 60mm cal	
Pyrus calleryana 'Chanticleer'	Chanticleer Pear	45 to 60mm cal	
Pyrus calleryana 'Glen's Form'	Glen's Form Ornamental Pear	45 to 60mm cal	
Pyrus calleryana 'Redspire'	Redspire Ornamental Pear	45 to 60mm cal	

Table C2 Continued: Deciduous Trees (60 mm cal WB typical)

Species Name	Common Name	Size	Notes
Pyrus colleryano Capitol	Capitol Ornamental Pear	45 to 60mm cal	
Quercus alba	White Oak	60 to 70mm cal.	
Quercus bicolor	Swamp White Oak	60 to 70mm cal.	
Quercus macrocarpa	Bur Oak	60 to 70mm cal.	
Quercus robur	English Oak	60 to 70mm cal.	
Quercus robur 'Fastigiata'	Pyramidal English Oak	50 to 60mm cal.	
Quercus rubra	Red Oak	60 to 70mm cal.	
Salix alba 'Tristis'	Golden Weeping Willow	60mm cal. Typical	
Sorbus aucuparia	Mountain Ash	60mm cal. Typical	limit use- Fire blight
Syringa reticulota 'Ivory Silk'	Ivory Silk Tree Lilac	45 to 60mm cal	
Tilia americana	Basswood	60 to 80mm cal.	
Tilia americana 'Redmond'	Redmond Basswood	60mm cal. Typical	
Tilia cordata	Little Leaf Linden	60mm cal. Typical	
Tilia cordata 'Glenleven'	Glenleven Linden	60mm cal. Typical	
Tilia cordata 'Greenspire'	Greenspire Linden	60mm cal. Typical	
Ulmus americana cultivar 'Jefferson'	Jefferson Elm	60mm cal. Typical	
Ulmus 'pioneer'	Pioneer Elm	60mm cal. Typical	

Table C3: Shrubs (potted typical)

Species Name	Common Name	Size	Notes
Amelanchier arborea	Downy Serviceberry	3 gal pot to 200cm ht WB	
Amelanchier canadensis	Serviceberry	3 gal pot to 200cm ht WB	
Amelanchier laevis	Alleghany Serviceberry	3 gal pot to 200cm ht WB	
Amelanchier x alnifolia	Saskatoon Serviceberry	3 gal pot to 200cm ht WB	
Berberis thunbergii 'Rose Glow'	Rose Glow Barberry	50 cm	
Comus sericea	Red Osier Dogwood	100cm ht typical but ranges from live stakes up	
Cornus alba 'Elegantissima'	Silver Edge Dogwood	80 to 100 cm ht.	
Cornus alternifolia	Alternate-leaved Dogwood/Pagoda	60 to 100cm ht.	
Cornus racemosa	Gray Dogwood	live stakes to 100cm ht.	
Euonymus elatus Coloratus	Dwarf Winged Burning Bush	50cm ht	avoid over planting
Euonymus fortunei	Winter creeper	50cm spr.	
Euonymus fortunei 'Sarcoxie'	Sarcoxie Euonymus	60cm spr.	
Fothergila major Mount Airy'	Mount Airy: Fothergilla	50cm spr.	
Hamamelis virginiana	Witch Hazel	3 gal. to 100cm ht.	
Hamamelis x intermedia 'Arnold's Promise'	Arnold's Promise Witch Hazel	3 gal. to 100cm ht.	
Hydrangea macrophylla 'Bialmer'	Endless Summer Hydrangea	50cm	
Juniperus x media 'Old Gold'	Old Gold Juniper	40 to 60 cm spr.	
Juniperus chinensis "var. sargentii Viridis"	Green Sargent Juniper	40 to 60 cm spr.	
Juniperus sabina 'Tamariscifolia'	Tamarix Juniper	40 to 60 cm spr.	
Juniperus squamata 'Holger'	Holger Juniper	40 to 60 cm spr.	
Juniperus x media 'Old Gold'	Old Gold Juniper	40 to 60 cm spr.	
Lindera benzoin	Spicebush	50cm ht.	
Myrica gale	Sweet Gale	50cm ht.	

Table C3 Continued: Shrubs (potted typical)

Species Name	Common Name	Size	Notes
Physocarpus opulifolius	Common Ninebark	80cm ht.	
Physocarpus opulifolius "Dart's Gold"	Darts Gold Ninebark	80cm ht.	
Pinus mugo 'Pumilia	Dwarf Mugho Pine	60cm spr.	
Potentilla fruticosa	Shrub Cinquefoil	50 to 60cm ht.	
Potentilla fruticosa 'Red Ace'	Red Ace Potentilla	50 to 60cm ht.	
Rhus aromatica	Fragrant Sumac	1 gal to 60cm ht	
Rhus typhina	Staghorn Sumac	80 cm spr.	
Ribes americanum	Wild Black Currant	50cm ht.	
Ribes aureum	Golden Currant	3 gal.	
Rosa woodsii	Woods Rose	40cm ht.	
Rubus odoratus	Flowering Raspberry	2 gal	
Salix bebbiana	Bebbs Willow	live stakes to 80cm ht.	
Salix discolor	Pussy Willow	live stakes to 80cm ht.	
Sambucus canadensis	American Elder	50 to 80cm ht. (2-3 gal typical)	
Spiraea alba	Meadowsweet	2 gal	
Spiraea bumalda "Anthony Waterer"	Anthony Waterer Spirea	2 gal to 60 cm ht.	
Spiraea japonica 'Little Princess'	Little Princess Spirea	2 gal to 60 cm ht.	
Spiraea nipponica 'Snowmound'	Snowmound Spirea	2 gal to 60 cm ht.	
Spirea japonica 'Goldflame'	Spirea Goldflame	2 gal to 60 cm ht.	
Symphoricarpos albus	Snowberry	2 gal to 60 cm ht.	
Syringa reticulata	Common Lilac (3 gal. pot)	3 gal	
Taxus x media 'Citation'	Citation Yew	50cm ht	well drained areas only
Viburnum lentago	Nannyberry	60 to 80 cm ht.	

Table C4: Perennials (1 gal typical except in the case of naturalization and for larger impact use of 2 gal)			
Species Name	Common Name	Size	Notes
Acorus gramineus 'Oborozuki'	Sweet Flag	4" pot to 1 gal	
Allium aflatunense	Flowering Onion BULB	blub or potted depending on season	
Asclepias incarnata	Swamp Milkweed	4" pot to 1 gal	
Aster cordifolius	Heart-Leaved Aster	4" pot to 1 gal	
Aster Novae-angliae	New England Aster	4" pot to 1 gal	
Bouteloua gracilis	Mosquito Grass	4" pot to 1 gal	
Calamagrostis acutiflora	Feather Reed Grass	1 gal typical	
Calamagrostis acutiflora 'Karl Foerster'	Karl Foerster Feather Reed Grass	1 gal typical	
Calamagrostis brachytricha	Korean Feather Reed Grass	1 gal typical	
Calamagrostis canadensis	Canada Bluejoint Grass	1 gal typical	
Calamagrostis x acutiflora 'Overdam'	Variegated Reed Grass	1 gal typical	
Calamagrostis x acutifolia 'Karl Foerster'	Feather Reed Grass	1 gal typical	
Calamagrostis x acutifolia 'Stricto'	Feather Reed Grass	1 gal typical	
Campanula carpatica	Carpathian bellflower	4" pot to 1 gal	
Carex greyi	Morning Star Sedge	4" pot to 1 gal	
Carex muskingumensis	Palm Sedge Grass	4" pot to 1 gal	
Carex pensylvanica	Pennsylvania Sedge	4" pot to 1 gal	
Carex stricta	Tussock Sedge	4" pot to 1 gal	
Carex vulpinoidea	Fox Sedge	4" pot to 1 gal	
Deschampsia cespitosa	Tufted Hair Grass	1 gal typical	
Echinacea or Rudbeckia	Little Angel Coneflower	1 gal typical	
Eupatorium	Spotted Joe Pye Weed	4" pot to 1 gal	
Eupatorium maculatum	Joe Pye Weed	4" pot to 1 gal	
Festuca cinerea "Elijah Blue"	Elijah Blue fescue	1 gal typical	
Festuca glauca 'Boulder Blue'	Boulder Blue Fescue	1 gal typical	
Geranium maculatum	Wood Geranium	4" pot to 1 gal	
Glyceria striata / Fowl Manna Grass	Fowl Manna Grass	4" pot to 1 gal	

Table C4 Continued: Perennials

(1 gal typical except in the case of naturalization and for larger impact use of 2 gal)

Species Name	Common Name	Size	Notes
Helictotrichon "Sapphire"	Sapphire Blue Oat Grass	1 gal typical	
Hemerocallis	Daylily	1 gal typical	
Hemerocallis 'Magnificent Rainbow'	Magnificent Rainbow Daylily	1 gal typical	
Hemerocallis 'Stella D'Oro'	Stella D'oro Daylily	1 gal typical	
Hemerocallis 'fulva'	Tawny Daylily	1 gal typical	
Hosta 'Hadspen Blue'	Hadspen Blue Hosta	1 gal typical	
Hosta 'Sum and Substance'	Sum and Substance Hosta	1 gal typical	
Hypericum ascyron	Great St.John's Wort	1 gal typical	
Imperata cylindrical 'Red Baron'	Japanese Blood Grass	1 gal typical	use with caution
Iris versicolor	Blue Flag Iris	4" pot to 1 gal	
Lavandula angustifolia 'Munstead strain'	Munstead Lavender	1 gal typical	use with caution
Liatris spicata	Dense Blazing Star	1 gal typical	
Lilium michiganense	Michigan Lily	4" pot	
Lobelia siphilitica	Blue Cardinal Flower	1 gal typical	
Matteucia struthiopteris	Ostrich Fern	1 gal typical	
Miscanthus sinensis 'pupurascens'	Flame Grass	1 gal typical	
Miscanthus sinensis 'Gracillimus'	Maiden grass	1 gal typical	
Monarda fistulosa	Wild Bee Balm	1 gal typical	use with caution- powdery mildew
Onoclea sensibilis	Sensitive Fern	1 gal typical	
Panicum virgatum	Switch Grass	1 gal typical	
Panicum virgatum 'Cloud Nine'	Cloud Nine Switch Grass	1 gal typical	
Panicum virgatum var	Red Switch Grass	1 gal typical	
Pennisetum alopecuroides	Fountain Grass	1 gal typical	
Perovskia atriplicifolia	Russian Sage	1 gal typical	
Festuca glauca 'Boulder Blue'	Boulder Blue Fescue	1 gal typical	

Table C4 Continued: Perennials (1 gal typical except in the case of naturalization and for larger impact use of 2 gal)			
Species Name	Common Name	Size	Notes
Perovskia atriplicifolia 'Little Spire'	Little Spire Russian Sage	1 gal typical	
Ratibida pinnata	Grey-headed Coneflower	1 gal typical	
Rudbeckia fulgida 'Goldsturm'	Goldstrum Black Eyed Susan Coneflower	1 gal typical	
Rudbeckia hirta	Black Eyed Susan	1 gal typical	
Sagittaria latifolia	Common Arrowhead	plug or 4" pot	
Salvia verticillata 'Purple Rain'	Purple Rain Salvia	1 gal typical	
Schizachyrium (or Andropogon) scoparium	Little Bluestem	1 gal typical	
Scirpus validus	Soft-stemmed Bullrush	plug or 4" pot	
Sedum kamitschaticum	Russian Stonecrop	4" pot to 1 gal	
Sedum x 'Autumn Joy'	Autumn Joy Sedum	1 gal typical	
Solidago rigida	Stiff Goldenrod	plug or 4" pot	
Sparganium emersum	Green Bur-reed	plug or 4" pot	
Typha latifolia	Cattail	plug or 4" pot	
Verbena hastata	Blue Vervain	4" pot	
Vinca minor	Periwinkle	4" pot	
Viola sororia	Common Blue Violet	4" pot	

Appendix D: VMC Planting Palette

The VMC Planting Palette plant species lists reflect nativity and salt and drought tolerance. However, pollution and water inundation tolerance also must be considered, especially when selecting plant species for landscape-based stormwater management.

Additionally, it is important that species are selected according to the specific conditions of the site, including consideration of hours of sunlight, soils, wind, amount of space, and exposure to traffic pollution.

Table D1: Coniferous Trees (Suitable for use within the VMC Boundary Forest)

Species Name	Common Name	Native	Notes
<i>Abies balsamea</i>	Balsam Fir	yes	Salt intolerant - use in inner areas of Buffer Forest and Parks only
<i>Chamaecyparis nootkatensis</i>	Nootka Cypress	yes	Native to Canada
<i>Juniperus virginiana</i>	Eastern Red Cedar	yes	
<i>Larix laricina</i>	Larch	yes	Salt intolerant - use in inner areas of Buffer Forest and Parks only
<i>Picea abies</i>	Norway Spruce	no	
<i>Picea glauca</i>	White Spruce	yes	Salt intolerant - use in inner areas of Buffer Forest and Parks only
<i>Picea omorika</i>	Serbian Spruce	no	
<i>Picea pungens</i>	Colorado Spruce	no	
<i>Pinus banksiana</i>	Jack Pine	yes	Salt intolerant - use in inner areas of Buffer Forest and Parks only
<i>Pinus nigra</i>	Austrian Pine	no	limit use due to Diplodia
<i>Pinus parviflora</i>	Japanese White Pine	no	
<i>Pinus ponderosa</i>	Ponderosa Pine	no	
<i>Pinus resinosa</i>	Red Pine	yes	Salt intolerant - use in inner areas of Buffer Forest and Parks only
<i>Pinus strobus</i>	White Pine	yes	Salt intolerant - use in inner areas of Buffer Forest and Parks only
<i>Pinus thunbergii</i>	Japanese Black Pine	no	
<i>Platyclus orientalis</i>	Oriental arborvitae	no	
<i>Taxodium distichum</i>	Bald Cypress	no	
<i>Thuja occidentalis</i>	White Cedar	yes	Salt intolerant - use in inner areas of Buffer Forest and Parks only
<i>Tsuga canadensis</i>	Hemlock	yes	Use in protected areas only

Table D2: Large Deciduous Trees (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
<i>Carya cordiformis</i>	Bitternut Hickory	yes	
<i>Catalpa speciosa</i>	Northern Catalpa	no	
<i>Corylus colurna</i>	Turkish Hazel	no	
<i>Eucommia ulmoide</i>	Hardy Rubber Tree	no	
<i>Ginkgo biloba</i>	Maidenhair Tree	no	
<i>Gleditsia triacanthos</i>	Honey Locust	no	
<i>Gymnocladus dioicus</i>	Kentucky Coffeetree	yes	
<i>Juglans cinerea</i>	Butternut	yes	
<i>Juglans nigra</i>	Black Walnut	yes	
<i>Platanus occidentalis</i>	Sycamore	yes	
<i>Platanus x acerfolia</i>	London Plane Tree	no	
<i>Prunus serotina</i>	Black Cherry	yes	
<i>Quercus acutissima</i>	Sawtooth Oak	no	
<i>Quercus alba</i>	White Oak	yes	
<i>Quercus bicolor</i>	Swamp White Oak	yes	
<i>Quercus macrocarpa</i>	Bur Oak	yes	
<i>Quercus robur</i>	English Oak	no	
<i>Quercus rubra</i>	Red Oak	yes	<i>Quercus rubra</i> (Northern Red Oak) may also be used
<i>Salix amygdaloides</i>	Peachleaf Willow	yes	
<i>Tilia cordata</i>	Little Leaf Linden	yes	
<i>Zelkova serrata</i>	Japanese Zelkova	no	

Table D3: Small Deciduous Trees

Species Name	Common Name	Native	Notes
<i>Alnus glutinosa</i>	Black Alder	no	Salt and drought tolerant
<i>Amelanchier canadensis</i>	Serviceberry	yes	Salt and drought tolerant
<i>Amelanchier laevis</i>	Downy Serviceberry	yes	Salt and drought tolerant
<i>Amelanchier x grandiflora</i>	Apple Serviceberry	no	Salt and drought tolerant
<i>Betula nigra</i>	River Birch	yes	Salt and drought tolerant
<i>Celtis occidentalis</i>	Hackberry	yes	Salt and drought tolerant
<i>Cercis canadensis</i>	Redbud	yes	Salt and drought tolerant
<i>Cercidiphyllum japonicum</i>	Katsuratree	no	Salt and drought tolerant
<i>Cornus kousa</i>	Kousa Dogwood	no	Salt and drought tolerant
<i>Cornus mas</i>	Cornelian Dogwood	no	Salt and drought tolerant
<i>Koelreuteria paniculata</i>	Goldenraintree	no	Salt and drought tolerant
<i>Magnolia x loebneri</i> 'Merril'	Merrill Magnolia	no	Salt and drought tolerant
<i>Malus</i>	Crabapple	no	Salt and drought tolerant
<i>Phellodendron amurense</i>	Amur Corktree	no	Salt and drought tolerant
<i>Populus deltoides</i>	Cottonwood	yes	Pioneer species, use for Edge Forest
<i>Populus grandidentata</i>	Largetooth Aspen	yes	Pioneer species, use for Edge Forest
<i>Populus tremuloides</i>	Trembling Aspen	yes	Pioneer species, use for Edge Forest
<i>Prunus</i>	Cherry, Plum	no	Salt and drought tolerant
<i>Prunus cerasifera</i>	Purple Leaf Plum	no	Salt and drought tolerant
<i>Prunus serrulata</i>	Japanese Cherry	no	Salt and drought tolerant
<i>Pyrus calleryana</i>	Callery Pear	no	Salt and drought tolerant
<i>Robinia pseudoacacia</i>	Black Locust	yes	Pioneer species, use for Edge Forest
<i>Sassafras albidum</i>	Sassafras	yes	Salt and drought tolerant
<i>Sorbus acuparia</i>	European Mountain Ash	no	Invasive, salt and drought tolerant
<i>Sorbus x thuringiaca</i>	Oakleaf Mountain Ash	no	Salt and drought tolerant
<i>Styphnolobium japonicum</i>	Japanese Pagoda Tree	no	Salt and drought tolerant
<i>Syringa reticulata</i>	Japanese Tree Lilac	no	Invasive, salt and drought tolerant

Table D4: Shrubs for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
<i>Amelanchier laevis</i>	Allegheny Serviceberry	yes	
<i>A. sanguinea</i>	Dwarf Juneberry	yes	
<i>A. spicata</i>	Shadbush Serviceberry	yes	
<i>A. x alnifolia</i>	Saskatoon Serviceberry	yes	
<i>Aronia melanocarpa</i>	Black Chokeberry	yes	
<i>Buxus</i>	Boxwood	no	
<i>Cephalanthus occidentalis</i>	Buttonbush	yes	
<i>Cornus foemina</i>	Gray Dogwood	yes	
<i>Cotoneaster</i>	Cotoneaster	no	
<i>Forsythia intermedia</i>	Forsythia	no	
<i>Hypericum kalmianum</i>	Shrubby St. Johns-Wort	yes	
<i>Juniperus communis</i>	Common Juniper	yes	
<i>Juniperus horizontalis</i>	Creeping Juniper	yes	
<i>Lindera benzoin</i>	Spicebush	yes	
<i>Mahonia aquifolium</i>	Oregon Grape	no	
<i>Myrica pensylvanica</i>	Bayberry	yes	
<i>Physocarpus opulifolius</i>	Eastern Ninebark	yes	
<i>Pinus mugo</i>	Mugo Pine	no	
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	yes	
<i>Prunus x cistena</i>	Purple-Leaf Sandcherry	no	
<i>Prunus pennsylvanica</i>	Pin Cherry	yes	
<i>Prunus pumila</i>	Sand Cherry	yes	
<i>Prunus virginiana</i>	Chokecherry	yes	
<i>Rhus aromatica</i>	Fragrant Sumac	yes	
<i>Rhus glabra</i>	Smooth Sumac	yes	
<i>Rhus typhina</i>	Staghorn Sumac	yes	
<i>Ribes alpinum</i>	Alpine Currant	no	
<i>Rosa rugosa</i>	Japanese Rose	no	Invasive, do not use within 100m of a natural area or Blue Street
<i>Rubus idaeus</i>	Red Raspberry	yes	
<i>Rubus odoratus</i>	Purple Flowering Raspberry	yes	

Table D4 Continued: Shrubs for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
Salix discolor	Pussy Willow	yes	
Salix exigua	Sandbar Willow	yes	
Sambucus canadensis	Elderberry	yes	
Sambucus racemosa	Red Elderberry	yes	
Shepherdia canadensis	Buffaloberry	yes	
Spiraea japonica	Japanese Spiraea	no	
Symphoricarpos alba	Western Snowberry	no	Invasive, do not use within 100m of a natural area or Blue Street
Viburnum dentatum	Arrowwood	yes	
Viburnum rafinesquianum	Downy Arrowwood	yes	

Table D5: Groundcovers for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
Ajuga	Bugleweed	no	Invasive, do not use within 100m of a natural area or Blue Street
Antennaria spp.	Pussytoes	yes	
Arctostaphylos uva-ursi	Bearberry	yes	
Cerastium arvense ssp. strictum	Field Chickweed	yes	
Cerastium tomentosum	Snow-in-Summer	yes	
Fragaria virginiana ssp. virginiana	Common Strawberry	yes	
Thymus serpyllum	Mother-of-Thyme	no	Invasive, do not use within 100m of a natural area or Blue Street
Waldsteinia fragarioides	Barren Strawberry	yes	

Table D6: Perennials for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
<i>Achillea millefolium</i>	Common Yarrow	yes	
Agastache 'Black Adder'	Black Adder Hyssop	no	
<i>Agastache rupestris</i>	Orange Flare Hyssop	no	
<i>Alchemilla mollis</i>	Lady's Mantle	no	
<i>Aquilegia canadensis</i>	Wild Columbine	yes	
<i>Armeria maritima</i>	Sea Thrift	no	
<i>Artemisia schmidtiana</i>	Artemesia	no	
<i>Asclepias incarnata</i>	Swamp Milkweed	yes	
<i>Asclepias tuberosa</i>	Butterfly Milkweed	yes	
<i>Baptisia alba</i>	White Wild Indigo	no	
<i>Baptisia australis</i>	False Indigo	no	
<i>Bergenia</i>	Bergenia	no	
<i>Boltonia asteroides</i>	Boltonia, False Aster	no	
<i>Brunerra macrophylla</i>	Siberian Bugloss	no	
<i>Coreopsis lanceolata</i>	Lance-leaved Coreopsis	yes	
<i>Coreopsis rosea</i>	Pink-flowered Tickseed	no	
<i>Echinacea purpurea</i>	Eastern Purple Coneflower	no	
<i>Epilobium coloratum</i>	Purple-leaf Willow-herb	yes	
<i>Epimedium</i>	Barrenwort	no	
<i>Erigeron pulchellus</i>	Robin's Plantain Fleabane	yes	
<i>Eupatorium maculatum</i>	Joe Pye Weed	yes	
<i>Euthamia graminifolia</i>	Flat-top Goldentop	yes	
<i>Gaillardia aristata</i>	Great Blanket-flower	no	
Geranium 'Rozanne'	Rozeanne Geranium	no	
<i>Geum triflorum</i>	Prairie Smoke	yes	
<i>Helianthus divaricatus</i>	Woodland Sunflower	yes	
<i>Helianthus strumosus</i>	Pale-leaf Sunflower	yes	
<i>Helianthus tuberosus</i>	Jerusalem Artichoke	yes	
Heuchera 'Marmalade'	Coralbells	no	
<i>Iberis sempervirens</i>	Candytuft	no	
<i>Lavandula angustifolia</i>	Lavender	no	

Table D6 Continued: Perennials for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
<i>Lespedeza capitata</i>	Round-head Bush-clover	yes	
<i>Leucanthemum</i>	Shasta Daisy	no	
<i>Lysimachia ciliata</i>	Fringed Loosestrife	yes	
<i>Monarda fistulosa</i>	Wild Bergamot, Bee-balm	yes	
<i>Nepeta racemosa</i>	Catmint	no	
<i>Opuntia fragilis</i>	Spreading Prickly-Pear	yes	
<i>Packera paupercula</i>	Balsam Ragwort	yes	
<i>Penstemon digitalis</i>	Foxglove, Beardtongue	yes	
<i>Potentilla anserina</i>	Silverweed	yes	
<i>Rudbeckia hirta</i>	Black-Eyed Susan	yes	
<i>Rudbeckia laciniata</i>	Green-Headed or Cut-leaf Coneflower	yes	
<i>Sedum spectabile</i>	Sedum	no	
<i>Sisyrinchium montanum</i>	Strict Blue-eyed-grass	yes	
<i>Solidago altissima</i>	Tall Goldenrod	yes	
<i>Solidago canadensis</i>	Canada Goldenrod	yes	
<i>Solidago flexicaulis</i>	Zig-zag Goldenrod	yes	
<i>Solidago nemoralis</i>	Grey Goldenrod	yes	
<i>Stachys byzantina</i>	Lambs' Ears	no	
<i>Symphyotrichum cordifolium</i>	Heart-leaved Aster	yes	
<i>S. ericoides</i>	White Heath Aster	yes	
<i>S. lanceolatum</i>	Panicled Aster	yes	
<i>S. novae-angliae</i>	New England Aster	yes	
<i>S. oolentangiense</i>	Sky-blue Aster	yes	
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	yes	
<i>Trichostema brachiatum</i>	False Pennyroyal	yes	
<i>Verbena stricta</i>	Hoary Vervain	yes	
<i>Verbena urticifolia</i>	White Vervain	yes	
<i>Veronicastrum virginicum</i>	Culver's-root	yes	
<i>Yucca filamentosa</i>	Narrow-Leaved Yucca	no	
<i>Zizia aurea</i>	Common Alexanders	yes	

Table D7: Grasses and Sedges for Roadside Planting (Salt and Drought Tolerant)

Species Name	Common Name	Native	Notes
Andropogon gerardii	Big Bluestem	yes	
Bromus latiglumis	Broad-glumed Brome	yes	
Calamagrostis acutiflora 'Karl Foerster'	Karl Foerster Feather Reed Grass	no	
Carex atherodes	Awned Sedge	yes	
Carex brevior	Brevior Sedge	yes	
Carex pennsylvanica	Pennsylvania Sedge	yes	
Chasmanthium latifolium	Northern Sea Oats	yes	
Danthonia spicata	Poverty Oatgrass	yes	
Deschampsia caespitosa	Tufted Hair Grass	yes	
Elymus canadensis	Canada Wild-rye	yes	
Elymus riparius	River Wild-rye	yes	
Elymus virginicus	Virginia Wild-rye	yes	
Festuca cinerea "Elijah Blue"	Elijah Blue Fescue	no	
Festuca glauca 'Boulder Blue'	Boulder Blue Fescue	no	
Festuca ovina 'Elijah Blue'	Elijah Blue Fescue	no	
Helictotrichon sempervirens	Blue Oat Grass	no	
Juncus tenuis	Path Rush	yes	
Miscanthus sinensis 'Gracillimus'	Maiden grass	no	Invasive, do not use within 100m of a natural area or Blue Street
Miscanthus sinensis 'pupurascens'	Flame Grass	no	Invasive, do not use within 100m of a natural area or Blue Street
Miscanthus sinensis	Morning Light	no	
'Morning Light'	Maiden Grass	no	Invasive, do not use within 100m of a natural area or Blue Street
Muhlenbergia mexicana	Mexican Muhly	yes	
Schizachyrium scoparium	Little Bluestem	yes	
Scirpus cyperinus	Cottongrass Bulrush	yes	
Sorghastrum nutans	Yellow Indian-grass	yes	
Spartina pectinata	Prairie Cordgrass	yes	
Sporobolus neglectus	Small Dropseed	yes	

