



The Planning Partnership

# NORTH MARKHAM URBAN DESIGN GUIDELINES

Design Implementation Guidelines Version 1.1 | May 2018



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## ACKNOWLEDGEMENTS

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North Markham Area Landowners' Group

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Toronto and Region Conservation Authority (TRCA)

City of Markham Staff

### Credit:

Dr. Creatore has been part of the North Markham Area study since its inception and has provided valuable input to the communities design in regards to improved health outcomes related to built form choices and plan design.

<sup>1</sup> Obesity in Canada. A whole-of-society approach for a healthier Canada. Report of the standing committee on social affairs, science and technology. March, 2016.

<sup>2</sup> Frieden TR. A framework for public health action: The health impact pyramid. *Am J Public Health.* 2010;100(4):590–5.

<sup>3</sup> Cappuccio FP, Capewell S, Lincoln P, McPherson K. Policy options to reduce population salt intake. *BMJ.* 2011;343:d4995.

<sup>4</sup> Glazier RH, Creatore MI, Weyman JT, Fazli G, Matheson FI, Gozdyra P, Moineddin R, Kaufman-Shriqui V, Booth GL. Density, destinations or both? A comparison of measures of walkability in relation to transportation behaviours, obesity and diabetes in Toronto, Canada. *PLoS ONE* January 14, 2014 DOI: 10.1371/journal.pone.0085295

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## FOREWORD

With nearly two-thirds of the adult population and one-third of children (under 18 years of age) being considered obese or overweight, and with the direct and indirect costs associated with obesity estimated to be between \$4.6 billion and \$7.1 billion annually<sup>1</sup>, we are at a critical economic and political point in Canada. Approaches to improve diet or physical activity that rely on individual counselling aimed at changing individuals' behaviours have proven to be unsuccessful at the population level<sup>2,3</sup>. The built environment provides an excellent opportunity to promote healthy behaviours and well-being across the entire population by making the healthier choices the easier and more available choice – an approach also referred to as “low agency interventions” (i.e., not relying on individual agency).

Factors related to urban and regional planning, such as transportation systems, availability of fresh food retail, green space, air quality and neighbourhood diversity, directly impact our behaviours and in turn, our overall health. Urban planners have long known about the association of good urban planning and healthy livable communities, and many of these observations have been embedded in planning guidelines and best practices. It has taken a long time, however, for the health research community to generate sufficient evidence to support the causal link between built environment and health. For the past 25-30 years, while the most progressive planners and municipalities have been working out how to build communities that promote active transportation, preservation of green space and communal areas,

access to amenities and food retail, the health evidence has been growing in parallel, showing us that the built environment is associated with physical activity, obesity, diabetes, mental health, heart disease and muscular pain/discomfort, among other outcomes.

It is not surprising then that building healthy and thriving communities has become an important political priority. The 2016 federal government budget committed \$11.9 billion to public transit, green infrastructure and social infrastructure and has proposed an additional \$81 billion through to 2027–28 in public transit, green and social infrastructure, transportation infrastructure that supports trade, and supporting rural and northern communities. It is clear that there is political will behind building healthier and more resilient communities across the country.

This is an exciting time for those of us interested in building healthy communities. Not only do we have the evidence and political support to back up the importance of built environment for public health, but there is increased respect for how critical intersectoral partnerships are between urban planners, transportation engineers, environmental engineers and public health practitioners to ensure that healthy and sustainable design is implemented. These partnerships are necessary throughout the planning process to ensure that not only are the important environmental components present in a plan, but that the components are brought together in the right way to maximize benefit. For example, in the

walkability health literature, we have shown that it's not just about having well-designed street connectivity and sidewalks, it's also important to provide destinations (such as stores, restaurants, banks, transit stops, parks and other amenities) for people to access within a 5-10 minute walk<sup>4</sup>. Street connectivity alone does not result in the full benefits to levels of physical activity without the strategic placement of destinations.

The Conceptual Master Plan for Markham's North Markham Area is an exciting example of how progressive municipalities can use public health evidence and intersectoral partnerships. In addition, these Urban Design Guidelines are an important tool for both City officials and developers to use in making this a reality in Markham. By inviting me to participate in meetings and viewing plans from the very beginning, the City of Markham ensured a “public health lens” was present throughout the planning process. This kind of “big picture” thinking has made the City of Markham a leader in this area over the past 25 years and is visible in other local communities (see examples of Cornell and Angus Glen). I look forward to seeing how this community develops and grows over the next decade and how we can continue to learn from these partnerships about how to design and build healthy and resilient communities both in Canada and globally.

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# CONTENTS

## 01

### SECTION ONE

#### INTRODUCTION 1

1.1 Purpose	4
1.2 Implementation	6
1.2.1 Additional Urban Design Guidelines	7
1.2.2 Architectural Control Guidelines	7
1.3 Vision and Principles	8
1.4 Community Structure Plan	10
1.4.1 Key Components	11

## 02

### SECTION TWO

#### CHARACTER AREAS 13

2.1 Residential Neighbourhood Areas	14
2.2 Mixed Use Neighbourhood Corridors & Nodes	16
2.3 Mixed Use Regional Corridors	18
2.3.1 Retail Focus	18
2.4 Employment Areas	20

## 03

### SECTION THREE

#### PUBLIC REALM DESIGN 23

3.1 Streets & Blocks	25
3.2 Street Design	27
3.2.1 Streetscape Elements	28
3.3 Greenway System	33
3.4 Parks & Open Spaces	35
3.5 Stormwater Management	37
3.6 Landmarks & View Corridors	38
3.7 Cultural Heritage Resources	39
3.8 Public Art	40
3.9 Community Hubs	41

# 04

## SECTION FOUR

### PRIVATE REALM DESIGN 43

4.1	Building Placement and Orientation	45
4.2	Pedestrian and Bicycle Facilities	46
4.3	Building Setbacks	47
4.4	Building Height, Massing and Transition	48
4.5	Facade Design and Treatment	49
4.6	Parking	50
4.7	Vehicular Access	51
4.8	Servicing & Loading	52
4.9	Private Outdoor Amenity Space	53
4.10	Green Buildings & Sites	54
4.11	Built Form Typologies	56
4.11.1	Stacked Townhouses & Back-to-Back Townhouses	57
4.11.2	Apartment Buildings & Mixed-Use Buildings	60
4.11.3	Industrial and Office Buildings	62

# 05

## APPENDIX A

### COMPLETE STREETS A-1

A.1	Complete Streets	A-2
A.2	Street Composition	A-3
A.3	Street Types	A-6
A.4	Laneway Design	A-18
A.4.1	Open Space Notches	A-19
A.4.1	Notches	A-20
A.5	Intersection Design	

## APPENDIX B

### LID & GREEN INFRASTRUCTURE B-1

B.1	Low Impact Development & Green Infrastructure	B-2
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## APPENDIX C

### REFERENCES C-1

C.1	CDP: Sample Table of Contents	C-2
C.2	Build for Tomorrow: Sustainable Development Checklist for the North Markham Area	C-4





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# 1

## 1.0 INTRODUCTION

# 1.0

## INTRODUCTION

Markham has been at the forefront of planning, designing and building progressive and innovative new communities based on principles of sustainability and livability for over twenty years. The City moved away from the conventional suburban model, characterized by low-density, disconnected and car-dependent forms of development, when it adopted the *New Urbanist* approach for the now built-up communities of Angus Glen, Berczy, Boxgrove, Wismer, Greensborough and Cornell.

Today, Markham continues to be a leader in sustainable development, making further transitions from suburban to urban through such communities as Markham Centre, Cornell Centre and Langstaff. These communities are transit-supportive, walkable and contain a diverse mix of uses, including retail commercial, offices, community uses and a range of housing options.

The City of Markham 2014 Official Plan (OP) provides for an urban boundary expansion in north Markham called the “Future Urban Area”. The urban

expansion area is generally bounded by Major Mackenzie Drive to the south, the Hydro Corridor and Woodbine Avenue to the west, the northerly city limits and Elgin Mills Road to the north, and Warden Avenue and Robinson Creek to the east (Figure 1.0).

This Urban Design Guideline (UDG) applies to the “Future Urban Area” lands in north Markham as identified in Figure 1.0. For the purposes of this document, the “Future Urban Area” is referred to as the “North Markham Area”.



*It is the intent of this Plan that these new areas will be pedestrian, cycling and transit-friendly compact complete communities with an emphasis on sustainable building innovative techniques for stormwater and waste management and high standards of urban design. The opportunity to make these areas among the most sustainable and innovative neighbourhoods and employment areas in Markham requires careful planning beyond what may traditionally have been undertaken.*

*(City of Markham 2014 Official Plan Section 8.12)*



Building on the City's earlier successes, the North Markham Area will demonstrate a continued commitment to healthy, resilient and innovative community development based on principles such as:

- Protecting & Enhancing the Natural Environment
- Building Compact, Complete Communities
- Maintaining a Vibrant and Competitive Economy
- Providing Sustainable Travel Choices



Figure 1.0 North Markham Area

# 1.1

## PURPOSE

The Urban Design Guidelines (UDG) will inform the preparation of Community Design Plans (CDP) and Secondary Plans and provide guidance at the community design scale, including street and block pattern, streetscape design, location of community focal points, the natural heritage interface, parks and open space blocks, community hubs, as well as sustainable design. The UDG also provides design guidance for the private realm relating to building placement and orientation, pedestrian and cycle facilities, height, massing and transition, facade design and treatment, parking and access, and to private outdoor amenity space for various building typologies. Figure 1.1 illustrates the role of the UDG in the planning and development of North Markham Area.

The purpose of these guidelines is to:

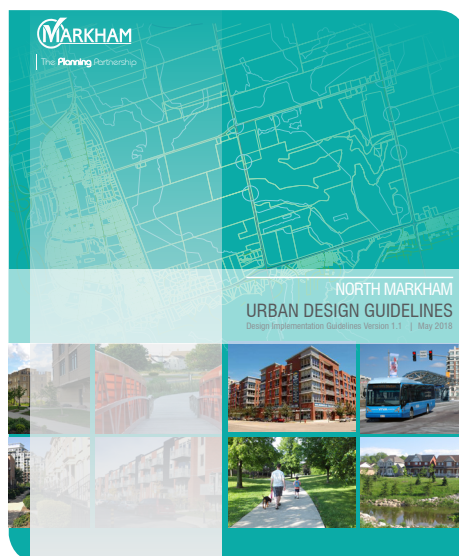
- Provide guidance for the development of high-quality design, healthy communities and neighbourhoods in the North Markham Area
- Ensure that the North Markham Area is designed and developed as a sustainable and innovative community
- Provide guidance to the development industry and City staff in the preparation and review of CDP and development plans and applications
- Provide guidance to City staff in the preparation and review of development applications for public buildings and facilities

### THE GUIDELINES REFLECT THE UPDATED POLICIES AND DIRECTIONS OF:

- The Planning Act
- The Provincial Policy Statement and Growth Plan for the Greater Golden Horseshoe
- The York Region Official Plan
- The York Region New Community Guidelines

### THE GUIDELINES HAVE BEEN PREPARED WITH REFERENCE TO:

- The City of Markham 2014 Official Plan
- The Design Implementation Guidelines (1998)
- Markham City Council-endorsed Guidelines and Manuals, including Markham's Trees for Tomorrow Streetscape Manual (2010) and Markham's Generic Architectural Design Guidelines (2001)
- Markham's current urban design best practices and standards
- New/emerging building typologies and market trends



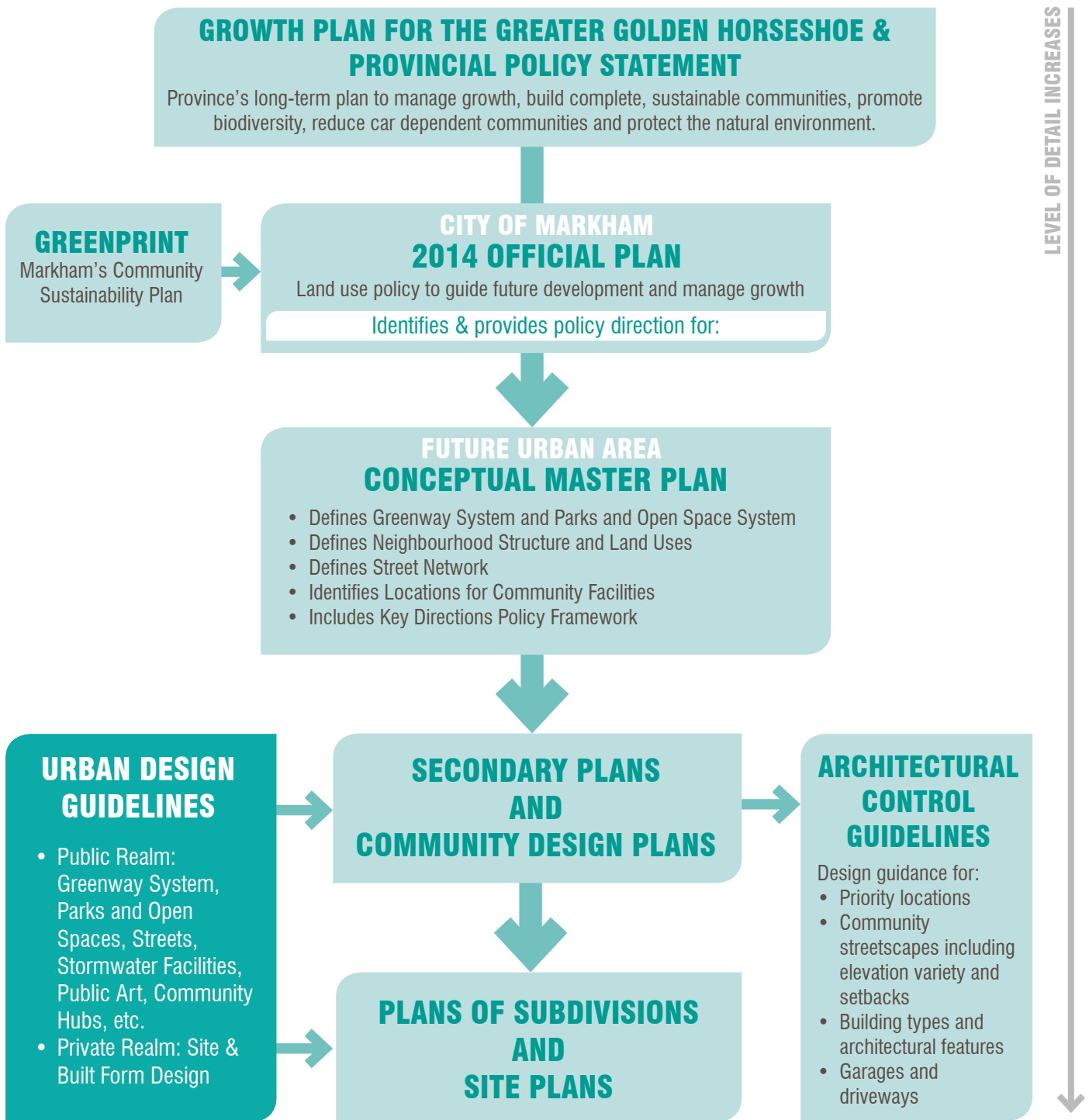


Figure 1.1 Role of the Urban Design Guidelines in the planning and development of the North Markham Area



# 1.2

## IMPLEMENTATION

The planning process in Markham has been structured to ensure that design considerations are integrated into the process at the appropriate stages of approval in accordance with the provisions of the Planning Act, including subdivision approval, architectural control, site plan approval and zoning bylaws. This integration is achieved through a sequence of steps that follow the requirement, preparation and approval of design guidelines from the Secondary Plan stage through to the implementation of architectural controls at building permit.

While the Secondary Plan provides the foundation for the development of the community’s basic structure, land use distribution and primary road network, the CDP further refines and reinforces the community’s structure. The CDP presents vision statements and guidelines for site development related to streetscape, urban design, parks and open space, and addresses more specific community design matters such as building typology and mix, lotting pattern, sustainability features, gateways, special community and landmark features.

Refer to Appendix C “**CDP: Sample Table of Contents**” in preparation of a CDP.



An integrated planning and design process is key to successful implementation of the design guidelines

The CDP provides a detailed response to the design policies expressed in the Secondary Plan, and provides further guidance in the preparation of the implementing draft plans of subdivision, zoning bylaw, and criteria for the more detailed review of site plan applications. Refer to the Future Urban Area Key Directions document for the CDP framework.

A number of plans will be required for review as part of the CDP. These include, but are not limited to:

- Streetscape Master Plan
- Streetscape Lighting Plan
- Public Art Plan

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## 1.2.1 ADDITIONAL URBAN DESIGN GUIDELINES

While the UDG provides design direction at the community design scale and general built form guidance, more specific design guidelines are needed to help inform the design of specific building types and forms related to site planning matters.

The City has initiated and completed a number of design guidelines, including but not limited to: Built Form, Height and Massing Study (2010) for intensification areas, Drive-Through Facilities Design Guidelines (2010), Generic Architectural Design Guidelines (2011) for grade-related residential development, Bird Friendly Guidelines (2014), and Accessibility Design Guidelines (2011).

The City may update/develop additional comprehensive urban design guidelines for various building types envisioned in the North Markham Area. These could include design guidelines for new emergent mid-rise forms, such as stacked or back-to-back townhouses, institutional buildings including schools and places of worship, as well as development within heritage sites.

## 1.2.2 ARCHITECTURAL CONTROL GUIDELINES

Integral to the successful achievement of the UDG outlined in this document is a commitment from both developers and builders to achieve excellence in design for new residential areas of the city. To achieve this goal, the City will continue to require as a condition of draft plan approval that the developer agree to prepare Architectural Control Guidelines for all residential subdivisions, including all new ground-related low- and medium-density residential developments, to promote best practices in built form/architectural design.

As this process will be a privately administered design review process, developers will have their control architects prepare their own Architectural Control Guidelines to be based on the City's Generic Architectural Control Guidelines (2001), which provides design guidance on such matters as:

- Site planning principles for priority locations in the community
- Community streetscapes, including building types, variety and setbacks;
- Design guidelines for various building types and architectural features
- Design guidelines for garages and driveways
- Outline of the approvals process

The Architectural Control Guidelines will be reviewed and approved by the City, and will be used by the developers' control architects to ensure that the design goals and objectives of the CDP and an appropriate level of architectural design have been achieved. Building permit applications will only be accepted and processed when drawings are stamped and signed by the Design Control Architect to ensure that the dwellings have been designed in accordance with the approved Architectural Control Guideline. (In order to perform and administer Architectural Control Guidelines, the control architect must be pre-approved by the City of Markham)

# 1.3

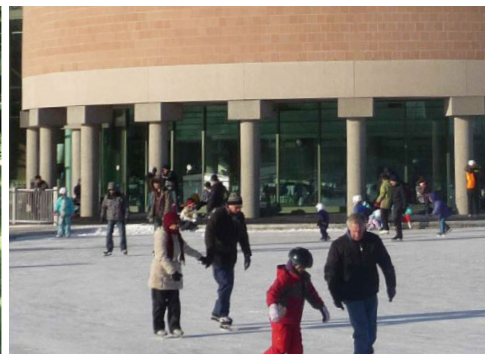
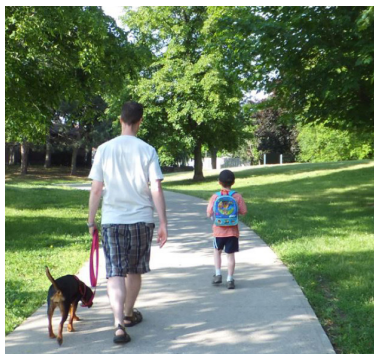
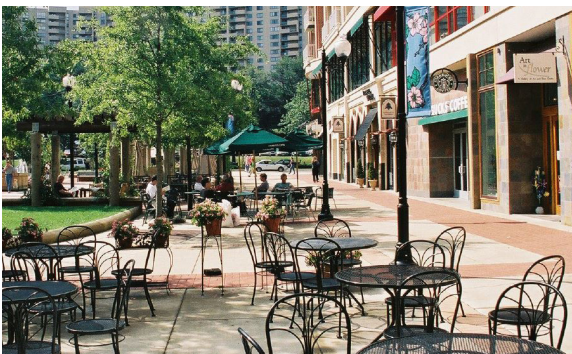
## VISION AND PRINCIPLES

The Conceptual Master Plan (CMP) is a non-statutory document that informs the development and approval of Secondary Plans for the North Markham Area. The intent of the CMP is to clarify the overall vision and establish a broad planning framework and structural elements to guide the form of the growth in the North Markham Area.

The Key Directions policy document, developed as part of the CMP, along with the Official Plan, help shape the vision for each Secondary Plan and CDP. The UDG supports the implementation of the vision and outlines the guiding principles in each neighbourhood to ensure innovation, resilience, adaptability and livability are at the forefront of all developments.

*New neighbourhood and employment lands in the north Markham Future Urban Area will be designed as healthy, compact and complete communities. These communities will reflect the City's leadership in sustainable development, with resilience and innovation being cornerstones of community design.*

*(Vision Statement, Conceptual Master Plan for the Future Urban Area Interim Report 2016)*





Each CDP should incorporate the following key principles of the CMP:

## *Create healthy, resilient and innovative communities*

- Strong community identity built on remarkable natural features, cultural heritage and distinctive walkable neighbourhoods
- High levels of accessibility to built and natural environment for all, regardless of age and physical ability
- Well-being and health of the residents by promoting active living, reducing air pollution, enhancing urban ecology, and by reducing urban heat island by design elements of sites and buildings
- Resilience and adaptability of the built environment and infrastructure with respect to climate change and changing needs of the community over time



### *Protect & Enhance the Natural Environment*



- Protection, restoration and enhancement of the designated Greenway System
- Integrity of urban ecology by creating respectful and mutually beneficial interface between built and natural environment
- Integration of natural heritage system/open space network that respects ecological sensitivities and supports healthy and active communities
- Integration of green infrastructure as an essential component of stormwater management



### *Build Compact, Complete Communities*



- A mix and range of housing, employment uses and community amenities located close to where people live to meet the needs of a diverse population and to address changing needs
- Transit-supportive design
- Walkable neighbourhoods
- Access to a wide range of parks and community facilities for all
- Integration of cultural heritage in neighbourhood design
- A high-quality public realm and excellence in urban design



### *Maintain a Vibrant and Competitive Economy*



- Developments that support municipal and regional economies
- Job opportunities closer to residential neighbourhoods
- Range of employment opportunities



### *Provide Sustainable Travel Choices*



- Street networks and pedestrian connections that facilitate active transportation and accessibility
- Functional, safe and interconnected transportation networks that balance needs of pedestrians, cyclists and vehicles
- Increased travel options for walking, cycling and transit

# 1.4

## COMMUNITY STRUCTURE PLAN

The Community Structure Plan (Figure 1.2) developed as part of the CMP establishes the main structural elements for the North Markham Area and, along with the Key Directions policy document, provides the foundation for the following:

- The types and distribution of parks and open space systems in the community
- The relationship between the Greenway System, parks and open space system, and streets
- The size and distribution of school sites in the community
- The location of proposed character areas
- The collector road system and its relationship to land uses and potential transit and active transportations routes

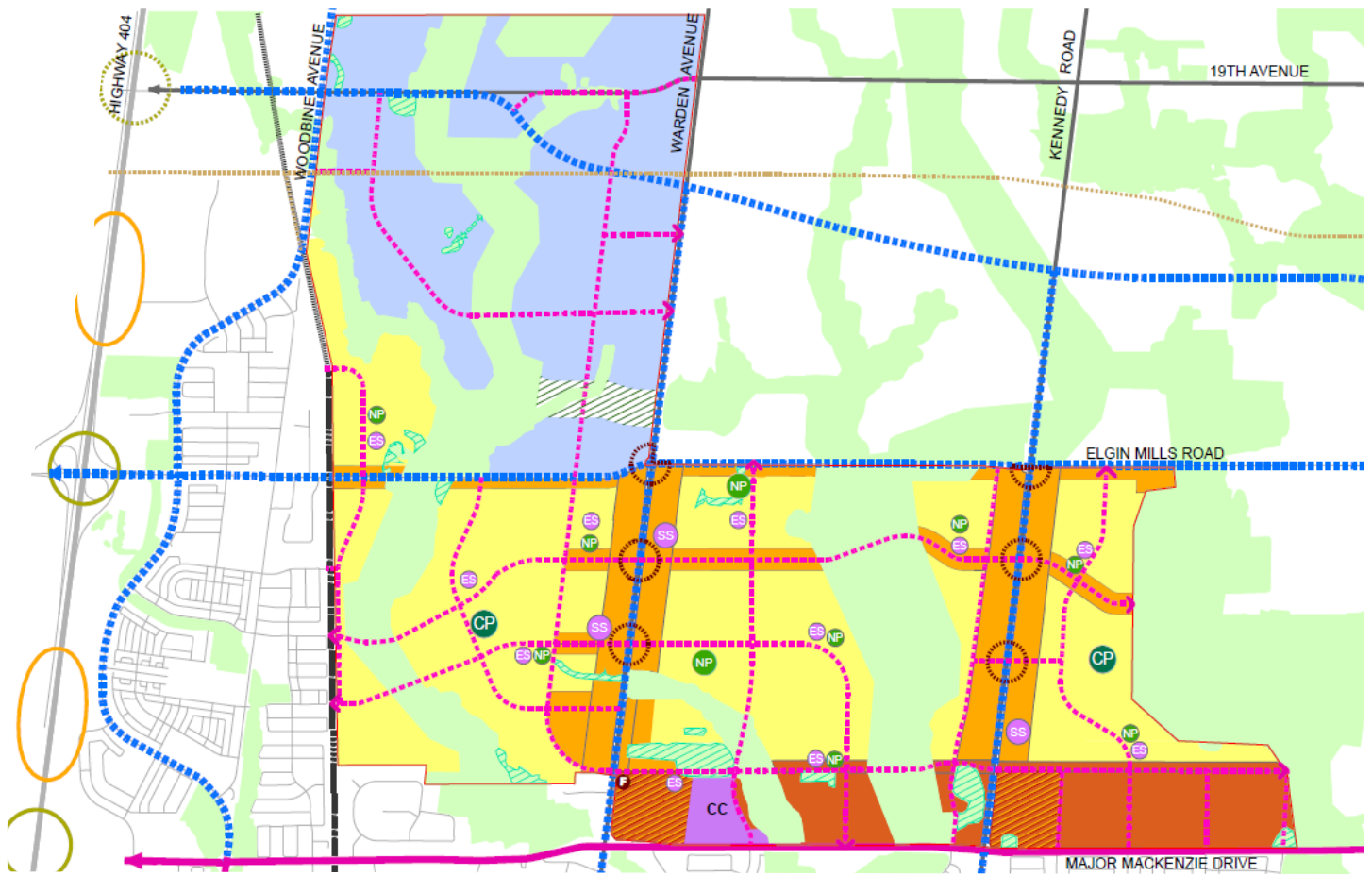


Figure 1.2 Council-approved Community Structure Plan

### Legend

Study Area	Community Centre	Existing Highway Interchange
Greenway System	Community Park	Proposed Highway Interchange
Proposed Ecological Corridor (Under Study)	Neighbourhood Park	Proposed Highway Mid-block Crossing
Greenway System Under Study	Neighbourhood Park (3 ha or greater based on parkland dedication requirements)	Functional Arterial Road System
Residential Neighbourhood Area	Elementary School	Highway
Mixed Use Neighbourhood Corridor	Secondary School	Proposed Regional Rapid Transit Corridor
Mixed Use Regional Corridor	Fire Station	Proposed Regional Transit Priority (Frequent Transit Network and/or HOV)
Mixed Use Regional Corridor - Retail Focus	Proposed Collector Road Network	Hydro Corridor
Employment Area		TransCanada Pipeline Easement
Neighbourhood Service Node		

## 1.4.1 KEY COMPONENTS

The following are key components of the CMP for the North Markham Area.



### GREENWAY SYSTEM

The “Greenway System” in the North Markham Area includes watercourses, valleylands, woodlands, wetlands, their vegetation protection zones, and the proposed Bruce Berczy Greenway Enhancement Ecological Corridor.

### PARKS AND OPEN SPACE SYSTEM

The Parks and Open Space System shows how the natural open spaces of the Greenway System can be linked with the actively programmed community and neighbourhood parks to provide a system that is accessible within and between neighbourhoods. Connectivity is provided to the parks, open spaces and key destinations, such as schools, community centres and retail nodes, through streets and a system of pedestrian and cycling trails to support the active transportation system and provide mobility options.

### TRANSPORTATION NETWORK

The network consists of arterial and collector roads, which provide the basis for the local road network, transit, pedestrian and cycling connections, including off-road active transportation systems and open space linkages. The network is closely related to adjacent land uses to ensure support and access of transit, pathways and trails.

### RESIDENTIAL NEIGHBOURHOOD AREAS

These areas will contain predominantly ground-oriented housing such as single-detached houses, semi-detached houses and townhouses. Each neighbourhood is distinct, characterized by definable edges with amenities and services within a comfortable walking distance of its boundary edge.

### MIXED USE NEIGHBOURHOOD CORRIDORS

These corridors form edges to the broader residential neighbourhood areas and are intended to contain higher-density built forms to support frequent transit along the corridors. The mixed use neighbourhood corridors will also contain retail and servicing at key nodal intersections abutting neighbourhoods.

### MIXED USE REGIONAL CORRIDOR RETAIL FOCUS AREA

This corridor will contain the highest densities to support adjacent rapid transit. A mix of residential and commercial uses will be located here to serve the wider community.

### EMPLOYMENT AREAS

Business Park, General and Service Employment are the intended land uses for these areas. These areas support transit and cycling.





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# 2

## 2.0 CHARACTER AREAS

# 2.0

## CHARACTER AREAS

As illustrated in the Community Structure Plan (see Figure 1.2), the North Markham Area is a community composed of distinct character areas. Each of these areas includes walkable neighbourhoods, a well-developed street network, integrated parks and open spaces, schools, retail and service areas.

The following sections describe the character of some of the key areas and corridors identified in the Community Structure Plan, including:

- Residential Neighbourhood Areas
- Mixed Use Neighbourhood Corridors and Nodes
- Mixed Use Regional Corridors and Retail Focus Areas
- Employment Areas

The demonstration plans represent the vision for the North Markham Area.

# 2.1

## RESIDENTIAL NEIGHBOURHOOD AREAS

Residential Neighbourhood Areas provide for most daily needs of residents within short walking distances. A variety of parks, community infrastructure and services form the focal points of neighbourhoods and are linked by a network of streets and mid-block pathway connections. Residents also have convenient access to public transit and options for active transportation.

Significant natural and cultural heritage features are retained, protected and enhanced. A range of lot sizes and building types with varying architectural treatments further contribute to the character of each area. Single-detached dwellings, semi-detached dwellings and townhouses are envisioned.



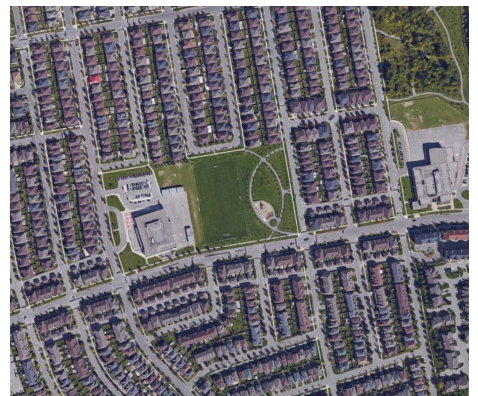
Neighbourhood character defined by a variety of built form and architectural features



Centrally located parks within neighbourhoods



Walkable retail services within neighbourhoods



School/Park campus as a focal point linked to the neighbourhoods by streets and pathways



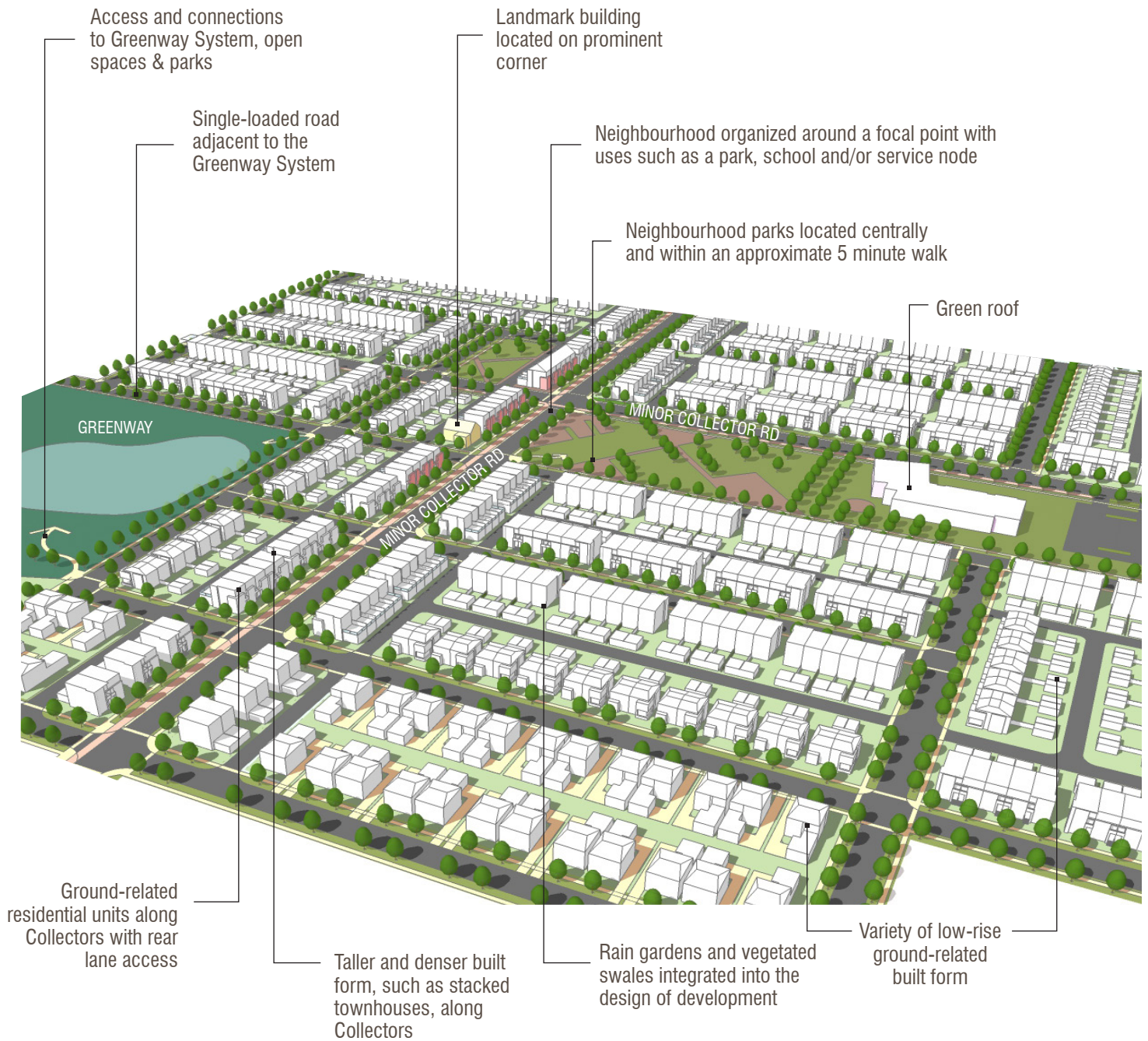


Figure 2.1 Demonstration plan highlighting key organizing elements and built form vision for Residential Neighbourhood Areas

# 2.2

## MIXED USE NEIGHBOURHOOD CORRIDORS & NODES

The Mixed Use Neighbourhood Corridors and Nodes function as “main streets” and “urban villages” and support adjacent residential neighbourhood areas. The nodes have higher-density, mixed-use, multi-function developments which allow a range of uses. These developments transition gradually to adjacent lower-density residential neighbourhood areas. A network of trails, pathways and streets links the Mixed Use Neighbourhood Corridors and Nodes to surrounding neighbourhoods, parks and open spaces, and the Greenway System.

An enhanced pedestrian realm supports the “main street” character along collector streets and provides active ground-related uses at nodes, which include retail, restaurant, office and personal services with dwelling units located above. Together, building design, facade treatment and setbacks assist to create high-quality public spaces.

The nodes include transit stops, cycle routes and on-street parking to provide multi-modal access to ground-level retail and service uses. Private parking areas are located away from views along “main streets”. Parking for apartments, townhouses and stacked townhouses along the Mixed Use Corridor is primarily located in underground garages or in the rear accessed by laneways.



Mid-block pathway connections linking residents to services and open spaces



Building setback and retail uses to activate public realm



Main street with ground-level retail uses with dwelling units above



Transit and on-street parking for multi-modal access to commercial uses



Main street with enhanced streetscape and on-street parking





Figure 2.2 Demonstration plan illustrating key organizing elements and built form vision for Mixed Use Neighbourhood Corridors and Nodes



# 2.3

## MIXED USE REGIONAL CORRIDORS

The highest density in the North Markham Area is found within the neighbourhoods located along the Mixed Use Regional Corridor. A mix of high-density residential, commercial and service uses support the rapid transit corridor anticipated along Major Mackenzie Drive.

Higher densities and ground-related retail uses are primarily located along the north-south collectors in mixed-use buildings, creating a pedestrian-friendly retail environment. Apartments frame Major Mackenzie Drive and provide a higher-density, transit-supportive built form, with adequate stepping to provide transition to the low-rise residential neighbourhoods to the south of Major Mackenzie Drive.

Mixed-use streets support active uses on the ground floor, create attractive urban spaces and provide connections to adjacent urban plazas and parkettes. Allees of trees are provided in planters along with enhanced street furnishings and pedestrian lighting. On-street parking is provided along mixed-use retail streets.

Townhouses and stacked townhouses provide transition to low-density residential neighbourhoods to the north, within the North Markham Area. Parking is primarily located in underground garages or in the rear and accessed by laneways.

Neighbourhood parks, parkettes, urban squares and privately owned public spaces (POPS) are linked by streets, located centrally to each neighbourhood and, where possible, animated by adjacent uses such as cafes and restaurants.



High quality urban square designed as focal point of mixed-use neighbourhood



Townhouses as transition to lower density neighbourhoods



Open space animated by adjacent cafes and restaurants



Enhanced streetscape along mixed-use streets

### 2.3.1 RETAIL FOCUS

Retail Focus areas, which are part of the Mixed Use Regional Corridor, are places for people to live, work and play. The design of the buildings accommodates retail and services that support adjacent North Markham Area neighbourhoods.

Buildings line key north-south public streets to create continuous pedestrian-friendly retail environments. These streets contribute to an enhanced public realm and include trees, furniture, lighting, public art, etc. Development blocks are sized to allow for intensification and to accommodate future underground parking garages. On-street parking is provided along the retail streets and limited surface parking areas are located behind buildings that front the retail streets.



Retail street with on-street parking and continuous liner buildings



Retail street with outdoor cafe seating



Figure 2.3 Demonstration plan illustrating key organizing elements and built form vision for Mixed Use Regional Corridor



# 2.4

## EMPLOYMENT AREAS

Employment areas provide for a range of employment uses and support high-quality urban design and landscaping. Primary building frontages address the street with prominent entrances, massing, articulation and enhanced architectural treatments. Buildings at intersections are taller to accentuate the street corners.

A network of streets, trails and pathways provides connections to public transit, open spaces and the Greenway System to encourage the use of modes other than cars. Street trees and buffer landscaping contribute to a comfortable pedestrian environment.

Parking is primarily located to the side or rear of buildings along the Collectors. Surface parking areas are designed to include green infrastructure that minimizes stormwater runoff and heat island effect. Loading and outdoor storage areas are located to the rear of sites and screened from street view using walls or landscaping.



Orientation of building and landscaping addressing street frontage



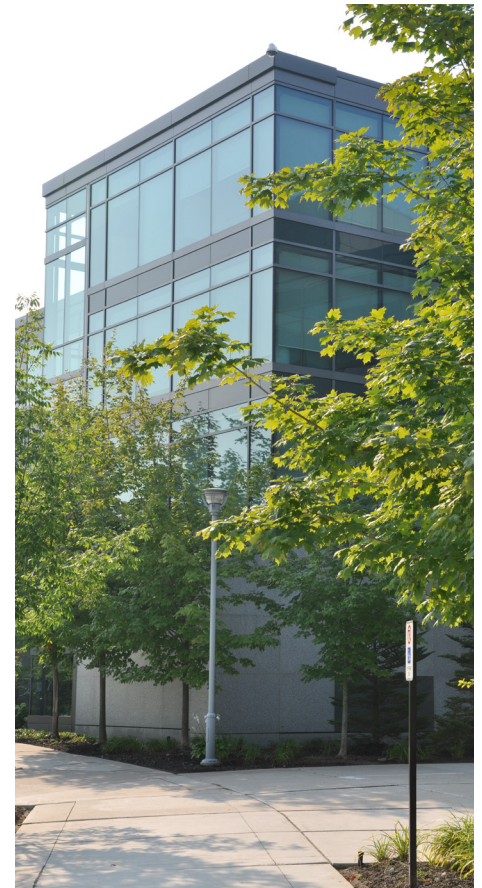
Landscape and pathways that provide relationship to street



Building entrance designed as a prominent feature addressing the street



Surface parking designed to mitigate stormwater runoff



Taller built form addressing street corner and pathway connections to the street



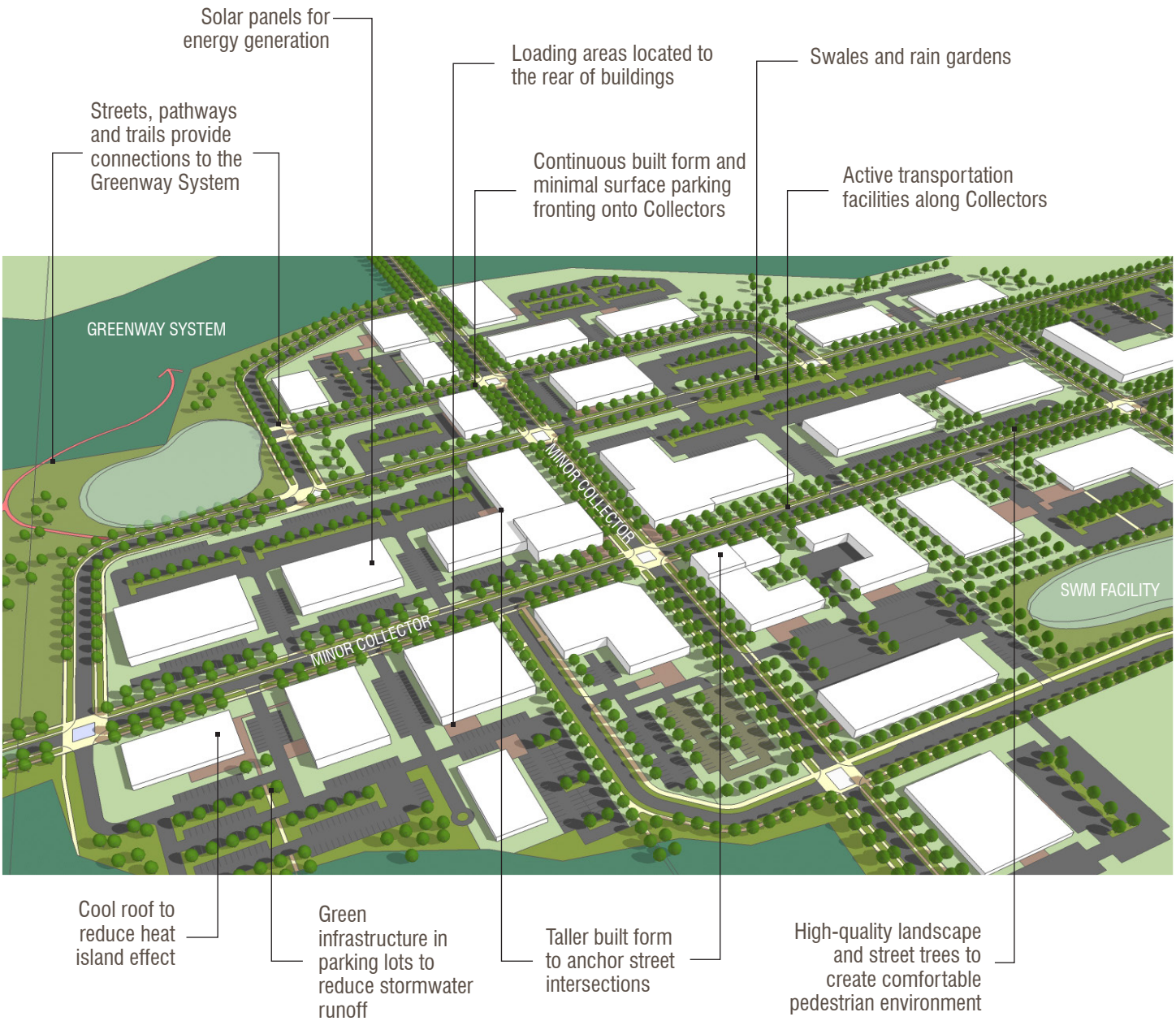


Figure 2.4 Demonstration plan illustrating key organizing elements and built form vision for Employment Area



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# 3

## 3.0 PUBLIC REALM DESIGN

# 3.0

## PUBLIC REALM DESIGN

A thoughtful and integrated approach that considers interactions, connectivity, and synergies of multiple and diverse elements of public realm is key to the creation of healthy and resilient communities. Well-designed public spaces are vibrant and have a strong sense of place. In the North Markham Area, the connecting and organizing elements of its extensive public realm include the Greenway System, Parks and Open Space System, and the trail and street networks. The design elements of these public spaces create community identity, meet recreation needs, support active travel choices, and contribute to the natural environment, urban biodiversity, and overall health and wellbeing of its residents.



Integration of the street network with the overall open space network facilitates healthy, active lifestyles for people of all ages and abilities



# 3.1

## STREETS & BLOCKS

1. Lands should be divided into a series of development blocks defined by a continuous grid of streets to support multiple connections to a wide range of destinations, such as community amenities, open spaces, institutions, transit and services. Improved connectivity encourages active transportation, creates opportunities for transit service and contributes to improved public health.
2. Streets and blocks should be designed to have a rectilinear or a modified rectilinear shape. Irregularly shaped blocks could be considered in response to topographic or unique open space conditions, or to achieve distinctive neighbourhood character, and to address landmarks or focal points within the community.
3. Block lengths should not exceed 200 m to support active mobility and transit use. Where block lengths exceed 200 m, provide a minimum 6 m wide publicly accessible mid-block pedestrian and cycle connection.
4. Block depths should be designed to maximize density and allow for appropriate built form typologies, accommodate adequate setbacks, outdoor amenity spaces, service and parking arrangements, and transitions in scale and use.
5. Where possible, streets and blocks should be designed to protect and enhance natural features not identified as part of the Greenway System, such as individually significant trees, hedgerows and small woodland, by integrating them into design of the development.
6. Design of streets and blocks should retain, protect and enhance significant cultural heritage resources. Streets and blocks should create landmarks through the careful placement of cultural heritage resources at intersections, adjacent to parks or at the terminus of significant views.
7. Blocks for public and institutional uses should be located in community nodes, at the termination of a view corridor or within a 5 minute walking distance of residential neighbourhoods.
8. Streets within development blocks should be designed as public right-of-ways (ROWs). Where private streets are unavoidable, they should connect to the overall street network.
9. Where appropriate and feasible, alignment of streets and blocks should run parallel to contours to minimize grade alterations and maximize views and vistas.



A block with variety of housing types and forms providing housing choices, access to open spaces, amenities, services and transit, and encouraging walking and cycling

- 10. Active transportation networks should align with transit routes to promote active lifestyle and use of transit.
- 11. Blocks within Mixed Use Retail Focus Areas should allow for future redevelopment and intensification by careful sizing of blocks.
- 12. Neighbourhood blocks should support a range of lot sizes, which will support a diversity of housing forms along individual streets.
- 13. Blocks for multi-family and mixed-use buildings should be located within walking distance to amenities, services and transit.
- 14. The street network should be designed to support a linked Open Space System.
- 15. Where feasible, single-loaded streets should be provided adjacent to the Greenway System and parks and open spaces. They may also be considered along the hydro corridor. For additional guidance, refer to Sections 3.3 and 3.4 of the document.

- 16. Laneways should be provided for service access and parking to serve mixed-use buildings fronting on Arterials and Major Collectors to support pedestrian access and active streetscape.
- 17. Where possible, on-street parking should be provided to serve mixed-use buildings fronting on Collectors.
- 18. Laneways should be considered for grade-related residential units to minimize the number of driveways along streets, eliminate street-facing garages and allow for the regular placement of street trees. See Appendix A for laneway design standards.
- 19. Reverse frontage lots should be avoided to achieve positive frontage, especially on Arterial and

Collector streets, by locating active uses, front doors and windows facing the public realm. Window streets may be considered to achieve active frontage.

- 20. Cul-de-sacs are discouraged. Where unavoidable, they should provide pedestrian and bicycle trail connections.
- 21. Streets and blocks should be aligned to maximize passive solar orientation of buildings and use of active and passive solar energy.
- 22. Snow storage locations, preferably integrated with mid-block open spaces, should be provided for lane-based ground-related residential units fronting Arterials and Major Collectors.

**Note:**

For additional reference on sustainable features, refer to **“Build for Tomorrow: Markham’s Sustainable Development Checklist”**



Blocks designed to maximize passive solar gain



Single-loaded street along park offering views and access



Pedestrian-friendly streets without driveways using rear access lanes



## 3.2 STREET DESIGN

A street is the primary component of the public realm and plays an important role in determining neighbourhood character. Streets will be designed as active public spaces that accommodate needs of all users. They will be designed using the “Complete Streets” approach, where pedestrians, cyclists, transit users and motor vehicles are integrated safely and efficiently. Neighbourhood safety is ensured by designing local roads to have lower vehicular speeds, minimizing potential conflicts between cars and people. The streets in the North Markham Area should also support and enhance their natural and built environment, creating “places” and a sense of identity within each community.

Street design in the North Markham Area takes into account the existing natural and cultural heritage, primarily defined by farms and the Greenway System. Streets form the foundation of a network that links parks, open spaces and the Greenway System and will be sustainable and welcoming corridors for walking and cycling. The design of streets also reflects the different North Markham Area character areas (described in Chapter 2) and creates distinct identity through streetscape elements. More guidance on this is provided in Section 3.2.1.

Design guidance in this document applies to public and private streets. Additional information on Complete Streets, including street composition, proposed street types in the North Markham Area and intersection design, is provided in Appendix A.



Streets designed as active public spaces that accommodate needs of all users



Enhanced natural environment along streets to create a sense of place

## 3.2.1 STREETScape ELEMENTS

Streetscape refers to all elements of the street within the public realm that contribute to a distinct character, including but not limited to street trees, landscaping, furniture, lighting and public art, and forms an important part of the Open Space System.

These elements are primarily located along the boulevard and preferably within the Edge or Furnishing Zones (see Figure 3.1). Some elements may be accommodated in the Frontage Zone, if required.

Where possible and appropriate, green infrastructure may be accommodated in the Furnishing Zone or below-grade.

Streetscape elements should create attractive, cohesive and safe streets that strengthen the desired character of distinct areas within the North Markham Area.

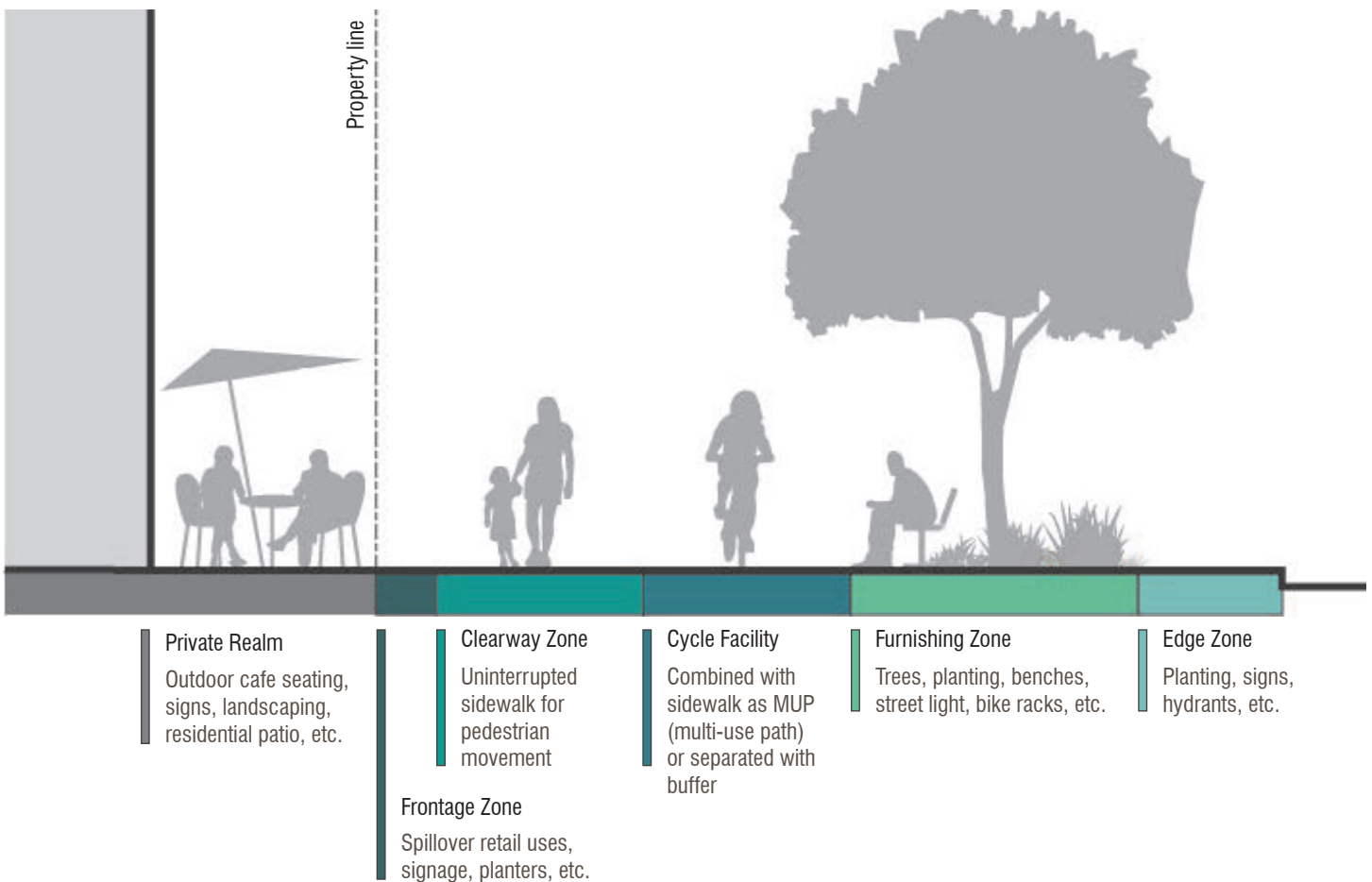


Figure 3.1 Location of some of the streetscape elements within boulevard zones



## SIDEWALK AND PAVING

1. Sidewalks must be direct, continuous and clutter-free along the pedestrian Clearway Zone.
2. The sidewalk Clearway Zone shall be minimum 1.50 m wide. Their width should also respond to the land use context.
3. Where more pedestrians are anticipated, such as along retail street, near community centres, school loading zones, and transit stops, the sidewalk should be expanded and augmented to create a larger hard surface area.
4. The sidewalk network should be designed to connect to adjoining recreational trail networks.
5. Tactile paving should be used to provide cues to the visually impaired when there are changes in slope, curb drops and transition to shared zones.

**Note:**  
For further design guidance, refer to the City's "Accessibility Design Guidelines"



Continuous and clutter-free sidewalk



Sidewalks connecting with adjoining recreational trails

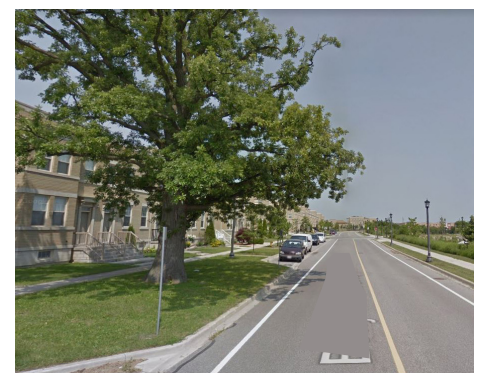
## STREET TREES AND PLANTING

1. Street trees should generally be located between the curb and sidewalk. When sufficient soil volume is not available within the ROW, trees may be planted between the sidewalk and private properties (see Appendix A).
2. Tree planting should be coordinated to enhance a key landmark or important view corridor.
3. Where appropriate and feasible, individually significant existing trees should be protected and incorporated into the streetscape design.
4. A minimum one street tree per lot shall be provided for low-rise development.
5. Enhanced landscaping should be considered for mixed-use areas.
6. A variety of native tree species should be planted to enhance biodiversity and avoid the creation of a streetscape monoculture.
7. Species selected should generally be of a shade tree variety, however, exceptions may be permitted for ornamental trees.
8. Species should be selected to support the character of distinct neighborhoods.

**Note:**  
For planting specifications, species selection, design details and compensation requirements, refer to the City's "Trees for Tomorrow: Streetscape Manual"



A variety of species to enhance biodiversity



Preservation of significant trees within the ROW

## STREET FURNITURE

1. Street furniture should be located in the Furnishing/Planting Zone, and may extend into the Edge Zone where appropriate. Street furniture should be coordinated along the street ROW and on private lands to ensure a consistent and unified streetscape appearance.
2. A streetscape palette selected for a particular street or neighbourhood should support and enhance the character of the corridor and/or the character area.
3. Street furniture, such as benches, trash cans, tree grates and guards, bicycle racks, and bollards, should be thoughtfully placed to minimize conflicts with pedestrian zones along streets and around buildings, vehicular traffic, parking, and loading areas.
4. Additional furniture may be required at transit stops, intersections, etc., to support active transportation and adjacent uses.



Unified furniture and planting palette animates the streetscape



Furniture located adjacent to and out of the way of the Clearway Zone



Coordinated street furniture that enhances neighbourhood character

## TRANSIT STOPS & SHELTERS

1. Street design should consider existing and future locations of transit stops and shelters.
2. Sidewalks and multi-use paths within the ROW should connect directly to the transit stop and provide clear, unobstructed access.
3. Shade trees should be planted near transit stops to provide relief from the sun.
4. Tall shrub plantings should be avoided near transit shelters to ensure pedestrian safety.
5. Other streetscape elements, such as lighting, signage, trash receptacles, and bicycle racks, should be placed near transit stops as required without obstructing pathway connections.



Pedestrian lighting, trash receptacles, bicycle parking, and seating near transit stop



Shade trees near transit shelters for pedestrian comfort



Transit stop in a residential neighborhood with benches and signage



## SIGNAGE AND WAYFINDING

1. A unified design approach should be developed for the placement of different types of signs, such as regulatory (communicating traffic laws), direction (providing vehicle directions) and information (maps, transit schedule, etc.) signs.
2. Information signs should be placed in appropriate locations to ensure legibility and enhance visitor experience. Signs should generally be placed in the Furnishing and/or Edge Zones, or located within the median where appropriate.
3. Signs should not be placed in locations where they impede pedestrian and cyclist movements or visibility. They should not be located or encroach into Clearway Zones or cycle tracks.
4. Related signs should be placed on a single pole to reduce clutter within the streetscape.



Transit stops as places for wayfinding



Signage to improve safety and navigation



Bylaws enforced using signage

## STREET LIGHTING

1. The character of light fixtures should support and enhance the identity of corridors and neighbourhoods in which they are placed, address functional requirements and respond to their context.
2. Additional pedestrian lighting should be provided in areas with greater pedestrian activity.
3. Pedestrian lighting may be integrated with street lighting poles or located as stand-alone fixtures within the Furnishing Zone.



Well-lit pedestrian areas



Light fixture supporting neighbourhood character

### Notes:

For design criteria and specification requirements, refer to City of Markham's "**Street Lighting and Electrical Standards**"

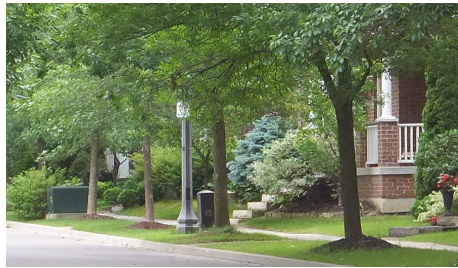
For bird-friendly lighting design considerations, refer to City of Markham's "**Bird Friendly Guidelines**"

## UTILITY PLACEMENT

1. The location of street trees, landscaping and furniture should be coordinated with underground and above-ground utilities and planned concurrently.
2. The placement of above-ground utilities shall not obstruct pedestrian movement in the Clearway Zone or at intersections.
3. Above-ground utilities, such as Bell DMS Units, Micro Hubs, transformers and pedestals, should be sited to minimize their negative visual impact on the public realm. They should be located away from sites with high public view, such as at the end of T-intersections or view corridors, intersections, or daylighting triangles. Where this is unavoidable, utilities should be consolidated and screened, and public art opportunities should be considered in discussions with appropriate utility agencies.



Utilities kept out of the Clearway Zone (above and above right)



Street art to transform visually disruptive boxes

## ON-STREET PARKING

1. On-street parking should be provided on all mixed-use and residential streets, one side minimum.
2. On-street (off-peak or lay-by) parking should be provided on Collectors in mixed-use areas, especially at retail nodes.
3. On-street parking should be maximized by locating parking along the sides of streets that have active uses and fewer disruptions (such as driveways). Their location should be consistent for the length of the block.
4. Curb extensions should be used to define on-street parking and reduce crossing distances at intersections, and may be used for enhanced landscaping and snow storage in winter months.



On-street parking that support business on retail streets



On-street parking along parks and open spaces that support visitors to the park



Curb extensions that frame on-street parking and provide enhanced landscaping



# 3.3

## GREENWAY SYSTEM

### VIEWS & ACCESS

1. Street ROWs, buildings, open spaces, parks, municipal infrastructure, services and structures should be placed to complement the visual characteristics and protect views to the Greenway System.
2. Adjacent development to the Greenway System should be designed and sited so as to minimize adverse impacts on, and encroachments into, the System.
3. Where appropriate and desired, public uses, such as parks and open spaces, should be located along the Greenway System in order to support the preservation of natural features.
4. Where necessary and desirable, access to the Greenway System should be provided through adjacent public park blocks, stormwater management blocks, private development blocks and municipal sidewalks.
5. Where necessary, access to the Greenway System should be restricted and/or buffered from private lands, such as through fencing and restriction of gates, to preserve the integrity and ecology of the system.
6. “Green linkages” should be provided to support an integrated network of pathways and trails connecting the protected Greenway System, streets and public and private open spaces throughout the community.



Greenway System and open space connectivity through an integrated trail system



Pathway connections to the Greenway System through residential blocks



Sidewalk connection for pathway to the Greenway System



Views and access to the Greenway System from adjacent park and open space

## INTERFACE & TRANSITION

1. Development should have a positive interface with the Greenway System. Facades that face onto the Greenway System should have enhanced treatment where adjacent to public trails within the Greenway System.
2. Back-lotting onto the Greenway System is discouraged. Where unavoidable, a minimum 6.0 m wide publicly accessible pedestrian and cycle connection shall be provided every 200 m to connect to the trail system where it exists and is planned.
3. Surface parking lots, parking garages, and loading and service areas should not be located along the edge of, or visible from, the Greenway System with existing or planned trails, parks and open spaces. Where this is not possible, they should be well-screened.
4. The Greenway System should be defined by a single-loaded street where feasible. Where a street is not feasible or essential to the street network, public access and views along the Greenway System should be maintained, such as through the provision of parks blocks, open space blocks or multi-use trails.
5. When abutting a Greenway System, private open space within a high-density development should be located adjacent to the Greenway System to build on and enhance the System.
6. Grading along the edge of the Greenway System should be minimized by design where possible. Existing topography and vegetation should be respected when planning and designing development along the edge of the Greenway System.

### Note:

Development of trails within the North Markham Area will be based upon the City of Markham's "**Pathways and Trails Master Plan**"



Positive interface of new development with the Greenway System



Integration of trails and street network linking Greenway System



Single loaded road along the Greenway System

# 3.4

## PARKS & OPEN SPACES

### SIZE

1. A range of parks and open spaces should be provided to meet the various needs of the community and add to the character of neighbourhoods.
2. The City of Markham’s Official Plan (OP) establishes a parks and open space classification system. The recommended typology, sizes and walkability criteria for parks in the North Markham Area are provided below (Table 3.1). Refer to Section 4.9 for guidance on Privately Owned Public Spaces (POPS).

### LOCATION & CONFIGURATION

1. Parks and open spaces should form the foundation of the community and should link to each other and to parks and open spaces in neighbouring communities to the extent possible. The resulting Open Space System should provide a continuous, universally accessible and safe network for pedestrians and cyclists.
2. Parks and open spaces should be prominently located within the community with public frontage on multiple streets to ensure they are highly visible and accessible, such as at a prominent corner of two higher order streets.
3. Parks should have frontage at the terminus of T-intersection streets and open crescents to provide views and access.
4. Back-lotting shall not be permitted along public parks.
5. Parks should be framed by a strong built form edge and active frontages.
6. Where possible, development should front directly onto parks with the use of rear lanes. Delineation of private/public realm should be provided through pathways, landscape features and private amenity spaces.

	Park Typology	Size (Hectares)	Preferred Walking Distance
NEIGHBOURHOOD PARKS	URBAN PARKETTES	0.2 – 0.5	2 – 5 minute walk (approx. 150 – 400 m)
	PARKETTES	0.5 – 1.5	2 – 5 minute walk (approx. 150 – 400 m)
	URBAN SQUARES	0.5 – 5.0	2 minute walk (approx. 150 m)
	ACTIVE PARKS	1.0 – 6.0	5 minute walk (approx. 400 m)
	COMMUNITY PARKS	> 6	10 minute walk (approx. 800 m)
	CITY-WIDE PARKS	> 12	n/a

Table 3.1: Park typology, sizes and walkability criteria as established by the City of Markham Official Plan



- 7. Parks may be located to preserve individually significant vegetation and small groupings of trees.
- 8. Parks should be located to support the Greenway System and provide views, in particular from significant high points within the North Markham Area.
- 9. A centrally located park or urban square should be considered in high pedestrian traffic areas, such as mixed-use nodes and corridors, to provide areas for community and civic events, as well as unstructured play and public art.
- 10. Significant views to prominent landmarks within the community should be protected through the careful placement and configuration of parks.

- 11. The quality, size, configuration and design of parks and open space sites for landmarks should reflect the appropriate context and significance of the landmark to the community.
- 12. The location and design of active parks should avoid major grade changes where sports fields and play areas are proposed.
- 13. Where residential side yards abut a park or open space, fencing and landscaping should be provided to demarcate the public and private realm, and to ensure privacy of the residence is maintained.



Parks framed by strong built form edge and active uses



Parks organized as focal points to neighbourhoods



A centrally located urban square for community gathering and unstructured play



Parks framed by strong built form edge and front porches



Parks offer opportunities for community events, unstructured play and public art



# 3.5

## STORMWATER MANAGEMENT

Stormwater management is one of the major challenges in urban areas. Sustainable stormwater management systems are integral components of resilient urban development. Stormwater management facilities in the North Markham Area includes water retention facilities such as stormwater ponds, Low-Impact Development (LID) features and green infrastructure. Guidance for the location, interface and design of stormwater ponds is provided here. Design guidance for LIDs and green infrastructure is provided in Appendix B, based on the City of Markham’s emerging LID and green infrastructure strategy.

**Note:**

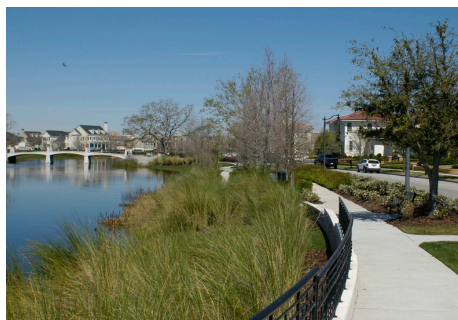
Design of Stormwater Management Facilities (SWM) shall be in accordance with the City of Markham’s:

- **Stormwater Management Guidelines**
- **Stormwater Management Pond and Planting Design Guidance**
- **LID Guideline**

1. The design of stormwater management facilities, where feasible, should be visible, creative, and engaging.
2. Local street frontage along stormwater pond blocks should be provided for ease of access and views of natural environment.
3. Landscaping along the public street frontage of stormwater ponds should be coordinated with the streetscape design.
4. Stormwater ponds should incorporate trails and trail head locations where appropriate and create educational opportunities for nature interpretation.
5. Trails associated with stormwater ponds should be designed to connect to the abutting active mobility network to contribute to the interconnectivity of the overall system.
6. Planting within the stormwater pond block should encourage naturalization. When abutting Greenway Systems, parks or open spaces, planting should complement the ecological functions of adjacent natural heritage and hydrologic features.
7. When abutting higher-density urban development, design of the stormwater pond should make a positive contribution to the urban edge by integrating design features appropriate for the urban context, such as, well-designed stone walls with pedestrian amenities.



Naturalized planting along stormwater pond



Pedestrian amenities along stormwater pond



Stormwater pond integrated with the trail system

# 3.6

## LANDMARKS & VIEW CORRIDORS

1. Landmarks should be treated as focal points for orientation and designed to contribute to the place-making and creation of community identity.
2. Streets should be planned to preserve, enhance and create views of natural areas, public buildings, cultural heritage buildings, open spaces and landmarks. Such streets should provide visual connectivity between landmark sites, buildings or destinations within the community.
3. Variation of the street grid should be considered to respond to natural features, significant views, and prominent buildings and landmarks.
4. Landmark buildings and other structures should be sited prominently and terminate views.
5. View corridors to landmark buildings, the Greenway System, natural features and vistas should be provided for scenic quality and orientation.
6. Gateway and corner sites should be considered for the location of landmarks.
7. Landmark buildings should be distinguished through creative architectural expression that contributes to the character of the North Markham Area. Distinctive building designs are encouraged through the use of high-quality building materials, massing details and other memorable architectural features.



Landmark structures should be sited prominently and should terminate views



# 3.7

## CULTURAL HERITAGE RESOURCES

1. Heritage structures should be sited on prominent lots within the community, such as corner lots, focal lots or lots adjacent to parks or open spaces.
2. Heritage structures should be integrated into the street/block pattern to respect and retain the relationship between the front door and the street.
3. Lot layout and grading should have regard for existing heritage structures.
4. Lots designated for heritage structures should be of sufficient size and shape to accommodate existing structures, future additions, tree preservation and landscaping.
5. Special development features, such as plaques and decorative walls, should be provided to interpret the existing/former cultural heritage resource.
6. Retained heritage structures should be considered for both residential and commercial use.
7. Where feasible and appropriate, cultural landscapes and other cultural heritage features, such as ancillary buildings, should be protected to add to local identity.
8. All new development adjacent to or incorporating a cultural heritage resource should be respectful of the resource, having regard for scale, massing, shadows, setbacks, complementary building materials and design features.



Heritage structure located on a corner lot, with strong relationship between front door and the street



Heritage structures on generous lots within a landscaped setting

# 3.8

## PUBLIC ART

1. Public art should be considered for all major municipal buildings and sites, public parks and open spaces, streets, new or major upgrades to public infrastructure and gateways.
2. Public art should be considered for private development, and integrated into POPS and building facades.
3. Public art opportunities should be balanced across various areas within the North Markham Area, and not restricted to one location.
4. The scale of the public art piece should reflect the level of prominence of its site context.
5. Public art should be located in high pedestrian traffic and activity areas to enhance the overall public environment and pedestrian experience.
6. Public art should be site-sensitive and should explore opportunities to celebrate historic events and figures of local, national and international relevance where appropriate.
7. Where appropriate, the design and placement of public art should reflect the North Markham Area’s natural and agricultural heritage.
8. Various forms, scale, media and levels of permanence should be considered to create a sense of identity and place.
9. Public art may include a wide range of art forms and can be integrated into built form or landscape elements. Fountains, outdoor furniture, indoor and outdoor sculptures, murals, decorative walls, light and digital installations, signage and other graphic elements using a variety of materials and forms can be considered public art.
10. Public art pieces should be durable and easily maintained.
11. Interactive public art should be physically accessible and barrier-free through the incorporation of universal design principles.
12. Where feasible, the public art component should be delivered in the first phase for phased developments.

**Note:**  
For additional guidelines, refer to City of Markham’s “**Public Art Policy**”



Public art in high pedestrian activity areas



Public art integrated with building facade



Interactive public art



# 3.9

## COMMUNITY HUBS

1. Community facilities should be co-located and integrated with educational institutions and parks to create community hubs, especially on sites close to transit routes and with convenient access, and to maximize shared use of structures, open spaces, recreational facilities, parking and other services.
2. The layout and design of community hubs should be prepared comprehensively, and designed without fencing or barriers between land ownership boundaries to maximize utilization of the site.
3. Where schools are located, clear and direct pedestrian and bicycle routes, safe crossings, and access to entrances should be provided to address the daily traffic needs by school children.
4. Community hub buildings should be designed as landmark destinations through architectural expression and placement on site.
5. Adequate screening of service areas, utility rooms and structured parking should be provided from the public realm. Landscape buffers and screening should be provided to ensure safety.
6. Surface parking lots should be shared between community hub uses, such as parks, outdoor playing fields, schools and community centres to reduce their footprint and encourage compact development.
7. Green infrastructure features such as green roofs, rain gardens, swales and tree planting, should be incorporated to reduce stormwater runoff and heat island effect. Permeable pavers with lower solar reflectivity should be considered in surface parking lots.

**Note:**

Public recreation facilities will be required in accordance with the “**City of Markham Integrated Leisure Master Plan**”



Co-location of community center and park enables shared parking



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# 4

## 4.0 PRIVATE REALM DESIGN



# 4.0

## PRIVATE REALM DESIGN

From an urban design perspective, buildings are more than just individual structures; collectively, and in combination with all other aspects of a community, they play a pivotal role in defining the character of a community and in shaping the public realm. Through their location within the community, on a particular lot, within a certain setting, and within the context of natural and other built features, buildings can enrich the pedestrian environment and community experience. They are the key components that define the form of a community, help to frame streets and public spaces, and provide landmarks in prominent locations.

In addition to shaping the quality of the public realm, buildings and their settings help define the character of neighbourhoods and communities. It is

critical that buildings and sites exhibit design excellence and distinction through the use of high-quality building materials and best landscape architecture practices, and varied yet complementary architectural and landscape elements. Furthermore, sustainable building and site design features and practices are essential for building innovative, healthy and resilient communities in the North Markham Area.

The purpose of this section is to inform how buildings are designed and sited to contribute to a vibrant, pedestrian-oriented public realm. Although there will be many different building typologies developed in the North Markham Area, they will have both common and distinct considerations that address: building placement and orientation, setbacks,

height, massing and transition, facade design and treatment, parking, servicing and loading, vehicular access, and private outdoor amenity spaces, in addition to green buildings and sites.

Table 4.1 summarizes the references for specific built form typologies. The general built form guidelines (Sections 4.1 to 4.10) apply to all built forms, as applicable. Section 4.11 provides more detailed guidance for specific typologies, such as stacked townhouses, back-to-back townhouses, apartment buildings, mixed-use buildings and industrial and office buildings. The guidelines in Section 4.11 should be used in addition to those in Sections 4.1 to 4.10. It should be noted that specific design guidance for single-detached, semi-detached and street townhouse forms are not included in the UDG. Refer to the City’s **“Generic Architectural Design Guidelines”** for additional guidance on these forms.

Design guidance in relation to many sustainable design features is also included throughout this chapter, while Section 4.10 *Green Buildings and Sites* contains more detailed guidance on design elements aimed at reducing demands on infrastructure and the natural environment.

Built Form Typology	Section Reference (UDG)		Additional Reference
	General Guidelines	Specific Guidelines	
Single-Detached, Semi-Detached & Street Townhouses	4.1-4.10	n/a	City of Markham’s Generic Architectural Design Guidelines
Stacked Townhouses & Back-to-Back Townhouses	4.1-4.10	4.11.1	
Apartment Buildings & Mixed-Use Buildings	4.1-4.10	4.11.2	City of Markham’s Built Form, Height and Massing Study
Industrial Buildings & Office Buildings	4.1-4.10	4.11.3	

Table 4.1 Reference guide for specific built form typologies

# 4.1

## BUILDING PLACEMENT & ORIENTATION



Main entrance clearly distinguished from ground-related units



“Eyes on the street” through building entries fronting on parks and streets (top and above)

1. Buildings with active frontages should be placed close to the street. Parking, driveways and service areas should not be located between the building and the street.
2. Primary building facades and entrances should be oriented toward the public street. Main entries should be clearly visible from the street.
3. Active building facades, entrances and pedestrian amenities should be oriented towards public spaces such as parks and transit facilities to provide a sense of enclosure and enhance safety by providing “eyes on the street.”
4. Buildings on corner sites should be located to address both street frontages through the placement of entrances and building articulation.
5. Buildings such as schools, community centres, and heritage buildings should be placed at prominent locations, such as at the terminus of a view corridor or at street corners.



Building with entrances addressing the street intersection

# 4.2

## PEDESTRIAN AND BICYCLE FACILITIES



Walkways connecting entrances to sidewalk



Enhanced pedestrian experience using pedestrian-scaled lighting, planting, facade treatment and entries

1. A walkway should be provided to connect primary entrances to the sidewalk.
2. A continuous pedestrian pathway system should be provided within each development, designed to be safe, direct, attractive, comfortable and universally accessible.
3. Pedestrian/bicycle routes within the site should connect to existing/planned public sidewalks and trails, bicycle routes and public transit routes.
4. The experience of pedestrians and cyclists should be enhanced by providing shade and amenities along pedestrian walkways and connections, such as pedestrian-scaled lighting, street furniture, bicycle parking and tree planting. These amenities should be designed to contribute to the neighbourhood character.
5. Driveways to parking facilities and vehicular access to building service areas (loading, waste, etc.) should be separated from pedestrian walkways and cycling trails.
6. Amenities and street furniture, such as benches, bicycle parking and landscaping, should be provided along street frontages to create pedestrian-friendly environments.
7. Development adjacent to pedestrian walkways and publicly accessible spaces should be designed to enhance “eyes on the street”, and provide elements of visual interest, such as rich architectural details, special features and/or art for blank facades.



# 4.3

## BUILDING SETBACKS

1. Buildings should be placed to create a consistent street wall and frame the street. Slight setback variations may be considered where appropriate, particularly along long streets to provide visual relief and interest.
2. Setbacks must be carefully considered to accommodate the full canopy growth of street trees and to provide buffer and enhanced landscaping where desirable.
3. Where appropriate and desired, high-quality POPS should be provided through building setbacks, together with appropriate interface conditions and facade treatments.



Building placement creating a consistent street wall



Setback accommodating full canopy growth of street trees



POPS created through increased setbacks providing opportunities for active streetscapes

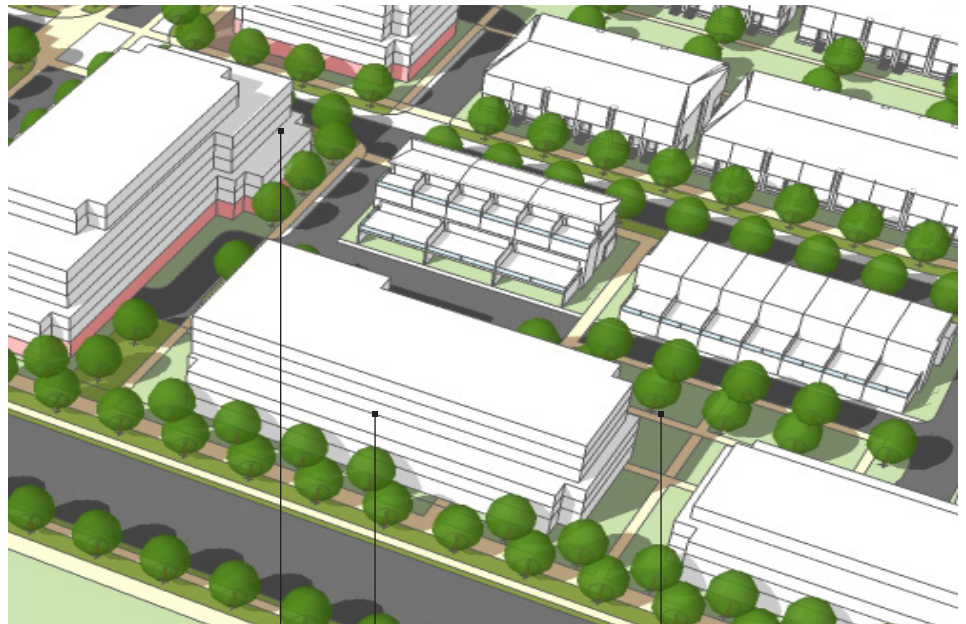
**Note:**  
For specific setback requirements, refer to the “**City of Markham Zoning Bylaw**”



# 4.4

## BUILDING HEIGHT, MASSING AND TRANSITION

1. The mass and height of new developments should relate to the adjacent street to achieve an appropriate street wall enclosure.
2. Buildings should have adequate transition in height and scale to adjacent and surrounding buildings and along the street.
3. Taller and denser built form should be considered along Arterials and Collectors and within Mixed Use Neighbourhood Corridors and Mixed Use Regional Corridors.
4. Taller and larger buildings should relate to their neighbouring development and surrounding context with a sensitive transition in scale to adjacent uses, especially to existing and planned low-rise and mid-rise residential buildings, heritage structures, and public spaces. Apply a variety of design approaches, where appropriate, including:
  - height transitions/step-backs
  - increased setbacks
  - landscaped buffers



Setback providing transition to adjacent low-rise development

Massing of built form creating an appropriate street wall enclosure

Landscaped areas acting as buffers and providing sensitive transition to lower built forms

Figure 4.1 Demonstration plan illustrating some of the height, massing and transition guidelines



Building height, massing and planting providing street enclosure



Transition to lower built form using step-backs and increased setbacks

# 4.5

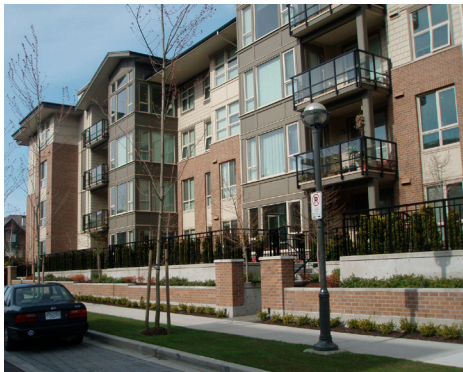
## FACADE DESIGN AND TREATMENT

1. Flat, unarticulated blank walls visible from the public realm, such as along public streets, parks and open spaces, should be avoided.
2. Long building elevations should be designed with massing articulation, plane changes, architectural features and details to visually break up the length of the building.
3. Larger developments that contain multiple buildings and blocks should incorporate a variety of facade and architectural designs within an unified theme.
4. Public and active uses should be provided within the ground floor to activate and provide “eyes on the street”, such as living rooms for residential dwellings or storefronts and cafes along retail streets.
5. Side and rear building elevations with high public exposure and visibility to public spaces, such as streets, public walkways, the Greenway System and parks, should be highly articulated and consistent with the front elevation in terms of materials, fenestration style and detailing.
6. Both facades of corner buildings should achieve the same high level of architectural quality and facade treatment, including materials and articulation.
7. Corner buildings should address street intersection with special features such as wraparound windows or porches, or double height entries as appropriate to the architectural style of the building.
8. Building projections, such as balconies, outdoor terraces, canopies, awnings, porches and sunshades, should be provided to add visual interest, help establish an inside-to-outside connection and provide weather protection for pedestrians and the building. Projections should be well-integrated into the overall design of a building and not extend beyond the property line.
9. Buildings should be designed with high-quality, durable materials and colour palettes that contributes to a vibrant public realm.
10. Architectural elements and facade design should be integrated into the building design to accentuate building entrances.

**Note:**  
Refer to City of Markham’s “**Bird Friendly Guidelines**”



Incorporate active uses on the ground floor to engage public realm



Rhythm in fenestration, detailing and landscaping to break up long facades



Awnings provide visual interest and weather protection for buildings and pedestrians



Architectural details and massing treat the corner condition



# 4.6

## PARKING

1. Surface parking should be minimized where feasible. Alternatives include underground and above-grade parking structures.
2. The dominance of parking areas should be minimized where visible from the public realm.
3. Opportunities for on-street parking should be maximized where appropriate.
4. Parking should not be located at the terminus of significant views, nor in close proximity to other visually prominent locations such as the Greenway System, parks and open spaces. Where this is not possible, adequate screening in the form of architectural massing, walls and/or landscaping should be provided.
5. In addition to shade tree planting, parking shade canopies or structures for exterior parking lot areas should be provided where feasible to mitigate heat island effect and to lower temperatures at grade. Solar panels should be incorporated as part of the shade canopy/structure where appropriate.

6. Crime prevention through environmental design (CPTED) principles and adequate lighting should be applied to parking design.
7. Pedestrian safety should be prioritized by clearly identifying pedestrian routes in parking areas and minimizing potential conflicts between pedestrians and vehicles.
8. Pedestrian routes should connect parking areas to main building entrances.

12. Green infrastructure should be considered in the design of surface parking areas, such as filtration swales, bioretention cells, and permeable pavers.
13. Shade trees should be provided throughout the parking area.
14. Consolidated soft landscape areas in larger parking lots should be provided to enhance tree growing conditions.

### SURFACE PARKING LOTS

Where a surface parking lot is proposed, the following additional guidelines apply:

9. Where surface parking abuts the public realm, a landscaped buffer consisting of planting and/or low architectural wall/decorative fence should be provided for screening.
10. Larger parking areas should be visually and functionally divided into smaller parking courts.
11. Circulation throughout the site should be continuous. Dead-end driveways and turn-around spaces should be avoided.

### PARKING STRUCTURE

Where a parking structure is proposed, the following additional guidelines apply:

15. Where appropriate, an above-grade parking structure abutting a street should be wrapped with development facing the street to ensure animation of the adjacent street frontage.
16. Garage ramps and access stairs to underground parking should be integrated into the design of the building.
17. The design of above-grade parking structure should complement the main building through massing, material selection and architectural design feature/language.

#### Note:

Parking must comply with the City of Markham's "Parking Standards By-law 28-97", "Accessibility Design Guidelines" for accessible parking and pedestrian access guidance, and "Streetscape Manual" for planting requirements in parking areas



Landscaped islands defining parking courts and clearly identified pedestrian routes



Entrance to underground garage screened using decorative walls, trellis and landscaping

# 4.7

## VEHICULAR ACCESS



Driveways avoided on Collector road by providing rear lane access the development



Street without driveways allowing for more on-street parking

1. Individual driveways for grade-related residential units should not be located along Collectors.
2. Where possible and appropriate, driveways should be shared between adjacent properties in order to reduce the extent of interruption along the sidewalk and the streetscape.
3. The number of driveways to a site should be minimized in order to increase opportunities for on-street parking and landscaping treatments and provide a more continuous pedestrian realm.
4. Vehicular and service access to development along major retail streets and pedestrian and cycling routes should be provided by use of service lanes and/or mutual driveways with abutting development.
5. Driveways should be located as far as possible from parks, open space features, public walkways, schools and intersections.



Figure 4.2 Demonstration plan illustrating some of the guidelines

6. Driveways should be designed to minimize the amount of paved area to reduce stormwater runoff and heat island effect. This can be achieved through minimizing the extent of the driveway and using permeable paving and light-coloured surface material, where appropriate.
7. Driveways should be designed with minimum widths and curb radii to reduce speed of vehicles and enhance pedestrian safety.
8. Vehicular driveways should be sited and designed to minimize conflicts with pedestrians and cyclists. Continuous sidewalks through driveways should be provided to ensure pedestrian priority and accessibility is maintained.

Rear access lane serving mixed-use buildings with underground parking

Opportunities for on-street parking along Collectors

Driveways to locate away from intersections

Sidewalk continuing across driveway

**Note:**  
Refer to the City of Markham's "Curb Cut By-Law"



# 4.8

## SERVICING & LOADING

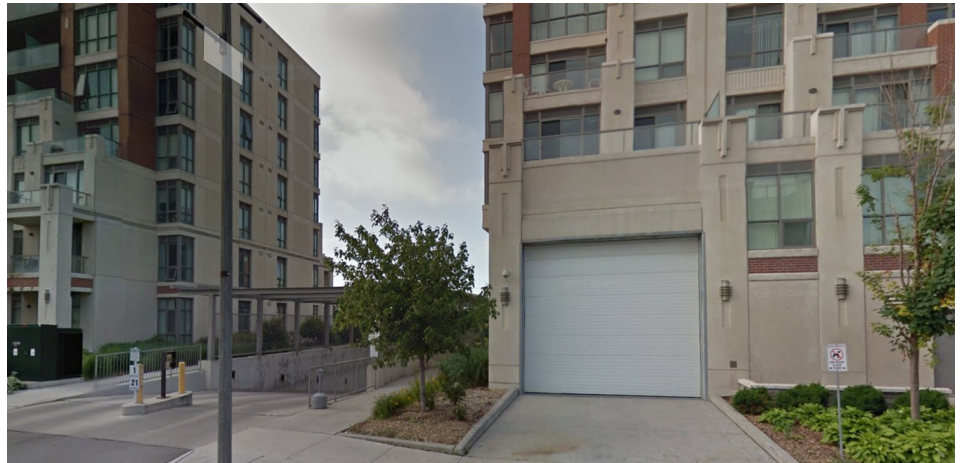
1. All servicing, drop-off and loading areas should be well-integrated in the building design or located to the rear of the site, away from public view. Where servicing and loading are publicly visible, they should be adequately screened by walls and/or landscaping.
2. Adequate internal space for waste collection areas and convenient access for pick-up should be considered early in the design process and should be provided for all types of uses and built form.
3. Arrangements for waste pick-up should be considered in design of sites and structures at the initial stage of the design process. Integrated and screened staging areas or enclosures for waste pick-up should be provided. Location, design elements and screening of the staging areas and enclosures should take into account frequent maintenance of these areas for odour and should mitigate the noise impact of the pick-up in proximity to residential uses.
4. Design elements of the service areas should enhance the real and perceived feeling of personal safety and security; adequate lighting and visibility into semi-enclosed or isolated areas should be provided throughout.



Well-integrated waste collection area



Adequately screened service area with dedicated areas for waste storage



Service area integrated into the building design



# 4.9

## PRIVATE OUTDOOR AMENITY SPACE

Private outdoor amenity space refers to a wide range of usable outdoor areas associated with a development, including courtyards, mews, front yards, rear yards, balconies and terraces, as well as privately owned public spaces (POPS).

1. Usable private outdoor amenity spaces should be provided for all development.
2. Private outdoor amenity spaces should be of an appropriate size for its use and located with optimum solar exposure and views. Ambiguous, unprogrammed or residual, orphaned spaces should be avoided.
3. Diverse landscaping features should be provided to contribute to the urban ecology and to enhance user experience.
4. Where private outdoor amenity spaces are located adjacent to the street, landscaping that enhances the character of the street should be provided while ensuring privacy to its users through buffers, screening and grade separation.
5. Where possible, children's play areas should be provided within common amenity spaces for medium- and high-density residential development.
6. The use of hard surfaces should be minimized in yards and setback areas. If unavoidable, permeable surfaces should be introduced.
7. To reduce heat island effect and increase infiltration of stormwater, green infrastructure such as rain gardens, permeable paving, soft landscaping and shade trees should be provided in private outdoor amenity spaces.
8. The function and use of private outdoor amenity spaces can be maximized by combining uses, such as snow storage areas and soft landscaping.

### PRIVATELY OWNED PUBLIC SPACE (POPS)

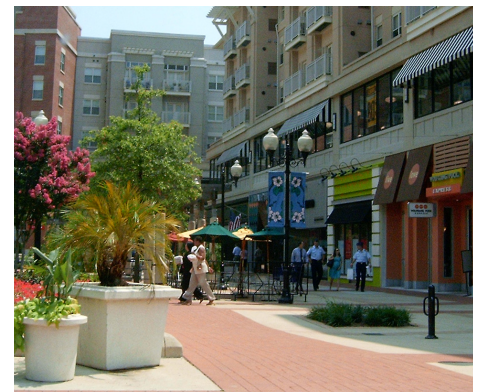
Privately owned public spaces (POPS) should be provided where appropriate to the context to provide additional green linkages within the community, promote urban ecology and enhance neighbourhood character. Where they are proposed, the following guidelines apply:

9. POPS may include, but are not limited to:
  - landscaped mews
  - urban plazas
  - landscaped walkways
  - mid-block connections
  - enhanced private streets
10. POPS should form part of a larger and more vibrant parks and open space network and establish a positive sense of place, and not to simply serve as "leftover" areas or as a backdrops to buildings.
11. POPS should be visible and accessible from public streets, parks or open spaces.
12. POPS should be designed to promote active interface with adjacent development to encourage the use of open spaces and allow for passive surveillance.
13. POPS should be designed to establish a seamless transition between public and private areas.
14. The design of POPS should be coordinated with adjacent streetscape design with respect to planting species selection and material/furniture specifications.
15. POPS should be clearly signed and identified.
16. Adequate lighting should be provided to ensure safety.

**Note:**  
Refer to the City of Markham's "Trees for Tomorrow: Streetscape Manual" for planting details, species selection and specifications



Privately owned walkways can serve key connections between public streets and spaces



Active interface with adjacent built form encourages use of open space

# 4.10

## GREEN BUILDINGS AND SITES

1. Energy efficiency and energy generation features, such as solar thermal or photovoltaic equipment, should be considered early in the design process and should be well-integrated into design of buildings and sites.
2. Existing buildings should be considered and prioritized for adaptive re-use where possible.
3. Building roof orientation, slope and engineering should optimize opportunities for solar energy generation.
4. On-site tree planting should take in consideration the potential for solar energy generation. Trees at maturity should not shade the optimal location for solar energy generation.
5. Passive building design features to maximize the use of natural light for interior spaces, sunlight for heating, shade for cooling and natural ventilation should be considered at early stages of the design process.
6. Where feasible, shared energy systems and energy storage should be considered and should be integrated in the design of buildings and sites.
7. White (high reflective) roofs, blue (runoff harvesting) roofs and green (vegetated) roofs should be implemented where feasible to reduce energy demand for cooling and heating of buildings, to conserve potable water and to reduce runoff.
8. The use of LID features and green infrastructure should be prioritized for buildings and sites to reduce demand for stormwater management and for water conservation. Where appropriate, the following features should be considered:
  - Minimized impervious surfaces and use of permeable pavements
  - On-site infiltration and evapotranspiration through provision of bio-swales, rain gardens, constructed wetlands, enhanced landscaping, green roofs and walls
  - Urban agriculture
  - Water harvesting and re-use
9. Green infrastructure features should be visible and, ideally, combined with amenity spaces and other programmed areas to ensure an appropriate level of maintenance and to maximize co-benefits.
10. Design features such as carpool/car share spaces, electric vehicle charging stations, and bicycle parking and storage should be incorporated as part of the development to support Transportation Demand Management (TDM) initiatives.
11. Heat island effect should be minimized through the use of white and green roofs, high albedo surfaces for paved areas, permeable paving, shade structures for outdoor spaces, and enhanced landscaping.
12. Xeriscaping and water-efficient irrigation with re-use of rainwater should be prioritized for all types of development. The rainwater storage should be durable, designed in a manner to complement design of buildings and sites, and should be conveniently located for its use by residents and tenants.



Solar panels integrated into building design



- 13. Design features of buildings and sites, including lighting and landscaping, should support the reduction of bird fatalities.
- 14. High-efficiency lighting fixtures and the use of renewable energy, such as solar energy, should be used for lighting buildings and sites.
- 15. All types of development should be designed to facilitate waste diversion by including features for separated streams of waste by providing adequate internal or external storage spaces and waste staging areas for pick-up.
- 16. Locally sourced, recycled or reclaimed materials should be prioritized for use for all types of buildings and site infrastructure.

- 17. Innovative strategies and design solutions to minimize environmental impacts should be incorporated.
- 18. Opportunities to inform and engage the community through such things as interpretive art and signage, should be considered at the early stages of design process for all types of development.
- 19. Public buildings should be designed to manage rainwater by use of building features such as green walls, green roofs and rainwater harvesting and re-use.
- 20. Public spaces and facilities should demonstrate leadership by implementing innovative stormwater management pilots and demonstration projects.



Urban agriculture as a green infrastructure



Landscape area in surface parking lot used as LID feature for stormwater management

**Note:**  
Refer to the City of Markham’s “**Build for Tomorrow: Markham Sustainable Development Checklist**”



Green roof integrated with amenity space



Green pavers in driveway



Well-integrated water harvesting system



# 4.11

## BUILT FORM TYPOLOGIES

This section of the document captures some of the building types that may be considered in the North Markham Area to accommodate a more compact built form. These building types include stacked townhouses, back-to-back townhouses, apartments buildings and mixed-use buildings, as well as industrial and office buildings.

The list of typologies is not exhaustive, nor is it meant to limit the introduction of other building types. The main objective is to create high-quality development that fit within their surrounding context while contributing to an attractive and pedestrian-oriented public realm. Architects, landscape architects and builders are encouraged to bring forward alternative and innovative options that promote the design principles and intent of the UDG.

The guidelines in this section of the UDG provide more detailed guidance for specific typologies, and are in addition to the more general design guidelines contained in Sections 4.1-4.10.



A variety of built form typologies that fit within their context and function

## 4.11.1 STACKED TOWNHOUSES AND BACK-TO-BACK TOWNHOUSES

The guidelines in this section provide more detailed guidance for stacked townhouses, back-to-back townhouses and small complex buildings, and are to be read in conjunction with the more general design guidelines contained in Sections 4.1-4.10 of the UDG.

### BUILDING PLACEMENT & ORIENTATION

1. Where buildings abut Arterials and Collectors, an appropriate setback, building interface and landscaped buffer should be provided to mitigate noise and ensure privacy for residential uses.
2. Where appropriate, main entries should be located on the flankage elevation for corner lots.

### BUILDING HEIGHT, MASSING & TRANSITION

3. Adequate massing and height transition, setbacks and buffers should be provided to low-rise residential neighbourhoods.

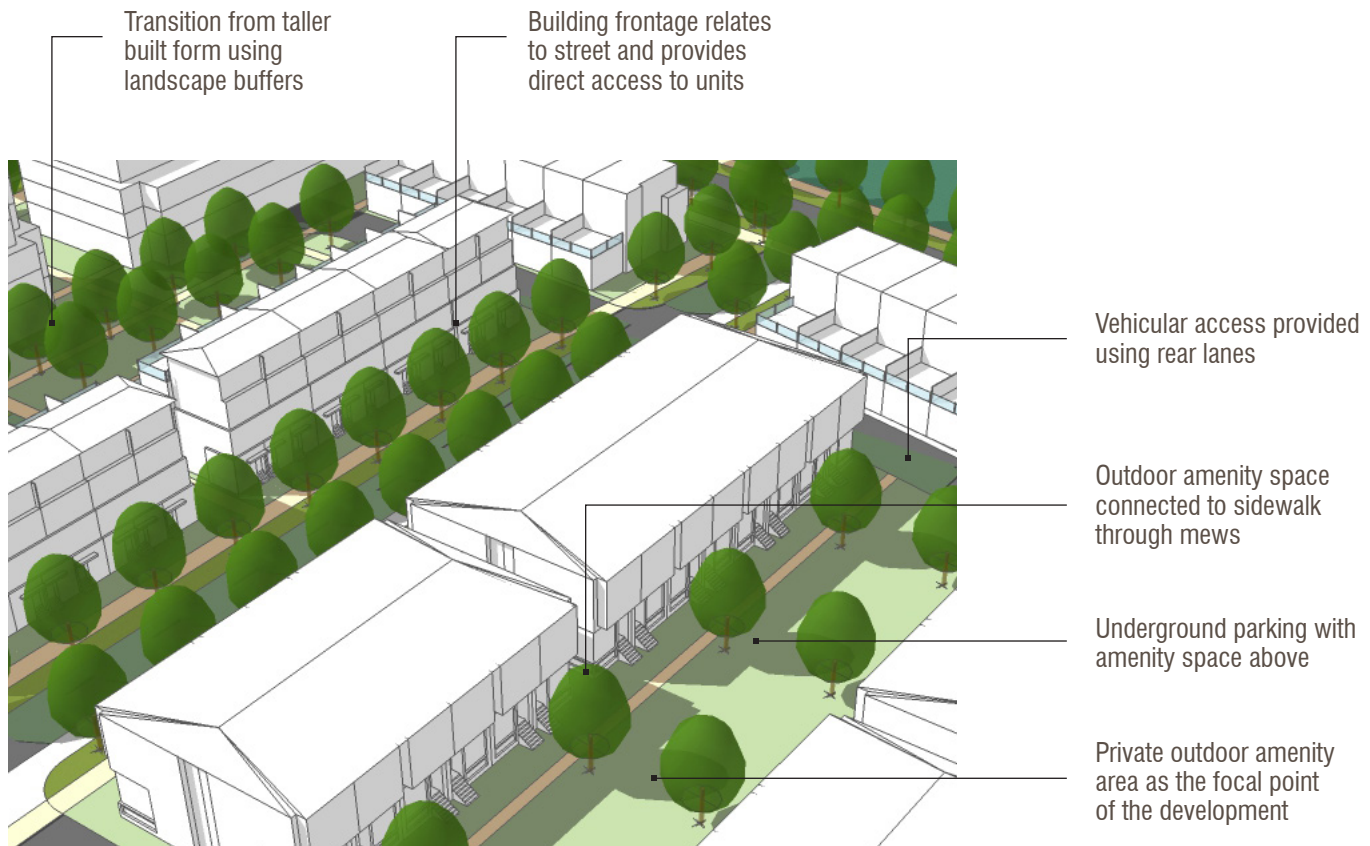


Figure 4.3 Demonstration plan illustrating some of the stacked and back-to-back townhouse guidelines



## BUILDING DESIGN & FACADE TREATMENT

4. The building base should be distinct from the middle and top through the use of material selection, massing and articulation.
5. Buildings should relate to the street. Exterior steps should be minimized and internalized where additional steps are needed.
6. Barrier-free units that are directly accessible from grade should be provided where possible.
7. Multiple unit entrances created by stacked units should be coordinated and designed to help contribute to a successful public realm.
8. Below-grade residential units are generally discouraged. Where this is unavoidable, the following guidelines apply:
  - The units should be designed to ensure sufficient sunlight is provided by combining a below-grade level with an above-grade level to create a two-level unit, or design units as “through-units”
  - Balconies and porches should not obstruct daylight into the below-grade unit
  - Adequate setback and landscaped courts in front of below-grade units should be provided to enhance solar exposure

## PARKING

9. Underground parking is strongly encouraged for back-to-back townhouse developments to minimize the placement of garages/driveways along the street.
10. Where front integral garages are proposed for back-to-back townhouses, the following apply:
  - Garages to be flush or recessed from the main wall of the dwelling
  - Garages should not be more than 50% of the front building width
  - Tandem garages are encouraged

## VEHICULAR ACCESS

11. Front integral garages are not permitted along Arterials or Collectors. Alternative road layouts should be considered, such as rear lanes, slip/service lanes, window streets, and flankage conditions as appropriate to the context.



Below-grade units designed to ensure sufficient sunlight



Building with strong street relationship



Vehicular access through rear lane



## PRIVATE AMENITY/OUTDOOR SPACE

12. Usable private outdoor amenity spaces should be provided as appropriate to the building type, such as at-grade rear yards, above-grade balconies, decks above garages, front yard terraces, and/or roof top patios.
13. Where pedestrian mews are proposed, a 1:1 relationship between the width of the mews and adjacent building height should be provided to ensure sufficient sunlight and privacy are maintained. At a minimum, the width of mews should be 11.0 m.
14. Where proposed, at-grade private amenity spaces should be adequately screened with railings and landscaping to offer privacy and distinguish private amenity spaces from the public realm.
15. Shared private outdoor amenity spaces should be provided for the overall development.
16. Shared private outdoor amenity spaces should be of appropriate size, shape, location and siting to maximize visibility and accessibility, with direct access to sunlight and sky views.
17. Where provided, common outdoor amenity spaces should be sited and designed as focal points of the new development, in the form of courtyards, children's play areas, shared roof top terraces or plazas.



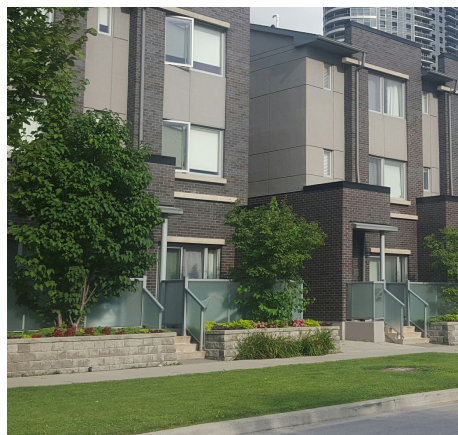
Private amenity area above the garage



Landscaped private amenity areas accessed by common walkways



Enhanced pedestrian mew with landscaping, building entrances and pedestrian connections from public sidewalk



Screened at-grade private amenity space



Play area as focal point within the development

## 4.11.2 APARTMENT BUILDINGS & MIXED-USED BUILDINGS

The guidelines in this section provide more detailed guidance for apartment buildings and mixed-use buildings, and are to be read in conjunction with the more general design guidelines contained in Sections 4.1-4.10 of the UDG.

### BUILDING HEIGHT, MASSING & TRANSITION

1. Buildings should have a minimum height of 3 storeys, with a maximum height of 8 storeys along Mixed Use Regional Corridors and a maximum height of 6 storeys within Mixed Use Neighbourhood Corridors/Nodes.
2. Appropriate height and massing transitions should be provided to adjacent neighbourhoods, the street and/or other uses.
3. The design of buildings fronting or backing onto existing low-rise residential properties should be residential in character, scale, rhythm and proportion, and provide complementary roof lines or slopes.
4. Buildings taller than 6 storeys should be designed to minimize shadow and wind impacts on the public realm.



Materials and colours are used to break down the mass of larger buildings

### BUILDING DESIGN & FACADE TREATMENT

5. All buildings should be designed to consist of three distinct parts: a base, middle and top.
6. All facades shall have consistent and cohesive design elements.
7. Buildings in corner locations should be designed to include:
  - Highly articulated facades/elevations along the street frontages
  - The same degree of articulation and detailing on all elevations that face the street
  - Special corner features to address both streets
  - Primary entrance(s) accessible and visible from the corner
8. Visually permeable building facades should be provided along the public realm. Large well-proportioned openings should be located on the ground floor and should encompass 25-50% of the facade.
9. Wind impacts in pedestrian areas should be minimized through the use of building projections and recesses, including canopies, colonnade/cantilevers and building step-backs.
10. Rooftop mechanical equipment shall be well-screened from public views and, where possible, integrated into the design of the top.



Clearly defined base, middle and top



## PARKING & VEHICULAR ACCESS

11. Surface parking, when provided, should be limited to visitors and retail customers only. Where proposed, parking areas should be located to the rear or side of buildings and screened from public views using walls and landscaping.
12. Entrance to parking garages and loading areas should be well-integrated and should not dominate the facade. Where necessary, they can be screened from public view using walls and landscaping.

## PRIVATE AMENITY/OUTDOOR SPACE

13. Street-level residential units should be well-integrated with the public realm to allow for pedestrian access, privacy and private amenity areas, which can be achieved using screening, hard and soft landscape treatments and grade changes within the setbacks.

## MIXED USE BUILDINGS

Where mixed-use buildings are proposed with retail uses at-grade, the following additional guidelines apply:

14. Buildings should generally be located close to the street, except to allow for patios, higher pedestrian volumes and spillover from these uses.
15. Increased setbacks are encouraged where urban open spaces are desired to support active uses. Such open spaces should be treated as extensions of the sidewalk with clear pedestrian routes, activity zones and a combination of planting, hard landscaping and site furniture.
16. The majority of a building's facade at the ground level should have active frontages on Arterials and Collectors.
17. Any ground floor residential unit fronting major streets should have a minimum height of 4.5 m, entrance from street, adequate depth and service access to facilitate conversion to non-residential uses without structural modifications.

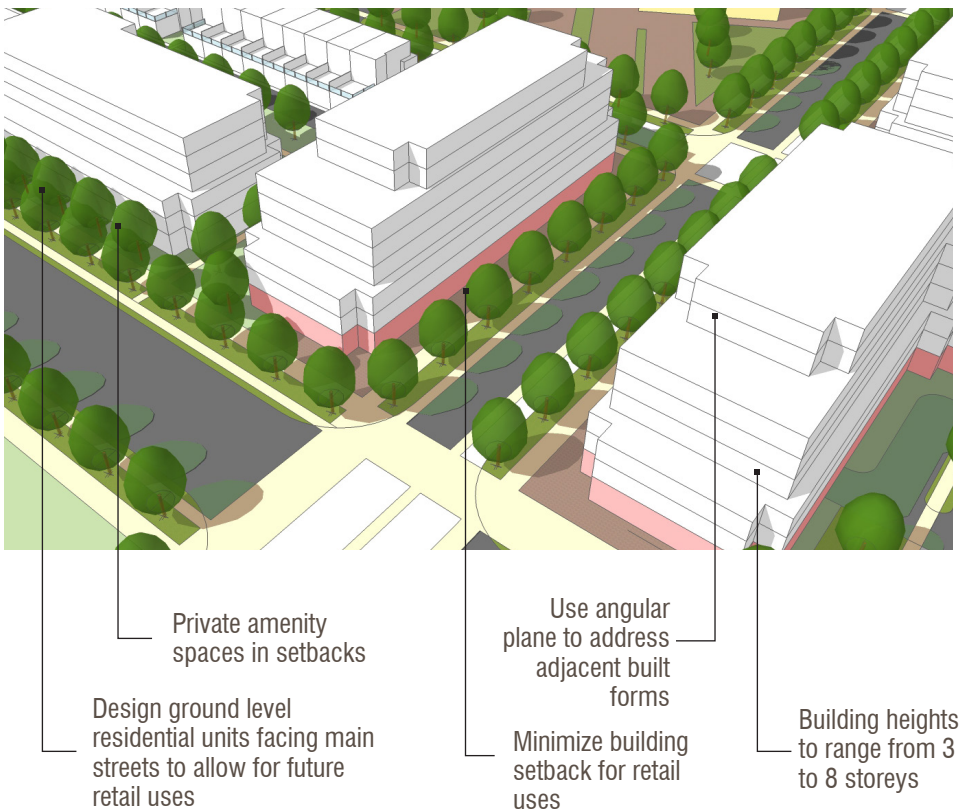


Figure 4.4 Demonstration plan illustrating some of the apartment and mixed-use building guidelines



## 4.11.3 INDUSTRIAL AND OFFICE BUILDINGS

The guidelines in this section provide more detailed guidance for industrial and office buildings, and are to be read in conjunction with the more general design guidelines contained in Sections 4.1-4.10 of the UDG.

### BUILDING PLACEMENT & ORIENTATION

1. Sufficient setback and landscaped buffers should be provided where buildings are adjacent to land uses other than office or industrial uses.



Well-screened rooftop mechanical equipment



Green roof to reduce environmental load

### BUILDING HEIGHT, MASSING & TRANSITION

2. Taller buildings and larger massing elements should be located at corner locations to accent its prominent location.

### BUILDING DESIGN & FACADE TREATMENT

3. With campus style development, the architectural design of all buildings should relate to one another to ensure a cohesive design, at the same time offering variety to create interest.
4. Where multiple tenants occupy a building, individual entrances should be clearly articulated through design features.
5. Weather protection should be provided for all entries.
6. Signage should be designed as an integral component of the facade design; it should not overwhelm the building and/or storefront.
7. Where visible from the public realm, rooftop mechanical equipment should be screened.
8. Special material and/or architectural details should be provided at street corners.

### PARKING & VEHICULAR ACCESS

9. All parking should generally be located to the side or rear of the site. Where unavoidable, a maximum of one row of parking may be considered along the building frontage for visitor parking.
10. Where parking is provided adjacent to the street, a minimum 3.5 m wide landscaped area with walkways should be provided between buildings and parking areas.
11. Driveways should be minimized along Arterials. Where feasible, access should be provided off local roads or lanes.

### PRIVATE OUTDOOR AMENITY SPACE

12. Street setbacks should be adequately landscaped with a combination of tree plantings, shrubs and sod, and hard landscaping, as appropriate to the context.
13. Amenity spaces should be provided for employees, such as designated outdoor spaces (including rooftop spaces) or indoor common areas.



Outdoor amenity areas and landscaped walkways add interest to office buildings



Integrate retail signage with facade design



Tree planted islands in surface parking lots in accordance with the Streetscape Manual

Loading areas to be located to the rear of buildings and away from street views

Larger massing element provided at street corners

Outdoor amenity space for employees

Figure 4.5 Demonstration plan illustrating some of the industrial and office building guidelines







**COMPLETE STREETS**

# A.1

## COMPLETE STREETS

***Strong coordination of land use planning, transportation planning and urban design disciplines is needed to emphasize the placemaking role of transportation facilities and make people, rather than vehicles, the focus of street activity.***

A street is the primary interface between built form and the public realm, and it plays an important role in determining the neighbourhood character. Streets should be designed as active public spaces that accommodate needs of all users. They should be designed using a “Complete Streets” approach, where pedestrians, cyclists, transit users and motor vehicles are integrated safely and efficiently. These streets also support and enhance their natural and built environment, creating “places” and a sense of identity within each community.

Traditionally, the City has established a hierarchy of streets based on their functional classification (e.g., Arterials, Major Collectors, Minor Collectors, and Local Roads). While this classification primarily establishes the needs for vehicular movement and level of service, the City is interested in establishing a clear hierarchy of streets that balances mobility needs of all modes and offers a coordinated approach to streetscape design. In order to achieve this, the design of streets must consider the following:

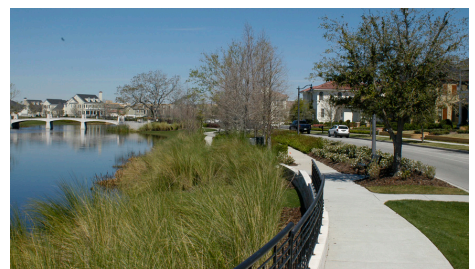
- Land use context: Existing and proposed land uses and the resulting built form along a street determine the level of activity and strongly influence the boulevard design including size, type and location of pedestrian and cycle amenities, street furniture and planting.
- Transportation networks: Multi-modal transportation network that identifies primary and secondary routes for pedestrians and cyclists, vehicular travel demand, and existing and proposed transit routes helps balance mobility requirements of different modes within a given street right-of-way.
- Natural environment: Street design should be sensitive to adjacent open spaces and water systems with special attention to tree preservation, type and placement of street trees, potential for green infrastructure, stormwater management, etc. Large, healthy trees are a valuable asset to the community. Where significant healthy existing trees/hedgerows exist on private or public lands, they should be protected where possible and feasible through street and block design.



Street design should respond to and accommodate adjacent land uses



Clearly demarcated zones for pedestrians, cyclists, and motorists enhance safety



Street design should be sensitive to adjacent open spaces and water systems

# A.2

## STREET COMPOSITION

Different users are accommodated within each street right-of-way in designated zones to ensure adequate space for movement, safety and operational requirements. Compositions of streets vary depending on the land use context, transportation network demands and priority for green infrastructure.

Design considerations and priorities and priorities of different street users/modes of travel are illustrated here. Section A.3 provides details and dimensions of various street types and how different street users are accommodated within the proposed right-of-ways in the North Markham Area.

### PEDESTRIANS

Every journey starts and ends on foot. However, pedestrians are the most vulnerable users on streets. Safety and comfort of pedestrians should be of high priority as they move and interact with other travel modes at intersections, transit stops, dedicated cycle facilities and crossings. As stated in Markham’s **Public Realm Strategy: Shared Places Our Spaces**, streets are an essential component to the creation of vibrant public realm.

Where appropriate, sidewalks should be designed as “places” using furniture, planting, lighting and art, thus creating opportunities for people to gather in ways best suited for the context.

Pedestrian movement is primarily accommodated in the Clearway Zone along sidewalks, with additional amenities provided in the Frontage, Furnishing and Edge Zones.

Figure A.1 illustrates various pedestrian zones within the right-of-way. People of all ages and abilities should be considered in the design of streets. For guidance on designing streets for universal access, refer to the City of Markham’s “**Accessibility Design Guidelines**”.



Figure A.1 Pedestrian Zones within the street right-of-way



## CYCLISTS:

Cycling offers a sustainable and efficient mobility choice in today's urban areas. It is important to design cycling facilities that prioritize safety, as cyclists can be seriously injured even in minor collisions. Greater separation and protection for cyclists are needed on streets with higher speeds and volumes of traffic. Clear delineation and visual separation between pedestrian and cycling facilities, using surface treatment, buffer zones and markings, are needed to protect pedestrians from cyclists.

Depending on the active mobility network planned for urban areas, cyclists can be accommodated on the boulevard on cycle tracks and multi-use paths, separated cycle lanes within the roadway or on shared lanes. Cycle lanes and cycle tracks are dedicated cycling facilities, while cyclists ride along with motor vehicles on shared lanes. The latter is most appropriate for streets with low speeds and low volumes of traffic. Adequate bicycle parking should be provided near destinations, and these should be located in the Furnishing Zone. Refer to the City of Markham's "**Bicycle Facility Selection Guide**" and "**Ontario Traffic Manual Book 18: Cycling Facilities**" for additional design guidance.



Raised and separated cycle tracks provide dedicated cycling facility on boulevards



Separated cycle lanes provide safe cycling routes

## TRANSIT:

In Markham's growing urban areas, it is important to ensure transit facilities are designed to provide an attractive travel choice, in order to reduce congestion and dependence on private automobiles. Dedicated and shared bus routes should be accommodated within the street

right-of-way, as determined by the transit network plans. Transit stops should be designed to provide safety and comfort to transit users during all hours and weather conditions with shelters, seating, information signs, lighting and street trees. Transit streets should be designed as special places,

inviting to pedestrians and cyclists and encouraging higher intensity and greater mix of land uses. Transit stops should be integrated with other modes by providing safe crossings, unobstructed and universal access, cycle parking, etc.



Dedicated bus lanes ensure that public transportation remains an efficient and viable option for commuters with choices

## MOTOR VEHICLES:

Markham’s street network needs to accommodate ongoing growth in its urban areas and enhance mobility and accessibility of all users. In the past, the focus has been on accommodating the automobile, which creates an imbalance in facilities for pedestrians, cyclists and transit users. The focus on “Complete Streets” will support a transportation system that provides mobility options for all users. It will also enable the limited street right-of-ways to be used more efficiently by modes that require less space, such as walking, cycling and transit (Figure A.2).

Motor vehicles are accommodated in the roadway, between curbs, on travel lanes that can be exclusively for automobiles or sometimes shared with buses or cyclists.

On-street parking, when provided, is accommodated on the outer edges of the roadway. Major Collectors and Arterial streets may have landscaped medians separating directional traffic, offering visual relief, accommodating signs and lighting and providing crossing refuge at intersections.

Design of roadways should give special consideration to vehicle speeds, especially at intersections. Vehicle speeds have strong influence on creating a safe environment for pedestrians and cyclists, who are the most vulnerable street users. Higher speeds increase stopping distance for vehicles and this increases severity of injury and chances of fatality for pedestrians and cyclists in the event of an accident.

The following design strategies may be considered to ensure safety of the most vulnerable users, depending on the street classification and mobility requirements.

- Design speeds should correlate with desired travel speed
- Reduce lane widths to correspond to and reinforce lower design speeds
- Reduce crossing distances to minimize exposure to traffic
- Ensure visibility for all modes at intersections and crosswalks
- Increase separation and buffers between various modes at higher traffic speeds
- Consider curb extensions and reduced corner radii at intersections
- Use textured materials and enhanced pavement markings at crosswalks, especially in areas with high pedestrian volumes
- Provide median refuge on wide Collectors and Arterials at crossings

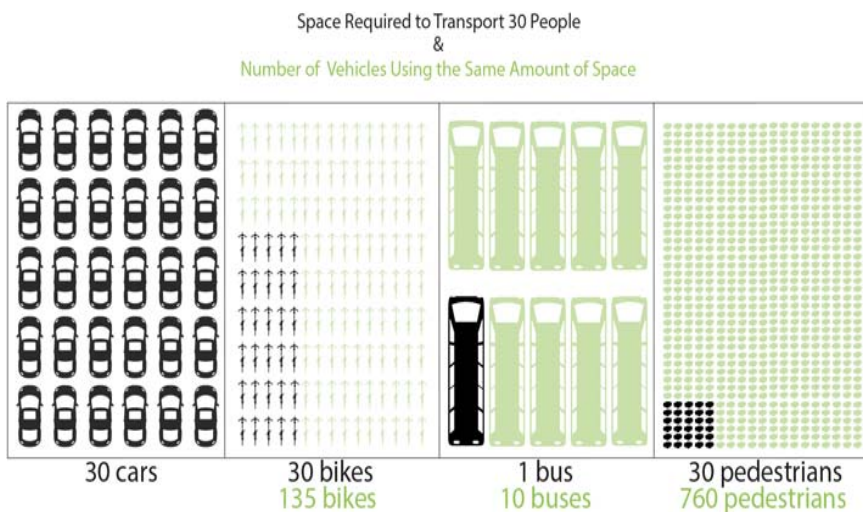


Figure A.2 Street right-of-ways are used more efficiently by modes that require less space, such as walking, cycling and transit

# A.3

## STREET TYPES

Street types and their composition are established based on their land use context and mobility requirements as indicated in the table below. The land use context defines how the streets relate to adjacent uses and needs of different users associated with the built environment. For example, Mixed Use streets are typically bound by higher densities of development and high levels of pedestrian activity. This is reflected in the width of sidewalks and treatment of Furnishing Zones with improved planting and street furniture. These streets may

also include off-peak parking in the curb lanes and designated lay-by parking with curb extensions. Street types are identified by their context name and street name. These streets may also include off-peak parking on curb lanes and designated lay-by parking with curb extensions.

The context names refer to the following key land use designations:

- Mixed Use
- Residential
- Employment Uses

Street names are based on their functional classification:

- Collector (Major or Minor Collector)
- Street (Local Road)

Right-of-way requirements for Arterial streets are established by the Region and laneways are to be designed based on City of Markham’s current standards. The following cross sections illustrate all other street types recommended for the North Markham Area. Figure A.3 shows the location of different types of Collector streets within North Markham Area.

Street Typology	R.O.W. (Metres)	Classification
Neighbourhood Main Collector	30.5	Major Collector
Residential Main Collector	30.5	Major Collector
Mixed Use Collector	24.5	Minor Collector
Residential Collector	24.5	Minor Collector
Employment Area Collector	24.5	Minor Collector
Mixed Use Street	18.5	Local Road
Residential Street A	16.5	Local Road (Lane-based)
Residential Street B	18.5	Local Road (Front-loaded with driveways)
Residential Street C	15.5	Local Road (Single-loaded fronting Greenway System/Parks)
Residential Street D	13.5	Local Road (Lane-based and Single-loaded fronting Greenway System/Parks)



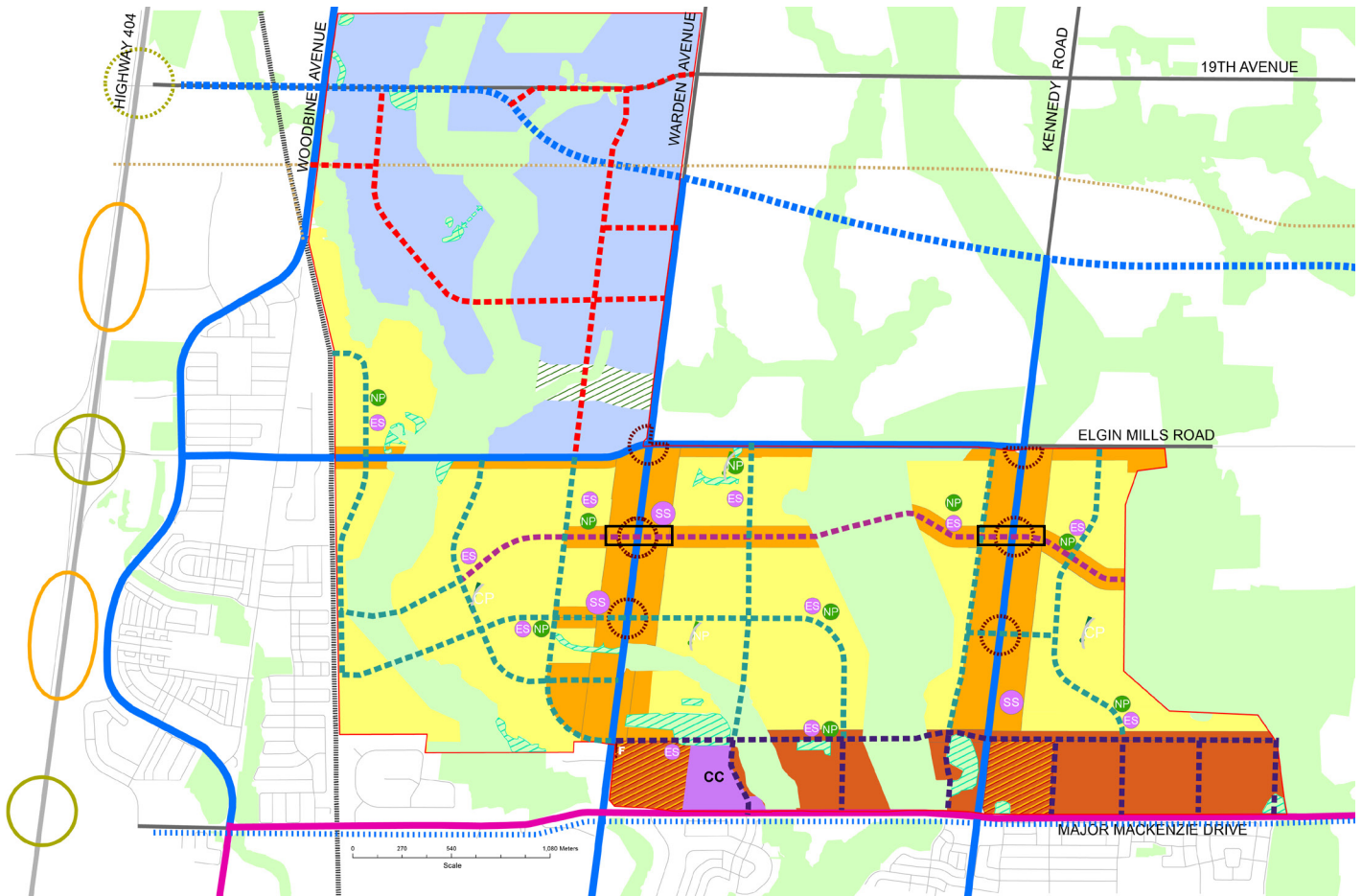


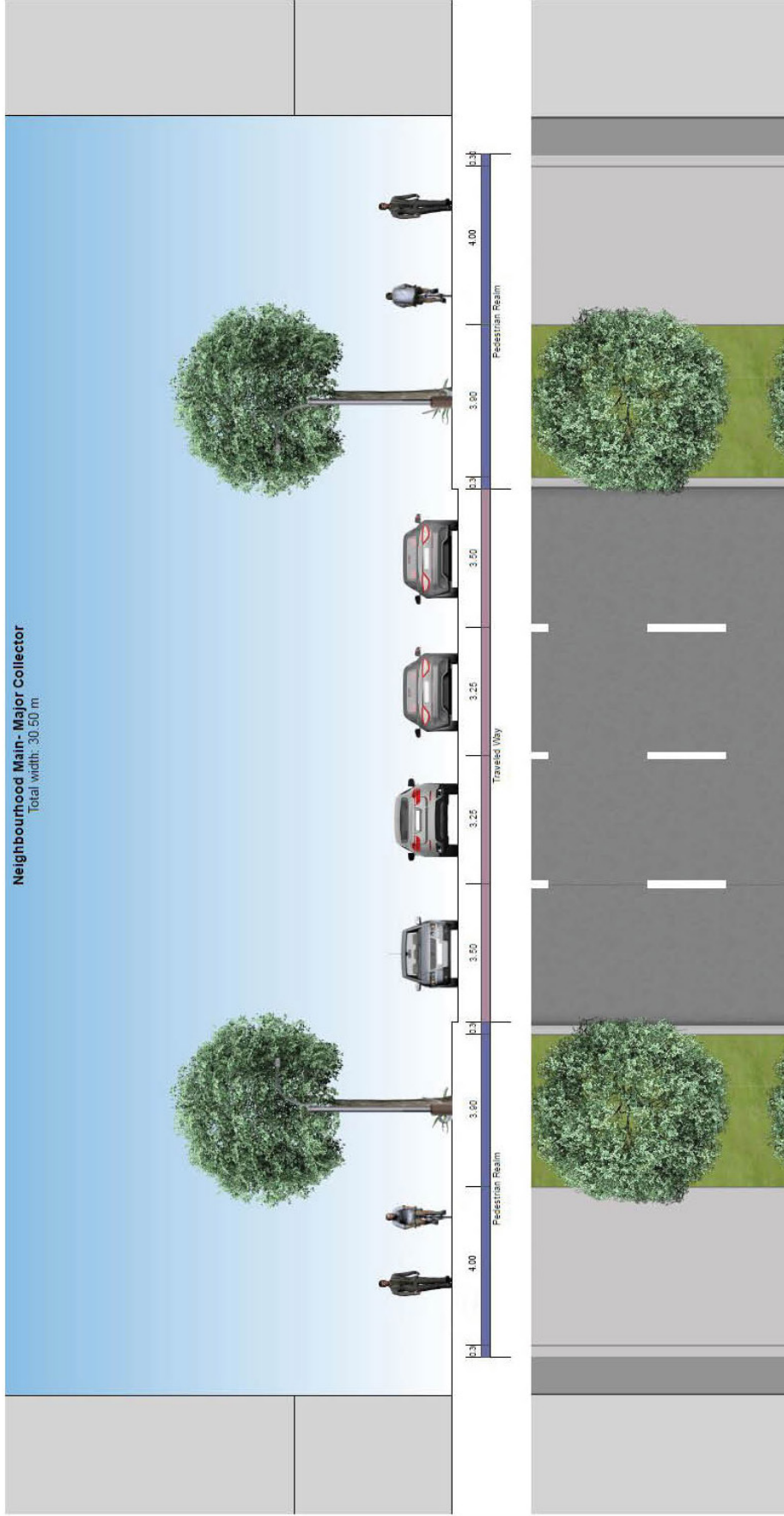
Figure A.3 Location and type of Collector Streets within North Markham Area

LEGEND

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li><span style="color: purple;">- - -</span> Residential Main Collector</li> <li><span style="border: 1px dashed purple; padding: 2px;">- - -</span> Neighbourhood Main Collector</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: blue;">- - -</span> Mixed Use Collector</li> <li><span style="color: teal;">- - -</span> Residential Collector</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: red;">- - -</span> Employment Area Collector</li> </ul> |
|--|--|--|
- 
- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li><span style="border-bottom: 1px solid red; width: 20px; display: inline-block;"></span> Study Area</li> <li><span style="background-color: lightgreen; width: 20px; height: 10px; display: inline-block;"></span> Greenway System</li> <li><span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, lightgreen 2px, lightgreen 4px); width: 20px; height: 10px; display: inline-block;"></span> Proposed Ecological Corridor (Under Study)</li> <li><span style="background: repeating-linear-gradient(-45deg, transparent, transparent 2px, lightgreen 2px, lightgreen 4px); width: 20px; height: 10px; display: inline-block;"></span> Greenway System Under Study</li> <li><span style="background-color: yellow; width: 20px; height: 10px; display: inline-block;"></span> Residential Neighbourhood Area</li> <li><span style="background-color: orange; width: 20px; height: 10px; display: inline-block;"></span> Mixed Use Neighbourhood Corridor</li> <li><span style="background-color: brown; width: 20px; height: 10px; display: inline-block;"></span> Mixed Use Regional Corridor</li> <li><span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, brown 2px, brown 4px); width: 20px; height: 10px; display: inline-block;"></span> Mixed Use Regional Corridor - Retail Focus</li> <li><span style="background-color: lightblue; width: 20px; height: 10px; display: inline-block;"></span> Employment Area</li> </ul> | <ul style="list-style-type: none"> <li><span style="border: 1px dashed red; border-radius: 50%; width: 15px; height: 15px; display: inline-block;"></span> Neighbourhood Service Node</li> <li><span style="background-color: purple; color: white; border-radius: 50%; width: 15px; height: 15px; display: inline-block; text-align: center; line-height: 15px;">CC</span> Community Centre</li> <li><span style="background-color: green; color: white; border-radius: 50%; width: 15px; height: 15px; display: inline-block; text-align: center; line-height: 15px;">CP</span> Community Park</li> <li><span style="background-color: green; color: white; border-radius: 50%; width: 15px; height: 15px; display: inline-block; text-align: center; line-height: 15px;">NP</span> Neighbourhood Park</li> <li><span style="background-color: green; color: white; border-radius: 50%; width: 15px; height: 15px; display: inline-block; text-align: center; line-height: 15px;">NP</span> Neighbourhood Park (3 ha or greater based on parkland dedication requirements)</li> <li><span style="background-color: purple; color: white; border-radius: 50%; width: 15px; height: 15px; display: inline-block; text-align: center; line-height: 15px;">ES</span> Elementary School</li> <li><span style="background-color: purple; color: white; border-radius: 50%; width: 15px; height: 15px; display: inline-block; text-align: center; line-height: 15px;">SS</span> Secondary School</li> <li><span style="background-color: red; color: white; border-radius: 50%; width: 15px; height: 15px; display: inline-block; text-align: center; line-height: 15px;">F</span> Fire Station</li> </ul> | <ul style="list-style-type: none"> <li><span style="border-bottom: 1px solid green; width: 20px; display: inline-block;"></span> Existing Highway Interchange</li> <li><span style="border-bottom: 1px dashed green; width: 20px; display: inline-block;"></span> Proposed Highway Interchange</li> <li><span style="border-bottom: 1px solid orange; width: 20px; display: inline-block;"></span> Proposed Highway Mid-block Crossing</li> <li><span style="border-left: 1px solid black; border-right: 1px solid black; width: 20px; display: inline-block;"></span> Functional Arterial Road System</li> <li><span style="border-left: 1px solid gray; border-right: 1px solid gray; width: 20px; display: inline-block;"></span> Highway</li> <li><span style="border-bottom: 1px solid purple; width: 20px; display: inline-block;"></span> Regional Rapid Transit Corridor</li> <li><span style="border-bottom: 1px solid blue; width: 20px; display: inline-block;"></span> Proposed Regional Transit Priority (Frequent Transit Network and/or HOV)</li> <li><span style="border-bottom: 1px dashed black; width: 20px; display: inline-block;"></span> Hydro Corridor</li> <li><span style="border-bottom: 1px dashed brown; width: 20px; display: inline-block;"></span> TransCanada Pipeline Easement</li> </ul> |
|---|---|---|

# Neighbourhood Main Street

Functional Classification: Major Collector  
30.5m ROW

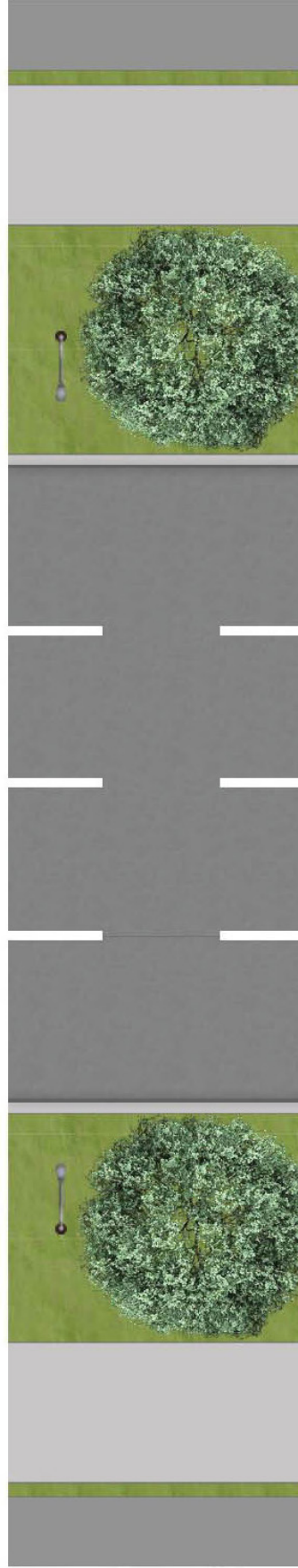
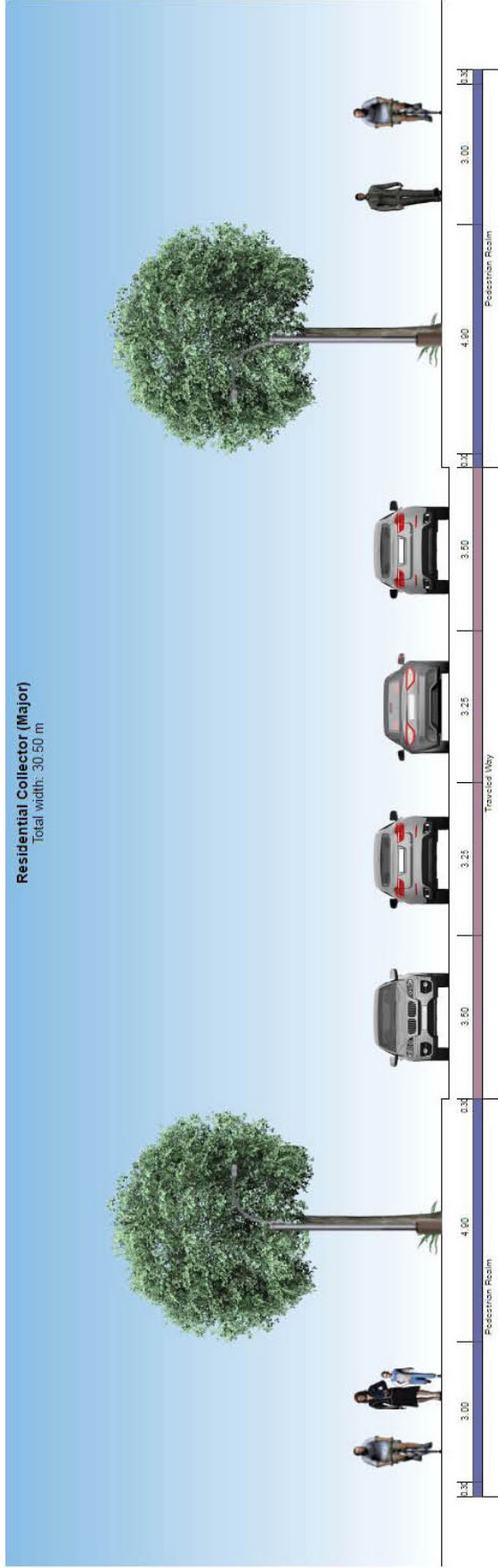


**Notes:**

1. Can be converted to dedicated cycle track with 0.5m buffer from sidewalk if maintenance LOS is approved to be the same as that for sidewalk.
2. Gold standard for streetscape along mixed use neighborhood nodes
3. Off-peak parking on curb lane (subject to further study)

# Residential Collector- Main

Functional Classification: Major Collector  
30.5m ROW



Frontage Zone (m)	Boulevard					Roadway				Total Right-of-Way (m)	
	Sidewalk / MUP (m)	Furnishing Zone (m)	Edge Zone (m)	Cycle Track (m)	Total	Curb Lane (m)	Travel Lane (m)	Cycle Lane (m)	On-street Parking <sup>1</sup> (m)		Total
0.30	3.00	4.90	0.30	n/a	8.50 X 2	3.50 X 2	3.25 X 2	0.00	0.00	13.50	30.50

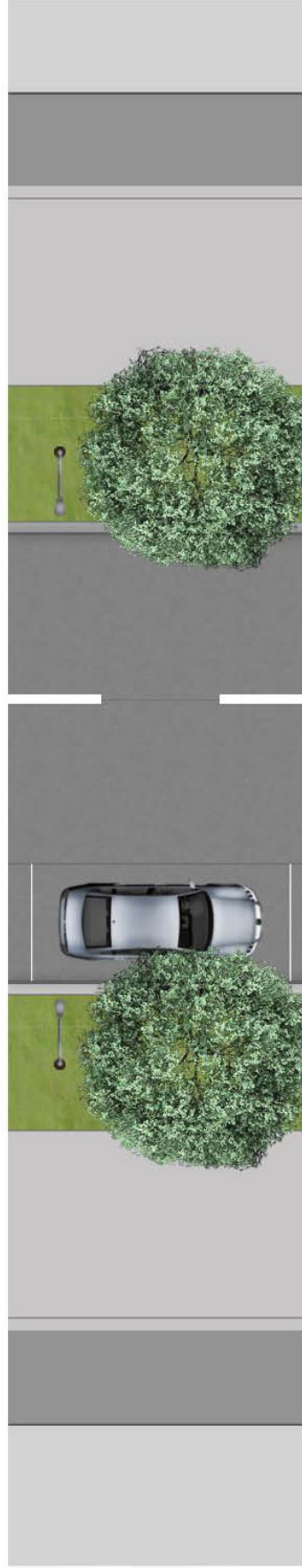
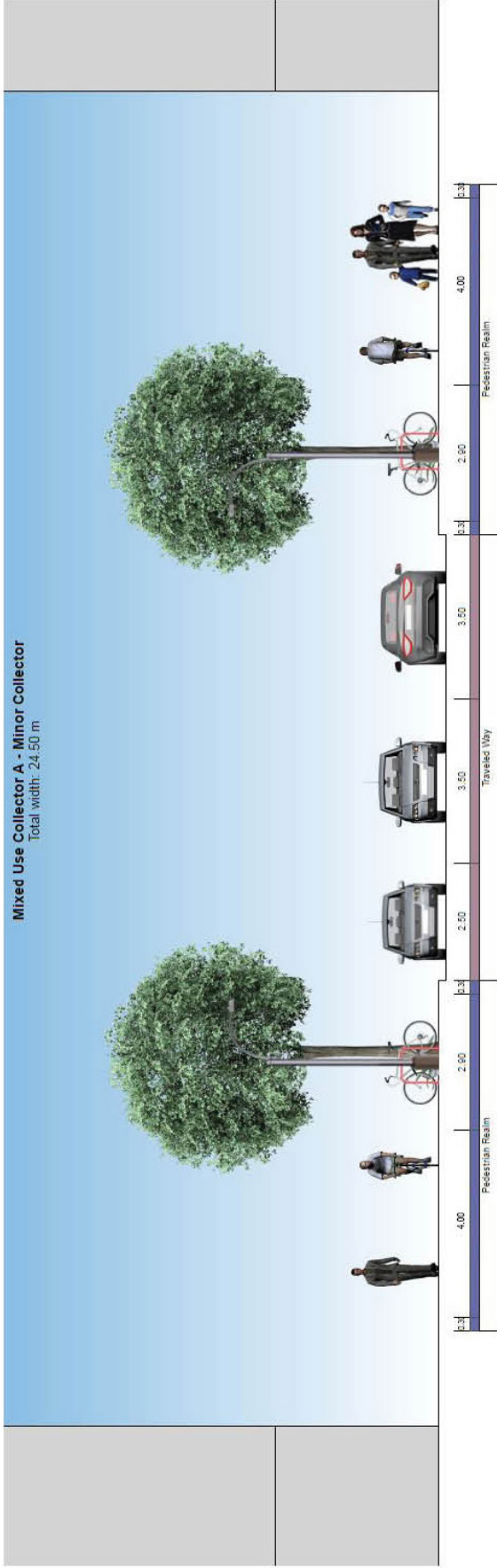
**Notes:**

1. Curb lane may be used for off-peak parking (subject to further study)



# Mixed Use Collector

Functional Classification: Minor Collector  
24.5m ROW



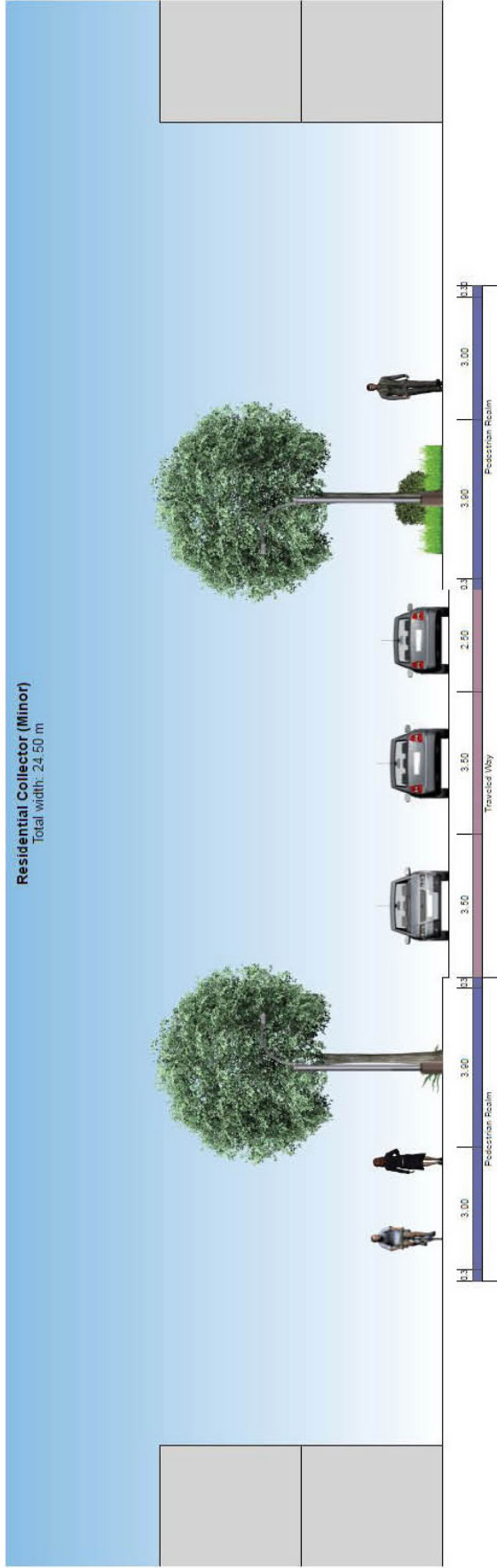
Frontage Zone (m)	Boulevard					Roadway					Total Right-of-Way (m)
	Sidewalk / MUP <sup>2</sup> (m)	Furnishing Zone (m)	Edge Zone (m)	Cycle Track (m)	Total	Curb Lane (m)	Travel Lane (m)	Cycle Lane (m)	On-street Parking <sup>1</sup> (m)	Total	
0.30	4.00	2.90	0.30	n/a	7.50 X 2	3.50 X 2	0.00	0.00	2.50	9.50	24.50

**Notes:**

1. On-street parking designed as lay-by with curb extensions providing space for LID/snow storage
2. Can be converted to dedicated cycle track with 0.5m buffer from sidewalk if maintenance LOS is approved to be the same as that for sidewalk.

# Residential Collector

Functional Classification: Minor Collector  
24.5m ROW



		Boulevard				Roadway				Total Right-of-Way (m)	
Frontage Zone (m)	Sidewalk / MUP (m)	Furnishing Zone (m)	Edge Zone (m)	Cycle Track (m)	Total	Curb Lane (m)	Travel Lane (m)	Cycle Lane (m)	On-street Parking <sup>1</sup> (m)	Total	
0.30	3.00	3.90	0.30	n/a	7.50 X 2	3.50 X 2	0.00	0.00	2.50	9.50	24.50

**Notes:**

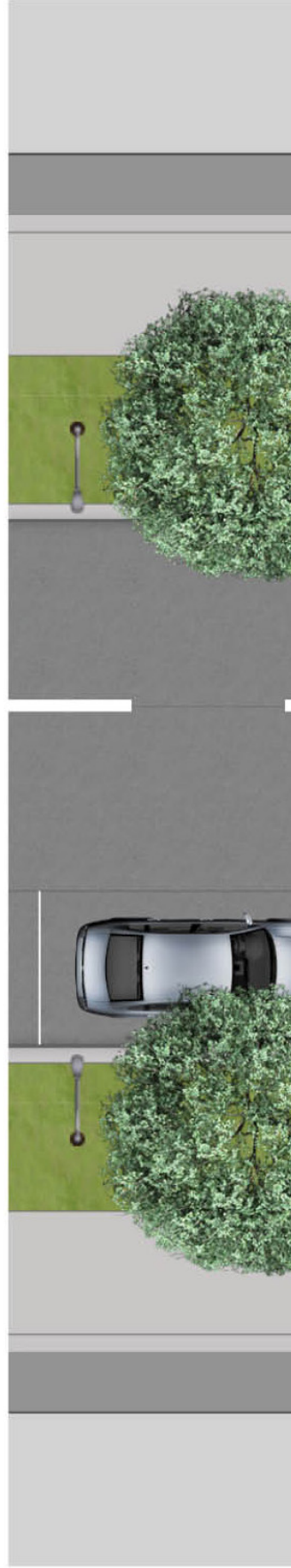
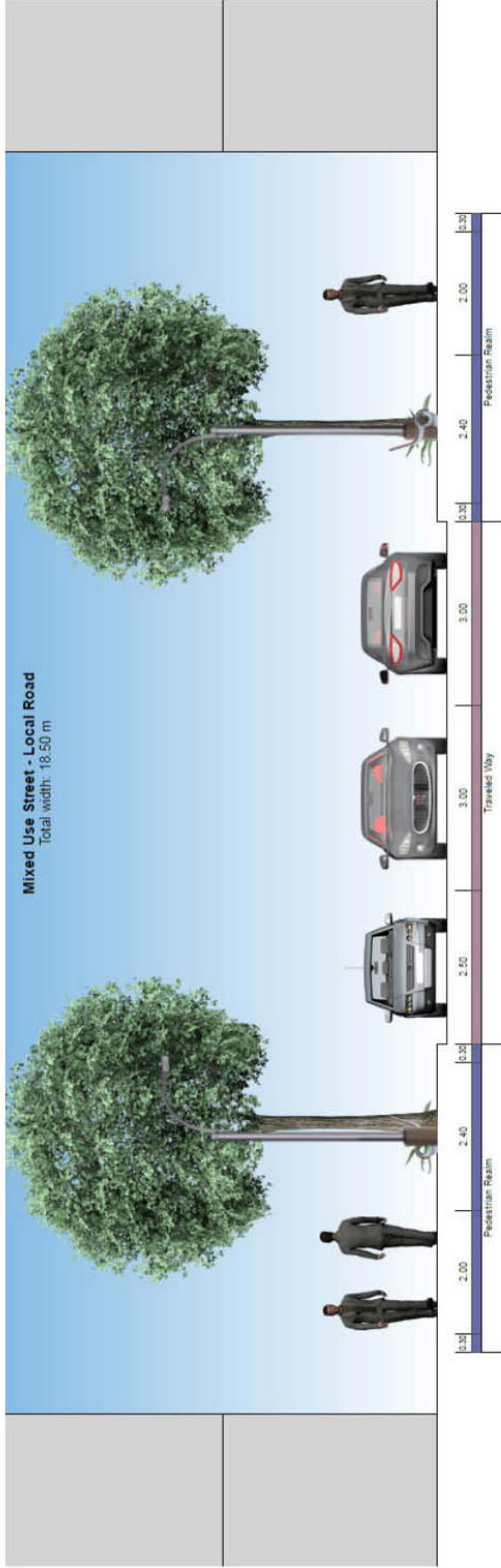
1. On-street parking designed as lay-by with curb extensions providing space for LID/snow storage





# Mixed Use Street

Functional Classification: Local Road  
18.5m ROW



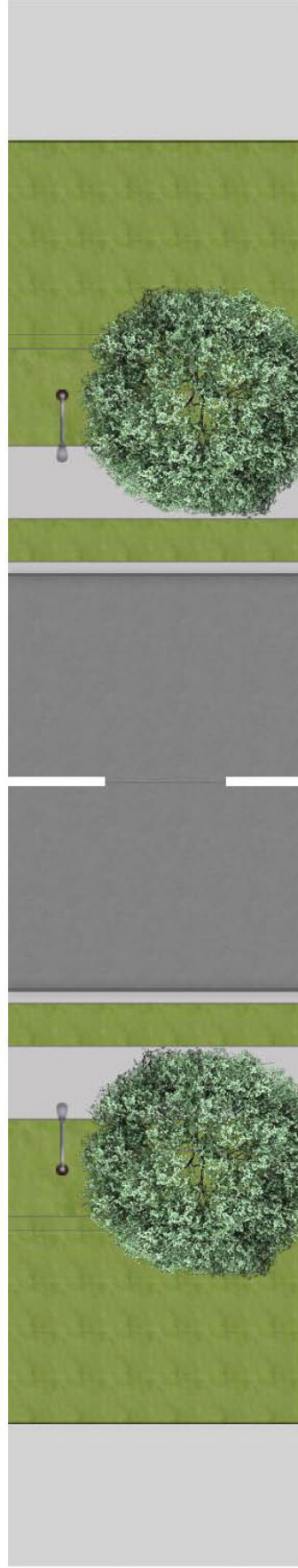
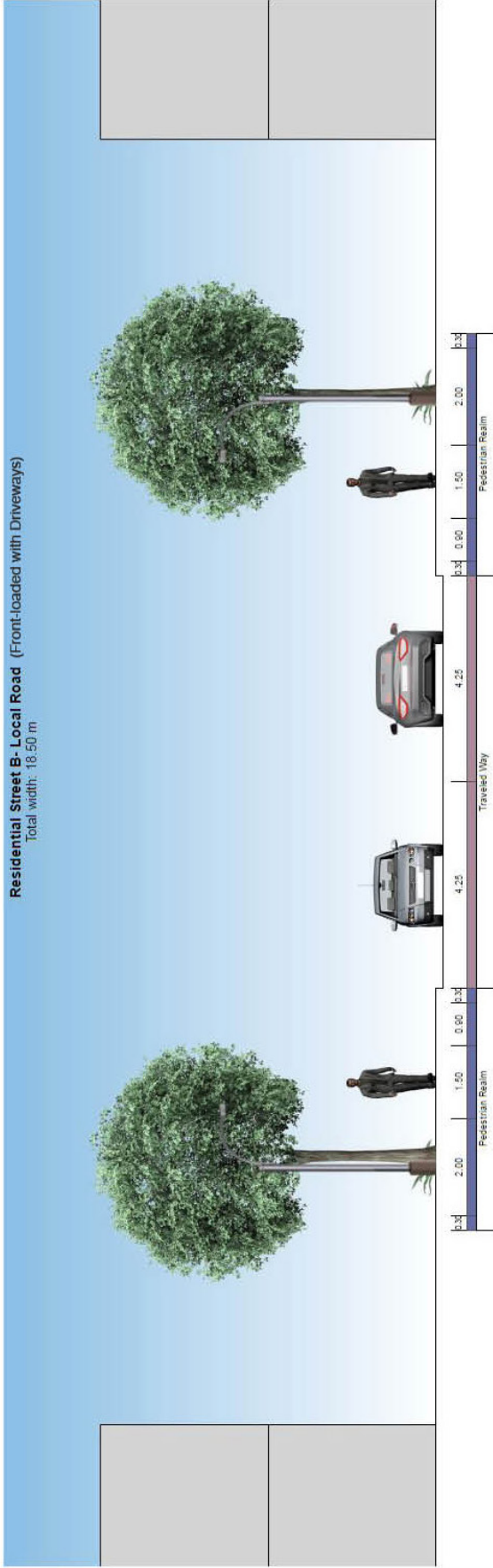
Frontage Zone (m)	Sidewalk / Clearway Zone (m)	Boulevard				Roadway				Total Right-of-Way (m)	
		Furnishing Zone (m)	Edge Zone (m)	Cycle Track (m)	Total	Curb Lane (m)	Travel Lane (m)	Cycle Lane (m)	On-street Parking (m)		Total
0.30	2.00	2.40	0.30	0.00	5.00 x 2	3.00 x 2	0.00	0.00	2.50	8.50	18.50





# Residential Street - B

Functional Classification: Local Road  
18.5m ROW



Frontage Zone (m)	Boulevard				Roadway				Total Right-of-Way <sup>1</sup> (m)		
	Sidewalk / Clearway Zone (m)	Furnishing Zone (m)	Edge Zone (m)	Cycle Track (m)	Total	Curb Lane (m)	Travel Lane (m)	On-street Parking (m)		Total	
0.30	1.50	2.25	1.20	0.00	5.00 X 2	4.25 X 2	0.00	0.00	0.00	8.00	18.50

**Notes:**

1. Preferred for front-loaded development with driveways (additional soil volume in the front yards to support healthy street trees)



# Residential Street - C

Functional Classification: Local Road  
15.50 m ROW



Frontage Zone (m)	Boulevard					Roadway				Total Right-of-Way (m)	
	Sidewalk / Clearway Zone <sup>1</sup> (m)	Furnishing Zone (m)	Edge Zone (m)	Cycle Track (m)	Total	Curb Lane <sup>2</sup> (m)	Travel Lane (m)	Cycle Lane (m)	On-street Parking (m)		Total
0.30	1.50	2.90	0.30	0.00	7.50	4.00 X 2	0.00	0.00	0.00	8.00	15.50
0.00	1.50	0.00	1.00	0.00							

**Notes:**

- To be used when valley buffer is not sufficient to include a multi-use path and a sidewalk is required on the valley edge.
- Includes two 3.00m wide travel lanes and 2.00m wide on-street parking. Applicable to lane-based development.

# Residential Street - D

Functional Classification: Local Road  
13.5m ROW



**Notes:**

- To be used only where a multi-use path (MUP) is provided within the valley buffer.
- Includes two 3.00m wide travel lanes and 2.00m wide on-street parking. Applicable to lane-based development.

# A.4

## LANEWAY DESIGN

Alternative standards should be used where existing standards are not feasible.

### ALTERNATIVE STANDARDS

- Max Length: 150 m Single-Detached dwellings, Semi-Detached dwellings and Townhouses
- Curb Radii – 7 m
- Sprinkler detached garages (where hydrant access exceeds 45 m)
- Mid block attached garages to be considered
- 10.0 m lane width required for mid-block connector lanes (See Figure A.4)
- Where required, provide mid-block urban open spaces with integrated hard surface notches snow/play/storage permit (see Figure A.5)

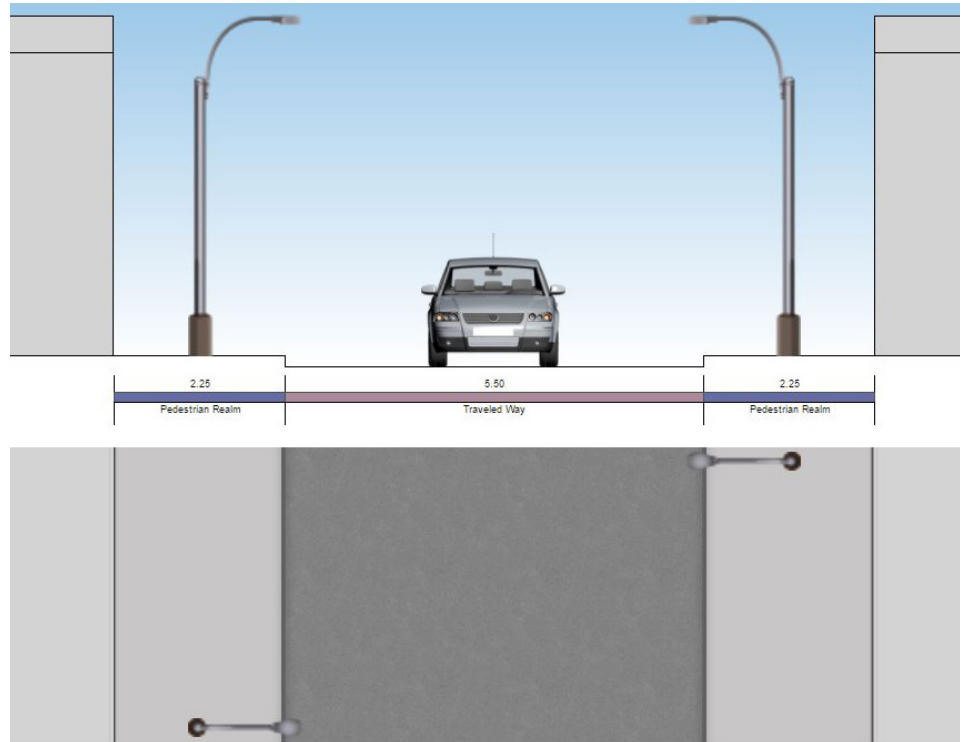


Figure A.4 10.0 m wide residential mid-block connector lane

#### Note:

For additional requirements, refer to the City's lane standards



## A.4.1 OPEN SPACE “NOTCHES”

Snow storage locations/ notches along the lanes, preferably integrated with mid-block open spaces, should be provided for lane-based ground-related residential units fronting Arterials and Major Collectors (See Figure A.4).

1. Where possible, notches should be provided at the termination of intersecting lanes or streets.
2. Where appropriate, notches should intergrade seasonal parking, play spaces and soft landscape.
3. A minimum of one notch is required per block for lane-based residential development along an Arterial or Major Collector.
4. Overall width of open space with integrated notches should be minimum 10 m.

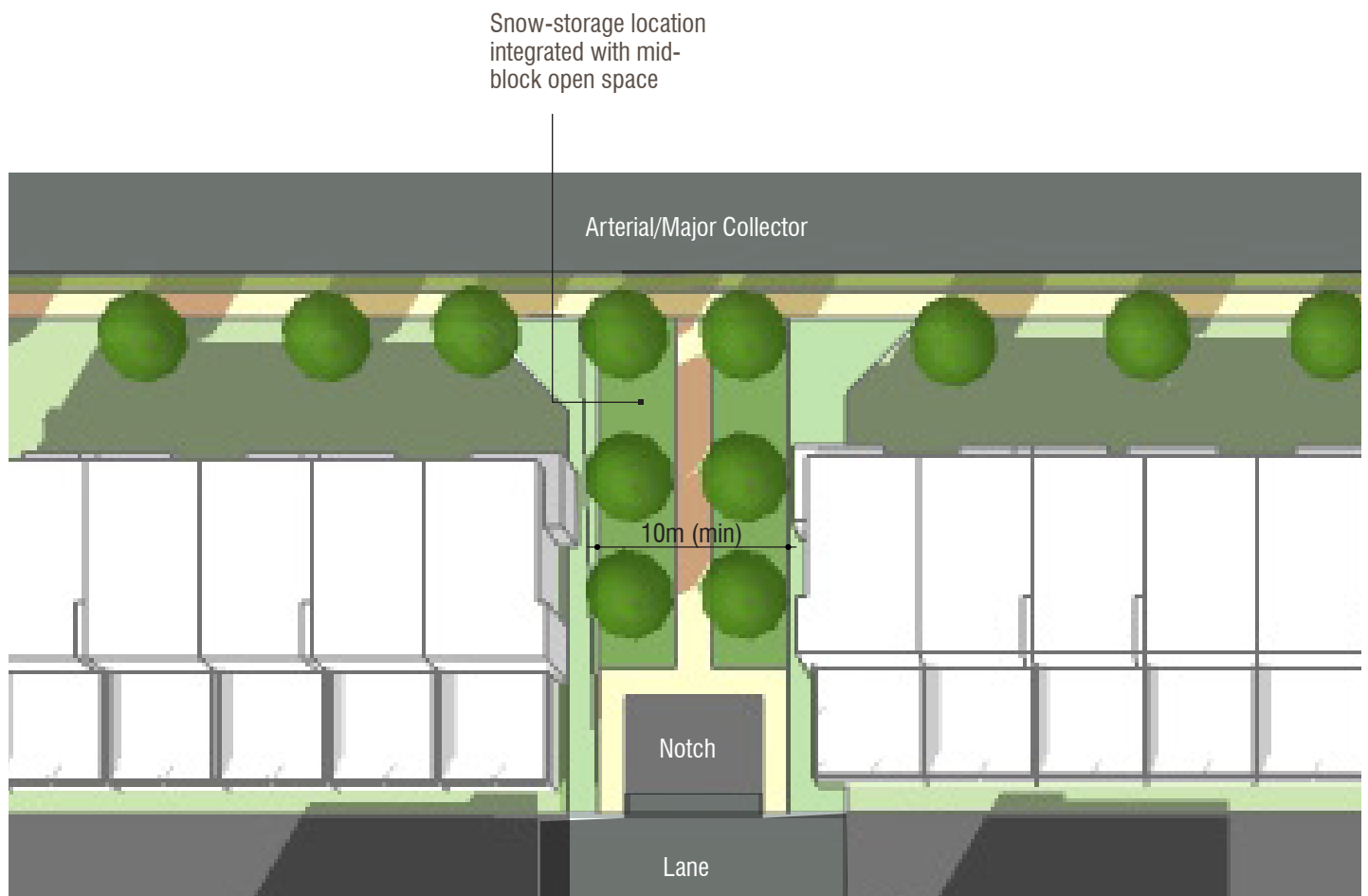


Figure A.5 Demonstration of notch integrated with a mid-block open space

# A.5

## INTERSECTION DESIGN

Design of intersections should balance the needs of all users by ensuring safe and efficient movement for motorized and non-motorized modes. Pedestrians and cyclists are the most vulnerable users at intersections and their needs should be prioritized in the design. The following design objectives should be considered:

1. Ensure universal accessibility for all aspects of intersection design, including geometry, crossing distance and signal phasing.
2. Increase pedestrian safety by reducing vehicle speeds at intersections through smaller corner radii or other traffic calming measures. Avoid slip lanes, pork chops and other features that support increased traffic speeds.
3. Ensure sightlines are unobstructed for all road users at intersections by locating crosswalks closer to the intersection and minimizing clutter.
4. Align curb ramps to the desired travel path, providing two separate ramps at every corner.
5. Ensure convenient access to people with mobility and visual impairments and by designing AODA compliant curb ramps.
6. Improve safety at intersections along streets with high volumes of pedestrian traffic by reducing crossing distances and improving visibility on corners by using curb extensions/bulb-outs along streets with on-street parking.
7. Carefully consolidate and locate signs, light poles, utility boxes, traffic control devices, etc. to ensure accessibility and minimize visual clutter.
8. Ensure cycle facilities and routes at intersections are clear, continuous and comfortable to improve safety and minimize conflicts with vehicles and pedestrians.
9. Incorporate transit stops at intersections to ensure accessibility, safety and convenience of transit users and minimize transit service delays.
10. Choose appropriate traffic control based on the needs of all road users.
11. Incorporate protected intersection for cyclists, as needed.
12. Consider Accessible Pedestrian Signals (APS) and bicycle-friendly signal phasing to encourage safety and comfort of all modes at intersections.
13. Avoid offset intersections.
14. Ensure consistent approach to signing and pavement markings at all intersections.

**B**

**LID & GREEN INFRASTRUCTURE**



# B.1

## LOW IMPACT DEVELOPMENT & GREEN INFRASTRUCTURE

Sustainable stormwater management systems are integral components of resilient urban development. These systems also play one of the key roles in climate change mitigation and adaptation. In the North Markham Area, stormwater will be managed as a resource in accordance with current policies of the Province, TRCA, Region of York, Markham’s OP and the directions of the Subwatershed Plan for the North Markham Area. The current policies and directions require a comprehensive approach and use of innovative best practices for stormwater management. An integrated design approach to minimize stormwater flows and reliance on stormwater ponds is needed, which includes appropriate Low Impact Development (LID) features and Green Infrastructure (GI).

LID and GI are defined by the Province of Ontario in the Provincial Policy Statement (2014) and in the Growth Plan for Greater Golden Horseshoe (2017) respectively, as follows:

**Low Impact Development** is defined as an approach to stormwater management that seeks to manage rain and other precipitation as close as possible to where it falls to mitigate the impacts of increased runoff and stormwater pollution. It includes a set of site design strategies and distributed, small-scale structural practices to mimic the natural hydrology to the greatest extent possible through infiltration, evapotranspiration, harvesting, filtration, and detention of stormwater. Low impact development can include: bio-swales, permeable pavement, rain gardens, green roofs, and exfiltration systems. Low impact development often employs vegetation and soil in its design, however, that does not always have to be the case.

(Growth Plan for Greater Golden Horseshoe, 2017)

**Green Infrastructure** is defined as natural and human-made elements that provide ecological and hydrologic functions and processes. Green infrastructure can include components such as natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces, and green roofs.

(Provincial Policy Statement, 2014)



Rain gardens minimize stormwater runoff and provide additional visual amenities within the public realm

The Region of York policies require a comprehensive and integrated approach to planning and implementation of stormwater management throughout the region to:

*“... minimize stormwater volume and contaminant loads, and maximize infiltration through an integrated treatment approach, which may include techniques such as rainwater harvesting, runoff reduction of solids and materials at source, phosphorus reduction, constructed wetlands, bioretention swales, green roofs, permeable surfaces, clean water collection systems, and the preservation and enhancement of native vegetation cover.”* (YR Official Plan 2016 Office Consolidation, 5.6.11)

Furthermore, changes on the water balance of an area are minimized *“through implementation of innovative site design and engineering practices applied in a distributed manner by*

- *using an ecosystem (landscape) based approach to planning*
- *focusing on preventing stormwater runoff*
- *treating stormwater as close to source as possible*
- *creating multi-functional landscapes*
- *providing education and maintenance”*

(YR New Communities Guidelines 2014)

The definition for GI includes natural heritage systems and urban forest to emphasize and acknowledge their important role in stormwater management for sustainable urban development. LID features include GI that provides ecological function and processes along with hydrologic functions and processes (e.g., include vegetation). LIDs and GI are the modern stormwater management tools that, in addition to stormwater management, address many dimensions of sustainability, including environmental, economic, health and social aspects. The co-benefits of GI specifically include better air quality, higher property values, beautification, heat island mitigation, energy savings and carbon sequestration.

Natural systems in the North Markham Area, such as woodlands, meadows, valleylands, and wetlands, will continue to play an important role in rainwater management by absorbing, slowing and filtering of the runoff and recharging the groundwater. Man-made stormwater management facilities in North Markham Area will be composed of water retention facilities to control release of water into receiving streams (such as stormwater ponds), LID features and GI. Examples of LIDs and GI are rainwater harvesting, infiltration galleries, enhanced soils, bio-swales and rain gardens, permeable pavement, green roofs and stormwater planters, among others.

The design of stormwater management facilities in the North Markham Area, including LIDs and GI, should be considered and integrated into design of the community at the earliest stage of the planning and design process. Development of the North Markham Area provides an important opportunity to manage water in a comprehensive and sustainable manner: to manage rainwater at or near the source, to allow infiltration, where feasible, and to design systems that encourage soil absorption, evapotranspiration and reduce the need for potable water. In addition, the use of creative and functional stormwater facilities present opportunities to create multi-functional spaces and features with multiple co-benefits to new communities. These benefits are the additional recreational and visual amenities through creating high-performing landscapes and re-use of water, enhanced urban ecology, improved air quality, heat island mitigation and energy savings, as well as added resilience and carbon



Landscape area in surface parking lot used as LID feature for stormwater management



sequestration.

The City's standards and conditions of acceptance for LIDs and GI located within publicly owned land and as part of private development are forthcoming. Urban Design guidance for the LIDs and GI in the North Markham Area is provided below and is subject to further updates to ensure alignment with the emerging standards and practices:

1. Where feasible, design elements of GI should be visible, creative, and engaging to emphasize the important role water plays for sustainability and resiliency of the community.
2. Public spaces should be designed to value and capture the resource of rainfall through use of GI to support healthy soils and vegetation.
3. The design of public spaces and facilities abutting protected natural areas should enhance the benefits these areas provide to water quality through careful consideration of complementary features and functions.
4. Where feasible, GI should be considered for the transportation network to provide enhanced soil volume and additional tree planting, and enhanced right-of-way landscaping. Vegetated buffers, where provided for the abutting development along busy streets, could accommodate GI to support landscaping and reduce runoff.
5. The design of public facilities, parks and school sites should incorporate GI, including, but not

**Note:**

Reference should be made to the following documents:

- **Markham's Stormwater Management Guidelines** (October 2016)
- **Markham's Stormwater Management Pond and Planting Design Guidance** (January 2014)
- **Markham's LID Guidelines** (forthcoming)
- **Ontario Ministry of Environment and Climate Change Low Impact Development Guidance Manual** (forthcoming)
- **TRCA LID Stormwater Management Planning and Design Guide** (2011)
- **LID and Green Infrastructure definitions in Growth Plan for Greater Golden Horseshoe** (2017)
- **YR New Communities Guidelines: Water Management** (2014)

limited to, pervious parking lots, playground and trail surfaces, bio-swales, constructed wetlands, naturalized landscapes, enhanced tree planting, rain gardens and rain water re-use. These features must be considered at the early design stages, must be well integrated into overall design concept and should support and enhance programming of open spaces and function of public facilities.

6. Public buildings should be designed to manage rainwater by use of building features such as green walls, green roofs and rainwater harvesting and re-use.
7. Public spaces and facilities should demonstrate leadership by implementing innovative stormwater management pilots and demonstration projects.
8. The use of LIDs and GI in the public realm and as components of public buildings and facilities should realize opportunities for public education and engagement through interpretation and showcasing the role of sustainable



Example of green infrastructure integrated with street design



Pervious pavers in parking lot



A large, white, sans-serif capital letter 'C' is centered on a teal rectangular background. The letter is thick and has a slight shadow effect, giving it a three-dimensional appearance.

## **REFERENCES**

# C.1

## COMMUNITY DESIGN PLAN: SAMPLE TABLE OF CONTENTS

### 1.0 INTRODUCTION

- 1.1 Vision
- 1.2 Overview
  - 1.2.1 Overview of the Policy Framework
  - 1.2.2 Area Context
  - 1.2.3 Area History
  - 1.2.4 Area Analysis

### 2.0 SUSTAINABLE DEVELOPMENT PRINCIPLES FOR THE NORTH MARKHAM AREA

- 2.1 Protection, Enhancement & Integration of the Greenway System
- 2.2 Building a Compact, Complete Community
  - 2.2.1 Compact Development
  - 2.2.2 Mix and Range of Housing and Jobs
- 2.3 Vibrant Multi-Functional Public Realm
  - 2.3.1 Open Space and Parks System
  - 2.3.2 Streetscapes
- 2.4 Integrated Multi-Modal Transportation Network
  - 2.4.1 Active Transportation Network
  - 2.4.2 Transit Supportive Community Design
  - 2.4.3 Pedestrian-Oriented Development
- 2.5 Mixed Use Corridors
  - 2.5.1 Mixed Use Regional Corridor – Major MacKenzie Drive
  - 2.5.2 Mixed Use Neighbourhood Corridors
- 2.6 Neighbourhood Nodes & Focal Points
  - 2.6.1 Primary Neighbourhood Service Node
  - 2.6.2 Secondary Neighbourhood Service Node
  - 2.6.3 Neighbourhood Focal Point
- 2.7 Green Buildings and Sites
- 2.8 Sustainable Stormwater Management
- 2.9 Solar Strategy
- 2.10 Cultural Heritage

### 3.0 COMMUNITY DESIGN PLAN

- 3.1 The Greenway System
  - 3.1.1 Greenway System Connectivity and Crossings
  - 3.1.2 Pathways & Trails
  - 3.1.3 Access and Interface
  - 3.1.4 Views and Vistas
- 3.2 Street and Block Pattern
  - 3.2.1 Blocks' Configuration
  - 3.2.2 Links to Adjacent Areas
- 3.3 Transportation Network
  - 3.3.1 Future Transit Network
  - 3.3.2 Active Transportation Network
    - 3.3.2.1 Pedestrian and Cycling Facilities
    - 3.3.2.2 Interconnectivity of the Network
    - 3.3.2.3 Connectivity with Transit Network and Off-Road Trail System
  - 3.3.3 Arterial Roads
  - 3.3.4 Collector Streets
  - 3.3.5 Local Streets
  - 3.3.6 Laneways
  - 3.3.7 On-Street Parking
  - 3.3.8 Utility Coordination
- 3.4 Land Use Mix & Distribution
  - 3.4.1 Distribution of Density and Land Use
  - 3.4.2 Mix of Housing Types
  - 3.4.3 Neighbourhood Nodes
  - 3.4.4 Focal Points

### 4.0 SITE PLANNING & BUILT FORM DESIGN

- 4.1 Site Analysis and Building Types
- 4.2 Residential Buildings
  - 4.2.1 Site Planning
  - 4.2.2 Vehicular Access, Parking & Servicing
  - 4.2.3 Building Massing
  - 4.2.4 Building Elevations
  - 4.2.5 Building Entrances
  - 4.2.6 Pedestrian Circulation
  - 4.2.7 Amenity Spaces and Landscaping

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#### 4.3 Mixed Use and Non-Residential Buildings

- 4.3.1 Site Planning
- 4.3.2 Vehicular Access, Parking & Servicing
- 4.3.3 Building Massing
- 4.3.4 Building Elevations
- 4.3.5 Building Entrances
- 4.3.6 Pedestrian Circulation
- 4.3.7 Lighting
- 4.3.8 Amenity Spaces and Landscaping
- 4.3.9 Commercial Signage
- 4.3.10 Public Safety

#### 4.4 Special Considerations

- 4.4.1 Gateways
- 4.4.2 Landmarks
- 4.4.3 Corner Sites
- 4.4.4 Cultural Heritage Buildings and Landscapes
- 4.4.5 Buildings Abutting Greenway System, Open Spaces & Parks
- 4.4.6 Public Buildings and Institutions

### 5.0 PUBLIC REALM: STREETScape DESIGN

#### 5.1 General Guidelines

- 5.1.1 Pedestrian and Cycling Facilities
- 5.1.2 Transit Stops
- 5.1.3 Street Trees and Street Landscaping
- 5.1.4 Lighting
- 5.1.5 Street Furniture and Utilities
- 5.1.6 Community Mailboxes

#### 5.2 Streetscape Typologies

- 5.2.1 Mixed Use Regional Corridor
- 5.2.2 Mixed Use Neighbourhood Corridors
- 5.2.3 Collector Streets
- 5.2.4 Local Streets

#### 5.3 Special Streetscapes: Neighbourhood Nodes and Focal Points

- 5.3.1 Primary Neighbourhood Service Node
- 5.3.2 Secondary Neighbourhood Service Node
- 5.3.3 Neighbourhood Focal Point

#### 5.4 Public Art Strategy

### 6.0 PUBLIC REALM: PARKS & OPEN SPACE SYSTEM

#### 6.1 Parks and Open Space System

- 6.1.1 Interconnectivity: Open Space Links
- 6.1.2 Connectivity and Interface with the Greenway System
- 6.1.3 Accessibility
- 6.1.4 Integration with Active Transportation Network
- 6.1.5 Views & Vistas

#### 6.2 Park Typologies & Recreation

#### 6.3 POPS

### 7.0 IMPLEMENTATION

#### 7.1 Phasing

#### 7.2 Long-Term Vision



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# C.2

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## **BUILD FOR TOMORROW: SUSTAINABLE DEVELOPMENT CHECKLIST FOR THE NORTH MARKHAM AREA**

**FORTHCOMING**



