

**ENVIRONMENTAL
SYSTEMS**



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3.0 ENVIRONMENTAL SYSTEMS

Markham's landforms and watercourses provide key ecological functions and linkages that connect and integrate its natural features and systems with a broader ecosystem encompassing the Oak Ridges Moraine, the Niagara Escarpment and the surrounding major lake and *watershed* system identified by the Province, the Region and the Toronto and Region Conservation Authority. In particular, the tributaries of the Rouge *watershed* and the Little Rouge River located in Markham serve as vital ecological corridors linking the environmental systems of Lake Ontario to the Oak Ridges Moraine. Portions of the Don, Highland, Petticoat and Duffins watersheds are also located in Markham.

By defining a system of linked *natural heritage and hydrologic features*, the limits and priorities for protection of Markham's significant environmental features relative to the use of lands within and adjacent to them are established. This "environment first" approach to land use planning ensures that significant *natural heritage and hydrologic features* are protected.

The Oak Ridges Moraine is a geological landform that extends from the Niagara Escarpment to the Ganaraska Forest and includes parts of the Greater Toronto Area. The Province enacted the Oak Ridges Moraine Conservation Plan to protect, restore and enhance its ecological and hydrological features and functions. Portions of the southern toe of the Oak Ridges Moraine extend into Markham at the northern boundary of the City.

The Greenbelt is an area identified by the Province for the long-term protection of environmental and agricultural lands. In Markham, the Greenbelt extends along the major tributaries of the Rouge *watershed* north of Major Mackenzie Drive and in eastern Markham on lands predominantly owned by the Toronto and Region Conservation Authority and Provincial and Federal governments.

Markham lies on a relatively flat till plain south of the Oak Ridges Moraine bisected by the major tributaries of the Rouge River. This portion of Rouge River *watershed* is of particular significance serving as a vital ecological corridor linking the environmental systems of Lake Ontario to the Oak Ridges Moraine. There has been extensive public investment in establishing the Rouge Park in eastern Markham with all levels of government involved in the preparation of the Rouge North Management Plan.

A systems approach to natural heritage, agricultural, *urban forest* and water resource planning has been undertaken by Markham within the context of the Council Endorsed Growth Alternative to 2031 and this Plan.

The Greenway System will enhance human health and well-being by providing for the protection of *natural heritage and hydrologic features* as well as flora and fauna habitat, and improvements to air and soil quality. Furthermore, the Greenway System policies support ecological linkages

By defining a system of linked natural heritage and hydrologic features and associated lands to support their functions, the natural heritage areas establish limits and priorities for protection of Markham's significant environmental features.

that connect and integrate the natural heritage landscape in Markham across five *watersheds*. The Oak Ridges Moraine and the Greenbelt are included as part of the Greenway System.

The Urban Forest System provides a variety of health and environmental benefits to the community and, in particular, contributes to the quality and character of the urban environment. It is important that the *urban forest* be protected and enhanced and that public awareness of the benefits of the *urban forest* be promoted through public education and stewardship programs.

Markham's Water System identifies a more specific policy framework for addressing *watershed* planning, groundwater and surface water resources and stormwater management.

The policies in Chapter 3 provide policies for the identification, protection and enhancement of the Greenway System, the Urban Forest System and the Water System and associated Environmental Reporting Policies. The land use policies for protecting these systems are contained in Chapter 8 of this Plan.

3.1 GREENWAY SYSTEM

The Greenway System encompasses approximately 33 percent of the land base in Markham comprising Natural Heritage Network lands, Natural Heritage Network Enhancement Lands, Rouge Watershed Protection Area lands, Oak Ridges Moraine Conservation Plan Area lands, Greenbelt Plan Area lands and certain naturalized stormwater management facilities. Markham's Greenway System lands are not available for urban development.

The purpose of the Greenway System policies is to maintain and enhance, as a permanent landscape, an interconnected system of natural open space, certain agricultural lands and enhancement areas and linkages that will preserve areas of significant *ecological value* and certain protected agricultural lands while providing, where appropriate, opportunities to improve *biodiversity* and connectivity of natural features and *ecological function*.

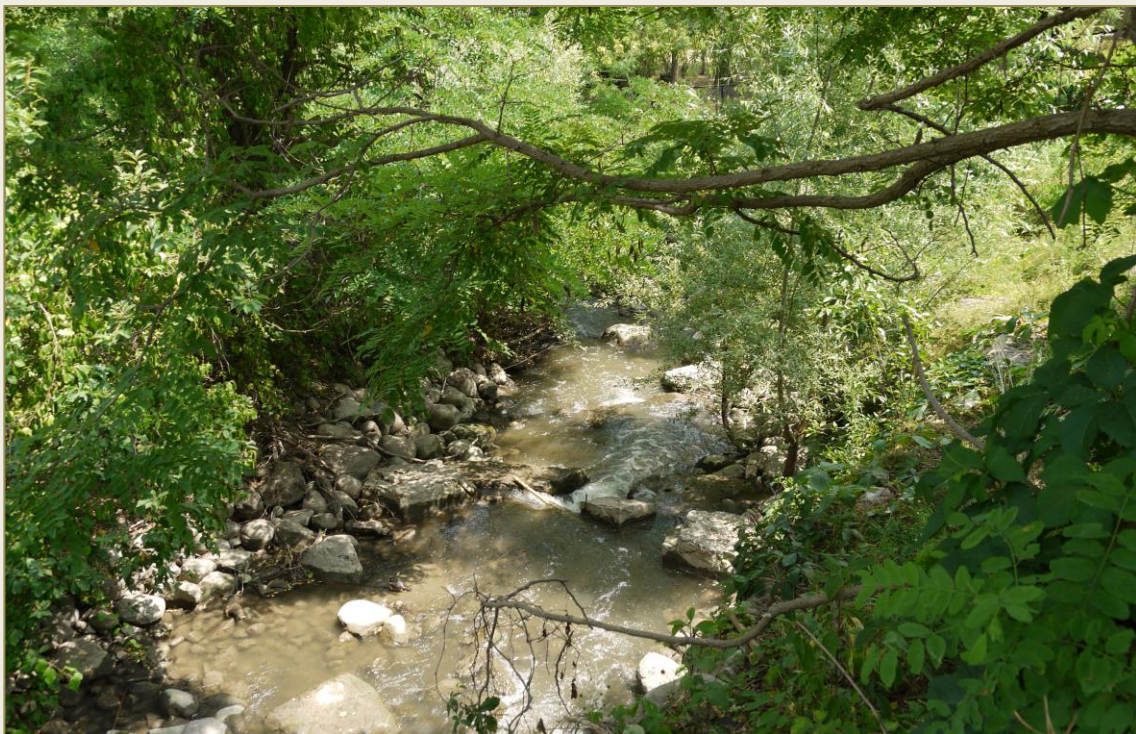
Markham's Greenway System also forms part of the Region's Greenlands System connecting and assisting with the implementation of the Greenlands System and supporting other agency natural heritage programs by providing a finer level of detail for protected features. Markham's Greenway System is one of the City's most valuable assets to be maintained and enhanced over the long term. Markham is committed to protecting, restoring and actively managing the natural heritage landscape.

The land use policies for protecting the Greenway System are contained in Section 8.6 of this Plan.

The Greenway System encompasses approximately 33 percent of the land base in Markham comprising Natural Heritage Network lands, Natural Heritage Network Enhancement Lands, Rouge Watershed Protection Area lands, Oak Ridges Moraine Conservation Plan Area lands, Greenbelt Plan Area lands and certain naturalized stormwater management facilities.



Markham will continue to be a leader in natural heritage preservation, protection and enhancement.





Markham will encourage that approximately 33 percent of the City's land area will remain untouched by future urban development.



3.1.1 General Policies

It is the policy of Council:

3.1.1.1 **That** the components of the Greenway System include the following:

- a) Natural Heritage Network lands;
- b) Natural Heritage Network Enhancement Lands;
- c) Rouge Watershed Protection Area lands;
- d) Oak Ridges Moraine Conservation Plan Area lands;
- e) Greenbelt Plan Area lands; and
- f) certain naturalized stormwater management facilities.

To the extent possible, given the limitation of available data, these components are generally identified on Map 4 – Greenway System, Map 5 – Natural Heritage Features and Landforms, Map 6 – Hydrologic Features and Map 7 – Provincial and Federal Policy Areas.

3.1.1.2 **To identify, protect and enhance** Markham's Greenway System as shown on Map 1 – Markham Structure by:

- a) protecting a network of *natural heritage and hydrologic features* (as defined as *key natural heritage features, key hydrologic features, valleylands and woodlands*, and their functions) and associated *vegetation protection zones*, protected agricultural lands and Natural Heritage Network Enhancement Lands, to improve the *biodiversity* and connectivity of natural heritage features and their *ecological function*;
- b) directing permitted development, *redevelopment* and *site alteration* away from *natural heritage and hydrologic features* within the Greenway System;
- c) protecting the *ecological integrity* of the Oak Ridges Moraine;
- d) providing protection for agricultural lands and *ecological features* and functions in the Greenbelt;
- e) providing public access to publicly owned natural areas for nature-based recreation uses, where appropriate, in a manner that respects ecological sensitivities in support of a healthy and active community;
- f) encouraging public acquisition of the Natural Heritage Network lands where possible over the long term; and
- g) encouraging stewardship of privately owned natural areas by private landowners until the lands come into public ownership.

3.1.1.3 **That** the boundaries of the Greenway System and Natural Heritage Network, including the delineation of *natural heritage and hydrologic features* as shown on Map 4 – Greenway System, Map 5 – Natural Heritage Features and Landforms, and Map 6 – Hydrologic Features reflect the most accurate information available and are to be confirmed and may be refined or modified as follows:

- a) confirmation of the boundaries will be undertaken in the field, in consultation with appropriate agencies, and any corresponding changes to the mapping shall be undertaken without amendment to this Plan;
- b) refinements to the boundaries may be considered as part of an application pursuant to the Planning Act, without an amendment to

**Section 3.1.1.2
subject to
Area/Site Specific
Appeal No. 22
(Issue 281A)**

this Plan, where supported by a *subwatershed* study, master environmental servicing plan, environmental impact study or equivalent study; and

- c) modifications to the boundaries, other than refinements, including the delineation of the boundaries of the Natural Heritage Network Enhancement Lands in accordance with Section 3.1.3.2, may be considered through an amendment to this Plan, where supported by a *subwatershed* study, master environmental servicing plan, environmental impact study or equivalent study.

The outer boundaries of the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area can only be refined or modified by the Province through amendments to the relevant Provincial Plan or as identified in applicable legislation. Any modifications to these boundaries approved by the Province shall be addressed in accordance with provincial requirements.

3.1.1.4 **That** where compensation for removal of *natural heritage and hydrologic features* is determined to be appropriate, Council shall:

- a) work with the Province, York Region, the Toronto and Region Conservation Authority and other agencies seeking compensation and encourage all compensation to be located in Markham; and
b) seek appropriate compensation in accordance with Section 3.2.1 c).

3.1.1.5 **To coordinate** with Parks Canada, the Province, York Region and the Toronto and Region Conservation Authority efforts to ensure a consistent approach towards the protection of a system of *natural heritage and hydrologic features*.

3.1.1.6 **To incorporate** the protection and enhancement of the Greenway System as a component of the parks and open space system in accordance with Section 4.3.1.2 and a required secondary plan in accordance with Section 10.1.1.

3.1.1.7 **That** lands within the Greenway System are subject to the policies of this Plan, and where applicable, policies in the Greenbelt Plan, Oak Ridges Moraine Conservation Plan, and Minister's Zoning Order – Airport and other applicable land use policy regulations and/or standards. In the event of conflict among plans, regulations and standards the most restrictive requirements prevail, except in the case of agriculture, mineral aggregates and wayside pits where provincial plans and policies prevail.

3.1.1.8 **To collaborate** with Parks Canada and the Toronto and Region Conservation Authority, where appropriate, to prepare plans to guide the management of public parks and recreation uses within the Greenway System while safeguarding and enhancing natural features and functions.

3.1.1.9 **To minimize** the impacts of nature-based recreation infrastructure such as trails, trailheads, foot bridges, parking, signage, picnic facilities, washrooms and interpretative facilities on the *ecological integrity* of the Greenway System.

3.1.1.10 **To require** minimum *vegetation protection zones*, as identified in Section

**Section 3.1.1.4
subject to Area/Site
Specific Appeal Nos.
22 and 24 (OMB
Hearing Issues 3)**

3.1.2.22, where development, *redevelopment* or *site alteration* is approved on lands adjacent to *natural heritage features and hydrologic features*.

3.1.1.11 **To ensure** to the extent possible that connectivity is maintained or enhanced between *key natural heritage* and/or *key hydrologic features* to accommodate the movement of native plants and animals across the landscape where development, *redevelopment* and *site alteration* is proposed in the Greenway System.

3.1.1.12 **To discourage** the removal of other natural heritage features, including hedgerows and smaller woodlot features not identified as part of the Natural Heritage Network identified in Section 3.1.2.1, where they:

- a) provide a linkage to other natural heritage features;
- b) provide for wildlife habitat and movement; or
- c) comprise healthy and mature trees.

3.1.1.13 **To encourage** the incorporation of other natural heritage features referred to in Section 3.1.1.12 into the planning and design of proposed development, wherever possible, and where identified for protection in an environmental impact study.

3.1.2 Natural Heritage Network

The Natural Heritage Network as generally shown on Map 4 – Greenway System is a core element of the Greenway System and includes remaining examples of Markham’s natural ecosystem which are essential for preserving *biodiversity* and providing representation of the natural environment in which Markham was established.

The features that comprise the Natural Heritage Network are generally intended to be conveyed into public ownership through the *development approval* process and other land securement means where appropriate. Markham has also committed funds and developed a land securement strategy for the purpose of identifying and securing important components within the Natural Heritage Network and the Natural Heritage Network Enhancement Lands.

Where lands in the Natural Heritage Network are held in private ownership, their identification does not infer a commitment on the part of the City to purchase such areas, or imply that they are accessible to the general public.

General Policies

It is the policy of Council:

- 3.1.2.1 **That** the Natural Heritage Network includes the following components:
- a) *natural heritage and hydrologic features*;
 - b) *vegetation protection zones* associated with the features identified in 3.1.2.1a); and
 - c) *hazardous lands and hazardous sites*.

Sections 3.1.1.10 -11, 13 and Section 3.1.2 Preamble subject to Area/Site Specific Appeal No. 22 (Issue 281A)

The Natural Heritage Network features and their functions are essential for preserving biodiversity and providing representation of the natural environment in which Markham was established.

Sections 3.1.2.1-2 and 3.1.2.4-7 subject to Area/Site Specific Appeal No. 22 (Issue 281A)

3.1.2.2 **That** where *natural heritage and hydrologic features* have been willfully damaged, destroyed or removed without required approvals, appropriate compensation in the form of rehabilitation and enhancement to the impacted area shall be provided by the landowner at their cost. There shall be no adjustment to the Natural Heritage Network boundary or redesignation of lands where *natural heritage and hydrologic features* are willfully damaged, or destroyed or removed without required approvals.

3.1.2.3 **To work** cooperatively with landowners, governments and agencies to ensure that restoration activities within 'Natural Heritage Restoration Areas' shown on Map 4 – Greenway System:

- a) support a natural linkage and ecological corridor function;
- b) achieve the naturalization of publicly owned lands over time; and
- c) minimize impacts to agricultural operations.

3.1.2.4 **To seek** conveyance of lands within the Natural Heritage Network to a public authority, where appropriate, as part of the *development approval* process at minimal or no cost to the receiving public authority. Conveyance of lands within the Natural Heritage Network shall not be considered as contributing towards the parkland dedication requirements under the Planning Act, except where provided as Natural Heritage Network Enhancement Lands.

3.1.2.5 **That** in addition to conveyance of Natural Heritage Network lands through *development approvals* in Section 3.1.2.4, Markham may also consider the following options for securing land into public ownership:

- a) public acquisition;
- b) land exchanges;
- c) donations, gifts, bequests; and
- d) other appropriate methods.

3.1.2.6 **That** where lands in the Natural Heritage Network cannot be secured in public ownership, in order to achieve the objectives of this Plan, the following stewardship and regulatory tools may be used to secure the appropriate protection and/or public access for the lands:

- a) municipal land use controls;
- b) education;
- c) stewardship and other agreements; and
- d) conservation easements.

3.1.2.7 **To work** in partnership with the Region, other senior levels of government, community partners and landowners, to secure in public ownership strategic land parcels within the Natural Heritage Network for the purpose of environmental protection.

3.1.2.8 **That** the Markham Environmental Land Securement Fund or other funding sources as may be appropriate, may be used to contribute to the costs of acquisition of properties within the Natural Heritage Network.

3.1.2.9 **That** where the need for infrastructure in the Natural Heritage Network is demonstrated and no reasonable alternative is available as identified

through an appropriate study and in consultation with the City and appropriate agencies, the impact of the infrastructure shall be minimized and mitigated by:

- a) avoiding *natural heritage and hydrologic features*, where possible;
- b) avoiding *provincially significant wetlands* except where addressed through an environmental assessment process;
- c) minimizing the length of crossings through the Natural Heritage Network;
- d) only considering the location of stormwater management facilities in accordance with Section 3.3.3.9;
- e) locating nature-based recreation infrastructure, as described in Section 3.1.1.9, to avoid *natural heritage and hydrologic features*, where possible;
- f) optimizing existing and planned capacity through coordination and co-location of infrastructure among service providers;
- g) providing appropriate mitigation measures to address the impacts on *natural heritage and hydrologic features*; and
- h) ensuring compliance with the applicable policies of the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan and consistency with the Provincial Policy Statement.

Key Natural Heritage Features, Key Hydrologic Features and Species at Risk

Key natural heritage features and key hydrologic features are the principal features of the Natural Heritage Network that are identified by the Province for protection.

Key natural heritage features and key hydrologic features support a wide variety of habitat for flora and fauna and in some cases *habitat of endangered and threatened species* and *habitat of special concern species*. *Endangered species* and *threatened species* are addressed in Provincial regulations governing habitat and species protection.

It is the intent of this Plan that *key natural heritage features and key hydrologic features* shall be assessed, enhanced and planned for in a comprehensive and integrated manner, which builds upon and supports the Natural Heritage Network.

It is the policy of Council:

3.1.2.10

That the components of *key natural heritage features and key hydrologic features* include the following:

- a) *wetlands*;
- b) *habitat of threatened and endangered species*;
- c) significant portions of the habitat of:
 - i. *special concern species* in the Oak Ridges Moraine Conservation Area and Greenbelt Plan Area; and
 - ii. *provincially rare species* in the Oak Ridges Moraine Conservation Plan Area;
- d) *fish habitat*;

Sections 3.1.2.9 and Key Natural Heritage Features Preamble – last paragraph subject to Area/Site Specific Appeal No. 22 (Issue 281A)

It is intended that key natural heritage features and key hydrologic features be assessed, enhanced, and planned for in a comprehensive and integrated manner, which builds upon and supports the Natural Heritage Network.

- e) Life Science Areas of Natural and Scientific Interest;
- f) *significant valleylands*;
- g) *significant woodlands*;
- h) *significant wildlife habitat*;
- i) sand barrens, savannahs and tallgrass prairies;
- j) *permanent streams* and *intermittent streams*; and
- k) *seepage areas* and *springs*.

3.1.2.11 **To protect** and enhance *key natural heritage features* and *key hydrologic features* and their functions by:

- a) prohibiting development, *redevelopment* and *site alteration* within *key natural heritage features* and *key hydrologic features* as determined through an environmental impact study, natural heritage evaluation and/or hydrological evaluation, or equivalent study except as otherwise provided for in the policies of this Plan;
- b) securing *vegetation protection zones* in accordance with Section 3.1.2.22;
- c) evaluating features not identified on Map 5 – Natural Heritage Features and Landforms and Map 6 – Hydrologic Features using procedures developed or applied by the Province, or where determined appropriate by the City in consultation with relevant agencies, an environmental study, to determine if they qualify for protection as *key natural heritage features* and *key hydrologic features*; and
- d) working with other governments and agencies to identify and protect:
 - i. *habitat of endangered and threatened species*, and habitat of *special concern species*; and
 - ii. Life Science Areas of Natural and Scientific Interest and providing protection policies consistent with senior government requirements.

3.1.2.12 **That** *key natural heritage features* and *key hydrologic features* on Map 5 – Natural Heritage Features and Landforms and Map 6 – Hydrologic Features shall be precisely delineated on a site-by-site basis using procedures established by the Region, Toronto and Region Conservation Authority and the Province, where applicable, and through the approval of Planning Act applications where supported by the appropriate study. The refined boundaries of the features may be identified without an amendment to this Plan with the approval of Council.

Valleylands

Valleylands support flood protection, erosion hazard control, and nature-based recreation uses, and provide for *fish habitat* and habitat for flora and fauna. They are an integral part of the Natural Heritage Network and frequently provide an ecological linkage function among natural heritage features.

Valleylands, as generally shown on Map 6 – Hydrologic Features, may include *significant valleylands* which are intended for protection in accordance with the Provincial Policy Statement.

It is the intent of this Plan to ensure the long-term protection of

**Sections 3.1.2.11-12
subject to Area/Site
Specific Appeal No.
22 (Issue 281A)**

**Valleylands
Preamble – last
paragraph and
Sections 3.1.2.13
subject to Area/Site
Specific Appeal No.
22 (Issue 281A)**

valleylands through the policies of this Plan and the regulations of the Toronto and Region Conservation Authority.

It is a policy of Council:

- 3.1.2.13 **To protect and enhance** *valleylands* including *significant valleylands* as defined by the Province and the Toronto and Region Conservation Authority by:
- a) prohibiting development, *redevelopment* and *site alteration* except:
 - i. on lands identified as Special Policy Areas on Map 8 – Special Policy Areas and in accordance with Toronto and Region Conservation Authority regulations and provincial requirements; or
 - ii. on existing developed properties regulated under the Conservation Authorities Act with the approval of the Toronto and Region Conservation Authority; or
 - iii. where infrastructure is provided in accordance with Section 3.1.2.9; and
 - b) securing *vegetation protection zones* in accordance with Section 3.1.2.22.
- 3.1.2.14 **To work** with the Toronto and Region Conservation Authority and landowners to confirm *valleylands* and their boundaries in accordance with this Plan.
- 3.1.2.15 **To work** in cooperation with the Toronto and Region Conservation Authority to protect and improve *fish habitat* having regard for the recommendations in approved fisheries management plans. Development, *redevelopment* and *site alteration* is not permitted where it impacts *fish habitat* except in accordance with provincial and federal requirements.

Valleylands support flood protection, erosion control, nature-based recreation uses and provide for fish habitat and flora and fauna.

Woodlands

Woodlands provide ecological, social, economic, and environmental benefits including enhancing *biodiversity*, providing *wildlife habitat*, moderating temperatures, erosion control, pollution filtration, opportunities for passive recreation and respite from the urban environment.

Significant woodlands are generally treed areas of land of at least 0.5 hectares in size that satisfy criteria as provided in Section 11.2 of this Plan. *Woodlands* are generally treed areas of land of at least 0.2 hectares in size with a specified minimum number of trees and tree size and excluding tree species as described in Section 11.2 of this Plan. It is a priority of Markham to protect and enhance *significant woodlands* and *woodlands* and integrate them into existing and new communities as a component of the *urban forest*.

The woodlands identified on Map 5 – Natural Heritage Features and Landforms are mapped using the best available information based on existing data sources from the City, York Region and Toronto and Region Conservation Authority and are subject to confirmation as *significant*

**Woodlands
Preamble, Sections
3.1.2.16 and
3.1.2.17 subject to
Area/Site Specific
Nos. 1 (62A iii), 18
(62 B iii), 22 (281A)
and 24 (62C iii)**

woodlands or woodlands in the field.

It is the policy of Council:

3.1.2.16 **To protect and enhance** *woodlands* and *significant woodlands*, as defined by the Province, the Region and the City by:

- a) prohibiting development, *redevelopment* and *site alteration* except:
 - i. where infrastructure is provided in accordance with Section 3.1.2.9; or
 - ii. as provided for in Section 3.1.2.17;
- b) securing *vegetation protection zones* in accordance with Section 3.1.2.22; and
- c) seeking public ownership of *significant woodlands* and *woodlands* through the *development approval* process where appropriate, and where this is not appropriate, securing conservation easements and other protection tools for the long-term protection of *significant woodlands* and *woodlands* in private ownership.

3.1.2.17 **That** development, *redevelopment* and *site alteration* may be considered in *woodlands*, that are not *significant woodlands*, where all of the requirements below have been addressed through an environmental impact study as described in Section 3.5 to the satisfaction of the City in consultation with agencies as appropriate:

- a) *habitat of endangered or threatened species* has been addressed in accordance with provincial and federal requirements;
- b) they have minimal function and are not functionally connected to other *natural heritage and hydrologic features* in the Greenway System;
- c) they are difficult to restore and/or manage in an urban setting; and
- d) they have been in existence for generally less than 25 years.

3.1.2.18 **To work** with York Region, the Toronto and Region Conservation Authority and landowners to:

- a) confirm *significant woodlands* and *woodlands* and their boundaries in accordance with this Plan and provincial criteria as applicable; and
- b) encourage the maintenance of *significant woodlands* and *woodlands* through the implementation of good forestry practices.

Wetlands

Wetlands are areas that are seasonally or permanently covered by shallow water or where the water table is close to or at the ground surface and are generally classified as swamps, marshes, bogs or fens. *Wetlands* control and store surface water to assist in flood control and *groundwater recharge* and support water tolerant vegetation. *Wetlands* may include *provincially significant wetlands*.

The *wetlands* shown on Map 6 – Hydrologic Features are mapped using the best available information based on existing data sources from the City, Region, Ministry of Natural Resources and Forestry and Toronto and Region Conservation Authority and are subject to refinement through an environmental impact study or equivalent study. These *wetlands* include *wetlands* evaluated using standard provincial procedures and *wetlands*

Woodlands
Preamble, Sections
3.1.2.16 and
3.1.2.17 subject to
Area/Site Specific
Nos. 1 (62A iii), 18
(62 B iii), 22 (281A)
and 24 (62C iii)

Sections 3.1.2.18
subject to Area/Site
Specific Issues Nos.
22 (Issue 281A) and
24 (62 C iii) and
Wetlands Preamble,
3.1.2.19-21 subject
to Area/Site Specific
Appeal Nos. 18 (66)
and 22 (Issue 281A)

that have yet to be evaluated. Not all wetlands in the City are shown on Map 6 – Hydrologic Features.

It is the policy of Council:

- 3.1.2.19 **To protect and enhance wetlands** including *provincially significant wetlands* by:
- a) prohibiting development, *redevelopment* and *site alteration* except:
 - i. where infrastructure is provided in accordance with Section 3.1.2.9; or
 - ii. in *wetlands* that are not *provincially significant wetlands*, or identified in the York Region Official Plan, in accordance with Section 3.1.2.20;
 - b) securing *vegetation protection zones* in accordance with Section 3.1.2.22;
 - c) integrating *wetlands* into new communities as appropriate; and
 - d) seeking public ownership of *wetlands* through the *development approval* process.
- 3.1.2.20 **That** applications for development, *redevelopment* and *site alteration* within 120 metres of *wetlands* shall be accompanied by an environmental impact study that determines their importance, functions and means of protection and/or maintenance of function, as appropriate, to the satisfaction of the approval authority. In limited circumstances, the modification and/or relocation of *wetlands* may be considered where importance and functions are such that in-situ protection and/or maintenance is not necessary.
- 3.1.2.21 **To work** with the Ministry of Natural Resources and Forestry and/or the Toronto and Region Conservation Authority and landowners to confirm *wetlands* and their boundaries using provincial criteria and procedures.

Vegetation Protection Zone

A *vegetation protection zone* is a buffer area adjacent to a *natural heritage* or *hydrologic feature* that is intended to protect the feature and its *ecological function* from adjacent land use impacts in order to maximize the long-term viability of the feature.

Vegetation protection zones are established as lands are urbanized or land uses change. The policies of this Section are not intended to alter existing buffers and edge conditions in urban areas of Markham outside of large scale development or *redevelopment* applications, or prevent *agricultural uses* contiguous with farm operations on lands which could become a future *vegetation protection zone* within the 'Countryside' and 'Greenway' designations.

Vegetation protection zone requirements vary depending on the feature and the relevant policy application (local, regional or provincial). Where development, *redevelopment* or *site alteration* is proposed on lands adjacent to a *natural heritage* or *hydrologic feature*, the extent of a *vegetation protection zone* is determined by an environmental impact

Sections 3.1.2.18
subject to Area/Site
Specific Issues Nos.
22 (Issue 281A) and
24 (62 C iii) and
Wetlands Preamble,
3.1.2.19-21 subject
to Area/Site Specific
Appeal Nos. 18 (66)
and 22 (Issue 281A)

**Vegetation
Protection Zone
Preamble and
Section 3.1.2.22**
subject to Area and
Site Specific Appeal
Nos. 1, 2, 5 (Issue
52A) and 22 (Issue
281A)

study, natural heritage evaluation and/or hydrological evaluation, or equivalent study. The width of the *vegetation protection zone* shall be based on the minimum standards provided in Table 3.1.2.22 and any additional lands required to protect the feature, and the level of impact associated with proposed adjacent development.

As outlined in Section 3.1.4, the Rouge *watershed* tributaries are subject to requirements of the Rouge North Implementation Manual, 2003 and the application of the Rouge Watershed Protection Area Criteria which incorporate *vegetation protection zones*.

It is the intent of this Plan that where development, *redevelopment* and *site alteration* is proposed adjacent to a *natural heritage or hydrologic feature*, a *vegetation protection zone* be provided and conveyed in public ownership as part of the Natural Heritage Network.

It is the policy of Council:

3.1.2.22

To identify and protect *vegetation protection zones* adjacent to *natural heritage and hydrologic features* by:

- a) requiring an environmental impact study, natural heritage evaluation and/or hydrological evaluation, or equivalent to determine the *vegetation protection zone* where development, *redevelopment* or *site alteration* is proposed within the adjacent lands outlined in Table 3.1.2.22. The width of the *vegetation protection zone* shall be based on the minimum standards provided in Table 3.1.2.22 and any additional lands required to protect the feature as identified in the environmental study; and
- b) securing *vegetation protection zones* through:
 - i. conveyance into public ownership through the *development approval* process where appropriate, and other land securement means where appropriate; and
 - ii. appropriate zoning controls.

MINIMUM VEGETATION PROTECTION ZONES

On the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area the standards specified by the Provincial Plans will apply. Standards provided in this Table are minimums and their adequacy must be evaluated through site-specific studies.

A vegetation protection zone is a buffer area intended to protect a natural heritage or hydrologic feature and its ecological function from adjacent land use impacts.

Vegetation Protection Zone Preamble and Section 3.1.2.22 subject to Area and Site Specific Appeal Nos. 1 , 2 and 5 (Issue 52A) and 22 (Issue 281A)

MINIMUM VEGETATION PROTECTION ZONES			
On the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area the standards specified by the Provincial Plans will apply. Standards provided in this Table are minimums and their adequacy must be evaluated through site-specific studies.			
Feature	Minimum Adjacent Lands *	Minimum Vegetation Protection Zone **	Measurement***
<i>Significant valleylands</i>	120 metres	10 metres except where the upper limit of other <i>natural heritage and/or hydrologic features</i> and/or their <i>vegetation</i>	Whichever is the greater of long-term stable top of bank,

MINIMUM VEGETATION PROTECTION ZONES

On the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area the standards specified by the Provincial Plans will apply. Standards provided in this Table are minimums and their adequacy must be evaluated through site-specific studies.

Feature	Minimum Adjacent Lands *	Minimum Vegetation Protection Zone **	Measurement***
		<p><i>protection zones</i> are located between the toe of the slope and top of bank. In these instances, additional lands will be required to protect the features, as determined through an environmental study, consistent with the guidance provided in the Natural Heritage Reference Manual, and with consideration for the effect of the valley slope on the function of the <i>vegetation protection zone</i>.</p> <p>In the Urban Areas as identified on Map 12 – Urban Area and Future Urban Area, a reduced <i>vegetation protection zone</i> may be considered in accordance with Section 3.1.2.25.</p>	<p>limit of the <i>floodplain</i> defined by the TRCA or edge of other <i>natural heritage and hydrologic features</i></p>
Valleylands	120 metres	10 metres	Whichever is the greater of long-term stable top of bank or limit of <i>floodplain</i> defined by TRCA
		In the Urban Areas as identified on Map 12 – Urban Area and Future Urban Area, a reduced <i>vegetation protection zone</i> may be considered in accordance with Section 3.1.2.25.	
Significant woodlands	120 metres	10 metres	Outermost drip line of edge trees as determined by field staking with the City in consultation with the TRCA and relevant agencies
Woodlands	60 metres	10 metres	Outermost drip line of edge trees as determined by field staking with the City in consultation with the TRCA and relevant agencies
		In the Urban Areas as identified on Map 12 – Urban Area and Future Urban Area, a reduced <i>vegetation protection zone</i> may be considered in accordance with Section 3.1.2.25.	
Provincially significant wetlands	120 metres	30 metres	Wetland boundary as determined through field staking with relevant agencies
		In the Urban Areas as identified on Map 12 – Urban Area and Future Urban Area, a reduced <i>vegetation protection zone</i> may be considered in accordance with Section 3.1.2.25.	
Wetlands	120 metres	15 metres	Wetland boundary as determined through field staking with the TRCA in consultation

MINIMUM VEGETATION PROTECTION ZONES

On the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area the standards specified by the Provincial Plans will apply. Standards provided in this Table are minimums and their adequacy must be evaluated through site-specific studies.

Feature	Minimum Adjacent Lands *	Minimum Vegetation Protection Zone **	Measurement***
			with the City and relevant agencies
<i>Significant wildlife habitat and habitat of endangered and threatened species</i>	Determined based on wildlife requirement	Determined by an environmental impact study evaluation and/or applicable Provincial regulation and guideline	
<i>Fish habitat</i>	120 metres	15, 20 or 30 metres as determined by an environmental impact study or equivalent study consistent with the standards recommended in the Natural Heritage Reference Manual	Edge of water feature
Rouge River tributaries within the Rouge Watershed Protection Area	120 metres	Determined in accordance with Section 3.1.4.1	
<u>Oak Ridges Moraine Conservation Plan Area and Greenbelt Plan Area</u>			
<i>Wetlands on the Oak Ridges Moraine and the Greenbelt</i>	120 metres	30 metres	Any part of the feature
<i>Seepage areas and springs on the Oak Ridges Moraine and the Greenbelt</i>	120 metres	30 metres	Any part of the feature
<i>Significant woodlands on the Oak Ridges Moraine and the Greenbelt</i>	120 metres	30 metres	Outermost drip line of edge of trees
<i>Permanent streams and intermittent streams on the Oak Ridges Moraine and the Greenbelt</i>	120 metres	30 metres	Oak Ridges Moraine Conservation Plan: Edge of meanderbelt Greenbelt Plan: Outside boundary of the <i>key natural heritage</i> or <i>key hydrologic feature</i>
Sand barrens, savannahs and tallgrass prairies on the Oak Ridges Moraine or Greenbelt	120 metres	30 metres	Any part of the feature

MINIMUM VEGETATION PROTECTION ZONES

On the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area the standards specified by the Provincial Plans will apply. Standards provided in this Table are minimums and their adequacy must be evaluated through site-specific studies.

Feature	Minimum Adjacent Lands *	Minimum Vegetation Protection Zone **	Measurement***
<i>Provincially rare species</i> on the Oak Ridges Moraine	120 metres	Determined by a Natural Heritage Evaluation or applicable Provincial regulation and guideline	

Table 3.1.2.22

- * The adjacent lands are those lands contiguous to a *natural heritage feature* or *hydrologic feature* as measured from the feature, exclusive of property boundaries.
- ** Minor roundings of *vegetation protection zones*, located outside of the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area, may be considered where there is no net loss in the required area of the minimum *vegetation protection zone*.
- *** Measurement may also be determined in accordance with the Ministry of Natural Resources and Forestry Natural Heritage Reference Manual

3.1.2.23 **That** where development, *redevelopment* or *site alteration* outside the Urban Area, as shown on Map 12 – Urban Area and Built-Up Area, is proposed between *key natural heritage features* or *key hydrologic features* within the minimum adjacent lands, the minimum adjacent land requirements identified in Section 3.1.2.22 a) may be increased.

3.1.2.24 **To coordinate** with the York Region requirements for a natural heritage evaluation and/or hydrological evaluation, or an environmental impact study where lands within the Greenway System and the Region’s Greenlands System overlap.

3.1.2.25 **To consider** a reduced *vegetation protection zone* within the Urban Area, as shown on Map 12 – Urban Area and Built-Up Area, only where:

- a) supported by an environmental impact study satisfactory to the City in consultation with the Toronto and Region Conservation Authority; or
- b) site constraints such as existing lot size or physical site characteristics clearly limit the ability to achieve a minimum 10-metre *vegetation protection zone*; or
- c) the *vegetation protection zone* was delineated through a previous *development approval* or secondary plan or area and site specific policy.

3.1.2.26 **That** *vegetation protection zones* shall be managed as part of the feature and where required restored with native plantings. *Site alteration* inside of a *vegetation protection zone* shall only be permitted where it does not impact the feature or the restoration of the *vegetation protection zone* as determined in an environmental impact study.

3.1.2.27 **That** should areas of natural or scientific interest (life science or earth

**Sections 3.1.2.26
subject to Area/Site
Specific Appeal No.
22 (Issue 281A)**

science) be identified in Markham, the feature and its *vegetation protection zone* shall be protected in accordance with provincial requirements.

3.1.3 Natural Heritage Network Enhancement Lands

Natural Heritage Network Enhancement Lands are areas that have the potential to increase the resilience of the Natural Heritage Network by, among other things, facilitating movement of wildlife and dispersal of plants among features. These areas can improve the *biodiversity* and connectivity of *key natural heritage features* and *key hydrologic features*, *valleylands*, and *woodlands*, and improve the *ecological function* of the network. The Natural Heritage Network Enhancement Lands are shown symbolically on Map 4 – Greenway System as ‘Core Area Enhancements’, ‘Core Linkage Enhancements’ and ‘Natural Heritage Restoration Areas’.

‘Core Area Enhancements’ have been identified as areas that would greatly enhance the function of existing natural areas by improving their shape and marginally increasing their size to provide the minimum area required to support valued species in the long term. This is done in recognition of the increased stresses put on smaller natural features within urban areas. ‘Core Linkage Enhancements’ are intended to provide wildlife corridors and mitigate the reduction in connectivity among natural features that generally occurs when agricultural lands are urbanized. ‘Natural Heritage Restoration Areas’ are publicly owned lands that are targeted for natural heritage restoration activities such as reforestation and *wetland* rehabilitation.

It is the intent of this Plan to identify and refine ‘Core Area Enhancements’, ‘Core Linkage Enhancements’ and ‘Natural Heritage Restoration Areas’, and seek their protection and enhancement through the *development approval* process for development, *redevelopment* and *site alteration*, particularly on lands designated as ‘Future Urban Area’ on Map 3 – Land Use. In addition, naturalized stormwater management facilities adjacent to *valleylands* and stream corridors have the potential to enhance the function of the Natural Heritage Network.

It is the policy of Council:

3.1.3.1 **To identify** Natural Heritage Network Enhancement Lands comprising ‘Core Area Enhancements’, ‘Core Linkage Enhancements’, and ‘Natural Heritage Restoration Areas’ shown symbolically on Map 4 – Greenway System and integrate them into the Natural Heritage Network to:

- a) improve *biodiversity* around existing natural features and protected provincial policy areas;
- b) improve connectivity of *subwatersheds* and their features; and
- c) improve *ecological function*.

3.1.3.2 **To delineate** the Natural Heritage Network Enhancement Lands through one or more of the following studies: a *subwatershed plan*, master environmental servicing plan, environmental impact study, natural heritage evaluation and/or hydrological evaluation, or equivalent and

Sections 3.1.3 subject to Area/Site Specific Appeal Nos. 5 (Issue 62) and 22 (Issue 281A)

Natural Heritage Network Enhancement Lands are areas that have the potential to increase the resilience of the Natural Heritage Network by facilitating movement or wildlife and dispersal of plants among features.

where appropriate, identify additional Natural Heritage Network Enhancement Lands for long-term protection.

- 3.1.3.3 **To seek** the protection and enhancement of Natural Heritage Network Enhancement Lands through the *development approval* process for development, *redevelopment* and *site alteration*, particularly on lands designated as ‘Future Urban Area’ on Map 3 – Land Use, to maintain existing connectivity among *natural heritage and hydrologic features* and create large blocks of habitat. Natural heritage enhancements may also be secured through greening initiatives, partnership and infrastructure projects to achieve ecological gains.

- 3.1.3.4 **That** Natural Heritage Network Enhancement Lands shall be considered a priority for public acquisition using the Markham Environmental Land Securement Fund or other funding sources as may be appropriate.

- 3.1.3.5 **To work** cooperatively with landowners and agencies to ensure the ‘Natural Heritage Restoration Areas’ shown on Map 4 – Greenway System are appropriately phased to minimize impacts on agricultural operations.

3.1.4 Rouge Watershed Protection Area

The ‘Rouge Watershed Protection Area’ as shown on Map 4 – Greenway System comprises the Rouge watercourses, their associated *valleylands* and riparian zones, *key natural heritage features* and *key hydrologic features* and *woodlands* associated with the corridor and the associated *vegetation protection zones*. The ‘Rouge Watershed Protection Area’ reflects the criteria established to delineate the Rouge Park boundary in the Rouge North Management Plan.

The ‘Rouge Watershed Protection Area’ component of the Greenway System is of particular significance given the extensive public investment in establishing the Rouge Park and the efforts of all levels of government in preparing the Rouge North Management Plan.

Some of the Rouge Park lands shown in the Rouge North Management Plan are intended to form portions of the Rouge National Urban Park. The Rouge North Management Plan provides the framework for the Rouge Park referred to herein as the ‘Rouge Watershed Protection Area’ and contains objectives to ensure the long-term protection of Rouge *watershed* tributaries that flow into the Rouge National Urban Park. The Rouge North Implementation Manual provides the boundary delineation methodology for the interpretation and refinement of the ‘Rouge Watershed Protection Area’ boundary. The boundary of the ‘Rouge Watershed Protection Area’ shown on Map 4 – Greenway System is preliminary and will continue to be refined through the *development approvals* process.

It is the policy of Council:

- 3.1.4.1 **That** where development, *redevelopment* or *site alteration* is proposed adjacent to a watercourse within the Rouge *watershed*, the refinement and

Section 3.1.3 subject to Area/Site Specific Appeal Nos. 5 (Issue 62) and 22 (Issue 281A)

Section 3.1.4 subject to Area/Site Specific Appeal Nos. 1, 2 and 5 (Issue 52A)

The Rouge Watershed Protection Area is of particular significance given the extensive public investment in establishing the Rouge Park and the efforts of all levels of government in preparing the Rouge North Management Plan.

confirmation of the boundary of the 'Rouge Watershed Protection Area' as shown on Map 4 – Greenway System will be required in accordance with the 'Rouge Watershed Protection Area' objectives contained in Table 3.1.4.1 below and the requirements of the boundary delineation criteria for the 'Rouge Watershed Protection Area' contained in the Rouge North Implementation Manual.

Section 3.1.4 subject to Area/Site Specific Appeal Nos. 1, 2 and 5 (Issue 52A)

ROUGE WATERSHED PROTECTION AREA CRITERIA		
	Criterion	Objective
1	Watercourses and existing regulatory <i>floodplain</i>	To protect form, function, ecological health and <i>floodplain</i> function of the watercourses.
2	Meander belt	To provide for the natural evolution of stream morphology and minimize long-term risk to life and property.
3	<i>Valleylands</i> and stream corridor features	To preserve the stability and integrity of the <i>valleylands</i> and stream corridors and to preserve and enhance <i>valleylands</i> and stream corridors consistent with the intent of the TRCA policy.
4	Natural vegetation communities and riparian vegetation communities and interior forest conditions	To preserve and protect existing natural vegetation, riparian zones, aquatic habitats, <i>woodlands</i> and interior forest condition consistent with TRCA programs.
5	<i>Wetlands</i> (evaluated and unevaluated)	To preserve and protect <i>wetlands</i> (evaluated and unevaluated) and Life Science Areas of Natural and Scientific Interest in accordance with Markham, TRCA and Provincial policy and regulations.
6	<i>Significant habitat for endangered, threatened, special concern</i> or provincially rare species	To protect habitats for vulnerable, <i>threatened and endangered species</i> and <i>species of concern</i> as identified by TRCA, Provincial and Federal governments.
7	Terrestrial corridor habitat function and woodland restoration requirement	To provide, maintain and enhance corridors required for species movement, maintain appropriate <i>Biodiversity</i> consistent with TRCA policy and programs and to provide for the enhancement of natural vegetation communities and interior forest conditions and to enhance <i>woodland</i> connectivity and reduce fragmentation.
8	Seepage areas and areas exhibiting groundwater discharge	To ensure maintenance of baseflow for habitat for aquatic and <i>wetland</i> species and maintain and enhance water quality, consistent with TRCA programs
9	Vegetation community maintenance area to protect riparian zones	To protect vegetation communities, species and habitats from edge effects; to protect from invasive species colonization; to achieve TRCA restoration targets; to protect interior forest habitat; to accommodate access; to protect adjacent properties

		from damage, and to accommodate recreational uses
10	Cultural and archaeological resources	To identify and protect cultural heritage and archaeological resources and to provide for cultural heritage interpretation.

Table 3.1.4.1

Section 3.1.4 subject to Area/Site Specific Appeal Nos. 1, 2 and 5 (Issue 52A)

3.1.4.2 **That** the ‘Rouge Watershed Protection Area’ boundary along the main branch of the Little Rouge Creek on lands in private ownership shall be interpreted as coincident with the Greenbelt Plan boundary.

3.1.4.3 **To support** the long-term protection of the Little Rouge Creek corridor as shown on Map 6 – Hydrologic Features as a functional and sustainable ecological corridor generally extending 600 metres in width, with the long-term goal of achieving interior forest habitat conditions within the corridor.

3.1.4.4 **That** in the event that the minimum *vegetation protection zone* identified in Section 3.1.2.23 is not consistent with the boundary as established through the application of the ‘Rouge Watershed Protection Area’ criteria identified in Section 3.1.4.1, the boundary of the Natural Heritage Network shown on Map 4 – Greenway System shall be deemed to be the boundary which provides the greatest protection for the natural feature.

3.1.4.5 **That** where lands are located both within the Rouge North Management Plan Area and the Greenbelt Plan Area the most restrictive policies shall prevail.

3.1.5 Oak Ridges Moraine Conservation Plan and Greenbelt Plan

The Provincial Oak Ridges Moraine Conservation Plan provides policies and guidelines for the protection of the *landform features* and natural heritage resources within the Oak Ridges Moraine Conservation Plan Area shown on Map 7 – Provincial Policy Areas. The Provincial Greenbelt Plan provides policies and guidelines for the management of lands within the Greenbelt Plan Area shown on Map 7 – Provincial Policy Areas. In addition to the land use policies in Section 8.6, the following policies apply to all lands within the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area.

It is the intent of this Plan to support the Provincial Plans and implement the requirements of the Provincial Plans. The Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area form part of the Greenway System as shown on Map 4 – Greenway System.

It is the policy of Council:

3.1.5.1 **To protect** and manage lands within the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area as shown on Map 7 – Provincial and Federal Policy Area in accordance with the policies of the appropriate Provincial Plans and this Plan where applicable. Development, *redevelopment* and *site alteration* shall only be permitted where they

comply with applicable provincial legislation.

- 3.1.5.2 **That** for the purpose of interpretation of Provincial and Regional policy, agricultural lands within the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area are classified *prime agricultural lands*.
- 3.1.5.3 **To prohibit** development, *redevelopment* or *site alteration* within *key natural heritage features* and *key hydrologic features* and their *vegetation protection zones* in the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area with the exception of conservation, resource management, nature-based recreation facilities and infrastructure.
- 3.1.5.4 **That** existing uses, expansion to existing uses, reconstruction of existing buildings and structures and conversions of existing uses to more compatible uses may be permitted subject to satisfying the specific applicable policies in the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan providing that the use or expansion was lawfully used for that purpose on or before November 15, 2001 within the Oak Ridges Moraine Conservation Plan Area and on or before December 15, 2004 in the Greenbelt Plan Area.
- 3.1.5.5 **That** activities related to non-renewable resources, including mineral aggregates and wayside pits, may be permitted in the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area subject to an amendment to this Plan and the specific policies in the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan.
- 3.1.5.6 **That** the technical papers prepared by the Province associated with the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan shall be used to provide guidance in the definition and implementation of policies related to *key natural heritage features* and *key hydrologic features* as identified in the Plans.
- 3.1.5.7 **That** lands identified as ‘Oak Ridges Moraine Countryside’ and ‘Oak Ridges Moraine Natural Linkage Area’ on Map 7 – Provincial Policy Areas, and ‘Oak Ridges Moraine Landform Conservation Area Category 2’ on Map 5 – Natural Heritage Features and Landforms, and ‘Oak Ridges Moraine Areas of High Aquifer Vulnerability’ on Map 6 – Hydrologic Features, are subject to the specific policies of the Oak Ridges Moraine Conservation Plan.
- 3.1.5.8 **To recognize** that the southern boundary of the Oak Ridges Moraine is based on the 245-metre contour established by Ontario Regulation 01-02. Where lands are certified by an Ontario Land Surveyor as below the 245-metre contour to the satisfaction of Markham and the Region such lands shall be exempt from the provisions of the Oak Ridges Moraine Conservation Plan, but shall be subject to the ‘Protected Countryside’ policies of the Greenbelt Plan.
- 3.1.5.9 **To maintain** and where possible restore lands identified as ‘Natural Heritage Restoration Areas’ shown on Map 4 – Greenway System within the ‘Oak Ridges Moraine Natural Linkage Area’ shown on Map 7 –

It is the intent of this Plan to support and implement the requirements of the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan.

Provincial Policy Areas that support a regional scale natural linkage and ecological corridor function consistent with the Natural Linkage objectives of Section 12 of the Oak Ridges Moraine Conservation Plan.

- 3.1.5.10 **That** lands identified as ‘Oak Ridges Moraine Countryside’ on Map 7 – Provincial Policy Areas are intended to support and provide for the continuation of *agricultural uses* and form part of the Greenway System.
- 3.1.5.11 **That** applications for development, *redevelopment* or *site alteration* on lands identified as ‘Oak Ridges Moraine Landform Conservation Area’ Category’ on Map 5 – Natural Heritage Features and Landforms shall be accompanied by a Landform Conservation Plan and be consistent with the policies and requirements in the Oak Ridges Moraine Conservation Plan.
- 3.1.5.12 **That** applications for development, *redevelopment* or *site alteration* on lands identified as ‘Oak Ridges Moraine Areas of High Aquifer Vulnerability’ on Map 6 – Hydrologic Features shall be subject to the policies of Section 8.6.1.4 b) of this Plan.
- 3.1.5.13 **To only permit** consents on lands identified as Oak Ridges Moraine Conservation Plan Area on Map 7 – Provincial Policy Areas, subject to meeting all the requirements of Section 32 of the Oak Ridges Moraine Conservation Plan.
- 3.1.5.14 **That** lands identified as Greenbelt Natural Heritage System on Map 7 – Provincial Policy Areas are subject to additional Natural Heritage System policies contained in the Greenbelt Plan and Section 8.6.1.8 of this Plan. Refinements to the boundary of the Natural Heritage System shall only be considered through a provincial review process.
- 3.1.5.15 **To only permit** consents on lands identified as the Greenbelt Plan Area on Map 7 – Provincial Policy Areas, subject to meeting all the requirements of Section 4.6 of the Greenbelt Plan.

3.2 URBAN FOREST SYSTEM

The Urban Forest System comprises all wooded areas and individual *trees* as well as the soil that sustains them on public and private property in Markham. The *urban forest* is a valuable asset which provides various benefits to Markham including reduction in air pollution, moderation of urban heat island effect, energy savings, mitigation of climate change effects, habitat for urban adapted wildlife, stormwater management, recreation and opportunities for physical activity, *biodiversity*, improvement in mental well-being, contributions to the quality and character of the urban environment and support to Markham’s Greenway System.

The *urban forest* contains a number of different components which will be protected in accordance with the relevant policies of this Plan, including *significant woodlands* and *woodlands*.

It is the policy of Council:

- 3.2.1 **To protect**, expand and integrate the *urban forest* in existing and new communities by:
- a) encouraging the enhancement of a resilient and healthy *urban forest* by increasing *tree canopy* coverage and encouraging a diversity of *tree* species through *tree* planting and restoration of public lands in appropriate locations;
 - b) providing sustainable growing environments for *trees* by allocating adequate soil volumes and landscaped area through development, *redevelopment* and *site alteration* and infrastructure;
 - c) reviewing applications for development, *redevelopment* and *site alteration* to minimize impacts on the *urban forest*. Where *woodlands* or other *trees* cannot be retained in situ, as supported by appropriate studies in accordance with the policies of this Plan, compensation will be provided in accordance with Council policy and best practices determined as follows:
 - i. Compensation for *woodlands* that meet the criteria of Section 3.1.2.17 shall take into consideration the following principles:
 - achieving no net loss of *woodland* area, ecological functions including ecological services, and the overall area of the Greenway System;
 - providing appropriate locations for ecological restoration in Markham with a priority given to Natural Heritage Network Enhancement Lands;
 - providing appropriate implementation mechanisms including cash-in-lieu; and
 - other considerations deemed appropriate by Council; and
 - ii. Compensation for *trees* not within *significant woodlands* or *woodlands*, shall be applied using tree replacement standards in accordance with City policy and guidelines;
 - d) regulating the injury of destruction of *trees* on public and private property through York Region and Markham tree protection by-laws; and
 - e) increasing awareness of the benefits of the *urban forest* and promoting education and involvement in the stewardship of Markham's *urban forest*. (Markham Mod. 229)

- 3.2.2 **To develop** in cooperation with York Region an Urban Forest Management Plan to address local *tree canopy* targets, tree species diversity, invasive species management, soil conservation strategies to implement *tree canopy* targets and the long-term maintenance of Markham's *urban forest* including tracking and measuring the health benefits of the *urban forest*.

3.3 WATER SYSTEM

Water is a resource that sustains aquatic and wetland habitats, provides drinking water and supports day to day residential and employment activities and recreational opportunities. The Water System policies in this Section provide a framework for *watershed* planning, guide the delivery of safe and sustainable water and wastewater services as well as provide

Section 3.2.1 subject to Area/Site Specific Appeal No. 24 (Issue 62C ii) and Section 3.2.1 c) subject to Area/Site Specific Appeal No. 1 (Issue 62C ii) and Section 3.2.2 subject to Area/Site Specific Appeal No. 24 (Issue 62C ii)

The Urban Forest System comprises all wooded areas and individual trees as well as soil that sustains them on public and private property in Markham.

direction for the protection of local surface water and groundwater resources.

3.3.1 Watershed Planning

Watershed plans provide management direction for the protection of *natural heritage and hydrologic features* at the *watershed* scale using an ecosystem approach. *Watershed plans* have been prepared for the five *watersheds* located in Markham including the Don, Rouge, Duffins, Petticoat and Highland *watersheds* identified on Map 6 – Hydrologic Features. These plans provide a community vision and policy framework to achieve a sustainable and healthy *watershed* through the protection of safe and sustainable local surface water and groundwater resources and an integrated water conservation approach.

Markham recognizes *watershed* and *subwatershed* planning and its ecosystem-based approach to resource management as an important tool for guiding land use and infrastructure decisions that protect water and land resources.

It is the policy of Council:

- 3.3.1.1 **To work** in cooperation with the Toronto and Region Conservation Authority and other partners in the preparation and update of the Don, Rouge, Duffins, Petticoat and Highland *watershed plans* where required.
- 3.3.1.2 **To work** in partnership with the Toronto and Region Conservation Authority, York Region and other partners in the preparation of a framework for the implementation of the Don, Rouge, Duffins, Petticoat and Highland *watershed plans* that may include the preparation of detailed implementation plans and the consideration of appropriate best management practices and sustainable technologies in development of the ‘Future Urban Area’ lands shown on Map 3 – Land Use.
- 3.3.1.3 **To work** in cooperation with the Toronto and Region Conservation Authority, Ministry of Natural Resources and other partners, in the preparation of *subwatershed plans* for smaller drainage areas within Markham’s *watershed* area boundaries.
- 3.3.1.4 **To require** the preparation of *subwatershed plans* prior to development in the ‘Future Urban Area’ lands north of Major Mackenzie Drive as shown on Map 3 – Land Use to guide land use options and identify mitigation and restoration strategies required to protect and enhance *natural heritage and hydrologic features* and their *ecological functions* and hydrologic functions.
- 3.3.1.5 **To implement** *watershed* and *subwatershed plans* in the preparation of master environmental servicing plans and all other required studies prepared in support of development, *redevelopment* and *site alteration*, where appropriate.

3.3.2 Groundwater and Surface Water Resources

Groundwater resources sustain rural drinking water supplies and support

Markham recognizes watershed and subwatershed planning and its ecosystem based approach to resource management as an important tool for guiding land use and infrastructure decisions that protect water and land resources.

sensitive aquatic habitat and natural features throughout Markham. Features considered to be critical to the protection of these resources include recharge areas, discharge areas, and lands above aquifers that are susceptible to contamination.

Land uses impacting drinking water supplies are managed through the Clean Water Act and local source protection plans that consider the sensitivity of specific features. In Markham, the sensitivity of local aquifers to potential contamination is limited. *Highly vulnerable aquifers* identified in the local source protection plan are low and moderate risk areas and are subject to salt management best practices. From a drinking water quantity perspective, *significant groundwater recharge areas*, wellhead protection areas and intake protection zones lie beyond Markham boundaries and will be managed by adjacent municipalities through implementation of source protection plan policies.

Groundwater and surface water resources in Markham are important from an ecological perspective and sensitive features are protected through this Plan and the provincial Oak Ridges Moraine Conservation Plan and Greenbelt Plan. *Watershed plans* prepared by the Toronto and Region Conservation Authority have also identified potential *significant local groundwater recharge areas* which contribute to maintaining aquifer levels and aquatic habitat and may be further defined through a *subwatershed plan*. At a local scale, sensitive features such as headwater drainage features will be assessed and, where appropriate, protected through the *development approval* process.

It is the policy of Council:

- 3.3.2.1 **That** development, *redevelopment* and *site alteration* be designed with the goal of protecting ground and surface water quality and quantity through the identification of strategies and techniques to maintain and where appropriate restore the function of *key hydrologic features* demonstrated through master environmental servicing plans or other equivalent studies.
- 3.3.2.2 **To work** with the Toronto and Region Conservation Authority to manage the water budget as a result of development to maintain as much as possible the natural quality, hydrological function and *ecological integrity* of *key hydrologic features* as much as possible using best management practices suited to terrain and hydrogeological conditions.
- 3.3.2.3 **To work** with provincial agencies, York Region, adjacent municipalities and private landowners to manage activities which pose potential contamination risks on *highly vulnerable aquifers* as identified on Appendix J – Clean Water Act Highly Vulnerable Aquifers including salt management and the manufacturing, handling and storage of organic solvents and dense non-aqueous phase liquids (DNAPLs) in accordance with industry and provincial standards.
- 3.3.2.4 **That** applications for development approval within *highly vulnerable aquifers* identified on Appendix J – Clean Water Act Highly Vulnerable

**Sections 3.3.2
Preamble and
3.3.2.1-2 subject to
Area/Site Specific
Appeal No. 22 (Issue
281A)**

Groundwater and surface water resources in Markham are important from an ecological perspective and sensitive features are protected through this Plan and the provincial Oak Ridges Moraine Conservation Plan and Greenbelt Plan.

Aquifers involving the manufacturing, handling and/or storage of bulk fuel or chemicals (activities prescribed under the Clean Water Act), shall be accompanied by a *contaminant management plan* as deemed necessary by Markham.

- 3.3.2.5 **That** where potentially *significant local groundwater recharge areas* are identified in an approved *watershed plan* and/or *subwatershed plan*, Markham shall require a *subwatershed plan*, a master environmental servicing plan, an environmental impact study, a natural heritage evaluation and/or hydrological evaluation, or equivalent. These studies shall include a hydrogeological study and modeling component to confirm:
- a) recharge conditions;
 - b) groundwater levels and flow patterns;
 - c) areas of groundwater/surface water interaction; and
 - d) reliance of aquatic habitat for target species on groundwater discharge.
- 3.3.2.6 **To support** programs developed by York Region and the Toronto and Region Conservation Authority to monitor the quality and quantity of surface water and groundwater systems.
- 3.3.2.7 **That** where development, *redevelopment* or *site alteration* is proposed on lands containing headwater drainage features as identified on Appendix B –Headwater Drainage Features, the features shall be evaluated and protected where required using the Toronto and Region Conservation Authority’s Evaluation, Classification and Management of Headwater Drainage Features Guidelines.
- 3.3.2.8 **To prepare** and maintain an Erosion Restoration Master Plan for eroded and degraded watercourses for the purpose of protecting infrastructure, restoring natural form and function, and where possible improving *fish habitat* through the restoration of natural riparian vegetation and removal of barriers to fish migration.
- 3.3.2.9 **To prohibit** permanent dewatering associated with development, *redevelopment* or *site alteration*, unless it can be demonstrated to the satisfaction of the City, in consultation with the Ministry of Environment and the Toronto and Region Conservation Authority, that the negative environmental impact of dewatering can be mitigated.

3.3.3 Stormwater Management

Stormwater management is the control of stormwater runoff and snowmelt for the purpose of water quantity and erosion control, and water quality control. It is the means by which broad goals for management of the water cycle and pollution are implemented to address the negative impacts of development and human activities.

The Province, the Toronto and Region Conservation Authority and Markham have regulations and guidelines in place to ensure best practices in stormwater management. The goal of these practices is to mitigate the effects of development and human activities on the hydrologic cycle including increased runoff, and decreased infiltration, of rain and

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snowmelt, and deteriorated water quality.

An integrated design approach to stormwater management considering engineering, landscape architecture, geosciences, planning and ecology aspects is required to achieve technical as well as complementary social and environmental objectives.

Markham continues to support innovative methods to manage and integrate stormwater as a resource including the use of water retention facilities to control the release rate into receiving streams and low-impact development measures that preserve natural hydrologic functions and protect natural systems.

It is the policy of Council:

3.3.3.1 **To require** stormwater management for all development, *redevelopment* or *site alteration* that addresses Provincial and Toronto and Region Conservation Authority regulations and requirements to the satisfaction of the City.

3.3.3.2 **To apply** best management practices in stormwater management to:

- a) protect groundwater quality and flow and stream baseflow, and where applicable, in accordance with targets established in a *subwatershed plan* or master environmental servicing plan;
- b) protect water quality;
- c) minimize the disruption of natural drainage patterns wherever possible;
- d) mitigate stream channel erosion;
- e) mitigate flood risk;
- f) protect aquatic species and their habitat;
- g) minimize vegetation removal, grading, soil compaction, and sediment erosion;
- h) use an integrated treatment approach where appropriate to minimize stormwater management flows and structures;
- i) address recommendations, standards or targets contained within *watershed plans* and water budgets; and
- j) comply with the specific requirements of the Oak Ridges Moraine Conservation Plan and Greenbelt Plan, *watershed plans* and *subwatershed plans*.

3.3.3.3 **To encourage** an integrated design approach in the selection and design of innovative best management practices for stormwater management in order to improve technical effectiveness, minimize maintenance and operation requirements, advance other initiatives (water conservation) and to promote naturalized solutions that integrate with other features in the public and private realms.

3.3.3.4 **That** all stormwater management reports submitted to Markham in support of applications for development, *redevelopment* or *site alteration*, identify best management practices that will meet or exceed the minimum design criteria specified for flood control, erosion control (as specified in a sediment and erosion control report), water quality treatment and

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infiltration (water budget) identified in Markham's Stormwater Management Guidelines and Engineering Design Standards, other applicable agency requirements and any large-scale supporting studies. Minimum criteria specified in the guidelines may be superseded by additional requirements for drinking water protection, Oak Ridges Moraine and Greenbelt conservation, and/or protection of sensitive and *endangered or threatened* aquatic species.

- 3.3.3.5 **To require** all stormwater management facilities to be designed and constructed to meet or exceed provincial requirements for stormwater management best practices and in accordance with Markham's Stormwater Management Guidelines and Engineering Design Standards, and in partnership with the Toronto and Region Conservation Authority.
- 3.3.3.6 **That** low-impact development measures be promoted as part of best management practices consistent with the requirements of Sections 3.3.2.2 and 3.3.3.2.
- 3.3.3.7 **That** naturalized stormwater management facilities, including wetland configurations, be located and designed to complement the Greenway System and further enhance the function of the Natural Heritage Network.
- 3.3.3.8 **To prohibit** stormwater management facilities in the Natural Heritage Network except where provided for in Section 3.3.3.9.
- 3.3.3.9 **To only consider** stormwater management facilities in *vegetation protection zones* in accordance with all of the following:
- a) it can be demonstrated through a master environmental servicing plan, environmental impact study or natural heritage and/or hydrological evaluation or equivalent study taking into consideration the directions of b, c) and d) that:
 - i. the function of the *vegetation protection zone* is not compromised;
 - ii. *natural heritage and hydrologic features* shall be protected and enhanced;
 - iii. there is no unacceptable risk related to *hazardous lands* and *hazardous sites*;
 - iv. the facility is natural in appearance and integrated into the Natural Heritage Network;
 - v. bird hazard impacts are addressed, where subject to airport regulations; and
 - vi. the site specific requirements of the applicable provincial plans and regulations are met.
 - b) an outlet discharge system may encroach within the *vegetation protection zone* or into a *natural heritage and hydrologic feature* where necessary, subject to:
 - i. the outlet discharge system, with the exception of the outlet channel and naturalized measures to appropriately manage outfall discharges, being placed close to the base of the slope, above the 25 year floodline and outside of the meanderbelt of the stream, where feasible; and
 - ii. the location of the outfall discharge system shall avoid disturbances

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- to *natural heritage and hydrologic features*, where possible;
- c) certain components of the stormwater management facilities or systems which would compromise the physical and functional integrity of the *vegetation protection zone* and its associated feature, including forebay and pretreatment facilities, shall be located outside of the *vegetation protection zone*; and
 - d) all other components of the stormwater management facilities or systems, with the exception of transitional grading, shall be located outside of the first 10 metres of the *vegetation protection zone*, as measured from the associated *natural heritage and hydrologic feature*, except where required to address exceptional circumstances.

Markham's Stormwater Management Guidelines, as identified in Section 3.3.3.5, will provide guidance on which components of stormwater management facilities or systems may be considered within portions of a *vegetation protection zone* in accordance with a, b, c and d above.

- 3.3.3.10 **That** all proposed development, *redevelopment* or *site alteration* shall have erosion and sediment control measures in place to the satisfaction of Markham.
- 3.3.3.11 **That** construction practices and sediment control measures during construction shall be implemented, monitored and maintained to the satisfaction of Markham and in consultation with the Toronto and Region Conservation Authority in accordance with best management practices.
- 3.3.3.12 **To prepare** a Stormwater Management Retrofit Master Plan to identify and prioritize opportunities to:
 - a) improve stormwater management in the urban area;
 - b) improve existing water quality treatment and erosion control; and
 - c) restore pre-development hydrologic functions.
- 3.3.3.13 **To require** that stormwater management facilities be inspected and maintained on an on-going basis to ensure their proper function.

3.4 ENVIRONMENTAL HAZARDS

Environmental hazards can pose a threat to public health and safety. Environmental hazards include natural hazards such as *floodplain* lands and erosion sites, as well human environmental hazards resulting from soil contamination and air pollution resulting from the burning of fossil fuels in homes, transportation vehicles and industrial operations.

It is the intent of Markham to take a proactive and precautionary approach to protecting public health and safety through prevention, protection and emergency preparedness.

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Environmental hazards include natural hazards such as floodplain lands and erosion sites, as well human environmental hazards resulting from soil contamination and air pollution.

3.4.1 Natural Environmental Hazards

Natural environmental hazards such as flooding and erosion can present an inherent risk to life and property damage. Policies respecting restrictions on *hazardous lands* and *hazardous sites*, *floodplain* management, *Special Policy Areas*, and *flood vulnerable areas* can reduce this risk and enhance public health and safety. Appendix A – Toronto and Region Conservation Authority Regulatory Framework outlines the key components of the Toronto and Region Conservation Authority Regulatory Framework related to *floodplain* and erosion management and *flood vulnerable areas* including:

- the screening area for development, *redevelopment* or *site alteration* established through Ontario Regulation 166-06;
- *flood vulnerable areas* that are shown symbolically and are potentially susceptible to flood events where the flood risk must be assessed and addressed prior to development, *redevelopment* or *site alteration*; and
- the *floodplain* and erosion hazards where development, *redevelopment* or *site alteration* is regulated.

Map 8 – Special Policy Areas identifies areas that have historically existed within the *floodplain* where site-specific policies approved by the Province are intended for the continued viability of existing uses.

For the purposes of this Section 3.4.1, the definition of development shall mean the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the Planning Act, but does not include:

- a) activities that create or maintain infrastructure authorized under an environmental assessment, Planning Act, or Condominium Act process; and
- b) works subject to the Drainage Act.

General Policies

It is the policy of Council:

- 3.4.1.1 **To protect** the safety of the public and reduce property damage by directing development, *redevelopment* or *site alteration* to locations outside of the *hazardous lands* and *hazardous sites* generally shown in Appendix A – Toronto and Region Conservation Authority Regulatory Framework with the exception of *Special Policy Areas*.
- 3.4.1.2 **To prohibit** the following uses on *hazardous lands*, *hazardous sites* and *Special Policy Areas*:
 - a) an institutional use including hospitals, *shared housing* such as long-term care homes and retirement homes, *daycare centres* and schools;
 - b) an essential emergency services such as that provided by fire, police and ambulance stations and electrical substations; or
 - c) uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

Natural environmental hazards such as flooding and erosion can present an inherent risk to life and property damage.

- 3.4.1.3 **To promote** and encourage mitigation and remediation works for existing development within *hazardous lands* and *hazardous sites*.

Hazardous Lands and Hazardous Sites

Hazardous lands and *hazardous sites* pose risks to human health and safety and private property due to potential flood impacts and/or unstable slopes and erosion issues. *Hazardous lands* and *hazardous sites* are regulated in accordance with the natural hazard policies of the Provincial Policy Statement and the regulations of the Toronto and Region Conservation Authority. It is the intent of Markham to direct development, *redevelopment* and *site alteration* away from these areas to protect the safety of the public. *Hazardous lands* and *hazardous sites* are generally designated 'Greenway'.

It is the policy of Council:

- 3.4.1.4 **That** *hazardous lands* and *hazardous sites* located within the areas as generally shown in Appendix A – Toronto and Region Conservation Authority Regulatory Framework, with the exception of *Special Policy Areas* and certain *flood vulnerable areas*, shall be generally designated as 'Greenway' lands on Map 3 – Land Use. The limits of *hazardous lands* and/or *hazardous sites* and the boundary of the corresponding 'Greenway' designation will be confirmed through the *development approval* process.
- 3.4.1.5 **To prohibit** development, *redevelopment* or *site alteration* and lot creation in *hazardous lands* and *hazardous sites* in accordance with Provincial policies, Conservation Authority regulations and the policies of this Plan.
- 3.4.1.6 **To only consider** development, *redevelopment* and *site alteration* in *hazardous lands* and *hazardous sites* where appropriate, provided:
- it is associated with required flood and/or erosion control works, minor additions and structures associated with passive recreational uses, or located within an approved *Special Policy Area*;
 - it has been demonstrated that safe access can be provided to the satisfaction of the Toronto and Region Conservation Authority;
 - no habitable living space or overnight accommodation is located below the regulatory flood elevation; and
 - infrastructure is provided in accordance with Section 3.1.2.9
- 3.4.1.7 **To require** conveyance of *hazardous lands* and *hazardous sites* within the 'Greenway' designation at no cost to a public authority as part of a *development approval*, except in those circumstances where an existing use will continue after implementation of the *development approval*.
- 3.4.1.8 **That** the management of *floodplain* lands as generally shown in Appendix A - Toronto and Region Conservation Authority Regulatory Framework be based on the *regulatory flood standard* in accordance with Provincial standards and mapping produced by the Toronto and Region Conservation Authority.
- 3.4.1.9 **That** where development, *redevelopment* or *site alteration* is proposed in

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areas subject to *erosion hazards* and slope instability, a geotechnical report shall be prepared by the proponent to address the nature and extent of the erosion and identify appropriate setbacks and remediation measures to prevent long-term erosion hazards to the satisfaction of Markham and the Toronto and Region Conservation Authority.

Special Policy Areas

Special Policy Areas are areas within Markham that have historically existed within the *floodplain* where site-specific policies approved by the Province provide for the continued viability of existing uses, which are generally small scale. Specific policies in this Section, Section 8.1.5, 9.14.6, 9.19.2, 9.19.6, 9.19.7, 9.19.11 and certain secondary plans are provided to address the management of these areas including criteria and procedures for development, *redevelopment* or *site alteration* as established by the Province. *Special Policy Area* policies shall prevail over all other policies in this Plan.

Markham's *Special Policy Areas* are shown as an overlay on Map 8 – Special Policy Areas with the underlying land use designation reflecting existing uses, existing zoning and statutory approvals shown on Map 3 – Land Use. It is the intent that a *Special Policy Area* provide for the continued viability of existing uses and manage development and *redevelopment* where provided for in this Plan. *Special Policy Areas* are not intended to allow for new or intensified development and *site alteration* if a community has feasible opportunities for development outside of the *floodplain*.

It is the policy of Council:

- 3.4.1.10 **That** no new development shall be permitted on any parcel of land within a *Special Policy Area* where:
- a) the development would be subjected to velocities and/or depths that would create an unacceptable risk to life or property;
 - b) the development would be susceptible to major structural damage as a result of a flood less than or equal to the *regulatory flood standard*;
 - c) the necessary flood protection measures would have a negative impact on adjacent properties; or
 - d) adverse downstream and/or upstream impacts would be created/exacerbated and/or an increase in risk to life or property would occur as a result of flooding.
- 3.4.1.11 **That** development, *redevelopment* or *site alteration* within a *Special Policy Area* is permitted subject to meeting technical floodproofing and safe access/egress criteria in accordance with the underlying land use designations and the policies of this Plan. Development applications which would intensify the level of development beyond what is permitted by this Plan, must demonstrate that no alternatives exist outside of the *floodplain* and shall be assessed in a comprehensive manner and require the review and approval of the Ministers of Municipal Affairs and Housing and

Special Policy Areas are areas within Markham that have historically existed within the floodplain where site-specific policies approved by the Province provide for the continued viability of existing use.

Natural Resources and Forestry.

- 3.4.1.12 **That** access and egress to all buildings and structures shall be safe. Where safety to the provincial *flooding hazard* standard cannot be achieved, access and egress shall be provided to the maximum level of flood protection that is determined feasible and practical by the Toronto and Region Conservation Authority. Dry access and egress is preferred. Under no circumstances shall new residential units or an increase in overnight accommodation be permitted where safe access and egress cannot be achieved to the provincial *flooding hazard* standard.
- 3.4.1.13 **To require** that applications for development, *redevelopment* or *site alteration* on lands in a *Special Policy Area* shall include:
- a) technical engineering studies detailing information such as flood velocity and depth of storm flows, flood damage reduction measures and stormwater management techniques, or other information as determined appropriate by Markham and the Toronto and Region Conservation Authority. The study requirements may be scoped where applications are considered minor such as additions or replacement structures;
 - b) a flood evacuation plan for multi-unit developments prepared by a qualified professional where and which is determined appropriate by Markham and the Toronto and Region Conservation Authority; and
 - c) a comprehensive floodproofing and management review to identify any remediation strategies as may be required to support larger *redevelopment* parcels in Markham Centre; and
 - d) plans that demonstrate primary building system controls, such as service unit panels, are above the regulatory flood elevation.
- 3.4.1.14 **That** the approval of buildings, structures, and parking in a *Special Policy Area* shall be conditional upon the landowner incorporating flood protection measures to the *regulatory flood standard* on all new buildings and new additions to minimize flooding impacts to the satisfaction of Markham and the Toronto and Region Conservation Authority. Where floodproofing to the regulatory flood elevation is not possible, floodproofing must be to the greatest extent feasible to the satisfaction of the Toronto and Region Conservation Authority, however, under no circumstances may it be lower than the 1:350 year flood elevation.
- 3.4.1.15 **That** prior to the issuance of a building or *site alteration* permit, applications for development on lands wholly or partially within a *Special Policy Area* shall require approval and permits from the Toronto and Region Conservation Authority in accordance with applicable criteria, procedures, standards and regulations.
- 3.4.1.16 **That** *Special Policy Area* lands shall continue to be identified with a *Special Policy Area* zone overlay in all applicable zoning by-laws with the necessary provisions to implement the relevant policies and shall be subject to site plan control approval.
- 3.4.1.17 **To prohibit** new lot creation or additional dwelling unit creation on lands

designated 'Residential Low Rise' in *Special Policy Areas*.

- 3.4.1.18 **That** modifications to a *Special Policy Area* boundary, new *Special Policy Areas* or modifications to *Special Policy Area* policies and/or land use designations shall be approved by the Ministers of Natural Resources and Forestry and Municipal Affairs and Housing prior to the adoption by Markham.

Flood Vulnerable Areas

Flood vulnerable areas are lands contained within the *floodplain* within the urban area containing multiple structures and roads for which the Toronto and Region Conservation Authority has identified the potential to address flood risk issues through a comprehensive flood remediation approach. The location of *flood vulnerable areas* will be confirmed by the Toronto and Region Conservation Authority. Markham will work with the Toronto and Region Conservation Authority and other agencies and landowners to ensure the flood risk is assessed and addressed.

It is the policy of Council:

- 3.4.1.19 **To work** with the Toronto and Region Conservation Authority, other agencies and landowners to explore opportunities to manage flood risk and develop comprehensive long-term solutions for *flood vulnerable areas* including opportunities to address existing development within *flood vulnerable areas* to ensure that the level of risk is maintained or decreased through specific actions and strategies for flood remediation, floodproofing, flood warning and emergency response matters.
- 3.4.1.20 **To work** with the Toronto and Region Conservation Authority and upstream municipalities to ensure development, *redevelopment* or *site alteration* upstream of *flood vulnerable areas* provide for stormwater management controls that decrease or do not increase existing flooding levels on properties within Markham for storms up to and including the Regulatory Storm event.

3.4.2 Other Environmental Hazards

Environmental hazards resulting from human activities such as air quality impacts and contaminated lands as well as noise, vibration and light impacts, have the potential to adversely impact human health and quality of life.

Air Quality and Climate Change

Direct or indirect air pollution impacts human and ecosystem health. The most significant sources of air pollution are related to the burning of fossil fuels and emission of greenhouse gases, which directly contribute to global warming and climate change. By managing and reducing these sources of air pollution and enhancing greenspaces, the impacts on human and ecosystem health can be mitigated.

Markham's Greenprint Community Sustainability Plan is a long-term

strategy prepared to address climate change mitigation and adaptation in a comprehensive manner and serves as Markham's Climate Action Plan. Priority climate change adaptation and mitigation policies have been incorporated throughout this Plan.

It is the policy of Council:

- 3.4.2.1 **To work** cooperatively with the Region and other partners to support and implement locally based climate change adaptation actions identified in Markham's Greenprint Community Sustainability Plan.
- 3.4.2.2 **To work** in consultation with public health agencies and other stakeholders to develop outreach and programs to raise awareness of air quality issues and encourage behavioural change in order to reduce air pollution and improve air quality.
- 3.4.2.3 **To provide** leadership in the reduction of the impact of climate change through the design of municipal buildings, public infrastructure, transportation services and municipal policies and procedures.
- 3.4.2.4 **That** certain *sensitive land uses* such as *day care centres, private schools* and *public schools* not be located near significant known air emission sources including the provincial 400 series highways.
- 3.4.2.5 **To require** air quality impact studies be undertaken for development approvals where potential or known air quality emission levels can potentially impact certain *sensitive land uses*.

Noise and Vibration

Noise and vibration policies address the management of impacts associated with noise generating uses such as airports, railways, highways, arterial roads and primary transit corridors.

It is the policy of Council:

- 3.4.2.6 **To require** that applications for *development approval* for *sensitive land uses* adjacent to a Provincial Highway, an airport, an arterial road, a rail line or an industrial use shall be accompanied by a noise and vibration study prepared in accordance with the Ministry of Environment Guidelines and York Region noise policies including required mitigation measures prepared to the satisfaction of Markham and York Region.
- 3.4.2.7 **To require** development, *redevelopment* and *site alteration* on lands adjacent to *sensitive land uses* to be appropriately designed and buffered using land use restrictions, building design, location of outdoor living spaces and landscaping such as berms and fencing to address noise and vibration impacts.
- 3.4.2.8 **That** the *noise exposure forecast* as may be in place for an airport site and Airport Zoning Regulations shall be used as a basis for land use planning and development control on affected lands.

Brownfields and Site Remediation

Brownfield sites are abandoned, underutilized or active properties where

Environmental hazards resulting from human activities such as air quality impacts and contaminated lands as well as noise, vibration and light impacts, have the potential to adversely impact human health and quality of life.

previous or current development activities such as waste disposal sites, recycling facilities or activities involving fuel and chemicals have led to environmental contamination of the soil or groundwater. In order to minimize the risk on human and ecosystem health, *brownfield sites* have to be remediated before they can be redeveloped. Former waste disposal sites are lands previously used for the disposal of waste materials by burial. Markham will support the reuse and *redevelopment of brownfield sites* and former waste disposal sites for community improvement in accordance with provincial legislation and guidelines and in a manner that protects human and ecosystem health and safety.

It is the policy of Council:

- 3.4.2.9 **To encourage** and support the remediation and reuse of *brownfield sites* and former waste disposal sites.
- 3.4.2.10 **To restrict**, where appropriate, land uses on *brownfield sites* and former waste disposal sites subsequent to clean-up and subject to satisfactory approval of all technical studies.
- 3.4.2.11 **To require** environmental site assessments and a record of site condition prepared by a qualified person in accordance with the Environmental Protection Act and its regulations, for any *redevelopment of a brownfield site*.
- 3.4.2.12 **To require** that a record of site condition, confirmed by the Ministry of Environment, be submitted for all land conveyances to Markham. Conveyances of minor road widenings may be exempt from the requirement of a record of site condition.
- 3.4.2.13 **That** *redevelopment* or reuse of lands identified as a former waste disposal site on Appendix I – Former Waste Disposal Sites shall require approval from the Minister of the Environment in accordance with the Environmental Protection Act. The symbol on Appendix I – Former Waste Disposal Sites may be removed without an amendment to this Plan subject to confirmation by the Ministry of Environment that the site has been decommissioned and rehabilitated in accordance with applicable legislation and to the satisfaction of Markham.
- 3.4.2.14 **That** where development, *redevelopment* or *site alteration* is proposed within 500 metres of a known or suspected former waste disposal site, the following requirements shall be completed to the satisfaction of Markham and the appropriate approval authority:
- a) determination of the impacted area;
 - b) submission of technical studies prepared by qualified persons identifying the level of contamination and remediation measure and post clean up conditions as required by legislation; and
 - c) implementation of cleaning and remediation measures in accordance with provincial criteria, the policies of this Plan and technical study recommendations.

Markham will support the reuse and redevelopment of brownfield sites and former waste disposal sites for community improvement in accordance with provincial legislation and guidelines and in a manner that protects human and ecosystem health and safety.

3.4.3 Emergency Preparedness

Emergency situations are unpredictable and can happen anywhere and anytime. These could include naturally caused events such as storms or health emergencies, technological failures such as power outages or human caused actions such as a terrorist event. Markham has in place a coordinated emergency management program and response plan.

It is the policy of Council:

- 3.4.3.1 **To develop** and update an Emergency Response Plan to coordinate emergency management measures and best practices for disaster response including a flood hazard warning system prepared in consultation with applicable agencies.

Markham has a coordinated emergency management program and response plan in place for unpredictable emergency situations.

3.5 ENVIRONMENTAL REPORTING

Markham requires the preparation of environmental reports such as master environmental servicing plans, environmental impact studies, natural heritage evaluation and/or hydrologic evaluations, in support of certain development, *redevelopment* and *site alteration*.

A master environmental servicing plan is a comprehensive study intended to address:

- the delineation and protection of *natural heritage and hydrologic features, key natural heritage features, key hydrologic features, hazardous lands and hazardous sites*;
- provincial requirements relative to water resources and *endangered species, threatened species, and special concern species*;
- municipal servicing in the context of urban development; and
- compliance with higher order *subwatershed* plans where prepared.

A scoped master environmental servicing plan for intensification areas may be provided where there are site specific requirements for a major *intensification area*.

An environmental impact study or natural heritage evaluation and/or hydrological evaluation is required to address and manage the impacts of development, *redevelopment, site alteration* or land use changes on *adjacent lands to natural heritage and hydrologic features or hazardous lands or hazardous sites*. This study or evaluation may be undertaken as a component of a master environmental servicing plan.

The role of an environmental impact study is to identify and evaluate potential impacts resulting from a proposed change of land use in or adjacent to a *natural heritage or hydrologic feature*. A primary function of the environmental impact study is to provide direction to a proponent to avoid impacts to *natural heritage and hydrologic features*.

Where avoidance cannot be achieved, the study should provide recommendations to minimize impacts. Recommendations for compensating residual, or net impacts that cannot be avoided or

minimized should be provided where permitted by the policies of this Plan. Impact avoidance will take primacy over minimizing impacts or compensation. When evaluating features and determining appropriate protection measures, the study will be guided primarily by the policies of this Plan, as well as other applicable provincial and conservation authority policies, and will also utilize guidance provided in Markham's Submission Requirements for Development Applications.

The equivalent studies for applications within the Oak Ridges Moraine Plan Area or the Greenbelt Plan Area are called natural heritage evaluations and/or hydrological evaluations and their content will incorporate, but not be limited to, the reporting requirements of the applicable provincial plans. A natural heritage evaluation and/or hydrological evaluation may be incorporated into and undertaken in conjunction with an environmental impact study where determined appropriate through pre-consultation.

Other environmental studies may also be required by Markham to address soil contamination, tree preservation and other specific environmental issues.

The City places a high priority on pre-consultation with proponents to identify and scope the issues associated with a particular development application and to determine supporting information and material needed to evaluate the application as set out in Section 10.6.1. Markham's Submission Requirements for Development Applications will be prepared for specific study requirements referenced in the Official Plan and in Section 10.6.2.

The Submission Requirements will include guidelines and/or terms of reference for environmental impact studies and other environmental studies prepared in consultation with appropriate agencies and approved by Markham. Among other things, the guidelines and/or terms of reference will provide guidance on evaluating the function of a *natural heritage and hydrologic feature* and assessing its functional connection.

It is the policy of Council:

- 3.5.1 **To require** pre-consultation for all environmental studies in accordance with Section 10.6 to determine the details, scope and terms of reference for the studies, in consultation with appropriate agencies, to include:
- a) representatives from relevant City departments, as well as the Toronto and Region Conservation Authority and other agencies where appropriate;
 - b) guidance on scoping the master environmental servicing plan or environmental impact study requirements, recognizing where existing studies or information may reduce required technical studies;
 - c) guidance for evaluating the function of a *natural heritage and hydrologic feature* and assessing its functional connection; and
 - d) any phasing requirement for studies needed to address new information and ensure all technical issues and matters are appropriately addressed.

- 3.5.2 **To require** the preparation of a master environmental servicing plan to the satisfaction of Markham, in consultation with the Toronto and Region Conservation Authority and other agencies where appropriate prior to any development of lands designated 'Future Urban Area' on Map 3 – Land Use and major developments, as deemed appropriate. The Toronto and Region Conservation Authority shall be satisfied with respect to the water resources and provincial natural hazard related components of the master environmental servicing plan, recognizing that the approved terms of reference shall guide the appropriate level of detail for the master environmental servicing plan. The master environmental servicing plan shall have regard for the recommendations of applicable *watershed plans* and *subwatershed plans* where prepared and endorsed by Council.
- 3.5.3 **To require**, where appropriate, in consultation with the Toronto and Region Conservation Authority, the preparation of a scoped master environmental servicing plan for intensification areas to address issues related to municipal servicing, stormwater management, protection of *natural heritage* and hydrologic features and sustainability requirements.
- 3.5.4 **To require** a natural heritage evaluation and/or hydrological evaluation or equivalent where development, *redevelopment* or *site alteration* is proposed on *adjacent lands* to a *key natural heritage feature* or a *key hydrologic feature* within the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area to identify and confirm the protection of the feature and its associated *vegetation protection zone* in accordance with the requirements of the applicable provincial plan.
- 3.5.5 **To require** an environmental impact study or equivalent where development, *redevelopment* or *site alteration* is proposed on *adjacent lands* to a *natural heritage feature* or *hydrologic feature* outside of the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Plan Area to identify and confirm the protection of the feature and its associated *vegetation protection zone*.
- 3.5.6 **To require** recommendations regarding environmental management and enhancement, including where appropriate, a management plan for lands subject to ecological stress or in a degraded state, as part of an environmental impact study or natural heritage evaluation and/or hydrological evaluation or equivalent study to address the long term sustainability of Natural Heritage Network lands intended for public ownership.
- 3.5.7 **To require**, where appropriate, a peer review of any environmental study by a qualified professional. The selection of the peer reviewer will be at the discretion of the City and the cost will be borne by the development proponent.