PART 5.
UDM APPENDICES

This Part of the UDM Appendices provides supporting background for the UDM such as a glossary of terms for reference, an illustrated glossary, and technical process requirements and standards for the site plan process. The UDM appendices include the following:

Appendix		Purpose
A	UDM Summary – At a Glance	Brief summary of UDM.
B	City-Initiated Guidelines	Consolidated list of city-initiated guidelines. Some guidelines may supersede UDM. Over time, guidelines should be added into UDM. Contact City for applicable guidelines.
C	Intensification Projects and Principles	To illustrate the design and density implications of different building types and scale of development.
D	Select Maps and Schedules	Information and reference. Subject to change.
E	Glossary of Terms	A set of definitions for design and technical terms used in UDM.
F	Illustrated Architectural Glossary	Illustrated glossary showing examples of select architectural features.
G	Basic Roof Types	Basic roof types for small infill development.
H	Interesting Rooflines	Illustrated examples showing alternative roof forms, massing and architectural features that contributes to an interesting built form and skyline.
I	Tall Building Massing	Examples of tall building massing forms and features.
J	Building Entrance Features	Examples of building entrances.
K	Amenity Spaces	Illustrated examples of amenity spaces.
L	Urban Design Awards Criteria	Summary of urban design awards program and judging committee criteria.
M	Sustainable Design Criteria	Select criteria to promote sustainable design through site plan development.
N	Barrier Free Accessibility Guidelines	City approved guidelines for Barrier Free Accessibility.
O	Protective Measures for Trees During Construction	Basic tree management and preservation requirements for site plan approval and during construction.

Overtime, the Appendices may be updated by City staff.

A. UDM SUMMARY – AT A GLANCE

AT A GLANCE

CITY OF WATERLOO
URBAN DESIGN MANUAL

The City of Waterloo is comitted to promoting a high standard of urban design for all development in the City. The City's primary design expectations are established in the City of Waterloo's Official Plan and implemented through the Urban Design Manual.

WHAT IS URBAN DESIGN?

Urban design is a term that describes an evolving discipline focused on the design and analysis of the city and its related parts and elements. Good urban design is about creative city building and the art of creating great places, places for people. The role of urban design is expanding in city planning and is providing an effective tool in creative city building, intensification and placemaking. Urban design provides a design-based approach to city planning and a medium to improve the quality of city streets, neighbourhoods and community. It can also be further linked to other initiatives such as the Official Plan, recreation programs and visioning excerises, such as the Uptown Vision 2025, to create truly vibrant and dynamic places.

WHAT IS THE URBAN DESIGN MANUAL?

The Urban Design Manual is a consolidated set of City design guidelines and reference material approved by Council that implements the City's Urban Design policies contained in the Official Plan. This Manual includes General City Design Guidelines for many types of development in the City and includes more detailed, Supplemental Design Guidelines for specific types of projects and locations in the city. The Urban Design Manual also includes process guidelines and technical criteria to assist with the Site Plan Review and Approval process.

WHAT ARE DESIGN GUIDELINES?

Design guidelines are a set of design recommendations intended to guide development to achieve a desired level of prescribed quality. Guidelines apply to projects in the public and private realm. They may be general statements, or more technical statements that help create functional, attractive and compatible site development. The City will implement design guidlines with a level of presented flexability through creative and innovative solutions that meet the City's design objectives.

WHAT ARE THE CITY'S PRIMARY DESIGN OBJECTIVES?

The City of Waterloo has a clear design vision for the City based on the following design objectives:

- Promote a High Standard of Urban Design;
- Respect Context and Promote Sense of Place;
- Enhance connectivity and Interaction;
- Promote Creativity and Innovation; and
- Encourage Sustainable Design.

These design objectives are established in the City's Official Plan and have been incorporated into the Urban Design Manual with supporting design guidelines.

URBAN DESIGN OBJECTIVES

A HIGH STANDARD OF DESIGN
The 42, a mixed use project located in a planned growth area

THE CITY OF Waterloo

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WHAT IS THE PRIMARY FUNCTION OF THE URBAN DESIGN MANUAL?

- To support the implementation of the City's Urban Design policies established in the City's Official Plan;
- To provide guidelines to assist with implementing the Planning Act reforms that expanded Site Plan Control to include detailed building design considerations, sustainable design and accessibility;
- To support intensification in planned growth areas through effective guidelines;
- To finalize guidelines for the Nodes and Corridors areas; and,
- To establish clear Site Plan review process with supporting standards for site development.

WHAT IMPACT DOES THIS MANUAL HAVE ON FUTURE DEVELOPMENTS IN WATERLOO?

The Urban Design Manual was prepared to apply to many types of development in the City with emphasis on the Site Plan Review process administered through Section 41 of the Planning Act. All Site Plan development is subject to the General Guidelines contained in the Urban Design Manual. In addition, specific types of projects, such as tall buildings or specific locations, such as the Nodes and Corridors Areas, are subject to Supplemental Design Guidelines. All Site Plan developments will be subject to this process and to the criteria established in the Site Plan Review Guidlines (SPRG).

SITE PLAN DEVELOPMENT EXAMPLES:

MIXED USE DEVELOPMENT
Regina Street

COMMERCIAL DEVELOPMENT
Wildcraft Restaurant

INSTITUTIONAL DEVELOPMENT
Perimeter Institute

OFFICE DEVELOPMENT
Research & Technology Park

The City has passed new Official Plan policies (through Official Plan Amendment 72) that strengthens the role of Urban Design Guidelines in the City; providing greater authority and ability to implement design guidelines. The City of Waterloo will use the Urban Design Manual as a component for development review and approval with emphasis on Site Plan Control, and will update the Urban Design Manual on a regular basis.

IMPORTANT PRINCIPLES:

- design that results in attractive streetscapes
- more articulated building massing that relates to the surrounding buildings, human-scale dimensions and interesting skylines
- greater emphasis on building entrance, rooftop screening and building massing
- high quality architectural features, materials and coordinated colours that complement and enhance the neighbourhood character or project theme
- higher quality landscaping treatment that contributes and improves streetscape quality and to effective buffer treatment
- more detailed Nodes and Corridors guidelines with emphasis on built form, pedestrian connectivity, landscaping strategies and public art
- area-specific guidelines for the Uptown
- sustainable design and opportunities
- criteria for shadow impacts, lighting standards and landscape matters

FOR MORE INFORMATION CONTACT:

City Hall Planning Division 519.747.8523 or visit: www.waterloo.ca
The Urban Design Manual is available in electronic form on the City's website.

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B. CITY-INTIATIED GUIDELINES

Since 1982, the City of Waterloo has used design guidelines as part of its city planning and development approval processes. Many of these guidelines were approved on an ad-hoc basis providing design direction for select areas in the City, and continue to apply today. In all cases, customers should ask City staff the status of previous design guidelines. Over time, it is expected that older city design guidelines get updated and incorporated into the UDM as current, integrated guidelines. A summary of existing guidelines is provided below:

Guideline(s)	Year Approved	Status
• Architectural Guidelines	1982	First set of guidelines in City for Uptown. Updated an incorporated into Supplemental Design Section.
• Regina Street Guidelines	1983	Area-specific guidelines. Applicable.
• King Northfield Design Guidelines	1988	Area-specific guidelines. Applicable.
• Arterial Commercial Urban Design Guidelines	1997	Land use (policy implementation) guidelines. Applicable.
• Columbia Hills/Laurelwood Mixed Use Node Urban Design Guidelines	1997	Area-specific guidelines. Applicable.
• Clair Hills/West Hill Mixed Use Node Urban Design Guidelines	1997	Area-specific guidelines. Applicable.
• Site Planning and Design Guidelines for the Ira Needles/Westvale Interface	1998	Area-specific guidelines. Integrated with Westvale District Implementation Plan.
• Urban Design Principles - Columbia Forest	1998	Area-specific guidelines.
• University of Waterloo Research and Technology Park	2002	Area-specific guidelines. Applicable.
• Draft Nodes and Corridor Design Guidelines	2006	Height and density policy implementation. Draft guidelines. Integrated into UDM.
• Plan it Waterloo Urban Design Principles	2007	Official plan background study introducing new design principles.
• UDM	2009	Urban design policy implementation. General city design guidelines, supplemental guidelines and technical site plan design guidelines and process requirements.
• Northdale Land Use and Community Improvement Plan Study – Urban design and Built Form Guidelines	2012	Area-specific guidelines. Applicable.
• Station Area Planning	2017	Area-specific guidelines. Applicable.
• Uptown Public Realm Strategy	2019	The Uptown Public Realm Strategy guides the overall approach to the public realm in the Uptown.
• West Side Employment Lands – Urban Design Guidelines	2021	Area-specific guidelines. Applicable.

C. INTENSIFICATION PROJECTS AND PRINCIPLES

Mansion Lofts: Infill Townhouses
Density: 60 UPH or 0.9 FSR
11 units, 1782 sm site

Camelot: Infill stacked townhouses
Density: 70 UPH or 0.6 FSR
50 units, 7,109 sqm (0.71 ha)

Court Yard apartments
Underground Stacked Town Houses

Mid-Rise Building
Density: 100 UPH or 2.3 FSR
8 units, 5 storeys, 0.085ha site, surface and underground parking

Betzner Brownstones: Stacked Apartments
Density: 150 UPH or 1.1 FSR
27 units, 0.18 ha site, surface parking

Water Park Place: Highrise Towers
Density: 188 UPH or 2.1 FSR
287 units, 1.5 ha site, mixed parking

Bauer Lofts: Mixed Use Development
Density: 182 UPH excluding non-residential or 2.1 FSR Residential and 3.3 FSR with all uses
160 units, .88 ha site, underground parking
15 storey slab

345 King North: Student Highrise
Density: 250 UPH or 3.4 FSR excluding parking structure
94 units (372 bedrooms),0.4 ha site, parking deck, 16 storey slab

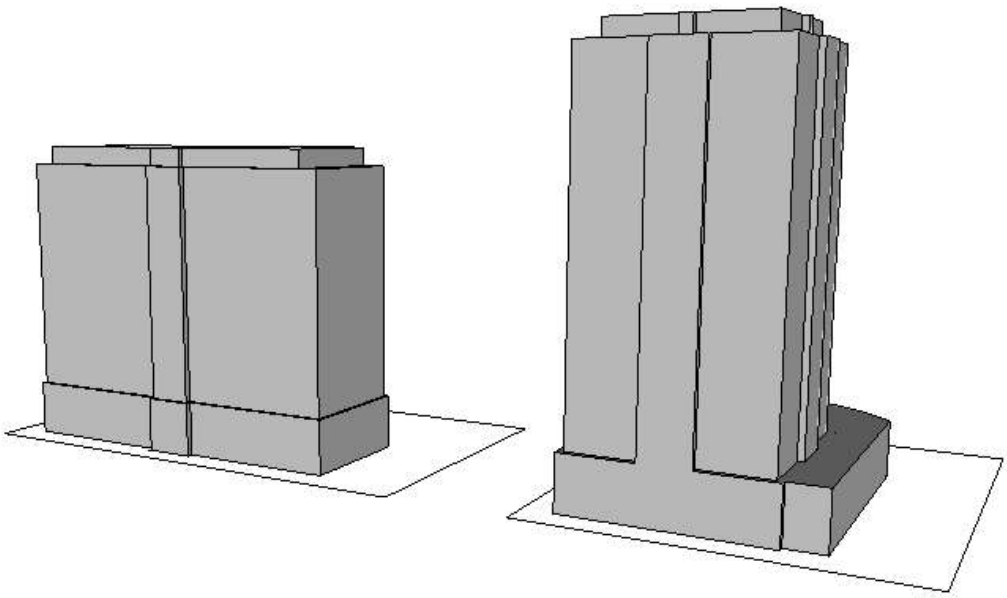
Queens Arms: Urban Infill
Density: 314 UPH or 2.6 FSR
61 units, .19ha, underground parking, 12 storey slab

These intensification projects emphasize the following principles for site development and design:

- Density is greatly affected by building coverage, lot size and parking. Smaller lots tend to have higher density compared to larger lots. More surface parking results in lower Floor Space Ratio (FSR) density however, may not affect Unit Per Hectare (UPH) density.

- Large sites generate the most number of units however, they may not generate the highest density. Higher densities are observed on small to medium size lots

- Building height is greatly influenced by building type and massing. High-rise buildings average 6-16 units per floor. Tower buildings (6-10 units per floor) generate less shadow impact than slab buildings (average 12-16 units per floor) however, they require greater height to maintain the same density. Reducing shadow impacts (duration) may result in taller, more slender buildings rather than shorter, more bulky buildings.



A 17-storey slab building with 200 units including underground and limited surface parking on 1 acre lot

A 23-storey tower with 200 units including underground and podium parking structure on 1 acre lot

- A change in massing, such as terracing and step backs, may result in additional building height to compensate for lost units and to maintain a proportionate building scale.

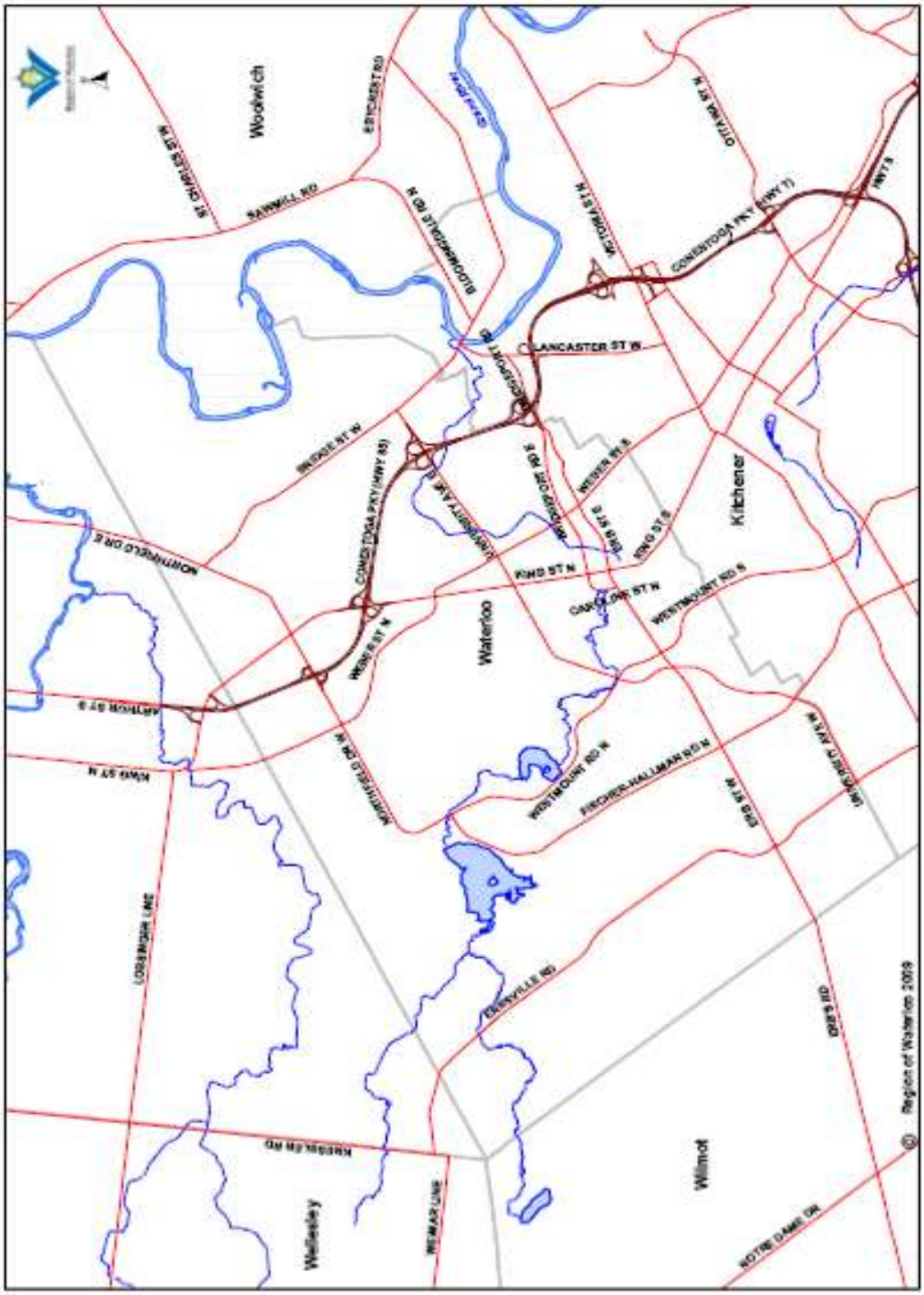
- UPH density and FSR density are not always directly related; in some cases, higher UPH may result in relatively modest FSR. As well, a relatively high FSR may result in modest UPH particularly if a project includes commercial uses or parking structure space which does not form part of a UPH calculation. FSR includes total building floor area, including above ground (structure) parking space. FSR is a measure of volume compared to people.

- UPH is a residential density calculation. Mixed use buildings, or commercial development, does not affect UPH density. The City has higher density projects (FSR) when commercial development is taken into account.

D. MAPS AND SCHEDULES

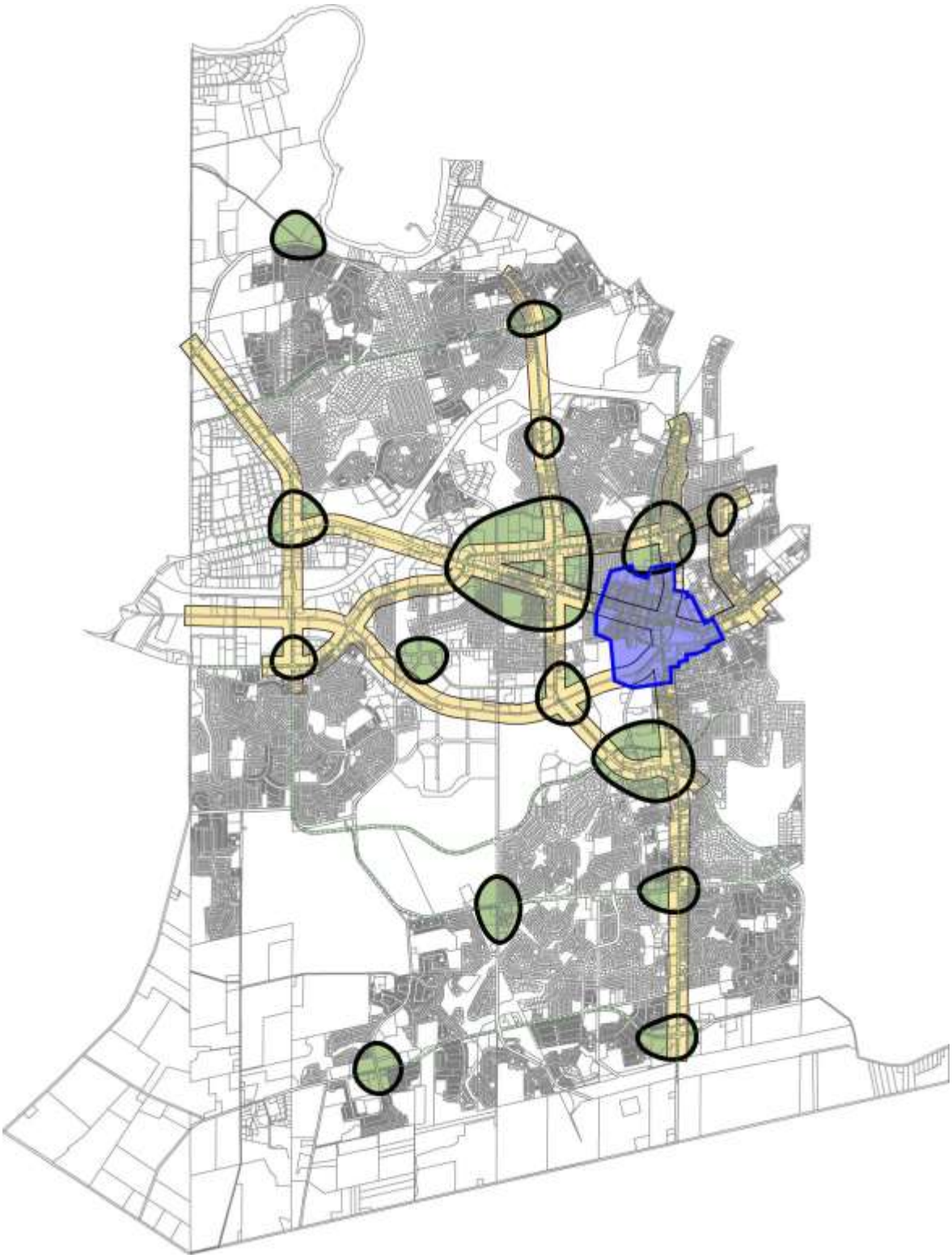
- Map 1: Regional Roads Map
- Map 2: Major City Gateways Map
- Map 3: Nodes and Corridors Map
- Map 4: Uptown Urban Growth Centre Boundary
- Map 5: Uptown District Map

MAP 1: REGIONAL ROADS MAP (2009)

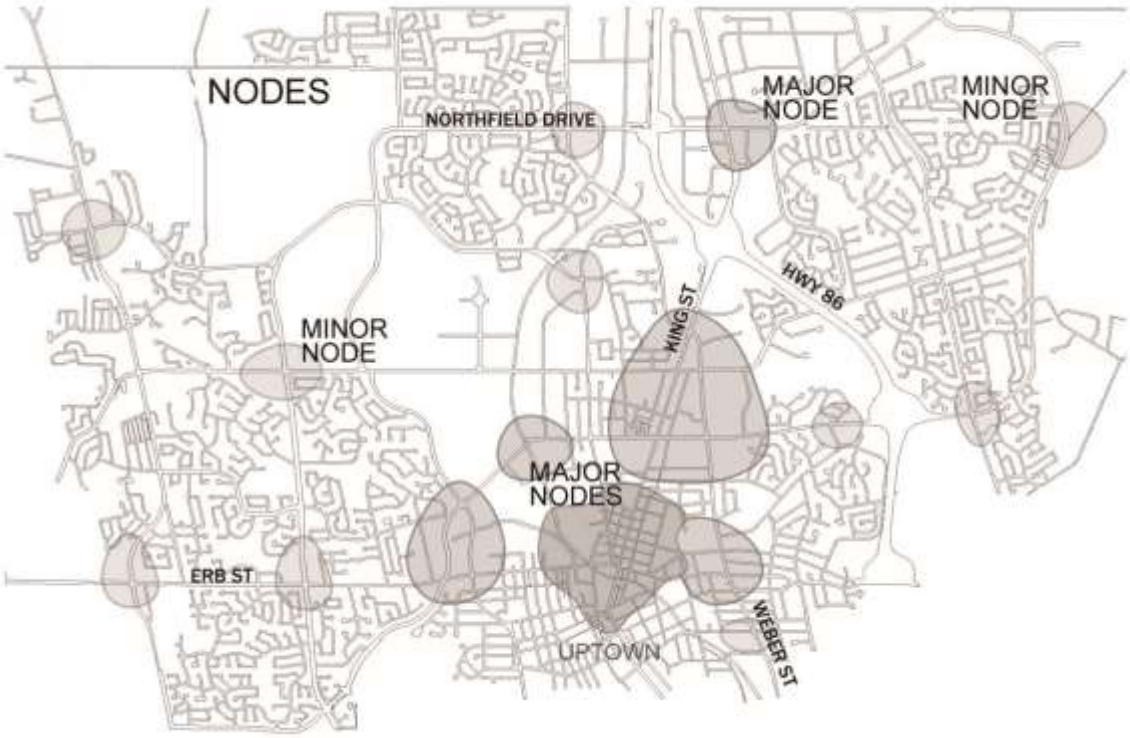


MAP 2: MAJOR CITY GATEWAYS

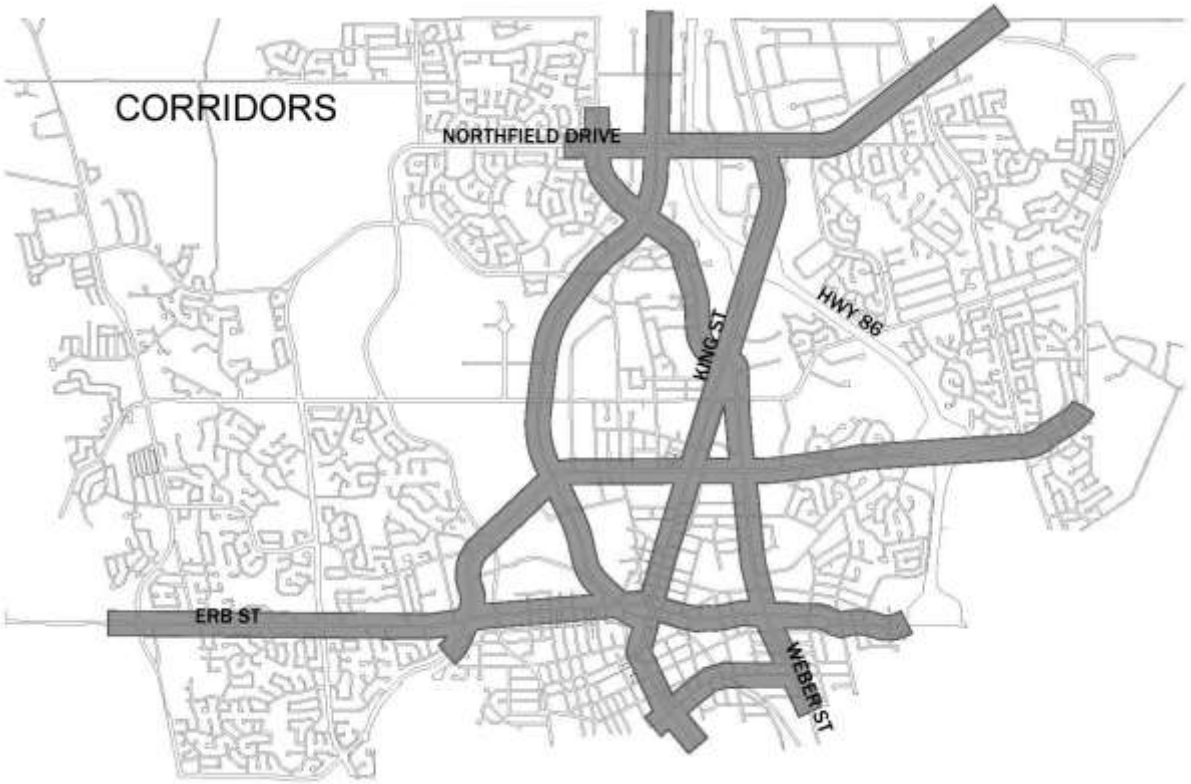
MAP 3: NODES AND CORRIDORS MAPS



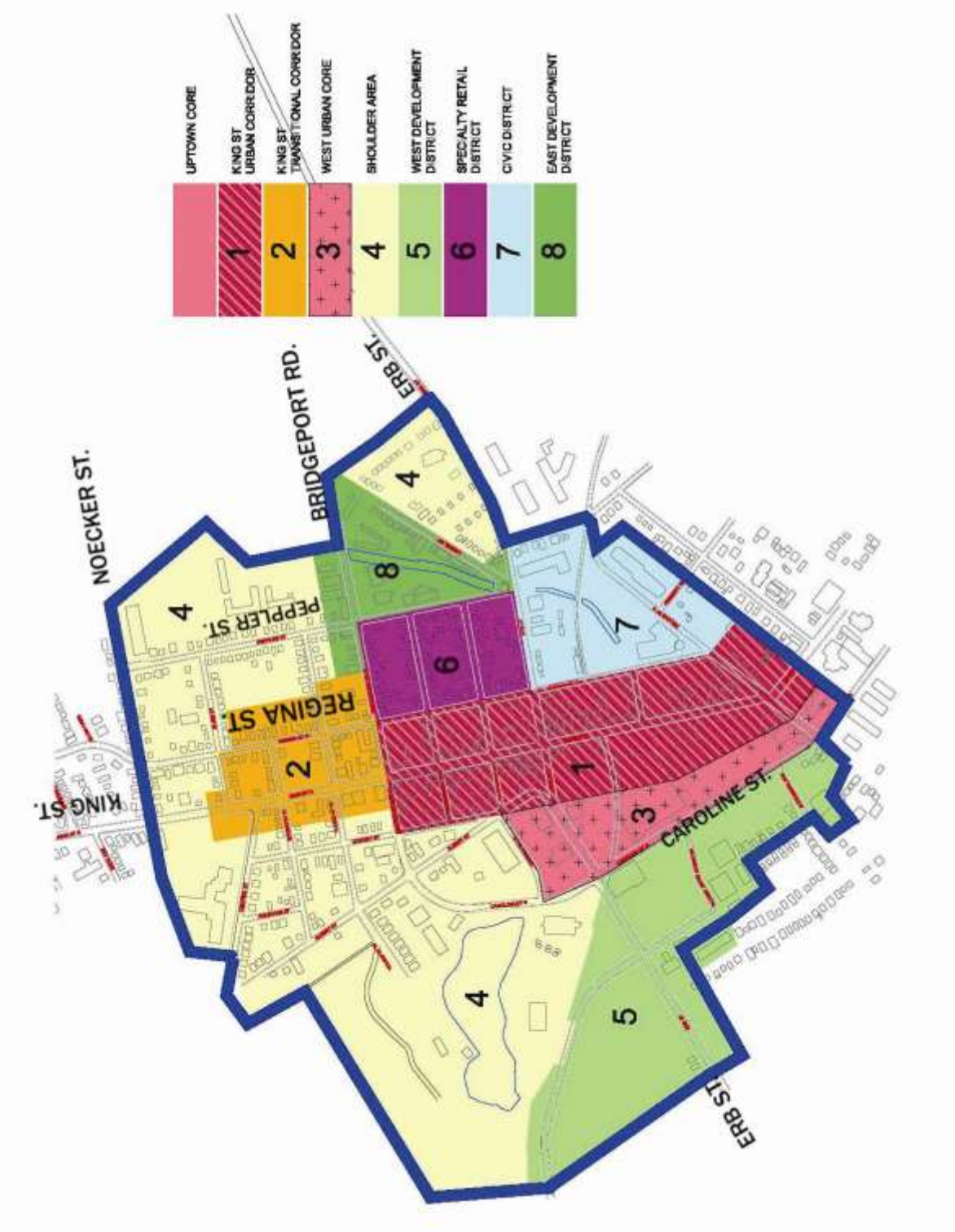
NODES



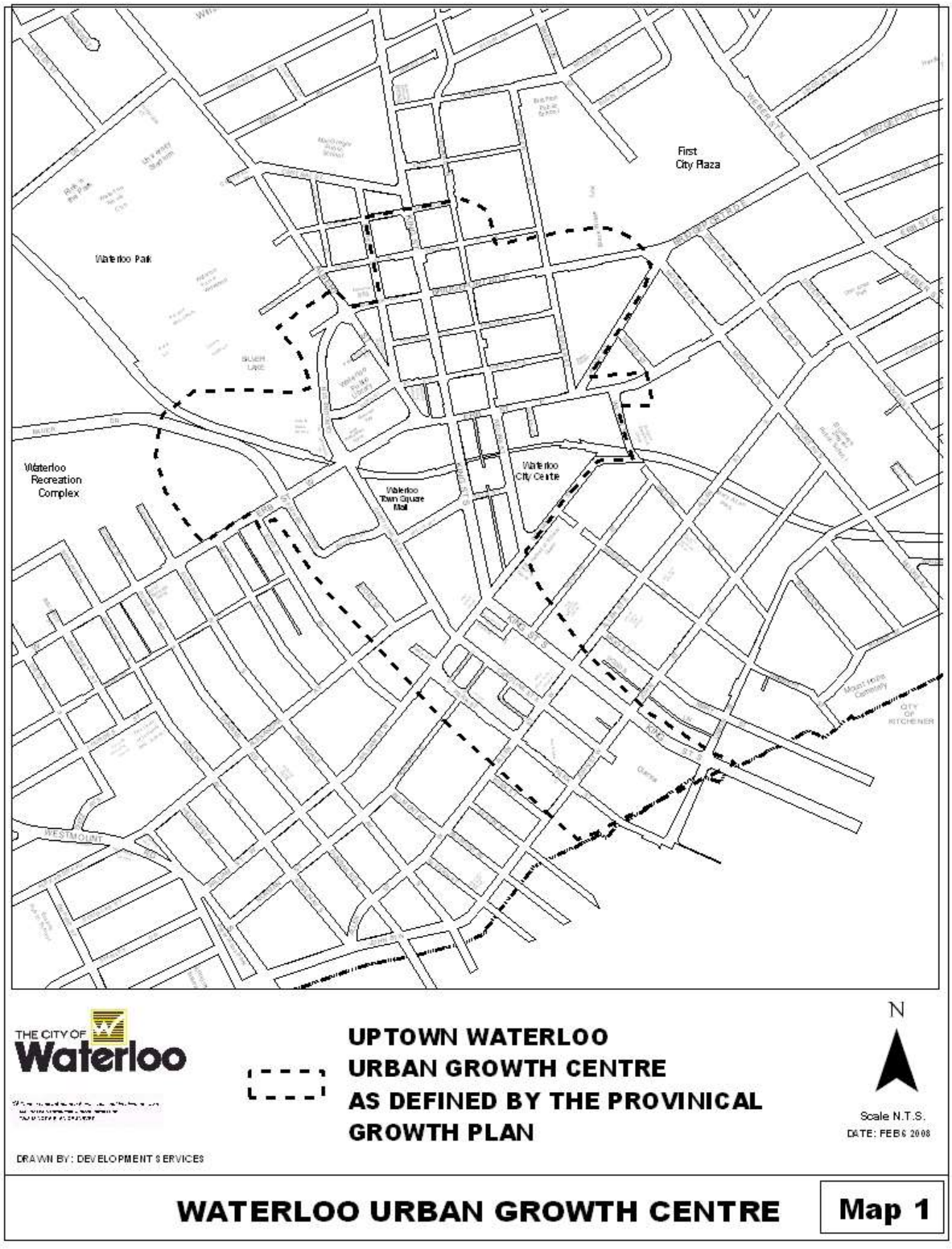
CORRIDORS



MAP 4: UPTOWN DISTRICT MAP



MAP 5: UPTOWN URBAN GROWTH CENTRE



E. GLOSSARY OF TERMS

Amenity area: An interior landscaped area which is designed and intended primarily for leisure and recreation of the building occupants.

Angular Plane: A line drawn from the edge of the front or rear property line to define the confines in which to build to protect a neighbour's right to sun.

Arbor: A light open latticework frame, often used as a shady green shelter.

Architectural Feature: Prominent or significant parts or elements of a building or structure such as cornices, canopies, parapets.

Art: The creation of beautiful or thought-provoking works, e.g. in painting, music or writing. The main purpose of art is to express or stimulate ideas or emotions – something otherwise intangible or invisible. Art is unique and original and can be functional, but not necessary. In contrast, design is the creation of something functional in a skillful or artistic way.

Articulation: The layout of pattern of building elements and architectural detail that gives a building interest and added richness. Typically includes walls, doors, roofs, windows, cornices, belt course and other architectural features.

Balcony: A small outside private space, usually attached to the main volume of a building, similar to but distinct from a terrace.

Bay: A principle compartment or division in the architectural arrangement of a building, typically marked by pilasters in the walls, or by any spatial repetition spatial units that separate it into corresponding proportions.

Bay Window: A window forming a recess in a room and projecting outwards from the wall typically in a rectangular form. Some are supported on corbels or on projecting moldings. An angled bay window protrudes over a wall and is triangular in plan.

Belt Course: A projecting horizontal on the exterior of a building marking the separation between floors or levels. Adapted from Design Review.

Belvedere: A building, architectural feature, or rooftop pavilion from which a vista can be enjoyed.

Buffer: A strip of land established to provide separation between land uses typically as an intensive landscaped area.

Build To Line: Minimum amount of building frontage located along the minimum or maximum building setback line to create an urban street enclosure.

Built Form: The location and massing of buildings along a street.

Building Height To Street Width Ratio: The relationship of building height to street corridor width measured either from building face to building face or from property line (the Right of Way).

Caliper: The measurement of the diameter of a tree trunk.

Canopy: A decorative hood above a nitche or entry. Also a covered area that extends from the wall of a building, protecting an enclosure.

Cantilever: A structural member or any other element projecting beyond its supporting wall or column with weights at one end to carry a proportionate weight on the projecting end.

Carbon Footprint: A measurement of the total set of greenhouse gas emissions caused directly and indirectly by an individual, organization, event or product (UK Carbon Trust, 2008) typically measured in units of tones of carbon dioxide equivalent.

Character: A place, including a street, streetscape or neighbourhood, with its own identity.

Colonnade: A covered walkway flanked by rows of columns.

Cornice: A molded and projecting horizontal feature that crowns a façade.

Compact City: A relatively high density, mixed use city (Burton, 2000).

Compact Urban Form: Provincial Places To Grow terminology used to describe a land use pattern that encourages efficient use of land, walkable neighbourhoods, mixed land uses, proximity to transit and reduced need for infrastructure. Compact urban form can include detached and semi-detached houses on small lots as well as townhouses and walk-up apartments, multi-storey commercial developments and apartments or offices above retail.

Compatibility: The size and character of a building element relative to other elements around it.

Complete Community: Provincial Places To Grow terminology used to describe communities that meet people's needs for daily living throughout an entire lifetime by providing convenient access to an appropriate mix of jobs, local services, a full range of housing, and community infrastructure including affordable housing, schools, recreation and open space for their residents. Convenient access to public transportation and options for safe, non-motorized travel is also provided.

Conserved: Means the identification, protection, use and/or management of cultural heritage and archaeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a conservation plan or heritage impact assessment.

Context: The setting of a site and its adjacent uses and structures and views.

Courtyard: A private garden space usually enclosed by dwelling on at least two sides.

CPTED (Crime Prevention Through Environmental Design): An approach to planning and development that reduces opportunities for crime.

Cutoff Lighting: A light fixture constructed in a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire (lamp), is project below the horizontal.

Daylight Corner: The space on a corner lot formed by the intersection of the street line to the point on the opposite street line.

Design Guidelines: A set of design recommendations intended to guide site development to achieve a desired level of prescribed quality.

Dormer: A structure projecting from a sloping roof, usually a vertical window that is placed in a small gable. Common types include: arched dormers; eyebrow dormer; hipped dormer; recessed dormer; shed dormer; wall dormer (dormer whose face is integral with the face of wall below); dormer cheek.

Drip Line: The drip line is that line representing the outermost limits of the tree branches. This information is required in instances where preservation is a priority. WSPG.

Double Hung Window: A window having two vertically sliding sashes, each closing in a different part of the window. Typically located on a wall return.

EIFS: Acronym for External Insulation and Finishing System.

Elevation: A drawing showing an external face of a building including all architectural features, materials and colour.

Equinox: Occurs twice a year (March 20/21, September 21/22) when the tilt of the earth's axis is inclined neither from nor to the sun, causing the sun to be directly over the earth's equator. During the equinox day and night are approximately equal.

Exterior Design: Ontario Planning Act term to describe including without limitation the character, scale, appearance and design features of buildings, and their sustainable design, but only to the extent that it is a matter of exterior design.

Façade: Refers to an individual exterior wall of a building and its treatment. WSPG. Typically the main exterior face of a building almost always containing an entrance.

Façade Setback: A setback of the upper floors (a terracing effect) from the body or base of the building resulting in an articulated building form.

False: Non-functional architectural element, such as false window.

Fenestration: The arrangement and design of windows and other openings on a building's façade (design review).

Floor Space Ratio (FSR): A density measurement calculating the total amount of gross building floor area divided by the total site area.

Focal Point: A prominent structure, feature or area of interest or activity.

Footcandle: The standard used to specify the measured intensity of light.

Frieze: An elevated horizontal band or panel that is usually located below the corner, and often decorative with sculpture in low relief. Typically a decorative band located below a crown molding.

Gable: The entire triangular end of a wall above the level of the eaves, the top of which conform to the slope of the roof which abuts against it.

Gateway: A gateway is a form defining an entrance from one domain to another. A gateway relates to the speed, mode, and reason for the traveler entering. A true gateway is a combination of elements that together, create an experience announcing passage into a new domain. Gateways may range in scale from a prominent city entrance, a prominent neighbourhood entrance or a major site entrance.

Habitable Room: Any room or space intended primarily for human occupancy, such as kitchens, living rooms, family rooms, bedrooms, dens and finished recreation rooms etc (SPRG).

Heritage Resource: Includes but not necessarily restricted to buildings, structures, artifacts, districts and archeological sites of architectural or historical significance (City of Waterloo Official Plan).

Human Scale: The proportional relationship of the physical environment to human dimensions.

Illuminance (lux): The luminous flux density at a surface. One lux is equal to one lumen per square metre. One footcandle is equal to one lumen per square foot. One footcandle = 10.76 lux.

Intensification: Development or redevelopment of a site in an established neighbourhood at higher density.

Interfenestration: The space between the windows in a façade.

Interlocking: Forms that are united firmly or joined closely by hooking or dovetailing.

Landmark: A building, structure or space which create distinct visual orientation points that provide a sense of location to the observer within the neighbourhood or district.

Legibility: The extent to which people can understand the layout of a place and find their way including cues from three dimensional forms and patterns in the landscape.

Lot: A parcel of land occupied or to be occupied by one main building, structure or use, with any accessory buildings or uses, and includes all yards, and open spaces required by this by-law. A lot may or may not be the lands shown as a lot on a registered Plan of Subdivision. WSPG.

Luminance: The physical measure of stimulus which produces the sensation of luminosity (brightness) in terms of the intensity of the light emitted in a given direction by unit area.

Massing: The overall form/composition (including bulk, size, shape, height) of a building above grade.

Master Plan: A conceptual design for long-term development or a planning document with supporting design guidelines prepared to guide the future development on a site or area.

Modulation: A stepping back or projecting forward of sections of a structure's façade with specified intervals or selections of building width and depth, as a means of breaking a building's apparent bulk.

Motif: A part or element repeated in an ornamental design.

Official Plan: A planning document adopted by City Council which contains a formal set of objectives, principles and policies, land use maps, concerning the nature, pattern, extent and scheduling of future growth and change within a municipality for a specified period.

Ontario Planning Act: Provincial planning legislation governing municipal development approvals processes and requirements.

Parapet: A low, protective or decorative wall or railing along the edge of a roof or balcony, terrace and cornices.

Pavilion: An open structure or small ornamental building/shelter used as a summer house or accessory of a larger building.

Pediment: A low-pitched triangular gable above a facade, or smaller version above the doorway or above a window or an ornamental accent found above entry way and windows.

Pergola: A garden structure that consists of an open wooden-framed roof, often latticed and supported by regularly spaced posts or columns covered by climbing plants.

Permeability: The variety of routes and views through a site, block, district or neighbourhood.

Pilaster: A partial pier or column, often with a based, shaft and capital, that is embedded into a flat wall and projects slightly.

Podium: The base of a tall building, typically 2-4 storeys in height.

Portal: An entrance, gate, or door to a building or courtyard, often decorated. Used to mark the transition from the public exterior to the private interior space.

Portico: A range of columns or arches in front of a building, often merged into the façade including a covered walkway in which one or more sides are open.

Private Realm: The parts of the City (whether publicly or privately owned) that are only available to a specific organization of people, where entry and use is regulated and monitored. Typically located on privately owned lands.

Projection: Any component, member or part, that juts out from a building.

Proportion: The ratio of one part to another, or its relationship to the whole. A comparison of parts as to its size, length, width and depth.

Public Realm: The parts of the City (whether publicly or privately owned) that are available, without charge, for everyone to use or see, including streets, squares and parks. Typically City owned lands, or publicly accessible lands secured through easements/rights of ways.

Return: The continuation of a molding, projection, cornice or wall, in a different direction usually at right angles.

Rhythm: Reference to the regular or harmonious recurrence of lines, shapes, forms or colours, incorporating the concept of repetition as a device to organize forms and spaces in architecture.

Sash: Any framework of a window; may be moveable or fixed.

Sash Bars: The strips of wood that separate the panes of glass in a window composed of several panes. Also called muntins.

Scale: A comparison of one set of dimensions to another set. Urban design is concerned with human scale, the relationship of buildings and urban space to the size of a human being. A human would be used as the measure for the built environment.

Screen façade: Non-structural facing assembly used to disguise the form or overall size of a building or to visually screen interior building functions.

Semi-Public Realm: The transition zone between the public zone and the private zone, typically extending from the sidewalk to the building entrance and accessible space.

Sense of Place: Characteristics that make a place special or unique, often fostering a sense of authentic human attachment and belonging.

Setback: The required distance from a street, property line or another structure, within which no building can be located typically established through Zoning By-law definitions and regulations.

Site Plan: A plan of the construction site showing the dimensions and contours of the lot and dimensions of the building. The site plan also shows the site features and functions including areas for landscaping, loading, refuse and snow storage.

Site Plan Control Area: "A municipal regulation that permits the City to review and approve site development and elevation plans for any form of development within the City of Waterloo", subject to the provisions of the Ontario Planning Act. Modified. WSPG.

Skyline: The artificial horizon that a city's built form creates or the outline of a group of buildings and structures against the sky.

Slab: Refers to a multi-floor building of long rectangular volume typically at least 40m in length.

Solstice: Occurs twice a year (June 21, December 22) when the sun is at its greatest distance from the celestial equator. During the summer solstice the North Pole is tilted towards the sun, and it is the longest day of the year; during the winter solstice the South Pole is tilted towards the sun, and it is the shortest day of the year (in the Northern Hemisphere).

Spandrel panel: A panel covering the spandrel area between the head of a window on one level and the sill of the window immediately above.

Step-back (upper or lower storey building stepback): Horizontal shifting of building mass towards the centre of the building.

Street Enclosure: An urban built form condition created by the even height and scale of buildings on both sides of the street resulting in a perceived scale of enclosure based on human dimensions. An urban street enclosure generally ranges between a 4:1 to 1:1 building height to street width ratio.

Street Wall: A line of buildings that frames the street.

Streetscape: The combination of physical elements that give character to the street including the roadway, street lights, street trees, street furnishings, sidewalks and building façade treatments.

Style: Architectural vocabulary and appearance.

Tall Building: Any building four storeys or greater in height including mid-rise buildings ranging between 4-11 storeys in height and high-rise building 12 storey or greater in height.

Tower: A tall, free-standing building with a small footprint organized with dwelling unit clusters about a central lobby and vertical access core.

Transit Oriented Design: Design for transit supportive and oriented streetscapes and public spaces.

Transportation Demand Management: Actions or programs designed to reduce or modify the demand for travel to make optimum use of existing and future transportation facilities and services such as ride-sharing, cycling, transit.

Universal Design: The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

Urban Design: A term used to describe a field of study focused on the design and analysis of the city and all its interrelated parts including, but not limited to, neighbourhoods, blocks, site development, exterior building design, spaces between buildings, circulation patterns, the built form.

Urban Heat Island (UHI) Effect: The temperature increase in urban centres or area(s) associated with the replacement of natural vegetation with pavements, buildings, and other structures necessary to accommodate growing populations (modified, Wong, 2005).

Verandah: Similar to a balcony but located on the ground level.

Vista: A line of vision, contained by buildings or landscaping, to a building or other feature which terminates the view.

Walkway: A street level exterior publicly accessible pedestrian way through the middle of a city block or parking area. Or walking area that connects the public sidewalk to the front door of a building.

Wall Dormer: Dormer feature whose face is integral or vertically integrated with the face of the wall below.

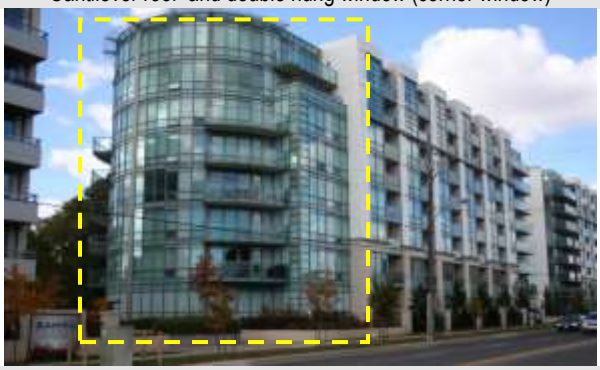
F. ILLUSTRATED ARCHITECTURAL GLOSSARY

Box Bay Window

Canopy or Hood

Cantilever roof and double hung window (corner window)

Cornice



Curtain wall system

Façade Modulation

Pediment

Pilaster (vertical columns or buttress)

Rhythm

Recessed Balconies

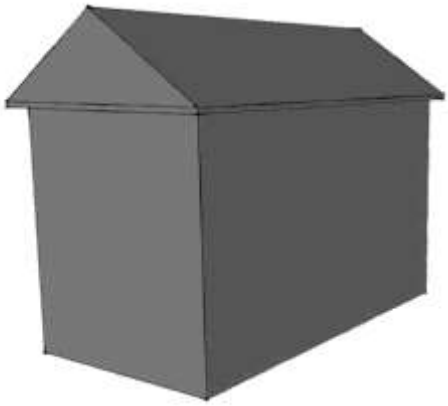
Screens or sun shades

Step-back (upper storey)

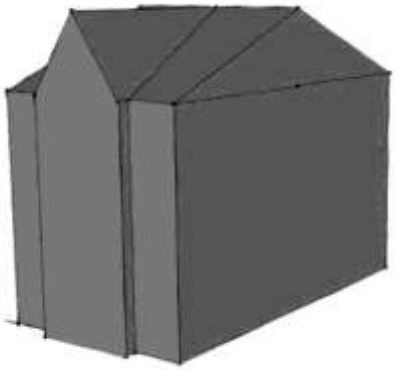
Tower

Vertical Bays

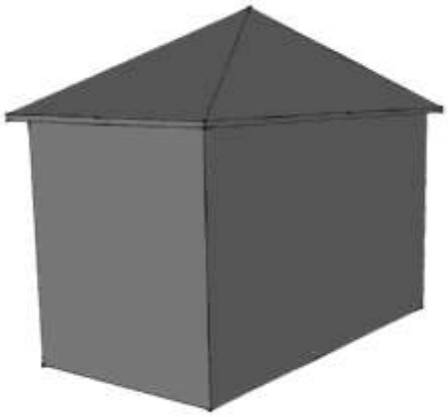
G. BASIC ROOF TYPES



Front Gabled



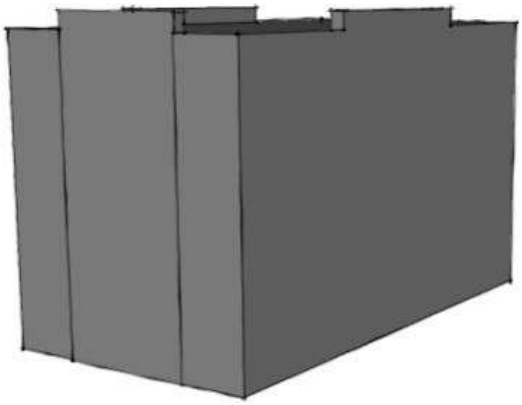
Cross Gable



Hipped

Pavilion Hipped

Mansard



Parapet

H. INTERESTING ROOFLINES

CANTILEVERED ROOF:

SCULPTED

FLAT ROOF:

FLAT ROOF:

STEPPED

STEPPED

MANSARD:

I. TALL BUILDING MASSING

Perimeter block building (corner building)

Tower

Podium Towers

Podium Point Tower

Modulated Slab

J. BUILDING ENTRANCE FEATURES

Proportionately Scaled Entrance Features:	
	
	
Articulated Entrances:	
	

Corner Entrances:	
	
	
	
Canopied Entrances:	
	

	
Recessed Entrances:	
	

Avoid:

- Fake/Faux Entrance or Entrance Features
- Hidden or fully recessed entrances with obstructed sight lines
- Un-proportionate features/entrances

	
Fake/faux door	*Hidden entrance*

K. AMENITY SPACES

L. URBAN DESIGN AWARDS CRITERIA

The City of Waterloo supports a high standard of urban design through its Urban Design policies and City urban design guidelines (Urban Design Manual). With these initiatives, the City has (re)instituted its Urban Design Awards (UDA) program starting in 2010 to recognize design excellence and industry leaders on a bi-annual basis.

The purpose of the City of Waterloo Urban Design Awards is to recognize design excellence within the City based on nomination and judging criteria.

Eligibility:

- Nominations may be submitted by all members including property owners, consultants, industry representatives, staff and the general public.
- Eligible projects must have received site plan approval and be *constructed* prior to the awards submission cut off date subject to a judging committee site visit.

Urban Design Awards:

- Award of Excellence: presented to projects that demonstrate overall design excellence for all awards criteria related to high standard of urban design, context and sense of place, connectivity and interaction, creativity and innovation and sustainable design.
- Award of Merit: presented to projects that demonstrate design excellence in specific evaluation criteria, feature or type of project also demonstrating a high standard of project design.
- Award of Distinction: presented to remaining project finalists that were evaluated by the Judging Committee.

Notification Process:

- Nomination forms provided on City's website.
- Urban Design Awards ceremony held on a regular basis.
- City will contact site plan applicants prior to award submission deadline.
- City will provide advertisement in the Waterloo Chronicle before submission deadline.
- Awards Presentation: Council televised meeting recommended.

Judging Committee Process:

- The judging process is a two step process involving a staff selection subcommittee to select the urban design award finalists, and, the formal judging committee to evaluate the final projects.
- The Urban Design Awards Subcommittee (the site plan review committee members) is also responsible to prepare and organize the urban design awards program. They will evaluate final projects based on the established evaluation criteria used by the Urban Design Awards Judging Committee. The judging committee will be determined as part of the nomination process.

Evaluation Criteria:

- Evaluation criteria involves weighting rankings based on City of Waterloo Urban Design Objectives and supporting design guidelines:

M. SUSTAINABLE DESIGN CRITERIA

The City of Waterloo supports sustainable design and development practices. This site plan process is one part of a lifecycle which includes site engineering, green building design, landscape design and public realm improvements. Together, these practices represent significant opportunity to integrate sustainable design features some with limited effort, and other features, require greater upfront cost.

Over time, it is anticipated that the upfront costs will be recovered through operating cost savings and higher return value. Applicants should consider, and evaluate, the opportunity to incorporate sustainable design elements which may be eligible to a number of green building design programs such as LEED certification or Green Building Design which are based on credits. The City of Waterloo promotes sustainable design, and supports any initiatives which help reduces the carbon footprint, promotes longer term energy savings and promotes a higher quality of life/liveability.

A summary of select sustainable design features are identified below with corresponding LEED points for information purposes and site planning opportunities:

Reference: *Refer to The Community Energy Investment Strategy (2018), and the Net Zero Energy Feasibility Study (2019) for best management practices and recommendations.*
Reference: *City of Waterloo Stormwater Management Plan (2019).*
Guideline Tip: *Align with best management practices identified through Risk Mitigation Plans provided by the Region of Waterloo Source Water Protection staff.*

Sustainable Design Opportunities: Site Plan Process

Sustainable Design Element/Features	Examples	Cost	Cost Recovery Potential	Potential LEED Credit	Site Plan Eligible	Site Plan Requirement
Public Realm Design						
Alternative transportation	bike parking, transit facilities	Low/medium	Reduced carbon footprint	✓	✓	✓
boulevard planting		Low	NA		✓	✓
Water efficient landscaping	native plant materials (SPG 10)	None	High (reduced maintenance)	✓	✓	✓
Light pollution reduction	Solar street lighting		High			
General Site Design						
Barrier Free Accessibility		Low	NA		✓	✓
Alternative transportation	Outdoor bike storage, indoor bike storage.		Reduced carbon footprint		✓	✓
Light pollution reduction	Solar lighting, full cut off luminaries, dark sky compliant lamps, LED luminaires		High	✓	✓	✓ (full cut off lighting)
Landscape Design						
bioswales		Low	NA	✓	✓	Encouraged

Thermal and Moisture protection	Porus paving	Varies	NA	✓	✓	Encouraged
Sustainable sites	Reduced heat island effect	None	NA	✓	✓	✓
quality control measures		Varies			✓	✓
Water efficient landscaping	Green roofs, grey water treatment systems, native plants and seeds,turf and grasses (no mow)		Low-medium		✓	Encouraged
quantity control measures		Varies			✓	✓
water use reduction	Rainwater harvesting systems, rainwater catchment systems,water cistern tanks,	Medium	Low-medium	✓	✓	Encouraged
Building Design						
Thermal and moisture protection	Curtain wall and glazed assemblies, glazing, photovoltaic glazing		High		✓	Encouraged
energy efficient fixtures		medium	High	✓		
green roofs		Medium		✓	✓	Encouraged
solar orientation		Low	High		✓	Encouraged
Building Construction						
recycled materials		Low-medium		✓		
Local materials		Medium or not always available		✓		

LEED SUMMARY

Certification:	Level	Points
	Certified	26-32 points
	Silver	33-38 points
	Gold	39-51 points
	Platinum	52 or more
Credit Categories	Categories	
	• Sustainable Sites	
	• Water Efficiency	
	• Energy and Atmosphere	
	• Materials and Resources	
	• Indoor Environmental Quality	
	• Innovation and Design Process	

N. BARRIER FREE ACCESSIBILITY GUIDELINES

- For all barrier free standards, please refer to the City of Waterloo Accessibility Standards (2016) as amended.
- Review and comply with Ontario Building Code requirements and Built Form Legislation.

O. PROTECTIVE MEASURES FOR TREES DURING CONSTRUCTION

PROTECTIVE MEASURES FOR TREES DURING CONSTRUCTION

NO CONSTRUCTION OR EXCAVATION IS TO OCCUR ON LOTS THAT REQUIRE TREE PRESERVATION UNTIL PROPER APPROVALS HAVE BEEN GIVEN BY A CITY ARBORIST

1. When trees are apt to be damaged, they should be protected with fencing. These barriers protect the roots, trunk, and branches during development, as well as the understory and ground covers (Figure 1). Small lot by lot tree savings would require snow fencing with metal posts (Drawing 1 – Specifications for Snow Fencing). Long term development construction and construction adjacent to Environmental Special Policy Areas would require special paige wire fencing (Drawing 2 – Specifications for Paige Wire Fencing). The type of fencing used is determined during the site visit by the Inspecting City Arborist. Fences should be located at a minimum of 1.5 times the crown radius of the tree from the dripline (Figure 2), 360° around the perimeter of individual or clustered trees.

Figure 1: Proper protective fencing installation.

2. Wherever possible, avoid cutting surface roots. In excavation, if root cuts are necessary, it should be done quickly, making smooth, flush cuts supervised by an Arborist. Then the roots should be backfilled and watered before the roots have a chance to dry out. Where roots have to be removed, there may be a subsequent decline within the tree branches. Branches should be removed only if dieback occurs.

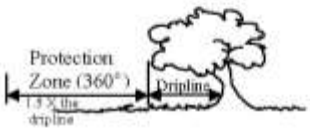


Figure 2: Diagram showing proper measurement for measuring protective zone

3. Do not deposit, place store, or maintain any stone, brick, sand concrete, soil, or other materials or equipment which may impede the free passage of water, air, or nutrients to the roots of the tree. Such actions could lead to halting of operations and a fine of up to $10,000.

4. Heavy equipment should not be allowed to compact the soil over the root zone of existing trees. To avoid damage to trees that are to be protected, access routes should be established away from protected areas.

5. Sanitation pruning, root feeding, barrier installation, watering during dry season, and other tree protective measures should be carried out prior to, and /or during construction for optimum results.

6. New sidewalks, paving or asphalting must allow breathing space for tee roots. The following should be used as a guideline: For trees up to 10cm in trunk caliper to be encased in asphalt or paving, 2.5 m^2 of porous area surrounding the tree is needed to allow breathing space for tree roots (Figure 3). For each additional 5 centimeters, 1 more metre square is required.

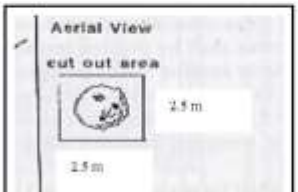


Figure 3: Aerial view of porous area needed to surround an encased tree

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***note: small lot by lot tree savings now requires paige wire fencing rather than snow fencing with metal posts.**

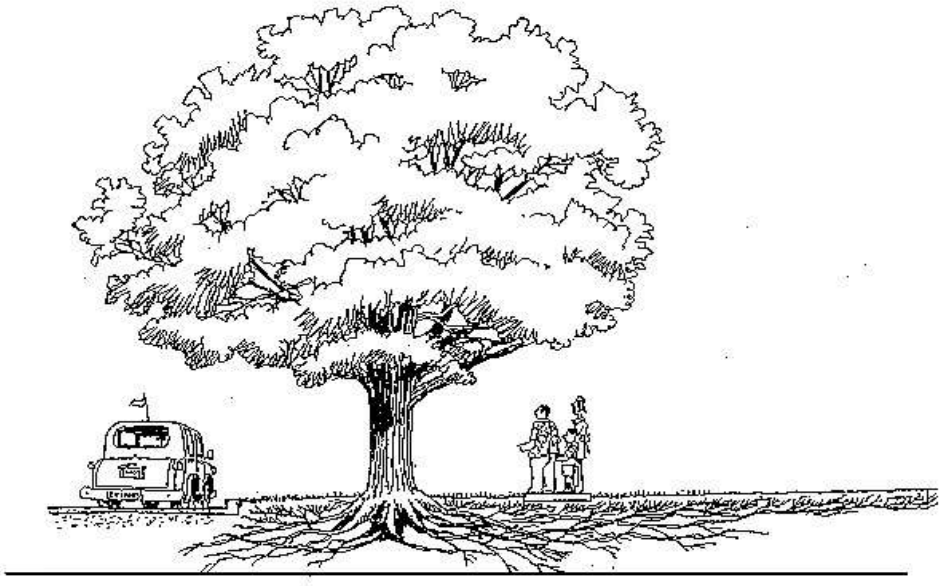
7. It is best not to disturb original grades around trees and in areas of protective fencing. Also, road grades should match topography at the curb lines to maximize tree retention in boulevards and front yards.

8. Take measures to preserve the understory and ground covers.

Other Damage Prevention Techniques

Healthy strong trees will reduce homeowner costs for treatments or removals and reduce the risk of property damage. The following is a list of Damage Prevention techniques that can be employed during construction to reduce the impact of grade changes and construction practices on the health of trees (ISA, 1999)

1. Bridging over the root system instead of conventional walkways.
2. Cantilevers or pilings can substitute excavated foundations.
3. Protective fencing to protect root systems i.e. make sure fencing is as far away from the tree as possible (Note: even foot traffic from construction workers can compact the soil).
4. Spread thick layer of mulch (6-12" deep) for weight dispersal. Can also place large plywood sheets over the mulch to enhance the effects of weight dispersal.
5. Carefully remove mulch when completed and do not allow the mulch to remain on site for extended periods of time, as it will suffocate vegetation.
6. It's better to tunnel under a tree' root system than to cut through it.
7. "*Vertical Mulching:*" Aeration of compacted soil by drilling holes in the soil and fill with peat moss, sand, vermiculite, pea gravel etc.
8. When the grade must be raised, trees should be thoroughly aerated before increasing the grade. The original soil surface should be loosened to increase soil to soil contact with the fill.



How Roots Grow

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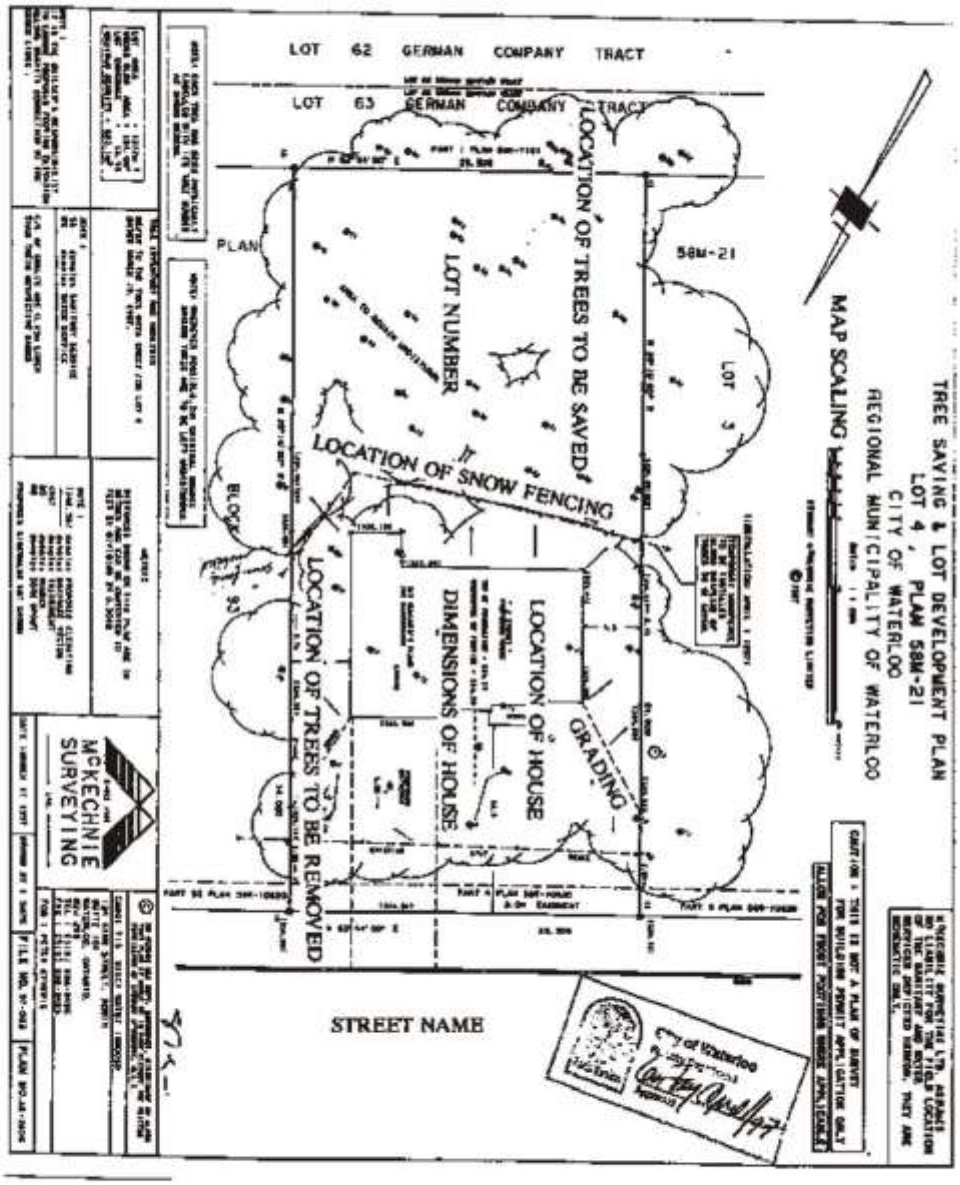

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Tree Saving Design Submissions (Phase 1)

1 General Information

- North Arrow and Legend
- Title Block-include the scale (horizontal & vertical), date, and a place for the City of Waterloo's crest & Forester's stamp
- Boundary Lines and Study Area Boundary
- Lot Locations & ID Numbers
- Identify Blocks of Present Land Use Surrounding Construction Area
- Proposed Street Pattern
- Location & Extent of Woodland
-

2 As Phase 1 of the Plan, submit:

a)(a Detailed Site Plan of the proposal Plans will be checked and approved.)

- Dimensions & Bearings of Land
- Location of Setbacks
- Existing & Proposed Lot Grades (cross-section)
- Location of Paving, Driveways & Walkways
- Utility & Service Connections
- Cut & Fill Areas
- Locations of Proposed Topsoil Stockpile
- Indication of Surface Drainage
- Location of Trees for Preservation & Removal altering

b) Tree Inventory & Analysis

i) (Site Characteristics)

- Woodlot/Tree Inventory
- General Topography
- Contours (0.3 metre intervals)
- Soils (type, texture, properties, extent)
- Groundwater Location and Drainage (stream, surface water pond, wet areas)
- Existing Land Use
- **ii)** Environmental Assessment on wooded (and Wetland) areas

c) Summary Report of impacts, construction details and erosion control, & recommendations

Plan of Subdivision Approval (proceeding Tree Saving Plan approval)

Tree Saving Design Submissions (Phase 2)

1. General Information

- See "General Information" from Tree Saving Design Submissions (Phase 1)

2. As Phase 2 of the Plan, submit:

- Street Name
- Style of House
- Location of Building Envelope
- Setbacks
- Show all existing trees, and indicate which are to be saved and which are to be removed
- Location of Protective Fencing

Building Lot Approval

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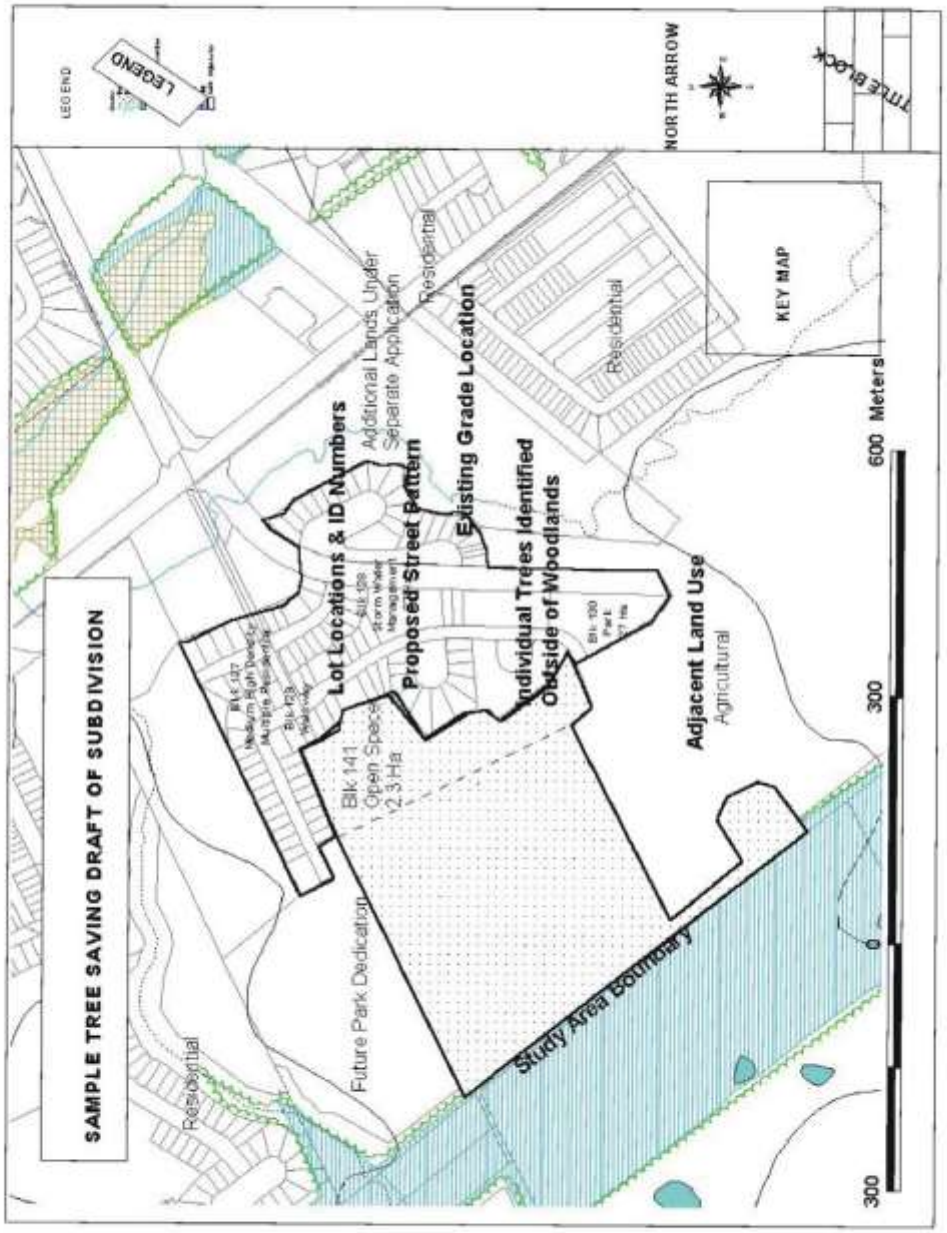

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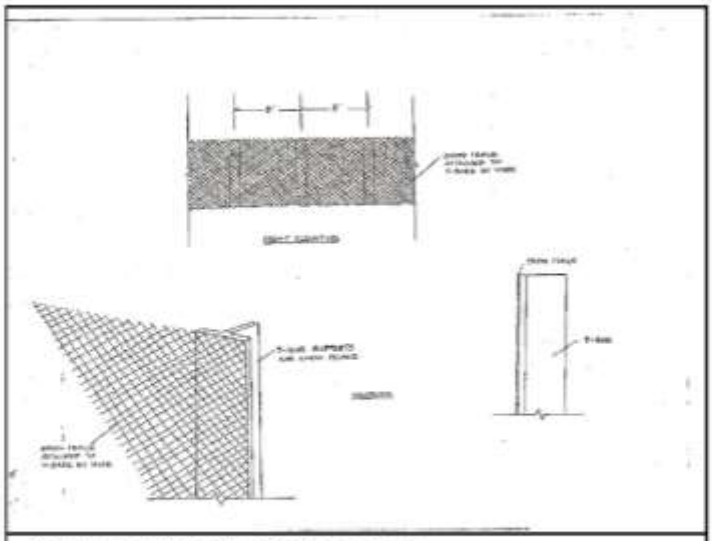
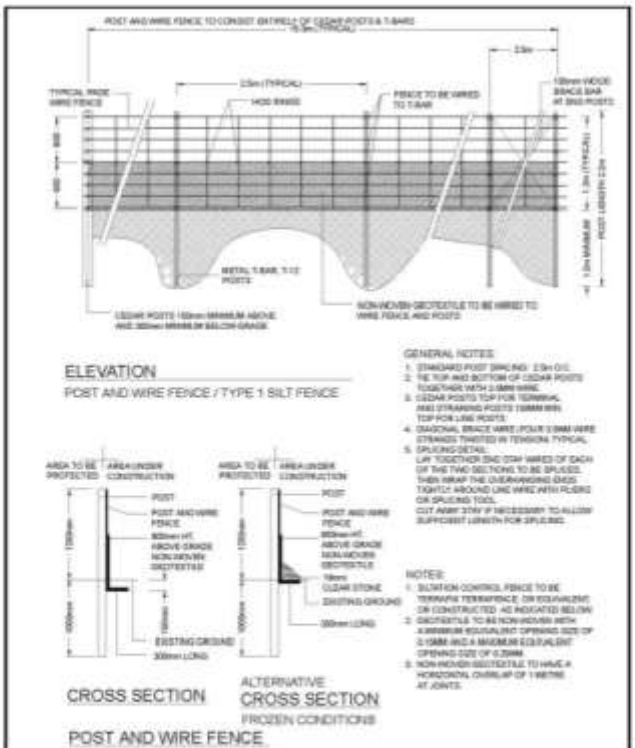


Specifications for tree Protective Snow Fencing



Specifications for Paige Wire Fence

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***Note: City protective fencing is the paige wire fence detail, not the protective snow fencing.**