

CHAPTER 8 ENVIRONMENT AND ENERGY

This chapter provides policy direction with respect to the protection, management, and stewardship of the environment. This takes the form of maintaining, enhancing, and restoring the Natural System and our water resources, ensuring environmental health and safety, supporting the sustainable production and use of energy, improving air quality and reducing contributions to climate change, and encouraging sustainable development practices. Such measures are fundamental to achieving environmental sustainability.

8.1 OBJECTIVES

- (1) **Natural Heritage**
 - (a) Identify and protect elements of the Natural System through watershed-based analysis and planning.
 - (b) Maintain, enhance, and restore *natural features* and functions.
 - (c) Identify opportunities for ecological corridors and buffers.
 - (d) Encourage community involvement in natural heritage maintenance, enhancement, and restoration.
 - (e) Balance recreational opportunities and environmental protection.
- (2) **Water Resources**
 - (a) Maintain, enhance, and restore water resources.
 - (b) Increase potable and non-potable water conservation and efficiency.
 - (c) Enhance existing stormwater management practices.
 - (d) Maintain basic water *infrastructure*.
- (3) **Contaminated Sites**
 - (a) Encourage remediation and re-use of contaminated land and support the redevelopment of *brownfields*.
- (4) **Natural Hazards**
 - (a) Prevent or minimize threats to life and property posed by natural hazards.
- (5) **Noise, Vibration and Light**
 - (a) Prevent or attenuate noise, vibration, and light emissions where appropriate.
 - (b) Ensure noise, vibration, and light emissions from municipal facilities and operations meet or exceed applicable provincial regulations.
- (6) **Energy**
 - (a) Support the accommodation of future community energy needs in a manner that is efficient, cost-effective, and environmentally responsible, and that fosters local economic development.
 - (b) Continue to implement a conservation strategy for energy use within municipal facilities and operations.
 - (c) Encourage energy conservation across all sectors of the community.
 - (d) Support *alternative energy systems* and *renewable energy systems*.

- (e) Support low-energy transportation systems, including transit, cycling, and walking.
 - (f) Use energy and resources efficiently by planning for and/or supporting:
 - (i) *mixed-use* development and *complete communities*;
 - (ii) higher density compact development;
 - (iii) *intensification* in appropriate locations;
 - (iv) waste reduction, re-use, and recycling;
 - (v) diversion of construction waste from landfills;
 - (vi) increased reuse of materials; and
 - (vii) *sustainable design* practices.
- (7) **Air Quality and Climate Change**
- (a) Protect and expand the *urban forest*.
 - (b) Plan for a reduced level of automobile use and promote non- automotive transportation.
 - (c) Encourage *sustainable design* practices.
 - (d) Promote energy efficient buildings and city form that reduce the urban heat island.
 - (e) Encourage pollution reduction, including dust and odour from point sources.
 - (f) Ensure that municipal operations and facilities meet or exceed applicable provincial regulations with respect to air quality.
 - (g) Endeavour to address the impacts of extreme weather events induced by climate change.

8.2 NATURAL HERITAGE

Comprised of diverse landscapes and habitats, Waterloo's Natural System contributes to the character of the City and to the quality of life of its residents. It is important for its *natural features* and *ecological functions*, its natural resources, and its scientific, recreational, and therapeutic values. It is also a living system, involving plants, animals, and humans, and is therefore continuously evolving.

The Natural System consists of Landscape Level Systems, Core Natural Features, and Supporting Natural Features, as well as *fish habitat*, Restoration Areas, and *Linkages*. Landscape Level Systems are macro-scale *natural features* or significant concentrations of *natural features*. Core Natural Features form key habitat for native flora and fauna and represent the most significant elements of the regional landscape. Supporting Natural Features include ecological communities and habitats considered significant at the local level and play an important role in maintaining the *ecological functions* provided by the Natural System. *Fish habitat* includes the areas that supply fish with their life cycle requirements for food, shelter, reproduction, and movement. Restoration Areas are lands that have the potential to be enhanced or restored to a natural state. *Linkages* provide connectivity, allowing for the movement of plants and animals, a process that is essential for sustaining biodiversity. Underpinning the identification of all of these elements is the Provincial Policy Statement, the Region of Waterloo's Regional Official Plan, as the Natural System forms part of the broader Greenlands Network identified through the Regional

Official Plan, and previously approved City planning documents. Each element of the Natural System has unique functions and attributes, in addition to different levels of significance and sensitivity, which together dictate appropriate land use, development intensity, and human use.

To ensure the long-term health and viability of the Natural System, and the continued provision of its ecosystem services, the City will maintain, enhance, and restore the Natural System through land use planning policies, restoration initiatives, sound management, stewardship, education, and acquisition.

8.2.1 Supporting Documents and Implementation

- (1) Council will approve, and update as appropriate, additional documents to support the implementation of the policies of this Section. Such documents may include, but are not necessarily limited to:
 - (a) Environmental Strategy
 - (b) *Watershed Studies*
 - (c) Natural System Inventory
 - (d) Urban Greenlands Strategy

8.2.2 General Policies

- (1) The Natural System consists of Landscape Level Systems, Core Natural Features, Supporting Natural Features, *fish habitat*, Restoration Areas, and *Linkages*.
- (2) The policies pertaining to the Natural System are intended to maintain, enhance, or restore the diversity, connectivity, and *ecological functions* of the City's *natural features*. Incompatible land uses and activities within or *contiguous* to the Natural System will be prohibited or generally not supported, as appropriate.
- (3) The Natural System is shown on **Schedule 'A4' – Natural System**. The boundaries of the *natural features* that make up the Natural System will be delineated more precisely through *watershed studies*, *Environmental Impact Statements*, or other appropriate studies accepted by the City and the other public agencies having jurisdiction. The *natural features* that comprise Core Natural Features and Supporting Natural Features are mapped collectively. Consultation with the City is required for further categorization of these elements.
- (4) This Plan recognizes that the boundaries associated with Landscape Level Systems and Core Natural Features may be refined by the Region in accordance with the policies contained in the Regional Official Plan. Such refinements will be reflected in this Plan through a *municipal comprehensive review* or Official Plan Amendment. Minor refinements to the boundaries of other elements of the Natural System may occur through *watershed studies*, *Environmental Impact Statements*, or other appropriate studies accepted by the City and the other public agencies having jurisdiction without amendment to this Plan. Major boundary changes require an amendment to this Plan.

- (5) *Significant Habitat of Endangered or Threatened Species* approved by the Province or Federal government is not mapped as such on **Schedule 'A4' – Natural System**. Notwithstanding the land use designations shown on **Schedule 'A' – Land Use Plan**, any *development* or *site alteration* on lands so identified will comply with the Endangered Species Act and its regulations to the satisfaction of the Province in consultation with the City and the other public agencies having jurisdiction.
- (6) *Fish habitat* is not mapped as such on **Schedule 'A4' – Natural System**. Notwithstanding the land use designations shown on **Schedule 'A' – Land Use Plan**, any *development* or *site alteration* on lands so identified will comply with the Fisheries Act and its regulations to the satisfaction of Fisheries and Oceans Canada, or its delegate, in consultation with the City and the other public agencies having jurisdiction.
- (7) Lands that have been identified through a *watershed study*, *Environmental Impact Statement*, or other appropriate study accepted by the City and the other public agencies having jurisdiction as fulfilling the criteria to be recognized as an element of the Natural System will be reflected on the Schedules of this Plan through a *municipal comprehensive review* or Official Plan Amendment. Prior to the approval of such amendments, any *development* or *site alteration* proposed within or *contiguous* to the lands will be considered premature or will proceed on the basis that the lands identified as meeting the criteria are protected as though they were an element of the Natural System in accordance with the policies in this Plan.
- (8) Where elements of the Natural System have not been adequately identified through a *watershed study* or other appropriate study, *development* and *site alteration* will be prohibited until such time as a natural heritage review is completed by an owner/applicant, to the satisfaction of the City and the other public agencies having jurisdiction, to identify any such elements on the subject lands and, wherever appropriate, *contiguous* lands. Where such elements are identified, an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, may be required.
- (9) Where *development* or *site alteration* associated with an *existing* use is proposed, opportunities to enhance or restore the Natural System on or *contiguous* to the subject property will be sought by the City and identified to the satisfaction of the public agencies having jurisdiction. Such opportunities may include enhanced protection of *natural features*, the identification of Restoration Areas, or the establishment or enhancement of *Linkages*.
- (10) Where the construction of a building or structure on a legal lot of record within the Natural System is not subject to the *development* review process or *site alteration* permit process, landowners are encouraged to maintain appropriate buffers from *natural features*, implement suitable mitigative measures, and to maintain, enhance or, where feasible, restore *ecological functions*.
- (11) The City recognizes that a portion of the trail network will be within the Natural

System. New trails or expansions to existing trails, including new routes, links, and linear extensions, within Core Natural Features and Supporting Natural Features will be evaluated through an *Environmental Impact Statement* or other appropriate study to the satisfaction of the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11.

- (12) Decisions regarding *development* or *site alteration* on land within or *contiguous* to the Natural System will be made in consultation with the public agencies having jurisdiction, in accordance with the policies of this Plan, using the best available information available at the time.
- (13) Where land contains two or more overlapping *natural features* of differing policy significance, the more restrictive policies pertaining to those features will apply. If more than one policy applies to a *natural feature*, such as when a *natural feature* coincides with a natural hazard, the more restrictive policy will apply.
- (14) Through the *development* application review process, excluding applications for *Site Plan*, Consent, or Minor Variance, elements of the Natural System will be placed in an appropriate zoning category.
- (15) Land division through Consent or Plan of Subdivision that will have the effect of fragmenting the ownership of the elements of the Natural System will generally not be supported, except where such division will facilitate public acquisition of the elements of Natural System.
- (16) If illegal acts, including but not limited to tree removal, *wetland* filling or draining, or diverting of watercourses, cause a reduction in the form or function of a *natural feature*, such reduced form or function will not be recognized as existing conditions within the *development* application review process. Restoration of the damaged area may be required prior to, or as a condition of approval of any *development* application, excluding *site plan* applications, and where applicable, through the City's Site Alteration By-law.
- (17) Where lands shown as part of the Natural System on **Schedule 'A4' – Natural System** are under private ownership, nothing in this Plan will be construed to imply that such lands are available for use by the general public or will be acquired by the City or other public agency.
- (18) The City may undertake studies to evaluate the status and completeness of the Natural System with the intent of determining the precise location of *natural features*, identifying elements of the system that need to be added or modified, and establishing targets related to *ecological function* and biodiversity.
- (19) The City will consider exercising the following options to protect the Natural System:
 - (a) acquiring lands through purchase or gift;
 - (b) implementing municipal by-laws;
 - (c) entering into agreements;
 - (d) forming partnerships;

- (e) having lands conveyed to the City, public agency, or land trust; and,
 - (f) invoking other statutory authority assigned to the City.
- (20) The City will support public agencies, community organizations, and private landowners in their efforts to maintain, enhance, and restore the Natural System and may use the following, or similar, tools to do so: stewardship advice, technical and logistical support for stewardship activities, land trusts, public acquisition, conservation easements, and financial incentives.
 - (21) The City will work with other levels of government, the Grand River Conservation Authority, and the community to support education, outreach, and landowner stewardship programs.
 - (22) Areas within the Natural System may be regulated by the Grand River Conservation Authority. Such areas include river or stream valleys, watercourses, *wetlands* and adjacent lands where development (as defined under the Conservation Authorities Act) could interfere with the *hydrologic function* of a *wetland*, *hazardous lands*, and *hazardous sites*. Development, alteration to a watercourse or interference with a wetland (as defined under the Conservation Authorities Act) within regulated areas will require written permission from the Grand River Conservation Authority in accordance with the applicable regulation approved under the Conservation Authorities Act.

8.2.3 Landscape Level Systems

- (1) Landscape Level Systems are macro-scale *natural features* or significant concentrations of *natural features* and include:
 - (a) *Environmentally Sensitive Landscapes*;
 - (b) *Significant Valleys*; and,
 - (c) *Regional Recharge Areas*.
- (2) The designation of lands as Landscape Level Systems will not affect *agricultural uses* and associated *normal farm practices* as defined in applicable provincial legislation and regulations in conformity with this Plan and the City's Zoning By-Law, as well as statutes, policies, and regulations of other government agencies, including agricultural drainage through municipal or agreement drains.
- (3) Through the *development* application review process or when undertaking public works, the maintenance, enhancement, or where financially and technically feasible and appropriate, restoration of scenic qualities within *road* allowances, or on lands adjacent to *roads* within Landscape Level Systems, may be required. Applicants may be required to undertake analysis to facilitate this process.

Environmentally Sensitive Landscapes

- (4) *Environmentally Sensitive Landscapes* are designated by the Region in the Regional Official Plan. A portion of the Laurel Creek Headwaters *Environmentally Sensitive Landscape* is located within the City of Waterloo and is shown on **Schedule 'A4' –**

Natural System. The policies contained in this Section pertain to the portion of the Laurel Creek Headwaters *Environmentally Sensitive Landscape* that is within the City of Waterloo.

- (5) Future expansions of the Urban Area Boundary are not permitted into the Laurel Creek Headwaters *Environmentally Sensitive Landscape*.
- (6) Lands within the Laurel Creek Headwaters *Environmentally Sensitive Landscape* are designated Rural as shown on **Schedule 'A' – Land Use Plan**. The policies for the Rural designation are outlined in Chapter 10 of this Plan. The elements of the Natural System within and including the Laurel Creek Headwaters *Environmentally Sensitive Landscape* are further identified on **Schedule 'A4' – Natural System**. In the event of a conflict between the Rural land use policies and the *Environmentally Sensitive Landscape* policies, the most restrictive policies will prevail.
- (7) The creation of new lots for non-farm-related residential units within the Laurel Creek Headwaters *Environmentally Sensitive Landscape* is not permitted.
- (8) *Agricultural uses* will be permitted within the Laurel Creek Headwaters *Environmentally Sensitive Landscape*. The following uses may be permitted within the Laurel Creek Headwaters *Environmentally Sensitive Landscape* in accordance with the policies of this Plan, the implementing Zoning By-law, and the policies and regulations of other public agencies having jurisdiction:
 - (a) single detached dwellings on existing legal lots of record;
 - (b) new or expanded *recreational and tourism uses* and *rural institutional uses*;
 - (c) minor *intensification* of existing employment, commercial, recreational, and/or institutional uses, including minor changes in the uses thereof; and,
 - (d) new *agriculture-related uses* and *secondary uses*.
- (9) Notwithstanding policy 8.2.3(8), the list of land uses that are explicitly prohibited within *Environmentally Sensitive Landscapes* through the Regional Official Plan will not be permitted within the Laurel Creek Headwaters *Environmentally Sensitive Landscape*.
- (10) Notwithstanding policy 8.2.3(8), the implementing Zoning By-law will only permit a single detached dwelling on an existing legal lot of record or *agricultural uses* without consideration of a site-specific Zoning By-law Amendment application.
- (11) Any *development* or *site alteration* proposed in accordance with policy 8.2.3(8) will only be permitted within or *contiguous* to the Laurel Creek Headwaters *Environmentally Sensitive Landscape* where it is demonstrated through an *Environmental Impact Statement* and other appropriate study accepted by the City and the other public agencies having jurisdiction that there will be no *adverse environmental impacts* on the *natural features* or *ecological functions* of the *Environmentally Sensitive Landscape*. The *Environmental Impact Statement* will address landscape level impacts in addition to any other requirements in accordance with Section 8.2.11.

- (12) Where construction of a *road* on a new right-of-way, widening or upgrading of an existing roadway, construction or upgrading of a trunk sewer, trunk watermain, gas pipeline, or electrical transmission line, wastewater treatment facility, waste management facility, or groundwater taking project is proposed within or *contiguous* to the Laurel Creek Headwaters *Environmentally Sensitive Landscape*, the submission of an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, which evaluates landscape level impacts, will be required, unless the proponent is expressly exempt by other legislation. Alternatives to undertaking such works will be evaluated and, wherever possible, such works will be avoided, especially *road* improvements where steps could be taken to reduce traffic.
- (13) Decisions regarding *development*, *site alteration*, and *infrastructure* work within or *contiguous* to the Laurel Creek Headwaters *Environmentally Sensitive Landscape* will be consistent with the policies of this Plan and the policies and decision-making framework of the Regional Official Plan.
- (14) Nothing in Section 8.2.3 will prevent the owner of a legal lot of record in the Laurel Creek Headwaters *Environmentally Sensitive Landscape* from obtaining a building permit to construct or enlarge a single detached dwelling, accessory building, or farm structure, provided it is in conformity with all other City, Regional, and Grand River Conservation Authority policies and regulations.

Significant Valleys

- (15) *Significant Valleys* are designated by the Region in the Regional Official Plan. Within the City of Waterloo, the valley of the Grand River is designated as a *Significant Valley* and is shown on **Schedule 'A4' – Natural System**.
- (16) The City will collaborate with the Region and the Grand River Conservation Authority in an effort to maintain the character of the Grand River Valley by identifying, conserving, interpreting, and enhancing natural and cultural heritage, recreational resources, and scenic values.

Regional Recharge Areas

- (17) *Regional Recharge Areas* are designated by the Region in the Regional Official Plan and are shown on **Schedule 'A4' – Natural System**. The following policies pertain to the portions of the *Regional Recharge Areas* identified within the City of Waterloo in terms of Natural System protection. Policies related to protecting the source water supply function of the *Regional Recharge Areas* are outlined in Section 8.3.
- (18) *Development* applications, excluding *site plan* applications, within a *Regional Recharge Area* on lands designated for urban development in this Plan will comply with the following:
 - (a) Category 'A' uses, as defined in the Regional Official Plan, or employment land uses restricted under the Source Water Protection policies of the Regional Official Plan, will not be permitted;

- (b) the *development* maintains, enhances, or restores the hydrogeologic and *hydrologic functions* of the Regional Recharge Area as established through *watershed studies* or through further study in accordance with the Source Water Protection policies of the Regional Official Plan;
- (c) the *development* incorporates best management practices, where appropriate, developed in accordance with the provisions of the Regional Implementation Guideline for Source Water Protection Studies; and
- (d) the *development* is in conformity with all other applicable policies of this Plan and the Regional Official Plan.

8.2.4 Core Natural Features

- (1) Core Natural Features are those *natural features* identified as being provincially or regionally significant. These features are the most significant elements of the regional landscape in terms of protecting and enhancing biodiversity and *ecological functions*. Core Natural Features are identified by the Region in the Regional Official Plan and are shown on **Schedule 'A4' – Natural System**. Core Natural Features include:
 - (a) *Significant Habitat of Endangered or Threatened Species*;
 - (b) *Provincially Significant Wetlands*;
 - (c) *Environmentally Sensitive Policy Areas*;
 - (d) *Regionally Significant Woodlands* (defined as Significant Woodlands in the Regional Official Plan); and,
 - (e) *Environmentally Significant Valley Features*.
- (2) The form and *ecological function* of Core Natural Features will be maintained, enhanced or, where feasible, restored.
- (3) *Development* or *site alteration* will not be permitted within Core Natural Features, except for:
 - (a) restorative, scientific, and educational uses related to on-site resources, including forest, fish, and wildlife management and conservation;
 - (b) flood or erosion control projects demonstrated to be in the public interest for which no other alternative is feasible;
 - (c) essential *infrastructure* for which no other alternative is feasible and where crossings and the area of disturbance will be minimized;
 - (d) minor alterations to legal non-conforming land uses; and,
 - (e) new *mineral aggregate operations* in accordance with Section 9.C of the Regional Official Plan.
- (4) Any *development* or *site alteration* proposed in accordance with policy 8.2.4(3) will require the submission of an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, to determine the mitigation measures to be implemented, as appropriate, through the *development* application review process.
- (5) *Development* or *site alteration* will only be permitted on lands *contiguous* to Core Natural Features if it is demonstrated through an *Environmental Impact Statement*

or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, that there will be no *adverse environmental impacts* on the feature or its *ecological functions*.

- (6) An *Environmental Impact Statement* submitted in accordance with policies 8.2.4(4) and 8.2.4(5) will identify appropriate buffers for Core Natural Features, to the satisfaction of the City and the other public agencies having jurisdiction. Such buffers will serve to protect Core Natural Features from *adverse environmental impacts* and, where feasible, enhance or restore Core Natural Features and their *ecological functions*. The location, width, composition, and use of buffers will be in accordance with the accepted *Environmental Impact Statement*, with buffers being measured from the outside boundary of the Core Natural Feature, and established and maintained primarily as appropriate self-sustaining and undisturbed native vegetation.
- (7) Notwithstanding policy 8.2.4(6), the buffer width for Core Natural Features will be a minimum width of 10 metres in accordance with the Regional Official Plan.
- (8) Buffer widths for Core Natural Features wider than 10 metres may be required if the features and *ecological functions* warrant it, as determined through the *Environmental Impact Statement*. Wider buffer widths will be determined on a site-specific basis by considering the sensitivity of the *natural features*, their *ecological functions*, the potential impacts of the proposed *development* and/or land use, the intended function of the buffer, and the physiography of the site.
- (9) Buffers of Core Natural Features are to remain in a primarily natural state or be restored to a primarily naturalized state if disturbed through historical land use or approved works. Permitted uses within the buffers of Core Natural Features will be limited to low impact uses consistent with those permitted within Core Natural Features. In addition, portions of stormwater management facilities may be permitted where the Core Natural Feature can be enhanced, no other alternative location is feasible, *low impact development* measures are implemented to the extent feasible outside the buffer, root zones are not impacted, and the facility replicates or complements an existing function of the buffer lands. Impervious surfaces and grading will not be permitted, except for approved works associated with public trails and stormwater management that conform to detailed engineering and environmental analysis accepted by the City and the other public agencies having jurisdiction. Such works will only be permitted where there will be no *adverse environmental impacts* on the Core Natural Feature and the works within the buffer are minimized to the extent possible.
- (10) Plantings within the buffers of Core Natural Features will consist of native species that are ecologically appropriate and suitable for site conditions. The City may require applicants to complete and implement a restoration or management plan for buffer areas as a condition of *development* application approval.
- (11) Buffers required to ensure the protection of Core Natural Features will generally be

secured in public ownership.

- (12) Buffers required to ensure the protection of Core Natural Features will not be considered as contributing to the parkland dedication requirements under the Planning Act.
- (13) Where construction of a *road* on a new right-of-way, widening or upgrading of an existing roadway, construction or upgrading of a trunk sewer, trunk watermain, gas pipeline or electrical transmission line, wastewater treatment facility, waste management facility, or groundwater taking project is proposed within or *contiguous* to a Core Natural Feature, the submission of an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, will be required, unless the proponent is expressly exempt by other legislation. Alternatives to undertaking such works will be evaluated and, wherever possible, such works will be avoided, especially *road* improvements where steps could be taken to reduce traffic.
- (14) Decisions regarding *development* applications, *site alteration*, and *infrastructure* work within or *contiguous* to a Core Natural Feature will be consistent with the policies of this Plan and the policies and decision-making framework of the Regional Official Plan.

8.2.5 Supporting Natural Features

- (1) Supporting Natural Features are those *natural features* not meeting the criteria for provincial or regional significance (i.e. designation as Landscape Level Systems or Core Natural Features) but which are locally significant. These features are the most significant elements of the local landscape in terms of protecting and enhancing *ecological functions*. Supporting Natural Features are identified by the City and are shown on **Schedule 'A4' – Natural System**. Supporting Natural Features are categorized as either Supporting “A” Natural Features or Supporting “B” Natural Features.

For the purposes of reviewing development proposals, this Plan provides a different set of policies for Supporting “A” Natural Features and for Supporting “B” Natural Features. The application of these policies will be determined on a site-by-site basis in accordance with the criteria outlined in this Section and all other applicable policies in this Plan.

Supporting “A” Natural Features include:

- (a) *Locally Significant Wetlands*;
- (b) *Locally Significant Woodlands*;
- (c) *Significant Wildlife Habitat*; and,
- (d) *Perennial Watercourses*.

Supporting “B” Natural Features include:

- (a) Intermittent Watercourses;
- (b) *Other Wetlands*;
- (c) *Other Woodlands*; and
- (d) *Environmentally Significant Discharge Areas* and *Environmentally Significant Recharge Areas*.

Supporting “A” Natural Features

- (2) The form and *ecological function* of Supporting “A” Natural Features will be maintained, enhanced or, where feasible, restored.
- (3) *Development* or *site alteration* will not be permitted within Supporting “A” Natural Features, except for:
 - (a) restorative, scientific, and educational uses related to on-site resources, including forest, fish, and wildlife management and conservation;
 - (b) flood or erosion control projects demonstrated to be in the public interest for which no other alternative is feasible;
 - (c) essential *infrastructure* for which no other alternative is feasible and where crossings and the area of disturbance will be minimized;
 - (d) minor alterations to legal non-conforming land uses; and,
 - (e) new *mineral aggregate operations* in accordance with Section 9.C of the Regional Official Plan.
- (4) *Development* or *site alteration* proposed in accordance with policy 8.2.5(3) will require the submission of an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, to determine the mitigation measures to be implemented, as appropriate, through the *development* application review process.
OPA No. 11, approved December 11, 2014
- (5) *Development* or *site alteration* will only be permitted on lands *contiguous* to Supporting “A” Natural Features if it is demonstrated through an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, that there will be no *adverse environmental impacts* on the feature or its *ecological functions*.
- (6) An *Environmental Impact Statement* submitted in accordance with policies 8.2.5(4) and 8.2.5(5) will identify appropriate buffers for Supporting “A” Natural Features to the satisfaction of the City and the other public agencies having jurisdiction. Such buffers will serve to protect Supporting “A” Natural Features from *adverse environmental impacts* and, where feasible, enhance or restore Supporting “A” Natural Features and their *ecological functions*. The location, width, composition, and use of buffers will be in accordance with the accepted *Environmental Impact Statement*, with buffers being measured from the outside boundary of the Supporting “A” Natural Feature, and established and maintained primarily as appropriate self-sustaining and undisturbed native vegetation.

- (7) The following buffer width guidelines for Supporting “A” Natural Features will be evaluated through an *Environmental Impact Statement*:
 - (a) *Locally Significant Wetlands* – 15 metres
 - (b) *Locally Significant Woodlands* – 10 metres (measured from the drip line)
 - (c) *Perennial Watercourses* – 30 metres on each side of the watercourse (measured from the bankfull channel)
- (8) Buffer widths different than those suggested in policy 8.2.5(7) for Supporting “A” Natural Features may be required if the features and *ecological functions* warrant it, as determined through the *Environmental Impact Statement*. Modified buffer widths will be determined on a site- specific basis by considering the sensitivity of the *natural features*, their *ecological functions*, the potential impacts of the proposed *development* and/or land use, the intended function of the buffer, and the physiography of the site.
- (9) Buffers of Supporting “A” Natural Features are to remain in a primarily natural state or be restored to a primarily naturalized state if disturbed through historical land use or approved works. Permitted uses within the buffers of Supporting “A” Natural Features will be limited to low impact uses consistent with those permitted within Supporting “A” Natural Features. In addition, portions of stormwater management facilities may be permitted where the Supporting “A” Natural Feature can be enhanced, no other alternative location is feasible, *low impact development* measures are implemented to the extent feasible outside the buffer, root zones are not impacted, and the facility replicates or complements an existing function of the buffer lands. Impervious surfaces and grading will not be permitted, except for approved works associated with public trails and stormwater management that conform to detailed engineering and environmental analysis accepted by the City and the other public agencies having jurisdiction. Such works will only be permitted where there will be no *adverse environmental impacts* on the Supporting “A” Natural Feature and the works within the buffer are minimized to the extent possible.
- (10) Plantings within the buffers of Supporting “A” Natural Features will consist of native species that are ecologically appropriate and suitable for site conditions. The City may require applicants to complete and implement a restoration or management plan for buffer areas as a condition of *development* application approval.
- (11) Buffers required to ensure the protection of Supporting “A” Natural Features will generally be secured in public ownership.
- (12) Buffers required to ensure the protection of Supporting “A” Natural Features will not be considered as contributing to the parkland dedication requirements under the Planning Act.
- (13) Opportunities to naturalize piped, culverted, or channelized *Perennial Watercourses* to enhance or restore *ecological functions* will be supported.
- (14) Where construction of a *road* on a new right-of-way, widening or upgrading of an existing roadway, construction or upgrading of a trunk sewer, trunk watermain, gas

pipeline or electrical transmission line, wastewater treatment facility, waste management facility, or groundwater taking project is proposed within or *contiguous* to a Supporting “A” Natural Feature, the submission of an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, will be required, unless the proponent is expressly exempt by other legislation. Alternatives to undertaking such works will be evaluated and, wherever possible, such works will be avoided, especially *road* improvements where steps could be taken to reduce traffic.

- (15) Where a study completed in accordance with policy 8.2.5(14) demonstrates to the satisfaction of the City that the construction of the *infrastructure* work will:
- (a) result in localized and/or reversible impacts to a Supporting “A” Natural Feature or its *ecological functions*, and that other alternatives are less feasible from a technical, environmental, and/or financial perspective, the City will, without amendment to this Plan;
 - (i) require that appropriate mitigation measures be implemented; and,
 - (ii) approve the project; or,
 - (iii) support the project in comments, submissions or recommendations;
 - (b) result in widespread *adverse environmental impacts* to the Supporting “A” Natural Feature or its *ecological functions* or result in long-term damage to its significant features and functions, and that other technically and financially feasible alternatives exist that would have fewer *adverse environmental impacts*, the City will:
 - (i) not approve the project; or
 - (ii) not support the project in comments, submissions or recommendations; or
 - (c) result in widespread *adverse environmental impacts* to the Supporting “A” Natural Feature or its *ecological functions*, or result in long-term damage to its significant features and functions, but that there is a clearly demonstrated need for the project, and that all other alternatives to the recommended project are substantially less feasible from a technical, environmental, and/or financial perspective, the City will, without amendment to this Plan:
 - (i) require that appropriate mitigation measures be implemented to reduce the impact of the project to greatest extent feasible; and
 - (ii) require compensation in the form of habitat restoration or enhancement, on-site or off-site; and
 - (iii) approve the project; or
 - (iv) support the project in comments, submissions or recommendations.

Supporting “B” Natural Features

- (16) The *ecological function* of Supporting “B” Natural Features will be maintained, enhanced or, where feasible, restored.
- (17) *Development* and *site alteration* will avoid Supporting “B” Natural Features wherever feasible. The assessment of feasibility will include, but may not necessarily be limited to, achieving a compact and efficient urban form, technical considerations, and financial considerations.

- (18) The form of Supporting “B” Natural Features may be modified through *development* or *site alteration* if it is demonstrated through an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, that *ecological functions* are maintained, enhanced or where feasible, restored. Where a feature is permitted to be modified, boundary modifications will be reflected on the Schedules of this Plan through a *municipal comprehensive review* or Official Plan Amendment, the Land Use Designation and Height and Density permissions assigned to the remainder of the property that surrounds the feature will apply, and a Zoning By-law Amendment will be required.
- (19) Further to policy 8.2.5(18), *development* or *site alteration* may only be permitted within *Other Wetlands* where it is demonstrated through an *Environmental Impact Statement* or other appropriate study accepted by the City and the Grand River Conservation Authority that that the feature is not:
- (a) located within a riparian community;
 - (b) part of a Landscape Level System, Core Natural Feature, or other Supporting Natural Feature;
 - (c) a *hazardous land* or *hazardous site*;
 - (d) a bog or fen;
 - (e) *fish habitat*; or
 - (f) part of a functional *Linkage* between larger *wetlands* or *natural features*.
- (20) Notwithstanding policy 8.2.5(16) and 8.2.5(18), *development* or *site alteration* within *Other Woodlands* that has the effect of disrupting or reducing *ecological function* may be permitted subject to an evaluation of significance. Significance will be evaluated based on composition, age, size, connectivity, representation in the vicinity, and potential contribution to community design. Where the removal of an *Other Woodland*, in part or in whole, is permitted, compensation in the form of *woodland* restoration or enhancement, on-site or off-site, may be required. Where it is considered appropriate to maintain an *Other Woodland*, in part or in whole, the protection of trees will be required through such measures as Tree Preservation Plans, landowner stewardship, zoning provisions, or public ownership.
- (21) Further to policy 8.2.5(18), where *Environmentally Significant Discharge Areas* or *Environmentally Significant Recharge Areas* sustain Core Natural Features or Supporting “A” Natural Features, as determined through a *watershed study* or other appropriate study accepted by the City and the other public agencies having jurisdiction, *development* or *site alteration* will only be permitted within the *Environmentally Significant Discharge Areas* or *Environmentally Significant Recharge Areas* where it is demonstrated through an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction that there will be no *adverse environmental impacts* on the Core Natural Features or Supporting “A” Natural Features or their *ecological functions*. Where feasible, *infrastructure* projects will avoid *Environmentally Significant Discharge Areas* and *Environmentally Significant Recharge Areas*. Where it is not feasible to avoid these areas, the construction of *infrastructure* projects will be designed to maintain the *hydrologic functions* that sustain the Core Natural Features or

Supporting “A” Natural Features.

- (22) Where the form of an *Intermittent Watercourse* is to be maintained or realigned through *development* or *site alteration*, in part or in whole, a guideline buffer width of 15 metres, applied to each side of the watercourse (measured from the bankfull channel), will be evaluated through an *Environmental Impact Statement* or other appropriate study to the satisfaction of the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11.
- (23) Where the form of an *Other Wetland* or *Other Woodland* is to be maintained or relocated through *development* or *site alteration*, in part or in whole, an appropriate buffer width will be determined through an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11.
- (24) Where applicable, buffers of Supporting “B” Natural Features are to remain in a primarily natural state or be restored to a primarily naturalized state if disturbed through historical land use or approved works. Permitted uses within the buffers of Supporting “B” Natural Features will be limited to low impact uses. In addition, portions of stormwater management facilities may be permitted where the Supporting “B” Natural Feature can be enhanced, no other alternative location is feasible, *low impact development* measures are implemented to the extent feasible outside the buffer, root zones are not impacted, and the facility replicates or complements an existing function of the buffer lands. Impervious surfaces and grading will not be permitted, except for approved works associated with public trails and stormwater management that conform to detailed engineering and environmental analysis accepted by the City and the other public agencies having jurisdiction. Such works will only be permitted where there will be no *adverse environmental impacts* on the Supporting “B” Natural Feature and the works within the buffer are minimized to the extent possible.
- (25) Where applicable, plantings within the buffers of Supporting “B” Natural Features will consist of native species that are ecologically appropriate and suitable for site conditions. The City may require applicants to complete and implement a restoration or management plan for buffer areas as a condition of *development* application approval.
- (26) Where applicable, buffers required to ensure the protection of Supporting “B” Natural Features will generally be secured in public ownership.
- (27) Where applicable, buffers required to ensure the protection of Supporting “B” Natural Features will not be considered as contributing to the parkland dedication requirements under the Planning Act.
- (28) Opportunities to naturalize piped, culverted, or channelized *Intermittent Watercourses* to enhance or restore *ecological functions* will be supported, where appropriate.

- (29) *Infrastructure* work will avoid Supporting “B” Natural Features wherever feasible. Where it is not feasible to avoid these features, *infrastructure* will be designed to maintain, enhance or where feasible, restore *ecological functions*.

8.2.6 Restoration Areas

- (1) Restoration Areas are lands that have the potential to be enhanced or restored to a natural state, thereby contributing to the overall integrity and connectivity of the Natural System. Such areas may include small, human-altered “gaps” in *natural features*, *hazardous lands* and *hazardous sites* associated with *natural features*, or other lands adjacent to Landscape Level Systems, Core Natural Features, or Supporting Natural Features. Restoration Areas are shown on **Schedule ‘A4’ – Natural System**.
- (2) Restoration Areas will be identified through technical studies undertaken or accepted by the City, through the conservation and land securement programs of other public agencies, through private land stewardship, or through the *development* application review process. Where Restoration Areas are identified through the *development* application review process, excluding *site plan* applications, the lands will be protected through zoning.
- (3) Once identified, Restoration Areas will be managed in accordance with applicable *watershed studies* or site-specific studies to provide planting of appropriate native species and/or allow for natural succession. Permitted uses within Restoration Areas will be limited to low impact uses consistent with those permitted within Core Natural Features and Supporting Natural Features.
- (4) Restoration Areas will be reflected on the Schedules of this Plan through a *municipal comprehensive review* or Official Plan Amendment as they are identified.

8.2.7 Linkages

- (1) *Linkages* are areas that are intended to provide opportunities for plant and animal movement among *natural features*, support hydrological and nutrient cycling, and contribute to the overall integrity and connectivity of the Natural System. *Linkages* are shown on **Schedule ‘A4’ – Natural System**.
- (2) *Linkages* will be identified through technical studies undertaken or accepted by the City, through the conservation and land securement programs of other public agencies, through private land stewardship, or through the *development* application review process, with the intent of maximizing functionality. Where *Linkages* are identified through the *development* application review process, excluding *site plan* applications, the lands will be protected through zoning.
- (3) Once identified, *Linkages* will be maintained, enhanced or, where feasible, restored.

Permitted uses within *Linkages* will be limited to low impact uses consistent with those permitted within Core Natural Features and Supporting Natural Features.

- (4) The City will establish or enhance *Linkages*, where appropriate, by restoring natural habitat on city-owned lands. In addition, the City will encourage the connection of *natural features* across municipal boundaries through the identification of *Linkages*.
- (5) *Linkages* will be reflected on the Schedules of this Plan through a *municipal comprehensive review* or Official Plan Amendment as they are identified.

8.2.8 Fisheries

- (1) *Development* or *site alteration* will not be permitted within *fish habitat*, except in accordance with provincial and federal legislation.

8.2.9 Urban Forest

- (1) The City recognizes the *urban forest* as providing significant ecological, social, and economic benefits. The City will encourage the protection, restoration, wise management, and expansion of the *urban forest*.
- (2) It is the City's intent to protect existing trees and plant new ones where feasible and appropriate. When considering *development* applications and *site alteration* permit applications, the City will require that only the trees that directly impede the proposed work be removed and that the applicant replace them in reasonable amount, with trees of sufficient maturity. The amount and maturity of replacement trees will be determined based on the amount, maturity, species, and health of the trees to be removed. A Tree Preservation Plan may be required to provide an inventory of all trees on the site, an assessment of their health and condition, recommendations regarding which trees should be saved and which will be removed, tree protection measures, and replacement trees. As part of any Tree Preservation Plan, the City may require tree- loss totals and corresponding compensation estimates. Tree Preservation Plans must be prepared by qualified professionals.
- (3) When considering *development* applications and *site alteration* permit applications, the City may require the protection and enhancement of hedgerows, especially where:
 - (a) they link other elements of the Natural System;
 - (b) wildlife regularly use them as habitat or movement corridors;
 - (c) they are composed of mature, healthy trees;
 - (d) they contain trees that are rare, unique, culturally important, or over 100 years in age; or
 - (e) they contribute to the aesthetics of the landscape.
- (4) Where the City is undertaking *infrastructure* work, the *urban forest* will be protected

and preserved, where feasible. If it is necessary for *infrastructure* work to remove any trees, the City will compensate by re-planting in reasonable amount on or off-site, with trees of sufficient maturity. The amount and maturity of replacement trees will be determined based on the amount, maturity, species, and health of the trees to be removed. A Tree Preservation Plan may be required to provide an inventory of all trees on the site, an assessment of their health and condition, recommendations regarding which trees should be saved and which will be removed, tree protection measures, and replacement trees.

- (5) Opportunities for tree planting on City-owned lands will be identified and implemented in coordination with other public agencies and local interest groups, as required. The City will plant native species that are ecologically appropriate and suitable for site conditions, where feasible.
- (6) The City will implement planting programs of desired and compatible species, with preference given to native species, on public lands or, in conjunction with landowners, on private lands.
- (7) To generate appreciation and stewardship towards the *urban forest*, the City will encourage public education and involvement.
- (8) The City will support and enhance the *urban forest* by implementing urban design standards that protect street trees, in particular in terms of preservation of existing root structures and preventing soil compaction.

8.2.10 Watershed Planning

- (1) Watershed planning is an integrated, ecosystem approach to planning based on the boundaries of a watershed or subwatershed. Watershed and subwatershed boundaries provide natural limits for managing the interconnections that exist between human activities and features and processes of the natural environment. The City recognizes watershed planning as an important mechanism for guiding land use and *infrastructure* decisions.
- (2) In collaboration with the *Province*, the Region, and the Grand River Conservation Authority, the City will require *watershed studies* to comprehensively and holistically characterize and assess the natural environment and protect it from site-specific and cumulative degradation. The City will work co-operatively with the *Province*, the Region, and the Grand River Conservation Authority to implement *watershed studies*.
- (3) The priorities and process for undertaking and updating *watershed studies* will be jointly determined by the *Province*, the Region, the City, and the Grand River Conservation Authority.
- (4) Generally, *watershed studies* will be prepared by the proponents of development under the direction of the City and the other public agencies having jurisdiction.

- (5) To complement the Laurel Creek Watershed Study, new *watershed studies* will be undertaken at the subwatershed scale.
- (6) Prior to an amendment to this Plan or the adoption of a District Plan which would have the effect of permitting significant areas of *development*, the City will require the completion and acceptance of a *watershed study*. The resulting recommendations for environmental protection, enhancement, restoration, management, and monitoring will be incorporated into the District Plan and implemented through the *development* application review process.
- (7) The City will consider *watershed studies* to be living documents. Recognizing that a portion of Waterloo's growth will come from *intensification*, applicants may be required to update existing *watershed studies*. The need to update such studies will be determined jointly by the Region, the City, and the Grand River Conservation Authority.
- (8) The *Province*, the Region, the City, and the Grand River Conservation Authority, in consultation with affected landowners and the general public through the decision-making process of the City, will jointly determine the terms of reference for *watershed studies*. At a minimum, the terms of reference for *watershed studies* will include:
 - (a) identification, maintenance, restoration, and wherever feasible, enhancement of *natural features, groundwater features, surface water features* and *ecological functions* which are necessary for the ecological and hydrological integrity of the watershed/subwatershed;
 - (b) identification, maintenance, enhancement and, wherever feasible, restoration of *linkages* among *natural features* and *ecological functions, groundwater features, and surface water features*;
 - (c) determination of areas where *development* and *site alteration* will be prohibited to:
 - (i) protect actual and potential municipal drinking-water supplies and identified *vulnerable* areas; and
 - (ii) maintain, enhance or, wherever feasible, restore *vulnerable* surface and ground water, *sensitive surface water features*, and *sensitive groundwater features*, their *hydrologic functions*, and *floodplains*;
 - (d) protection of the quality, quantity, distribution, and direction of flow of existing surface and groundwater processes;
 - (e) identification of stormwater management practices that maintain or enhance the quality, quantity, and distribution of stormwater including infiltration measures, and minimize stormwater volumes and contaminant loads;
 - (f) identification of areas where *Environmental Impact Statements* may be required for the review of *development* applications. Wherever feasible, *watershed studies* should partially fulfill the *Environmental Assessment* requirements for major *infrastructure* work to be located within that watershed, and/or comprehensive *Environmental Impact Statements* for all or part of the watershed/subwatershed; and
 - (g) development of a monitoring plan and definition of roles and responsibilities for

pre-, during, and post-construction monitoring to determine and address the impact of *development* on the Natural System and surface and groundwater resources.

- (9) This Plan will be amended to implement recommendations from *watershed studies*, where appropriate. Recommendations from the *watershed studies* will also be implemented through the *development* application review process and other mechanisms where the City has the legal authority to do so, such as through existing programs or management plans. The City will encourage private landowners to undertake whatever actions are within their legal authority to implement *watershed studies*.

8.2.11 Environmental Impact Statements

- (1) An *Environmental Impact Statement* will be required in accordance with the policies of this Plan to identify and evaluate the potential effects of *development* or *site alteration* on elements of the Natural System, to recommend means of preventing, minimizing, or mitigating impacts as well as opportunities for enhancing or restoring the quality and connectivity of the elements comprising the Natural System. An *Environmental Impact Statement* may also be used to identify and evaluate elements of the Natural System and interpret the boundaries of these elements. *Environmental Impact Statements* will be carried out by qualified professionals.
- (2) The need for, scope, and acceptability of an *Environmental Impact Statement* will be determined collaboratively by the *Province*, the Region, the City, and the Grand River Conservation Authority, and led by:
 - (a) the *Province*, for *development* or *site alteration* potentially affecting *Significant Habitat of Endangered or Threatened Species*;
 - (b) the Region, for *development* or *site alteration* potentially affecting Landscape Level Systems (not including *Significant Valleys*), Core Natural Features, and *Environmentally Significant Discharge Areas* or *Environmentally Significant Recharge Areas* that sustain Core Natural Features;
 - (c) the Grand River Conservation Authority for *Significant Valleys*, *Provincially Significant Wetlands* located outside *Environmentally Sensitive Policy Areas*, *Locally Significant Wetlands*, *Other Wetlands*, and *Perennial Watercourses* and *Intermittent Watercourses*;
 - (d) the City for *development* or *site alteration* potentially affecting Supporting Natural Features; and,
 - (e) Fisheries and Oceans Canada, or its delegate, for *fish habitat*.
- (3) The City, in consultation with the *Province*, the Region, and the Grand River Conservation Authority, may require the completion of a comprehensive *Environmental Impact Statement* where *development* or *site alteration* is proposed on multiple contiguous properties containing elements of the Natural System.
- (4) The extent of the contiguous lands that trigger an *Environmental Impact Statement* will be determined by the City in consultation with other public agencies having jurisdiction.

- (5) The City may reduce the scope or content of an *Environmental Impact Statement* where the impacts of the proposed *development* or *site alteration* are expected to be limited in area or scope or where other environmental studies fulfilling the requirements of an *Environmental Impact Statement* have been previously prepared.
- (6) The City may waive the requirement for an *Environmental Impact Statement* where consultation with other public agencies having jurisdiction and/or site investigation by the City indicate that there are not likely to be *adverse environmental impacts* on the Natural System.
- (7) Where an *Environmental Assessment* is required, or alternative environmental reviews are being undertaken as part of a comprehensive planning process required under provincial or federal legislation, the submission of an *Environmental Impact Statement* will not be required, provided the *Environmental Assessment* or alternative environmental review fulfills the requirements of an *Environmental Impact Statement*.
- (8) The completion of an *Environmental Impact Statement* or alternative environmental review does not guarantee that the proposed *development* application or *site alteration* application will be approved.
- (9) The City may develop *Environmental Impact Statement* Guidelines to be used by proponents and professionals when preparing an *Environmental Impact Statement*. Such Guidelines may be revised from time to time. Alternatively, the City may also utilize any Regionally-approved Guidelines.

8.2.12 Major Urban Greenlands

- (1) Major Urban Greenlands are relatively large, publicly accessible parklands, or open spaces located within urban areas that are owned and maintained by the Region, the City, or the Grand River Conservation Authority. These urban greenlands are valued for their environmental, hydrological, recreational, and public health benefits, and are intended to help maintain a balance between the built and natural environment in urban areas.
- (2) The City, in collaboration with the Region, the Grand River Conservation Authority, and other stakeholders, will develop and implement an Urban Greenlands Strategy that:
 - (a) identifies a system of natural areas and open spaces, including Major Urban Greenlands, that enhance quality of life and public health;
 - (b) helps mitigate air pollution, the urban heat island, and stormwater runoff;
 - (c) promotes green roofs, *community gardens*, and tree planting;
 - (d) secures additional public urban greenlands through the *development* application review process, excluding *site plan* applications; and
 - (e) provides a range of open-space amenities.
- (3) Subsequent to the identification of Major Urban Greenlands through the Urban

Greenlands Strategy identified in policy 8.2.12(2), the City will designate Urban Greenlands and develop associated policies for these areas in this Plan to:

- (a) provide long-term protection from inappropriate *development* through application of adequate land use designation(s);
- (b) require *development* on adjacent lands to not have an *adverse effect* on the valued characteristics of Major Urban Greenlands by requiring applicants to submit an assessment through the *development* application review process, excluding *site plan* applications, to the satisfaction of the City indicating how any *adverse effects* will be mitigated;
- (c) facilitate public access to the Major Urban Greenlands through connections with transit, cycling, and *pedestrian facilities*; and
- (d) support the provision of recreational and/or visitor services, wherever appropriate.

8.3 WATER RESOURCES

Water resources are critical to ecosystem and human health. They represent and sustain an array of environmental features, both on and under the earth's surface, and provide the City with a source of drinking water. Water is also an indispensable resource for the economy. It is therefore necessary to safeguard both surface and groundwater, as they are intricately connected, from land uses and human activities that could impair their quality or quantity. With continuing population growth and a finite supply of resources, the protection, conservation, and efficient use of water is imperative.

8.3.1 Supporting Documents and Implementation

- (1) Council will approve, and update as appropriate, additional documents to support the implementation of the policies of this Section. Such documents may include, but are not necessarily limited to:
 - (a) Environmental Strategy
 - (b) *Watershed Studies*
 - (c) *Source Protection Plan*

8.3.2 General

- (1) The City will endeavour to maintain, enhance, or restore water quality and quantity by using the watershed as the ecologically meaningful scale for planning and minimizing potential negative impacts, including cross- jurisdictional and cross-watershed impacts.
- (2) The City will promote and play a leadership role in the efficient and sustainable use of water resources, including practices for water conservation and sustaining water quality. Such practices may include, but are not necessarily limited to, encouraging educational initiatives, supporting the Region in programs related to water conservation, incorporating stormwater management best practices (including *low impact development* measures), and pursuing technological and other system improvements to address such issues as inflow and infiltration of sanitary sewers.

- (3) The City will participate in studies conducted by the Region or the Grand River Conservation Authority to monitor the *quality and quantity of water* resources within Waterloo's watersheds.
- (4) The City will discourage land uses that exert impacts on water resources that are not sustainable, such as those that use large amounts of water and/or discharge large amounts of water that require treatment.
- (5) The City will require hydrogeological assessments for *development* applications, excluding *site plan* applications, that may have *adverse environmental impacts* on *surface water features* and/or *groundwater features*. Such assessments must document pre-to-post development water balances and include measures to substantially maintain infiltration, recharge, and peak flow rates relative to existing conditions.
- (6) *Sensitive surface water features* and *sensitive groundwater features* will be identified through *watershed studies*, *Source Protection Plans*, or other appropriate studies accepted by the City and the other public agencies having jurisdiction. Where identified, these features and their related *hydrologic functions* will be maintained, enhanced or, where feasible, restored.
- (7) *Development* and *site alteration* will not be permitted in or near *sensitive surface water features* and *sensitive groundwater features* unless it is demonstrated through an *Environmental Impact Statement* or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, that there will be no *adverse environmental impacts* on the feature or its *hydrologic functions*.
- (8) Where feasible and appropriate, *development* will maximize clean water recharge and conservation measures, including infiltration through lot level infiltration structures, permeable surfaces and bioswales, cisterns for non-potable on-site use, and other innovative alternatives.

8.3.3 Source Water Protection

- (1) Source Water Protection Areas are identified by the Region and are shown on **Schedule 'B4' – Source Water Protection** Areas. These areas contribute water, or are in close proximity, to municipal drinking- water supply wells that are *vulnerable* to contamination and or depletion from incompatible land uses. In the City of Waterloo, Source Water Protection Areas consist of Wellhead Protection Sensitivity Areas, High Microbial Risk Management Zones, and *Regional Recharge Areas*.
 - (a) Wellhead Protection Sensitivity Areas are classified from 1 to 8. This classification allows for varying degrees of management relative to the *vulnerability* of the underlying groundwater to contamination, the importance of

the well to the capacity of the municipal drinking-water supply systems, and the length of time groundwater within the area will take to reach the municipal drinking-water supply well.

- (b) High Microbial Risk Management Zones identify areas where the underlying groundwater is the most *vulnerable* to disease causing organisms. These zones surround municipal drinking-water supply wells supplied by Groundwater Under the Direct Influence of Surface Water (GUDI). GUDI wells draw groundwater that is directly connected to, and dependant upon, surface water in locations where contaminants in the surface water may not be filtered adequately by the overlying soil or subsurface before entering the well.
 - (c) *Regional Recharge Areas* identify areas that will be protected from land use practices and hazardous chemicals and/or substances that could negatively impact the quality and quantity of water within and available to the aquifers that contribute to the municipal drinking-water supply system.
- (2) New water taking will not be permitted for any new or expanding uses within the Urban Area Boundary.
 - (3) The City will review its Zoning By-Law with respect to Source Water Protection Areas to ensure conformity with the Regional Official Plan in terms of compatible land uses.
 - (4) The City will, in collaboration with other public agencies having jurisdiction, provide input into and implement a *Source Protection Plan*.
 - (5) This Plan will be amended to conform to an approved Source Protection Plan, as required.
 - (6) The City, in collaboration with the *Province*, the Region, and the Grand River Conservation Authority will participate in informed stewardship of Source Water Protection Areas.
 - (7) *Development* applications, excluding *site plan* applications, within Source Water Protection Areas will be reviewed and considered in accordance with the source water protection policies in the Regional Official Plan.

8.4 ENVIRONMENTAL HEALTH AND SAFETY

Both natural and human-made hazards pose a threat to public health and safety. Natural hazards are physical processes occurring at or near the earth's surface that produce events of unusual magnitude or severity. Flooding and erosion are primary examples. In addition to the inherent risk to life, natural hazards are associated with property damage, social disruption as well as private and public expenditure. Accordingly, the general intent of this Plan is to direct development outside of areas subject to natural hazards. In contrast to natural hazards, which are naturally occurring events, human-made hazards result from

human activities. Included are contaminated sites. Through the remediation of *brownfields*, threats to human and ecosystem health are addressed and *intensification* opportunities are often provided, serving to further the City's goal of transitioning to a compact urban form and making wise use of resources. In addition to hazards, noise, vibration, and light emissions have the potential to adversely impact human health and the overall quality of life.

A proactive and precautionary approach is fundamental to protecting environmental health and safety. Such an approach allows for threats to be minimized, eliminated, or averted, and opportunities for improvement to be seized. The sound management of natural and human-made hazards, along with other nuisances including noise, vibration, and light emissions, is a critical component of the City's sustainability.

8.4.1 Supporting Documents and Implementation

- (1) Council will approve, and update as appropriate, additional documents to support the implementation of the policies of this Section. Such documents may include, but are not necessarily limited to:
 - (a) Environmental Strategy
 - (b) *Watershed Studies*
 - (c) Emergency Management Plan

8.4.2 Natural Hazards

Natural hazards include *hazardous lands* and *hazardous sites*. While *hazardous sites* could be unsafe for *development* and *site alteration* because of naturally occurring hazards such as unstable soils or unstable bedrock, *hazardous lands* are considered unsafe due to naturally occurring processes like *flooding hazards* and *erosion hazards*. *Hazardous lands* impacted by *flooding hazards* are categorized as a One Zone Policy Area, Candidate Two Zone Policy Area, Two Zone Policy Area, or *Special Policy Area*. There is one *Special Policy Area* in the City of Waterloo – the Laurel/Clair *Special Policy Area*. Any amendments to the *Special Policy Area* policies must be considered and approved by the *Province*, the City, and the Grand River Conservation Authority.

- (1) To reduce the threat to life and property posed by natural hazards, as well as lessen the risk of social disruption and potential for public cost, *development* will generally be directed to areas outside of *hazardous lands* and *hazardous sites*. Where *development* is permitted near or on *hazardous lands* and *hazardous sites*, potential adverse impacts will be recognized and mitigated.
- (2) *Hazardous lands* and *hazardous sites* are identified, mapped, and regulated by the Grand River Conservation Authority. *Hazardous lands* and *hazardous sites* are shown on **Schedule 'A5' – Natural Hazards**. Amendments to this Plan will not be required for minor revisions to the limits of *hazardous lands* and *hazardous sites*, where such revisions are supported by technical studies approved by the Grand River Conservation Authority.
- (3) *Development* or *site alteration* will not be permitted within:
 - (a) *hazardous lands* impacted by *flooding hazards* and/or *erosion hazards*;

- (b) *hazardous sites*; and
 - (c) erosion access allowances, which will not be less than 6 metres.
- (4) Notwithstanding policy 8.4.2(3), *development* or *site alteration* may be permitted in *hazardous lands* and *hazardous sites* where:
 - (a) a *Special Policy Area* has been approved by the *Province*;
 - (b) the *development* is limited to land uses that, by their nature must locate within the *floodway*, including flood or erosion control works, structures necessary for conservation, water supply, wastewater management, or minor additions or passive non-structural uses which do not affect flood flows;
 - (c) a Two Zone Policy Area has been designated in accordance with policy 8.4.2(22) to permit *development* or *site alteration* in the *flood fringe*, and the effects and risk to public safety are minor so as to be managed or mitigated in accordance with the *Province's* standards, as determined by the demonstration and achievement of all of the following:
 - (i) *development* or *site alteration* is carried out in accordance with *floodproofing* standards, protection works standards, and access standards;
 - (ii) vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion, and other emergencies;
 - (iii) new hazards are not created and existing hazards are not aggravated; and
 - (iv) no *adverse environmental impacts* will result.
- (5) Notwithstanding policy 8.4.2(4), *development* proposing the following land uses will not be permitted within *hazardous lands* and *hazardous sites*:
 - (a) an institutional land use associated with hospitals, nursing homes, *assisted living facilities*, preschool, school nurseries, child care centres, and schools, where there is a threat to the safe evacuation of the sick, the elderly, persons with disabilities, or the young during an emergency as a result of flooding, failure of *floodproofing* measures, or protection works, or erosion;
 - (b) an essential emergency service such as that provided by fire, police, and ambulance stations and electrical substations, which would be unacceptably impaired during an emergency as a result of flooding, the failure of *floodproofing* measures or protection works, or erosion; and
 - (c) land uses associated with the disposal, manufacture, treatment, or storage of *hazardous substances*.
- (6) *Development* permitted within *hazardous lands* impacted by *flooding hazards* will be *floodproofed* to the elevation of the *Regulatory Flood* unless otherwise provided by more specific policies. For non-habitable accessory buildings or structures such as garages, sheds, or temporary structures, *floodproofing* will be undertaken to the extent practical where *floodproofing* to the elevation of the *Regulatory Flood* is not technically feasible.
- (7) Where an existing building or structure is destroyed in a manner not associated with the inherent natural hazard, the City will permit its reconstruction, subject to approval from the Grand River Conservation Authority.
- (8) Except as provided through policy 8.4.2 (4), parking lots, elevated parking structures

and underground parking structures associated with residential uses and underground parking structures associated with non-residential uses will not be permitted in *hazardous lands* impacted by *flooding hazards*.

- (9) Where *development* on private services is permitted, new septic systems must be located outside of *hazardous lands* and *hazardous sites*. Where new or replacement septic systems are associated with *site alteration*, septic systems should be located outside of *hazardous lands* and *hazardous sites*.
- (10) Prior to *development* on lands occasioned by groundwater discharge or high water tables, detailed hydrogeological and/or geotechnical studies will be required to assess potential risks to persons, buildings, structures, or *infrastructure*.
- (11) Development approvals will not be granted within *hazardous lands* and *hazardous sites* or on lands adjacent to *hazardous lands* and *hazardous sites* that are regulated by the Grand River Conservation Authority until written permission is obtained from the Grand River Conservation Authority.
- (12) *Hazardous lands* and *hazardous sites* will be placed in an appropriate zoning category or identified through a zone suffix or prefix in the Zoning By-Law.
- (13) Building setbacks from *hazardous lands* and *hazardous sites* may be established in the Zoning By-Law in accordance with the degree, extent, and severity of the natural hazard, in consultation with the Grand River Conservation Authority, the *Province*, and other public agencies having jurisdiction.
- (14) *Hazardous lands* and *hazardous sites* will not be considered as contributing to the parkland dedication requirements under the Planning Act.
- (15) The acquisition of *hazardous lands* and *hazardous sites* by the City or other public agency is encouraged.
- (16) The City will continue to cooperate with the Grand River Conservation Authority in the operation of the Grand River Watershed Warning System.
- (17) The City will maintain an Emergency Management Plan that will protect the citizens, property, and environment from significant natural, technological, and human caused events.

Flooding Hazards – One Zone Policy Areas

- (18) In One Zone Policy Areas, the entire floodplain is considered the floodway.
- (19) Development and *site alteration* will not be permitted in One Zone Policy Areas except in accordance with policy 8.4.2(4).
- (20) Notwithstanding 8.4.2(19), minor alterations and additions to *existing* buildings or structures may be permitted provided that:

- (a) there is no feasible alternative location outside of the *floodplain*;
- (b) no *adverse effects* on the hydraulic characteristics of flood flows are created;
- (c) no new dwelling units are created;
- (d) no new floor space or building services, such as mechanical or electrical services, are created below the elevation of existing floor space;
- (e) no new habitable floor space is created below the elevation of existing habitable floor space;
- (f) *floodproofing* is undertaken to the extent practical, where *floodproofing* to the elevation of the *Regulatory Flood* is not technically feasible; and
- (g) there is no risk of structural failure due to potential hydrostatic or dynamic pressures.

Flooding Hazards – Two Zone Policy Areas

- (21) In Two Zone Policy Areas, the *floodplain* is divided into two sections: the *floodway* and the *flood fringe*. The *floodway* is the area of the *floodplain* required to pass the flows of greatest depth and velocity. The *flood fringe* lies between the *floodway* and the outer edge of the *floodplain*. Depths and velocities of flooding in the *flood fringe* are generally less severe than those in the *floodway*.
- (22) The City, in collaboration with the Grand River Conservation Authority, may designate Two Zone Policy Areas where significant urban uses currently exist within the *floodplain*, and where there is significant potential for further *intensification* with no *adverse effects* on flood flows. The application of the Two Zone concept is not intended to be on a lot-by-lot basis, but on a subwatershed or major reach basis.
- (23) Development and *site alteration* will not be permitted in the floodway of a Two Zone Policy Area except in accordance with policy 8.4.2(4).
- (24) Further to policy 8.4.2(4), *development* and *site alteration* may be permitted in the *flood fringe* of a Two Zone Policy Area provided that:
 - (a) all new buildings and structures are floodproofed to the elevation of the Regulatory Flood;
 - (b) all new dwelling units are above the elevation of the *Regulatory Flood*;
 - (c) all habitable floor space and building services, such as mechanical or electrical services, are above the elevation of the *Regulatory Flood*;
 - (d) no basement is proposed, or where the building contains multiple units, the basement is *floodproofed* to the elevation of the *Regulatory Flood* to provide parking below grade or common amenities; and
 - (e) ingress and egress to a building or structure is dry where achievable or *floodproofed* to an elevation that is practical and feasible, but no less than safe, as determined by the Grand River Conservation Authority.
- (25) The creation of any uninhabitable floor space below the elevation of the *Regulatory Flood* where there is any possibility of conversion to habitable use will not be permitted. Uninhabitable residential space associated with multi-unit development created below the elevation of the *Regulatory Flood* may be permitted and will be *floodproofed* to the elevation of the *Regulatory Flood*. Such areas may include foyers,

recreation rooms, communal storage areas, and other uninhabitable floor space that are normally associated with multi-unit residential development.

- (26) Access to new residential buildings and mixed-use buildings containing residential space will be provided to ensure safe access/evacuation at the Regulatory Flood elevation. The determination of safe access shall be made by the Grand River Conservation Authority in an evaluation of the combination of flood depths and flood flow velocities as they affect individual sites. However, in no case shall residential development be permitted where access/evacuation routes are subject to flood depths in excess of 0.8 metres or flood flow velocities in excess of 1.7 metres per second or where the product of depth and velocity exceeds 0.4 square metres per second under Regulatory Flood conditions. The provision of safe access within these parameters shall be provided by the raising of all or part of the site to suitable elevations to permit safe pedestrian evacuation or access under wet conditions. Parking associated with residential uses in the Two Zone Policy Area will also conform to the safe access standards outlined above.

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- (27) Conversions of non-residential buildings in the *flood fringe* to residential use may be permitted and will require that all residential floor space be located at or above the elevation of the *Regulatory Flood* and building services are *floodproofed* to the elevation of the *Regulatory Flood*. Separate electrical and heating services will be required for ground floor non-residential and upper floor residential conversions. An assessment by a qualified professional engineer of the structural integrity of the building to withstand flood and hydro-static pressures may be required by the City and the Grand River Conservation Authority. Access policies outlined in policy 8.4.2(26) shall apply.
- (28) Elevated parking structures and underground parking structures with a portion of the lowest parking level exposed and open above grade may be permitted in the *flood fringe* of a Two Zone Policy Area subject to the provisions of the Zoning By-Law. Underground parking structures which are fully enclosed underground are not permitted in the Two Zone Policy Areas.

Flooding Hazards – Candidate Two Zone Policy Areas

- (29) Candidate Two Zone Policy Areas are based on a Grand River Conservation Authority Board-approved list created in response to changes in the provincial *floodplain* planning policy framework. Candidate areas are subject to additional technical analysis in order to demonstrate the appropriateness of the application of the Two Zone approach. Candidate Two Zone Policy Areas will be treated as One Zone Policy Areas unless additional technical analysis is completed to the satisfaction of the Grand River Conservation Authority and the results of the analysis validate the application of the Two Zone approach. In such cases, Candidate Two Zone Policy Areas may be treated as Two Zone Policy Areas. Changes in status will be reflected on **Schedule 'A5' – Natural Hazards** through a *municipal comprehensive review* or Official Plan Amendment.

Flooding Hazards – Special Policy Areas

- (30) The City recognizes that the designation of a *Special Policy Area*, and any change or modification to the site-specific policies or boundaries applying to the *Special Policy Area*, must be approved by the *Province*. Further, the City recognizes that the *Province* has established procedures for undertaking such changes or modifications. The City intends to follow these procedures in the near future to update the policies and/or boundaries that apply to the *Special Policy Area* currently designated in the City of Waterloo.
- (31) This Plan designates certain lands along the Laurel and Clair Creeks a Provincial *Special Policy Area* for reasons outlined in subsections (a) to (f) inclusive. The lines on **Schedule 'A5' – Natural Hazards** are general in nature. Interpretations of lines on individual sites must be confirmed in consultation with the Grand River Conservation Authority. These lands are part of the historic centre of Waterloo and special policies are required for the continued economic and social viability of the area. Also, these lands are subject to special conditions which constitute a significant hazard to life and property during serious floods.
- (a) With specific reference to *floodplains*, the municipality has been utilizing design criteria for land use planning and stormwater management to control flooding up to the magnitude of the 1 in 100 year storm event. However, the Provincial design standard is the Regulatory Storm which is in the magnitude of Hurricane Hazel. Using this more restrictive provincial standard, the Grand River Conservation Authority has determined that a certain amount of development near specific watercourses in the City would be adversely affected by such a severe storm event.
 - (b) Provincial Flood Plain Planning policies generally discourage development within the regulatory *floodplain*. The policies recognize that, in some cases, portions of the *floodplain* can be developed safely and protected to the *Regulatory Flood* elevation with no adverse impacts to existing development. In such cases, selective application of a Two Zone Concept (*floodway-flood fringe*) is permitted. Where adherence to these policies is not feasible, the concept of *Special Policy Area* is recognized as a possible option for flood prone communities or portions thereof which have historically developed in the *floodplain*. In these areas, social, economic and environmental factors may warrant assuming a higher degree of flood risk than would normally be acceptable.
 - (c) In portions of Uptown Waterloo and areas adjacent to certain reaches of Laurel and Clair Creeks, development has historically taken place on lands within the regulatory *floodplain* defined by the Grand River Conservation Authority. The City has demonstrated a strong commitment to the renewal and revitalization of Uptown Waterloo through various actions and policies. While the City recognizes that a higher degree of flood risk exists along these creeks than would normally

be deemed acceptable, rehabilitation, development and replacement of buildings and structures in the area is considered necessary to the continued economic and social viability of this area and major relocations or complete acquisition by public authorities is not considered practical. Consequently, a *Special Policy Area* has been identified in this Plan which addresses planning and engineering criteria for developed and undeveloped lands along certain reaches of Laurel and Clair Creeks.

- (d) This Plan designates certain lands along Laurel and Clair Creeks as a *Special Policy Area*. This area is one in which the City, the Grand River Conservation Authority, the *Province* and the public agree to accept a higher flood risk than would normally be acceptable and permit development in circumstances where it would normally be prohibited, subject to certain flood damage reduction measures.
 - (e) A program of channelization/channel improvements is being undertaken within this area to reduce flooding up to the magnitude of the 1 in 100 year storm event. Unusual flood effects occur in the *Special Policy Area* once water exceeds the 100 year level. Flooding can occur to potentially significant depths over a short period of time leaving little time for public warning and/or evacuation. In certain locations within the *Special Policy Area* depths and velocities of water during a *Regulatory Flood* event combine to create hazardous conditions.
 - (f) Although the goal for the *Special Policy Area* is to promote protection to the regulatory level to prevent the loss of life and minimize property damage, requirements have been relaxed especially in relation to commercial development and related parking. The policies have been formulated to overcome or reduce flood hazards where feasible while recognizing the economic and social necessity of continued development in this area.
- (32) The *floodplains* that have been identified for the Laurel and Clair Creek watersheds and the flood channelization measures that have or will be developed in the core area have been developed on the assumption that any urban development located west of Erbsville Road and upstream of Laurel Creek Reservoir will not increase flooding within the *Special Policy Area*. Prior to development of lands on the West Side of Waterloo as identified above, a Master Drainage Plan for the West Side will be required. The goal of such a plan will be that run off from the West Side not increase peak flows up to and including the *Regulatory Flood* flow over existing conditions to the extent that flood levels in the *Special Policy Area* are affected. Should this goal not be achievable, the downstream effects as they impact upon the *Special Policy Area* will be reviewed and if required, an amendment to this Plan will be undertaken. Policy changes or the acceptance of even a higher level of risk within the *Special Policy Area* may result if flooding is increased by development on the West Side of the City.
- (33) An area within the *Special Policy Area* exists and functions as an hydraulic *floodway*. This hydraulic *floodway* is the minimum area required to pass the *Regulatory Flood*.

The hydraulic *floodway* is illustrated on **Schedule 'A5' – Natural Hazards**. Obstruction of the hydraulic *floodway* would create adverse upstream and downstream effects in the form of increased flow velocity, depth and extent of flooding.

- (34) No new buildings, structures or fill shall be permitted in the hydraulic *floodway*. Notwithstanding this prohibition, an area of the hydraulic *floodway* between the Erb Street West and Caroline Street intersection and Erb Street East has been identified as an area in which elevated parking structures may be permitted provided that the design and construction of such structures accommodates the passage of the *Regulatory Flood* as determined by the Grand River Conservation Authority and the City.
- (35) The reorientation or reconfiguration of existing buildings within the hydraulic *floodway* as a result of unusual loss or redevelopment may be permitted without requiring an amendment to this Plan provided that such redevelopment results in an improvement of the flow characteristic of the hydraulic *floodway*. Such buildings shall be *floodproofed* in accordance with the applicable policies of this Plan to the satisfaction of the City and the Grand River Conservation Authority.
- (36) The portion of the hydraulic *floodway* between Weber Street North and University Avenue East has been determined on the basis of the greater extent of two criteria: flood depth and the area required to pass the *Regulatory Flood*. The extent of the hydraulic *floodway* in this area is a result of the impact created by three bridges (two privately held and one under the jurisdiction of the Region). The use of flood depth as an additional factor to determine the hydraulic *floodway* is unique to this area. The replacement of bridges provides some opportunity to improve the flood condition while in other areas of the *Special Policy Area* such opportunities do not exist. The selected depth criteria addresses the area of the *floodplain* where the greatest risk exists and would assist in reducing risk of damage during lesser flood events than the Regulatory Storm. No new buildings, structures or fill shall be permitted in this area.

Notwithstanding the above, nothing shall prevent the erection of a training facility for fire protection purposes within this portion of the hydraulic *floodway* subject to approval by the Grand River Conservation Authority and the City. It is the intention that the three bridges will be reconstructed or other alternatives pursued such as new access points to private development which could eliminate the need for the private bridges. Such actions will be undertaken with the cooperation of the Grand River Conservation Authority, the Region, the City, and affected landowners. An amendment to this Plan will be required to ensure that *floodplain* policy reflects the improved flood condition.

- (37) Development along the edge of Silver Lake is constrained by the storage capacity of

this water body under *Regulatory Flood* conditions. Development along the shoreline may be permitted provided that the storage capacity is not affected or allowance has been made for replacement of lost capacity through reconfiguration of the lake. As a consequence the hydraulic *floodway* limit is shown on **Schedule 'A5' – Natural Hazards** as following the shoreline of Silver Lake. Development proposals will be assessed by the Grand River Conservation Authority and the City relative to impact on storage capacity. Should changes to the hydraulic *floodway* line be required to accommodate shoreline development, no amendment to this Plan will be required provided that storage capacity is not impaired.

- (38) Within the core area, flood depths and velocities within the hydraulic *floodway* may necessitate public acquisition of certain lands for open space purposes and special design treatments of adjacent structures.

Residential Policies

- (39) Policies 8.4.2(24)(c), 8.4.2(25) and 8.4.2(26) shall apply to the development of new residential buildings in the *Special Policy Area*. Notwithstanding policy 8.4.2(25), uninhabitable residential space created below the *Regulatory Flood* elevation shall be *floodproofed* to the *Regulatory Flood* elevation except those areas where it can be demonstrated to the satisfaction of the City and the Grand River Conservation Authority that a limited potential for damage exists. Flood protection for such uninhabitable space may be reduced, but in no case shall the reduction be more than 1 metre below the *Regulatory Flood* elevation. This elevation will provide protection to, at minimum, the 100- year flood elevation or higher.
- (40) Policy 8.4.2(27) shall apply to conversions of non-residential buildings beyond the hydraulic *floodway* to residential use.

Institutional Policies

- (41) Libraries, museums, university facilities and similar non-residential institutional uses are permitted in the *Special Policy Area* subject to *floodproofing* to the *Regulatory Flood* elevation.
- (42) Protective services such as police, fire, utility and public works yards, ambulance stations and major electrical substations should not be located in the *Special Policy Area*. If a *Special Policy Area* location cannot be avoided these uses shall be floodproofed to *Regulatory Flood* levels and access/facilities provided to ensure their ability to deliver emergency services during flood events is not impaired. Minor additions or alterations as defined by the Grand River Conservation Authority, to existing facilities may be permitted subject to the approval from the City and the Grand River Conservation Authority.

Commercial Policies

- (43) Commercial uses such as retail, office, service and personal service commercial uses shall be floodproofed to the *Regulatory Flood* elevation except where it can be demonstrated to the Grand River Conservation Authority and the City that the level of flood protection would impair the viability of commercial operations. In such cases, a reduction in flood protection requirements may be permitted, but in no case shall the reduction be more than 1 metre below the *Regulatory Flood* elevation. This elevation will provide protection to, at minimum the 100-year flood elevation or higher.
- (44) Hotels and motels, as commercial uses containing overnight accommodation, shall be *floodproofed* to the *Regulatory Flood* elevation. In no case shall building services, residential or sleeping space be located below the elevation of the *Regulatory Flood*. Direct access to the outside from residential or sleeping quarter space shall not be permitted unless the standards for access to new residential buildings, as outlined in policy 8.4.2(26) can be achieved. Notwithstanding the above, ancillary and other non habitable space shall be subject to commercial flood protection policies as outlined in policy 8.4.2(43).

Parking Policies – Surface

- (45) Surface parking may be permitted in all areas of the *Special Policy Area* in accordance with the Zoning By-Law. Where the Grand River Conservation Authority determines that surface parking sites are subject to severe flow velocities of sufficient magnitude to displace cars or other vehicles, surface parking facilities shall be designed with perimeter walls, berms, railings or other barriers suitable to contain floating vehicles in the parking lot and prevent obstruction of flood water flows.
- (46) Surface parking facilities associated with residential uses shall not be permitted to intrude into the hydraulic *floodway*. Surface parking associated with residential use shall conform to the same standards of "safe" access that apply to residential buildings as outlined in policy 8.4.2(26).

Parking Policies – Elevated

- (47) Elevated parking structures are prohibited within the hydraulic *floodway* but may be permitted in all other areas of the *Special Policy Area* subject to the provisions of the Zoning By-Law. Notwithstanding the above, elevated parking structures may be permitted in a specific section of the hydraulic *floodway* as outlined in policy 8.4.2(34) only if the placement of columns and ramps and the design of floor clearance will accommodate the passage of the *Regulatory Flood* as determined by the Grand River Conservation Authority and the City.
- (48) With specific reference to elevated parking structures noted above, when notified that flood events will result in significant overland flows, the City will attempt to

prohibit access by vehicle to the ground floor parking levels and attempt to remove existing vehicles parked in ground level spaces. Such action shall be integrated into an Emergency Management Plan and Flood Warning System.

Parking Policies – Underground

- (49) Underground parking facilities may be permitted in all areas of the *Special Policy Area* in accordance with the Zoning By-Law. Except as provided in policy 8.4.2(50), all underground parking facilities shall be floodproofed to the *Regulatory Flood* elevation. All underground parking structures in the *Special Policy Area* shall be developed subject to the following:
 - (a) access by elevator to underground structures during flood events shall be prevented;
 - (b) underground structures shall be designed for controlled seepage and filling by flood waters and shall contain facilities for pump out; and
 - (c) electrical and mechanical services be floodproofed to the *Regulatory Flood* elevation.
- (50) In the section of the *Special Policy Area* between the intersection of Erb Street West and Caroline Street and Erb Street East, it may not be feasible to protect underground parking facilities to the regulatory elevation. Where the City and the Grand River Conservation Authority determine that achievement of the *Regulatory Flood* protection is not feasible, underground parking facilities and structures may be developed subject to the following:
 - (a) openings to underground parking facilities may be permitted below the *Regulatory Flood* elevation, as determined by the Grand River Conservation Authority and the City. But in no case shall such openings be more than 1.0 metre below the Regulatory elevation.

Erosion Hazards

- (51) Notwithstanding policy 8.4.2(3), development or *site alteration* associated with existing uses may be permitted within the limits of an erosion hazard where it is demonstrated through a site-specific geotechnical or engineering assessment that:
 - (a) there is no feasible alternative location outside of the *erosion hazard*;
 - (b) any proposed building or structure is located in the area of least risk;
 - (c) there is no impact on existing or future slope stability and bank stabilization or erosion protection works are not required;
 - (d) access for maintenance or emergency purposes is not prevented; and
 - (e) where unavoidable, impacts on *natural features* or *ecological functions* are minimized and appropriate mitigative and remedial measures will adequately enhance or restore features and functions.
- (52) Minor alterations and additions to *existing* buildings or structures within the limits of an *erosion hazard* may be permitted in accordance with policy 8.4.2(51).
- (53) The replacement of buildings or structures within the limits of an *erosion hazard* may be permitted in accordance with policy 8.4.2(51).

- (54) *Development or site alteration* adjacent to a steep slope will be subject to a setback from the stable top of bank. The stable top of bank will be determined in consultation with the Grand River Conservation Authority. A minimum setback of 6 metres will be required to accommodate an erosion access allowance.
- (55) Where feasible, lands below the stable top of bank will be maintained in a natural state. In cases where such lands have been impacted by agricultural or urban uses, efforts will be made to naturalize the lands where appropriate.

8.4.3 Contaminated Sites

- (1) Where *development* is proposed on, or adjacent to, a known or *potentially contaminated site*, planning approvals will be subject to the submission of a Record of Site Condition. Where applicable, the procedures contained in the Regional Implementation Guideline for the Review of Development Applications on or Adjacent to Known and Potentially Contaminated Sites will be followed.
- (2) Land use designations on **Schedule 'A' – Land Use Plan** may be subject to review and the uses contemplated by this Plan may be restricted subsequent to environmental site assessment work carried out through the *development* application review process.
- (3) Holding provisions related to known or *potentially contaminated sites* may be utilized by the City when it is necessary or desirable to zone lands for development prior to the submission of a Record of Site Condition to the *Province*.
- (4) Where the City is deeded land for public highways, *road* widenings, parkland, stormwater management, easements, or any other purpose, evidence may be required, as a condition of the transfer, to the choice and satisfaction of the City, that no environmental contamination has occurred on the subject lands, that the lands have been satisfactorily restored, or that a record of on-site contaminants is provided. Unless satisfied, the City may not accept the deed.
- (5) The City may consider and implement programs to encourage the remediation of contaminated sites in accordance with Section 12.3.2 related to Community Improvement Plans.

8.4.4 Noise, Vibration and Light Emissions

General

- (1) *Sensitive land uses* proposed in the vicinity of *roads*, railways, or other uses considered to be noise generators will comply with applicable provincial, regional, and municipal guidelines. All recommended means of mitigation will be secured to

the satisfaction of the City prior to, or as a condition of approval of the *development* application, excluding *site plan* applications.

- (2) Any required noise or vibration study will be prepared by a qualified professional in accordance with recognized noise and vibration measurements and prediction techniques, to the satisfaction of the City and in accordance with applicable provincial, regional, and municipal guidelines and standards.
- (3) Where noise attenuation measures are required, *passive noise attenuation measures are preferred. Noise barriers may only be used where it is demonstrated to the satisfaction of the City that other attenuation methods are not adequate or feasible. Noise barriers must be designed and constructed to complement the streetscape and community design.*
- (4) To minimize noise and vibration impacts during the construction phase of development, proponents will be encouraged, and where appropriate, required to establish noise and vibration reduction strategies based on relevant regulations, guidelines, and best practices.
- (5) The City recognizes that innovative noise and vibration abatement techniques may become available through the development of new technologies. The use of such techniques will be encouraged.
- (6) The application of noise attenuation measures may be detailed in District Plans.

Noise and Vibration from Transportation Sources

- (7) Where a *development* application, excluding *site plan* applications, for a *sensitive land use* is submitted in the vicinity of an existing or planned City Arterial or Regional Arterial road, provincial highway or railway, the Regional *rapid transit* system, or a transit terminal, a noise study may be required. Any required noise mitigation measures will be implemented through the *development* application review process.
- (8) Where projected noise levels exceed the noise criteria prescribed by the *Province* and the Region, appropriate noise warning and/or noise attenuation measures will be required prior to, or as a condition of approval of a *development* application, excluding *site plan* applications. Such measures may include site design and building layout, noise warning clauses, noise attenuation barriers, air conditioning, and/or structural design measures such as multiple glazed windows and brick wall construction. Notwithstanding the above, *sensitive land uses* will be prohibited where the projected attenuated daytime noise level in the associated *outdoor living area* exceeds 70 dBA.

- (9) Provisions for noise mitigation are to be provided beyond the limits of the ultimate *road* or railway right-of-way.
- (10) Where a development application, excluding site plan applications, for a *sensitive land use* is submitted within 75 metres of a property line for a railway, a vibration study may be required, to the satisfaction of the City. The study must address all sources of vibration affecting the site and include recommendations for mitigation.

Noise and Vibration from Stationary Sources

- (11) Any *development* application, excluding *site plan* applications, for any use proposed to generate a stationary source of noise or vibration may be required to undertake a noise and/or vibration study as part of the application review process, to the satisfaction of the City. The study must address all sources of noise and vibration, include recommendations for mitigation, and demonstrate that there are no *adverse effects* on existing or planned *sensitive land uses*.
 - (a) Adherence to this Policy may include a development application to seek recognition as a Class 4 Area under NPC-300 guidelines.
 - (b) For clarity, requests for lands to be identified as a Class 4 Area will be supported by a noise and/or vibration study as part of the development application review process.

OPA No. 14, approved January 11, 2018

Light Emissions

- (12) Light pollution is excessive or obtrusive artificial light. While maintaining public safety, the City will endeavor to reduce light pollution in an effort to limit energy waste, decrease greenhouse gas emissions, minimize adverse impacts on ecological systems, and enhance the visibility of the night sky.
- (13) The City will use and promote the use of responsible lighting practices that eliminate or minimize light pollution.
- (14) The City may consider a Light Pollution By-law that would help prevent the negative impacts of excessive or misdirected light and encourage responsible lighting that is properly directed, of appropriate intensity, and energy efficient.
- (15) The City may require the proponent of an application for *development* to submit a light assessment and photometric plan in conjunction with the application.

8.5 ENERGY

The City of Waterloo, both corporately and as a community, is presented with energy challenges and opportunities, including the need to use energy more efficiently and the

ability to establish sources of sustainable energy production. Increased energy efficiency can lead to reduced air pollutant and greenhouse gas emissions, decreased demand for new production and distribution *infrastructure* and greater energy security. Complementing the efficient use of energy are *alternative energy systems* and *renewable energy systems*. While the environmental, social and economic benefits of such systems are widespread, benefits should be balanced with the functionality of these sustainable technologies and their compatibility with the natural environment and surrounding land uses.

8.5.1 Supporting Documents and Implementation

- (1) Council will approve, and update as appropriate, additional documents to support the implementation of the policies of this Section. Such documents may include, but are not necessarily limited to:
 - (a) Environmental Strategy
 - (b) *Watershed Studies*
 - (c) Community Energy Plan
 - (d) Transportation Demand Management Plan

8.5.2 Culture of Conservation

- (1) The City will play a leadership role in energy conservation through:
 - (a) the on-going implementation of energy conservation efforts in municipal facilities;
 - (b) ensuring that all new City facilities are designed to meet a high standard of *sustainable design*, including energy conservation;
 - (c) the ongoing implementation of energy management, waste reduction and re-use and recycling programs in City facilities;
 - (d) reducing, to an appropriate extent, the amount of high maintenance landscaping on City-owned lands; and
 - (e) maintaining a green procurement policy.
- (2) The City will encourage energy conservation in the community by:
 - (a) cooperating with other levels of government and the private sector to encourage innovative energy conserving measures within the City;
 - (b) supporting educational programs that promote energy conservation and efficiency measures; and
 - (c) promoting the retention and expansion of the urban forest to enhance air quality and reduce energy use through shading and sheltering opportunities.

8.5.3 Energy Conservation in the Built Environment

- (1) The City will encourage energy conservation in the community by:
 - (a) identifying opportunities to conserve energy, enhance energy security/ stability and increase the use of *renewable energy systems* or *alternative energy systems*, which may include developing a Community Energy Plan;
 - (b) promoting a compact city form, including:
 - (i) encouraging *intensification* primarily within Nodes and Corridors and discouraging reductions in permitted densities, as defined in this Plan and

- the Zoning By-Law, in instances where higher densities are appropriate;
- (ii) improving the mix of land uses, where appropriate, to reduce/ shorten vehicular trips and reduce congestion, including encouraging the distribution of *convenience retail* and personal services within walking/cycling distance of residential areas; and
- (iii) with regard to development within *designated greenfield areas*, phasing expansion or directing development to areas contiguous to the built up area of the City to optimize the use of existing *infrastructure*.
- (c) promoting increased reliance on public transit and *pedestrian* and bicycle travel and a reduced reliance on motor vehicles through measures such as enhanced physical *infrastructure* for transit, *pedestrians* and cyclists and supporting *transportation demand management* initiatives;
- (d) focusing major employment, commercial and other travel-intensive land uses on sites which are well served by existing or proposed public transit or designing these sites/areas to facilitate the establishment of public transit in the future;
- (e) promoting energy conservation during the review of development proposals by encouraging, where practical, the design of structures for energy efficiency, the proper siting of buildings, appropriate landscaping for wind shelter in the winter and the prevention of overheating in the summer, maximization of passive solar gain and east-west street orientation;
- (f) encouraging and, where possible, requiring that waste reduction, including the diversion of construction materials from landfills, and re- use and recycling programs be implemented;
- (g) encouraging energy conserving new construction and the upgrading and retrofitting of existing buildings to enhance their energy efficiency, including through the ongoing implementation of the Property Standards By-law and supporting *on-site energy production*, where appropriate;
- (h) supporting actions which aim to conserve energy through such things as the revision of Building Code standards; and
- (i) facilitating a reduction in energy consumption for development by:
 - (i) considering adaptive reuse of existing buildings;
 - (ii) considering the use of alternative development standards;
 - (iii) promoting development on gravity fed sanitary sewers and minimizing the reliance on pumping stations; and,
 - (iv) promoting water conservation measures.

8.5.4 Energy Production and Distribution

- (1) The City recognizes that a stable, efficient energy supply system is necessary for a strong, sustainable economy.
- (2) Increased energy supply in the City is encouraged by providing opportunities for alternative energy systems and renewable energy systems to accommodate current and projected needs. Such systems will generally be preferred over conventional forms of energy production, subject to provincial and federal requirements.
- (3) Notwithstanding any *provincial and federal requirements* for notice/public

consultation regarding energy production facilities, the City encourages proponents to undertake sufficient public notice and consultation so as to ensure members of the community and the City have sufficient opportunity to provide comment on proposed facilities to the proponent and/or approval authority.

- (4) In addition to the policies of this Plan, geothermal facilities will be subject to the Source Water Protection policies of the Regional Official Plan.
- (5) As per policy 5.2.8(5), the City may, in conjunction with development, require the transition of existing above-ground hydro lines and plant to underground locations, where technically feasible and where funding is available. It is recognized that the Uptown Waterloo Urban Growth Centre represents one priority area for such transition. Other priorities will be established through Class Environmental Assessments, capital projects, and or master planning, such as Hickory Street in Northdale. Where financially feasible, the City will support and participate in cost-sharing arrangements for the burial of hydro between Waterloo North Hydro Inc., landowners/developers and the Region. Where underground hydro services are contemplated, development shall be designed to accommodate the underground hydro services (including vaults, switchgears, and the like), related appurtenances, and easements. Regulations and standards to facilitate the transition of hydro lines and plant to underground locations may be established in the Zoning By-law, Urban Design Manual, and Engineering Manual.

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- (6) The City may support or actively participate in the development of energy production facilities which may include municipal ownership and/or operation of such facilities.
- (7) Energy production facilities that are owned and/or operated by the City, public utilities, Ontario Power Generation Inc., or Hydro One Networks Inc. and are subject to the requirements of the Environmental Assessment Act will be permitted in any land use designation of this Plan, with preference given to facilities locating in areas designated Flexible Industrial.
- (8) Energy production facilities that are privately owned and managed and are not regulated by the Green Energy Act may be permitted in the Zoning By-law in areas designated Flexible Industrial, subject to appropriate regulations. Zoning By-law Amendments to permit such energy production facilities in other areas of the City will only be considered where the City is satisfied that there will be no *adverse effects* from the development as related to economic, environmental, social, transportation, safety, and other concerns, as determined by the City.
- (9) *Alternative energy systems and renewable energy systems*, will be permitted in all land use designations in this Plan, but are encouraged to locate in areas designated Flexible Industrial. Such energy systems will be developed in accordance with *provincial and federal* requirements including appropriate separation distances to address land use compatibility.
- (10) The City will actively participate with the responsible approval authorities in planning

for the location and/or expansion of *alternative energy systems and renewable energy systems* within the City.

- (11) This Plan recognizes *district energy* systems as an efficient method of supplying heating, cooling and electricity to buildings and as a means to reduce the vulnerability of the energy system.

8.6 AIR QUALITY AND CLIMATE CHANGE

Our quality of life is dependent upon the quality of our air. Regardless of whether the source of air pollution is direct or indirect, local or long-range, air quality degradation significantly impacts both human and ecosystem health. Moreover, air pollution is closely linked with the burning of fossil fuels and the emission of greenhouse gases. Recognizing this link, and the link that exists between the accumulation of greenhouse gases and climate change, is vital to ensuring a comprehensive approach is taken in protecting and improving our air quality and combating human-induced climate change. Such an approach will include mitigation that reduces the sources and enhances the sinks of greenhouse gases and adaptation that minimizes our vulnerability to the impacts of climate change.

8.6.1 Supporting Documents and Implementation

- (1) Council will approve, and update as appropriate, additional documents to support the implementation of the policies of this Section. Such documents may include, but are not necessarily limited to:
 - (a) Environmental Strategy
 - (b) *Watershed Studies*
 - (c) Energy Management Program
 - (d) Air Quality and Climate Change Management Plan

8.6.2 General

- (1) The City will promote an urban form that includes compact and efficient development that is transit-supportive as a means of improving air quality and minimizing contributions to climate change through reduced reliance on automobiles.
- (2) The City will promote *sustainable design* and construction standards and the use of *renewable energy systems* as a means of improving air quality and minimizing contributions to climate change through reduced resource consumption and air pollutant generation.
- (3) The City will promote and undertake tree planting and landscaping initiatives to enhance and improve the *urban forest* as a means of improving air quality and minimizing contributions to climate change through shading, sheltering, screening, and increasing carbon sinks. The City will also promote the protection, restoration, wise management, and expansion of the *urban forest* as a means of pollution mitigation and carbon sequestration.

- (4) The City, through its operations, will endeavor to improve air quality and minimize contributions to climate change through pollution control, energy conservation, development and utilization of *renewable energy systems*, waste reduction, and the promotion of energy efficient facilities in the planning, design, and construction of public works.
- (5) The City may collaborate with other levels of government, other municipalities, institutions, community groups, and local industries to develop programs to reduce air pollutants and greenhouse gas emissions.
- (6) The City may promote and support education and awareness of air quality and climate change issues, associated health impacts, and linkages to transportation and land use.
- (7) *Development* that has the potential to generate dust, odour, or other airborne emissions will be evaluated in accordance with provincial guidelines and approval requirements. The City may require the proponent of such proposals to demonstrate compliance with provincial requirements.

8.6.3 Targets and Monitoring

- (1) The City may partner with other organizations to monitor, track, and assess local air quality to identify local emission sources and take action to reduce air pollutant and greenhouse gas emissions at these sources.
- (2) The City will encourage and undertake actions to reduce air pollutant and greenhouse gas emissions, which may include the development of an Air Quality and Climate Change Management Plan and local air pollutant and greenhouse gas emission targets.

8.7 ENVIRONMENTAL SUSTAINABILITY

On both a local and global scale, the impact that human activity has on the natural environment is increasingly more evident. To reduce and reverse this impact, ecological footprints must be minimized and our actions that threaten the quality of our land, air, and water must be modified. Achieving environmental sustainability requires continuous effort; there is no end to the process. Moreover, the challenge of becoming environmentally sustainable is actualized through a broad range of practices, including developing communities and buildings that are energy and water efficient, reducing greenhouse gas emissions, eliminating point source and fugitive contaminants, efficiently managing stormwater, effectively reducing and managing solid waste, and protecting biodiversity. Recognizing that our physical well-being, social vitality, and economic viability are intricately connected to each other and to the health of our natural environment, it is imperative that our activities are compatible and balanced with ensuring the integrity of *natural features*, systems, and processes.

8.7.1 Supporting Documents and Implementation

- (1) Council will approve, and update as appropriate, additional documents to support the implementation of the policies of this Section. Such documents may include, but are not necessarily limited to:
 - (a) Environmental Strategy
 - (b) *Watershed Studies*
 - (c) Energy Management Program
 - (d) Air Quality and Climate Change Management Plan

8.7.2 General

- (1) The City will promote environmental sustainability by encouraging, supporting and, where appropriate, requiring:
 - (a) a compact and efficient urban form;
 - (b) greater use of alternative transportation modes, such as transit, cycling, and walking;
 - (c) *sustainable design* and construction practices;
 - (d) the integration and protection of *natural features* and landscapes into building and site design;
 - (e) the reduction of resource consumption associated with growth;
 - (f) the avoidance of the release of contaminants into the environment; and,
 - (g) the creation of places and spaces that are resistant to the impacts of climate change.

8.7.3 Sustainable Building

- (1) The City will encourage *sustainable design* standards and the application of sustainable management practices for *development*, building renovation, and *infrastructure*.
- (2) The City will encourage, and where feasible and appropriate, require the implementation of *low impact development* measures for *development*, building renovation, and *infrastructure*.
- (3) The City will encourage the creation of innovative green spaces that retain stormwater, increase natural vegetation cover, improve air quality by binding dust and filtering air pollution, support biodiversity, provide sound attenuation, counteract the urban heat island effect, provide aesthetic and amenity value, provide opportunities for local food production, and/or reduce energy demand.
- (4) To offer protection from sun exposure, mitigate the urban heat island, and reduce energy demands, the City will encourage the provision of shade, either natural or constructed, to provide a balance of sun and shade. When planning for and developing new City facilities such as parks and public spaces, or refurbishing existing City-owned facilities, the City will consider the provision of shade an essential component.

- (5) Applications for Official Plan Amendment, Zoning By-law Amendment, Plan of Subdivision, and *Site Plan* will be encouraged, and where appropriate, required to submit a Sustainable Development Report describing the sustainable initiatives being implemented in the development, including but not necessarily limited to, initiatives related to energy efficiency, water efficiency, indoor air quality, building materials, landscaping, stormwater management, and construction waste.
- (6) The City may implement programs to encourage and/or require environmentally sustainable development.

8.7.4 Community Gardens

- (1) The City recognizes *community gardens* as valuable community resources that provide open space and a local food source, offer recreational and educational opportunities, and build social connections.
- (2) The City will identify land use designations appropriate for *community gardens*, with consideration being given to compatibility, prior land use and lot area.
- (3) The City will support *community gardens* through initiatives which may include:
 - (a) promoting the awareness of community gardening;
 - (b) where appropriate, offering City-owned lands as new community garden sites, such as undeveloped parcels and closed road right of ways; and
 - (c) collaboration with the Region.
- (4) The City will encourage backyard, roof top, and workplace gardening, as well as edible landscaping and fruit-bearing trees to complement community gardens.