

**URBAN DESIGN
AND SUSTAINABLE
DEVELOPMENT**



6.0 URBAN DESIGN AND SUSTAINABLE DEVELOPMENT

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6.0 URBAN DESIGN AND SUSTAINABLE DEVELOPMENT

6.1 URBAN DESIGN

Urban Design is about city building, placemaking, and community design through the integration of land use, built form and the public realm. Good urban design contributes to the economic vitality and health of a community, and to vibrant and successful public spaces. It also requires a partnership between the private and public sector to collaborate on the delivery of excellence and innovation in the planning, design and construction of Markham's communities.

The physical layout and design of Markham's communities, particularly new neighbourhoods and mixed-use neighbourhoods, and *intensification areas*, will be defined by the pattern and design of development established by streets and including the public realm and private open spaces. A network of streets and blocks will provide access and connectivity for pedestrians and cyclists in addition to travel routes for vehicles. A public realm consisting of streets and boulevards, open spaces and parkland, will provide places of shared use and a place for community interaction. Together, the street network and the public realm will organize the built form and open space elements that define the urban form and character of Markham communities.

As most of the new growth in Markham will occur within the *built up area*, the role of urban design will be essential in guiding the form of such growth to create:

- compact neighbourhoods with pedestrian-friendly streets;
- compatible built form and high-quality building design and construction;
- vibrant people places within a clearly identifiable and well-designed public realm; and
- sustainable development.

It is intended that these guiding principles also apply to new growth in the 'Future Urban Area'.

High-quality urban design must shape the urban form of Markham communities to ensure that new development and *redevelopment* is appropriate to the area context in which it occurs. The built form of development, its height and density, and the mix of uses shall be compatible with the surrounding community form and function to ensure that greater levels of density, mix of land uses, and building mass and height:

- are sensitive to established residential neighbourhoods;
- will be transit-supportive; and
- encourage higher volumes of pedestrian activity.

High-quality urban design must ensure that greater levels of density, mix of land uses, and building mass and height are sensitive to established residential neighbourhoods and will be transit-supportive.

One of the goals of urban design in Markham is achieving design excellence in the development of buildings, streets, urban parks and open spaces. Beautiful and attractive streets, spaces and buildings contribute to economic vitality, civic pride and citizen engagement, as well as contribute to a neighbourhood's identity. In this regard, the implementation of urban design principles to ensure high-quality environments will be based on a broad framework of regulations, guidelines and incentives. The implementation framework will include, but not be limited to, secondary plans, precinct plans, *comprehensive block plans*, zoning by-laws, urban design guidelines, design review panels and design excellence awards.

6.1.1 General Policies

It is the policy of Council:

- 6.1.1.1 **To provide** leadership and excellence in the design of Markham's communities, to achieve:
- a) compact, walkable neighbourhoods;
 - b) pedestrian-friendly streets;
 - c) high-quality building design and compatible built form;
 - d) a clearly organized and well-designed public realm; and
 - e) vibrant people places that create a sense of identity through placemaking.
- 6.1.1.2 **To shape** the urban form of Markham's communities, particularly new neighbourhoods and mixed-use neighbourhoods, and *intensification areas*, through the innovative planning and design of:
- a) the public realm, including:
 - i. streets and blocks;
 - ii. streetscapes;
 - iii. landmarks and views;
 - iv. parks and open spaces;
 - v. public art; and
 - b) built form and site development.
- 6.1.1.3 **To support** the integration of the planning and development of the built form and public realm with land use and transportation planning and municipal infrastructure projects to improve connectivity of neighbourhoods, mixed-use and employment areas and the Greenway System.
- 6.1.1.4 **To promote** design excellence in the development of Markham's buildings, streets, urban places and parks through the implementation of a broad framework of regulations, guidelines and incentives including secondary plans, precinct plans, *comprehensive block plans*, zoning by-laws, urban design guidelines, design review panels and design excellence awards.
- 6.1.1.5 **To develop** comprehensive urban design guidelines including, but not limited to, streetscape design guidelines, built form, height and massing guidelines, and parks and open space guidelines, and design guidelines





Successful urban design contributes to the development of vibrant public spaces.





New development must be appropriate to the community, through compatible uses and built form.



for specific uses and types of development, to guide new development and *redevelopment* to achieve, among other things:

- a) consistency and excellence in urban design;
- b) best practices in sustainable development in accordance with Section 6.2;
- c) a public realm consisting of streets and boulevards, open spaces and parks providing places for shared use and community interaction;
- d) a better balance of mobility and safety needs of all street users;
- e) attractive, well-designed streetscapes;
- f) landmarks, vistas and public art, view corridors and focal points that enhance a sense of place;
- g) an interconnected parks and open space system with public access to private open spaces, where possible;
- h) landscaping, and *urban forest* enhancements in accordance with Section 3.2;
- i) site development that respects and reinforces the existing and planned context in which it is situated;
- j) building height and massing that corresponds to specific site characteristics and the overall context of the development;
- k) building design that is compatible with adjacent development and land uses, including cultural heritage resources;
- l) building and site design that provides for long term adaptability;
- m) connectivity and integration of surrounding uses;
- n) accessibility for all users regardless of age and physical ability;
- o) public safety; and
- p) bird friendly design.

6.1.2 The Public Realm

The public realm consists of the publicly accessible spaces that define Markham's urban form and function; the streets and boulevards, and the parks and open spaces, that provide places of shared use and a place for community interaction.

Safe, accessible and comfortable public spaces add to the creation of a vibrant, healthy and sustainable community by emphasizing walkable streets and people places. In Markham, a successful public realm will enhance the lifestyle and transportation choices of citizens by integrating more pedestrian and transit-oriented land uses with improved walking, cycling and transit access. Streets, public spaces, buildings and views will be designed to be human-scale and context sensitive, and provide for a diverse mix of uses that are pedestrian, bike and transit friendly.

Unique and historic architecture, aesthetically pleasing public places and vistas, identifiable landmarks and focal points, human-scale development and ongoing public stewardship, are characteristics of great placemaking. The public realm will be organized and designed to place priority on city building and create a strong sense of place for the community. Landmark buildings and open spaces, streetscapes and view corridors, and public art that enrich the urban experience will contribute to the overall sense of identity of Markham's neighbourhoods, heritage districts and business

Safe, accessible and comfortable public spaces add to the creation of vibrant, healthy and sustainable community by emphasizing walkable streets and people places.

parks.

It is the policy of Council:

- 6.1.2.1 **To support** the development of a public realm that will contribute to the urban form and function of Markham's communities by creating safe, accessible, and comfortable spaces and places that enrich the urban experience.
- 6.1.2.2 **To design and organize** the public realm to:
- a) define streets and public spaces as places of shared use;
 - b) place priority on pedestrians, cycling and transit;
 - c) contribute to placemaking; and
 - d) ensure consistency in quality and design.
- 6.1.2.3 **To define** the streets and blocks, buildings and structures, and public spaces that support the public realm based on their functional requirements and locate and configure them to enhance the safety, accessibility and attractiveness of Markham's communities.
- 6.1.2.4 **To incorporate** natural and cultural heritage features, landmark buildings and open spaces, streetscapes and view corridors, and public art that contribute to the overall sense of identity of Markham's neighbourhoods, heritage districts and business parks.
- 6.1.2.5 **To require** the design of high-quality, attractive and sustainable developments that contribute to a successful public realm and include the following elements:
- a) linkages to the street network that are accessible to people of all ages and abilities;
 - b) *streetscapes* that are safe and attractive;
 - c) enhanced views and vistas of identified landmarks;
 - d) well-designed public and private open spaces;
 - e) enhanced landscaping and tree planting;
 - f) public art that promotes a sense of place; and
 - g) sustainable development practices.

6.1.3 Streets and Blocks

Streets and blocks provide the framework upon which Markham's urban form is built. Streets form the perimeter of blocks and provide access to, and connections between different blocks. Blocks are the spaces for accommodating buildings and land uses within the defined pattern of streets. Together they can create a well-defined urban fabric that is attractive, safe, pedestrian-oriented and transit-supportive.

The organization and layout of streets and blocks provides a functional framework for transitioning, accessing and integrating a diverse mix of land uses of varying intensity and scale.

Their design and use can influence Markham's urban form and contribute to placemaking by highlighting prominent landmarks such as natural and cultural heritage features, architecturally significant buildings, landscapes, parks and open spaces and public art.

The quality and comfort of streets, and the size of a block, shape the perception of a community and influence the community to choose walking as a viable mode of travel.

The quality and comfort of streets, and the size of a block, also shape the perceptions of a community and influence the community to choose walking as a viable mode of travel. A well-defined street grid provides blocks of a scale and dimension that is human, comfortable and walkable.

It is the policy of Council:

- 6.1.3.1 **To create** a compact, well-defined urban fabric that is attractive, safe, accessible, pedestrian-oriented and transit-supportive.
- 6.1.3.2 **To design and arrange** streets and blocks to create a sense of identity through the treatment of natural/cultural heritage and architectural features, built form, massing, scale, site layout and orientation, and by incorporating diverse streetscape elements.
- 6.1.3.3 **To improve** the connectivity of Markham's neighbourhoods, mixed-use and employment areas by providing a street network/public realm that is more conducive to transit, cycling and pedestrian use, and focuses on the needs and comfort of pedestrians, cyclists, and persons of all ages and abilities.
- 6.1.3.4 **To promote** a well-defined pattern of street and blocks for Markham's communities, particularly new mixed-use neighbourhoods and *intensifications areas*, in accordance with Section 7.1.3.3, that:
- a) delineates a street hierarchy and block typology accommodating:
 - i. multiple routing options for pedestrians, cyclists and vehicles;
 - ii. a mixture of building forms and associated permitted uses;
 - iii. changes in land use and development intensities as the community evolves;
 - iv. natural landforms and topographic features;
 - v. appropriate pavement, sidewalk and boulevard widths including traffic calming, on-street parking, street tree planting, street furniture and green infrastructure, where appropriate; and
 - vi. the physical needs of people of all ages and abilities including pedestrians, cyclists, transit riders and automobile users;
 - b) contributes to placemaking by giving emphasis to natural and cultural heritage features, architecturally significant buildings, landscapes, parks and open spaces, and public art;
 - c) encourages connectivity and walkability by:
 - i. maximizing the number of street and neighbourhood connections;
 - ii. limiting the length of a typical block;
 - iii. providing mid-block pedestrian and bicycle connections where appropriate;
 - iv. minimizing the impact of vehicular access and egress from blocks;
 - v. providing a better balance of mobility and safety needs of all street users; and
 - vi. avoiding street closures and minimizing cul-de-sac and dead end streets;
 - d) improves access to transit facilities, community facilities and public open spaces; and
 - e) supports active transportation and promotes the principle of "complete streets" in accordance with Section 7.1.



6.1.3.5 **To require** a streets and blocks plan, as a component of a required secondary plan, precinct plan, *comprehensive block plan*, mobility plan or where considered appropriate, to demonstrate how the planning and layout of streets, lanes and blocks will be in accordance with all the policies of Section 6.1.3 of this Plan.

6.1.4 Streetscapes

Streetscapes are framed by buildings and comprised of sidewalks, signage, street trees, landscaping, lighting, street furnishings, open spaces, public utilities, traffic calming and other elements that can be found along the streets and blocks of Markham's communities. They can be designed to create a sense of identity for a particular community through the treatment of architectural features, built form, site layout, orientation, landscaping, lighting and signage.

Streetscapes can be designed to complement the functional requirements of a street hierarchy and block typology by integrating appropriate and consistent treatments for each street and block type including standards for sidewalks, pedestrian crossings, lighting, landscaping and street furniture. Their design treatment can also address the interface and compatibility of height and density, traffic calming and on-street parking, and residential and non-residential land uses.

Safe, accessible and attractive streetscapes can provide supportive settings for a wide range of social, business and recreational activities by providing amenities that make walking, cycling, and gathering in public streets and open spaces more comfortable and convenient.

It is the policy of Council:

6.1.4.1 **To reinforce** the urban form of Markham's communities, particularly new neighbourhoods and mixed-use neighbourhoods, and *intensification areas*, by providing attractive, well-designed streetscapes.

6.1.4.2 **To design** streetscapes that support the functional requirements of streets and blocks and create a suitable interface and compatibility with the use, height and density of abutting development by promoting:

- a) activity on the street, where appropriate;
- b) pedestrian comfort and safety;
- c) pedestrian and cycling amenities;
- d) street planting and landscaping; and
- d) traffic calming and on-street parking where required.

6.1.4.3 **To design** streetscapes that help characterize Markham communities, including existing *heritage conservation districts*, and create a sense of identity through the treatment of architectural features, forms, massing, scale, site layout, orientation, landscaping, lighting and signage.

6.1.4.4 **To develop** streetscape design guidelines for the design and layout of streetscape elements to provide guidance on the treatment of street furnishings, signage and utilities to ensure:

- a) a consistent and coordinated approach to selection and placement of



street furnishings within boulevards and a style that is complementary to the architectural style that characterizes a specific Markham neighbourhood or community;

- b) signage is designed to minimize visual clutter and is integrated into the landscape and built form to achieve an appropriate scale, mass, and height relationship; and
- c) utilities are located and relocated underground and, where this is not practical, utilities are to be designed and clustered to minimize visual clutter and physical obstruction.

6.1.4.5 **To update** and implement procedures for tree preservation and planting to ensure:

- a) the preservation and placement of trees and significant vegetation are accommodated on public and private lands; and
- b) the requirements for placement and optimal growing conditions for street trees are addressed including use of sustainable materials and practices to:
 - i. reduce maintenance and life-cycle costs;
 - ii. provide opportunities for irrigation through storm water retention and infiltration; and
 - iii. ensure soil quality and increase soil volumes and minimize soil compaction in boulevards to provide maximum growing conditions.

6.1.4.6 **To require** design guidance for streetscape elements, as a component of a required secondary plan, precinct plan and/or *comprehensive block plan*, or where considered appropriate, to demonstrate how the design and layout of the streetscape will be in accordance with all the policies of Section 6.1.4 of this Plan.

6.1.5 Landmarks and Views

Significant natural and cultural heritage features and architecturally significant buildings and landscapes can provide distinct identifiable landmarks that can influence the pattern of the street network and the character of the public realm of a community.

Views and vistas of these landmarks can be used to strategically enhance the scenic quality of an area, and to create a sense of place and orientation. Views to landmarks can be created and protected or enhanced through the layout of streets and blocks, and the careful siting of buildings, and placement of parks and open spaces, other landscape elements and public art.

It is the policy of Council:

6.1.5.1 **To identify** existing landmarks or locations for new landmarks in Markham's neighbourhoods, *heritage conservation districts* and employment areas, and require measures in secondary plans, precinct plans, and/or *comprehensive block plans* for their protection, retention and creation where practical.

Significant natural and cultural heritage features and architecturally significant buildings and landscapes can provide distinct identifiable landmarks that can influence the pattern of the street network and the character of the public realm of a community.

- 6.1.5.2 **To plan and arrange** streets and blocks, parks and open spaces, buildings and public art to create view corridors and focal points to enhance a sense of place and orientation.
- 6.1.5.3 **To recognize** the importance of the following buildings and features and enhance their status as significant landmarks for the community:
- a) public and institutional buildings that serve the community such as places of worship, colleges and hospitals;
 - b) natural features; and
 - c) cultural heritage resources.
- 6.1.5.4 **To encourage** that all new development and *redevelopment* enhance the views and vistas of identified landmarks and to discourage any development that obscures existing views and vistas.
- 6.1.5.5 **To encourage** that all new development and *redevelopment* contribute to a distinctive skyline through architectural treatment and screening of rooftop elements.

6.1.6 Parks and Open Spaces

Markham's parks and open spaces are envisioned as a critical component of the public realm, which improves the connectivity of Markham's communities and contributes to a distinct character and sense of place. In addition to the parks and open space components outlined in Section 4.3.2, the parks and open space system may include certain private open space elements such as private gardens and grounds, private amenity outdoor spaces, cemeteries, and open spaces associated with infrastructure, squares, courtyards and passageways, plazas, and rooftop gardens.

The provision of new parks and open spaces is an important factor in creating successful new residential neighbourhoods, while urban open spaces are equally important in new mixed-use neighbourhoods and *intensification areas*. Parks and open spaces contribute to placemaking and provide a strategic framework for new development and *redevelopment* that provide community amenities, support economic development and social inclusion, and deliver a range of ecological, environmental and educational benefits for the community. The design and development of the parks and open space system will be guided by the policies of this Chapter and Section 4.3 of this Plan.

The parks and open space system will include public and private open spaces and it is important that they not only be well connected and integrated with adjacent uses and other open spaces, but are also publicly accessible and well designed and maintained to allow Markham residents, workers and visitors to socialize, recreate and appreciate nature together.

It is the policy of Council:

- 6.1.6.1 **To design** and develop parks and open spaces that are fully integrated with the urban design and built form of Markham's communities and

The parks and open space system will include public and private open spaces that are well designed, connected and publicly accessible to allow Markham residents, workers and visitors to socialize, recreate and appreciate the environment together.

form a key component of the public realm, particularly in new neighbourhoods and mixed-use neighbourhoods, and *intensification areas*.

- 6.1.6.2 **To develop** an interconnected parks and open space system comprised of Destination Parks, City Parks and Open Space Lands as classified in Section 4.3.2, that are designed to improve the connectivity of Markham communities and contribute to placemaking.
- 6.1.6.3 **To provide** a full range of parks and open spaces as part of the overall design of new development and encourage the provision of publicly accessible private open spaces that are designed to be integrated within the public realm.
- 6.1.6.4 **To plan and design** new parks and open spaces within the public realm to:
- highlight natural and cultural heritage features and facilities without impacting Natural Heritage Network lands and their associated *vegetation protection zones*;
 - create extensions and connections to existing parks and open spaces;
 - promote high visibility with prominent frontage on a public street and avoid back-lotting;
 - improve pedestrian and cycling access within the community;
 - accommodate active and passive recreation opportunities;
 - enhance the *urban forest*; and
 - create safe and comfortable settings for community events and individual use.
- 6.1.6.5 **To ensure** that development adjacent to parks and open spaces be designed to:
- support and enhance natural areas;
 - reduce the potential impact of development on the open space;
 - complement the design of the open space and enhance its use;
 - enhance park user safety and comfort by providing appropriate microclimatic conditions;
 - maintain adequate sunlight and sky views;
 - provide safe and accessible pedestrian connections; and
 - create appropriate visual and functional relationships.
- 6.1.6.6 **To ensure** that development be designed to incorporate private open spaces that contribute to the open space network of the immediate community by:
- including connections and through routes and features such as widened sidewalks, courtyards, plazas and places for informal community uses, where appropriate;
 - reinforcing the existing open space character or initiating a strong open space concept that can be built upon in the future;
 - providing outdoor amenity spaces for the use of occupants of the development;
 - including features that serve a number of functions, provide for year round use, and are adaptable to new uses;
 - using durable materials and elements of interest such as special



- landscape features or public art; and
 f) providing for a maintenance and management regime that is covered by the development.

6.1.6.7 **To develop** parks and open space guidelines to guide the development of an interconnected parks and open space system within Markham communities, particularly in new neighbourhoods and mixed-use neighbourhoods, and *intensification areas*.

6.1.6.8 **To develop** a parks and open space plan, as a component of a required secondary plan, precinct plan and/or *comprehensive block plan*, or where considered appropriate, to demonstrate how the design and layout of parks and open spaces will be in accordance with Markham's parks and open space guidelines and all the policies of Section 6.1.6 of this Plan.

6.1.7 Public Art

Public art is a key element of placemaking. It has the power to define a community and create a unique sense of place. It can enhance the urban fabric of the community by creating landmarks, recognizing local culture as well as global influences and contributing to social and economic vibrancy.

Markham supports the provision of public art as a means of fostering community identity by:

- incorporating public art into Markham's public places, facilities and infrastructure;
- encouraging other public agencies to incorporate public art into public places, facilities and infrastructure; and
- encouraging the private sector to incorporate public art into their developments and sites.

It is the policy of Council:

6.1.7.1 **To develop and adopt** a public art policy for municipal projects and private sector developments.

6.1.7.2 **To require** up to 1 percent of all eligible Markham municipal capital construction budgets be dedicated for the acquisition and installation of public art in conjunction with the building, structure or improvement.

6.1.7.3 **To encourage** public agencies to incorporate public art when sponsoring an infrastructure project in Markham.

6.1.7.4 **To encourage** the private sector to incorporate public art into their development projects or alternatively donate funds towards public art on public lands, as identified in Markham's public art policy.

6.1.7.5 **To secure** the provision of public art through the implementation of plans and agreements.

6.1.7.6 **To promote** the provision of public art in:
 a) highly visible and publicly accessible areas to promote a sense of place; and

Public art can enhance the urban fabric of the community by creating landmarks, recognizing local culture as well as global influences and contributing to social and economic vibrancy.

- b) the design of buildings and/or sites in:
 - i. new communities or areas undergoing *redevelopment*; and
 - ii. Regional Centres and *key development areas*.

6.1.8 Built Form and Site Development

Buildings through their design and placement, collectively, help create the character and identity of Markham's communities. Their built form characteristics, siting, access, servicing and parking arrangements, are critical to the success of the public realm as each building must complement and enhance its site and its context within the street, the block and the neighbourhood.

The built form within new development will serve to maintain and support the existing character of Markham's established neighbourhoods, *heritage conservation districts* and employment areas, and create and promote the evolution of the character of new communities in the 'Future Urban Area', and where transformations to new mixed-use neighbourhoods and *intensification areas* are planned and appropriate.

Building height and massing will correspond to the specific site characteristics and contribute to the overall context of the neighbourhood. The design of buildings will enhance adjacent or abutting development, streetscapes and parks and open spaces, where appropriate, and exhibit architectural diversity and best practices in sustainable development.

Density will be organized, concentrated and distributed through site planning and design including considerations such as:

- building height and massing;
- transition between areas of different intensities and uses; and
- relationships between buildings, streets and open space.

Criteria regarding the siting, massing and scale of buildings are addressed in Chapter 8 of this Plan where low-rise, mid-rise and high-rise building types reflect a character appropriate to each of the 'Residential', 'Mixed Use' and 'Employment Lands' designations.

Site planning for development will be based on role and relationship to context, character and the assessment of existing conditions. Building placement will reinforce a continuity of built form and definition of the public realm at the street edge. Siting and massing of new buildings will be designed to enhance pedestrian comfort and safety in the public realm and support outdoor use and activities. Opportunities for public and private open spaces, amenity areas and adequate landscaping, will be provided on site.

The design of parking, utilities and servicing and loading is a key component of site development. Parking will be encouraged to locate underground, or in well-designed parking structures, or where required, to the rear of buildings. Service, loading and garbage storage areas will be

Buildings through their design and placement, collectively, help create the character and identity of Markham's communities.

internal to the building or located at the rear or side of the building and screened from public view.

It is the policy of Council:

- 6.1.8.1 **To support** the development of the urban form of Markham's communities, by ensuring built form and site development:
- a) make a positive contribution to the public realm;
 - b) define the character of streets and open spaces; and
 - c) promote architectural diversity and sustainable development practices in building and open space design.
- 6.1.8.2 **To design and place** buildings on sites based on their relationship to their location and context, their character and use, and their ability to enhance existing site conditions and positively contribute to adjacent development and the public realm.
- 6.1.8.3 **To organize and distribute** the density across a site through site planning to address:
- a) building height and massing;
 - b) transition between areas of different intensities and uses; and
 - c) relationships between buildings, streets and open space.
- 6.1.8.4 **To design and place** buildings on a site to be compatible with, or enhance, adjacent or abutting development, *cultural heritage resources*, streetscapes and parks and open spaces by addressing:
- a) appropriate transitions in height and massing, including the relationship to the width of the public right-of-way, and adequate setbacks between buildings, the public realm and adjacent or abutting development;
 - b) safe connections to pedestrian and cycling routes and convenient access to public transit;
 - c) continuity in building placement;
 - d) enhanced views and vistas of identified landmarks;
 - e) comfortable microclimatic conditions including sunlight access, sky views and wind conditions, public safety, and adequate privacy conditions for residential buildings and their outdoor amenity areas;
 - f) open spaces and on-site landscaping that contribute to the enhancement of the *urban forest*;
 - g) opportunities for expansion of buildings and the introduction of new buildings in the future;
 - h) building design that:
 - i. incorporates architectural detailing and features to increase comfort, add interest and achieve a good relationship with neighbouring development;
 - ii. orients primary facades and locates pedestrian entrances on public street frontages;
 - iii. encourages human interaction and activity at the street level and avoids blank facades along public streets and spaces;
 - iv. allows space for activities such as vending and outdoor seating along commercial frontages;
 - v. provides security and privacy for residential units at street level



- while creating opportunities for informal interaction between residents and neighbourhoods;
- vi. minimizes the appearance of garage entrances and provide screening of parking along public streets;
- vii. provides screening of service areas, service building elements and utilities;
- viii. provides design elements and treatments to minimize bird strikes; and
- viii. minimizes the appearance of rooftop mechanical equipment.

- 6.1.8.5 **To design and place** buildings on a site to achieve:
- a) adequate private open space and amenity areas;
 - b) common landscaped amenity areas that are suitable for the intended users;
 - c) preservation and enhancement of significant vegetation;
 - d) public access to and routes through private open space and amenity areas, where feasible; and
 - e) opportunities for enhancement of the *urban forest*.
- 6.1.8.6 **To organize and locate** site access to minimize adverse impact on:
- a) pedestrian safety and comfort;
 - b) cycling routes;
 - c) opportunities for on-street parking and placement of street trees;
 - d) the attractiveness of the streetscape;
 - e) the continuity of the built form; and
 - f) the character of the public realm.
- 6.1.8.7 **To organize and locate** on-site parking facilities, service and loading areas underground, internal to the building or at the rear of the building, including:
- a) providing active frontages at ground level and adequate screening of the vehicles above where a structured parking facility fronts onto a public street or public space;
 - b) accommodating a minimal amount of on-site parking in a front or side yard only where it can be justified to support economic viability and where there is a minimal negative impact on the streetscape, and pedestrian and bicycle circulation; and
 - c) buffering service and parking areas from other site components, screened from public view and incorporating landscaping.
- 6.1.8.8 **To develop and adopt** built form, height and massing guidelines to guide built form and site development within Markham's communities, and identify best practices that can be employed to create walkable, connected and transit-supportive neighbourhoods and communities.
- 6.1.8.9 **To require** the submission of site plans to demonstrate how the comprehensive design of a development site and the building(s) located on it will address Markham's built form, height and massing guidelines and the policies of Section 6.1.8 of this Plan.
- 6.1.8.10 **To require** a *comprehensive block plan*, where considered appropriate, in accordance with Section 10.1.4, to demonstrate how the comprehensive



design of a development site and the coordinated location of buildings in relation to other development sites on a block, or adjacent blocks will be in accordance with Markham's built form, height and massing guidelines and all the policies of Section 6.1.8 of this Plan.

6.2 SUSTAINABLE DEVELOPMENT

Sustainable development is a fundamental premise of this Plan. Other Chapters of this Plan address various environmental and social dimensions of sustainable development including the protection of natural heritage areas and features, affordable housing and community infrastructure. This Section focuses on achieving greater sustainability through community design and site design and building practices in existing and new communities, sites and buildings. Sustainable development in this context must be understood in tandem with the policies in this Plan intended to protect Markham's natural heritage, thus channelling new development increasingly into smaller land areas, in a concentrated and clustered form. The challenge addressed here is how to minimize the carbon footprint of development on the environment through community design and site design and building practices in new and existing communities.

Markham's Greenprint Community Sustainability Plan sets out key sustainability priorities and recommendations for both community development as well as operational and servicing approaches. In this regard, some of the sustainability recommendations of the Greenprint will be reflected in Markham's corporate procedures and practices while others require consideration as part of the community development process and conditions of *development approval*.

Chapter 2 sets out broad policy objectives for sustainability across the Official Plan whereas this Section contains policies to guide the development of sustainable communities, and the application of sustainable development practices in building and site design.

6.2.1 General Policies

It is the policy of Council:

- 6.2.1.1 **To provide** leadership and excellence in achieving sustainable design of Markham's communities by:
- a) requiring community design based on principles of sustainable development; and
 - b) requiring or encouraging sustainable development practices in building and site design.
- 6.2.1.2 **To work**, in cooperation with the Region and the Toronto and Region Conservation Authority, to develop incentive programs to encourage the development of sustainable communities, and the application of sustainable development practices in building and site design.

6.2.1.3 **To promote** sustainable design and development of Markham's buildings, streets, urban places and parks through the implementation of a broad framework of regulations, guidelines and incentives including, but not limited to, secondary plans, precinct plans, *comprehensive block plans*, zoning by-laws, sustainable development assessment checklists, design review panels and design excellence awards.

6.2.2 Sustainable Communities

Markham's communities will be planned to achieve sustainable development by providing policy direction that can result in the maximization of environmental resource conservation, energy efficiency and the reduction of green house gas production, as well as improving air, soil and water quality.

The planning and design of new *complete communities* provides an opportunity to:

- provide an appropriate mix of jobs and range of housing and community infrastructure in close proximity;
- improve pedestrian, cycling and transit access and reduce automobile use;
- support biodiversity and ecological function including integrating natural heritage features into parks and open spaces; and
- introduce new green infrastructure technologies and best practices in sustainable community and open space design with an emphasis on air and water quality, water and energy efficiency and conservation, and efficient waste management practices.

As infrastructure is improved and *redevelopment* takes place within established communities, opportunities will be created to improve open space, community services, pedestrian and cycling systems, improve transit connections and reduce energy and water use.

The rising costs of energy and negative effects of fossil fuel combustion on air quality and climate have created the need for a comprehensive approach to achieve energy sustainability in Markham. Markham will continue to take a leadership role in achieving the sustainable management of energy resources.

Rising water demand requires a sustainable approach to water conservation and recognition of energy consumption impacts of water management systems. Markham's water conservation policies support provincial initiatives, the Region's Long Term Water Conservation Strategy and the Greenprint Community Sustainability Plan.

It is the policy of Council:

6.2.2.1 **To support** the sustainable development of Markham's communities through the integration of land use, transportation and infrastructure planning, and building and site design to:

- a) create compact, *complete communities* that incorporate a mix of uses and improve accessibility for all users regardless of age and physical

Markham's communities will be planned to achieve sustainable development by providing policy direction that can result in the maximization of environmental resource conservation, energy efficiency and the reduction of green house gas production, as well as improving air, soil and water quality.

- ability;
- b) increase mobility options for all users, with particular emphasis on pedestrians, cyclists and transit riders;
- c) support increased biodiversity and ecological function;
- d) ensure that natural heritage features are protected and enhanced;
- e) maximize energy conservation and reduce the production of greenhouse gases and local air pollutants through the use of:
 - i. energy-efficient street patterns, site orientation, and building layout;
 - ii. district heating and cooling systems;
 - iii. on-site renewable energy generation through solar, wind or geothermal heating and cooling; and
 - iv. measures to increase shading, reduce heat absorption, and heat island effects;
- f) require best practice approaches to water conservation and storm water management; and
- g) encourage efficient waste and resource management practices.

6.2.2.2 **To achieve** sustainable design and development or *redevelopment* of Markham's communities by addressing:

- a) the scale, layout, proximity to a mix of uses, quality of place, and availability of infrastructure, site context and conditions that make sites walkable, bicycle-friendly, and easily served by transit, be a primary consideration to reduce dependence on automobiles;
- b) the orientation and alignment of streets, sites and buildings create optimum conditions for the use of passive and active solar energy;
- c) green or white roofs, planting to provide shade, and the use of light-coloured paving materials with a high level of solar reflectance be encouraged to reduce local heat-island effects;
- d) natural heritage and hydrologic features be protected and enhanced, including the improvement of the *urban forest*, to increase biodiversity and ecological function;
- e) community gardens be encouraged to increase opportunities for local food production;
- f) bioswales, rain gardens, green roofs, permeable paving and rainwater harvesting be encouraged to minimize stormwater runoff and increase infiltration and potable/municipal water conservation;
- g) community-wide approaches to waste management to reduce, reuse and recycle; and
- h) topsoil stripping and soil compaction be minimized to support infiltration and improved growing conditions for street trees and vegetation.

6.2.2.3 **To encourage** a culture of energy conservation and promote energy-efficient practices within Markham communities by:

- a) requiring the preparation of a Community Energy Plan in support of all secondary plan areas, which will identify development and infrastructure to:
 - i. minimize the use of electricity, natural gas and gasoline consumption through compact urban design;



- ii. address energy-efficient building orientation, design and construction; and
- iii. identify opportunities for on-site energy generation, district energy and renewable energy options;
- b) continuing to support and expand opportunities for conventional and alternative natural gas heating and cooling systems, wind and solar power installations, geexchange and other *alternative energy systems* at appropriate scales throughout Markham subject to compatibility with surrounding land uses and in accordance with Federal and Provincial requirements;
- c) encouraging the business community to explore opportunities for co-generation, waste energy reuse, and partnerships including district energy;
- d) encouraging new development to connect to existing or new district heating and cooling facilities; and
- e) participating in Provincial programs where appropriate to encourage clean-energy infrastructure.

6.2.2.4 **To promote** water conservation measures in all sectors in an effort to reduce water consumption through such programs as water reuse systems, water meters and rain barrel programs and encourage that all new buildings achieve 20 percent greater water conservation than the Ontario Building Code.

6.2.2.5 **To work** with York Region and the development industry to achieve 10 percent greater water conservation than the Ontario Building Code for all new buildings.

6.2.2.6 **To develop** dark-sky guidelines to reduce light pollution to maintain night sky and to reduce negative impacts of lighting on the nocturnal environment for use as part of the *development approval* process.

6.2.2.7 **To develop** bird-friendly guidelines to reduce occurrence of bird window collisions with buildings for use as part of the *development approval* process.

6.2.2.8 **To work**, in collaboration with the Region and the development industry to:

- a) provide each resident, worker, and employer with information on sustainability features and programs in their communities including water and energy conservation, transit information, ride share, car share and carpooling options; and
- b) develop resident, building owner and operator educational materials and training on sustainable buildings and practices.

6.2.3 Sustainable Buildings and Site Design

There are opportunities to apply sustainable development practices in building and site design to reduce environmental impacts to the area and overall greenhouse gas emissions. Sustainable building and site design focuses on water efficiency, energy conservation and generation, ecological protection and enhancement, food production, and active

transportation, at the site scale.

A sustainable development assessment checklist will ensure that as part of the *development approval* process, consideration is given to a full range of options to incorporate innovative sustainable approaches and technology.

It is the policy of Council:

- 6.2.3.1 **To apply** innovative sustainable design practices and technologies in site planning and building design through the *development approval* process, to:
- a) encourage walking, cycling, and transit use through:
 - i. integrated on-site pedestrian, cycling and transit connections;
 - ii. site design that ensures bicycle parking and storage and facilitates car pooling;
 - iii. appropriate location and design of sidewalks, appropriately scaled building setbacks, vehicular and pedestrian access, building design and landscaping to enhance the pedestrian experience;
 - iv. measures to reduce speed and improve air quality;
 - b) promote energy conservation, maximize solar gains, and include or facilitate future on-site *renewable energy systems*;
 - c) reduce the urban heat-island effect of development sites and the cooling requirements of buildings by:
 - i. encouraging the use of vegetated areas and light-coloured surfaces including the provision of permeable driveways and parking areas and green or white roofs;
 - ii. encouraging tree planting and other landscaping to increase evapotranspiration and create shade;
 - iii. using architectural devices to create shade;
 - d) conserve natural features such as *tree canopy*, wetlands, native vegetation and provide habitat for both plant and animal species by:
 - i. rehabilitating natural areas to promote *biodiversity*; and
 - ii the use of adaptive or native vegetation for restoration and protection measures and where appropriate, to reduce the risk of bird window collisions;
 - e) limit or eliminate the use of potable water, natural surface waters or subsurface water resources for landscape irrigation through recommendations for native, adaptive, or drought-tolerate plant species and the use of innovative irrigation methods;
 - f) promote community-based food production by providing for growing areas and required resources such as water and storage on multiple residential sites;
 - g) reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust generation by setting standards for limiting disturbance areas during the construction period and the implementation of state of the art storm water management methods;
 - h) require that efforts be made on development sites to maintain natural soil health and reduce the need for cut or fill grading to preserve the integrity of native soil for growing plants and retaining water;

Sustainable building and site design focuses on water efficiency, energy conservation and generation, ecological protection and enhancement, food production, and active transportation, at the site scale.

- i) encourage the use of environmentally preferable building materials, high-renewable and recycled content building products, and certified sustainably harvested lumber;
- j) require that construction site waste management plans be prepared to encourage the reduction, recycling of construction waste and diversion of construction waste from landfill;
- k) minimize off-site storm water runoff and soil erosion;
- l) require window applications, use of shades, and visual markers to reduce the risk of bird window collisions with building facades; and
- m) minimize the impact of lighting from development on the nocturnal environment and night sky.

6.2.3.2 To consider the sustainable design practices and technologies referred to in Section 6.2.3.1 through the application of a sustainable development assessment checklist as part of the site plan control application process.

6.2.3.3 **To work** in cooperation with York Region to ensure that the sustainable development requirements of the Regional Official Plan are complied with in development applications.

6.3 DESIGNING SUSTAINABLE NEW COMMUNITIES

Markham's new communities, in particular new neighbourhoods and mixed-use neighbourhoods including those located in *intensification areas*, will often be located adjacent to the Greenway System and established neighbourhoods and employment areas. The design of these new communities should address compatibility with the Greenway System, and transition to existing neighbourhoods and employment areas to minimize the potential adverse impact of one on the other.

Key natural heritage features and *key hydrologic features* will require protection and enhancement as part of the Greenway System.

Innovative approaches to building construction, densities and layout of communities, dealing with infrastructure, circulation throughout and between communities, transit and active transportation, alternative energy sources, and recycling all provide opportunities to minimize the impact on the environment of future and existing development.

Accommodating new, more intense development will require transitions in scale and form that are both sensitive to established residential areas and compatible in use with existing employment areas.

Most of the new neighbourhoods and mixed-use neighbourhoods will be developed on greenfield lands or lands that have non-residential uses, which will require development of a mix and range of housing types, sizes and affordability and adequate community infrastructure such as parks and open spaces.

More immediate transportation demand measures and parking strategies will be required to direct land use planning in support of transit use and

Innovative approaches to building construction, densities and layout of communities, dealing with infrastructure, circulation throughout and between communities, transit and active transportation, alternative energy sources, and recycling all provide opportunities to minimize the impact of the environment of future and existing development.

reduced single-occupancy vehicle use and to create more attractive environments for active forms of transportation such as walking and cycling.

These challenges can be addressed if these new communities, in particular new neighbourhoods, mixed-use neighbourhoods and *intensification areas*, are created through a comprehensive secondary plan or local area study process that deals with urban design and sustainable development practices within the context of other land use and transportation matters.

It is the intent of this Plan that the design of new communities will occur within the context of more focused secondary plan or local area studies, with an urban design and sustainable development component referencing comprehensive urban design and sustainable development guidelines in accordance with Section 6.1.1.5, 6.2.2.2 and 6.2.3.1.

These studies will lead to new secondary plans, precinct plans and/or *comprehensive block plans*, as determined appropriate and in accordance with Section 10.1, a zoning by-law, and comprehensive guidelines for urban design and sustainable development to guide community and/or site design and development.

It is the policy of Council:

6.3.1

To plan and design Markham's new communities, in particular new neighbourhoods, mixed-use neighbourhoods and *intensification areas*, within the context of more detailed secondary plan or local area studies identified in Section 10.1, which incorporate urban design and sustainable development policies specific to each community that include, but are not be limited to:

- a) the protection and enhancement of *key natural heritage features* and *key hydrologic features* in accordance with Section 3.1.2.12;
- b) the preparation of *subwatershed plans*, where appropriate, and master environmental servicing plan that will examine all water systems in accordance with Section 3.3 and services and utilities in accordance with Section 7.2;
- c) sustainable development practices for community, building, and site design in accordance with Section 6.2;
- d) innovative planning and design of the public realm including streets and blocks, streetscapes, landmarks and views, parks and open spaces, public art; and built form and site development in accordance with Section 6.1;
- e) a wide range and mix of housing types, sizes and affordability in accordance with Section 4.1;
- f) community infrastructure facilities and services in accordance with Section 4.2; and
- g) transportation demand management and active transportation policies and parking strategies consistent with Sections 7.1.4 and 7.1.5.

