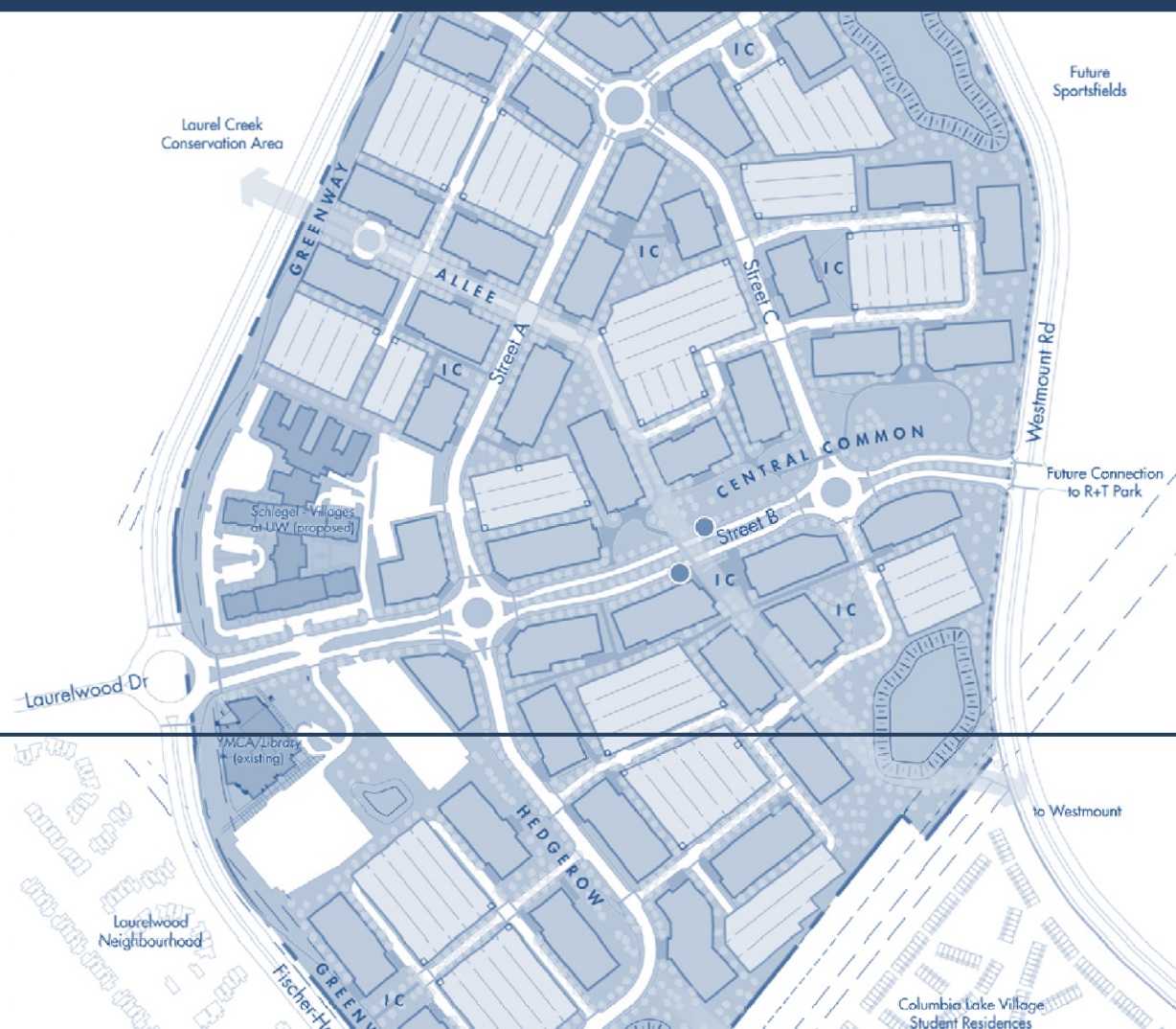




University of Waterloo Northwest Campus

Development Design Guidelines



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1.0 Introduction

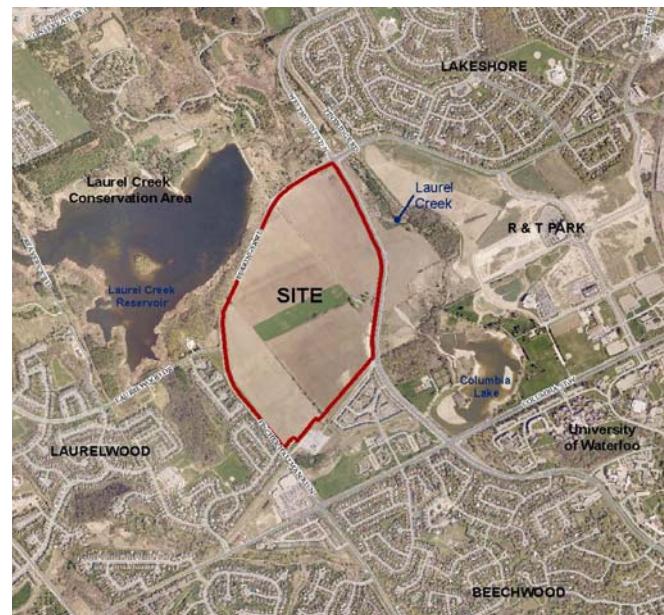
1.1 Background

The University of Waterloo (UW) has prepared these Development Design Guidelines to guide the long-term design and development of the University of Waterloo Northwest Campus. The Northwest Campus is an approximately 73.5 hectares (181.5 acres) area of land bounded by Columbia Street West to the south, Fischer-Hallman Road and Bearinger Road to the west/north, and Westmount Road to the east. The Northwest Campus is intended to develop into a multi-use employment node within the City of Waterloo that houses a broad range of uses and activities, which could include space for institutes or academic programs, university-related housing, park and open space, and university or private sector research facilities similar to the David Johnston Research and Technology Park (R&T Park) to the east.

These Development Design Guidelines build on previous planning and design work undertaken for the Northwest Campus. The UW Campus Master Plan was updated in 2009 to include a planning framework for the Northwest Campus. Subsequently, the City adopted the Northwest Campus District Plan in 2009 to provide further specific direction, beyond that provided by the Official Plan, for the development of the Northwest Campus. A Draft Plan of Subdivision for the Northwest Campus was approved in 2010 by the Region and divided the area into development blocks. The Guidelines are intended to provide a finer level of development design direction from the higher level direction of the above noted policy plans.

1.2 Development Context

The Northwest Campus is approximately 73.5 hectares (181.5 acres) in size and has a rolling topography, generally sloping towards the east and south. The former homestead was situated near the intersection of Westmount Road and the future principal east-west route through the NW Campus ("Street B" to be named at a later date), with existing trees as the only remaining visible elements. Other than two existing hedgerows and some individual Butternut trees, there are few natural features within the Northwest Campus that must be considered in its development.





The Northwest Campus is situated in an established portion of Waterloo, surrounded by existing residential uses to west and the south, by the UW North Campus to the east (including the UW Environmental Reserve and the David Johnston R&T Park), and the Laurel Creek Conservation Area to the north. The hydro corridor running between Fischer-Hallman Road and Westmount Road through the area divides the Northwest Campus into two areas. The southern area contains the existing Columbia Lake Village residences and community amenities, while the northern area is undeveloped, with the exception of the existing Stork Family YMCA/John Harper Library situated at the southeast corner of Fischer-Hallman Road and Street B. Only the area north of the hydro corridor is the subject of these Development Design Guidelines.

The Northwest Campus is designated “Major Institutional” in the current City of Waterloo Official Plan. This designation is intended to accommodate “*public buildings, universities and colleges, social and cultural facilities, hospitals, and other institutional uses of a major nature*”. Complementary accessory uses to the principal institutional use, such as convenience commercial uses, residences, and park and recreational facilities, are also permitted. Furthermore, manufacturing related to a research and development facility associated with the University of Waterloo is specifically permitted within the Northwest Campus.

The Northwest Campus is designated “Employment” in the new Waterloo Official Plan (Council-adopted April 2012) under an “Academic” sub-category. The “Academic” sub-category recognizes the main campuses of post-secondary institutions as well as other areas such as the R&T Park and the Northwest Campus. The designation principally permits academic and administrative facilities for the institution; research facilities operated by the institution; research institutes; residences associated with the institution; and other uses consistent with the designation’s intent. For the Northwest Campus, offices; research and development facilities associated with UW; and manufacturing related to such facilities facility are additional permitted uses. The new Official Plan permits heights up to 81 metres (generally 24 storeys) on the Northwest Campus north of the hydro corridor.

The Northwest Campus will be an urban neighbourhood of academic, institutional and private sector research-oriented activity, connected to the University campus and the city. In addition to the existing YMCA/library, this will include University buildings and technology intensive companies undertaking applied research and innovative product development in cooperation with the University. The streets will connect into the broader city grid and Street B, the main street, will provide connections to the Laurelwood neighbourhood to the west, and in the long term transit and

pedestrian connection to the R&T Park. Attractively designed buildings will frame the streets as well as internal courtyards for use by employees and students. These courtyards will be part of the open space system of public parks along Street B, stormwater management ponds and trails.

1.3 Purpose and Application

The purpose of the Guidelines is to provide specific guidance to developments within the Northwest Campus through the planning approval process. They are intended to provide guidance to developers and builders within the Northwest Campus when designing, developing and constructing sites within the area to ensure that they satisfy the overall objectives of the University of Waterloo. Additionally, they are to be used in conjunction with City of Waterloo design guidelines and standards, as relevant and appropriate, by the City through its review and evaluation of planning applications, including site plans and zoning applications.

The Development Design Guidelines are meant to be flexible in nature. They are intended to be applied and interpreted on a case-by-case basis, provided development proposals are in keeping with the spirit of overall design guidance of the document. They are meant to complement other design guidance provided by other documents, including the University of Waterloo Campus Master Plan as well as the Official Plan, Zoning By-law, Site Plan Guidelines, Sign By-law and Entrance Feature Policy, accessibility guidelines, and CPTED guidelines, among other documents.

1.4 Outline

The Development Design Guidelines for the Northwest Campus are comprised of five principal components. Section 2.0 summarizes the design principles that form the foundation for the preparation of the Guidelines, which are taken from the UW Campus Master Plan (2009). Section 3.0 identifies the structuring elements that organize the future development of the Northwest Campus, as established by the Campus Master Plan, District Plan, and Draft Plan of Subdivision. Section 4.0 outlines the design guidelines that provide the guidance to future development within the Northwest Campus, comprised of elements such as streets and movement, open space, site design, parking, building design, landscaping, and sustainability. Section 5.0 illustrates a conceptual demonstration plan of the development of the Northwest Campus at full build-out, providing an illustration of what the Northwest Campus could look like and how it could function based on an application of the Guidelines. Section 6.0 outlines the strategy for moving forward with the implementation of the overall vision for the Northwest Campus, including the planning approval process, including zoning, draft plan of subdivision, block plan, and site plan considerations.

2.0 Design Principles

Seven development principles were identified early in the 2009 Campus Master Plan Update to guide the creation of development options for the Northwest Campus. Forming the foundation of the Development Design Guidelines, these principles seek to:

1. Work with existing topography

Site grading should be minimized on the Northwest Campus to preserve the rolling hills that provide character to future development and create views to and from the site.

2. Preserve existing vegetation of significant character

Existing hedgerows on the site should be protected from future development in the Northwest Campus to provide future landscaping and open space opportunities.

3. Establish linkages to existing and proposed assets

The Northwest Campus should enhance the linkages between surrounding uses, both natural and built.

4. Plan for flexibility in use

A variety of uses should be accommodated in the Northwest Campus while ensuring appropriate infrastructure, movement patterns and open space.

5. Design parking to be shared and screened from the Street

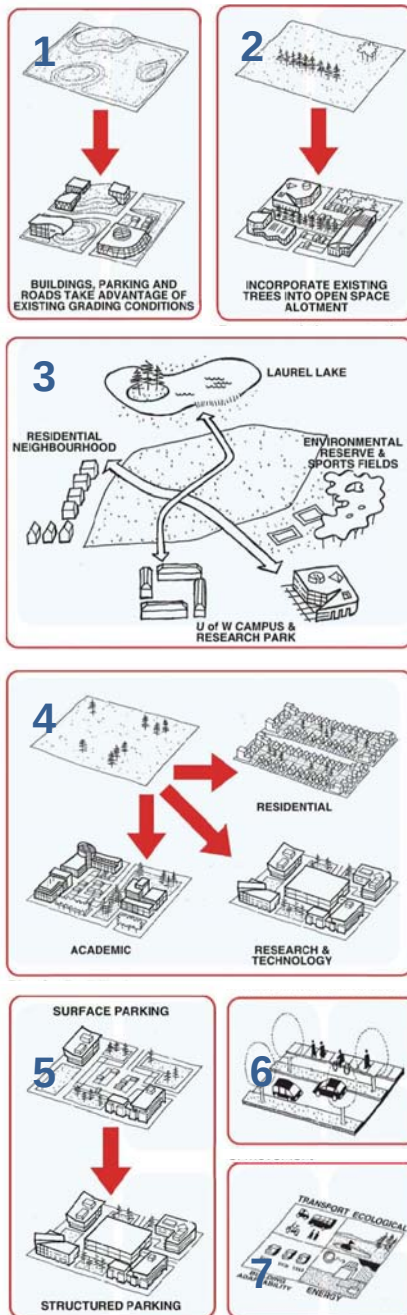
Parking should be optimized in the Northwest Campus through appropriate parking demands, opportunities for shared or structured parking, and design that minimize the visual impact of large parking lots.

6. Encourage various modes of movement

Movement within the Northwest Campus should provide for alternatives to auto travel through measures such as extensions to surrounding trail networks and maximizing transit capabilities, particularly supporting connectivity to Central Transit Corridor and to the North and South Campuses.

7. Design for sustainability

Development within the Northwest Campus should implement principles of sustainability to ensure its long-term success and feasibility.



3.0 Campus Structure Plan

3.1 Background

The UW Campus Master Plan Update and the Northwest Campus District Plan established the high level structure of the Northwest Campus. Building on the direction of these documents, the Draft Plan of Subdivision approved by the Region of Waterloo in 2010 refined this structure for the Northwest Campus by specifically detailing the principal streets, development blocks, and public spaces that provide the “skeleton” to which future development plans will build from. These three key structuring elements (streets, blocks and spaces) of the Northwest Campus are described below.



3.2 Streets

A central east-west public street (Street B) extending from the Laurelwood Drive and Fischer-Hallman Road intersection will function as the “main street” of the campus. It is oriented to efficiently move people to and through the Northwest Campus, linking the adjacent neighbourhoods with the University campuses. It will have a median and its design will be similar to that of Hagey Boulevard in the R&T Park. Multi-use trails will be provided along both sides to accommodate pedestrians and cyclists, and it is anticipated that this street will be a transit route.

Two secondary “university” streets (Streets A and C) provide north-south connectivity through the Northwest Campus. These streets will be designed and constructed in a similar fashion to the east-west public street, although without the central median. Roundabouts at the intersection of principal streets will be utilized throughout the Northwest Campus as the preferred means of intersection traffic control.

Internal access streets will provide access to buildings and parking areas on the Northwest Campus, accessed from the public street and “university” streets. Although constructed and operated as private streets, they will be designed to public street standards (a similar approach taken in the R&T Park).

3.3 Blocks

The network of principal streets divides the Northwest Campus into six sub-areas that allow for an efficient pattern of development phasing and further subdivision of the Northwest Campus. These blocks are organized to enable buildings within the Northwest Campus to be oriented to the street to frame the street edges and to create an attractive public realm. Parking will be located behind the buildings and be centralized within each block.

These larger development blocks provide flexibility for the University in the future, particularly given the Northwest Campus is expected to build out over a 40 year timeframe and specific uses or individual development parcels are not known at this time. Depending on the needs of particular users and as specific building projects are developed, blocks may be further subdivided or they may remain as larger blocks. This allows for the accommodation of a range of different development options based on land use, building size, and parcel size considerations.

3.4 Spaces

The street and block pattern is organized to capitalize on a series of open spaces within the Northwest Campus. There are two types of “spaces” that comprise this open space network.

The first are those spaces that are situated around existing features within the Northwest Campus. A central common developed along two blocks of land along Street B in the vicinity of the former farmstead will incorporate the existing hedgerow and Butternut trees in the area. Additionally, it can accommodate sitting areas, walking trails and a transit stop and will provide a commanding view of the Laurel Creek corridor and the R&T Park to the east. Also, the existing hedgerow located along Street A will be maintained and incorporated as part of an expanded Right-of-Way for Street A to provide a strong green edge to the street.

The second are those spaces that are “constructed” on the Northwest Campus. The stormwater management pond locations provide opportunities for additional natural landscaping along bounding street edges of the Northwest Campus. The existing Union Gas easement along Fischer-Hallman Road and Bearinger Road will incorporate a pedestrian-oriented Greenway and will be naturalized to provide a functional green edge to the Northwest Campus. Additionally, courtyards internal to the blocks throughout the Northwest Campus incorporate individual stands of quality trees and provide further casual recreation opportunities.



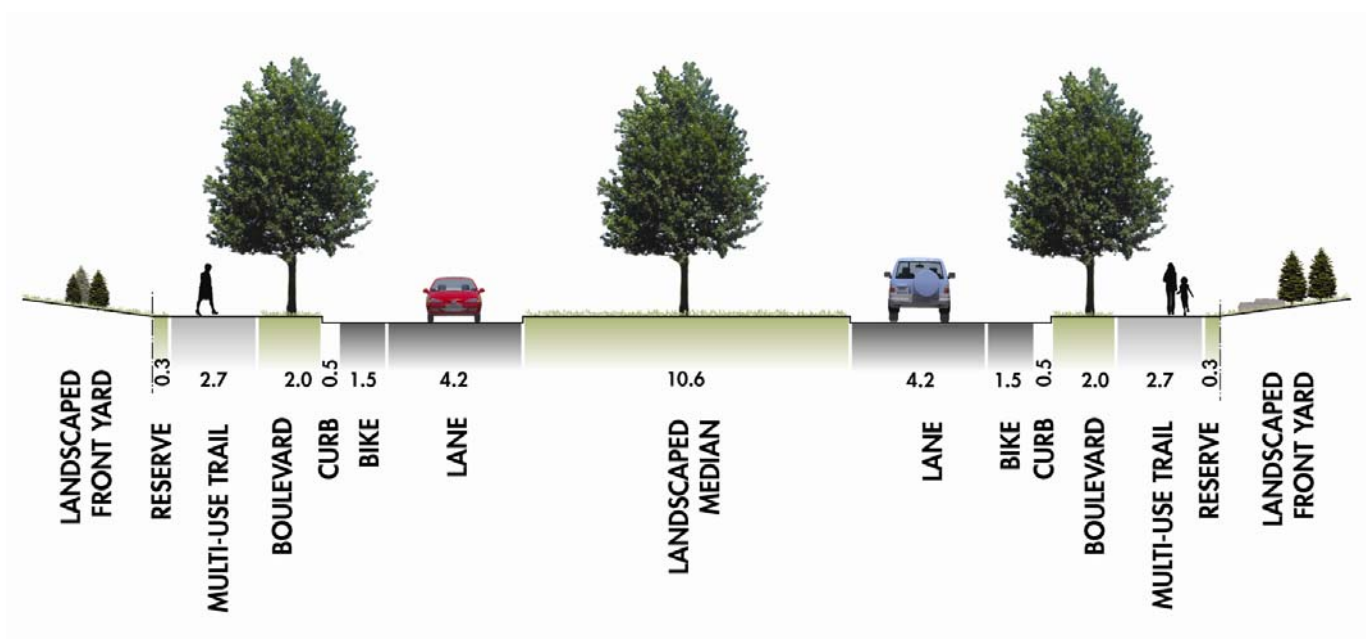
4.0 Development Guidelines

4.1 Streets and Movement

The design for new developments should consider the following guidelines in respect to streets and movement (driving, cycling, and walking):

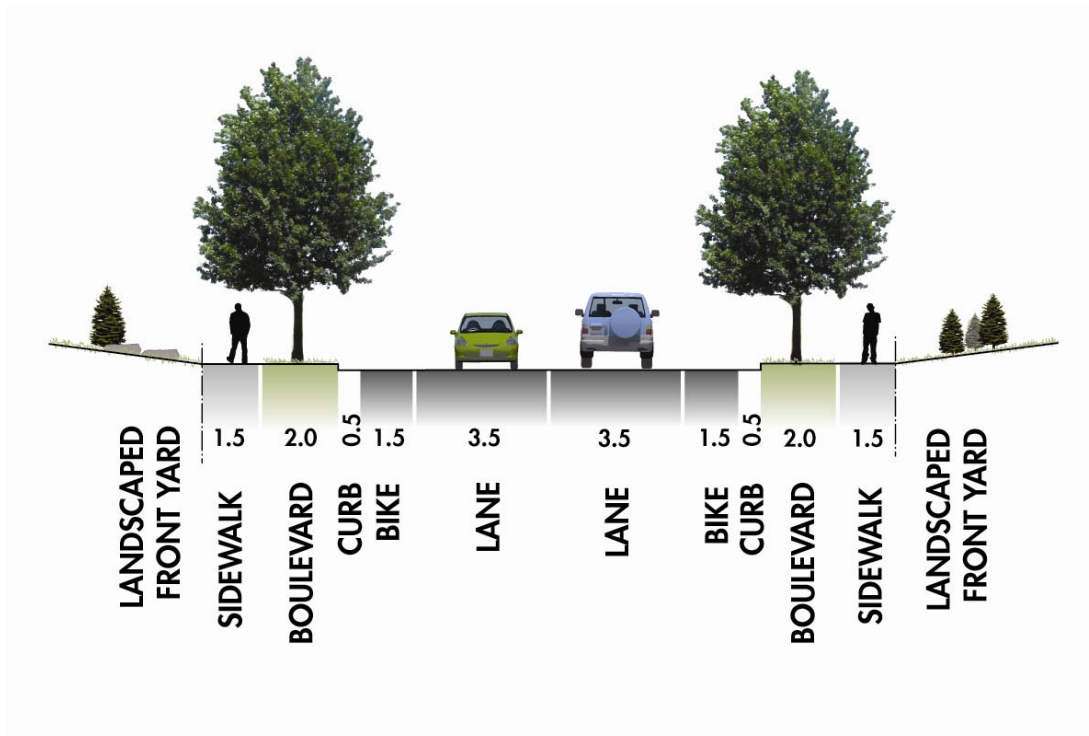
a) Street B

- i) Street B will be a public street with a right-of-way width of 33.0 metres.
- ii) The approved Street B right-of-way standard includes:
 - o A landscaped central median;
 - o Two travel lanes in both directions;
 - o Dedicated bicycle lanes in both directions;
 - o Landscaped curb-side boulevards on both sides; and
 - o A wide multi-use trail on both sides.
- iii) Situate vehicular accesses to buildings along Street B from secondary streets (Streets A and C and internal streets), rather than direct access from the Street B frontage, where possible.
- iv) Incorporate a transit stop in concert with Grand River Transit on both sides of the Street B, preferably mid-block situated between Street A and Street C.



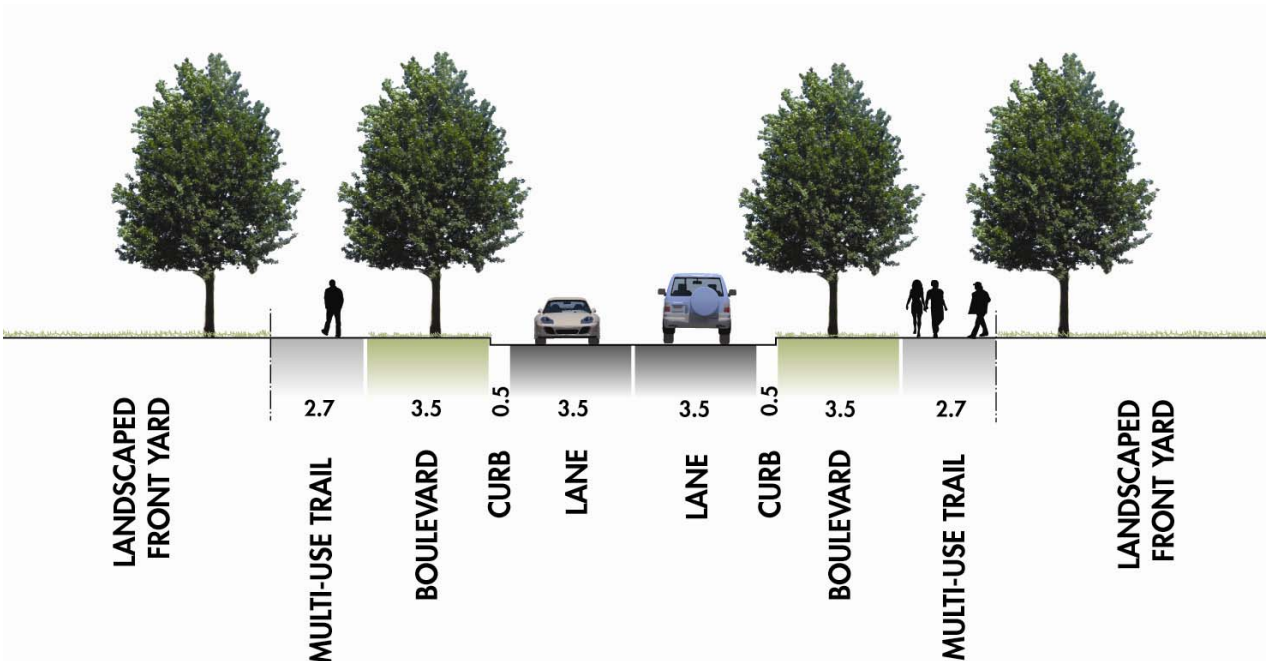
b) Streets A and C

- i) Streets A and C are to be private streets with right-of-way widths of 18.0 metres.
- ii) Within the Street A and C right-of-ways, incorporate:
 - o One travel lane in both directions;
 - o On-street parking lanes on both sides of the street;
 - o Landscaped curb-side boulevards on both sides of the street that are (at least 2.0 metres in width to accommodate street trees and street furnishings); and
 - o Sidewalks on both sides of the street (at least 1.5 metres in width).
- v) Situate vehicular accesses to buildings along Street B from secondary streets (Streets A and C as well as internal access streets), rather than direct access from the Street B frontage.
- vi) Refer to the streetscape cross-section below for the composition of the streetscape elements referenced above. Final streetscape design is to be undertaken in keeping with City of Waterloo standards (as applicable).



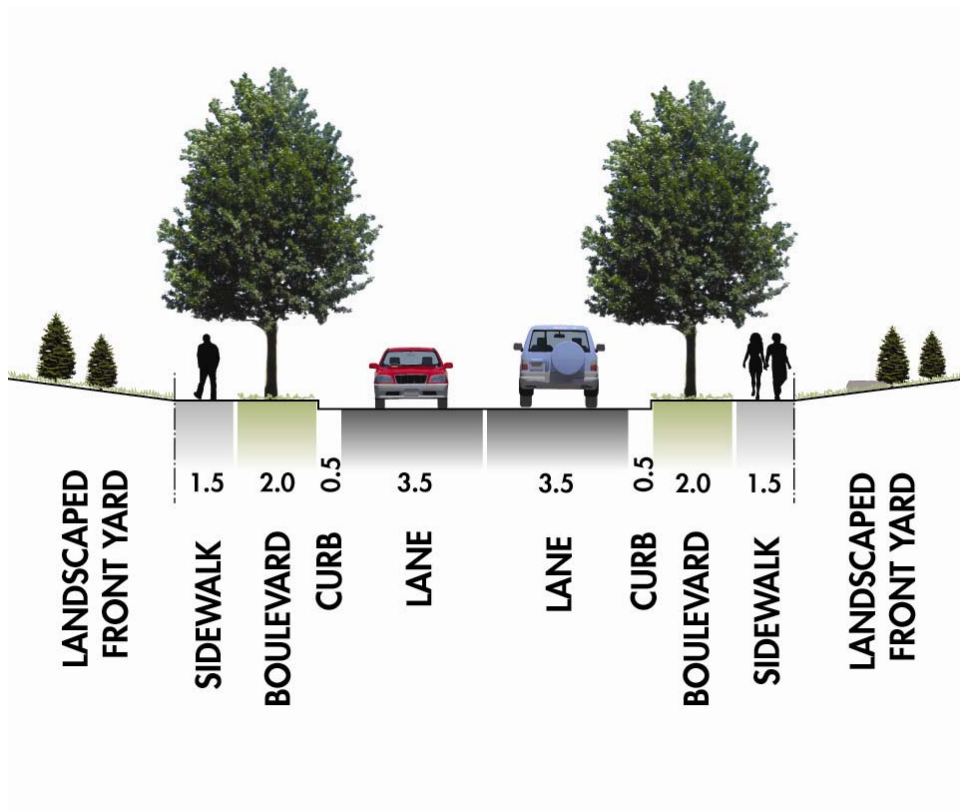
c) Pedestrian Connector Streets

- i) Incorporate pedestrian connector streets, or “Alles” as additional principal pedestrian routes through the Northwest Campus, over and above that provided by Streets A, B and C.
- ii) Situate pedestrian connector streets in locations that provide mid-block connection between Streets A, B and C and follow desire lines from the abutting arterial roads and the centre of the Northwest Campus.
- iii) Design pedestrian connector streets with right-of-way widths generally around 20.0 metres.
- iii) Within the right-of-way for pedestrian connector streets, incorporate:
 - o One travel lane in both directions (minimized to 3.5 metres as much as possible);
 - o Landscaped curb-side boulevards on both sides of the street (at least 3.5 metres in width to accommodate street trees and street furnishings); and
 - o Multi-use trails on both sides of the street (at least 2.7 metres in width).
- iv) Refer to the streetscape cross-section below for the composition of the streetscape elements referenced above. Final streetscape design is to be undertaken in keeping with City of Waterloo standards (as applicable).



d) Internal Streets

- i) All others streets within the Northwest Campus are to be private streets with right-of-way widths that may vary between 15.0 and 18.0 metres.
- ii) Within an internal street right-of-way, incorporate:
 - o One travel lane in both directions (minimized to 3.5 metres where possible);
 - o Landscaped curb-side boulevards on both sides of the street (at least 2.0 metres in width to accommodate street trees and street furnishings); and
 - o Sidewalks on both sides of the street (at least 1.5 metres in width).
- vii) Situate vehicular accesses to buildings along Street B from secondary streets (Streets A and C as well as internal access streets), rather than direct access from the Street B frontage.
- viii) Refer to the streetscape cross-section below for the composition of the streetscape elements referenced above. Final streetscape design is to be undertaken in keeping with City of Waterloo standards (as applicable).



e) Walkways

- i) Incorporate a well-defined and continuous pedestrian system on the site with connections between streets, building entrances, parking areas, and outdoor amenity areas.
- ii) Incorporate off-street walkways throughout the open spaces to provide additional pedestrian connectivity over and above that provided by the principal streets.
- iii) Design walkways so that they are at least 3.0 metres (and up to 6.0 metres depending on the context) to ensure a comfortable flow of movement.
- iv) Use durable and easily maintainable choices for walkway surface material that are universally accessible while reflecting the context of the walkway.
- v) Provide accessible seating opportunities at regular intervals for pedestrians, including pedestrian amenities and furnishings in a coordinated manner that does not obstruct pedestrian travel.
- vi) Provide curb cuts where walkways cross driveways and streets or where emergency terminals are placed within raised parking islands for accessibility.
- vii) Include wayfinding signage along walkways that are legible on approach to orient visitors, including both drivers and pedestrians.
- viii) Locate landscaping along trails and walkways that provide shade to delineate boundaries, while maintaining unobstructed sight lines and avoiding potential hiding spots.
- ix) Identify crosswalks through a change in material or other pavement markings for pedestrians at key crossing locations.



4.2 Buildings

The design for new developments should consider the following guidelines in respect to the design of buildings within the Northwest Campus:

a) Style

- i) Utilize a contemporary, rather than traditional architectural style, reflecting contemporary technology and forward-looking research orientation of the campus and its activities.
- ii) Utilize high quality exterior building materials, such as steel, glass, metal paneling and masonry, to reflect the contemporary style desired for the campus.
- iii) Use a complementary palette of materials throughout the buildings on the campus.

b) Articulation

- i) Design all building elevations facing streets, open spaces and pedestrian connector streets as principal building elevations with the highest degree of attention in terms of articulation detail and transparency.
- ii) Design all building elevations facing other private streets and parking structures as secondary building elevations with a lesser, but complementary, degree of articulation and transparency to that of the primary building elevation.
- iii) Emphasize entry areas through the use of architectural features, including canopies, awnings and other architectural elements as warranted.
- iv) Incorporate horizontal divisions (architectural, material, colour) that create a defined base, middle and top to the building.
- v) Use architectural detailing (use of windows, projections, recessions, colour, material) that creates balance and rhythm on the elevation, particularly for longer wall elevations.
- vi) Integrate rooftop mechanical equipment into the overall building design and screened from views from streets and spaces.
- vii) Use window placement and wall elevation design to maximize informal surveillance from buildings to streets, parking areas and open spaces.





c) Massing and Orientation

- i) Orient buildings towards street frontages to create an enclosure of the public realm and strong street edges.
- ii) Establish a general building front and exterior side yard setback throughout the campus between 5.0 to 10.0 metres, depending on the particular situation of the site and proposed building.
- iii) Ensure that setback space between a building and the street edge is appropriately landscaped to provide an attractive edge to the street. Consider such elements as foundation plantings, tree plantings, berms, low level walls, and sitting areas, as appropriate, in these spaces.
- iv) Design buildings at opposite sides of key focal points within the campus (such as at campus gateways) with similar massing so as to create built form portals into and through the campus.
- v) Incorporate multiple entrances on the building to address the abutting street (or streets) and parking areas.
- vi) Locate loading bays and other service areas so that they are oriented away from street views and, as necessary, screened from the street by building mass or landscape features. Wherever possible, locate waste storage areas inside buildings.

d) Height

- i) Ensure buildings are generally at least 3 storeys in height to provide a balance between intensive development and a pedestrian scale environment throughout the campus.
- ii) Emphasize “priority” buildings with additional building height (4 to 8 storeys is reasonable, although taller buildings are permitted by policy and zoning). Priority locations may include those areas along bounding arterial streets, at campus gateway locations, near major intersections, surrounding key open spaces, and with prominent views.
- iii) Design taller buildings (over 8 storeys) with defined base, middle and top sections. Orient and design the base sections to the pedestrian scale in terms of height and transparency and viewlines between the interior and exterior of the building. Include features and elements on the top section that create an interesting skyline and that minimize wind and shadowing impacts.

e) Entrances and Access

- i) Incorporate primary building entrances that are visibly defined on the building elevation through architectural emphasis and detailing in order for easy access for visitors.
- ii) Ensure all entrances and access points are designed to be universally accessible.
- iii) Provide pedestrian amenities and furnishings at principal building entrances, including waste receptacles, bench seating, bicycle racks, lighting and signage to highlight entryways, in a coordinated manner that does not obstruct pedestrian travel and emergency access to and from the buildings.
- iv) Provide shelter (standalone or incorporated into the building design) near building entrances where there are nearby transit stops along the streets.
- v) Locate garbage areas internal to the building.
- vi) Locate services areas for buildings so that they are screened from Streets A, B and C, either through building orientation or through landscaping.



f) Signage

- i) Incorporate clearly defined building identification signage (building name and/or municipal address) that complements the building's style.
- ii) Incorporate building identification signage into the principal building façade, ensuring it is compatible with the building's style, scale, colour and materials.
- iii) Use directional signage, as necessary, to assist in the orientation of pedestrians and traffic to the street, parking, service and open space systems.
- iv) Locate ground signs so that they do not obstruct sight lines, driveways and intersections, or interfere with pedestrian or motorist safety. Select landscaping around the base of the sign that considers the continued visibility of signage in the future as the landscaping matures.
- v) Refer to the City of Waterloo Sign By-law to ensure conformity.



4.3 Parking

The design for new developments should consider the following guidelines for parking accommodations within the Northwest Campus:

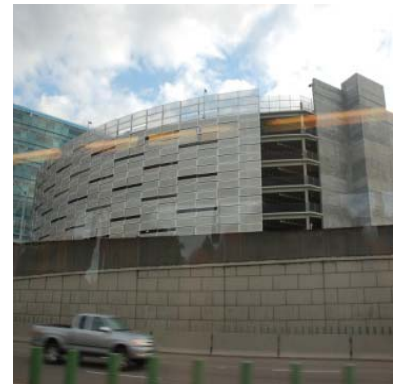
a) Surface Parking

- i) Encourage shared parking arrangements between buildings and users as much as possible.
- ii) Locate surface parking areas to the rear or side of each building with minimal exposure to abutting streets as much as possible.
- iii) Locate and design surface parking areas and structures to maximize natural surveillance from buildings, streets and walkways.
- iv) Screen the perimeter of surface parking areas to screen parking spaces, with a combination of berming, landscaping and fencing as appropriate, from abutting streets and pedestrian routes, while still maintaining appropriate sightlines for safety purposes.
- v) Incorporate landscaped parking islands within surface parking areas to physically and visually break up the surface area.
- vi) Provide shared access points and internal connections within surface parking areas to minimize impact on the streetscape.
- vii) Ensure pedestrian access to buildings from or across surface parking areas that is safe, well-lit, convenient, and well-defined.
- viii) Align rows of parking with surface parking areas perpendicular to the building to minimize the number of crossings of drive aisles for pedestrians.
- ix) Incorporate defined parking areas for bicycles, including short term and long term, either within the surface parking area or with direct connections to bicycle storage areas (and end-of-trip facilities) internal to buildings.



b) Structured Parking

- i) Encourage shared parking arrangements between buildings and users as much as possible.
- ii) Encourage structured parking for parking areas to provide an efficient and intensive development form.
- iii) Design parking structures to provide for ease of circulation and wayfinding on site in a secure fashion.
- iv) Design and site parking structures to integrate with the buildings in terms of a complementary scale and style to the associated building(s). This should include complementary treatment of massing, style, materials, colours, and articulation, among others considerations, along with appropriate landscaping.
- v) Incorporate stairwells within parking structures with glass or transparent openings for visibility purposes.
- vi) Screen the base portion of parking structure with a combination of berming, landscaping and fencing as appropriate, and incorporate landscaped islands or planters on the rooftop decks.
- vii) Align rows of parking perpendicular to the building to minimize the number of crossings of drive aisles for pedestrians.
- viii) Incorporate defined parking areas for bicycles, including short term and long term, either within the parking structure or with direct connections to bicycle storage areas (and end-of-trip facilities) internal to buildings.
- ix) Should a more limited number of larger parking structures be utilized to service the overall campus, situate such structures in central locations within the Northwest Campus that are safely and conveniently connected to buildings they are intended to serve.



4.4 Open Spaces

The design for new developments should consider the following guidelines in respect to open space design within the Northwest Campus:



a) Central Common

- i) Incorporate the hedgerow along Street B into a Central Common that provides a resting and gathering area for surrounding buildings.
- ii) Undertake an inventory and management plan for the existing hedgerow to document and identify species groupings, tree conditions, and any necessary improvements.
- iii) Remove any trees that have been significantly damaged, replace with new trees, and plant any “sparse” areas that are with successional trees planted to fill in open areas.
- iv) Ensure work on or around the hedgerow is limited to areas where the overall condition is determined as ‘fair’ or ‘poor’ to avoid removal of trees in ‘good’ or ‘excellent’ condition.
- v) Consider a variety of different areas to accommodate a range of functions, including both hard and soft surfaces.
- vi) Consider incorporating large canopy trees, shade structures, seating, bike racks, waste and recycling receptacles, public art and other related site furnishings.
- vii) Incorporate walkways through the space lined with trees and mass planting beds to frame the open space and connect with adjacent building entrances.
- viii) Provide clear distinctions between public and private open space through the use of defined access points and edges, circulation systems, grade changes and the use of plant material, architectural elements and fencing.

b) Greenway

- i) Incorporate the existing gas easement along Fischer-Hallman Road and Bearinger Road as a Greenway space.
- ii) Consider opportunities within the Greenway of providing a multi-use trail, tree and ground level plantings, and user amenities, subject to Union Gas policies and requirements.
- i) Prepare a comprehensive plan for the Greenway as part of the Block Plan process, in consultation with and requiring approval from Union Gas, along its entire length through the Northwest

Campus to ensure that it develops in a coordinated and consistent pattern as development proceeds.

c) Courtyards

- i) Provide an interconnected system of internal courtyards and amenities spaces that are developed in conjunction with individual or groups of buildings.
- ii) Provide clear distinctions between public and private open space through the use of defined access points and edges, circulation systems, grade changes, plant materials, architectural elements, and fencing.
- iii) Ensure courtyards are situated to maximize natural surveillance from buildings, streets and walkways, preferably shared by adjacent buildings to maximize use and exposure.
- iv) Incorporate clearly defined walkways through the space that are lined with trees and mass planting beds to frame the open space and connect with building entrances.
- v) Incorporate areas with large canopy trees as well as a shade structures for user comfort.



d) Street A Hedgerow

- i) Undertake an inventory and management plan for the existing hedgerow to identify species groupings, tree conditions, and any necessary improvements.
- ii) Remove any trees that have been significantly damaged, replace with new trees, and plant any "sparse" areas that are with successional trees planted to fill in open areas.
- iii) Ensure work on or around the hedgerow is limited to areas where the overall condition is determined as 'fair' or 'poor' to avoid removal of trees in 'good' or 'excellent' condition.
- iv) Incorporate pedestrian connections or driveways through hedgerows that are routed to avoid removal of quality trees.
- v) Provide sitting areas (through either natural seating elements or formal seating as benches) near light standards to allow for individual or small group seating.
- vi) Incorporate interpretive panels as an educational opportunity for those passing through the space.



4.5 Landscaping

The design for new developments should consider the following guidelines in respect to landscape design within the Northwest Campus:

a) Street Trees



- i) Tree should be accommodated within the boulevard space (or additionally within curb extensions) and should be sited as much as possible to provide a canopy that frames the views along the street and contributes to the area's character and identity.
- ii) Select species based on appropriate characteristics with a tolerance for urban conditions, heat, drought and salt; their suitability for use within the public realm; and consideration of the species hardiness.
- iii) Use native species with high branching canopies to reduce maintenance, promote long-term success, and to keep sight lines across the laneway open for pedestrians.
- iv) Locate large canopy street trees within the boulevard between the curb and sidewalk, consistently spaced in regular intervals (generally 8.0 metres apart although depending on species selection) where space permits and considering utility requirements and clearances.
- v) Trees should be planted with continuous trenches containing an appropriate growing medium, such as structural soil mixtures that provide opportunity for root growth and development.
- vi) Use trees of sufficient caliper (at least 75 millimetres) and height to create a reasonable impact on the streetscape when they are planted.
- vii) Consider planting multiple species for street trees throughout the campus to provide visual interest (leaf colour, bloom period, and leaf drop), whether distributed throughout the campus or to define particular streets.

b) Ground Plantings

- i) Select ground plantings based on appropriate characteristics with a tolerance for urban conditions, heat, drought and salt; their suitability for use within the public realm; the ability to naturalize over time; and consideration of the species hardiness.
- ii) Use low-growing salt tolerant shrubs and ornamental grasses to frame intersections and entrances, but not impede sight lines across the laneway.
- iii) Include a diversity of plant material that provides visual interest throughout the year, including deciduous and coniferous species.
- iv) Utilize a combination of shrubs, ornamental grasses and perennials as part of the planting program, using different forms and textures that create a strong impression.
- v) Ensure ground plantings are no more than 1.0 metres in height along the street edge and 0.45 metres in height at street corners or drive aisles to avoid creating entrapment and to preserve sight line triangles.
- vi) When used, ensure raised planters for ground use high quality materials and are at least 0.4 metres in height to promote informal seating areas along the street frontage while avoiding the creation of a tripping hazard.
- vii) Incorporate opportunities to provide visual interest through hanging baskets, or banners on light standards to promote special events at the University and at the Northwest campus.





c) Stormwater Management Areas

- i) Ensure that all stormwater management areas are designed as green “amenities” within the campus, and not solely “utilities”.
- ii) Connect stormwater management ponds wherever functionally possible to the overall greenspace network through pedestrian and cyclist linkages.
- iii) Use naturalized edges of native or adapted species to the water body portion of the stormwater management area to deter public access to the water.
- iv) Where fencing is required for safety reasons, use decorative fencing that complements the intended natural character of the stormwater management area.
- v) Incorporate amenities such as benches, garbage receptacles, information boards, and lookout areas into the design of the stormwater management area to enhance the passive recreation use.

d) Furnishings & Amenities

- i) Incorporate a suite of furnishings and amenities that include light standards, waste receptacles, benches, bike racks, and pedestrian lighting, among others amenities.
- ii) Ensure that furnishings and amenities within street right-of-ways or open spaces are located in a manner that does not obstruct pedestrian circulation or sight lines.
- iii) Ensure street furnishings within the boulevard of streets are in line with street trees and other plantings so as to maintain an unobstructed pedestrian route on the sidewalk.
- iv) Space street furnishings in a consistent pattern along the streetscape, although they may be focused in particular clusters in higher activity areas.
- v) Ensure street furnishings are selected from a single style for the Northwest Campus that complements the overall desired contemporary design character envisioned.
- vi) Ensure the style of street furnishings is consistent between Street B (public) and Street A, B and internal streets (private). Preferably this would include the same style, but at a minimum all streets should follow a complementary contemporary style.
- vii) Ensure street furnishings are high quality and comprised of durable materials and finishes.

e) Campus Entrances

- i) Emphasize the Street B entrances to the campus as primary campus gateways and the Street A and C entrances as secondary campus gateways.
- ii) Accentuate gateways with a combination of built form, landscape treatment and campus signage elements. Provide a greater degree of accentuation in terms of intensity and scale to the primary campus gateways as compared to the secondary.
- iii) Situate campus entrance signage either along roadway edges, within central medians, or spanning the roadway
- iv) Design campus entrance signage in a consistent style and form for all gateway locations, with high quality and durable materials that reflect the contemporary character of the campus, and with simple and universally readable lettering.
- v) Incorporate planting material and lighting as appropriate surrounding campus entrance signage.
- vi) Ensure any treatment at campus gateways allows unobstructed sight lines, the preservation of corner sight triangles and conformance with the City of Waterloo Entrance Feature Policy.



f) Lighting

- i) Design streetscape and site lighting as an integrated system that considers the needs of drivers and pedestrians.
- ii) Ensure unobstructed sight lines across the site and pedestrian scale light standards are provided for night time safety.
- iii) Carefully consider the areas to be lit, with only those areas which need to be illuminated being lit in order to avoid a false sense of security or lead people to isolated, unlit areas.
- iv) Ensure that lighting is “night sky compliant”, as per appropriate and relevant standards, and does not unnecessarily intrude into surrounding areas.
- v) Focus lighting on pedestrian areas, parking areas, walkways and building entrances.
- vi) Incorporate lighting fixtures and poles integrated with the overall architecture and landscape design of the project and compatible with streetscape elements.
- vii) Utilize lighting to accent and highlight building entrances, signage and landscape features.



4.6 Sustainability

The certification of new buildings on the Northwest Campus under the LEED® rating system, or equivalent program, is encouraged. A Silver Certification under a LEED rating system, or the achievement of an equivalent under another recognized program, is an appropriate target for individual buildings within the Northwest Campus. Should such a certification or rating not be pursued, the following stand-alone initiatives and measures should be encouraged (at a minimum, together with consideration for the numerous others that are possible) as part of the design, approvals and development process:

a) Water Performance



- i) Incorporate a stormwater management system on the site or through the campus that reduces stormwater runoff entering storm sewers through the use of such techniques as infiltration galleries, bio-swales or underground cisterns.
- ii) Incorporate techniques on site that reduce the need for potable water used for irrigation purposes, including rainwater use or native, drought tolerant, and low-irrigation plantings
- iii) Incorporate infrastructure that utilizes non-potable water for sanitary purposes, which may include cisterns and non-potable water for flushing toilets.
- iv) Use permeable materials for paved areas that achieve increases in permeability compared to conventional methods.
- v) Use landscaping materials with minimal maintenance requirements and reduce the dependence on water for irrigation and chemicals.

b) Energy Performance

- i) Maximize the number of buildings that are aligned within 15 degrees of the geographic east-west orientation in order to capitalize on passive solar opportunities.
- ii) Orient a majority of buildings (by gross floor area) with their largest facades facing north/south.
- iii) Use a combination of high-albedo surface materials, open grid pavement, or shading for a majority of the surface area of the site's hardscaped spaces.
- iv) Use a combination of exterior shading strategies on the majority of south facing facades, such as a combination of landscape

measures (i.e. tree plantings) or building measures (i.e. overhangs, porches, window glazing).

- v) Design buildings with a narrow footprint depth to optimize natural light penetration and access to outdoor views.
- vi) Incorporate roof-top solar infrastructure to meet electrical needs of the building, or design the building as solar-ready with infrastructure to accommodate solar infrastructure in the future.
- vii) Design exterior lighting to be night-sky friendly, limiting horizontal and vertical light spillover beyond the property's boundary.
- viii) Utilize LED lighting wherever possible and practical.

c) Materials and Resources

- i) Achieve a significant diversion rate in construction waste during the construction process.
- ii) Include a central and easily accessible space in the building for source separation and for collection of waste materials.
- iii) Use contractors that are certified under the Region of Waterloo's 'Smart About Salt' program for winter site maintenance.

d) Transportation Demand Management

- i) Establish a transportation demand management plan for the campus or sub-areas of the campus at the appropriate time of planning approvals (such as part of the Block Plan process) that is to be implemented as development occurs.
- ii) Investigate programs to reduce single occupant vehicle automobile trips to the campus by employees at the appropriate time of planning approvals (such as part of the Block Plan process). Parking requirements will be monitored and reviewed with each building phase.
- iii) Provide dedicated parking spaces for car-share vehicles. Preferably, each car-share space would have an electric vehicle charging station or the rough-in infrastructure to accommodate a space in the future.



4.7 Special Provisions

Given the size of the Northwest Campus and intended long term buildout, there will be unique considerations that exist or may arise which require individual design direction. This section provides that direction.

a) Research Institute for Aging

The parcel at the northeast corner of the Fischer-Hallman Road and Street B is currently in the site plan approval stage for an innovative and integrated seniors housing and research facility. The housing portion will be a continuum of care centre that will contain long term care, retirement home, and apartment components, as well as associated ancillary uses for the residents. The research facility will be the Research for Aging Institute (a collaboration of the Province of Ontario, the University of Waterloo, Conestoga College, and Schlegel-University of Waterloo Research Institute for Aging) which will contain space for classrooms, offices and labs.

The nature and function of this unique housing-research venture will generate a different layout, function, form, and style than what is envisioned by the Development Design Guidelines. Specifically, the building will have a more traditional architectural style, partly as a transition to the surrounding residential neighbourhood, than the contemporary style envisioned for the Northwest Campus. Site design elements may vary from the Guidelines given the use-specific nature of this unique project, including elements such as building massing and site access. This should not be read as a precedent for the conventional employment facilities that are expected, but rather as a response for this unique residential and institutional project.

b) University Residential

The Waterloo Official Plan policies (both current and new Council-adopted) permits residences associated with the University within the Northwest Campus. These Guidelines are generally oriented to providing design guidance to employment-based and institutional developments, rather than residential projects. Proposals for University-related residential developments within the Northwest Campus are to be in keeping with the overall character envisioned by these Development Design Guidelines. There are a number of the Development Design Guidelines that may apply to residential development proposals, including considerations for streetscape design, parking, site landscaping, among others; these should be read in conjunction with City's general urban design guidelines for residential development matters that are not covered by these Development Design Guidelines.

5.0 Demonstration Concept

The design principles from the UW Campus Master Plan and the Northwest Campus District Plan formed the basis for the preparation of a Draft Plan of Subdivision and the preparation of these Development Design Guidelines. Building from the general direction of the design principles, the Development Design Guidelines provide specific direction for proponents of developments within the Northwest Campus, including guidance on the built form, streets, and open spaces. The direction offered by the Development Design Guidelines will be further refined as part of the Site Plan Approval process.

To assist this transition, the demonstration concept illustrates the potential layout and form of development on the Northwest Campus at ultimate build-out. It is meant to be general translation of the Development Design Guidelines to the Northwest Campus. It has no status or standing as part of the planning approval process, but rather is meant to be a guide to proponents for developments within the campus. It illustrates one potential option for the build-out of the Northwest Campus, recognizing the long-term nature and possible changing demands and needs for development over time. There are a number of variables (such as taller building heights or taller parking structures) that may, over time, alter the form illustrated in the Demonstration Concept

Demonstration Concept of Northwest Campus (looking from northwest direction)



Demonstration Concept of Northwest Campus

Legend

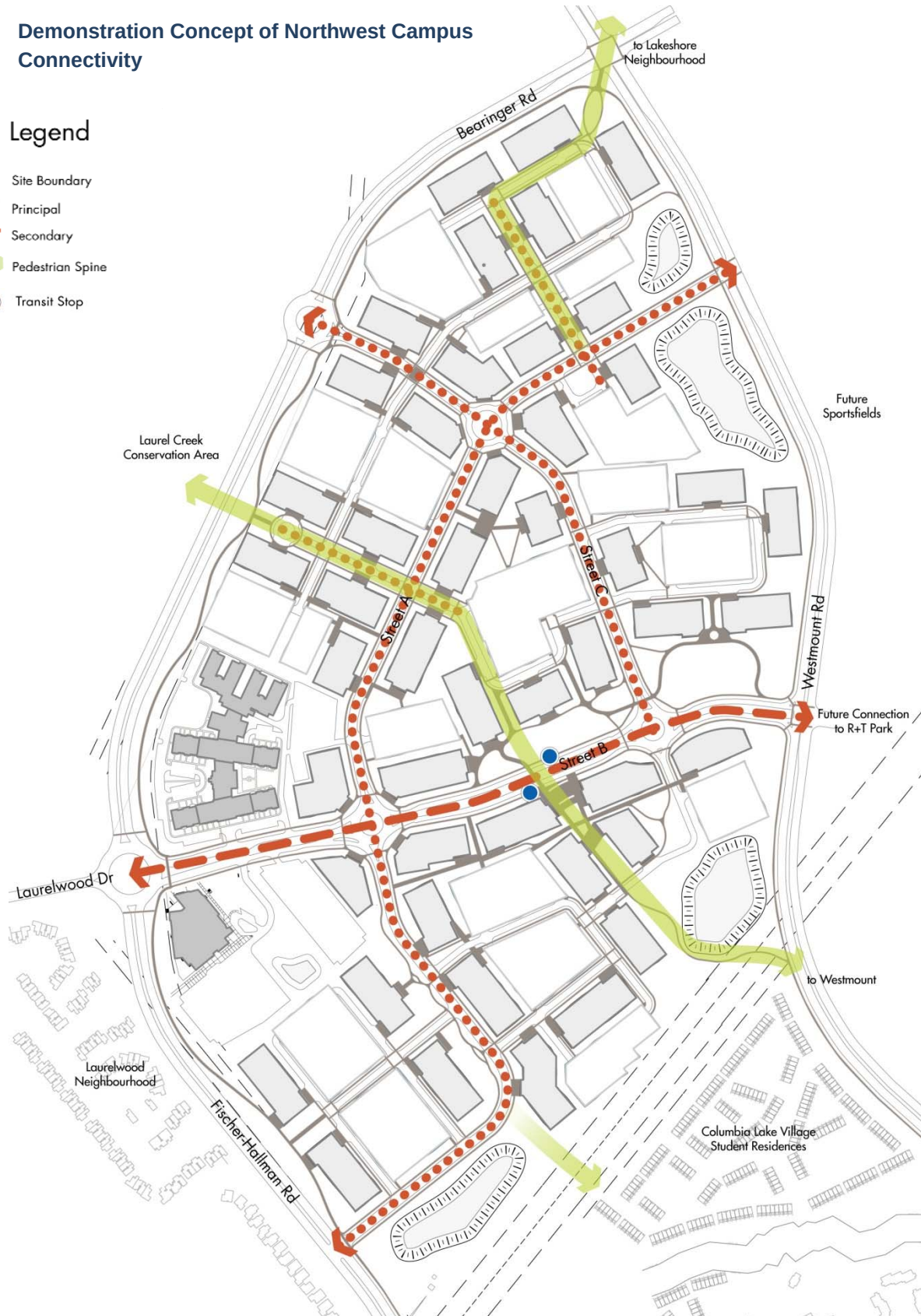
-  Site Boundary
-  SWM Pond
-  Building
-  Priority Building
-  Parking
-  Open Space
-  Internal Courtyard
-  Public Street
-  Internal Street
-  Pedestrian Spine
-  Transit Stop



Demonstration Concept of Northwest Campus Connectivity

Legend

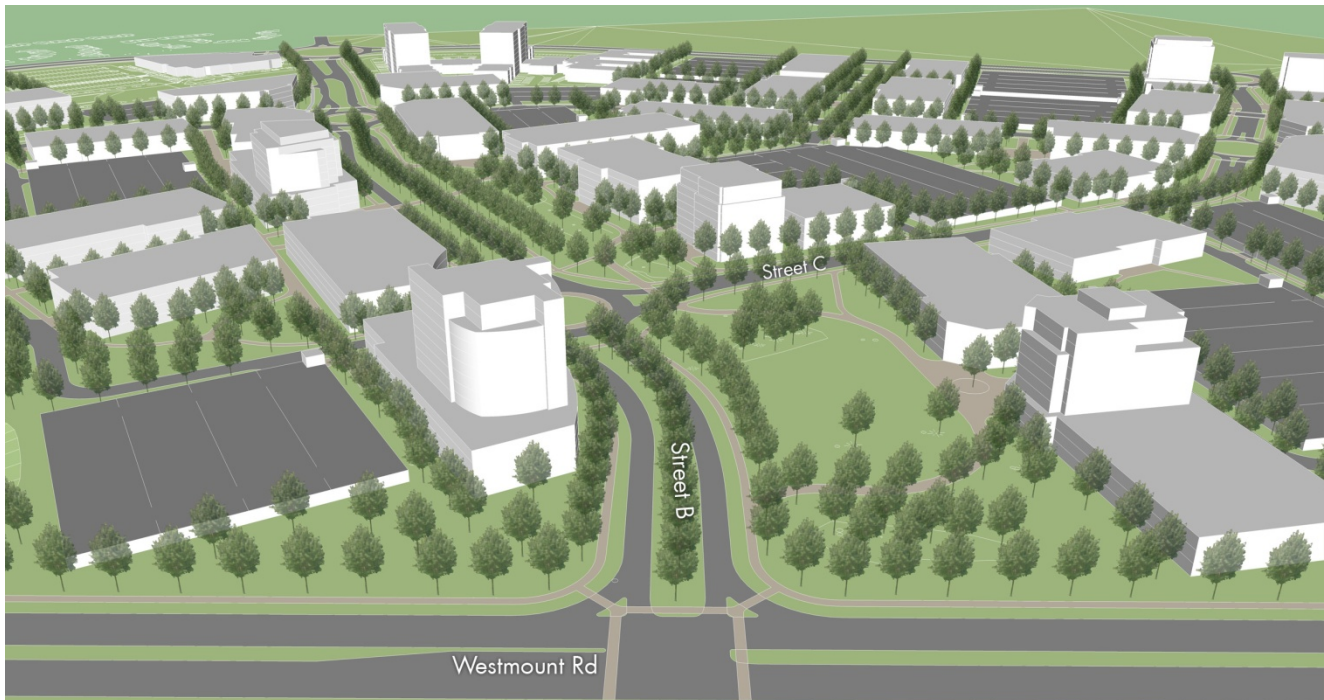
-  Site Boundary
-  Principal
-  Secondary
-  Pedestrian Spine
-  Transit Stop



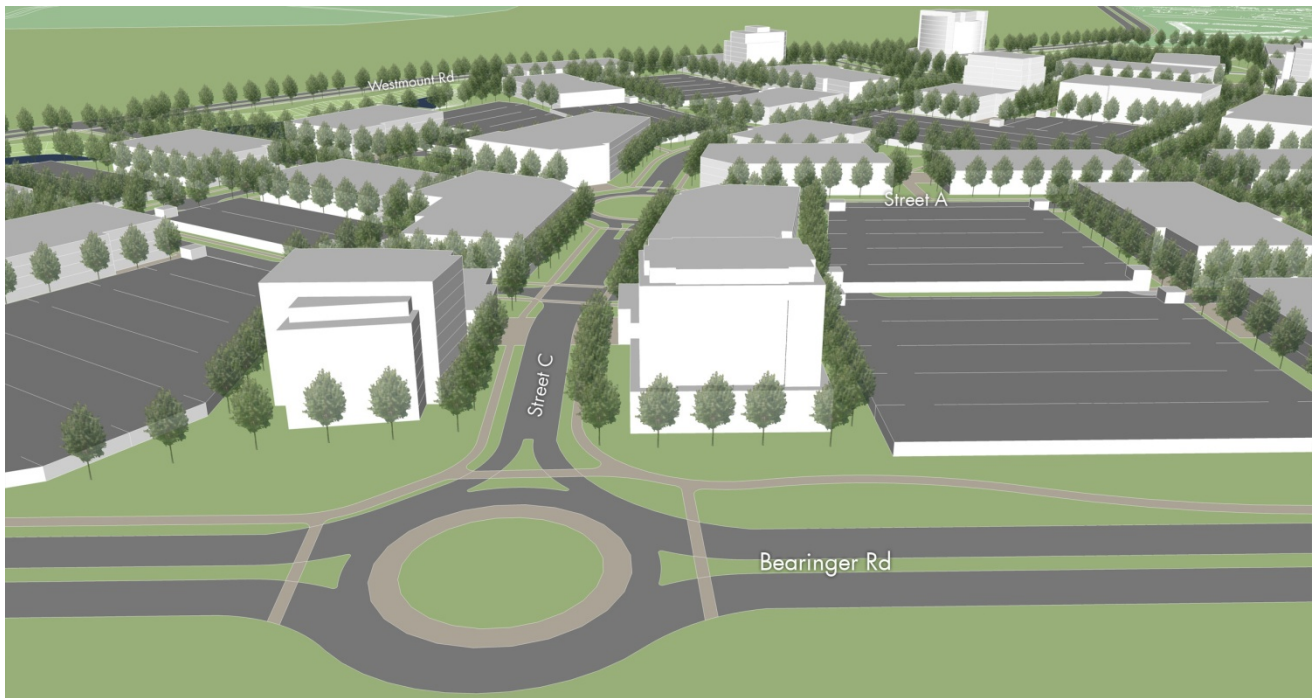
Central Common (looking from north side of Street B)



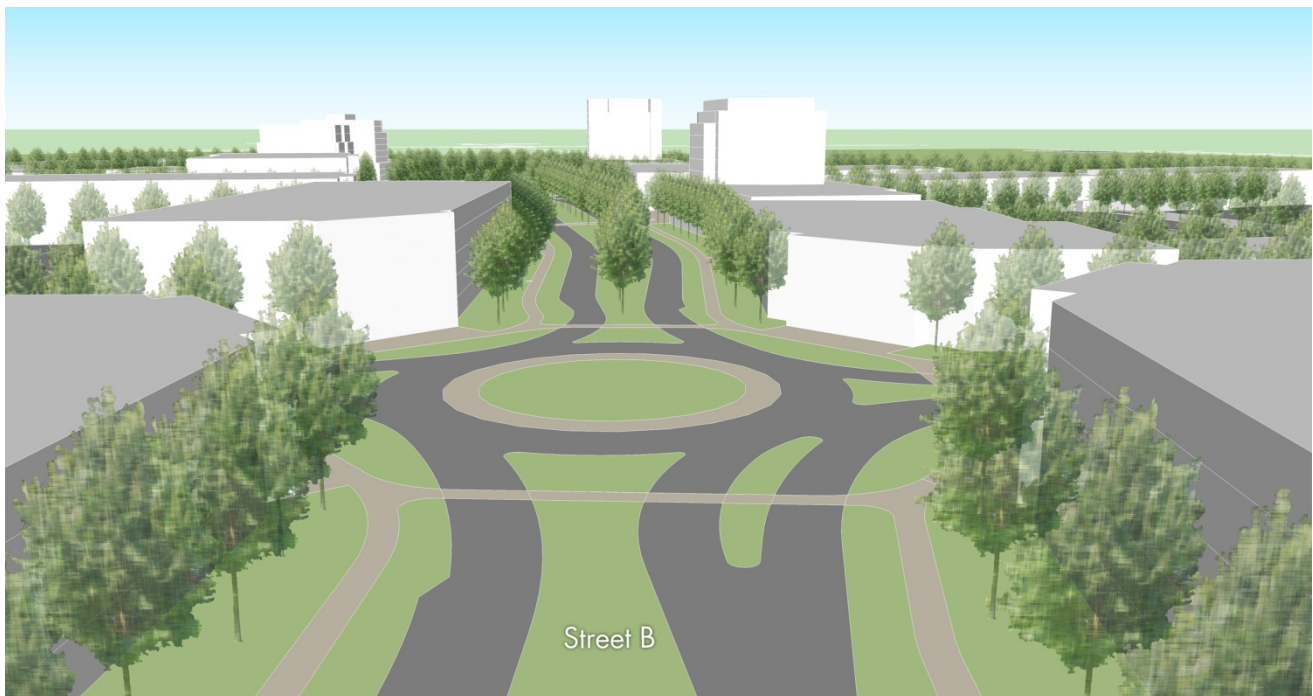
Central Common (looking from Westmount Road)



Pedestrian Connector Street (looking from Bearinger Road)



Central Roundabout along Street B (looking from the west)



6.0 Implementation

6.1 District Plan

The Northwest Campus District Plan provides specific policies on how development on the campus should occur. The Northwest Campus is designated “Major Institutional” in the 1990 City of Waterloo Official Plan, which is intended to accommodate “*public buildings, universities and colleges, social and cultural facilities, hospitals, and other institutional uses of a major nature*”. Complementary accessory uses to the principal institutional use, such as convenience commercial uses, residences, and park and recreational facilities, are also permitted. Furthermore, manufacturing related to a research and development facility associated with the University of Waterloo is specifically permitted within the Northwest Campus.

The Northwest Campus is designated “Employment” in the new 2012 Waterloo Official Plan (Council-adopted April 2012) under an “Academic” sub-category. The “Academic” sub-category recognizes the main campuses of post-secondary institutions as well as other areas such as the R&T Park and the Northwest Campus. The designation principally permits academic and administrative facilities for the institution; research facilities operated by the institution; research institutes; residences associated with the institution; and other uses consistent with the designation's intent. For the Northwest Campus, offices; research and development facilities associated with UW; and manufacturing related to such facilities facility are additional permitted uses.

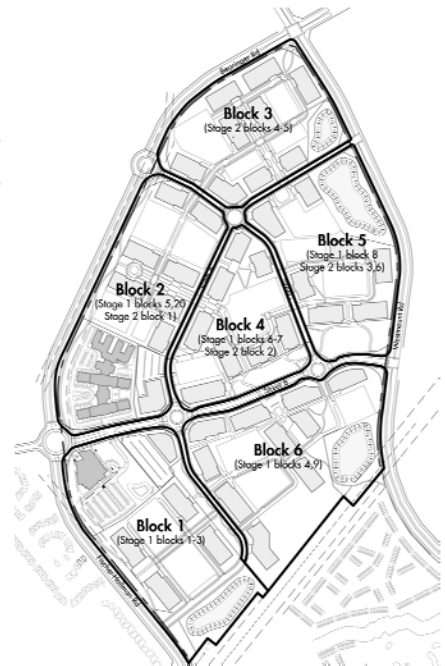
6.2 Zoning

The Northwest Campus Site is currently zoned “BI-25” in the City of Waterloo Zoning By-law, which principally permits university and university-related uses, including research-oriented offices and ancillary manufacturing, as well as supportive commercial uses. The Northwest Campus Site also has a Special Use Provision to permit a “*Commercial Recreation facility with ancillary uses such as a restaurant and offices for sports medicine*” to permit the proposed library and YMCA development on the Northwest Campus Site. Zoning Amendments may be required over time to accommodate particular development projects requiring specific or site-specific built form or site provisions.

6.3 Block Plans

For the purposes of implementing the Development Design Guidelines the Northwest Campus has been divided into six large development blocks (see following page), which are generally bounded by the area's principal streets. The first development proposal within each respective block, either for an individual building or a cluster of buildings, will be required to prepare a "block master plan" for the entire block prior to Site Plan Approval being given (not including the project identified in Section 4.7a) of these guidelines).

The purpose of a block master plan will be provide a more detailed assessment and illustration of how the Development Design Guidelines are applied to the particular block. It will ensure that the development of single building or cluster of buildings will not jeopardize the efficient and effective layout or design of the remainder of the block in keeping with the Development Design Guidelines. As per the Northwest Campus District Plan, master block plans are required to "address servicing, building layout, parking, landscaping, lighting, common areas and connectivity between existing and proposed buildings and connectivity to adjacent blocks".



6.4 Plan of Subdivision

The Draft Plan of Subdivision received approval from the Region of Waterloo in September 2010. The Draft Plan of Subdivision provides the street, lot and public space framework for the Northwest Campus to develop for academic and research-oriented office uses over the next forty years. Extensive engineering work and grading has been taking place in 2011 and 2012, and registration of Stage 1 (south portion) is anticipated in 2012. Further subdivision of the Northwest Campus blocks may occur over time as developments are proposed.



6.5 Site Plan Approval

Site plans will be required for all developments throughout the Northwest Campus. Specific requirements for Site Plan Approval by the City of Waterloo for the Northwest Campus are contained in the City's urban design guidelines. These Development Design Guidelines will be utilized by City and the University to review site plans, together with the City's general urban design guidelines.

6.6 Roles and Responsibilities

The Northwest Campus will be designed and constructed over time through various public and private initiatives, partnerships and approvals. Below are the principal participants and their key roles.

i. University

The University of Waterloo will play a leading role in the implementation of the Development Design Guidelines throughout Northwest Campus' development. The Board of Governors will be the ultimate authority for development decisions affecting the Northwest Campus, including design, development and contract decisions. Much of the Northwest Campus is expected to be designed and constructed by the University and private sector partners, including Streets A and C, internal streets, buildings, open spaces, and parking areas. The University will be responsible for undertaking agreements (design, financial, timing, servicing, among others) with individual developers to ensure the developments implement these Development Design Guidelines. Over time as the Northwest Campus develops, the University may need to make updates or modifications (in consultation with the City) to the Development Design Guidelines as future conditions warrant.

ii. City

The City of Waterloo will play two principal roles in the development of the Northwest Campus. First, it will provide some of the larger order infrastructure to service the Northwest Campus. This includes designing and constructing Street B as well as the initial municipal infrastructure to service development in Stage 1. Second, it will be an approval authority for the Planning Act applications (site plans, rezoning/variance applications) to facilitate development within the Northwest Campus. This will include a design review of proposed developments considering the City's design guidelines as well as consistency with these Development Design Guidelines.

iii. Developers

Developers and builders of individual land parcels within the Northwest Campus, working collaboratively with the University, will be principally responsible for realizing the overall vision of the Development Design Guidelines through the development of the Northwest Campus. Individual developers will be responsible for the preparation of all drawings and materials necessary for site plan and building approvals, as well as building and construction.