Final Report
March 2021

UNIVERSITY AVENUE GATEWAY STRATEGY

IBI Defining the cities of tomorrow
THE CITY OF Waterloo
Region of Waterloo
UNIVERSITY OF WATERLOO
LAURIER Inspiring Lives.
CONESTOGA Connect Life and Learning

Prepared by
IBI Group

CONTENTS

1 EXECUTIVE SUMMARY

The Executive Summary provides a brief overview of the University Avenue Gateway Strategy and the structure of the report.

Introduction to the Corridor

IBI Group was retained by the City of Waterloo to develop a Gateway Strategy for University Avenue from Highway 85 to Westmount Road. The Gateway Strategy provides a vision and potential direction on the design and function of the public realm along University Avenue, in order to create a streetscape that feels safe for all users and celebrates the importance of the corridor.

University Avenue, a Regionally owned road, is home to three major post-secondary institutions, commercial and cultural destinations. The corridor serves as a Gateway to the City of Waterloo from Highway 85 and as a primary East-West arterial road. Despite the cultural and institutional significance of the corridor, the street is currently designed to predominantly serve vehicular traffic and is marked by high volume of collisions at some problematic intersections. Pedestrian amenities are inconsistent along the corridor, including an inconsistent sidewalk, little street furnishing, few street trees, and a general lack of placemaking features. While there are bike lanes in some segments of the corridor, they are inconsistent and cyclists may feel unsafe due to the lack of an appropriate buffer and clear, dedicated infrastructure.

University Avenue is more than simply an important transportation connection. University Avenue has the potential to be a strategic gateway for the City and the Region of Waterloo, the University of Waterloo, Wilfrid Laurier University and Conestoga College, and to highlight the uniqueness of the corridor through an enhanced public and private streetscape and placemaking.

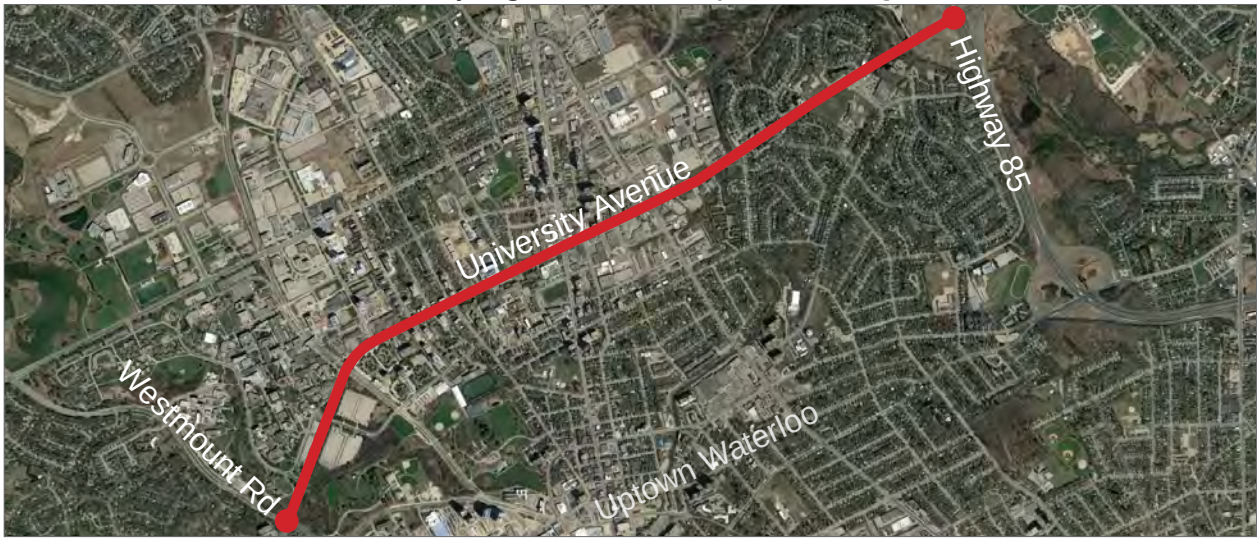

Figure 1 | Study Area - University Avenue between Highway 85 and Westmount Rd N

Strategic Vision

University Avenue will serve as the premier gateway to the University of Waterloo, Wilfrid Laurier University and Conestoga College, three of Canada's leading educational institutions with over 50,000 students. This attractive, tree-lined avenue will also serve as the main entry to one of the nation's fastest growing technology clusters, centred in the new Idea Quarter and the cutting-edge David Johnston Research and Technology Park.

As the principal gateway to this world-class education and technology hub, University Avenue will welcome visitors and residents and express the themes of learning, discovery, innovation and entrepreneurship. The buildings, streetscape and public spaces along University Avenue will be lively, pedestrian-oriented and contribute to a modern and distinct sense of place. They will embrace the use of green infrastructure and smart-city technologies and support environmental sustainability. Over time, University Avenue will transition into a complete street that balances the needs of pedestrians, cyclists, transit-users and motorists.

Themes:

Innovation

Entrepreneurship

Discovery

Learning

Goals:

1. **Enhance University Avenue's gateway features**
2. **Establish a safe, high quality pedestrian-oriented public realm**
3. **Transition University Avenue into a complete street**
4. **Create a greener and more environmentally sustainable corridor**

Focus Areas

The University Avenue Gateway Strategy illustrates the vision through five unique focus areas along the corridor. The Focus Area Concept Plans showcase how the recommended elements, geometry, and overall vision could look for the corridor in the future.

The focus areas were selected by the project team and stakeholders based on their variety and significance. The five focus areas are as follows:

1. The east corridor gateway on University Avenue west of Highway 85
2. The Conestoga College Area at Marsland Drive
3. The Mixed-Use Area at Regina Street North.
4. The Wilfrid Laurier Area at King and Hazel Streets.
5. The University of Waterloo Area at the ION light rail transit corridor

The full transformation of the corridor and Focus Areas will not be achieved via minor operational changes or improved aesthetics, but in many instances, the desired transformation will only be possible through geometric redesign and the reduction of automobile traffic (more ambitiously by modal shift and trip avoidance). However, it is important to acknowledge that University Avenue is still a major corridor necessary for the transport of goods and services.

Municipalities in the Region of Waterloo have long been innovators in the area of roadway design. This is demonstrated through the widespread use of roundabouts. The University Avenue corridor offers an opportunity to continue this innovative approach. A major long-term consideration is the continued prioritization of active transportation while still accommodating all necessary modes of transportation within this vital corridor.

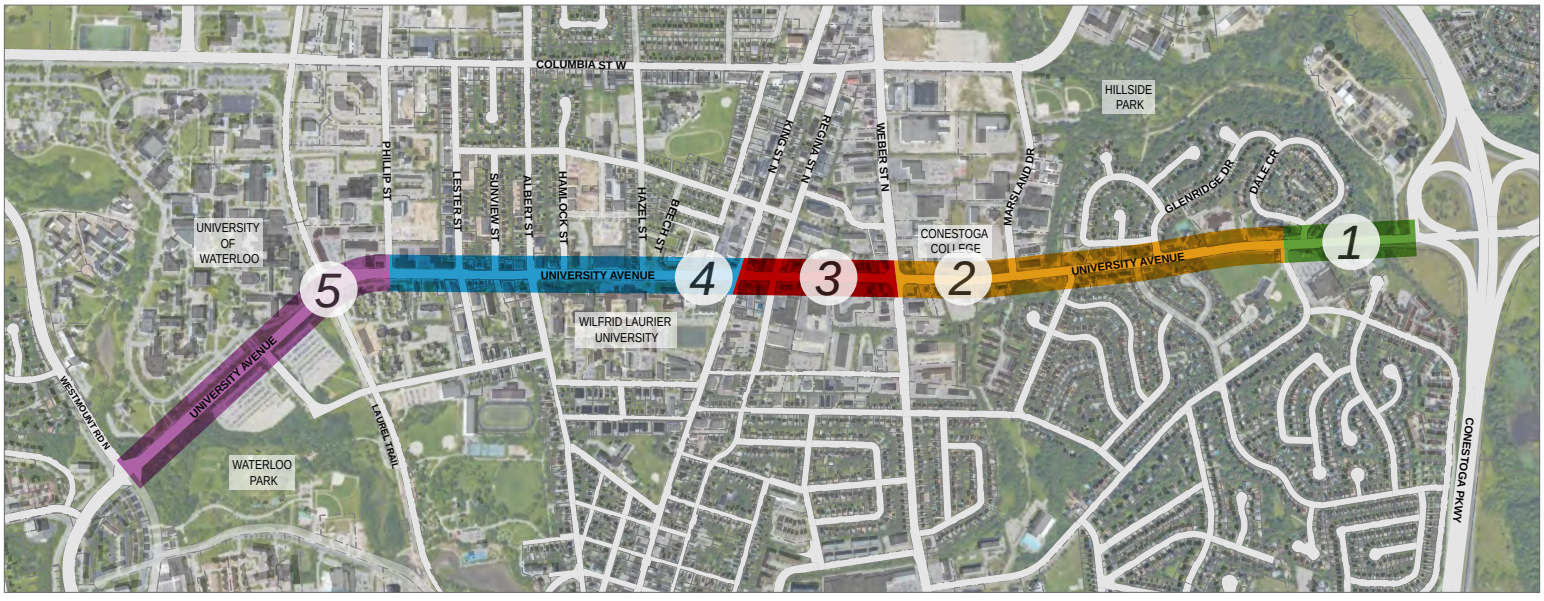

Figure 2 | University Avenue Focus Areas

Implementation

The University Avenue Gateway Strategy provides a long-term vision for the corridor that will require significant investment and collaboration between different stakeholders. As redevelopment occurs along the corridor, opportunities for implementation of the long term vision will become increasingly a reality.

The University Avenue Gateway Strategy study area spans more than four kilometers. The corridor currently is dominated by automobiles and the street is designed for efficient vehicular movement. Accommodating pedestrians, active transportation infrastructure, and transit, will require further studies and major investment. Major questions must be addressed before the Gateway Strategy can be implemented, such as: How do we shift current traffic patterns along the corridor? Where will traffic be diverted to and what are the repercussions? How and when will the required infrastructure be funded?

Implementation of the full vision of the Gateway Strategy requires a long-term time line to provide the Municipal Class Environmental Assessment process sufficient time for planning and funding.

Accordingly, a phased approach to the realization of the plan is recommended to ensure that benefits to the corridor can be achieved within the short-term, working towards the full build-out of the vision in the long term. It is important to understand the sequence of changes in order to prioritize the realization of ultimate design for each of the Focus Areas.

Strategy:

1 **Short-Term Improvements**

Short-term improvements provide impactful, reasonably low investment 'quick wins' to spark interest in the corridor and work towards improving some of the corridor's more significant issues such as safety, inconsistent pedestrian amenities, and an under-developed sense of place (e.g. Separated Bike Lane Pilot Project).

2 **Medium-Term Improvements**

Medium-term improvements begin to implement additional elements within the right-of-way and the private realm. Medium-term improvements provide opportunities for initiatives that require more extensive planning and/or investment than those outlined in the Short-term.

3 **Long-Term Improvements**

The Long-term improvements will see the full realization of the Gateway vision, likely beginning with the central segment of the corridor which has been prioritized for increasing the public realm by burying hydro lines.

Report Structure

The Gateway Strategy Report provides a comprehensive plan for University Avenue grounded in the existing conditions, research and best practices.

The following is a summary of each of the sections covered within the report and a brief summary of the information contained within.

2: Background & Study Process

This section begins with an overview of the existing conditions along the corridor. It divides University Avenue into Character Areas Zones and identifies the study stakeholders and their roles and responsibilities. This section also provides an overview of the applicable policy documents and the transportation patterns along the corridor.

3: Opportunities for University Avenue

This section examines University Avenue as a gateway, and provides an overview of the constraints and opportunities present along the corridor,potential for connectivity, placemaking, and potential treatment of utilities along the corridor.

4: Transportation Analysis and Direction

An overview of the existing transportation conditions and opportunities, and a holistic approach to developing a balanced multi-modal corridor is developed through examining precedents and industry best practices. Lessons learned from Transportation Best Practices are applied to the University Avenue Gateway Strategy.

5: Themes, Vision, and Goals

The vision for University Avenue is distilled and a plan on how to represent the project themes in the corridor is developed. This section includes: an outline and description of the project themes: innovation, learning, discovery, and entrepreneurship, the goals for the study, a vision for the future of University Avenue, the objectives and principles to be employed in order to achieve the vision, and gateway and public realm precedents that can inform the design.

6: Concept Plans

An overall approach for the University Avenue Gateway Strategy includes concept designs for the five Focus Areas along the corridor. The approaches developed in the key areas should be carried through the entire corridor in order to achieve the vision.

7: Implementation

Recommendations provide an overview of the potential project phasing, order of magnitude cost estimates and funding strategies. Roles and responsibilities for the corridor are also identified for each phase.

Appendix A: Study Consultation

Community input is an integral part of building a visually appealing and distinctive identity for the University Avenue corridor that accurately represents the desires of those that use it. Through consultation efforts, the valuable experiences and expertise of

the public can serve as the foundation for the corridor. Appendix A reviews the approach that was taken to conduct this Gateway Strategy, and the results of the Stakeholder Meeting and Public Open House that were conducted during the process of the project.

Appendix B: Public Open House Panels

Appendix B provides readers of this document a high-level and efficient overview of the Gateway Strategy's vision, goals, concept plans and recommendations. The panels that were displayed at the Public Open House provide a quick understanding of the project from beginning to end.

Appendix C: Order of Magnitude Cost Estimate

Appendix C provides approximate costing for materials and construction.

2 BACKGROUND & STUDY PROCESS

The Background section provides an overview of the University Avenue context that lays the ground work for the Gateway Plan.

University Avenue, Waterloo, Google Image

Description of University Avenue

The Gateway Strategy addresses the 4.2km section of University Avenue between Westmount Road North and Highway 85 (see Figure 2). University Avenue is an integral transportation link within the City and the Region of Waterloo. It provides a vital east-west connection for automobiles and transit and is the primary access for the University of Waterloo, Wilfrid Laurier University, Conestoga College Institute of Technology and Advanced Learning campuses, and much of Waterloo's tech industry and research institutes. This is the only road in Canada servicing three post-secondary institutions within a single municipality. The road intersects with a number of other major north-south corridors including Highway 85 (Conestoga Parkway), Weber Street, King Street, and Westmount Road. It also links to the new ION light rail transit line and the Grand River Transit bus network. These major intersections create connections to other significant nodes within the City (e.g. Waterloo Park between Westmount Road and Albert Street, Uptown Waterloo which is a mere 600m away, the Boardwalk, and Conestoga Mall and Station).

The City of Waterloo is located in the Waterloo Region and has a population of 130,000 people. Over the last twenty years the city has grown in population by 39% based on the 2011 Census – out-pacing the population growth of the region (34%) and province (27%). (strategic plan 2015-18).

Waterloo is transforming from a low-rise suburban community to a more compact urban form, particularly within the Urban Growth Centre, around prominent nodes and corridors, and at the ION Major Transit Station Areas (OP, p. 13) including sections of University Avenue. The entire length of the study area includes designated Nodes and Corridors, as seen on Schedule 'B' - City Structures, of the Official Plan (OP). The majority of the land along the study area (west of Weber Street) is designated as a Major Node, which means that medium high to high density mixed-use development is planned for this area. Adjacent to Highway 85 is a Minor Node, which is planned for medium to medium-high mixed use development. Linking these nodes is a series of Major and Minor Corridors. Corridors are the strategic linkages between nodes (destinations) and need to support all modes of transportation, including active transportation and transit.

Land Use

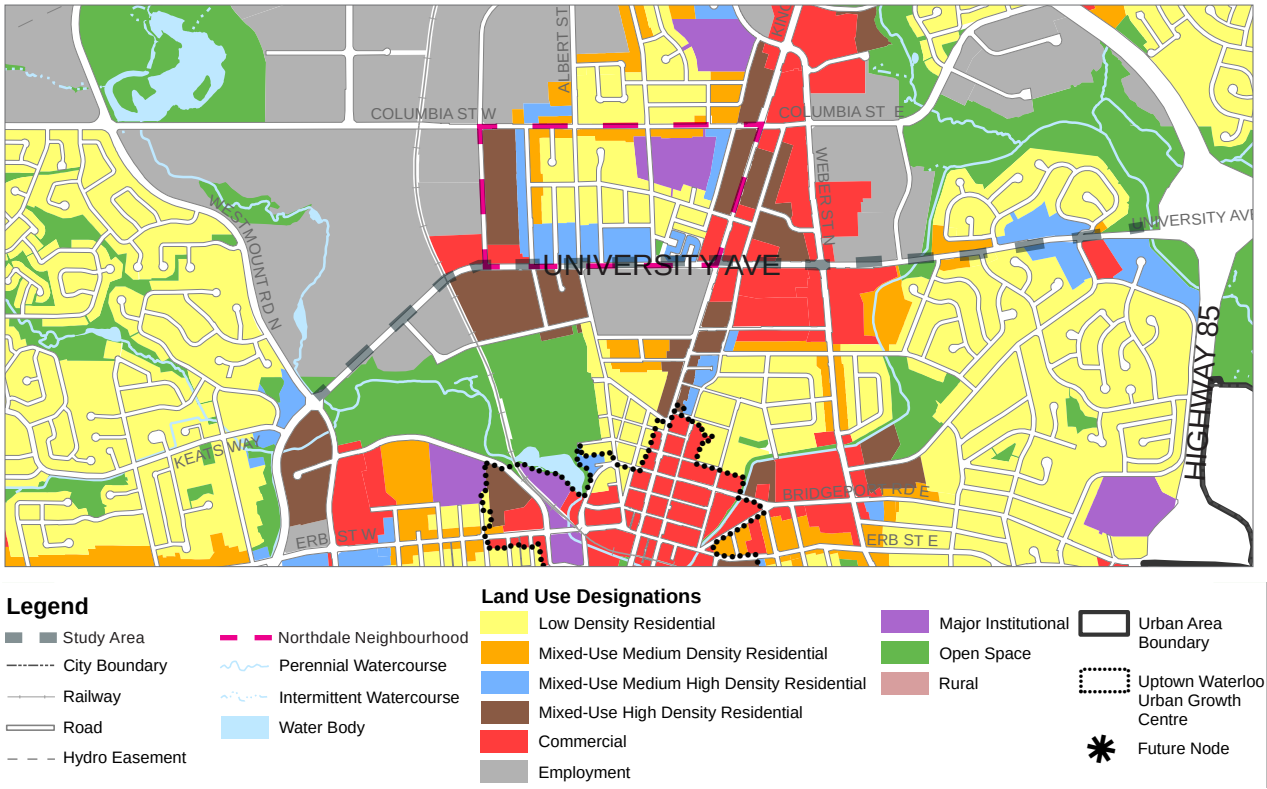

Figure 3 | Area Land Use Map - *The City of Waterloo Official Plan Land Use Plan Schedule 'A'*

The study area includes numerous land uses including low density residential, mixed-use medium, medium-high, and high density residential, commercial, and employment (See Figure 3). It is important that the Gateway Strategy responds to the current and future land uses along the corridor, as varying land uses often necessitate differing streetscape elements. Areas with more active land uses, such as Commercial, often require more pedestrian amenities than residential land uses.

The study area is experiencing rapid growth, in particular the adjacent Northdale Neighbourhood, which will impact the gateway through an increase in activity and community members in the area.

The corridor is designated as a **Regional Road** and is owned and operated by the Region of Waterloo. University Avenue is classified as a Neighbourhood Connector: *Avenue* in the Region's Corridor Design Guidelines. According to the Region's Context Sensitive Regional Transportation Corridor Design Guidelines, Neighbourhood Connectors are intended to:

"Balance active transportation (bicycles and pedestrians), transit and vehicle movement, providing a higher level priority (design and comfort) for pedestrians, cyclists and transit users."

Key Landmarks

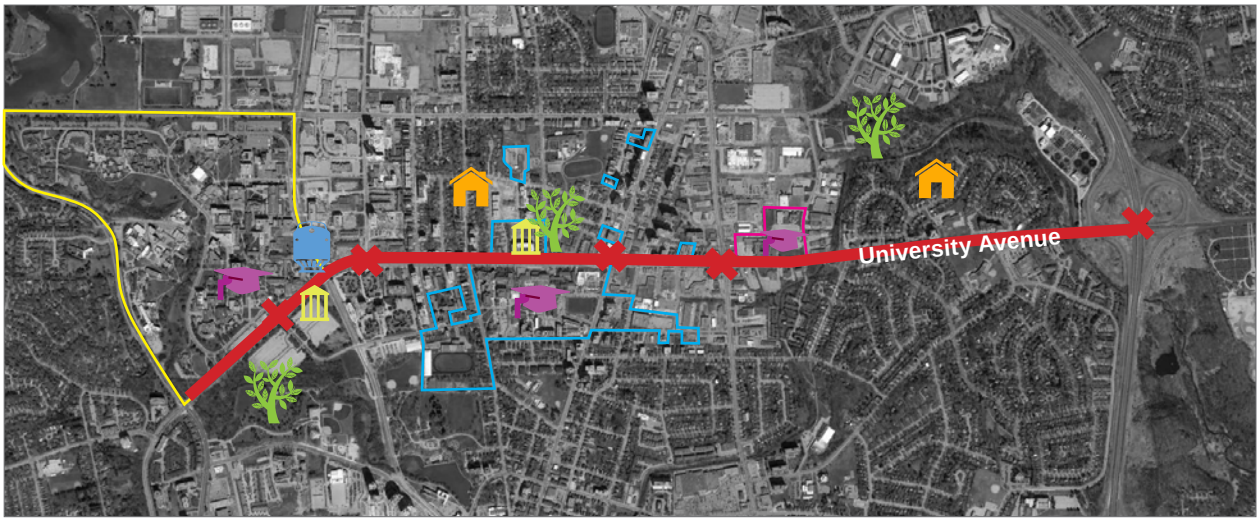

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Figure 4 | Key Landmarks

- Educational Institution
- Iconic Building / Structure
- Park / Open Space
- Key Transit (Light Rail Transit Station)
- Key Intersection
- Residential Neighbourhood
- Waterloo University
- Wilfrid Laurier University
- Conestoga College

The study area has several key and memorable landmarks, as identified in the initial Public Information Centre meeting. The look and character of University Avenue varies considerably, often lacking the desired visual cohesion and an established sense of place.

Key existing landmarks along the corridor include but are not limited to:

Built Form:

- Lazaridis Hall,
- John Aird Centre,
- Entry Signs (UW, WLU),
- Conestoga College,
- University Avenue Pedestrian overpass at UW.

Places (Names & Nostalgia):

- Commercial centres, shops, restaurants,
- University Plaza.

Transportation/Infrastructure:

Intersections including:

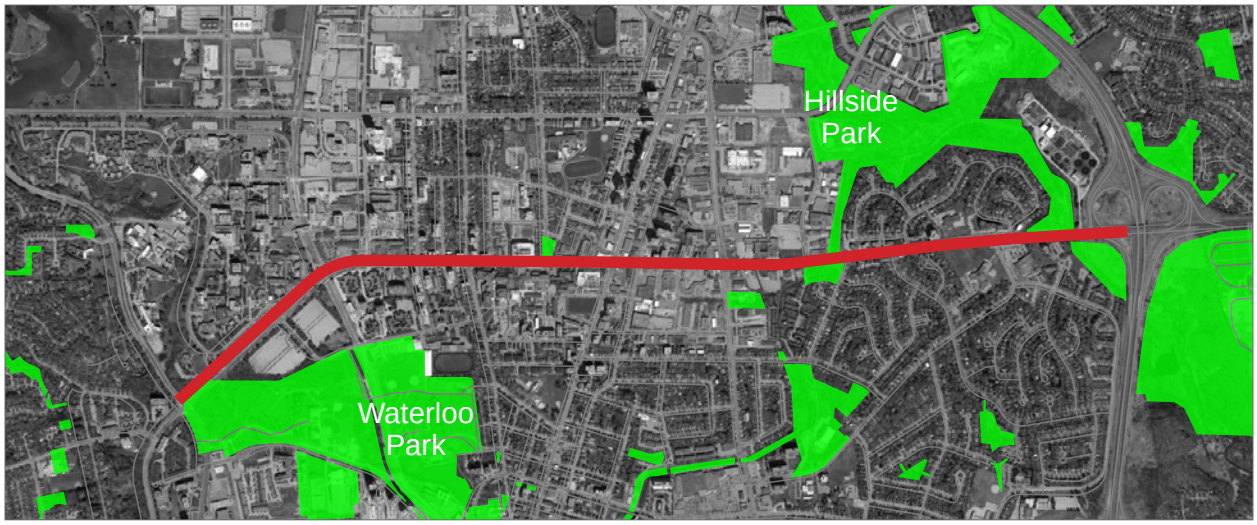
- University Avenue and King Street,
- University Avenue and Seagram Drive,
- ION Light Rail Transit Stop.

Other:

- Laurel/Hillside Trail Entrance & Pedestrian Crossing,
- Veteran's Green.

These areas, and others, were considered in the development of the Gateway Strategy to accommodate the growing urban area in a healthy, sustainable way.

Parks and Greenspace Networks



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Existing Open Space / Parks

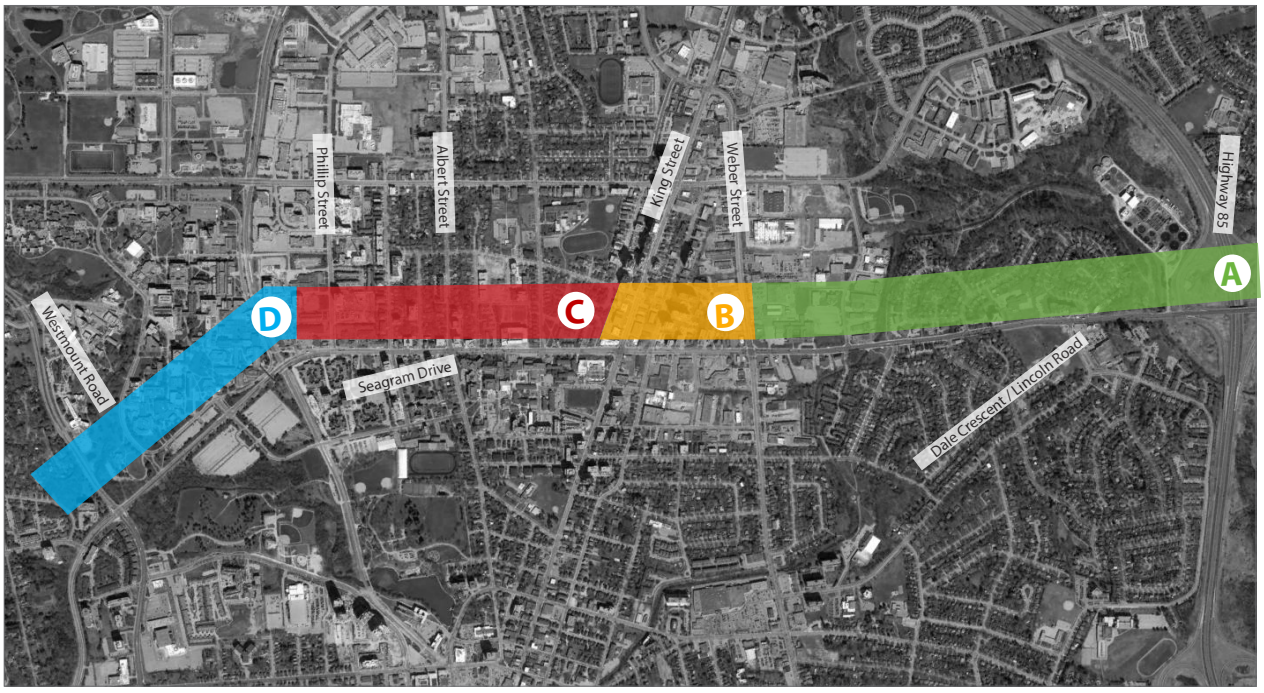
Figure 5 | Parks and Green Space Networks

The City of Waterloo has an extensive network of public open spaces, trails, parks, and naturalized areas that combine to foster a healthy and active urban environment. The University Avenue area (between Highway 85 and Westmount Rd North) is flanked by significant open green spaces, Hillside Park area to the east and Waterloo Park to the west. However, there is currently a lack of street trees and natural environment along University Avenue. There is an opportunity to enhance the urban environment through green infrastructure strategies.

Over time, the redevelopment of University Avenue offers the chance to explore opportunities to introduce more vegetation, especially trees. Trees can increase shade, reducing heat island effects, and improve the microclimate along the roadway. Street trees can enhance the urban habitat, further create connections in the landscape, and facilitate a more human-scale public realm.

Corridor Character Zones

Over the length of the study area the character of the street changes numerous times, thus indicating no single design approach. By using a combination of traffic data, corridor observations, and supporting documentation, four distinct zones were identified along University Avenue, which are outlined in Figure 6 below. These zones are divided at major intersections. Each zone provides a distinct circumstance and differentiates the character along the stretch of the corridor. The following section describes the current functional and modal characteristics of each zone.
These functional zones inform the conceptual design of the corridor.



Legend

- Zone A: Highway 85 to Weber Street
- Zone B: Weber Street to King Street
- Zone C: King Street to Phillip Street
- Zone D: Phillip Street to Westmount Road

Figure 6 | Corridor Character Zones Along the University Avenue Corridor

Zone A: Highway 85 to Weber Street

University Avenue at Lincoln Road/ Dale Road looking west

The eastern section of the corridor, from Weber Street to Highway 85 features a variety of land uses, notably the Conestoga College Waterloo campus, which is the most pedestrian friendly node of the zone. Many of the land uses are unlike the intensive urban character of the University Avenue corridor seen in Zones B, C and D; the urban streetscape is defined by lower density land uses, larger setbacks, wider lanes, and fewer direct accesses to adjacent lands. The Highway 85 interchange has a major impact on this zone of the corridor, which is reflected in the higher vehicular traffic volumes and lower active transportation presence. This zone has the lowest collision rates of the four, although two of the intersections are still in the Region's top 100 collision locations for 2016. The relative low density of the surrounding areas, the proximity of Highway 85, and the volume of through traffic represent barriers to a modal shift in this zone.

The Lincoln Heights School sport's field fronts onto University Avenue for a portion of the corridor in this zone.

There are dedicated on-road bike lanes on both sides of University Avenue (on this zone of the corridor beginning at Weber Street, but heading east, they extend only as far as Lincoln Road.

Zone B: Weber Street to King Street

University Avenue approximately 20m west of Weber Street looking west

The section of University Avenue between King Street and Weber Street has the highest total number of collisions, which can be attributed to the high volumes of vehicles and pedestrians (either moving along University Avenue or the intersecting north-south arterials). Although there are only three intersections (University Avenue at King Street, Weber Street, and Regina Street), they rank in the top 50 of the 2016 Regional collision rankings for at-intersection and mid-block collisions (refer to page 47 for more detail). The intersections along this stretch of University Avenue are closely spaced with an abundance of mid-block accesses, which is a different pattern than the other sections.

Within this section, there is a mixed-use pedestrian hub at King Street with Wilfrid Laurier and some commercial establishments. The remainder of the section has some commercial draws, however a large portion is characterized by parking lots fronting the streetscape. The University Avenue and King Street intersection is also a significant cross-street for transit, pedestrians, and cyclists.

This zone of the corridor presents a significant gap in the bike network, as it is the only zone with no on-road bike lanes.

Zone C: King Street to Phillip Street

University Avenue west of Lazaridis Hall looking east

The section of University Avenue between Phillip Street and King Street has direct interaction with the Northdale Neighbourhood, Wilfrid Laurier University, and multiple commercial plazas. This zone has numerous closely spaced intersections with multiple mid-block accesses. Some stretches of this segment have an active street edge with mixed-use buildings, while other areas are predominantly medium high density residential. Despite the pedestrian draws, the corridor maintains a feeling of auto dominance due to the lack of amenities and place-making elements.

The highest corridor transit use is within this zone, as are all three of the top ranked pedestrian collision locations within the study area. This suggests that the area is highly utilized by pedestrians, but that the existing facilities may not effectively accommodate them. Further detail regarding these matters are discussed in Section 4 Transportation Analysis & Direction.

On-going re-development of the Northdale neighbourhood and the recent launch of the ION light rail transit system heighten the case to enhance University Avenue to support the presence of transit and active transportation users within this Zone.

The dedicated on-road bike lanes in Zone A terminate in Zone B between Weber Street and King Street, and continue in Zone C west of King Street. The overall goal is to have cycling infrastructure on both sides of University Avenue from Westmount Road to Highway 85.

Zone D: Phillip Street to Westmount Street

University Avenue at the University Shops Plaza entrance looking west

The western section of the corridor from Westmount Road to west of Phillip Street has a four-lane cross-section with a centre median, representing a very high level of service for vehicular traffic despite the fact that this zone serves the lowest vehicular traffic volumes outside of the p.m. peak period. The signalized intersections are relatively far apart, and there are very few mid-block accesses on the north side of University Avenue, suggesting that people are predominantly either passing through this zone of the corridor, or using it to access the University of Waterloo. Transit activity supports this trip pattern, as Grand River Transit stop activity is extremely low near Westmount Road, and high near the University entrance at Seagram Drive.

Zone D also provides a connection to two ION light rail transit stations, which are within 350-400 metres of the University Avenue Corridor.

The majority of this zone is fronted by parking lots and green space, with a concentration of pedestrian activity around the University of Waterloo entry points. However, the University of Waterloo has plans to create an active street edge along the campus (refer to page 26 for more information).

There are dedicated on-road bike lanes in this zone of the corridor, with future active transportation routes planned. To the west of the study area, the Region is in the process of installing separated bike lanes on University Avenue from Westmount Road to Erb Street. The portion between Keats Way and Erb Street has been completed.

Zone D is primarily comprised of two land uses, which are employment and open space. The major institutional land use entirely consists of the University of Waterloo. The current campus is more interior focused and does not have a significant active frontage on University Avenue. The concentration of activity within this area is focused around peak times and is not lasting. Zone D currently serves as a means of entering the University of Waterloo campus. The character of this area is directly tied to the University of Waterloo and the campus' daily life.

Policy Context

The Gateway Strategy is informed by the following plans, guidelines and policies of the Region and City of Waterloo:

A Place to Grow: Growth Plan for the Greater Golder Horseshoe (2019)

A Place to Grow is an initiative undertaken by the Government of Ontario to develop a *"plan for growth and development in a way that supports economic prosperity, protects the environment, and helps communities achieve a high quality of life."* The Official Plan includes University Avenue within the Built-Up Area.

The Region of Waterloo Official Plan (2015)

The Region of Waterloo Official Plan is the Region's primary planning document. It is intended to guide growth and change to create a more balanced community structure working towards 2031.

The Regional Official Plan outlines the following core vision:

“Waterloo Region will be an inclusive, thriving, and sustainable community committed to maintaining harmony between rural and urban areas and fostering opportunities for current and future generations”

The Plan directs a greater share of future development to Built-Up Areas, including along the University Avenue Corridor, to make better use of land, existing infrastructure, community infrastructure, and human services.

The City of Waterloo Official Plan

The City's Official Plan serves as a comprehensive guide for long-term land use and development for the City of Waterloo. The Plan was created with input from the community and demonstrates Council’s vision of growth and change for the community. Policies have been established that will direct the city’s form, extent, nature of growth and change to 2031.

Areas of Focus:

- Vision, principles and basis of the plan;
- City form;
- Arts, culture, heritage, recreation and leisure;
- Networks;
- Transportation;
- Economy;
- Environment and Energy;
- Mineral aggregates;
- Land-use designations; and
- Implementation;

The Plan will be reviewed periodically in order to ensure that changes in social, economic, environmental, technological, and demographic conditions are reflected in the policy framework.

The City of Waterloo Strategic Plan (2015-2018)

The Strategic Plan is a comprehensive overview from Council that reinforces the City's vision, mission, and guiding principles with which the municipality is governed.

Six key priorities were identified including:

- Multi-modal transportation,
- Infrastructure renewal,
- Strong community,
- Environmental leadership,
- Corporate excellence, and
- Economic development.

The Plan's multi-modal transportation goal identifies objectives including maintain/ enhance transportation networks, improve public transportation areas and expand active transportation networks and specifically identifies enhancing the University Avenue Gateway. These objectives are reflected in this Gateway Strategy through measures that prioritize pedestrian connectivity and amenities, and enhancing transit and cycling infrastructure.

The City of Waterloo Urban Design Manual (2010)

The Urban Design Manual provides a structured framework of the City's urban design intentions in aspects of spatial configuration and design. It is a vehicle to further define the urban design objectives and priorities of the Official Plan. The Gateway Strategy is intended to augment the Official Plan and Urban Design Manual.

The City of Waterloo's Urban Design Manual highlights the City's objective to create attractive streetscapes, with high quality design features that enhance neighbourhood character and project theme. The streetscapes are intended to promote a high standard of urban design in the City of Waterloo, providing pedestrian-friendly design, animated streetscapes and facades, interactivity within the public realm, and accessible and integrated transitions between the private and public realms at street level. In keeping with the Urban Design Manual, the visions for University Avenue (as outlined in Section 5) focus on creating a vibrant public realm along the corridor, offering dynamic amenity spaces, connectivity between major destinations along the corridor for active modes of transportation and the creation of a consistent identity along the gateway.

Additionally, the Urban Design Manual encourages City Design Guidelines such as Creativity and Innovation (Section 2.4), Engaging Spaces (Section 2.3.4) Public Art and Culture (Section 2.4.2), which align with the identifying themes for University Avenue. These guidelines reinforce the themes of Innovation, Entrepreneurship, Learning and Discovery envisioned for University Avenue. The dynamic and vibrant visions for University Avenue directly correlate with the Urban Design Manual in this manner and a supportive policy environment will aid in implementing the bold design visions for the Gateway moving forward.

The City (2011) / Region of Waterloo Transportation Master Plans (2018)

The Gateway Plan should be consistent with the City's and Region's Transportation Master Plans. The City of Waterloo adopted its first Transportation Master Plan to create a more balanced transportation network, through the implementation of a multi-modal system including auto, walking, cycling and transit.

In 2018 , the Region of Waterloo approved an updated to its Regional Transportation Master Plan, which was last reviewed in 2010. The new Plan, titled "Moving Forward - 2018 Transportation Master Plan", seeks to complete current and planned transportation projects and pursue a more-sustainable transportation networks. The Vision of Moving Forward is:

"Waterloo Region will be a prosperous, sustainable, and healthy community, with viable transportation choices for people of all ages and abilities, and for the goods supporting our economy"

To realize this vision, Moving Forward establishes the following four key goals:

Promote Travel Choice

Promoting travel choice focuses on transportation equity, ensuring that everyone can make trips in an integrated manner without a car. This goal also seeks to make different ways of making trips, such as walking, cycling, and public transit, competitive in terms of travel time, cost, and accessibility.

Foster a Strong Economy

The transportation system plays a major role in the Region's economy. Moving Forward seeks to improve the quality of active transportation (walking and cycling) options in the region, find ways to manage congestion, and improve travel times along major goods movement corridors

Support Sustainable Development

Supporting sustainable development is both an economic and environmental goal as it relate to transportation. This goal supports more sustainable communities while reducing transportation contribution to climate change.

Optimize the Transportation System

Optimizing the transportation system means making the most of existing infrastructure and services. This goal will help defer the need for new infrastructure, save money and use land more efficiently.

Moving Forward also identifies a portion of University Avenue (from King Street to Erb Street West) as a potential corridor for ION Stage 3 rapid transit. This potential corridor would build on the ION LRT (Stages 1 and 2) to provide est-west connections in Kitchener and Waterloo. The corridors may feature Bus Rapid Transit or Light Rail Transit, depending on demand and development Region.

Improving the public realm along University Avenue will directly complement and reinforce the goals of Moving Forward. Public realm and streetscape enhancements will further encourage the use of active and public transportation. Creating a comfortable, safe and welcoming environment will result in a more vibrant public realm.

Throughout the RTMP, University Avenue is listed among the corridors that are critical to achieving the vision, and parts or all of the study area are identified for improvements to transit, separated cycling facilities, and pedestrian and accessibility improvements. The RTMP goals should be showcased in the University Avenue Gateway Strategy.

Improving the public realm along University Avenue will directly complement and reinforce the vision of the TMP. Public realm and streetscape enhancements will further encourage the use of active and public transportation. Creating a comfortable, safe and welcoming environment will result in a more vibrant public realm.

The Regional Active Transportation Plan (2014)

The Regional Active Transportation Plan calls for continuous bike lanes along University Avenue. A pilot is currently underway to explore segregated bike lanes. The Region intends to make it easier for the community to walk and cycle, which will contribute to a sustainable and liveable Waterloo. Promoting the integration of active forms of transportation will encourage more community members to shift their modal preference. In order to do so, the Region will provide a safe, comfortable and convenient network of facilities that are accessible and prioritized.

The Region of Waterloo Context Sensitive Regional Transportation Corridor Design Guidelines (2013)

The Region of Waterloo adopted a set of broad corridor design guidelines (design standards), which can be applied to a variety of road types and conditions. This includes University Avenue as a Neighbourhood Connector - Avenue. These guidelines are intended to serve as a reference in the preparation of corridor studies, land use plans, road improvement projects and other similar projects.

The Gateway Strategy reflects and responds to the unique condition of University Avenue. The vision will enhance the streetscape. The unique qualities of University Avenue will be echoed throughout the Gateway Strategy and will help to further solidify the importance of the corridor.

Grand River Transit Business Plan 2017-2021 (March 2018)

The Business Plan outlines plans to further integrate the new bus-and-rail transit system creating a more effective transit system in the Region of Waterloo. This Business Plan is the tool that the Region of Waterloo is utilizing to increase ridership as delineated in the Region's Transportation Master Plan. Part of this includes creating new passenger facilities, such as at the University of Waterloo, which will integrate multiple bus routes to the new ION light rail transit stations. The Business Plan recognizes that opportunities exist across the entire transit system to implement transit priority measures. This strategy proves

to be valuable by reducing traffic delays and creating a more reliable system. University Avenue is a vital roadway for multiple bus routes and implementing priority measures could further encourage the growth of Grand River Transit.

The City of Waterloo Station Area Plans (2017)

The City of Waterloo Station Area Plans highlight potential future changes around the different ION stations located through Waterloo. Each station area includes lands within a reasonable walking distance of the ION stop. The plans also explore improvements to active transportation, expanding access for people away from the light rail transit corridor. More specifically the following chapters were consulted in the development and review of the Gateway Strategy:

- Chapter 2: Corridor - Wide Considerations
- Chapter 3: Laurier - Waterloo Park
- Chapter 4: University of Waterloo

The City's Station Area Plans will result in the evolution of University Avenue as well as the surrounding land uses and neighbourhoods. The introduction of new stations will encourage intensification, which will help to stimulate economic development, promote community building and energize the public realm.

Northdale Neighbourhood Urban Design Guidelines (2012)

The Northdale Urban Design Guidelines are supplemental to the City's Official Plan and the Urban Design Manual. University Avenue is one of the bordering roads of the Northdale Neighbourhood and is directly addressed within the Guidelines.

Subsequent to the 2012 Northdale Land Use and Community Improvement Plan Study, the City of Waterloo released Urban Design and Built Form Guidelines supportive of the transformations envisioned for the Northdale neighbourhood in the future. The guidelines are motivated by the overall vision:

"By 2029, Northdale is revitalized and reurbanized into a diverse, vibrant and sustainable neighbourhood, integrated with educational, residential, commercial, cultural, heritage and recreational functions, and improved open space, pedestrian, cycling and transit networks."

This vision statement for the neighbourhood was considered in the visioning for University Avenue, as the main gateway to the transitioning Northdale neighbourhood. The main priorities for the Northdale neighbourhood, including integration with the urban fabric of the City, identity creation and interactivity, have been aligned with the visions for University Avenue to ensure this important neighbourhood is considered in the planning process.

Notably, Northdale will be an integral part of the University Avenue vision. The overall themes for the corridor (Innovation, Discovery, Learning and

Entrepreneurship), should be reflected in the Northdale neighbourhood, as an extension of the activity and character of University Avenue.

Campus Planning

An understanding of the growth intended for Conestoga College, the University of Waterloo and Wilfrid Laurier University, as entities making up a large portion of the corridor's frontage, is essential to this project.

The $43.5 million Conestoga satellite campus expansion doubled its size and will bring over 3000 new students to the Waterloo location. The expansion renewed the school image and consequently provides a modern update to the views experienced entering Waterloo along University Avenue. Expansions include a revamped University Avenue frontage with a new plaza, relocated and expanded bus shelters and landscaping.

In the case of the University of Waterloo and Wilfrid Laurier University, both Campus Master Plans state that University Avenue does not currently serve their student populations well through pedestrian amenities. The Master Plans' outline that development along University Avenue should foster connectivity and academic growth between both institutions and should be enhanced to reflect the major entrance it serves for both institutions.

The University of Waterloo intends to expand its campus to the south side of University Avenue at Seagram Drive in the future and will better integrate the Waterloo campus with the public realm along the corridor (e.g. buildings that relate to University Avenue). Moreover, the University is exploring opportunities for mixed-use housing developments at the LRT station at University Avenue, bringing potential intensification to University Avenue in the future.

Wilfrid Laurier University's Master Plan also contemplates the expansion of its campus to the north side of University Avenue, such as Lazaridis Hall. This expansion will create a strong connection to University Avenue and should be considered in the visioning process. Essential to consider as well are WLU's intentions to create a plaza/parkette at the corner of King and University fronting their athletics building at King Street and University Avenue.

Study Partners and Roles

The Gateway Strategy was developed in cooperation with various stakeholders and study partners. This collaborative effort ensures that the overall vision for the study will reflect and represent the community's goals. Establishing a cohesive vision which aligns with the various stakeholders and study partners will results in a successful outcome for all. The following stakeholders and study partners have been involved:

City of Waterloo

In 2019, the City of Waterloo expressed interest in creating this Gateway Strategy to develop a cohesive vision for the University Avenue corridor from Highway 85 westward to Westmount Road. The City oversaw this study, and provided representation on the study's team from Planning and Engineering and are in consultation with various other departments and divisions. Overall the City's role was to help guide the study process and develop a Gateway Strategy in coordination with all study partners and stakeholders. Ultimately, the Gateway Strategy will be considered by City Council for approval.

Region of Waterloo

The Region of Waterloo is the roadway owner and study partner. University Avenue is a Regional Road, operated by the Region. The Region's Planning, Engineering and Transportation staff have provided technical guidance and direction for the study.

Grand River Transit

As part of the Regional partners in this Gateway Strategy, Grand River Transit was involved given the prominence of transit along University Avenue. Regardless of the study's recommendations, the Grand River Transit team will be impacted by these outcomes. Grand River Transit is responsible for most of the bus traffic along University Avenue including the bus routing, arrival and departure scheduling and management of transit. For transit purposes, a key premise of this study relative to Grand River Transit is not to negatively affect the current ridership and the level of service to the existing customers.

Post-Secondary Institutions

University of Waterloo

University of Waterloo is one of the three post-secondary institutions located along the University Avenue corridor. The University of Waterloo was a local Primary Stakeholder in this study. The core project team worked closely with the University's development team in establishing key and strategic connections that will dovetail their future development master plans for the campus moving forward. A key component of the University Avenue vision is to ensure that the recommendations for the Gateway Strategy connect appropriately with the University of Waterloo development plans.

Wilfrid Laurier University

Wilfrid Laurier University (WLU) is another post-secondary institution located along the University Avenue corridor. WLU was a local Primary Stakeholder in this study. The core study team worked closely with WLU in establishing key and strategic connections that will complement future development master plans for the campus.

Conestoga College

Conestoga College is the third of the three post-secondary institutions that are located along the University Avenue corridor. The College was a local Primary Stakeholder in this study. The core project team worked closely with the College in establishing key and strategic connections that will dovetail their future development master plans for the campus moving forward.

The General Public and Other Stakeholders

The general public and other stakeholders such as land and business owners along the corridor were an important component of this study. The integration of comments and communications from the general public and stakeholders are a key component to the success of the vision.

IBI Group

IBI Group was the lead project consultant for this study. IBI's main goal was to create and develop a high level vision for the University Avenue Corridor and to develop a series of concept plan recommendations and document for our main client, the City of Waterloo. The Gateway Strategy vision would be possibly implemented over time to create a branded and prominent streetscape for University Avenue. IBI has worked to include all key stakeholders within this process.

Additionally, IBI Group is working on the Environmental Assessment on University Avenue led by the Region of Waterloo.

Vidya Inc.

Vidya Inc. is a subcontractor within the IBI Group study team. Their prime responsibility is to develop a unique and attractive approach towards engaging the general public during the two Public Information Sessions, and throughout the design development. Vidya was very progressive in the fact that they were creatively utilizing social media to connect with participants and attempting to interact will all age groups from youthful citizens to senior citizens of the community.

3 OPPORTUNITIES FOR UNIVERSITY AVENUE

This sections outlines the opportunities and constraints along University Avenue which informed this Gateway Strategy.

King Street Causeway Parklet, Toronto

University Avenue as a Gateway

University Avenue is a Regional Road that serves as the primary gateway to Waterloo from Highway 85 for many visitors and residents of the community via automobiles, transit, cycling and pedestrians. The corridor includes a mix of land uses that broadly relate to the themes of learning, innovation, entrepreneurship and discovery, as exemplified in the post secondary institutions and businesses along the corridor. There is opportunity to build on these themes and make the corridor more prominent and better integrated with the surrounding built form.

The three post-secondary institutions located along University Avenue create a unique identity for the corridor. The street is used each year by thousands of students who come to Waterloo in pursuit of completing their post-secondary education. For many, it is the first sense of arrival to the City of Waterloo in the fall. Wayfinding signs are used during orientation week to facilitate the arrival of the students to the main campuses and their residences, however this type of wayfinding should be embedded in the streetscape design throughout the year. At any time in the year, University Avenue is populated with students and faculty, walking,cycling or driving to and from the campuses, therefore the students and faculty should be showcased. This will reinforce the district and the corridor as a place of learning.

Creating a distinct environment for students can incite community growth and a thriving economy by encouraging students to develop lasting roots within the community.

Along with University Avenue being a gateway to the area for students and their families, it is also a point of entry into the community for other visitors such as tech sector research institutes. Multiple destinations already present along University Avenue have resulted in high amounts of pedestrian and vehicular traffic traveling along the corridor, demonstrating the value of the street; enhancing it will only increase the functionality and services it provides to the area.

The opportunity to make a profound impact on visitors through the development of this gateway will likely prove to be greatly valued, as it will create a stronger sense of place, entice people to visit more often, having the potential to spark economic growth and development along the corridor. It is vital to enhance this highly-traversed road into a fully-encompassing and functional road, accessible to everyone.

Connectivity Along University Avenue

University Avenue is designated as a Regional Road. It is a significant east-west connection for the City and Region which serves as one of the main roads connecting east-Waterloo to west-Waterloo.

University Avenue intersects with many other major corridors such as Highway 85, King Street, Weber Street, and Ira Needles Boulevard. These major intersections create connections to other significant nodes within the City, such as Uptown Waterloo and the Boardwalk. University Avenue is highly valuable as a transportation corridor.

University Avenue also passes through many residential communities as it travels from west-Waterloo to east-Waterloo. The connectivity of the road to these residential areas is key, as it allows people to travel to and from adjacent communities in a direct manner.

The University Avenue corridor also hosts numerous destinations including the three post-secondary institutions, Research and Technology sector companies, significant commercial plazas, and public green space (e.g. Veteran's Green, Waterloo Park and Hillside Trails).

All these noteworthy features create a diverse user base for the corridor. Despite the initial understanding of University Avenue as major arterial road, this Gateway Strategy recognizes the corridor as a destination in and of itself as opposed to just a throughway.

University Avenue is host to many Grand River Transit bus routes, GO bus routes and nearby connections to ION Light rail transit system that provide access to sustainable transportation. There are opportunities to enhance the road to improve the methods in which the buses move throughout the corridor. One way to encourage more ridership is by continuing to make public transportation more reliable and efficient. This is both beneficial for the environment and local economy, as effective public transportation can further improve connections throughout the entire Region.

Another method of sustainable transportation, common to University Avenue due to the students, is cycling. There currently is not an adequate cycling infrastructure in place for cyclists to confidently travel the road (refer to page 44). This is an area to be focused upon in connection with public transportation to enhance sustainability within the community.

Placemaking Opportunities

There is an opportunity through private/public partnerships to implement new placemaking measures to transform University Avenue into a more pedestrian friendly, transit supportive corridor with a strong sense of place. Placemaking opportunities along the corridor will assist in transitioning University Avenue to be a more urban, human-scale place, with enhanced public realm opportunities and private developments.

The major destinations along University Avenue currently serve as nodes for gathering, however, it would be beneficial for more areas to be designated and created to encourage a livelier corridor. Expanding the reach of the pedestrian realm through placemaking opportunities will help encourage connections into the surrounding communities.

Opportunities for effective placemaking exist within major landmarks, intersections and existing points of interest, noted in Chapter 2 of the report.

The major built form dispersed along University Avenue consists mainly of institutional buildings for post-secondary students. Offering an opportunity for the students to congregate outside in suitably placed, well-designed spaces will enhance their school experience as these areas will increase their well-being. These placemaking opportunities will offer students another method to connect with the area, and therefore creating emotional connections from such areas.

Areas of particular interest in creating places for people to gather are around transportation nodes. Similar to the role that the built form can support opportunities for placemaking, the intersections of King Street and University Avenue, and University Avenue and Seagram Drive provide prominent locations which would benefit from the development of gathering areas. These areas can become micro destinations where there is a pedestrian plaza linked to the transportation element.

In coordination with public transit systems, these plaza nodes can be strategically placed and designed to further enhance the experience of passengers by offering high quality urban spaces with shade trees, shelters, and places to rest along their journey. Not only does this create transit hubs for passengers to explore and experience, if done successfully it will also help to increase transit ridership.

Incorporating the four themes of Innovation, Entrepreneurship, Discovery and Learning into various design elements such as site furniture, banners, pole wraps, and improved cycling infrastructure (e.g. cycle tracks, bike boxes, etc.), along with other features, will result in the creation of distinct areas along the University Avenue Corridor. The creation of such places where people want to be around other people will result in an increased interest and stewardship for the City and Region of Waterloo, as it provides areas for people to gather and experience the community.

A strong sense of place will be established along the entirety of the corridor through the development of a cohesive design that is unique to University Avenue. This design will be expressed through a specialized material palette including the consideration of coloured intersection crossings, and other design elements such as street furnishing (to be outlined in Section 6). The context of each section of the corridor will inform how the design elements expressed are to cater to the specific needs and character of each area.

More details regarding the placemaking approach are explored throughout the visioning and concept design sections of the report (Sections 5 and Section 6).

Summary of Constraints

University Avenue has a number of challenges that must be addressed in this Gateway Strategy, including the following:

Vehicular Focused Corridor

Currently, traffic patterns along University Avenue focus on moving traffic quickly and efficiently. This focus primarily towards vehicles negatively impacts the pedestrian environment and is a barrier to the goal for creating high quality spaces along the corridor. The corridor/ area should shift its focus to be people friendly, connect all three educational institutions together, act as a gateway to higher learning and growth, and serve active transportation users. Slowing and / or reducing the vehicular traffic along the corridor can aid in the safety of pedestrians and cyclists in the area. Providing mid-block connections and making improvements to pedestrian crossings can assist in the activation of the corridor.

Lack of an Active Street Edge

The three post-secondary institutions do not have active street edges along University Avenue. The connections of an inviting space for pedestrians and public realm are currently overlooked. This opportunity for a vibrant public realm is missing and needs to be addressed. In order to revive this pedestrian experience we need to review the largest hurdle that hinders development of this space as a multi-modal corridor by relocating, reducing or slowing the daily commuter traffic. Changing current traffic patterns will require a shift to other modes of transportation and implementing transportation demand management strategies to encourage more multi-modal traffic patterns.

University Avenue

University Avenue

Lack of Placemaking

There are few places for community members to relax, eat and enjoy their time along the corridor. There are very few patios or outdoor collective spaces such as parks and plazas available for people. Enhancing the streetscape to include patios, public realm and place-making are proven techniques to elevate a dormant streetscape, and to create a sense of place where people actually want to spend time. The corridor currently lacks elements to signify that University Avenue is distinct from other parts of the community.

Pedestrian and Cyclist Crossing Safety Issues

There are many pedestrians and cyclists along the University Avenue corridor, particularly surrounding the two Universities and Conestoga College. Sufficient crossings for pedestrians and cyclists to improve movement and safety is a priority for the corridor identified in the study. Currently, a lack of crossing locations (on average about 400 metres between pedestrian crossings along the corridor), vehicular speeds, volume, and turning movements is a key issue for pedestrian and cyclist accessibility and safety. Any future crossing locations recommended in the study will be evaluated by the Region of Waterloo.

High Vehicular Speeds

High vehicle operating speeds carrying on from Highway 85 represents a significant challenge particularly in the eastern section of the corridor (Character Zone A), but also extending along the entire study area. Higher operating speeds tend to discourage active transportation and negatively impact the overall livability of the corridor. The speed transition problem is compounded by the fact that the grade of the streetscape drops towards Weber Street and Conestoga College. A wide right-of-way, coupled with the grades, does not provide the visual cues that drivers rely on to understand the need to slow down for slower operating speeds.

Traffic, Transit, and Road User Safety

The following key issues are of concern:

- Outside of the AM and PM peak hours, the four-lane cross section of University Avenue provides vehicle capacity that far exceeds the demand, resulting in traffic conditions that can promote higher operating speeds.
- Heavy peak period traffic and aggressive driving results in cyclists avoiding the on-road bike lanes where available, translating into more sidewalk riding on the already crowded 1.5m sidewalks.
- Daily transit boardings and alighting along the University Avenue corridor are among the highest in the Region (>4,000/day at Philip Street); which often results in crowding at bus stops that block sidewalks and encroaches on adjacent properties. While the bus stop crowding is an issue, the high transit ridership is an opportunity which helps to justify changes in modal priority along the corridor.
- The corridor collision records and the Regional Collision rankings indicate a history of collisions involving vulnerable road users. On University Avenue, collisions involving vulnerable road users are far more likely to result in serious injuries or fatalities than vehicle-vehicle collisions. 85% of collisions where a vehicle strikes a pedestrian or cyclist, result in personal injury, while only 19% of vehicle-vehicle collisions result in injuries to occupants.
- Left-turns are the primary driver action involved in vehicle-pedestrian collisions (53%).
- Right-turns are the primary driver action involved in vehicle-cyclist collisions (56%).

Outside peak hours, University Avenue provides a vehicle capacity that far exceeds demand

Left-turns are the primary driver action involved in vehicle-pedestrian collisions at 53%

Right-turns are the primary driver action involved in vehicle-cyclist collisions at 56%

Transit Stops and Amenities

Current transit stop locations along the University Avenue corridor lack supporting amenities (e.g. transit shelters, benches, waste receptacles, WiFi). Currently, there are strategic transit stops at each post-secondary institution to facilitate transit ridership. Each location is undersized due to the current volume of daily users. The lack of amenities supporting these transit stops is a key lost opportunity for transit ridership and for the corridor's animation. Using a transit-centric lens, efforts should be undertaken to support ridership, use of cycling and walkability.

Utilities

Existing Utilities Conditions

Above ground utilities are present along the majority of the study area. Hydro poles are present along the north side of University Avenue from Highway 85 to the light rail transit corridor. Hydro poles are not present along the streetscape in front of the University of Waterloo, but reappear within the centre median just east of Westmount Road.

Above ground utilities, predominantly hydro poles, often signify a less urbanized streetscape environment. The overhead wires and poles clutter the streetscape environment and place limitations on tree heights and planting opportunities within their vicinity. The placement of existing poles can disrupt ideal streetscape geometry, with pole relocation often being cost prohibitive or not possible without additional property acquisition. Considering the constraints placed on the public realm due to above ground utilities, two feasible options for burying utilities were explored.

Burying above ground utilities will provide considerable room for public realm and streetscape initiatives within the right-of-way. Allotting more space to the public realm will help balance transportation modes and support a safer and more functional and green corridor. To achieve the long-term vision for University Avenue, initial bold moves and partnership with the post secondary institutions and businesses will have to be undertaken. Although the cost of burying above ground utilities is considerable, it will provide a foundation for flexibility and interchangeability within the public realm over time. Undertaking this effort will also contribute towards the branding of the avenue.

Rationale for Burying Hydro Lines

One primary recommendation of this Plan is the eventual burying of hydro utility lines along the entirety of the corridor. The burying of hydro lines offers several design and safety benefits, including:

Appearance/ Urban Design:

Compared to overhead wires, underground utilities are much more aesthetically pleasing as they are out of sight. Overhead wires would compromise the urban design objectives along the corridor. Lack of above ground utilities opens up space for more full form street trees within the streetscape. Additionally, without above ground utilities, development can occur closer to the streetscape, creating a more active urban street edge.

Utilities Phasing Recommendation

In longer term roadway improvements, a phased approach to burying above ground utilities is likely the most feasible option due to the cost starting with the areas with more pedestrianized uses. As shown in Figure 7, the first phase should focus on burying the above ground utilities between Marsland Drive and the light rail transit corridor. This phase would stretch from Marsland Drive to Weber Street and continue to extend across the three succeeding Focus Areas. This stretch of approximately 2.8km would cost approximately $16,000,000. This initiative will likely need to be joint funded between the Region, the City, and any future development along the corridor. Burying the utilities can be implemented under a phased approach, with each phase costing approximately $8,000,000. The priority areas for burying utilities would be in front of Conestoga College and Wilfrid Laurier University. These areas will benefit the most from an expanded public realm during the beginning stages of the vision.

While there are benefits to burying above ground utilities, it is noted that this action would require significant financial cost. Neither the City nor the Region currently have the burying of utilities within their capital projects plan, nor has any municipality budgeted to do so. Future additional studies and assessments of specific projects may consider the burying of hydro utilities, though no current considerations exist. The burying of utilities in any particular segment of the corridor will need to be assessed on a case-by-case basis as part of the overall assessment of preferred alternatives at the time of road reconstruction.

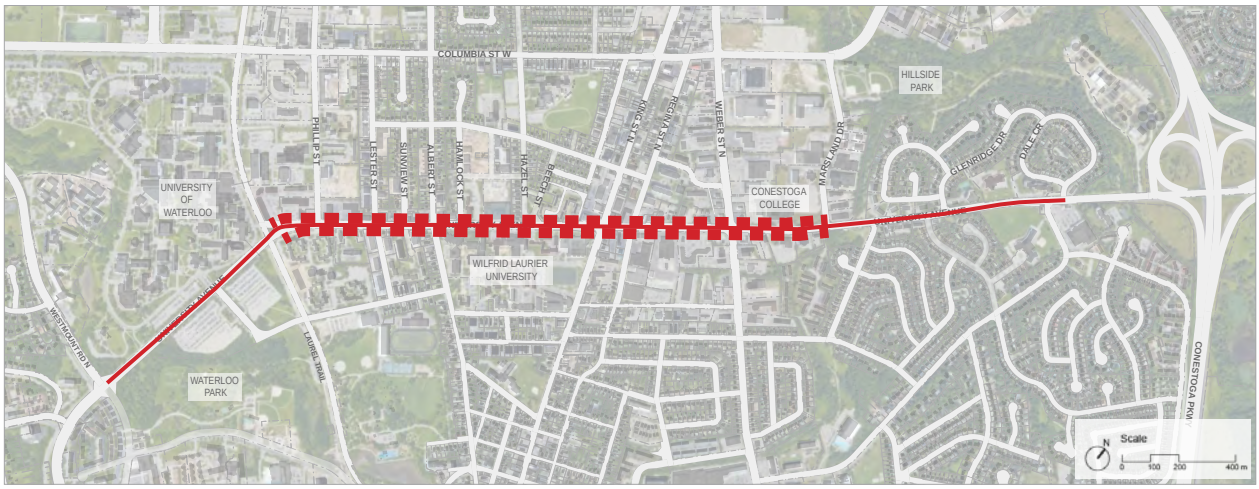


Figure 7 | Hydro Burying Phasing

Phase 1 of Burying Hydro

Phase 2 of Burying Hydro

Additional Considerations for Utility Infrastructure

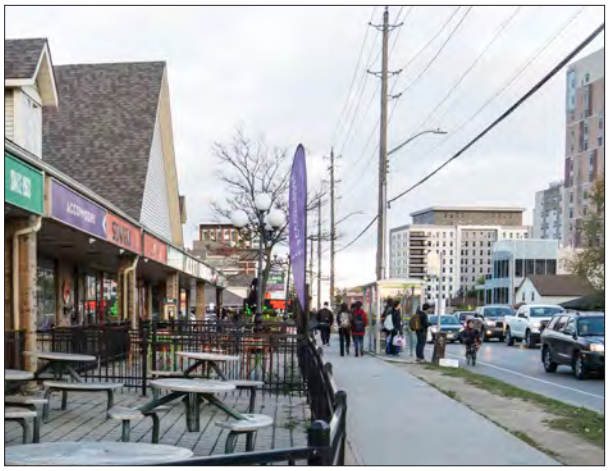
To realize the vision for University Avenue as a vibrant place for discovery, innovation, learning and entrepreneurship it would be preferable for the above ground utilities to be buried throughout the roadway and streetscape.

Infrastructure Placement

Specific attention must be given during the longer term detailed design work along University Avenue to ensure that placement of the necessary infrastructure (i.e. underground vaults (vista hydro vaults), ducts, pedestals, transformers) are incorporated into the design. The intent with burying the hydro in the future longer term phases, is to gain public realm space that is usable and provides opportunity to increase amenity space. It is important to understand that there will be a change in infrastructure requirements and that burying the utilities will not reduce the amount of infrastructure current within the corridor but will relocate it below grade with new at grade structures.

Maintenance

Burying utilities does not reduce the need for maintenance. Access to the system is required and in some cases may require access from the roads or pathways to allow access and service to be completed. Detailed design element must consider how the utility companies will complete their routine maintenance in and around the structures.



Above ground hydro along University Avenue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4 TRANSPORTATION ANALYSIS & DIRECTION

The section provides an overview of the current transportation conditions, challenges, opportunities and constraints, as well as transportation best practices and precedents that should be utilized throughout the Gateway Strategy in order to create a corridor that serves all users and optimizes safe transportation.

vivaNext, York Region

Transportation Conditions Analysis

Active Transportation

The three prominent post-secondary institutions give rise to a large student population and an associated abundance of active transportation users. The proximity of the Northdale neighbourhood (a residential neighbourhood where many residential property owners focus on student renters, and is currently undergoing rapid revitalization and re-urbanization) indicates that a significant portion of active transportation trips are taking place solely within the study area. The majority of University Avenue has pedestrian infrastructure with existing sidewalks on both sides of the road, with the exception of the south side of University Avenue, east of Lincoln Road.

The existing cycling infrastructure consists of on-street bike lanes on both sides of the street along most of University Avenue, although there are gaps in the bike network between King Street and Weber Street, and east of Lincoln Road. Gaps in the cycling network are problematic for cyclists. These gaps will be addressed in the Region's 2023 University Avenue reconstruction project from Weber Street to Albert Street.

Data illustrating the current levels of active transportation activity along the corridor are limited. Therefore, it is difficult to assess how well the existing pedestrian and cycling facilities serve the demand. However, observationally, it has been suggested that use of the bike lanes is infrequent and sidewalk riding is common. Additionally, during peak times the sidewalks can become crowded, particularly around transit stops. As observed throughout the study, in numerous areas it appears the existing sidewalk width is insufficient to accommodate pedestrian volumes.

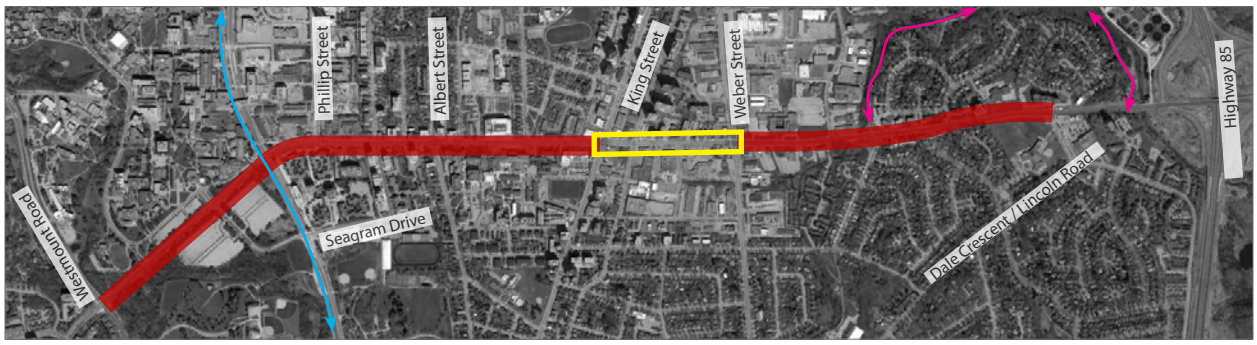


Figure 8 | Active Transportation Routes

Legend

- Existing Bike Lane (Dedicated)
- Stretch of road without Bike Lane (Dedicated)
- Laurel Trail
- Hillside Trail

Public Transit

Active transportation is extended through public transit. Public transit across the Region is operated by Grand River Transit. There are two main types of bus routes currently within the Region: standard bus routes and iXpress routes. The iXpress routes are express bus routes with fewer stops, more frequent service, and transit signal priority that run along major transit corridors. Two of the six iXpress routes travel along University Avenue. University Avenue is also served by several standard Grand River Transit bus routes, and provides direct connections to multiple key north-south transit routes (e.g. Ring Road and King Street). With the arrival of ION last year – the Region of Waterloo's light rail transit system – University Avenue will also serve the nearby University of Waterloo light rail transit station, which will connect GRT buses and light rail transit vehicles and a number of GO Transit riders at a planned Transit Mobility Hub (See Page 51 for details).

The large student population in the area generates high volumes of transit ridership, both within surrounding neighbourhoods and passing through the study area. The exhibit below depicts the average weekday Grand River Transit stop activity for the fall period of 2016. It shows the number of transit riders boarding and exiting buses for all stop locations within the study area. Generally, ridership is balanced between the eastbound and westbound directions with high stop activity observed near the post-secondary institutions (e.g., Seagram Drive, Phillip Street, Hazel Street, and King Street). The boarding and alighting data can also serve as an indication of pedestrian activity along the study corridor, since each rider must walk some distance to/from the bus stop.

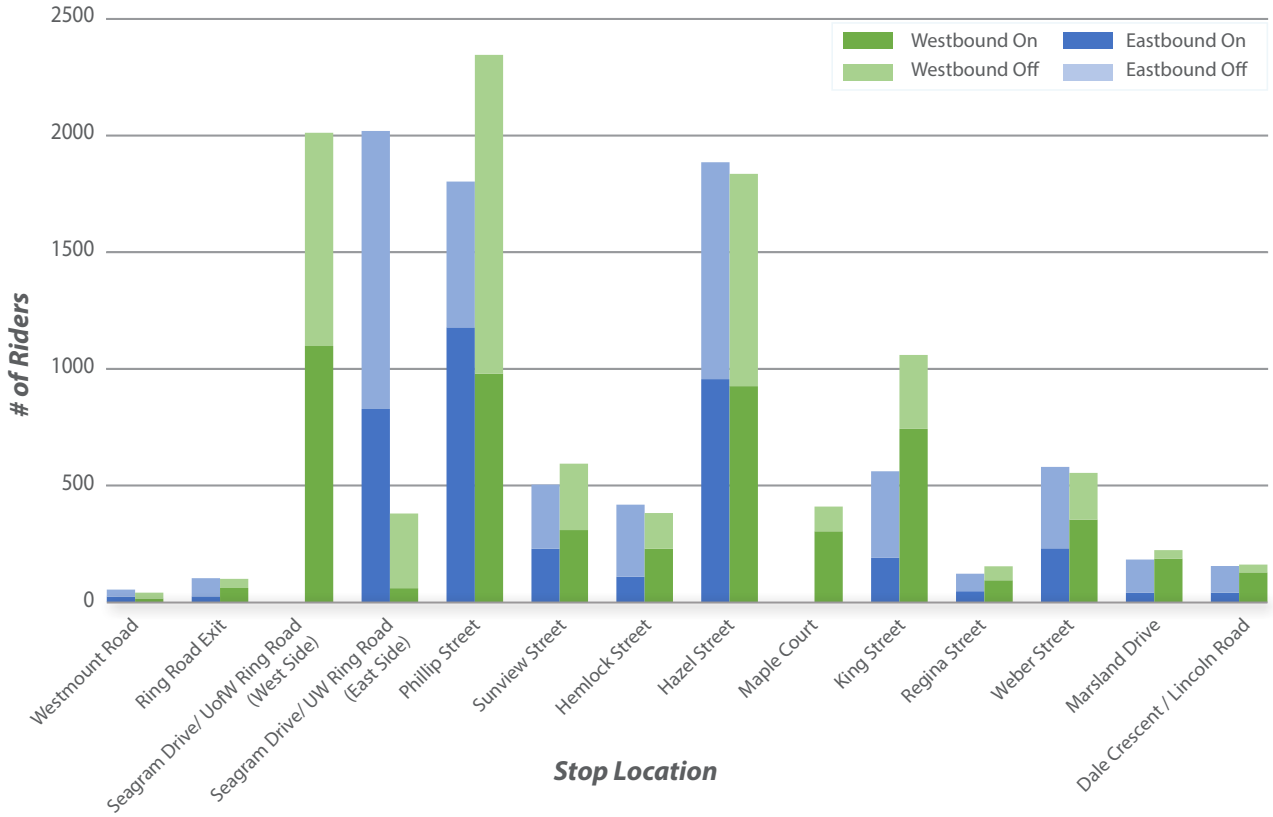


Figure 9 | Weekday Grand River Transit Stop Activity (Fall 2016)

Vehicular Traffic

Despite the high student population, high transit ridership, a developed active transportation network, and on-going transit-oriented development occurring in nearby neighbourhoods, the current design of University Avenue, and its surrounding area, remains very automobile-focused. University Avenue has a four-lane cross-section throughout, and left-turn lanes at most signalized intersections providing access to adjacent commercial plazas with front-facing parking lots. The geometry and size of University Avenue is designed to enhance vehicular flow and to accommodate the anticipated peak volume of vehicular demand.

Designing the roadway to accommodate peak traffic demand has resulted in excess road capacity at non peak times of the day, refer to Figure 10.

This underused road capacity can provide opportunities for high vehicular operating speeds, and encourage pass-through traffic. The situation is not unique to University Avenue and is a typical conditions of many roads designed for vehicular movement.

The operating and design speed of the corridor should be reconsidered to create a safe, accessible, functional, efficient and complete street condition for University Avenue. Due to the presence of several educational institutions along the corridor, it is imperative that traffic speed is reduced to a safe measure. A reduced speed along the stretch of the corridor within the study area would help realign traffic slows along the corridor with the vision of the Gateway Strategy.

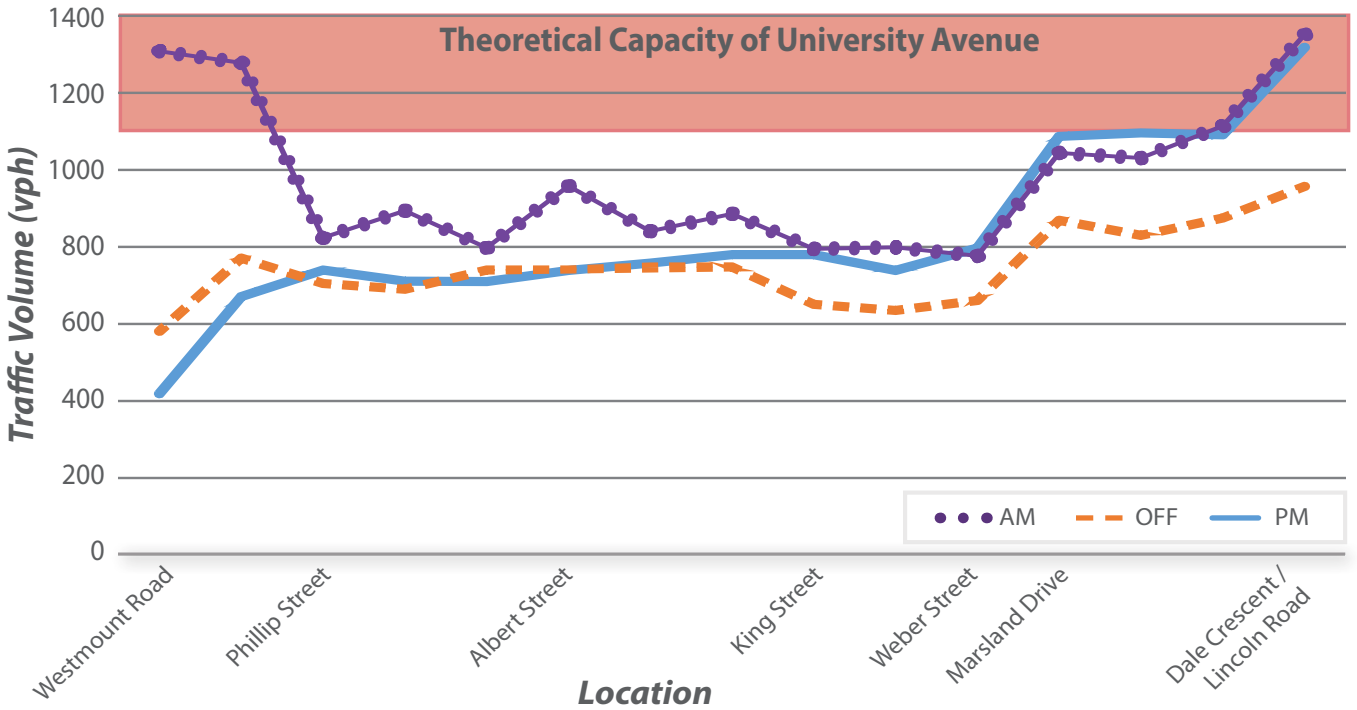


Figure 10 | Peak Hour Traffic Demand Along University Avenue

Collision Analysis

Traffic collisions are another measure by which the overall performance of a corridor can be assessed. Twelve out of the 20 intersections within the study area are on the Region of Waterloo's Top 100 Locations (2016 Collision Report), including the number one ranked worst intersection for pedestrian collisions (University Avenue at King Street). In total, over 1000 collisions were reported within the study area between 2012 and 2016. The exhibit below maps the total number of at-intersection, and mid-block collisions that occurred along University Avenue between 2012 and 2016, it also notes the 2016 Regional Rankings.

As shown in the exhibit below, most collisions were intersection-related. There has also been a significant number of mid-block collisions between the King Street and Weber Street intersections. West of King Street, intersection collision frequencies are fairly consistent, with a high proportion of pedestrian and cyclist collisions. East of Weber Street, there are relatively few collisions; however, two locations are still in the Region's Top 100 Locations for 2016.

The opportunity to better serve active transportation modes is further illustrated by the fact that three of the top 100 locations for pedestrian collisions, and 2 of the top 100 locations for cyclist collisions are clustered in the centre of the study area, less than two kilometres apart from each other. Figure 12 on the next page provides a breakdown of the five-year collision history by mode.

While the majority of the collisions are auto-only, the percentage of collisions that resulted in an injury are significantly higher for pedestrian or cyclist related collisions: 89% of pedestrian-related

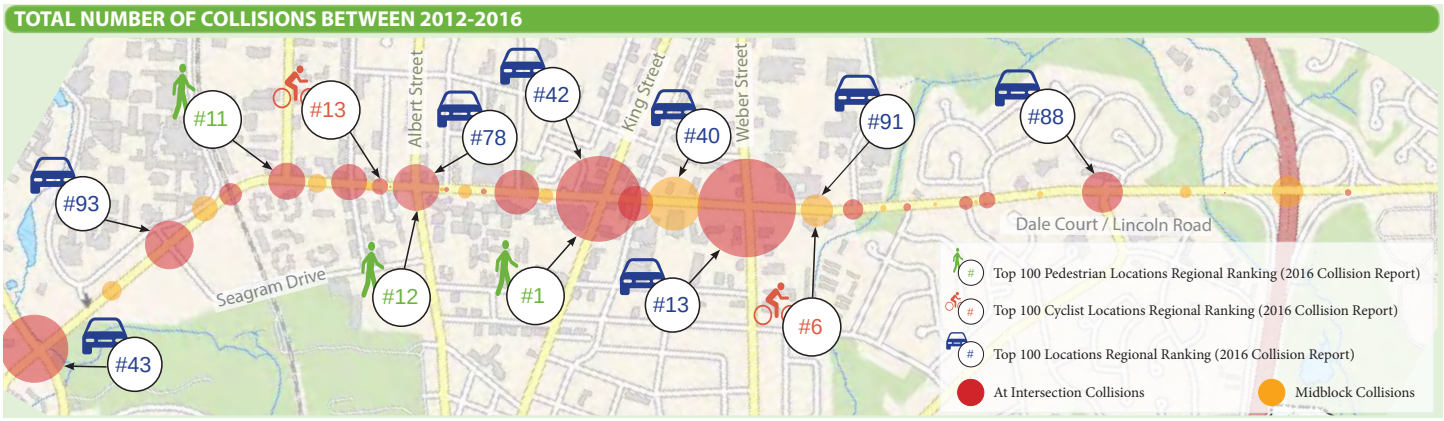


Figure 11 | Total Number of Collisions and Regional Municipality of Waterloo Rankings Between 2012-2016

collisions and 80% of cyclist-related collisions resulted in an injury, compared with 19% of auto-only collisions.

The exhibit shows that pedestrians are most likely to be involved in a collision with a left-turning vehicle during the evening hours, and cyclists are most likely to be involved in a collision with a right-turning vehicle.

These trends suggest that intersection treatments might be the best way of improving active transportation safety.

Furthermore, there are currently only 11 designated locations for pedestrians to cross along the entirety of the study area. The distance between certain intersections within the focus area are quite great, which also increases the probability of mid-block pedestrian crossings. Design interventions to intersections and the incorporation of mid-block crossings should be considered to prevent pedestrian and cyclist traffic collisions. By focusing attention on active forms of transportation, more priority will be given to pedestrians and cyclists along the corridor. This will decrease the dominance of automobile travel, and will create a more equal and efficient multi-modal experience along University Avenue.

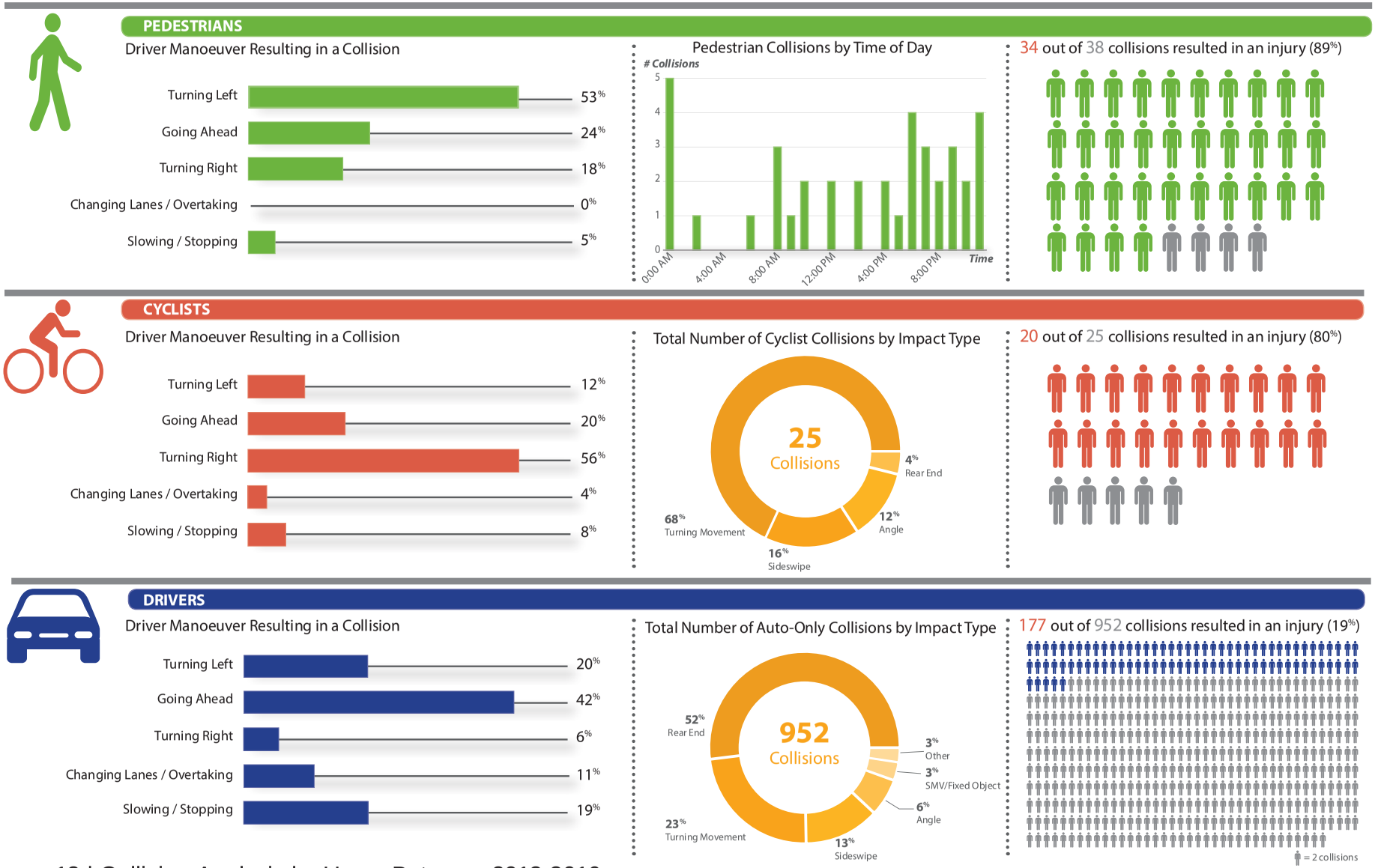


Figure 12 | Collision Analysis by Users Between 2012-2016

Present & Projected Transit Mobility

Importance of Transit to the Corridor

In June 2019, the Region of Waterloo launched its new light rail transit system, extending from Conestoga Mall in Waterloo to Fairview Park Mall in Kitchener.

The City of Waterloo developed five Station Area plans. One of those Station Areas is located by the University of Waterloo. The City's Station Area Plans will help facilitate in the continual evolution of University Avenue as well as the surrounding land uses and neighbourhoods. The introduction of light rail transit will encourage intensification, and will help to stimulate economic development, promote community building and energize the public realm.

University Avenue has been identified as a potential future rapid transit corridor* that would intersect and connect with the current ION light rail transit corridor. If this initiative moves forward, the University Avenue Gateway Strategy must integrate the planned rapid transit.

Implementing a new rapid transit corridor here would shift the function, activity and influence of the University Avenue corridor to a more multi-modal place over the long-term. However, in the near future, University Avenue will provide several multi-modal options for traversing the corridor as well as the surrounding neighbourhood and region. Multiple public transit and active transportation options will bring a level of increased pedestrian activity to the avenue and surrounding neighbourhoods.

Improving the public realm along University Avenue will directly complement and reinforce future transit developments. Public realm and streetscape enhancements will further encourage the use of active and public transportation. Creating a comfortable, safe and welcoming environment will result in a more vibrant and far reaching public realm. The proposed design vision for the University Avenue corridor outline in this Gateway Strategy will accommodate both curbside and the potential for middle lane transit in the future.

*EXHIBIT 5.18: WATERLOO REGION TRANSIT CORRIDORS FOR PROTECTION BEYOND 2041 (KITCHENER) in the Moving Forward 2018 Transportation Master Plan shows a potential ION3 rapid transit corridor along University Avenue from King Street to Erb Street West.

Transit Mobility Hub

In group partnership, the University of Waterloo, the Region of Waterloo, Grand River Transit and Metrolinx are collaborating on a new transit mobility hub to be located adjacent to Philip Street on the University of Waterloo lands. The multi modal hub will connect both the Grand River Transit and Metrolinx bus services to the regional area and provide a focal point for student users. The transit hub will have five unique architectural platform canopies that offer comfort and protection from the weather elements. This state of the art development will be equipped with the latest SMART technology displaying rider and bus information in real time. Equally, the bus stations will include charging stations for laptops and phones for patrons to use. The multi modal hub will also be connected by pedestrian pathways that venture into the university campus as well as a Multi-Use Trail (MUT). This trail will traverse on the north and south sides of the platforms and travel in an east and west fashion connecting multiple cycling and pedestrian travel routes throughout the campus and adjacent areas.

In a large context, the newly developed Seagram Light Rail Transit station is located very close by to the proposed UW Transit Hub, and will support both the University of Waterloo and Wilfrid Laurier University patrons equally. A project goal is to connect ridership to multiple modes of travel by introducing them to convenient options that are central to their intended destinations. By tying together various modes of travel, this approach will appeal to the larger community and thus increase the satisfaction of travel for the end users. Connections to the Transit Mobility Hub are considered in this University Gateway Strategy, and should be accounted for in the future work in the area.

Grand River Transit Route Map

University of Waterloo Station Plan

Creating a Balanced, Multi-Modal Approach

The identification of best practices starts with setting objectives. Observations and analysis, as well as stakeholder feedback, suggest that the transportation-related objectives of the vision should be as follows:

Focus on vulnerable road user safety issues

Discourage un-signalized pedestrian crossings through appropriate road enhancements

Shift travel patterns to encourage more sustainable travel options

The objectives are consistent with the Region's Moving Forward 2018 Transportation Master Plan, and directly reflect initiatives from the City TMP, specifically, the Complete Streets Policy.

In the most literal terms, University Avenue, in its current form, could be described as a “complete street.” It has sidewalks, on-street bike lanes, lanes for vehicular traffic, and transit priority. However, while the current cross-section does technically provide space for a range of modes, it is not balanced or equitable. Where the current design is lacking has less to do with access to alternate modes of transportation, and more to do with perceptions of safety and comfort. When vulnerable road users do not feel safe or comfortable using a given road they will generally seek an alternate route. Many of those alternate routings involve travel through the neighbourhoods and campuses that border University Avenue, leaving the corridor to be dominated by pass-through automobile trips. Creating a more balanced multi-modal transportation system along University Avenue will require transforming the corridor into one that is far more focused on alternative modes of transportation.

Innovation in Transportation = Creating *Real* Modal Choice

What precedents can be applied?

Current transportation best practices attempt to balance user access to dedicated facilities, as well as user comfort and safety. While traditional mobility planning and practices have focused on the car, more recent approaches promote a range of transportation options.

The National Association of City Transportation Officials (NACTO) is viewed as the authority on current transportation best practices. The NACTO Urban Street Design Guide describes a set of urban street design principles that speak to the range of roles played by urban streets, as well as the steps that can be taken to achieve desired outcomes.

The NACTO Urban Street Design Guide, and a range of jurisdiction-specific documents, provide guidance on complete street design principles and illustrations of what that concept can look like in practice.

NACTO's Street Design Principles

The National Association of City Transportation Officials (NACTO) Urban Street Design Guide describes,

> ***"Streets Are Public Spaces***
>
> *Streets are often the most vital yet underutilized public spaces in cities. In addition to providing space for travel, streets play a big role in the public life of cities and communities and should be designed as public spaces as well as channels for movement."*

> ***"Great Streets are Great for Businesses***
>
> *Cities have realized that streets are an economic asset as much as a functional element. Well-designed streets generate higher revenues for businesses and higher values for homeowners."*

Today, University Avenue is first and foremost a throughway and this Gateway Strategy intends to transform it into a complete street with a sense of place. By careful consideration of the spacing requirements dedicated to each mode of transportation along the corridor, and by adding amenities that will make the corridor a more pleasant and accessible place to congregate, it is intended that more personal interactions will occur, promoting discovery and learning. The transformation of University Avenue into a complete street will still acknowledge the corridor's important connections to Highway 85 and INB.

A slower pace and increased level of comfort and accessibility will encourage people to spend more time on University Avenue. New services will be needed and programmed activities and events can be introduced to further showcase the innovative ideas that are brought to life at the world-class institutions that line the corridor.

> **“ Streets Can Be Changed**
>
> *Transportation engineers can work flexibly within the building envelope of a street. This includes moving curbs, changing alignments, daylighting corners, and redirecting traffic where necessary. Many city streets were built or altered in a different era and need to be reconfigured to meet new needs. Street space can also be reused for different purposes, such as parklets, bike share, and traffic calming.”*

> **“ Design for Safety**
>
> *In [2017, across North America, more than 40,000] people were killed in traffic crashes. These deaths and hundreds of thousands of injuries are avoidable. Traffic engineers can and should do better, by designing streets where people walking, parking, shopping, bicycling, working, and driving can cross paths safely.”*

Along the study corridor there are a range of existing operating environments that represent the different starting points from which the transformation of University Avenue can begin. Achieving a common vision, look and feel, along the corridor will require that different challenges be overcome from east to west. For example, accommodating active transportation and protecting vulnerable road users will not be accomplished in the same ways in the high-volume, high-speed freeway transition zone to the east as it will be done in the west, where deep building setbacks, wide boulevards, and excess vehicular capacity equally create challenges and opportunities. The pace of change and stakeholders that drive and enable change will vary along the corridor.

Achieving the desired transformation will not be possible without trade-offs that prioritize transit and active transportation. For instance, shifting some of the existing traffic along University Avenue to other nearby roads could potentially lead to delays in travel time. Some of those impacts could be mitigated through roadway improvements on alternate routes, but the timing, funding and impacts of such work is currently unknown.

Safety, real and perceived, is at the heart of the transformation of University Avenue. Until people feel safe traveling the length of the corridor using a variety of modes, none of the other themes or goals of this Gateway Study can be realized. Until vulnerable road users feel safe, they will not come in great enough numbers or spend enough time to discover and experience all that the area has to offer. For example, creating dedicated transit lanes from existing general purpose lanes would grant greater priority to transit and increase traffic congestion for the adjacent lane automobiles, simultaneously making transit more attractive and slowing down traffic. Slower traffic speeds would, in turn, make crossings safer for all users.

> ***Streets Are Ecosystems***
>
> *Streets should be designed as ecosystems where man-made systems interface with natural systems. From pervious pavements and bioswales that manage storm- water run-off to street trees that provide shade and are critical to the health of cities, ecology has the potential to act as a driver for long- term, sustainable design.*

With a lack of street trees or planting, and an excess of concrete, much of University Avenue suffers from the urban heat island effect in the summer. A lack of plantings also provides little protection to block cold winds in the winter. Adding a more abundant and diverse mix of plants and trees would not only improve the aesthetics of the corridor, but it would add to user comfort and encourage longer trips by active modes of transportation. Greening the street and incorporating other pedestrian amenities will also offer up opportunities to integrate innovative technologies into the design.

Any additional plants/ trees added to the corridor must also include a comprehensive maintenance strategy.

> ***Act Now!***
>
> *Implementing projects quickly and using low-cost materials helps inform public decision making. Cities across [North America] have begun using a phased approach to major redesigns, where interim materials are used in the short term and later replaced by permanent materials once funding is available and the public has tested the design thoroughly.*

Given the extent of the changes that are being proposed for some sections of University Avenue (e.g., buried hydro, intersection reconfigurations, extensive greening, etc.) and the costs of some of those changes, not to mention the range of stakeholders that need to be consulted, it would be impractical, if not impossible, to undertake the work as a single project. Therefore, it will have to be phased in, with a collaborative approach over a period of years; however, there are opportunities to affect real change in the short to medium-term, and at relatively low cost using mostly paint and temporary barriers (e.g. the separated bike lane pilot, reduced corner radii with painted lines and bollards, transit/HOV lanes with signs, pavement markings, by-laws, high-visibility crosswalk markings, signal timing plan changes and turn restrictions are all examples of low-cost measures that could be implemented quickly).

-NACTO Urban Design Street Guide

Street Element & Configuration Direction

This Gateway Strategy vision has been informed by a combination of industry best-practices, previous local studies, and stakeholder consultation. By drawing from all of these sources of information, the future corridor design can be both practical and personal in the way that it addresses the desired outcomes.

Based on the stakeholder input and the Northdale Streetscape Master Plan concepts, one of the more fitting reconfigurations for most of the University Avenue corridor would be what NACTO refers to as a Neighbourhood Main Street.

Neighbourhood Main Street Features:

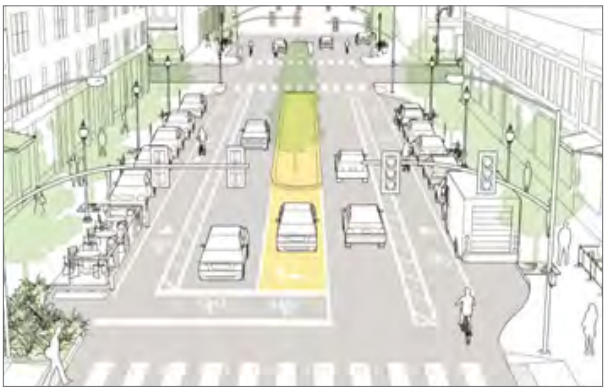
- Road diet (potential lane reductions)
- Slower operating speeds
- Frequent controlled crossings
- Buffered bike lanes and bike boxes
- Active frontages to generate foot traffic
- Parklets and other spaces for congregation and interactions
- Street trees for visual separation and shade

However, recognizing that transit is a major part of the current and future mode share along the University Avenue corridor, certain elements could also be borrowed from the NACTO 'Transit Corridor' configuration to create a hybrid street typology.

Transit Corridor Features:

- Dedicated transit lanes
- Transit priority measures
- Prominent transit stations
- Separation of modes
- Multi-stage pedestrian crossings

The features listed above have inspired certain design implementations along the corridor and have been incorporated in the Focus Areas Section of the report.



Neighbourhood Main Street, NACTO Urban Design Street Design Guideline, 2013

Transit Corridor, NACTO Urban Design Street Design Guideline, 2013

Transportation Big Move

In order to achieve the University Avenue Gateway vision, the following big move is recommended.

Pedestrian Safety

Pedestrian safety for all users, regardless of age or ability, is paramount in this Gateway Strategy.

Pedestrian safety is encouraged through:

- providing consistent and ample sidewalks with pedestrian amenities and lighting,
- upholding Accessibility for Ontarian with Disabilities Act standards along the entirety of the corridor,
- upholding Crime Prevention Through Environmental Design principles along the corridor,
- providing safe crossing facilities, including properly spaced signalized crossing locations (both intersection and mid-block)

Pedestrian-oriented intersections include the following:

- where possible, implementing reduced corner turning radii to prevent speeding while turning, and reduce crossing distance for pedestrians,
- clearly marked crosswalks,
- providing lead times for pedestrian crossing,
- where possible, restricting vehicular turning movements such as no right-turns on red lights and only signalized left-turns, and
- evaluate additional locations for potential pedestrian scrambles

Consideration for Pedestrian Scramble

A pedestrian scramble separates intersection vehicle movements from pedestrian movements, while adding one-phase diagonal crossing. This type of intersection operation can be implemented in a variety of ways that provide both flexibility of movement and protection of vulnerable road users. Pedestrian movements can be served exclusively by the scramble phase(s) or the parallel crossings can be run concurrently with the corresponding vehicle phases. Conflicts can also be managed by the elimination or prohibition of select turning movements. Removing some movements from the intersection can serve as an opportunity to reduce the crossing distances, which reduces pedestrian exposure, and can reduce the intersection cycle length to allow all phases to be served more frequently. Pedestrian scrambles could be considered at key intersections along University Avenue, pending more detailed transportation analysis by the Region of Waterloo, in collaboration with interested stakeholders, including the City of Waterloo.

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Functional Areas

Looking along the study corridor there are several areas that appear to be very distinct in their form and operational function. However, there are only two major functional areas for traffic under existing conditions. The eastern end of the corridor serves as the access to Highway 85, the transition zone for vehicles coming off of the Expressway and is a faster traveled zone. From approximately Lincoln Road/Dale Court to the west end of the corridor, the main functions are to move through traffic and provide access to adjacent land uses and neighbourhoods. The frequency and geometry of the access points are much different between Marsland Drive and King Street than they are from King Street to Westmount Road, but the traffic moving function of the roadway is not similar. Other roadway features like signalized intersection spacing and cross-section width are also relatively consistent along the corridor. What does change significantly along the study section of University Avenue is the type of adjacent land use (and built form). A key objective of this Gateway Strategy is to create a greater sense of connection and continuity of all built form along University Avenue.

Figure 13 | Transportation Functional Areas along the University Avenue Corridor

Legend

Access Area Transitional Area

East End Expressway Connectivity

Hornby Street, Vancouver

Hornby Street, Vancouver

Robson Street, Vancouver

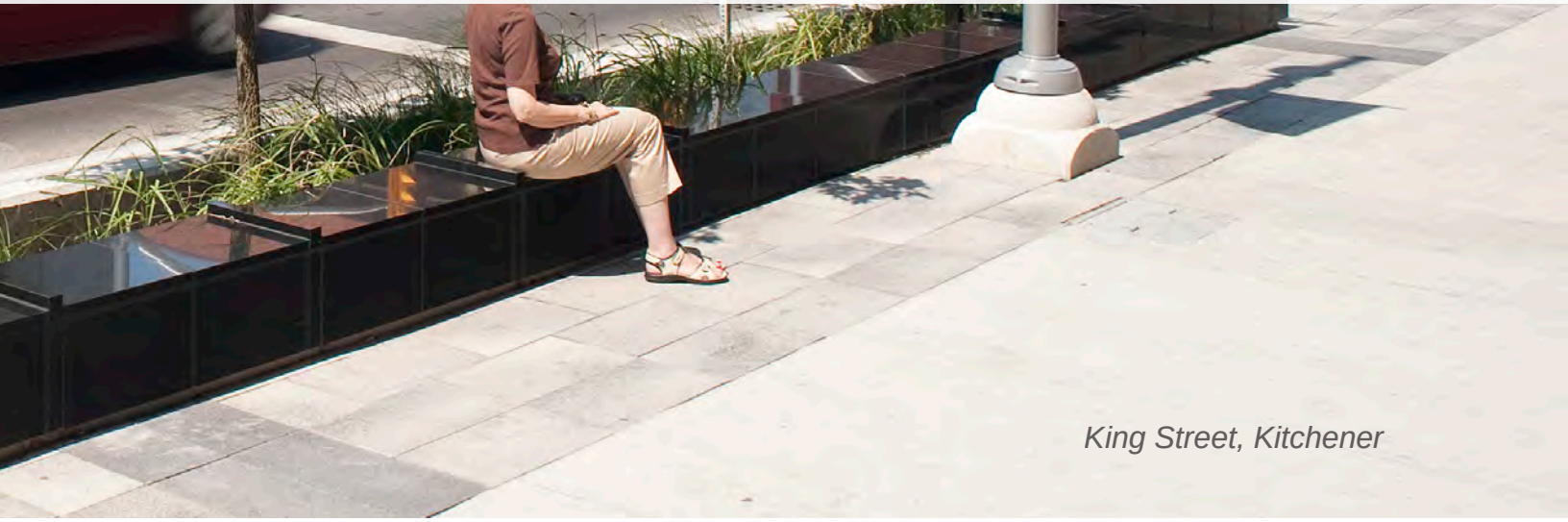
Given that University Avenue will continue to serve as a significant interchange with Highway 85, the eastern section of the corridor will need to continue to provide sufficient vehicular capacity to accommodate this function. However, it is desirable to transition to a more active transportation friendly scale starting at the Conestoga College Campus. Such transitions are most effectively accomplished though physical design elements that clearly communicate to drivers that they are leaving a high-speed environment and entering an environment where they should expect to encounter a range of road uses. Features such as narrower lanes, prominent active transportation facilities, easily identifiable controlled crossings, and a change in design materials all contribute to communicating the need for slower operating speeds. Design elements that begin to communicate the four themes of the corridor can also be integrated into the transition area.

These concepts are illustrated in the Focus Areas Section, beginning on page 94 of the report.


GARBAGE
RECYCLE

5 THEMES, VISION & GOALS

The Themes, Vision and Goals section of the report provides a clear direction for the principles that will drive the University Avenue Gateway Strategy. The underlying principles have been developed based on consideration of the existing conditions of the corridor, stakeholder and community feedback on what is envisioned and feasible for the streetscape, as well as urban design best practices for gateway design.



King Street, Kitchener

Project Themes

University Avenue is a significant street and primary gateway for the City of Waterloo and the Region of Waterloo. The corridor is the primary gateway to the City's and Region's learning, innovation, discovery and entrepreneurial centre, focused around the University of Waterloo, Wilfrid Laurier University and Conestoga College.

Between the Universities and the College, the R&T Park, the vibrant technology industry and research institutions, this area of Waterloo is known for Innovation, Discovery, Entrepreneurship and Learning. However, at present the University Avenue corridor does not generally express these themes. Therefore, this Gateway Strategy identifies how these themes can be expressed throughout the streetscape so that people visiting and living in the area know they have arrived at a special and unique place.

The corridor is marked by substantial traffic, much of which is through traffic, with heavy pedestrian activity at key nodes, particularly around the post-secondary institutions.

University Avenue should be more than a connection point to pass through. Rather, is should be designed to celebrate the strong cultural, institutional, and economic significance of the corridor.

Four key themes were identified as to what makes University Avenue unique. As opportunities arise, University Avenue should be transformed to express these themes through streetscaping and redevelopment opportunities along the corridor.

Innovation,

Entrepreneurship,

Learning, and

Discovery

To help establish the vision for the Gateway Strategy, the project team consulted with stakeholders and members of the community to hear their views and valuable insight.

Key stakeholders included the three post-secondary institutions: University of Waterloo, Wilfrid Laurier University, Conestoga College; the Region of Waterloo and the City of Waterloo. Early on in the study, these stakeholders were brought together to discuss their ideas for the corridor, to begin developing a unifying vision across the entire corridor and to create a strong brand. In addition, the public was invited to share their views/perceptions of the corridor and provide their input both in person and through an interactive design tool to create their ideal cross-sections of the corridor. This valuable information allowed for a grounded understanding of the opportunities and constraints which the project team then used to develop an overall vision for University Avenue. The vision is intended to enhance the streetscape and create a strong sense of place that serves as a gateway to this area.

The City of Waterloo is known for having an entrepreneurial mindset. Much of that entrepreneurial spirit originates from institutions and businesses that are linked to University Avenue. The Gateway corridor will celebrate Waterloo's entrepreneurial spirit by reflecting on past achievements, as well as looking forward to future opportunities. The proposed streetscape improvements along the corridor physically showcase these themes through various design implementations (art, benches, signs, paving, etc.).

Implementation of these themes is outlined in Section 7 of the report, beginning on page 131. That section describes the themes and the manner in which they would be implemented.

4 Project Themes

Discovery

The University Avenue area is a place of discovery of the past, present, and future. This spirit of discovery should be conveyed in the Gateway Strategy, transforming the streetscape into a place of discovery for community members and visitors rather than a place to simply pass through. The corridor can serve as an area for pilot projects (temporary parklets, closed street pop-up events, custom street crossing markings, public art) to test the potential for what a streetscape can achieve.

Innovation

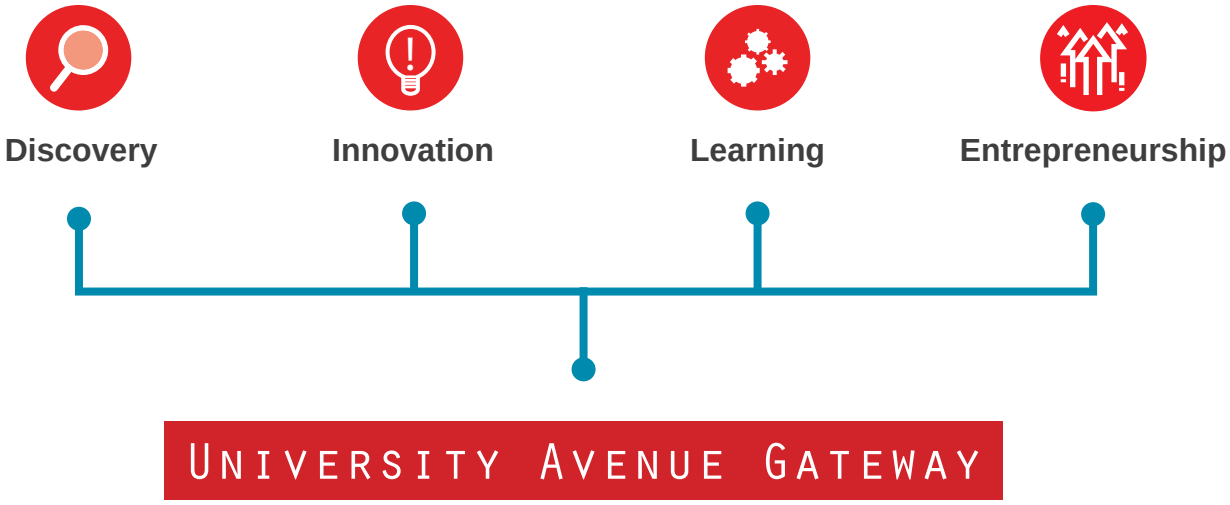
Waterloo is a place for innovation and creativity. From world renowned teaching models, to paradigm shifting technology, the innovative spirit, social innovation, and smart technologies is reflected in this Gateway Strategy and will be implemented through future streetscaping and public realm improvements.

Learning

Unique to Canada, two universities and one college have campuses located within the corridor area. The University of Waterloo, Wilfrid Laurier University, and Conestoga College are integral to the culture, character, and economy in Waterloo as well as the Region, and are significant destinations. A key piece of the overall vision of this Gateway Strategy is to acknowledge the influence of these institutional centres and the research and technology sector, by celebrating them visually, and by incorporating their presence throughout the urban environment along the corridor. Learning can be celebrated through animating the frontages of the institutions and optimizing their presence along University Avenue.

Entrepreneurship

The University Avenue area is one of the nation's fastest growing technology clusters, showcasing excellence in entrepreneurship. The corridor area offers enhanced opportunities for public and private investment as businesses, institutions, and residential developments continue to evolve and expand. University Avenue has the potential to be a vibrant, mixed-use corridor that celebrates the culture of entrepreneurship. By providing a streetscape that encourages a mixed-use, active street wall, as well as providing flexible spaces that can act as temporary marketplaces, this Gateway Strategy demonstrates how University Avenue can reflect a more entrepreneurial spirit along its corridor.



Taken together, the four themes will provide the foundation for the goals, design objectives, and streetscape principles for this Gateway Strategy. Ultimately, University Avenue will transition to reflect these four themes.

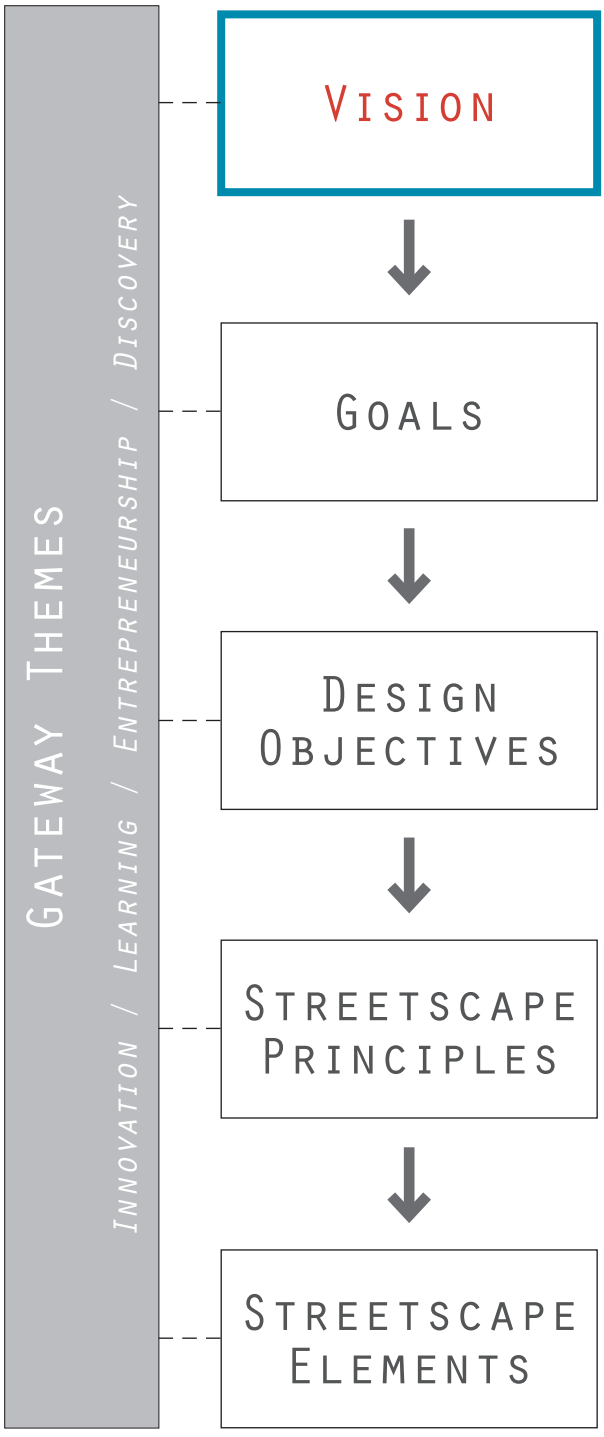
Vision

University Avenue will serve as the premier gateway to the University of Waterloo, Wilfrid Laurier University and Conestoga College. This attractive, tree-lined avenue will also serve as the main entry to one of the nation's fastest growing technology clusters, centred in the new Idea Quarter and the cutting-edge David Johnston Research and Technology Park.

As the principal gateway to this world-class education and technology hub, University Avenue will welcome visitors and residents and express the themes of learning, discovery, innovation and entrepreneurship. The buildings, streetscape and public spaces along University Avenue will be lively, pedestrian-oriented and contribute to a modern and distinct sense of place. They will embrace the use of green infrastructure and smart city technologies and support environmental sustainability. Overtime, University Avenue will transition into a complete street that balances the needs of pedestrians, cyclists, transit-users and motorists.

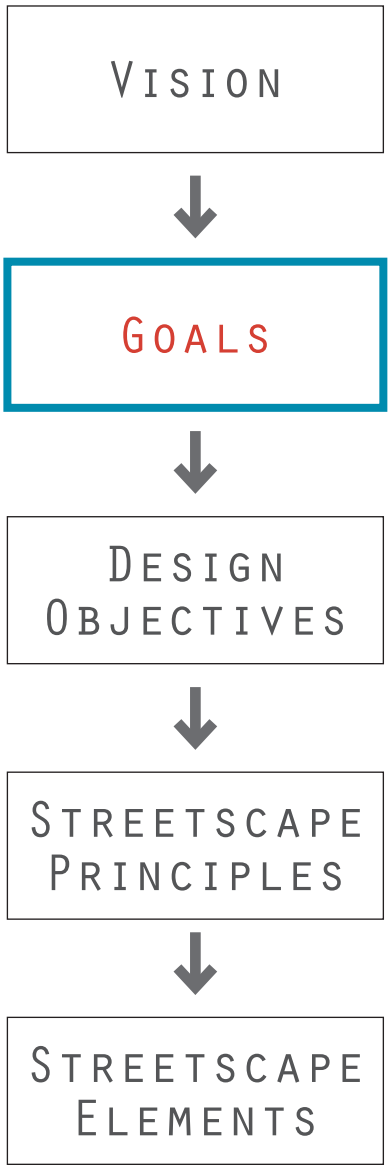
The vision for the Gateway will be realized through the following set of Goals, which lead to Design Objectives achieved through Streetscape Principles. The Gateway themes are woven throughout the elements, and will inform the design at all levels.

Each streetscape principle will be implemented through a series of detailed streetscape elements described on page 82.



Goals

The goal of the University Avenue Gateway Strategy is to celebrate the distinct places, people and activities along the corridor. Enhancements to the physical streetscape and public and private areas along the gateway area will help showcase the uniqueness of the University Avenue corridor. The four components of the corridor Innovation, Leaning, Discovery, and Entrepreneurship will be celebrated in different ways throughout the corridor. Therefore, the vision for University Avenue is structure around four primary goals:



1 Enhance University Avenue's gateway features

Enhance University Avenue's gateway features to welcome visitors and residents, facilitate wayfinding, and signal the arrival to a unique district that conveys a strong sense of learning, discovery, innovation and entrepreneurship.

2 Establish a safe, high quality, pedestrian-oriented public realm

Establish a safe, high quality, pedestrian-oriented public realm to create a more active, human-scaled environment that encourages walking, cycling, and transit use.

3 Transition University Avenue into a complete street

Transition University Avenue into a complete street gradually through future rehabilitation and reconstruction programs to better balance the needs of all road users, including pedestrians, cyclists, transit users, and motorists.

4 Create a greener and more environmentally sustainable corridor

Create a greener and more environmentally sustainable corridor to support a cleaner and healthier environment, build resilience to climate change, and improve the quality of life along the corridor.

Design Objectives and Streetscaping Principles

The Vision and Goals for University Avenue area will be achieved through the following design objectives and streetscaping principles:

1

GOAL

Enhance University Avenue's gateway features

DESIGN OBJECTIVE

Create a strong sense of place that expresses the themes of learning, discovery, innovation and entrepreneurship

STREETSCAPING PRINCIPLES

Integrated Mixed-Use Development
The streetscape should encourage mixed-use development along the corridor in appropriate locations to foster a vibrant district.

Active Street Edge
Built form with an active, animated street edge and appropriate setbacks should be encouraged.

Cohesive Material Palette
A consistent unique material palette including surface materials (e.g. pavers or equivalent), lighting, street furnishing and planting, will aid in reinforcing the themes/sense of place.

Wayfinding / Branding
Unique wayfinding techniques such as custom signage, wayfinding integrated within the hardscape and banners, within the district can aid in reinforcing the identity and provide clear directions to key destinations.

Discovery
Wayfinding can foster the theme of Discovery along the corridor.

Public Art
Public Art can aid in reinforcing the district identity as a centre of Innovation, Learning, Discovery and Entrepreneurship. Public Art should be incorporated into key areas where there is space available.

Discovery
Discovery of the area's history can be explored through public art.

2

GOAL

Maintain a safe and accessible, high quality pedestrian-oriented public realm

DESIGN OBJECTIVE

Foster pedestrian-oriented design principles to create a more active, human-scaled environment that encourages walking, cycling, and transit use

STREETSCAPING PRINCIPLES

Pedestrian Clearway
A consistent pedestrian sidewalk along the entirety of the corridor prioritizes safe and accessible pedestrian movement

Entrepreneurship
Providing an accessible and pleasant pedestrian path fosters entrepreneurship.

Flexible Pedestrian Realm
Flexible pedestrian spaces provide the opportunity for a variety of programming that can animate the district.

Entrepreneurship
Entrepreneurship can be celebrated and fostered in flexible pedestrian spaces.

Smart Technologies
Where appropriate, smart technologies such as charging stations, renewable forms of energy and smart Information Technology Systems can foster an animated pedestrian realm that showcases Learning, Discovery, Innovation and Entrepreneurship.

Innovation
Smart technology can showcase the theme of innovation along the corridor.

Street Furnishing
Unique street furnishings such as custom benches, bollards, and smart technologies. Provide pedestrian amenities and gathering spaces, while also creating a distinctive sense of place.

Learning
Places to gather along the streetscape can foster learning beyond the walls of the institutions.

2

GOAL

Maintain a safe and accessible, high quality pedestrian-oriented public realm

DESIGN OBJECTIVE

Provide safe, accessible, and comfortable sidewalks and crossings for people of all ages and abilities

STREETSCAPING PRINCIPLES

Safe & Accessible Crossing
Wide, clearly marked crossings at intersections with AODA compliant curbs will help improve intersections crossings for pedestrians.

Traffic Mitigation
Reducing corner turning radii and left turns where possible, and using a slower roadway design speed can increase pedestrian safety.

CPTED & Pedestrian Scale Lighting
Crime Prevention Through Environmental Design (CPTED) techniques such as increasing visibility through lighting and minimizing elements that create a lack of visibility can aid in creating a safer environment for the community.

Innovation
Innovation can be explored through CPTED techniques.

Accessibility for Ontarians with Disabilities Act Compliant
AODA standards must be upheld within the streetscape to ensure the corridor is accessible for all users.

Discovery
Ensuring the corridor is accessible will allow it to be explored and discovered by all.

3 GOAL

Transition University Avenue into a complete street

DESIGN OBJECTIVE

Adopt a complete streets approach for all users University Avenue

STREETSCAPING PRINCIPLES

Transit Priority
Providing transit priority on the roadway encourages transit use and has the potential to reduce traffic congestion.

Transit Stops
Ample sized transit stops with integrated smart technologies will encourage transit use.

Right-Sized Vehicular Lanes
Right-sized vehicular lanes and curb turning radii will encourage drivers to drive at the appropriate speed (TBD through detailed study). Further, spaces gained can be utilized to achieve other streetscape principles.

Cycling Infrastructure
Consistent cycling infrastructure, separated where possible from vehicular traffic where appropriate, encourages cycling.

Learning
Exploring the optimization of pedestrian, transit, and active transportation presents opportunities for learning.

Innovation
Innovative solutions to improve cycling infrastructure can celebrate this theme.

4

GOAL

Create a greener and more environmentally sustainable corridor

DESIGN OBJECTIVE

Implement green infrastructure strategies along University Avenue

STREETSCAPING PRINCIPLES

Green Streets Techniques
Techniques such as light-coloured paving and resilient and drought-resistant vegetation can help reduce the urban heat island effect and minimize the need for irrigation.

Learning
Implementing Green Streets techniques along the corridor can provide an opportunity for learning.

Green Stormwater Management (SWM) Techniques
SWM techniques such as permeable paving or equivalent, and rain gardens manage storm water runoff and take pressure off of storm sewers.

Innovation
Green infrastructure can provide an opportunity for innovation along the corridor.

Street Trees
Context-appropriate street trees with sufficient soil medium will create a consistent canopy along the corridor. The canopy will help to frame the corridor and provide pedestrians with protection from the elements. Tree grates should be used in more frequented areas to optimize public space.

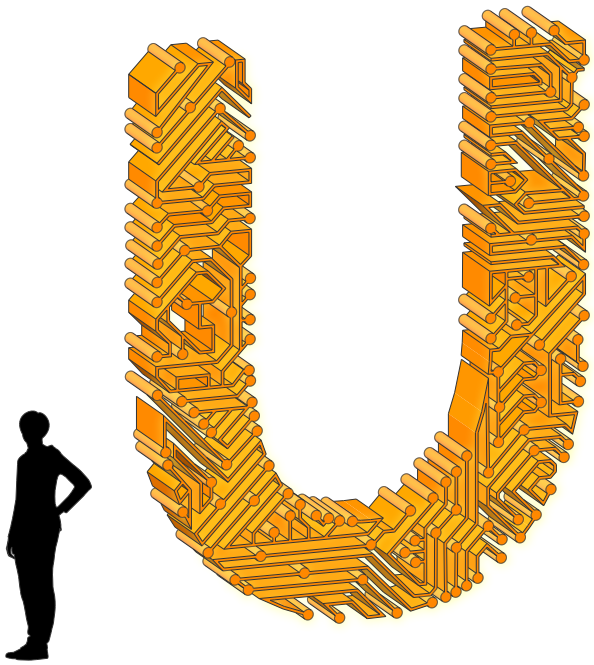
Branding

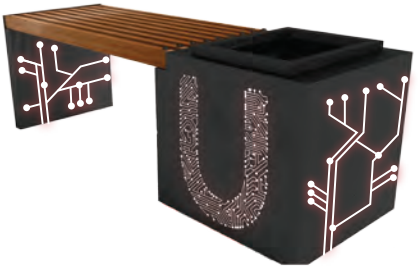
This Gateway Strategy for University Avenue sets about a new vision and trajectory for the corridor. Re-branding University Avenue to showcase the themes and vision of this Gateway Strategy will result in a comprehensive, unified corridor.

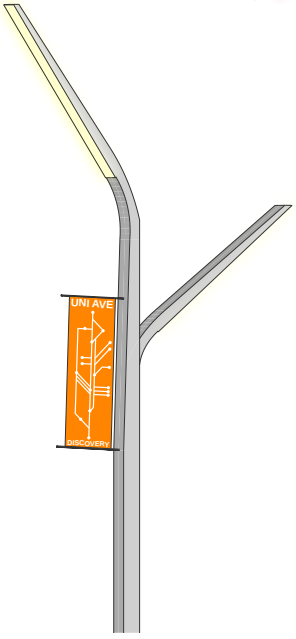
The improved University Avenue will be able to respond to changing trends in technology, functionality, circulation and amenity. University Avenue will be informed by and adapt to the various users and activities along the corridor.

The following images showcase how University Avenue can be branded to create a sense of visual cohesion throughout the streetscape while still allowing for a variety of design elements.

Institutional branding can also be integrated with the City and potential Business Improvement Association branding.



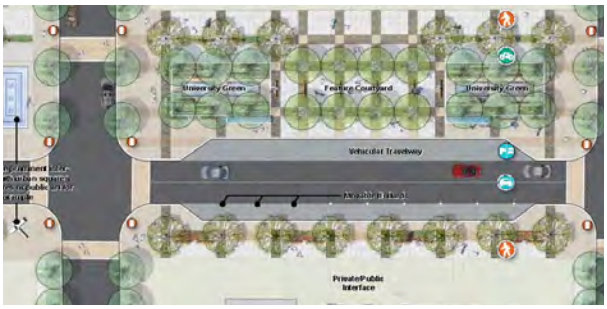




Gateway and Public Realm Precedents

The following streetscape and public realm precedents provide both local and international examples of the potential for University Avenue. Each precedent provides as least one important take-away that can inform the design for University Avenue. Though precedent projects provide inspiration for University Avenue, the differing urban contexts mean that not all designs illustrated are viable for University Avenue.

University Avenue, Halifax



Principle Employed / Key Takeaways Objectives Met:

University Avenue in Halifax was planned as a flexible complete street in the University of Dalhousie Campus with a vibrant pedestrian realm and a slow street with lay-by parking cycling facilities.

Educational Institutions bring about increased pedestrian activity as well as other forms of circulation. Implementing design initiatives along University Avenue that provide room for safety, space and comfort of each mode, will ensure the functionality and safe interaction of each mode.

Oxford Street, London (England)

Principle Employed / Key Takeaways Objectives Met:

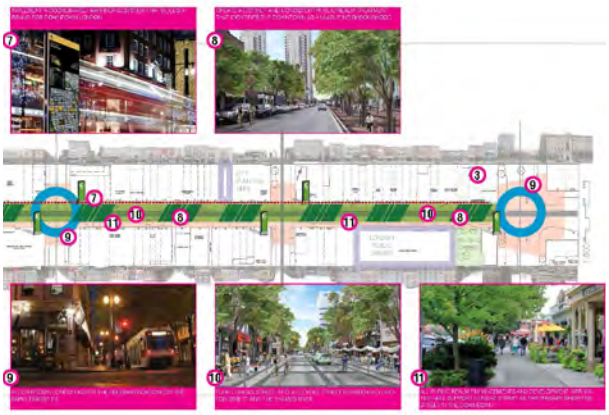
Oxford Street is a shopping centre with a streetscape that supports ample pedestrian activity. Traffic is regularly restricted along the corridor in favour of pedestrians and special events. These types of events can be considered for University Avenue. The material palette is distinctive and aids in developing a strong sense of place.

King Street, Waterloo

Principle Employed / Key Takeaways Objectives Met:

King Street is a flexible street with rolled curbs that allows for festivals along the corridor within lay-by parking spaces and through closing the street. Raised cycle tracks encourage safe active transportation. Unique lighting features incorporated into street trees reinforce a strong sense of place.

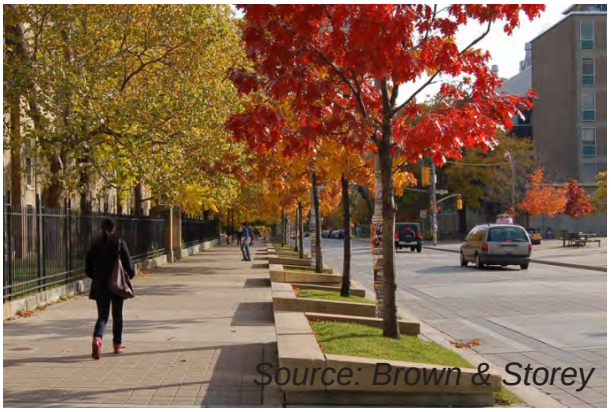
Dundas Street, London (Ontario)



Principle Employed / Key Takeaways Objectives Met:

The Dundas Street study defined future improvement initiatives to create a more attractive, vibrant and functional corridor in the heart of London, Ontario. The study is a commitment to a new and revitalized Dundas Street – a bustling, thriving public space which will once again become the economic, cultural and institutional heart of the City.

St. George Street, Toronto

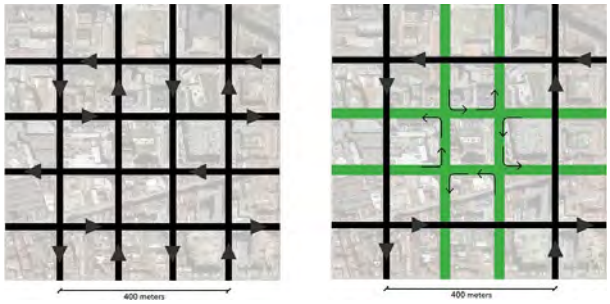


Principle Employed / Key Takeaways Objectives Met:

St. George Street is a complete street along the University of Toronto Campus with ample pedestrian space and amenities, cycling facilities, large canopy trees and planters with integrated benches and slow moving vehicles. Concrete and pavers are used in the roadway to create natural traffic calming.

Superblock, Barcelona

Sources: BCNecologia



The black lines show routes for cars and transit traveling 50km/h. The green lines show pedestrian, cycling and slow moving (10km/h) local vehicle routes.

Principle Employed / Key Takeaways
Objectives Met:

Barcelona's superblock mobility plan presents 400 metre wide neighbourhoods in which only pedestrians, active transportation, and local slow moving vehicles can move through. Vehicles can drive at typical speeds around these neighbourhoods, but not within them. This shift in the transportation hierarchy fosters vibrant and safe 'citizen spaces' within the superblock. University Avenue can benefit from some techniques used in the superblock to encourage pedestrians and active transportation, slow traffic, and create a pedestrian oriented robust public realm. The superblock concept of controlling the level of through traffic is consistent with the goals of adjacent neighbourhoods and institutions and could be applied to directly address traffic infiltration concerns in Northdale and pedestrian safety concerns on the University of Waterloo's Ring Road. Currently, University Avenue is dominated by vehicular movement, and public and active transportation are not given priority. The superblock mobility plan reverses the current order of priorities.

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MAN RECORDS

6 CONCEPT PLANS

The Concept Plans section of the University Avenue Gateway Strategy illustrates how the project themes and vision manifest along the corridor, with focus on five key areas. These areas showcase the geometry, elements and initiatives that will express the identity of University Avenue as a district for Innovation, Discovery, Learning, and Entrepreneurship.

Gateway Strategy streetscape elements

In order to reinforce University Avenue's identity developed through the streetscape design, this Gateway Strategy employs a distinctive kit of parts will be employed to realize the streetscape principles that include public realm amenities.

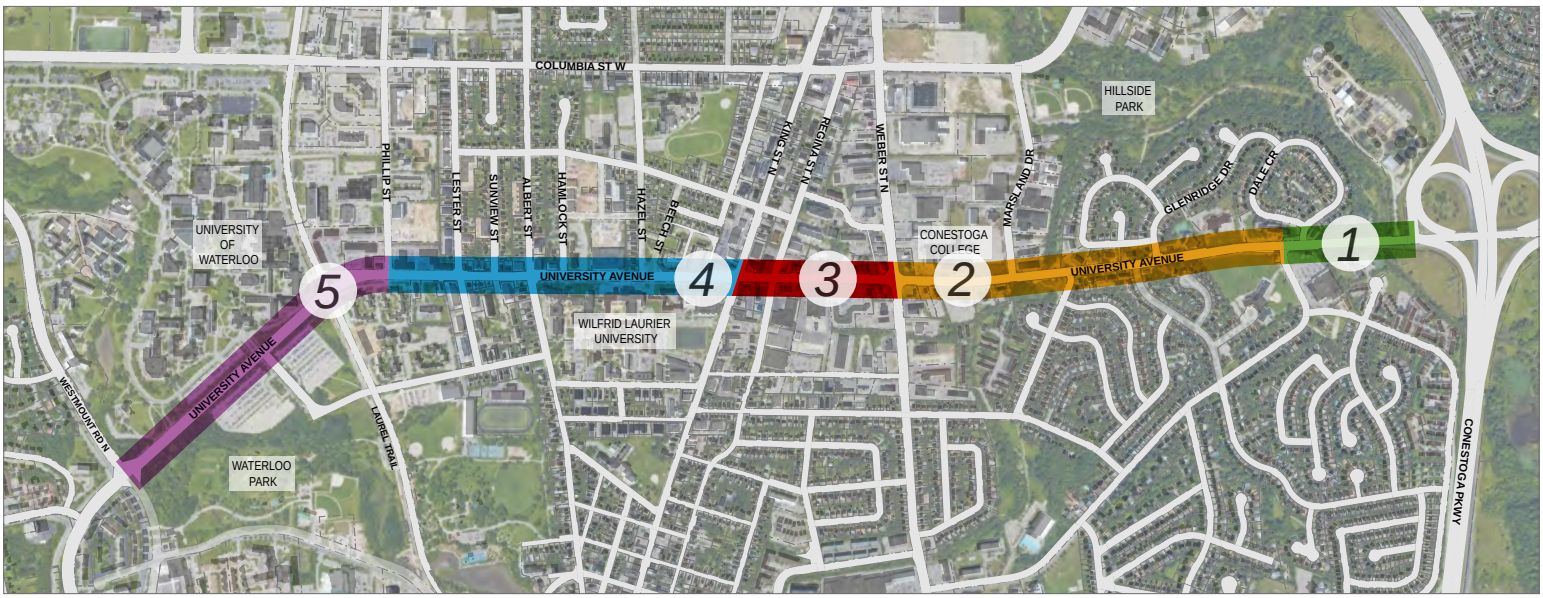
These streetscape and public realm elements showcase the overall Gateway vision and incorporate the themes of innovation, discovery, learning, and entrepreneurship throughout the corridor.

In order to create a consistent and unified street, design elements are distributed throughout each Focus Area. Due to the unique nature of each of the five Focus Areas, differing streetscape elements will be applied.

The 5 Focus Areas are as follows:

1. The east corridor gateway on University Avenue west of Highway 85
2. The Conestoga College Area at Marsland Drive
3. The Mixed-Use Area at Regina Street North.
4. The Wilfrid Laurier Area at King and Hazel Streets.
5. The University of Waterloo Area at the ION light rail transit corridor

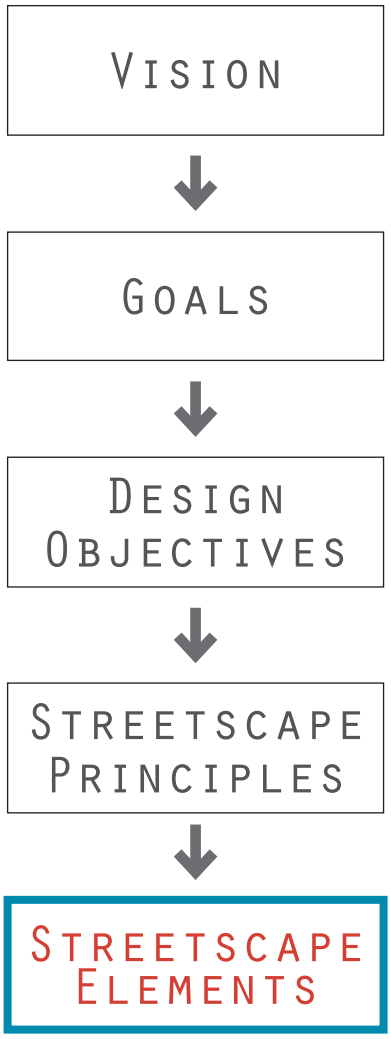
*For further information regarding the 5 Focus Areas, please refer to Page 94



The expression of the four themes will respond to the identity of each Focus Area. The corridor represents an important district and overall gateway to the City of Waterloo as a whole. However, it is also important to apply design elements contextually, and to understand that the character and land uses change across University Avenue.

From a residential character at its eastern end to an area dominated by institutional uses at its most Western point, certain themes will better represent the needs and activities undertaken along the corridor. The contextual design approach for each Focus Area starting on page 94, is further explained in the detailed Focus Area section.

Consistent design elements such as the sidewalks, dedicated cycling infrastructure, street trees and bus shelters should be uniform along the length of the corridor. Ensuring the uniform design of these elements across the entire length of the corridor will create a sense of unity and continuity throughout. In the different distinct contexts along University Avenue, there will be variables that change to reflect the nature of the activities being undertaken, as well as the themes that are most prevalent. Recognizing these different contexts will require the customization of streetscape elements to cater to the users and activities present in these areas. The Character Areas mentioned in Section 2 informs the appropriate elements to be placed throughout the corridor.
For example, in the case of sections of the corridor that are focused on serving the educational institutions (Focus Areas 2,4,5), streetscape elements will more strongly emphasize learning and innovation in their design. Variables include benches, tables, wayfinding features and gateways along the corridor. The primary methodology of adapting contextual elements to their corresponding themes, is through the creation of modular street elements. For example, a bench can be adapted in different contexts to include theme-specific elements like tables for co-working and studying in entrepreneurial and learning environments, wi-fi and charging capabilities to foster innovation, and interactive public art for discovery. By ensuring these elements cater to the resounding themes across certain portions of University Avenue, the creation of identity and user-specific design can be applied.



This table displays the consistent streetscape elements that should be implemented across University Avenue. These are essential foundational elements, which will assist in the successful implementation of the four themes and realization of the project goals.

The Smart Technologies identified in the Consistent Streetscape Elements table will require cost sharing between the City and key stakeholders of the Gateway Strategy.

Consistent Streetscape Elements Across University Avenue
Pedestrian Clearway and Realm
Smart Cycle Facilities
Bike Parking
Street Trees
Cohesive Planting Palette
Smart Bus Stops/Shelters at Key Stops (Wilfrid Laurier University & University of Waterloo)
Lighting with Integrated Smart Technology at Select Areas (Focus Areas 2-5)
Cohesive Material Palette
AODA Features
Improved crosswalk safety
Stormwater Management
Transit Priority on the Roadway
Minimum-Sized Vehicles Lanes
University Avenue Branding Elements

Variable Streetscape Elements Across University Avenue	
Focused Theme	**Variable Streetscape Element**
Adaptable to each theme	Street Furnishings
	Tables
	Public Art
	Plazas
	Banners
	Pavement Marking
Discovery	Wayfinding Elements
	Signage
	Gateways (Vehicular and Pedestrian)
Innovation	Wi-fi Stations
	Charging Stations
	Smart Technology
Learning	Outdoor Library
	Flexible Work Stations
	Presentation Spaces
Entrepreneurship	Smart Technologies
	Patio Space
	Flexible Market Spaces

This table displays the variable streetscape elements that will be utilized in specific context-appropriate areas along University Avenue. Each streetscape element presents an opportunity to celebrate one or more of the Gateway themes.

Most of the variable elements in the right-of-way should maintain a consistent design language, with slight variation to express a particular theme.

The following section outlines a selection of streetscape elements that will be employed along the streetscape to bring the vision to life and reinforce the corridor themes. The placement of these elements is described in Section 1, page 6 of this report.

Enhanced Bus Shelters

Bus shelters provide the opportunity to develop a unique identity along the corridor through custom designs and materials at key locations.

Current stop improvement projects have been focused on improving passenger comfort, by expanding landing pads, adding bus shelters, installing bike racks, benches and garbage bins.

Such efforts should be expanded on in key areas to provide integrated shelters with seating, placemaking features such as public art, and appropriate hardscape for queuing. Areas surrounding the bus shelters also provide opportunities to improve the transit experience through ample sidewalks, street trees, street furnishing, and cycling infrastructure to enhance multi-modal connections.

Smart technologies such as up-to-date transit information, wifi, and charging stations can improve transit user's experience and also provide an opportunity to showcase the various themes in the district. Screens within the bus shelters can intermittently change between transit information and FAQs or qualities of the Focus Area. For instance, in Focus Area 2 at Conestoga College, a recipe could be posted from the students in the Hospitality & Culinary Arts Program.

This would provide opportunities for transit users and pedestrians to explore and discover the unique qualities of each Focus Area. Smart technology should be prioritized for transit stops serving the University of Waterloo, Wilfrid Laurier University, and Conestoga College as these stops have the highest transit activity.

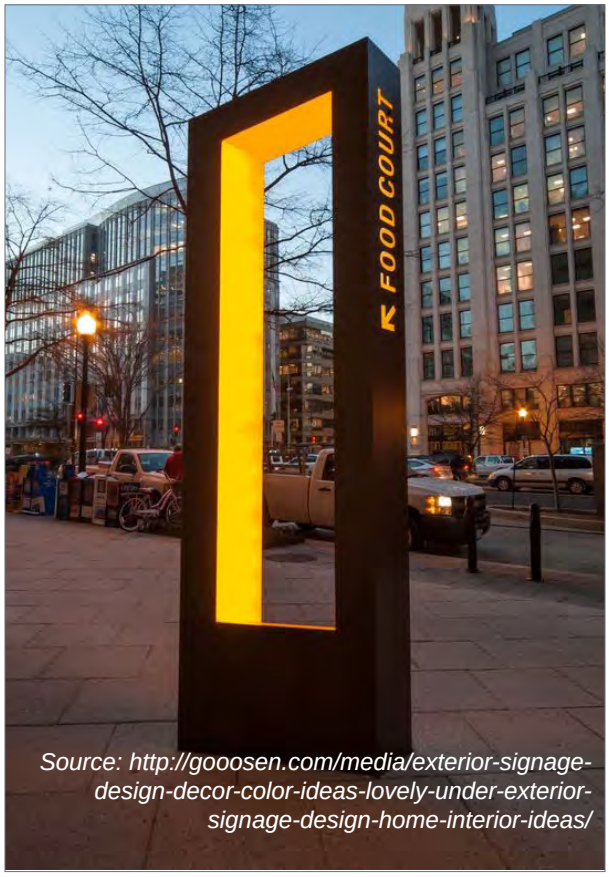
The following images illustrate how transit stops can help create a distinctive corridor identity through bus shelter design.

Gateway Features & Wayfinding

To celebrate University Avenue as a gateway, clear and unique indicators along the corridor should notify visitors of the district and the destinations along the corridor including the three institutions.

These features provide an opportunity to explore and celebrate the themes of innovation, discovery, entrepreneurship, and learning. The integration of smart technologies into these elements can also aid in reinforcing the corridor vision. Further, these features can also serve as public art.

The following images illustrate unique gateway and wayfinding techniques. Wayfinding elements should be consistent in design language with slight variation to express the different themes and areas.



Source: http://gooosen.com/media/exterior-signage-design-decor-color-ideas-lovely-under-exterior-signage-design-home-interior-ideas/

Source: https://www.smashingmagazine.com/street-and-wayfinding-signs-part-4/

Source: http://publicdesign.ca/work/ubc_gateway

Source: http://brutdeluxe.com/work/iconic-sign-system-de-dos-madrid/dise%C3%B1o

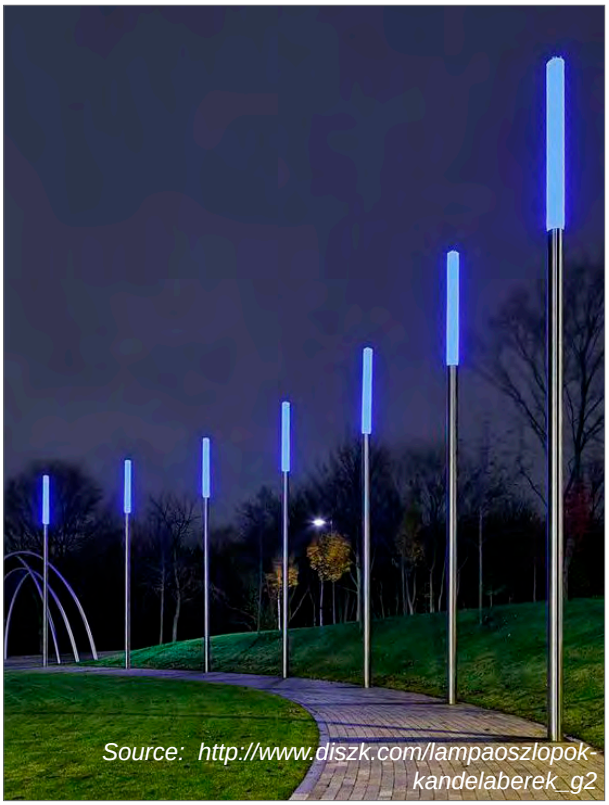
Lighting with Integrated Smart Technology

Street lighting provides an opportunity to reinforce a distinctive corridor identity, as well as integrate smart technologies such as charging stations, interactive maps, environmental monitoring, safety-driven technologies such as call stations, and Wi-Fi. Through providing multi-function streetscape elements, clutter is minimized and the themes of learning, discovery and innovation can be explored.

Lighting should look consistent along the corridor with opportunities for slight variation to express the different themes or contexts through such means as different colour wrapping treatments. Lighting can also provide an opportunity for public art.

Well-lit pedestrian environments increase the safety of the pedestrian realm and encourage more active users after dark. It is crucial to create a safe and comfortable environment for pedestrians accessing surrounding buildings and open space.

Source: https://www.engoplanet.com/single-post/Cost-of-the-Battery-Price-Smart-Solar-street-lights



Source: http://www.diszk.com/lampaoszlopok-kandelaberek_g2

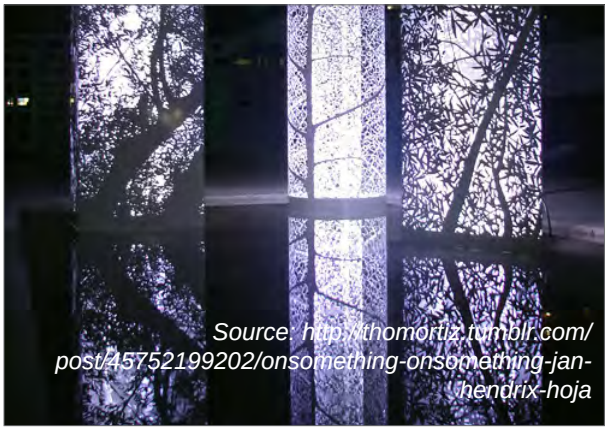
Source: https://internetofbusiness.com/haven-kakumae/

Public Art

Public art should be implemented in key areas where there is room in the road right-of-way to showcase the themes of University Avenue and spark interest in the community. Art that is interactive will further help to animate the streetscape, and foster a strong sense of place.

Public art can include sculptures, lighting installations, street furnishing, murals, surface treatments, wayfinding, and branding elements.

There is also opportunity to incorporate art as a part of new developments. The art feature will not only provide interest to the development, but also create a connection to the public realm and pedestrians passing through and adjacent to the property.



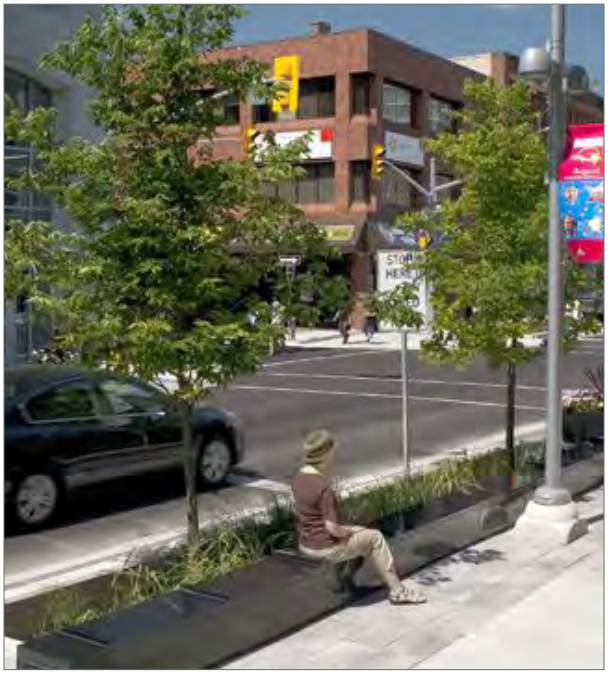
Source: http://thomortiz.tumblr.com/post/45752199202/onsomething-onsomething-jan-hendrix-hoja

Source: http://landezine-award.com/wp-content/uploads/2016/10/Megaphone1-1024x682.jpg

Street Trees & Planting

Street tree and plant species provide an opportunity to further reinforce the sense of place of the district, while also providing green infrastructure, shade, and stormwater management. Selection of unique (and resilient) species with seasonal interest, as well as distinctive planters will further develop the University Avenue identity.

Tree planting on private property adjacent to University Avenue can provide an opportunity to incorporate additional canopy cover within this corridor.



Street Furnishings

Street furnishings encourage pedestrians to stay within the public realm and enjoy what the area has to offer. Providing various types of street furniture can assist with helping a user to understand the function of an area within the public realm. Different types of furnishings can provide momentary rest when waiting for transit, protection from the elements, space for congregation, opportunity for interaction and playfulness, as well as information.

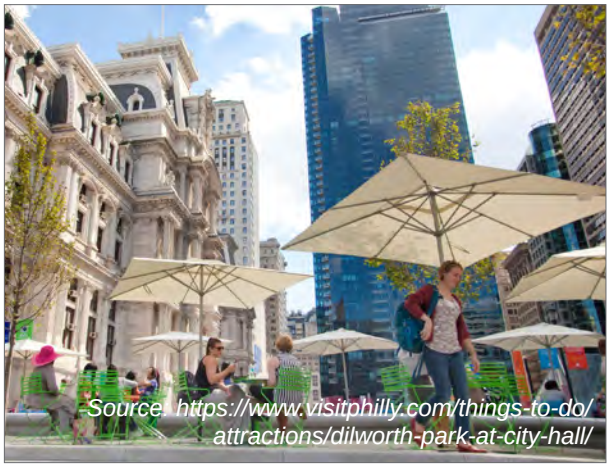
Common street furnishing can be applied throughout the Focus Areas, while more specific furnishings can be unique to certain Focus Areas within the private realm. For instance, modular furniture could be used within the Focus Areas that contain educational institutions. Playful, interactive furniture would well suit with that environment.

The same design language should be used across street furnishing, with opportunities to add custom elements to express the corridor themes (e.g. cut outs in metal of furniture).

Pedestrian amenity elements that provide multiple functions and have a unique look and feel can aid in establishing a strong identity for the corridor, showcasing the project themes.

For instance, smart benches with solar powered smart technologies as shown in the adjacent precedent image not only provide seating and shade, but also monitor environmental conditions and provide an SOS button and charging station.

Source: https://www.proidea.ro/mmcite6-srl-229194/banci-mmcite-parcuri-365095/a_49_d_14_1528969994613_mmcite_banci_parcuri_radium_2017.pdf



Source: https://www.visitphilly.com/things-to-do/attractions/dilworth-park-at-city-hall/

Source: https://medium.com/we-research-and-expriment-with-how-the-sharing/turning-indoor-public-spaces-into-vibrant-third-places-62084b528ff8

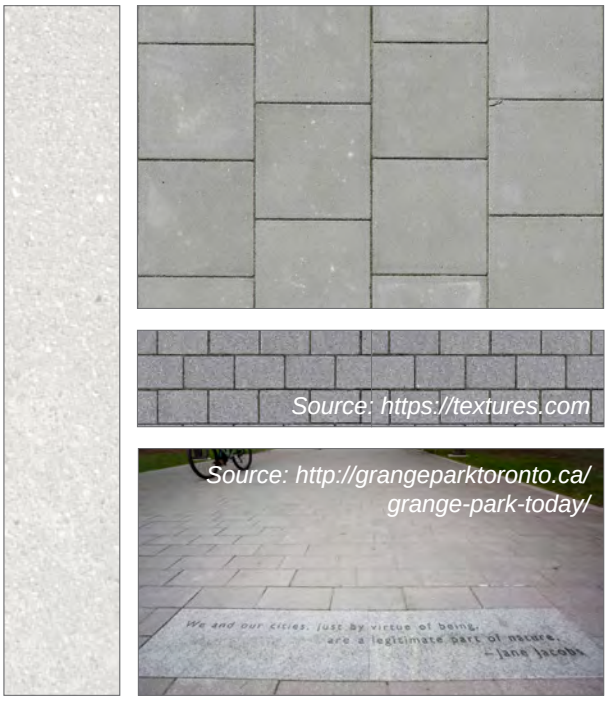
Source: https://ecosistemaurbano.com/madrid-chair/

Cohesive Material Palette

Clearly identifying the pedestrian realm through the use of alternating paving patterns can help to establish placemaking. Utilizing different patterns within planting areas, seating areas and circulation areas can help to frame and delineate the public realm.

Using a consistent pattern throughout the public realm will establish a cohesive visual for the street. Unique paving patterns can also be implemented in specific areas depending on the Focus Area or theme. For instance, inscribed paving patterns can display visuals or text which can illustrate a certain theme or character for the area.

University Avenue is an opportunity to apply new treatments that are unique to the corridor



Source: https://textures.com

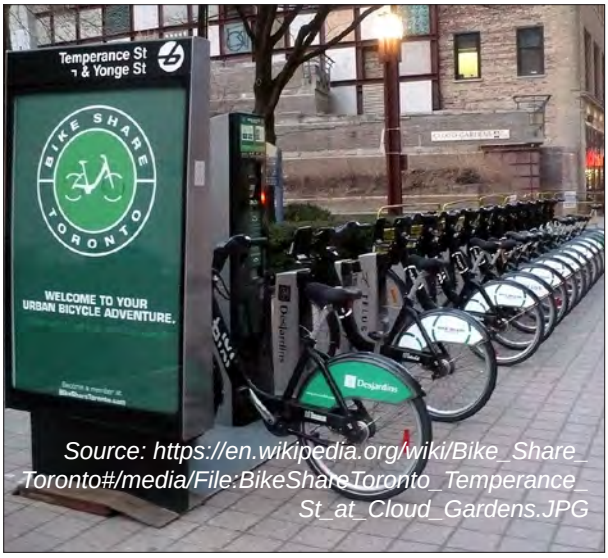
Source: http://grangeparktoronto.ca/grange-park-today/

Smart Cycling Facilities

Separated cycling infrastructure should be provided where feasible to encourage continued safe cycling along the corridor. Bike parking can provide a cohesive element to reinforce the identity of the corridor.

Bike sharing programs within the district have the opportunity to encourage active transportation and distill the themes of innovation, entrepreneurship and discovery. Bike Sharing programs in the form of pilot projects have been, and are in the process of, being made available to the public.

The combination of improved cycling infrastructure and bike sharing programs will have a positive effect on modal-splits along University Avenue.



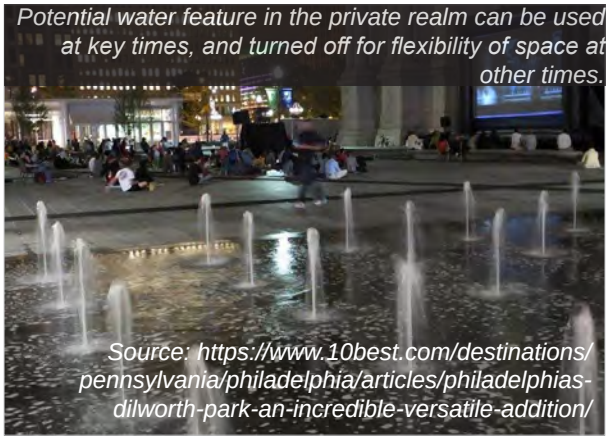
Source: https://en.wikipedia.org/wiki/Bike_Share_Toronto#/media/File:BikeShareToronto_Temperance_St_at_Cloud_Gardens.JPG

Flexible Pedestrian Realm

Flexible pedestrian spaces provide the opportunity for a diverse programming that can animate the district. Depending on the time of year or Focus Area, the pedestrian realm can adapt to current needs. There is also opportunity to showcase the unique elements of each Focus Area through varying pop-up events, pavilions, fairs and public art.

For example Focus Area 2 at Conestoga College, could potentially hold a pop-up outdoor kitchen or cooking class for students, residents and visitors. Dedication space within the pedestrian realm for flexible and temporary functions can encourage creativity within the corridor.

Providing room for flexibility within the pedestrian realm will prevent the street from turning stagnant and encourage adaptability and change.



Potential water feature in the private realm can be used at key times, and turned off for flexibility of space at other times.

Source: https://www.10best.com/destinations/pennsylvania/philadelphia/articles/philadelphias-dilworth-park-an-incredible-versatile-addition/

Source: http://www.marvelbuilding.com/public-reading-space-compact-box-story-pod.html

Source: http://sweeterytoronto.ca/

Gateway Strategy

This Gateway Strategy celebrates University Avenue as a district for:

- Innovation,
- Learning,
- Discovery, and
- Entrepreneurship.

The Gateway Strategy should showcase the ultimate vision of the University Avenue corridor. As a principal gateway, University Avenue should be the premier example within the City and Region, of a Complete Street for all users and modes of transportation, with a public realm that is green and smart.

Pedestrian Oriented **Green** **Smart**

Prior to viewing the Concept Plans of the 5 Focus Areas, the following is a summary of Section 6.

The corridor should showcase a distinct identity, developed through a consistent cross section, the repetition of unique cohesive streetscaping elements, such as sidewalks, cycling infrastructure, material and planting palettes and other elements outlined in the Streetscape Criteria. Along the entirety of the study area, the Gateway Strategy identifies a segregated cycle track, a planting/furnishing zone, and a pedestrian sidewalk. The Gateway Strategy should consistently provide for:

- Ample pedestrian clearways;
- Separated cycling facilities;
- Continued safe crossings;
- A unique University Avenue Gateway identity through place-making elements;
- Vibrant and flexible public realm space;
- Generous transit facilities;
- Large canopy street trees, and
- Slower driving design speeds.

The combination of consistent and variable streetscape elements will amplify the impact and visibility of the four themes along the corridor. A strong implementation of the consistent streetscape elements will provide the proper foundation for the various themes to be showcased.

Gateway strategy Focus Areas

Through contextual analysis, five Focus Areas have been identified to illustrate how this Gateway Strategy will achieve the vision along the corridor. The focus areas were selected by the project team and stakeholders based on their variety and significance. The five focus areas are as follows:

Focus Area 1: The east corridor gateway on University Avenue west of Highway 85;

Focus Area 2: The Conestoga College Area at Marsland Drive;

Focus Area 3: A Mixed-Use Area at Regina Street North;

Focus Area 4: The Wilfrid Laurier University Area at King and Hazel Streets;

Focus Area 5: The University of Waterloo Area at the ION light rail transit corridor.

The ultimate transformation of the corridor and Focus Areas will not be achieved via minor operational changes or improved aesthetics. In many instances, the desired transformation will only be possible through geometric redesign and the reduction of automobile traffic (more ambitiously by modal shift and trip avoidance). However, there are opportunities for smaller and more incremental transformations to occur at the onset.

The Region of Waterloo has long been an innovator in the area of roadway design through its widespread use of roundabouts. The University Avenue corridor offers an opportunity to do so again through modal re-prioritization.

The concept plans showcase the long-term vision for the Focus Areas. Improvements and future development beyond the public road right-of-way illustrate how potential future development along the corridor could look. Achieving the long-term vision shown in the concept plans will require investment and collaboration between different stakeholders. Refer to Section 7 for Implementation Recommendations for further information.

Gateway Plan Focus Areas

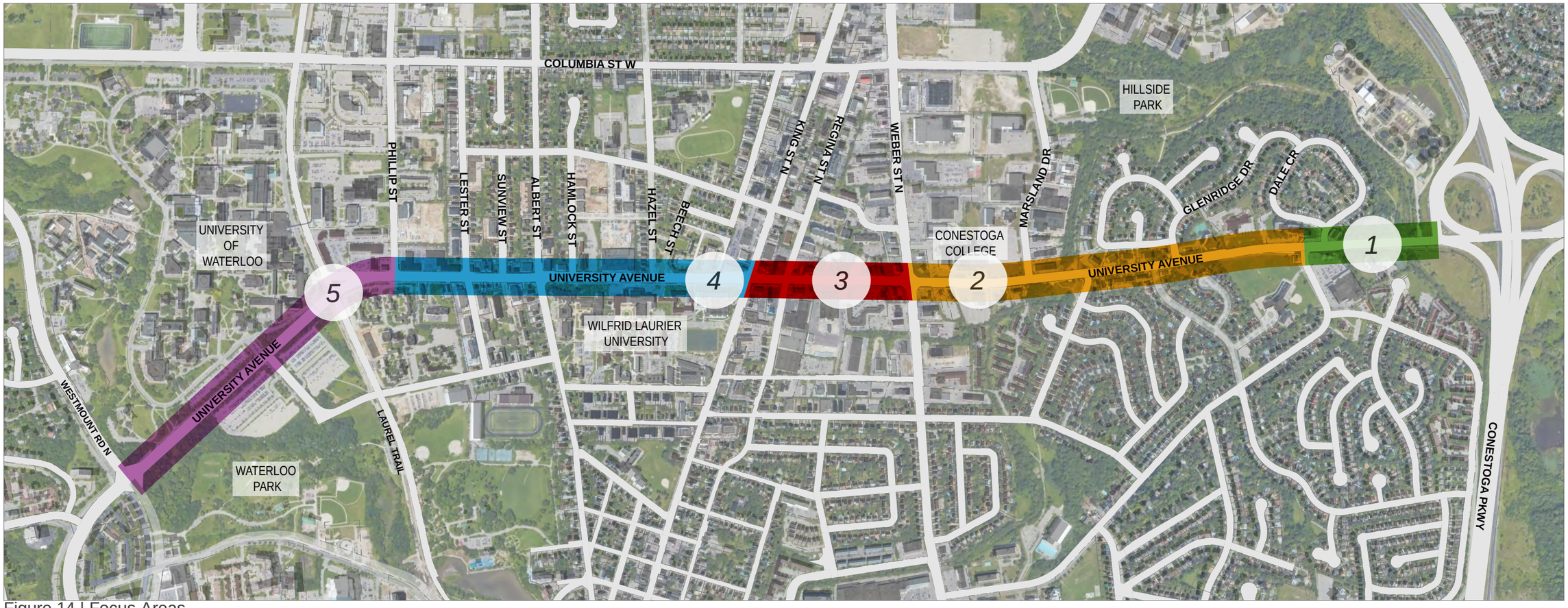


Figure 14 | Focus Areas

To note: *Each colour represents the full extent of a Focus Area. The placement of the Focus Area number is to represent the location of the detailed plans and sections created for each Focus Area*

Focus Area 1: University Avenue East Gateway Existing Conditions

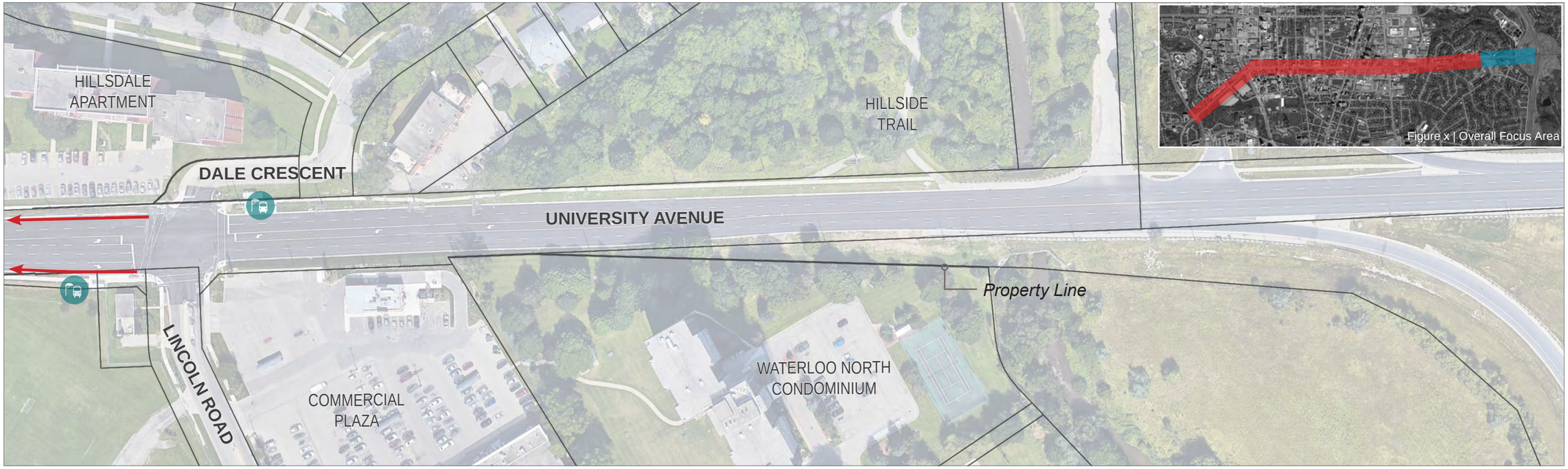


Figure 15 | Focus Area 1 Existing Conditions

Existing Streetscape Elements

Vehicular Transportation | *Transit* | *Transit Stops* | *Cycling Infrastructure* | *Pedestrian Clearway* | *Safe Crossing* | *Existing Bike Lanes*

Focus Area 1 is less urban in character compared to the other Focus Areas. The area is vehicular dominated, with fast moving traffic from cars coming off of and going onto the highway. Focus Area 1 provides an access point for the rest of University Avenue and does not currently contain land use or public realm features with significant pedestrian movement or activity. Although there are bike lanes along University Avenue, west of Lincoln Road the right-of-way condition is predominantly auto focused.

The main intersection east of Highway 85 is Lincoln Road and University Avenue. To the north is a residential neighbourhood with low-rise, single family homes within the interior and apartment buildings greater than 5 storeys lining the avenue. To the south is a retail plaza with low-rise, single family homes within the interior and apartment building lining the avenue. On both sides of University Avenue there are schools with open spaces which front the avenue.

There is a trail system, Hillside Trail, just west of Highway 85, which offers 3km of walking and cycling. Hillside Trail connects to Hillside Park, which contains sports fields, parking and public washrooms. The trail is also part of a larger network, which offers more than 150km of multi-use trails. The entrance to Hillside Trail, which fronts University Avenue does not have a strong or obvious presence. Unless the entrance to this trail is known by frequent users, there is no demarcation and marker for the trail or a wayfinding map for new users.

The first intersection west of Highway 85, Lincoln Road and University Avenue, does not signal the arrival of the more unique institutional uses further down the avenue; there is no preliminary indication or feature to announce it's uniqueness.

Focus Area 1, is currently not a destination, but rather a bypass section of the corridor for what is further down the avenue. It is the transition off of the highway, but not yet a transition into the avenue.

Focus Area 1 Recommended Design Approach

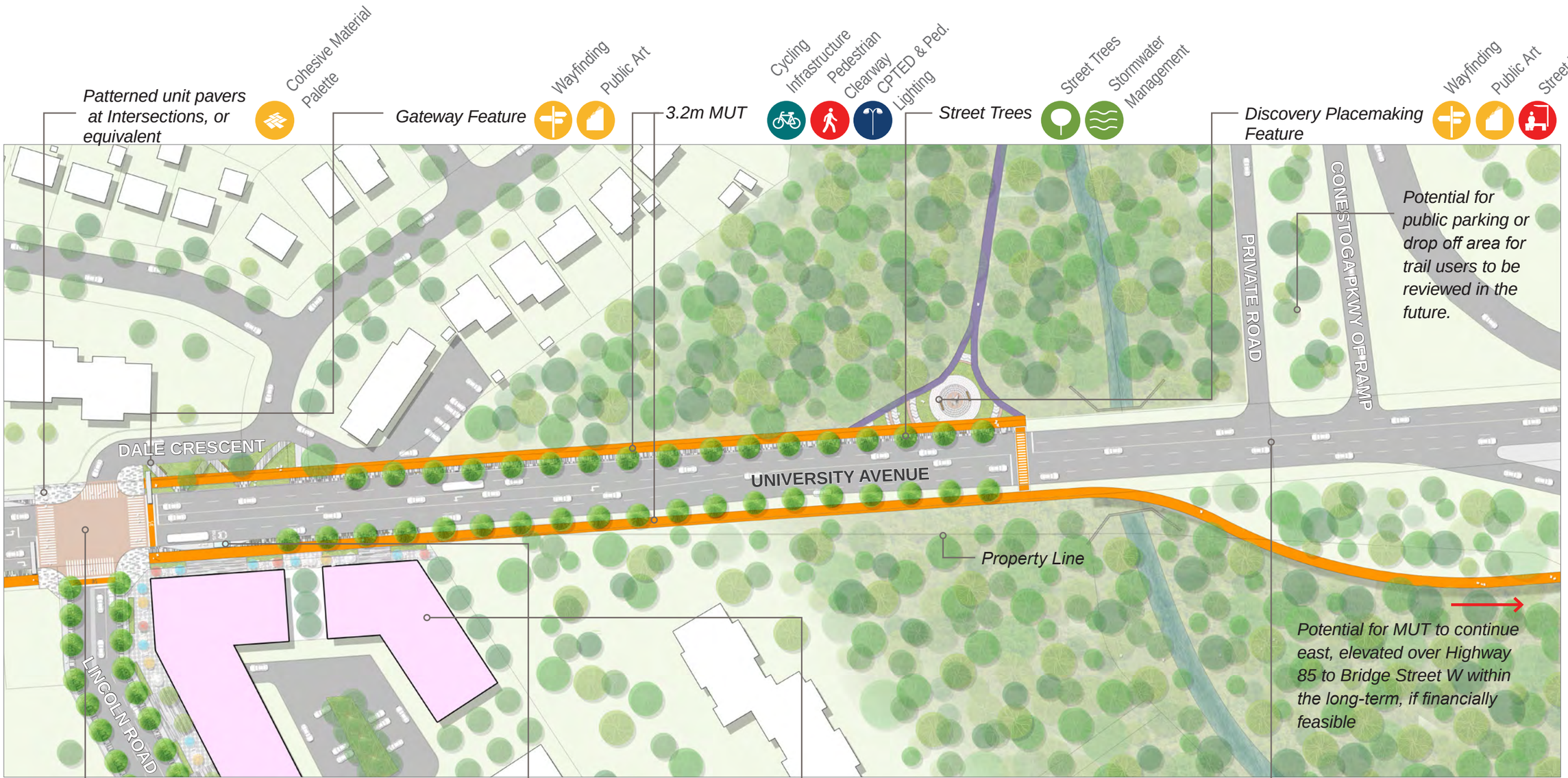
Focus Area 1 should serve as a transitional zone into the rest of University Avenue, and act as a formal gateway to the area. Accordingly, this focus area prioritizes the theme of Discovery.

The design approach (illustrated in Figures 16-18) showcases a mixture of improving on the existing conditions, as well as incorporating new streetscape elements, uses and visual hierarchies. The proposed road right-of-way for Focus Area 1, no longer prioritizes mainly vehicles, but instead creates a multi-modal approach that responds to the local context. As shown in the Focus Area 1 Long Term Vision Diagram, due to this stretch of the corridor's proximity to Highway 85, it is recommended that future cycling facilities east of Lincoln Road be considered a Multi-Use Trail (MUT). This MUT is separated from the street, which provides a separated environment for cyclists and pedestrians. The MUT will not only create a new artery of mobility, but will be connected to Hillside Trail and the expanded trail network. Due to the MUT becoming elevated over Highway 85, the Ministry of Transportation, Region of Waterloo and City of Waterloo will have to work collaboratively to understand the feasibility of this potential connection.

A public art piece which encompasses the theme of Discovery at the entrance to the trail, will highlight an existing network of the city to be explored. It can act as a trail marker, map and wayfinding feature for trail users. Formalizing the entrance to the trail and providing wayfinding information will encourage the use of the trail network and encourage other modes of mobility.

A Gateway feature which showcases the theme of Discovery at the Lincoln Road intersection, will mark the beginning to the University Avenue journey. It will represent an introduction to the avenue's new overall vision and identity.

Focus Area 1 Long-Term Vision: University Avenue East Gateway Design Concept Plan



** Potential future development intended to illustrate possible future conditions along the corridor. All development is subject to planning policy and zoning by-laws.*

Figure 16 | Focus Area 1 Design Concept Plan

Focus Area 1 Design Concept

Dominant Theme of DISCOVERY Proposed Elements

Discovery placemaking feature at entrance to Hillside Trails.

Gateway feature at main intersection after Highway 85 (at Lincoln Road)

EXISTING	RECOMMENDED DESIGN CONCEPT
Placemaking Features	
• N/A	• Unique material palette of patterned unit pavers, or equivalent at intersections • Coloured asphalt at key intersections • Coloured Streetprint crossing • Gateway parkette / feature • Public art
Pedestrian Amenities	
• Sidewalk	• Sidewalk / MUP • Flexible public realm space • Street furnishing in key areas • Integrated pedestrian / street lighting
Green Infrastructure	
• N/A	• Street Trees • Planting and furnishing zone • Bioswales, Rain Garden or equivalents where feasible
Transit Infrastructure	
• Bus shelter east of Dale Crescent on the north side of University Avenue (Bus traveling west) • Bus shelter west of Lincoln Road, on the south side of University Avenue (Bus traveling East)	• Bus shelter moved to west of Dale Crescent on the north side of University Avenue (westbound bus) • Bus moved to east of Lincoln Road on the south side of University Avenue (eastbound bus) • Potential for dedicated transit lane
Cycling Infrastructure	
• Bike lane on both sides starting west of Lincoln Road and University Avenue	• 3.2 metre MUT north of University Avenue from Hillside Trail to Lincoln Road • 3.2 metre MUT south of University Avenue from Bridge Street West to Marsland Drive

Focus Area 1: University Avenue East Gateway Vision - Looking East

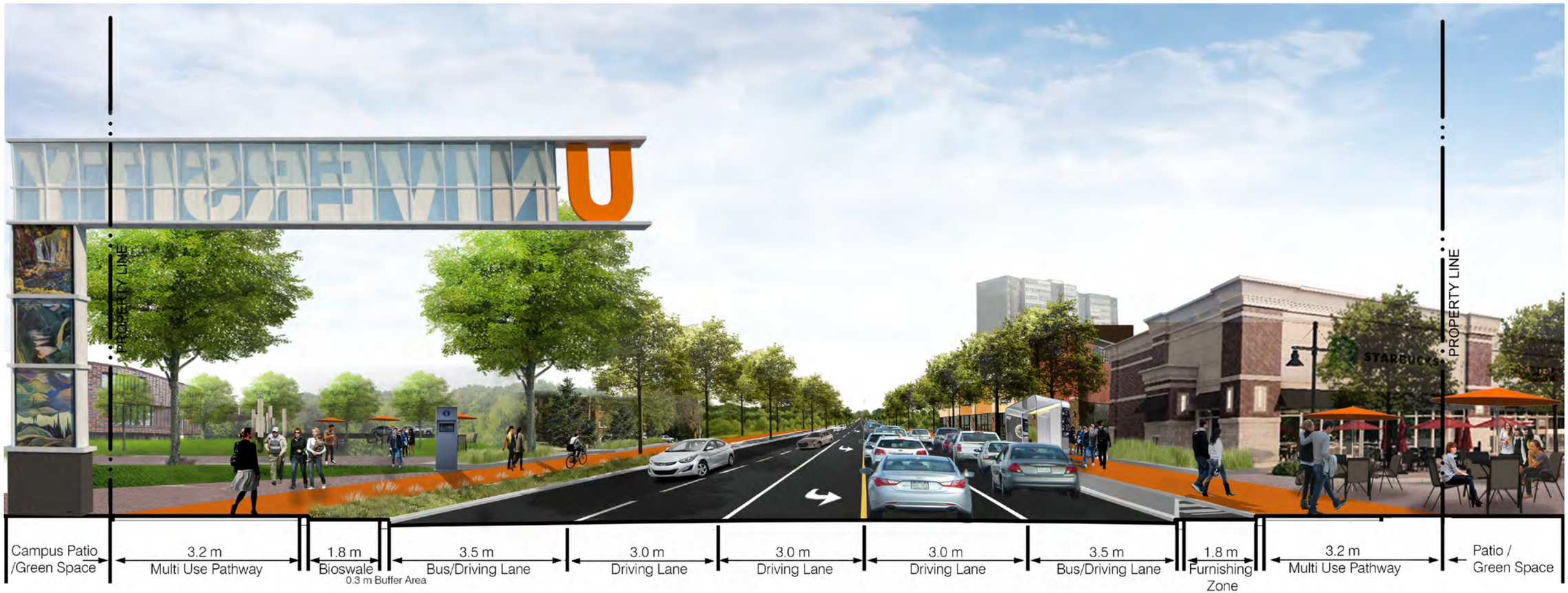
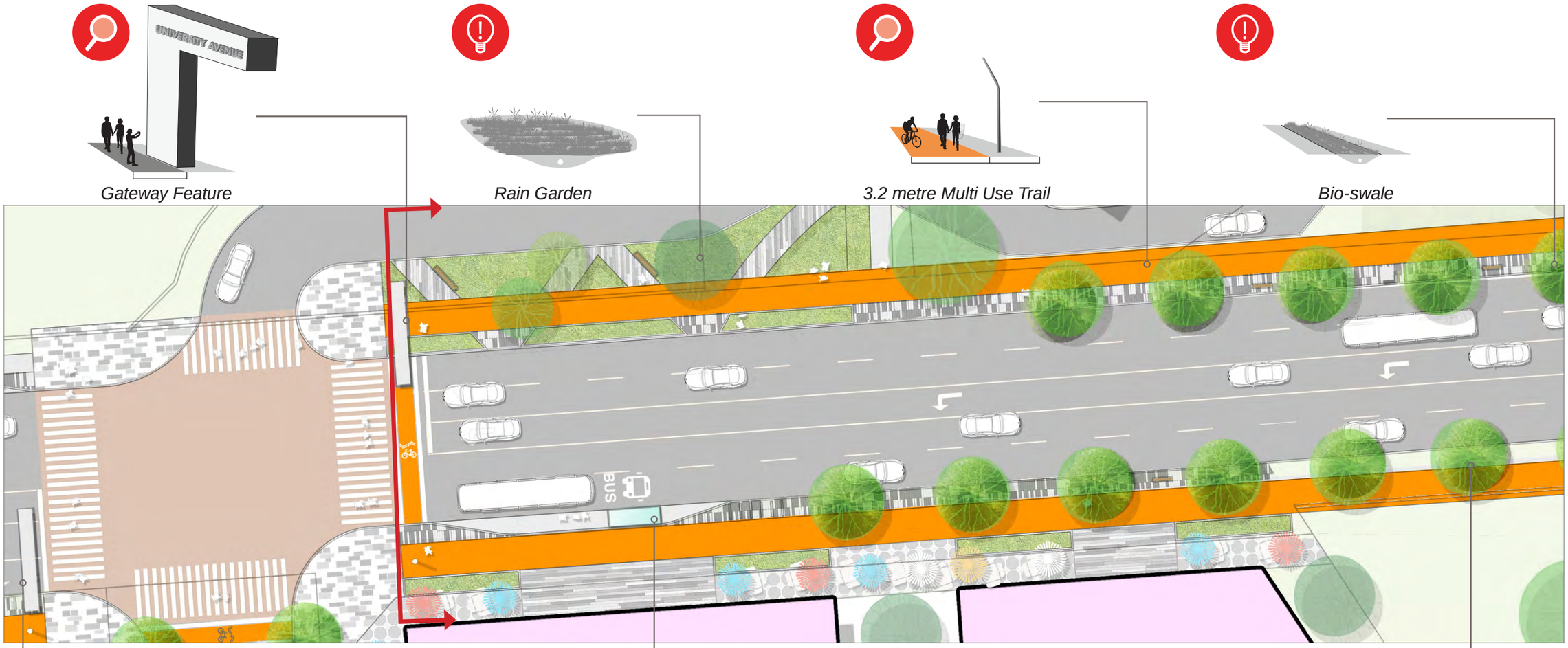


Figure 17 | Focus Area 1 Design Concept Cross Section

Focus Area 1: University Avenue East Gateway Design Concept Plan Key Elements



Gateway Feature

Rain Garden

3.2 metre Multi Use Trail

Bio-swale

Wayfinding/ Smart Information Board

Bus Pavilion

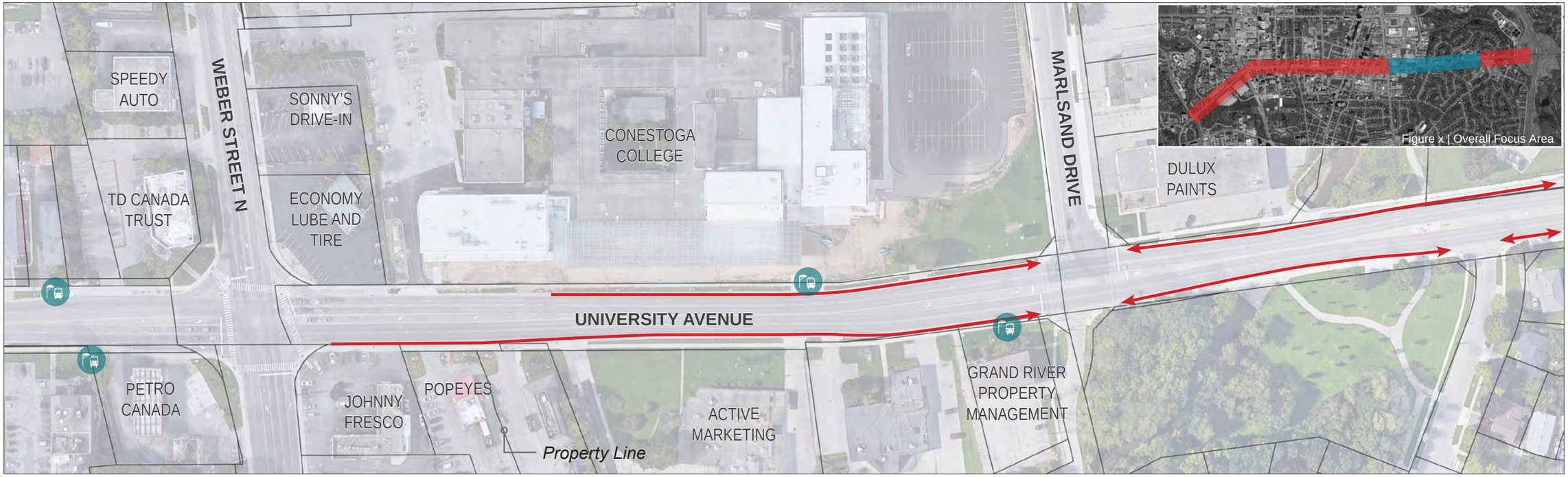
Stormwater Planter

4 Themes Celebrated in Corridor >

- Innovation
- Discovery
- Learning
- Entrepreneurship

Figure 18 | Focus Area 1 Design Concept Key Elements

Focus Area 2: Conestoga College Existing Conditions



Existing Streetscape Elements

Vehicular Transportation | *Transit* | *Transit Stops* | *Cycling Infrastructure* | *Pedestrian Clearway* | *Safe Crossing* | *Existing Bike Lanes*

Figure 19 | Focus Area 2 Existing Conditions

Focus Area 2 reflects a transition out of the predominantly low-rise residential use of Focus Area 1 and contains a mixture of uses such as institutional, residential, commercial and industrial. Conestoga College is the prominent destination and landmark for this area and is located on the northern side of University Avenue, between Marsland Drive and Weber Street. Many of the uses which surround the college are single storey buildings with substantial surface parking. Several of these uses are dependent on being reached by a vehicle, or are mostly frequented by students in the area. This section of the avenue serves as the starting point of the educational campuses, active street frontages and generous public realm.

There are bike lanes along a portion of University Avenue, which extend from Weber Street to the west and Lincoln Road to the east. Although there are bike lanes along this portion of the avenue and leading to the college, there is limited cycling infrastructure in terms of bicycle parking, even at the current bus stops.

Conestoga College recently underwent an expansion that was completed in the Fall of 2018. The expanded building introduces a new Institute for Culinary & Hospitality Management, a new Access Hub and The Centre for Advanced Learning. This expansion is aimed at creating the right conditions for a growing community, innovation and long term growth. This expansion represents that Conestoga College will anchor itself into this site and create growth and intensification opportunities for the surrounding area. The updated campus will further the reputation of the area as a centre of learning, entrepreneurship, discovery and innovation. It will also provide the opportunity for the campus to be further incorporated into the context and not only become a hub for students, but for visitors and residents alike. Conestoga College will become an anchor and point of attraction for the area.

With the recent expansion of Conestoga College and the future improvements to the avenue, intensification of the surrounding area will likely occur. By introducing complementary uses and built form to the land surrounding Conestoga College, it will inject vibrancy and activity into the public realm.

Focus Area 2 Recommended Design Approach

Focus Area 2 includes a prominent institution, Conestoga College. A recent expansion of the building has brought it closer to the corridor with a more prominent and grand entrance. While the expansion has provided great benefits to the corridor and public realm, further improvements can be made to the property's frontage on University Avenue. For instance, the hard surface paving to the entrance of the college can be extended further east to meet the edge of the new addition.

Highlighting the theme of Learning and Discovery, the design approach for Focus Area 2 is to celebrate Conestoga College while understanding the development potential of the surrounding area.

As mentioned above, the Focus Area 2 Long-Term Vision Concept plan (illustrated in Figures 20-22) focuses on extending the public realm further east along the building frontage. This will provide greater opportunity for gathering, events, day-to-day student life activities and community gathering.

By framing the street with streetscape improvements, open space, plazas, patios and future development, opportunities are created for interaction, discovery, exchange and learning. A family of elements for Focus Area 2 will tie the urban fabric together and form a cohesive environment.

Conestoga College can further strengthen it's relationship with the avenue through the addition of a mid-block connection and promenade. Providing a mid-block connection with direct access to the school entrance will create safer and more accessible crossing condition for students. It will also provide the opportunity for future development south of University Avenue to have direct access to the campus. Mid-block connections cut the walking distance between intersections and assist in prioritizing pedestrian mobility.

Public Art designed for the theme of learning, placed at either corners of the College and at the entry point can assist in framing the space and signaling what the school has to offer to the avenue and overall community. These monuments can also act as gateways into the campus.

Northern Plaza, Australia

Source: https://worldlandscapearchitect.com/tcl-creating-social-spaces-at-monash-university/#.XLXjOehKiUk

Northern Plaza, Australia

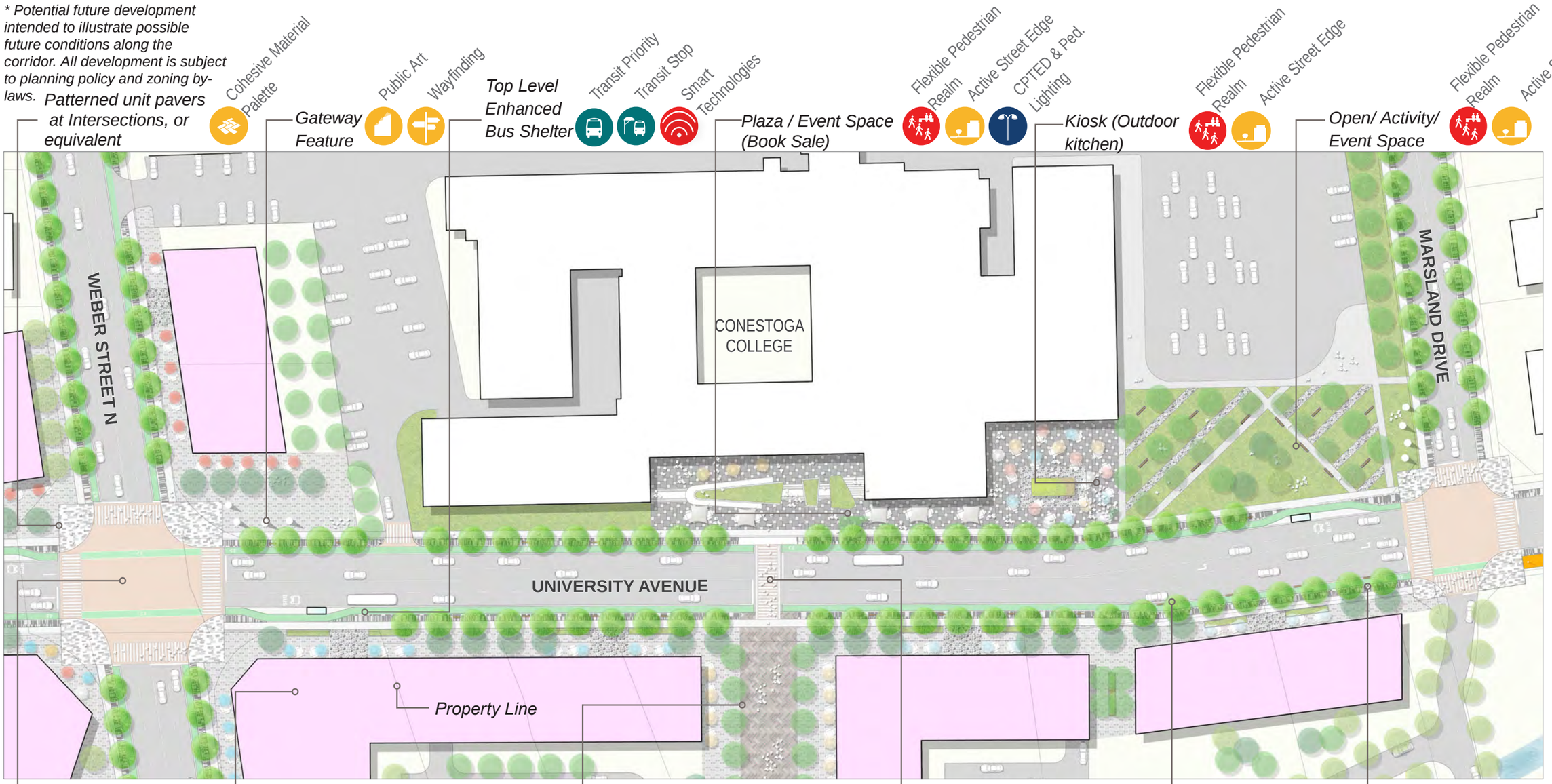
Source: https://worldlandscapearchitect.com/tcl-creating-social-spaces-at-monash-university/#.XLXjOehKiUk

100 Years, 100 Stones Monument, San Diego

Source: https://www.alumnifactor.com/report/san-diego-state-university

Focus Area 2 Long-Term Vision: Conestoga College Design Concept Plan

** Potential future development intended to illustrate possible future conditions along the corridor. All development is subject to planning policy and zoning by-laws.*



** Potential future development intended to illustrate possible future conditions along the corridor. All development is subject to planning policy and zoning by-laws.*

Figure 20 | Focus Area 2 Design Concept Plan

Focus Area 2 Design Concept

Dominant Theme of LEARNING & DISCOVERY Proposed Elements

Learning placemaking features at either intersection and mid-block connection.

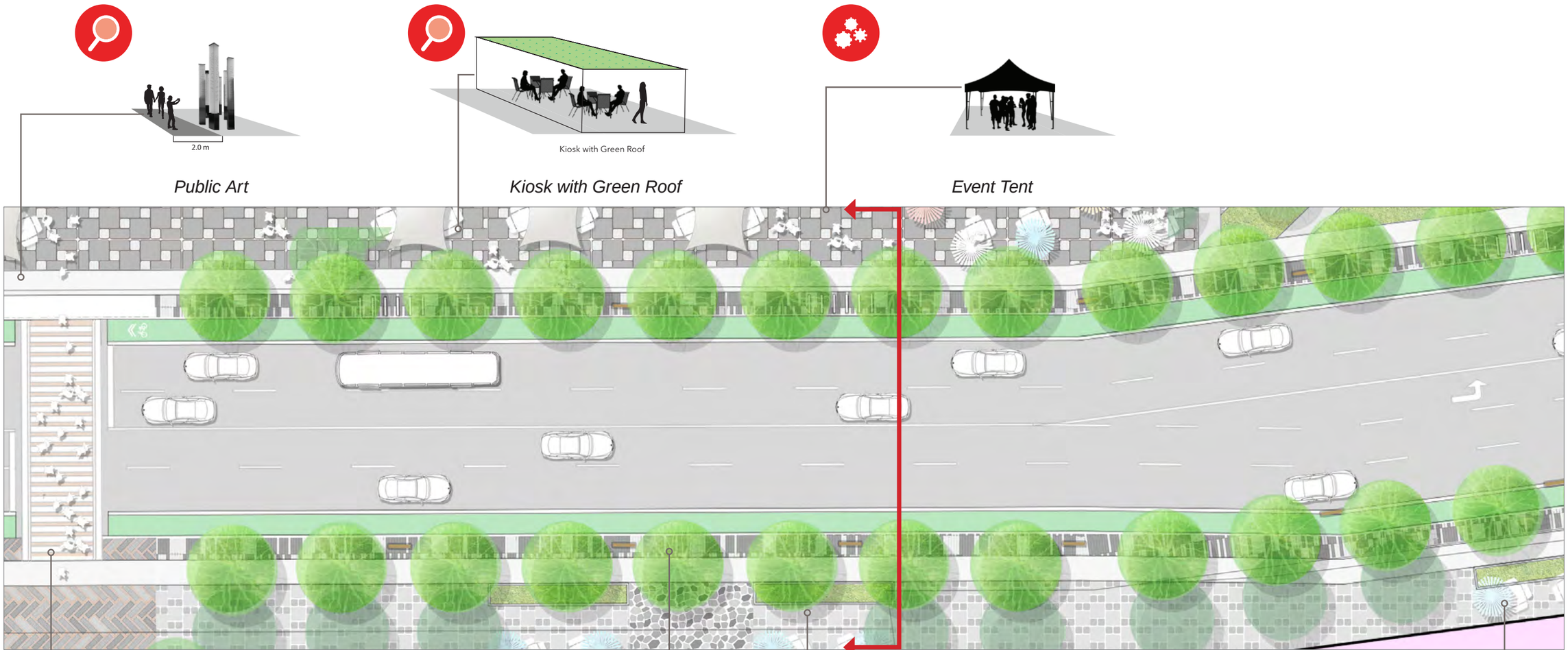
Various types of open space for events, activities and classes, which promote discovery.

EXISTING	RECOMMENDED DESIGN CONCEPT
Placemaking Features	
• N/A	• Flexible public realm • Unique material palette of patterned unit pavers, or equivalent at intersections • Coloured asphalt intersection • Streetprint crossing • Public Art • Promenade
Pedestrian Amenities	
• Sidewalk	• Sidewalk and flexible public realm space • Street furnishing including seating • Pedestrian priority intersection
Green Infrastructure	
• N/A	• Street Trees
Transit Infrastructure	
• Bus shelter west of Marsland Drive, north of University Avenue (Bus traveling west) • Bus stop west of Marsland Drive, south of University Avenue (Bus traveling East)	• Enhanced bus shelter west of Marsland Drive, north of University Avenue (Bus traveling west) • Enhanced bus stop east of Marsland Drive, south of University Avenue (Bus traveling East) • Potential for dedicated transit lane / transit priority along corridor and at intersections
Cycling Infrastructure	
• Bike lane on both sides.	• Separated cycle tracks on both sides, west of Marsland Drive. • 3.2 metre MUT east of Marsland Drive to Bridge Street West.

Focus Area 2: Conestoga College Vision - Looking West

Figure 21 | Focus Area 2 Design Concept Cross Section

Focus Area 2: Conestoga College Design Concept Plan Key Elements



4 Themes Celebrated in Corridor >

Innovation | Discovery | Learning | Entrepreneurship

Figure 22 | Focus Area 2 Design Concept Key Elements

Focus Area 3: Mixed-Use Area at Regina Street North Existing Conditions

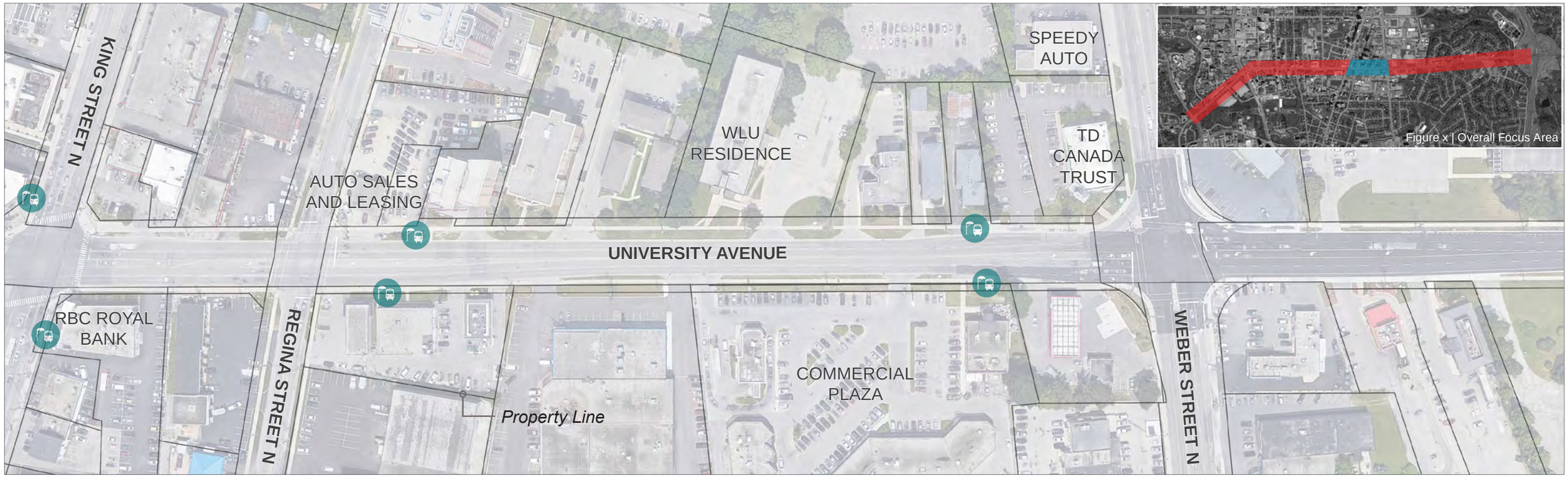


Figure 22 | Focus Area 3 Existing Conditions

Existing Streetscape Elements

Vehicular Transportation *Transit* *Transit Stops* *Cycling Infrastructure* *Safe Crossing*

Focus Area 3 has similar land uses as Focus Area 2. The north side of University Avenue is predominantly residential, with commercial uses at either intersection. The south side is a mixture of restaurants and commercial establishments. The University Square commercial plaza on the south side of University Avenue is the main focal point of activity for the area. It not only draws activity from the residential uses from the north, but from Conestoga College to the east and the surrounding neighbourhood.

The portion of University Avenue in Focus Area 3 does not currently contain bike lanes. The area is heavily dominated by vehicles, and although there are sidewalks on either side of the avenue, the pedestrian experience could be improved. Due to the mixed-use nature of this area, all forms of mobility should be appropriately served.

At present, only a few of the establishments along the avenue extend their function into the pedestrian realm. Generally, there is little connection between establishments and the avenue. Due to the nature of vehicles being the dominant form of mobility within Focus Area 3, there is little interaction between the built form and the public realm. In order for Focus Area 3 to become a thriving mixed-used area, an active street wall should be developed. This can include treatments such as, developments placed closer to the street, articulated building frontages and tall ground floor heights.

Other forms of mobility, such as walking, cycling and public transportation should be prioritized within this Focus Area.

Currently, the majority of the uses and establishments favour the vehicle with expansive surface parking. Re-prioritizing the street frontage and the space between the built form and avenue, will assist in creating an active and vibrant street edge.

The varying building setbacks along the avenue result in an unframed pedestrian realm. Due to the current parking requirement, there is no consistent streetwall along the avenue. The are no design components incorporated into the streetscape which would encourage the presence of pedestrians in the area. In order for Focus Area 3 to become a vibrant mixed-use corridor all forms of mobility should be accommodated and the built form should address the avenue and extend into it.

Focus Area 3 Recommended Design Approach

Focus Area 3 is focused on solidifying the area's identity as a mixed-use corridor, celebrating the themes of Entrepreneurship and Innovation.

This would be achieved through the introduction of streetscape elements (illustrated in Figures 23-25), paving patterns at key areas, as well as supporting considering the circulation of all modes of transportation.

Based on observations made throughout the study, a mid-block connection should be added between Weber Street and Regina Street to help break up the extent of the block. Due to the spacing of the intersections (400m), pedestrians often cross mid-block to reduce walking distance. This contributes to unsafe crossing conditions, which can result in injury. Providing a mid-block connection would help create a safer crossing condition, by prioritizing pedestrian movement, and strengthen connectivity to the residential uses north and south of the avenue. By creating an expanded pedestrian network, further activity will converge on Focus Area 3.

Potential future intensification should better frame and expand the avenue's reach. The Focus Area 3 Long-Term Vision Concept Plan provides additional space between the sidewalk and building edge. It also provides opportunity for patio space and for businesses to extend their function outside of the building envelope and into the public realm.

Lastly, the Weber Street and Regina Street intersections have been highlighted with potential for plazas to form a sense of place.

The Region of Waterloo has implemented a pilot project to test segregated bike lanes in this area. There will be an opportunity to integrate the initial findings of this pilot into future work along the corridor. Also, the Region is conducting a Municipal Class Environmental Assessment (EA) within this Focus Area for the proposed 2023 University Avenue Reconstruction project from Weber Street to Albert Street..

38 Dolores, San Francisco

Source: https://www.studiotill.com/38-dolores/zvnczluhg7504tot439hzifta50s0s

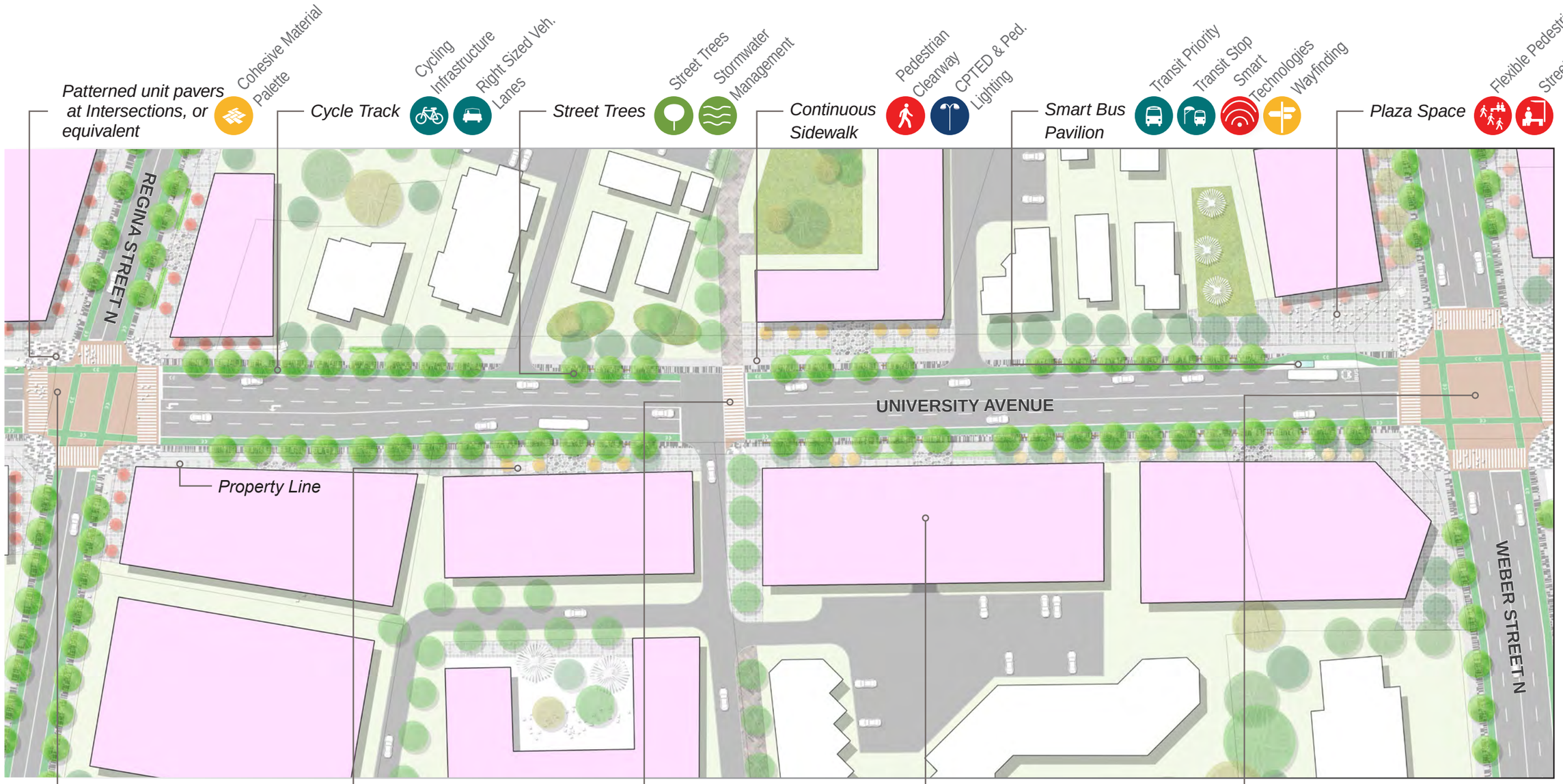
Mid-block Crossing, New York

Source: https://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/

Townhouse, Detroit

Source: https://archinect.com/mcintoshporis/project/townhouse-detroit

Focus Area 3 Long-Term Vision: Mixed-Use Area at Regina Street North Design Concept Plan



** Potential future development intended to illustrate possible future conditions along the corridor. All development is subject to planning policy and zoning by-laws.*

Figure 23 | Focus Area 3 Design Concept Plan

Focus Area 3 Design Concept

Dominant Theme of ENTREPRENEURSHIP & INNOVATION Proposed Elements

Patio space to extend businesses out into the pedestrian realm.

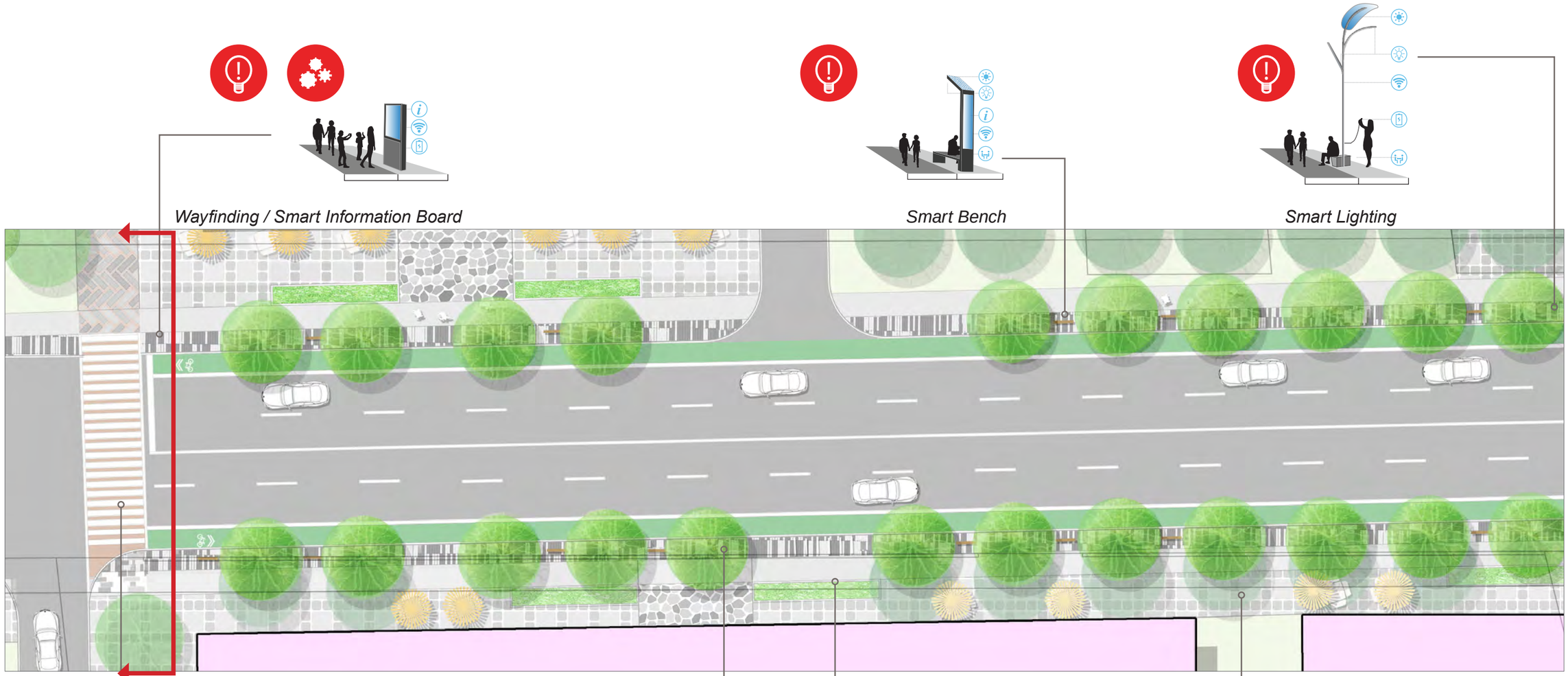
Plaza space at main intersections.

EXISTING	RECOMMENDED DESIGN CONCEPT
Placemaking Features	
• N/A	• Unique material palette of patterned unit pavers, or equivalent at intersections • Coloured asphalt intersection • Streetprint crossing • Public Art • Public Plaza • Patios
Pedestrian Amenities	
• Sidewalk	• Sidewalk and flexible public realm space • Street furnishing including seating • Pedestrian priority intersection
Green Infrastructure	
• N/A	• Street Trees in grates 8 metres on centre within planting and furnishing zone • Bioswales, Rain Garden or equivalents
Transit Infrastructure	
• Bus shelter west of Weber Street, north of University Avenue (Bus traveling west) • Bus shelter west of Weber Street, south of University Avenue (Bus traveling east)	• Bus shelter west of Weber Street, north of University Avenue (Bus traveling west) • Bus shelter east of Weber Street, south of University Avenue (Bus traveling east) • Potential for dedicated transit lane / transit priority along corridor and at intersections
Cycling Infrastructure	
• N/A	• Segregated cycle tracks on both sides

Focus Area 3: Mixed-Use Area at Regina Street North Vision - looking East

Figure 24 | Focus Area 3 Design Concept Cross Section

Focus Area 3: Mixed-Use Area at Regina Street North Design Concept Plan Key Elements



4 Themes Celebrated in Corridor >

Innovation

Discovery

Learning

Entrepreneurship

Figure 25 | Focus Area 3 Design Concept Key Elements

Focus Area 4: King Street and University Avenue Existing Conditions

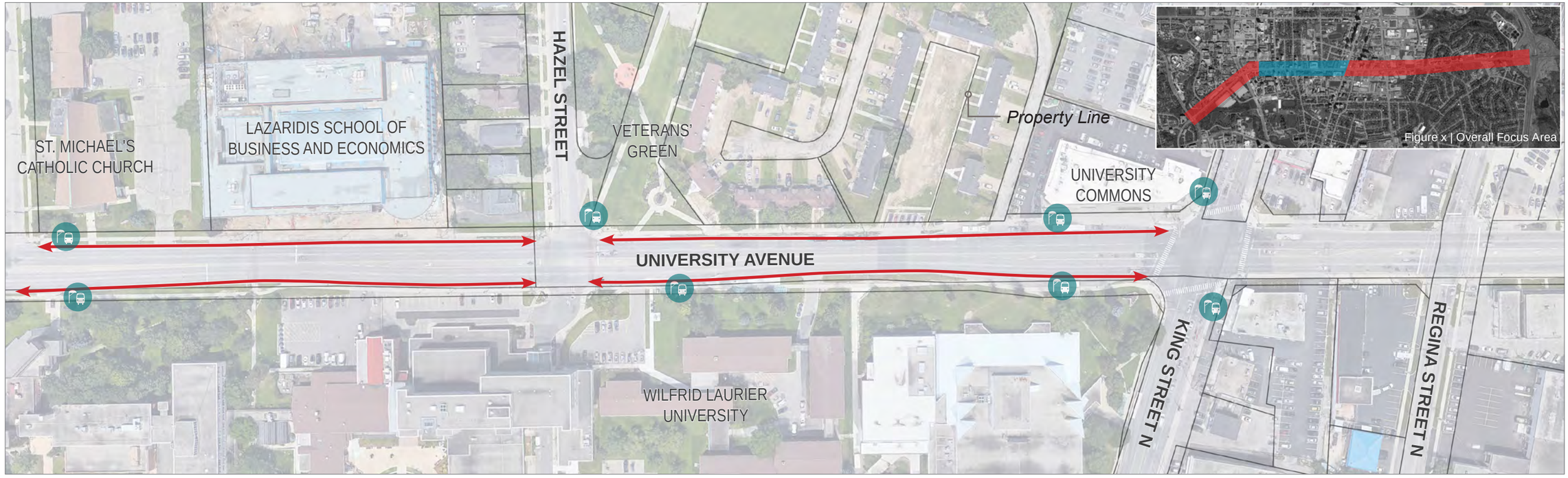


Figure 26 | Focus Area 4 Existing Conditions

Existing Streetscape Elements

Vehicular Transportation · *Transit* · *Transit Stops* · *Cycling Infrastructure* · *Pedestrian Clearway* · *Safe Crossing* · *Existing Bike Lanes*

Focus Area 4, similar to Focus Area 2, is a stretch of University Avenue which has another prominent institution fronting it. Wilfrid Laurier University (WLU) comprises the southwest corner of University Avenue and King Street North. It holds extensive coverage on the south side of the avenue as well as to the north where the Lazaridis School of Business and Economics is located. The presence of WLU creates a lot of street activity along this portion of University Avenue.

Similar to the other Focus Areas, much of University Avenue as well as the uses and built form layout fronting the avenue, have been designed to prioritize the car. Valuable street frontage is either utilized for parking or it is not being utilized to its fullest potential with regards to pedestrians and the public realm. Although several building frontages address the avenue, there is very little connection and relationship between the built form and University Avenue.

There are paths on the north and south side of the avenue which help to connect the campus, but they are simply means of passing through. There is currently no programming to garner activity or gathering. However, the Lazaridis School of Business has set a positive precedent for future improvements of the campus, by incorporating streetscape elements and outdoor seating within the public realm. Currently, the university is more inward focused and does not take advantage of it's University Avenue frontage. There is no glimpse into the student life, activities or day-to-day function of the university.

There are bike lanes along this portion of the avenue, which begin east of King Street North and extend all the way to Ira Needles Boulevard. This is the most extensive cycling network amongst all of the Focus Areas. There is bicycle parking at two of the four bus stops along the avenue.

The intersections of both ends of Focus Area 4 filter a flow of pedestrians from the residential uses to the north of University Avenue. The intersection of Hazel Street and University Avenue has a streetscape element in terms of crosswalk design. This sets it apart from the other intersections along the avenue and signifies this as a unique location. The intersection of King Street and University Avenue does not currently contain streetscape elements, and is similar to the other intersections along the avenue.

The uses within Focus Area 4 need to take advantage of their street frontage and provide various streetscape elements and public realm improvements along the corridor.

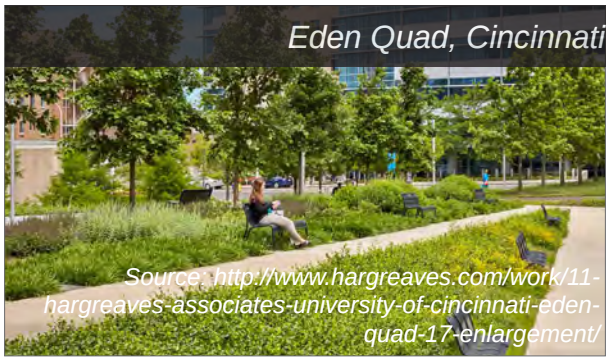
Focus Area 4 Recommended Design Approach

The design intent for Focus Area 4 is to fill the missing gaps between the existing built form and University Avenue and celebrate the themes of Entrepreneurship and Learning.

Although several buildings front onto the avenue, there is no interaction or cohesion between the built form and the public realm. In this space, new opportunities for activity, gathering and exchange have been created.

In the Focus Area 4 Long-Term Vision Concept Plan (illustrated in Figures 27-31), street intersections play an important role in the streetscape design in this area. It is crucial to create safe crossing conditions that highlight the presence of pedestrians on the avenue. Coloured asphalt intersections as well as a scramble intersection at King Street N announce the pedestrian crossings in a clear and distinct manner. By improving the intersection conditions and creating a mid-block connection, pedestrians are given more priority within the road right-of-way. Creating safer, more comfortable crossing experiences encourages the use of active transportation.

The buildings which front University Avenue are no longer inward looking and instead respect and take advantage of their context. Filling in the gaps with plazas, patios, open space and kiosks will garner activity and interaction. These spaces will become destinations and extensions of the university as well as student and campus life.

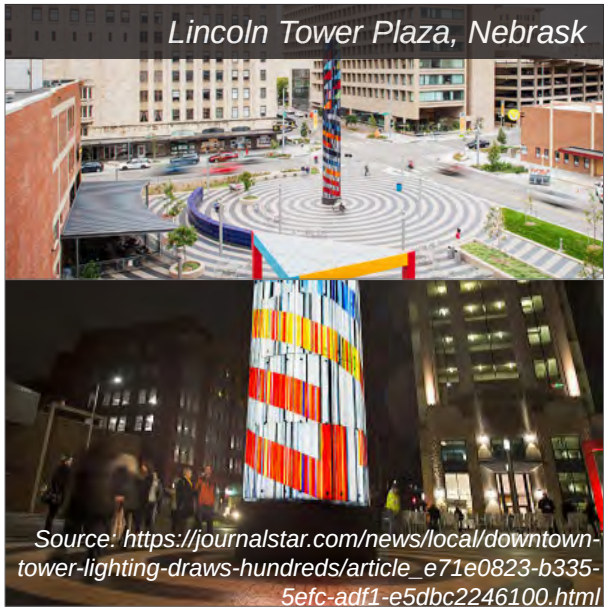


Eden Quad, Cincinnati

Source: http://www.hargreaves.com/work/11-hargreaves-associates-university-of-cincinnati-eden-quad-17-enlargement/

Dilworth Plaza , Philadelphia

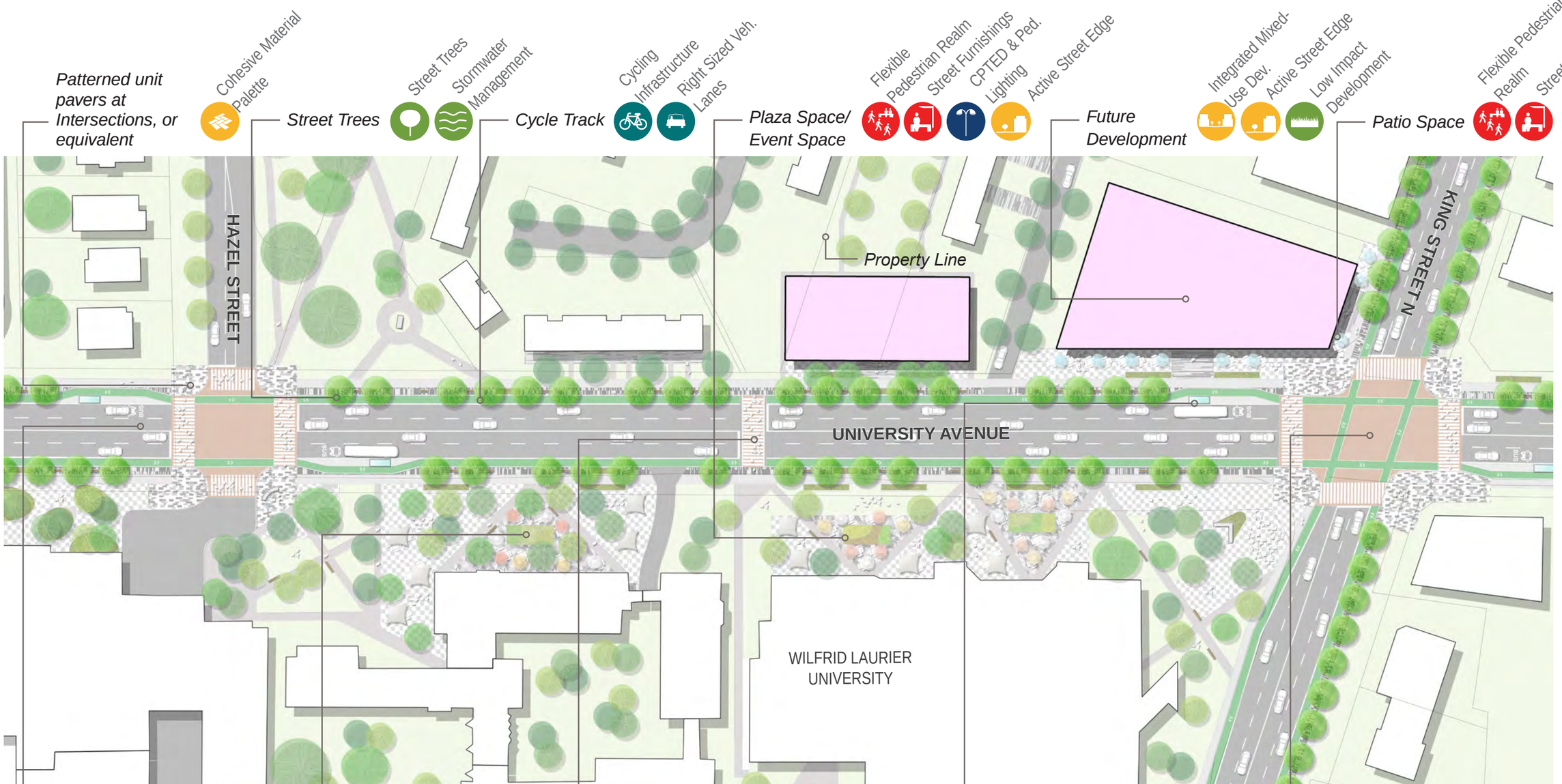
Source: https://centercityphila.org/parks/dilworth-park



Lincoln Tower Plaza, Nebrask

Source: https://journalstar.com/news/local/downtown-tower-lighting-draws-hundreds/article_e71e0823-b335-5efc-adf1-e5dbc2246100.html

Focus Area 4 Long-Term Vision: King Street and University Avenue Design Concept Plan



** Potential future development intended to illustrate possible future conditions along the corridor. All development is subject to planning policy and zoning by-laws.*

Figure 27 | Focus Area 4 Design Concept Plan

Focus Area 4 Design Concept

Dominant Theme LEARNING & ENTREPRENEURSHIP Proposed Elements

Patio space to extend businesses out into the pedestrian realm.

Plaza space at main intersections.

Existing	Design Concept
Placemaking Features	
• Lazaridis School of Business and Economics	• Unique material palette of patterned unit pavers, or equivalent at intersections • Coloured asphalt intersection • Streetprint crossing • Public Art
Pedestrian Amenities	
• Sidewalk	• Sidewalk and flexible public realm space • Street furnishing including seating • Pedestrian priority intersection
Green Infrastructure	
• N/A	• Street Trees in grates 8 metres on centre within planting and furnishing zone
Transit Infrastructure	
• Bus shelter west of King Street, north of University Avenue (Bus traveling west) • Bus shelter west of King Street, south of University Avenue (Bus traveling east) • Bus shelter west of Hazel Street, north of University Avenue (Bus traveling east) • Bus shelter east of Hazel Street, south of University Avenue (Bus traveling west)	• Bus shelter west of King Street, north of University Avenue (Bus traveling west) • Bus shelter east of King Street, south of University Avenue (Bus traveling east) • Bus shelter west of Hazel Street, north side of University Avenue (Bus traveling west) • Bus shelter east of Hazel Street, south of University Avenue (Bus traveling east) • Potential for dedicated transit lane / transit priority along corridor and at intersections
Cycling Infrastructure	
• Bike Lanes on both sides west of King Street	• Segregated cycle tracks on both sides

King Street and University Avenue Existing Intersection Condition

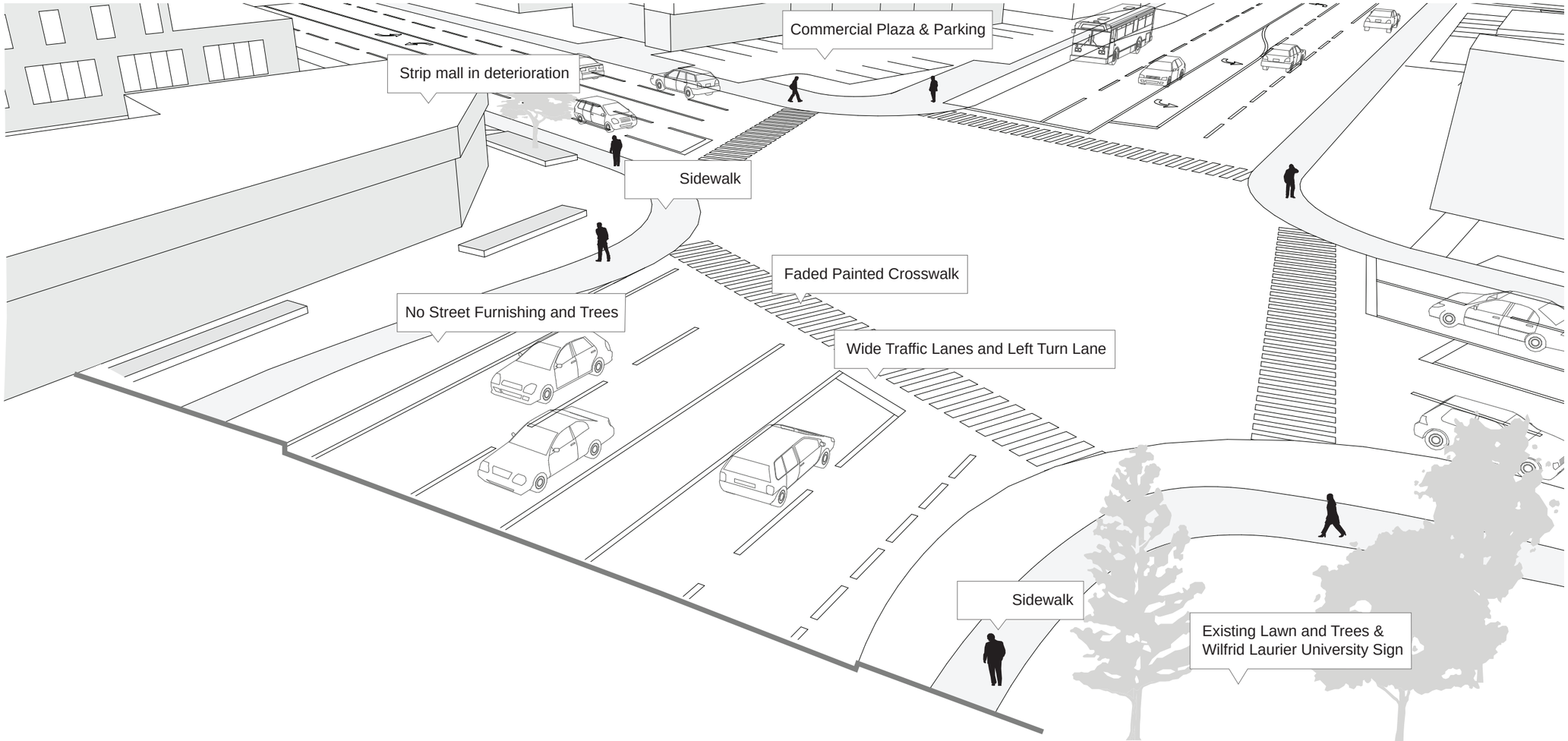


Figure 28 | Focus Area 4 Existing Intersection Perspective

King Street and University Avenue Scramble Intersection Condition Consideration

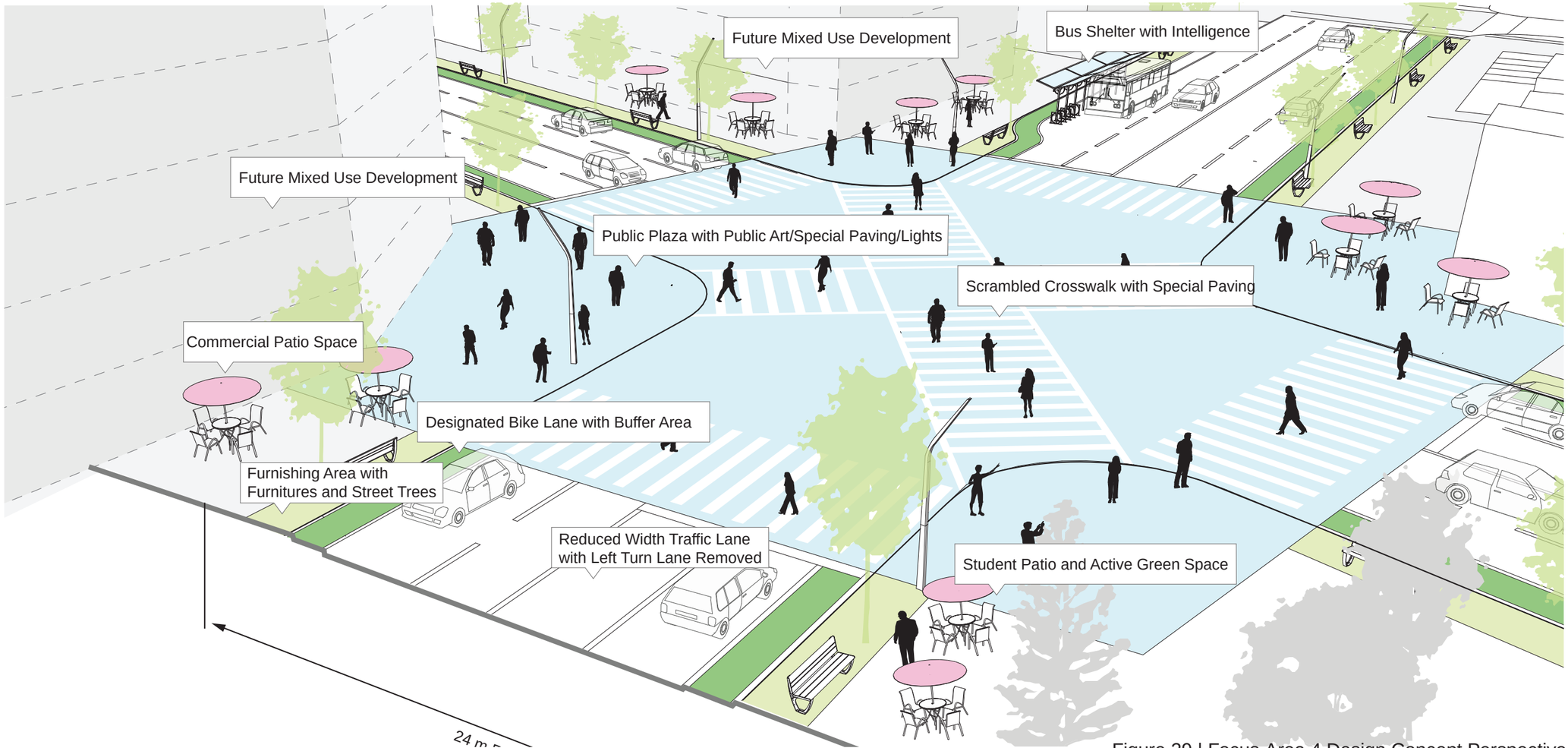


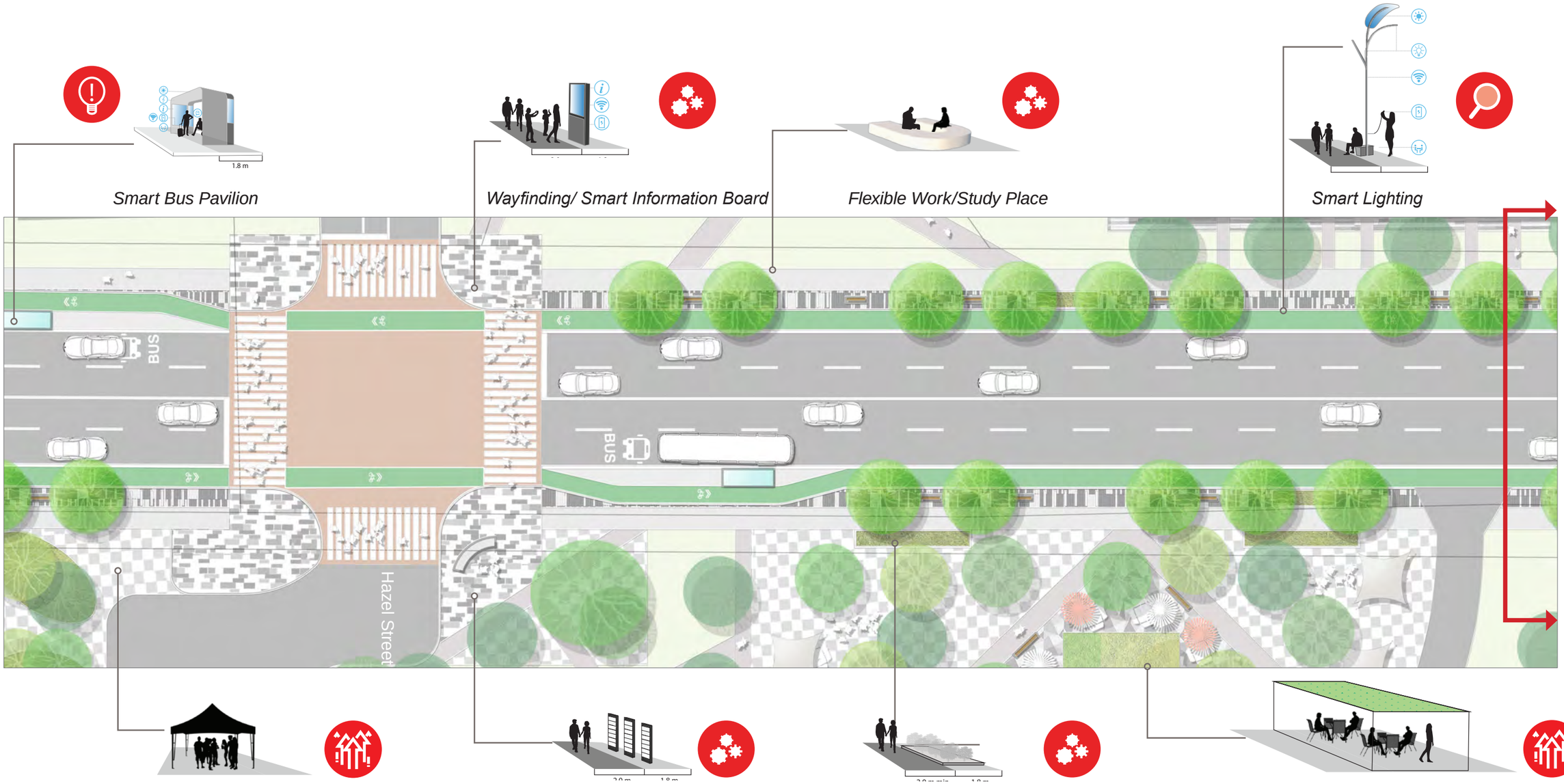
Figure 29 | Focus Area 4 Design Concept Perspective

The intersection condition is conceptual and meant to reflect the ultimate longer-term vision of the King Street and University Avenue intersection. Improvements may not be implemented in the short-term and would need additional studies to justify the implementation, and to be considered alongside a range of potential intersection improvements for pedestrians and cyclists.

Focus Area 4: King Street and University Avenue Vision - Looking East

Figure 30 | Focus Area 4 Design Concept Cross Section

Focus Area 4: King Street and University Avenue Design Concept Plan Key Elements

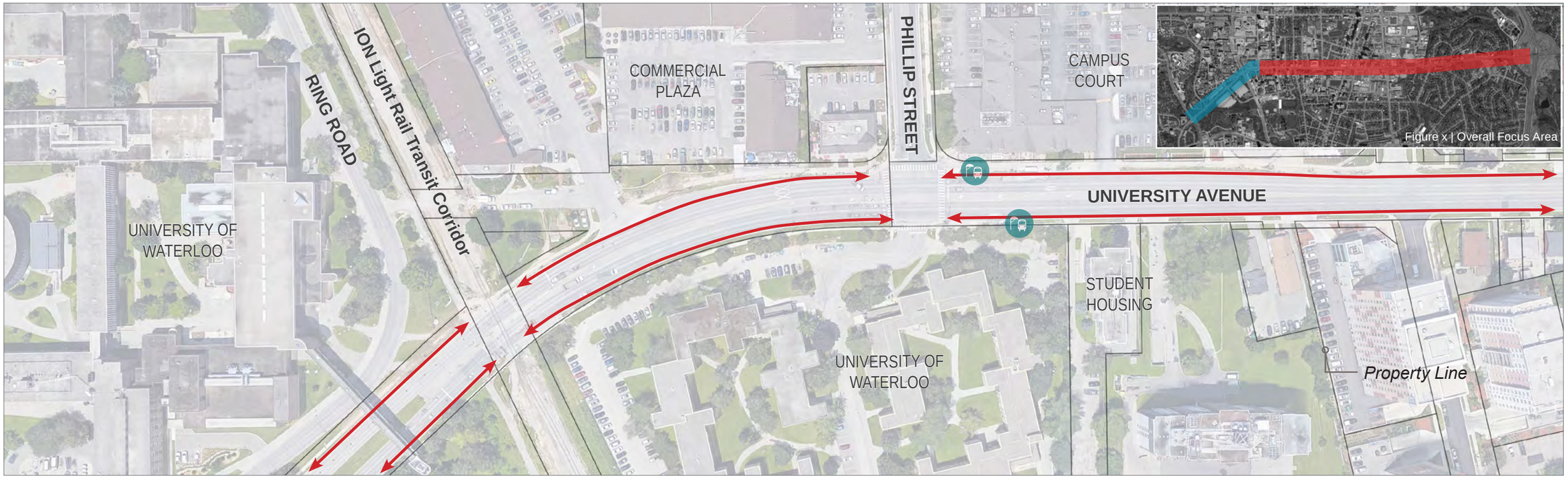


4 Themes Celebrated in Corridor >

- Innovation
- Discovery
- Learning
- Entrepreneurship

Figure 31 | Focus Area 4 Design Concept Key Elements

Focus Area 5: University of Waterloo Existing Conditions



Existing Streetscape Elements

Vehicular Transportation · *Transit* · *Transit Stops* · *Cycling Infrastructure* · *Pedestrian Clearway* · *Safe Crossing* · *Existing Bike Lanes*

Figure 32 | Focus Area 5 Existing Conditions

Focus Area 5, similar to Focus Areas 2 and 4, is a stretch of University Avenue which has another prominent institution fronting it. Focus Area 5 is mostly encompassed by the University of Waterloo, which has property on either side of University Avenue. Other uses within the Focus Area are residential uses on the south side of the avenue lining Lester Street, and commercial uses between the ION light rail transit corridor and Phillip Street. There are bike lanes on either side of University Avenue which run through the extent of the Focus Area. The Laurel Trail, which is more than 8km, runs along the ION light rail transit corridor and connects to Waterloo Park to the south and extends north to Wes Graham Way along the University of Waterloo campus. Additionally, there are 3 ION LRT Stations located along this trail.

Similar to the other Focus Areas, much of University Avenue as well as the uses and built form layout fronting the avenue, have been designed to prioritize the car. Valuable lot frontage is either utilized for parking or it is not being utilized to its fullest potential with regards to the public realm. Although several building frontages address the avenue, there is very little connection and relationship between the built form and University Avenue.

Although the University of Waterloo was designed as a self-contained campus, there is currently a need for the University to form a greater connection to the avenue. Similar to Focus Area 4 and Wilfrid Laurier University, the campus is more inward focused. There is an opportunity to re-utilize the space between the built form and street edge. The parking lot in front of the residence buildings could be better suited to provide different types of spaces for gathering, events, markets, plantings and seating. The goal is to animate the public realm and provide an active street edge in order to encourage pedestrian activity.

There is a large parking lot for the University of Waterloo between the ION light rail transit corridor and Seagram Drive. An elevated pedestrian bridge connects the parking lot to Carl A. Pollock Hall. This is a necessary connection with regards to providing weather protected connection and filtering heavy pedestrian flow away from the intersection at University Avenue and the ION light rail transit corridor.

Focus Area 5 is a unique area given its uses, prominent institution, trails and ION LRT. Understanding how all of these pieces fit together will aid in defining the connection between University Avenue and the surrounding context.

Focus Area 5 RECOMMENDED Design Approach

The design intent for Focus Area 5 is to fill the missing gaps between the existing built form and University Avenue and to celebrate the University of Waterloo through the theme of Learning, Innovation and Entrepreneurship.

Although several buildings front onto the avenue, there is no interaction or cohesion between the built form and the public realm. By reconsidering what could be done within the space between the built form and the avenue, new opportunities for activity, gathering and exchange can be created.

Similar to Focus Area 4, part of the design approach is to understand the importance of the intersections within the Focus Area (illustrated in Figures 33-35). It is crucial to create safe crossing conditions and highlight the presence of pedestrians and cyclists on the avenue. A coloured intersection and crossings at University Avenue and the ION light rail transit corridor announces the pedestrian and cycling crossing in a clear and distinct manner. By making the intersection standout, the pedestrian and cyclist is prioritized. Creating safer, more comfortable crossing experiences encourages the use of active transportation.

The buildings fronting University Avenue should no longer focus inward and instead respect and take advantage of their context. Filling in the gaps with plazas, patios, open space and kiosks will garner activity and interaction. These spaces will become destinations and extensions of the university, and campus life.

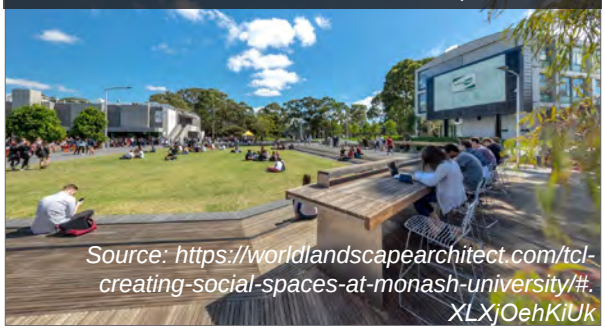
Smart technology features should be concentrated in this area to reflect the University of Waterloo and provide space to showcase innovation in the institution.

Yonge and Dundas, Toronto

Source: https://www.thestar.com/news/gta/transportation/2015/04/10/the-10-busiest-intersections-in-toronto-are-.html

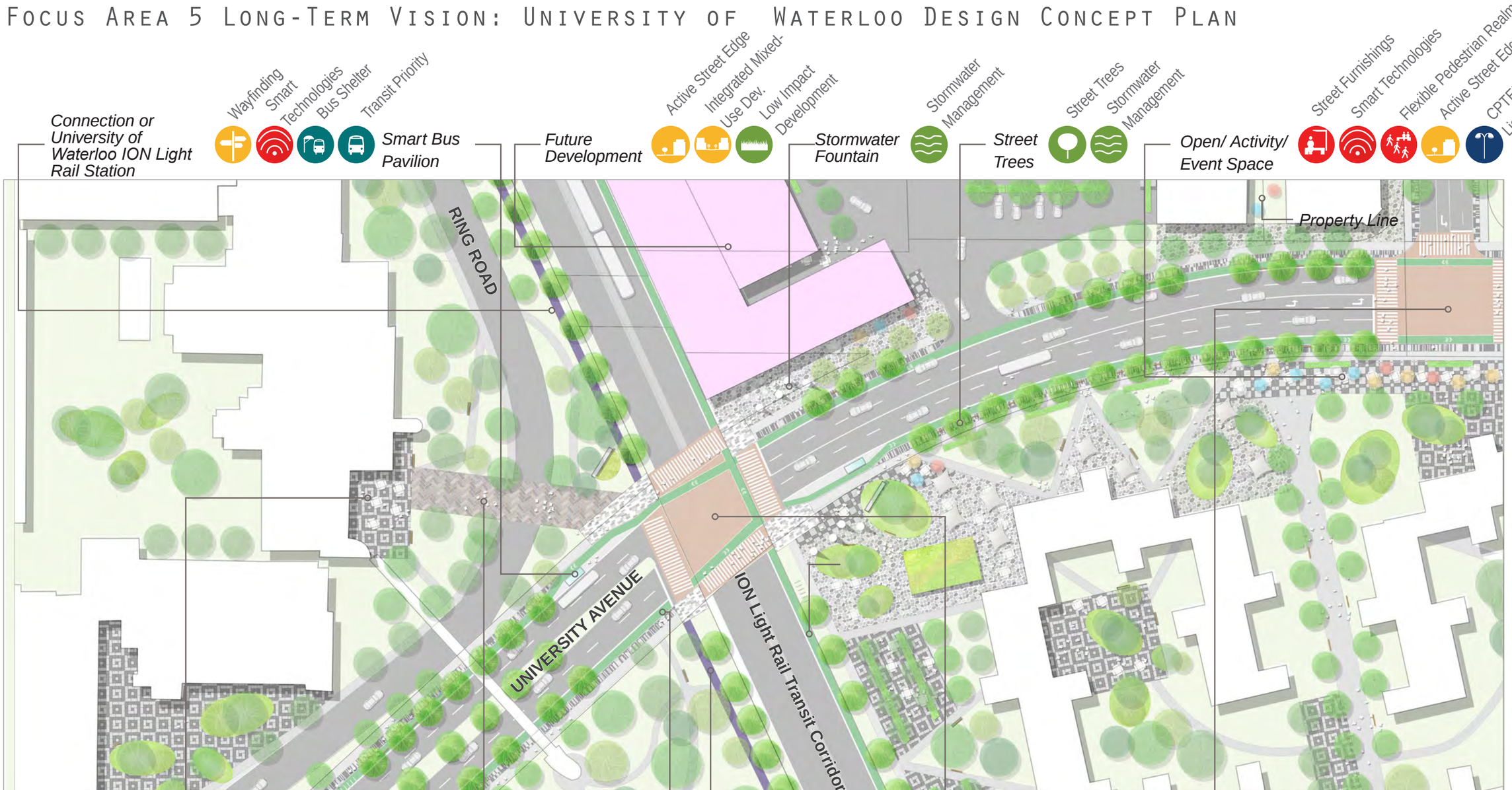
Harbourfront Centre, Toronto

Northern Plaza, Australia



Source: https://worldlandscapearchitect.com/tcl-creating-social-spaces-at-monash-university/#.XLXjOehKiUk

Focus Area 5 Long-Term Vision: University of Waterloo Design Concept Plan



** Potential future development intended to illustrate possible future conditions along the corridor. All development is subject to planning policy and zoning by-laws.*

Figure 33 | Focus Area 5 Design Concept Plan

Focus Area 5 Recommended Design Concept

Dominant Theme LEARNING, INNOVATION, ENTREPRENEURSHIP Elements

Learning placemaking features at either intersection and mid-block connection.

Various types of open space for events, activities and classes.

EXISTING	DESIGN CONCEPT
Placemaking Features	
• N/A	• Unique material palette of patterned unit pavers, or equivalent at intersections • Coloured asphalt intersection • Streetprint crossing • Public Art
Pedestrian Amenities	
• Sidewalk	• Sidewalk and flexible public realm space • Street furnishing including seating • Pedestrian priority intersection
Green Infrastructure	
• N/A	• Street Trees in grates 8 metres on centre within planting and furnishing zone
Transit Infrastructure	
• N/A	• Bus shelter west of ION LRT, north of University Avenue (Bus traveling west) • Bus shelter east of ION LRT, south of University Avenue (Bus traveling west) • Potential for dedicated transit lane / transit priority along corridor and at intersections • Connection from University avenue to ION LRT Station
Cycling Infrastructure	
• Bike lanes on both sides	• Separated cycle tracks on both sides

Focus Area 5: University of Waterloo Vision - Looking East

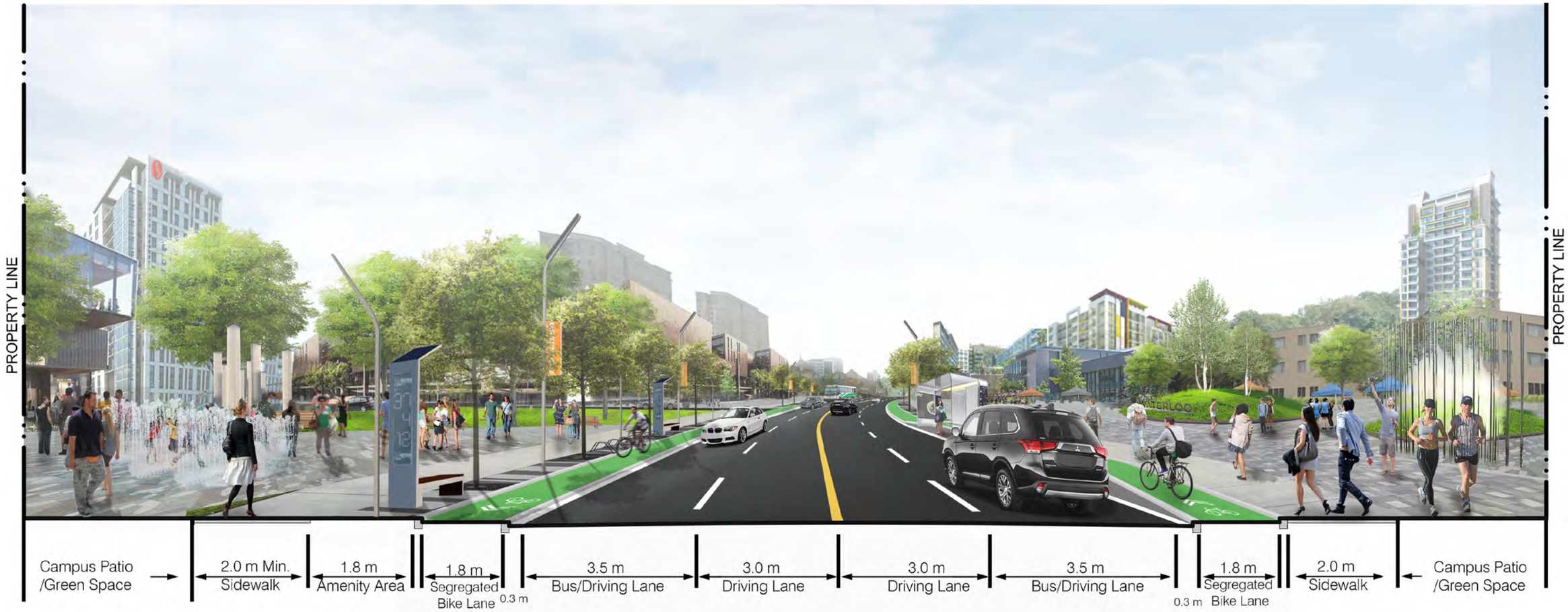
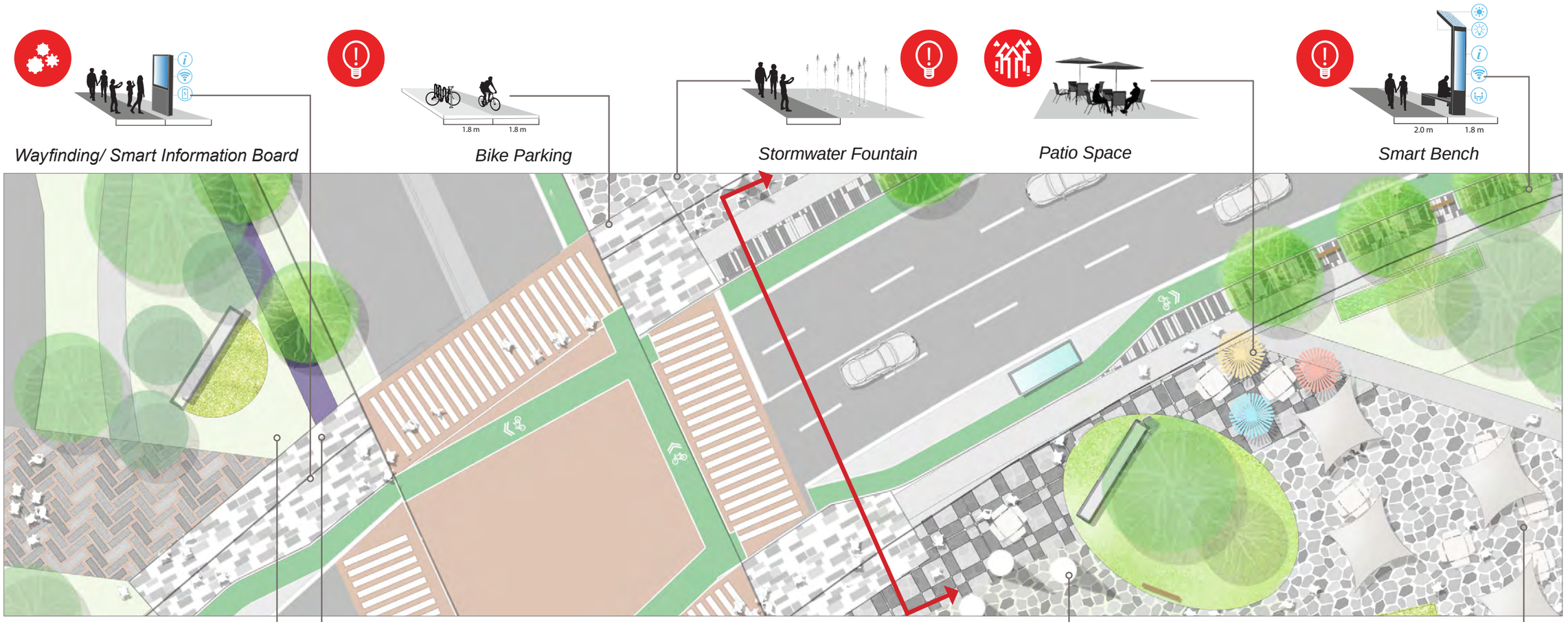


Figure 34 | Focus Area 5 Design Concept Cross Section

Focus Area 5: University of Waterloo Design Concept Plan Key Elements



Wayfinding/ Smart Information Board

Bike Parking

Stormwater Fountain

Patio Space

Smart Bench

Flexible Work/Study Place

Open Library

Public Art

Event Tent

4 Themes Celebrated in Corridor >

Innovation

Discovery

Learning

Entrepreneurship

Figure 35 | Focus Area 5 Design Concept Key Elements

All Season Use

In order to encourage animation along University Avenue in all seasons, including winter, the following type of initiatives should be explored:

Heated Bus Shelters

Potential to heat bus shelters at key stops should be explored to provide ease of use and encourage using transit in the winter season.

Seasonal Decorative Lights

Seasonal lighting on trees and light poles can aid in creating an inviting atmosphere along the corridor in the winter. There is also an opportunity to explore lighting installation exhibits along the corridor to draw interest to University Avenue during the winter months.

Community Outdoor Skating Rinks

Temporary winter skating rinks may be implemented within the future plaza space in the winter months to encourage animation along the corridor.

Warming Stations/Huts

Design competitions to create warming stations and/or huts either where there is space in the public road or within the private realm provide an opportunity for animation along the corridor in the winter and showcasing the corridor themes. Installation of warming stations in the winter will encourage activity along the streetscape in a way that may not otherwise occur in the winter. Additionally, the entire design competition process can engage the community through voting on finalists.

Microclimate

Design tactics should be employed that create a comfortable microclimate along the corridor. The urban heat island effect can be mitigated through maximizing green infrastructure and minimizing pavement with dark tones. Planting and design features such as berms can be employed to mitigate wind along the corridor. Optimizing sunlight in the winter and providing shade in the summer through deciduous large canopy trees can aid in creating comfortable microclimate.

ttps://www.archdaily.com/910013/ice-breakers-public-art-winter-wonderland-returns-to-toronto

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MAYFAIR HOT

7 IMPLEMENTATION RECOMMENDATIONS

This section outlines the recommended implementation for the process University Avenue Gateway Strategy including phasing, roles and responsibilities, an order of magnitude cost estimate, and potential funding strategies.

King Street, Kitchener

Phased Approach

The University Avenue Gateway Strategy provides a long-term vision for the corridor that will require significant investment and collaboration between different stakeholders. As redevelopment occurs along the corridor, opportunities for implementation of the long term vision will become more accessible.

The University Avenue Gateway Strategy study area spans over 4km. The coordination, capital costs, funding, and construction impacts of the realization of the Gateway Strategy are significant. Accordingly, a phased approach to the realization of the study is recommended to ensure that benefits to the corridor can be achieved within the short term, working towards the full build-out of the vision. It is important to understand the sequence of changes in order to prioritize the realization of certain areas. Ultimately, although University Avenue is a regional road under the Region's ownership, achieving the vision can be fulfilled through additional means of funding such as, Federal or Provincial grants, private investment, stakeholder funding, etc.

This section outlines three major phases for the realization of the Gateway Strategy:

- Short-Term Improvements,
- Medium-Term Improvements, and
- Long-Term Improvements.

Timelines projected based on current conditions and are subject to change. Generally, long term improvements are not feasible in the short or medium term. All improvements are subject to funding availability and applicable approval processes such as Class Environmental Assessments.

Initiating the Transformation of University Avenue

Alongside the phasing approach, there are certain next steps which will assist in beginning to implement the overall vision for the corridor. The current reconstruction project planned in 2023 from Weber Street to Albert Street will consider the short-term goals listed in this overall strategy through it's Municipal Class Environmental Assessment process. However, it should be noted that many strategies such as burying underground utilities has not been budgeted for this 2023 project.

During the class EA process, local experts, businesses and educational institutions can provide further input to help establish, designs and technologies will further legitimize the vision and intent of the Gateway Strategy for University Avenue.

Pilot projects, design competitions and placemaking initiatives for the various streetscape elements will bolster collaboration, excitement and attention for the city, the corridor and the surrounding neighbourhood. These examples can be implemented throughout the phases, but would be most beneficial within the Short-Term Phase.

Another step would be to set a positive precedent for the future of the corridor, especially as the phases progress. Creating a tradition for University Avenue, which exemplifies a pedestrian oriented street, which is safe and accessible and celebrates the corridor, would further solidify the vision. Closing down the corridor to vehicles, or at specific Focus Areas for events like Open Streets, Cycling Events, University Fairs, Oktoberfest and Festive Markets would be an example of “quick wins” for the corridor. These traditions, would garner more visitors to the area and add a unique quality to University Avenue.

Short-Term Improvements

Short-term improvements provide high impact, low investment 'quick wins' to spark interest in the corridor and work towards improving some of the corridor's more significant issues such as safety, lack of pedestrian amenities, and an under-developed sense of place.

The long term vision for the corridor requires changes to the streetscape geometry and will involve significant construction work.

Impactful yet inexpensive short-term improvements are recommended for the Gateway corridor in order to spark interest and realization of the vision.

Implementing 'quick wins' will garner interest and involvement from the community, local businesses, private land owners and educational institutions. Pilot projects can also be used to test ideas and increase the speed for implementation of key elements.

The branding of the University Avenue corridor should be implemented alongside the Short-Term Improvements. The continual evolution of the corridor should relate back to the brand, therefore it is crucial to provide that foundation from the start.

The following short-term improvements can be realized in either the public right-of-way or the adjacent private realm before funding is available for medium and long-term improvements. Many of these elements can remain with the construction of the long-term Gateway Strategy or be re-purposed for other areas in the City that could benefit from activation.

Short-Term Improvements Key Map

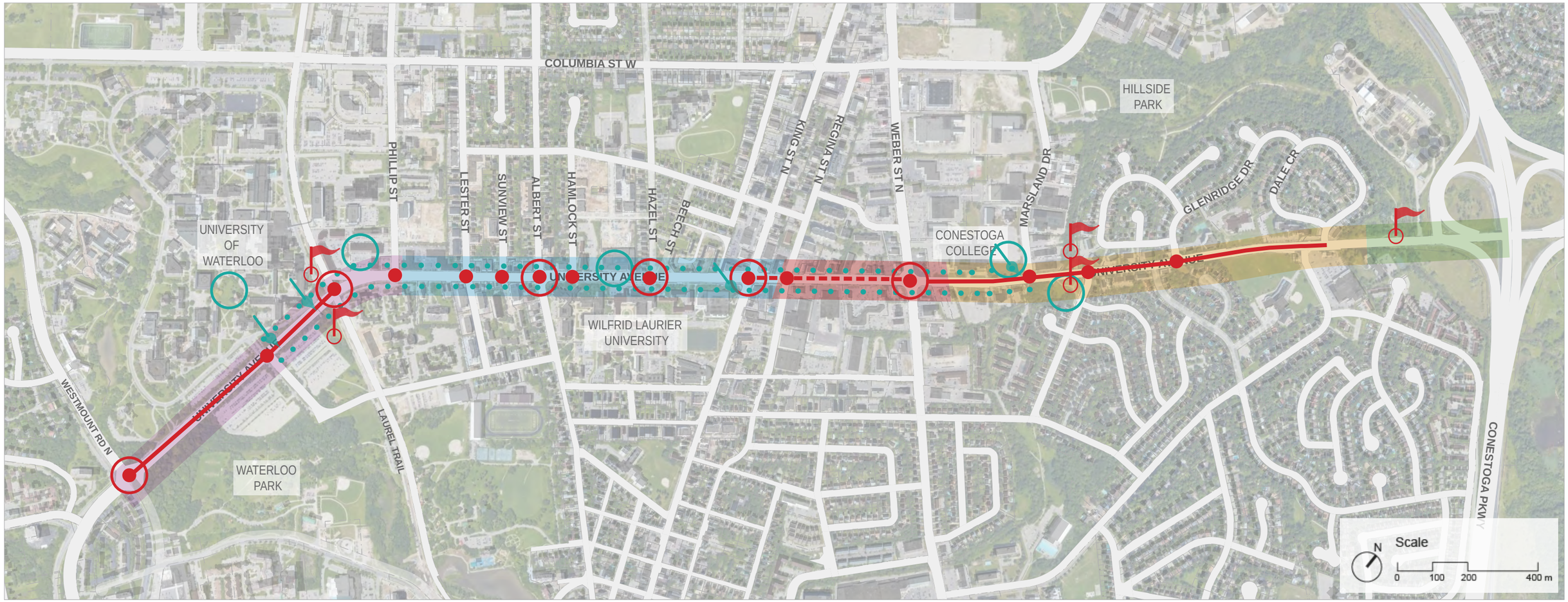


Figure 36 | Short-Term Improvements Key Map

Legend of Short-Term Place-Specific Features Potential Locations

- Public Art
- Trail and Park Gateways
- Key Intersections (Decorative Crosswalks, Pedestrian Priority)
- Painted Bike Lane Priority Areas
- New Bike Lane or Sharrows
- Bike Lane Painted Intersection
- Hanging Planters/Wayfinding Maps & Features
- Ground Level Planters (where space)
- Patio Space in Privately Owned Property
- Space for Pop-Up Events

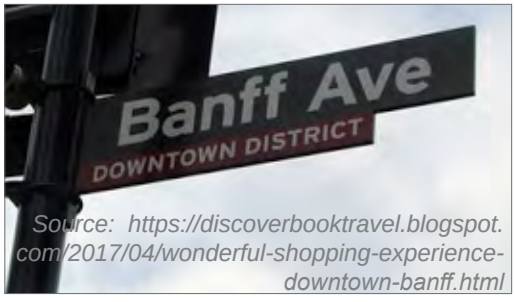
Short-Term Corridor Features Along Entire Corridor

- Focus Area 1
- Focus Area 2
- Focus Area 3
- Focus Area 4
- Focus Area 5
- Specialized Street Signs
- Decorative Banners
- Trees on Private Property

Potential Short-Term Improvements in the Public Realm*

https://www.archdaily.com/910013/ice-breakers-public-art-winter-wonderland-returns-to-toronto

Source: http://www.globeasphalt.com/duratherm.html



Source: https://discoverbooktravel.blogspot.com/2017/04/wonderful-shopping-experience-downtown-banff.html

** Potential short-term recommendations are provided for consideration only. Additional review is required to determine feasibility, funding, and implementation responsibility.*

Temporary Parklets

Parklets can be implemented where there is available space within the public right-of-way or private realm to aid in animating the space. Parklets provide an opportunity to showcase innovation through design competitions. Regional approval required for any temporary parklet in the University Avenue right-of-way.

Tactical Urbanism / Public Art Temporary Installations

In key locations where there is space within the public realm, or on privately owned land, temporary installations /public art should be incorporated that explores the themes of Learning, Discovery, Innovation, and Entrepreneurship.

Trail and Park Gateway Features

Gateway features should be implemented that announce the entry points to trails, such as the Laurel Trail, as well as parks in the area, such as the Veterans' Green. These features will aid in the animation of the whole corridor.

Temporary Decorative Crosswalks

Decorative crosswalks provide an inexpensive means for establishing a strong sense of place. This can be achieved through the repetition of a University Gateway crosswalk condition utilizing the branding colours for the corridor.

Specialized University Avenue Street Signs

Utilizing unique University Avenue street signs that are a distinct colour and style, and announce the area as a Gateway will aid in reinforcing the University Avenue sense of place.

Decorative/Branded Banners
Decorative banners should be added to the hydro/light poles to reinforce the University Avenue sense of place. These banners should showcase University Avenue as a place for Learning, Discovery, Innovation, and Entrepreneurship.

Wayfinding Maps and Features
Branded University Avenue wayfinding features such as maps, directional signs to key destinations, and painted markings on sidewalks can aid in ensuring that visitors are able to find their destinations and understand that they are within the University Avenue Gateway zone.

Source: http://emeryvillagebia.ca/beautification/streetscape-beautification/hanging-baskets.html

Hanging Planters
Hanging planters should be added to the hydro/light poles in key areas along the corridor to develop a strong sense of place and add green elements with a relatively low investment.

Source: https://www.landscapeforms.com/en-US/product/Pages/Sorella-Planters.aspx

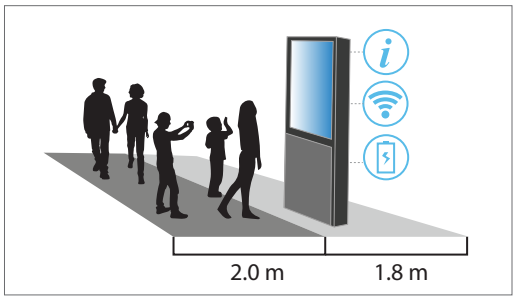
Ground-Level Planters
Where there is available space within the ROW, or the private realm, University Avenue planters should be added with seasonal planting. There are opportunities to develop programs to utilize the community, and surrounding business owners for the maintenance of planting.

Source: Google Street View

Painted Bike Lanes or Sharrows
Bike lanes or sharrows can provide better visibility of cyclists. Solid painted bike lanes should be prioritized where cyclists are less expected, such as the beginning/end of the lane, or in areas with higher occurrences of conflict. Sharrows should be employed where there is less available space in the roadway.

Bike Lane Intersection Treatment
Painting bike lanes approaching and crossing through intersections provide an impactful means for enhancing cyclist safety through drawing attention to the bike lanes in key locations for potential conflict.

Bike Lane Driveway Treatment
Painting or adding 'elephant toes' markings as bike lanes pass through driveway access points target potential points of conflict and notify drivers of the presence of bike lanes.



WiFi in Key Areas
Providing WiFi in key areas such as by the post-secondary institutions, well-used bus stops, and other key destinations along the corridor can encourage the activation of the streetscape and celebrate innovation.

Wrap/Paint Transit Boxes
Transit boxes provide opportunities for murals or decoration. The transit box public art can celebrate the corridor themes and provide opportunities for community engagement. It is not recommended to wrap wood utility poles as any damage or erosion to the poles will not be visible with wrapping.

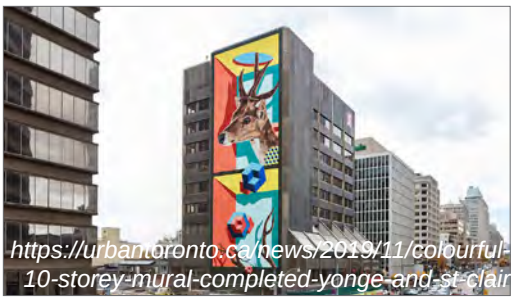
Pop-Up Events
Special events can aid in activating the corridor. These events can occur in public or privately owned open space, or within the roadway in the style of an 'Open Street.' These events can include markets,Tech Summits, Ontario University Fair (OUF), Orientation Week Events, Christmas Markets, OktoberFest, etc.

Pedestrian Priority at Intersections
Leading pedestrian intervals provide opportunities for pedestrians to begin walking before vehicles are given the green light to proceed. This tactic should be considered at key intersections to aid with visibility and pedestrian safety.

Restrict Right Turn on Red Lights
Disallowing right hand turns on red lights can improve pedestrian safety at intersections. This tactic should be considered at key intersections to aid with visibility and pedestrian safety.

Potential Short-Term Improvements in Privately Owned Lands:

Patio Space
Patios provide the opportunity to animate the corridor. Through providing incentives and supportive zoning, patio spaces can be encouraged along the corridor.



https://urbantoronto.ca/news/2019/11/colourful-10-storey-mural-completed-yonge-and-st-clair

Visual Interest on the University of Waterloo Pedestrian Bridge
There is potential to add visual interest to the UW pedestrian bridge through a painted mural, metal work, or other forms of public art. This can aid in announcing UW and the Gateway corridor.

Trees on Private Property.
Green canopy can be added to frame University Avenue through planting within privately owned property. As the streetscape geometry will likely be significantly altered to realize the Gateway vision, investment in street trees within the public right-of-way is not recommended at this stage.

Medium-Term Improvements

Medium-Term improvements provide opportunities to begin to implement the streetscape elements from this Gateway Strategy in key areas along the corridor. These improvements will focus on elements within the right-of-way as well as potential improvements on private property.

The previously outlined short-term improvements provided means for animating the corridor with relatively low investment and a brief timeline for their realization.

The medium-term improvements will provide opportunities for initiatives along the corridor that require more extensive planning and/or investment.

The elements within the right-of-way will require significant collaboration between the City and Region of Waterloo, as infrastructure investment and changes will begin to be addressed.

Improvements outside of the right-of-way will be up to the discretion of the property owner, however great benefit will come from adoption of the Gateway Strategy by City Council and working alongside the City and Region of Waterloo, as well as various stakeholders. Attention should be focused on how the streetscape elements outside of the right-of-way tie into those within the right-of-way. This will require the City, the Region and the implementation team to review any future developments and public realm improvements within the Focus Areas.

Key Medium-Term Improvements

- City and Region of Waterloo to closely collaborate on infrastructure and streetscape improvements within right-of-way
- Private property owners to refer to Gateway Strategy when making any public realm improvements or development within their given Focus Area
- City, Region and Implementation Team to ensure that any public realm improvements and developments within the Focus Areas complement and tie into the Gateway Strategy Vision

Medium-Term Improvements Key Map

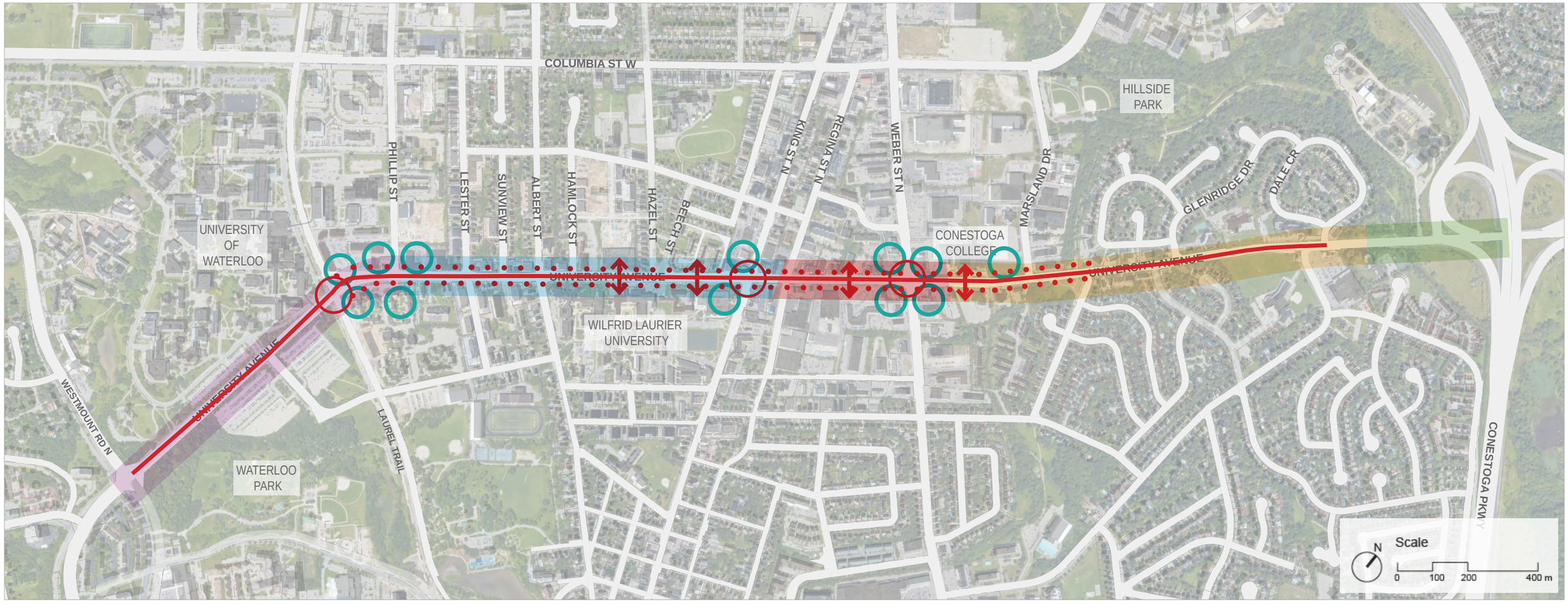


Figure 37 | Medium-Term Improvements Key Map

Legend of Medium-Term Place-Specific Features Potential Locations

- Bike Lanes with Buffers/Bollards
- Intersection Revitalization (turn signals, painted corner radii reduction, etc.)
- New/Improved Mid-block Crossing
- Trees in Private Realm Focused Implementation Segment
- Future Development Plazas/Privately Owned Public Spaces

- Focus Area 1
- Focus Area 2
- Focus Area 3
- Focus Area 4
- Focus Area 5

Additional Medium-Term Corridor Features

Development along the corridor with enhanced public realm

Trees on Private Property

Potential Medium-Term Improvements in the Public Realm:

Source: NACTO Urban Street Design Guide

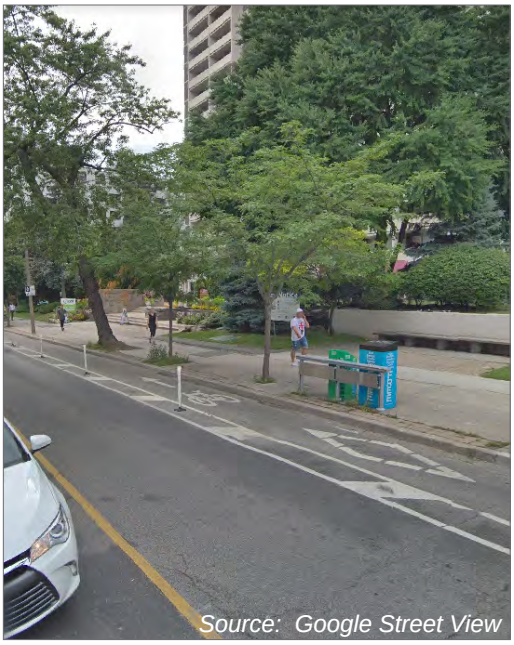
Source: http://www.cruz-diez.com/work/intervention-in-urban-spaces/2000-2009/crosswalks-of-additive-color/

New & Improved Mid-Block Crossings

Mid-block crossings should be implemented in locations where current and future circulation patterns warrant, that is locations with key destinations or paths of travel on either side of the road that are not in close proximity to an existing signalized crossing. Providing strategically place designated mid-block crossings will focus pedestrian crossings to a location that is clearly marked with a pedestrian crossing light, and should minimize un-signalized pedestrian crossings. Mid-block crossings should be highlighted through a visual treatment such as coloured paving or unit pavers, or equivalent, in order to reinforce the sense of place along the corridor and highlight the crossing area. Raised crossing conditions could also be employed, or equivalent implementations that will have the same effect. These treatment should also be applied to the existing mid-block crossing between Hemlock Street and Hazel Street.

Left-Turn Restrictions

Restricting left-turns through disallowing the movement at key intersections and/or implementing a dedicated signal for left-turns can aid in minimizing potential conflict resulting from left-turns. Analysis must be undertaken on the feasibility and repercussions of undertaking the initiative.



Source: Google Street View

Source: NACTO

Right-Sized Roadway Condition

Contemporary transportation planning has shifted towards right-sizing roadways, as evident through NACTO's *Urban Street Design Guide*. A right-sized roadway utilizes geometry that encourages users to adhere to the posted speed limit through such means as appropriate lane width and corner turning radii. When right-sizing pre-existing roadways, there is often opportunities to reduce the space taken up by vehicular traffic and increase availability for the public realm, pedestrian circulation, and cycling infrastructure. Through an in-depth analysis of the transportation needs of University Avenue, it is possible that the amount of space vehicles occupy in the roadway could be reduced. If this occurs, the following initiatives may be possible:

Buffered Bike Lanes

If more space is made available in the roadway for cycling infrastructure through reducing the width of vehicle lanes, it may be possible to increase the width of bike lanes and/or implement a buffer with flexible bollards or planters to provide additional segregation between vehicles and cyclists.

Curb Radii Reduction through Painted Corners

If it is feasible to reduce the corner turning radii, this space can be painted and potentially delineated with bollards in order to begin to implement slower turning speeds and open up more space for the pedestrian realm.

Potential Medium-Term Improvements in Privately Owned Lands / Land Outside of the Right-of-way :

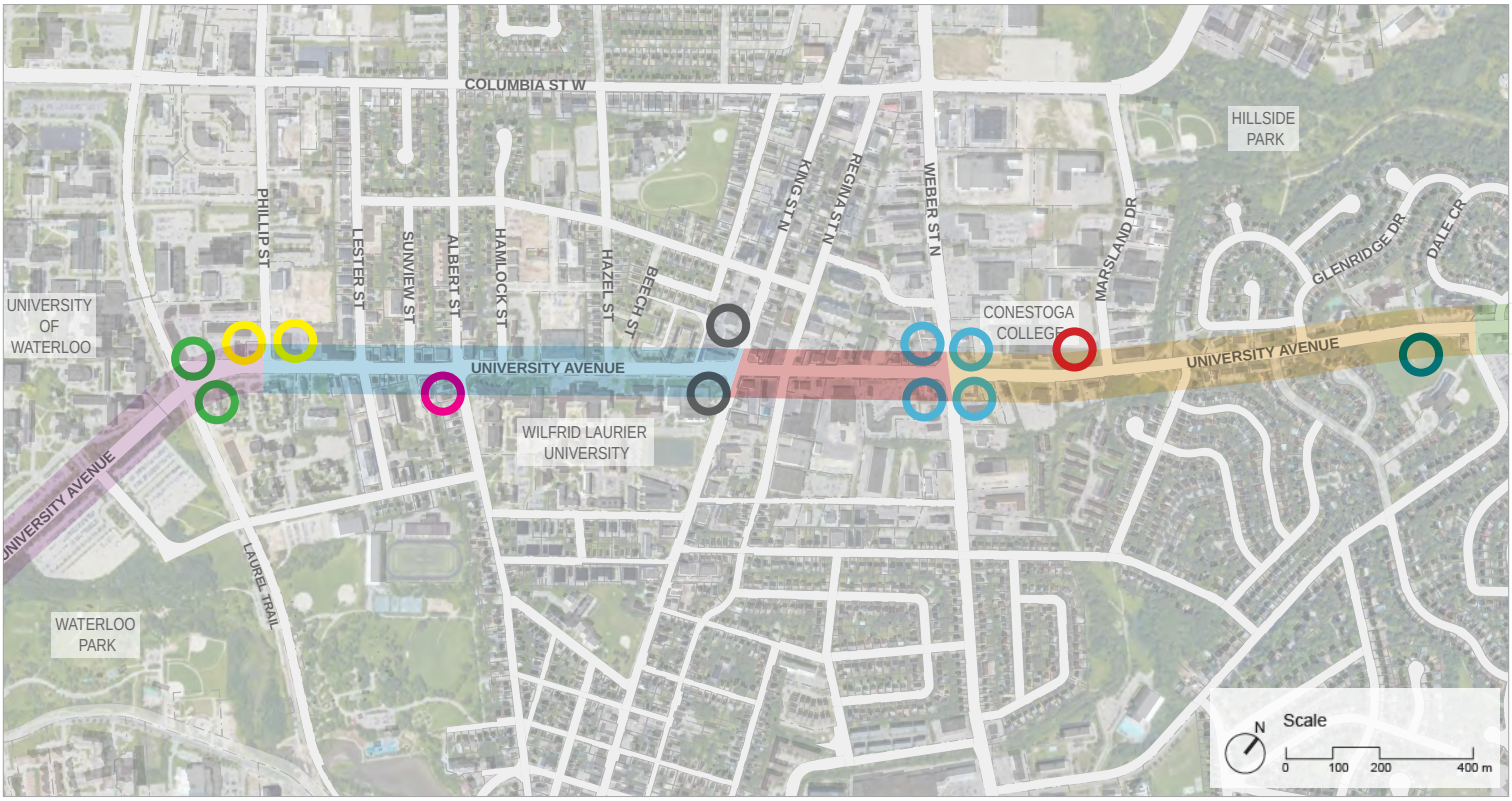


Figure 38 | Medium-Term Improvements Outside of Right-of-way Key Map

Focus Area 1 Focus Area 2 Focus Area 3 Focus Area 4

Focus Area 5

Future Development Plaza / Privately Owned Public Space

As development occurs along the corridor, opportunities for publicly accessible plazas will arise. These activated spaces adjacent to the corridor will aid in realizing the Gateway vision.

Within the Medium-Term, the following locations have been highlighted for potential publicly accessible plaza space:

In Front of Conestoga College
Educational community focused open space for everyday activities and special events.

Corner Plaza(s) at Weber Street
New development (as well as future reduction of right turn channels/pedestrian refuge islands) provide the opportunity to develop plaza space(s) at this intersection to foster pedestrian animation and activity.

Wilfrid Laurier University Plaza(s) near Regina Street / Albert Street / Adjacent to University Avenue
Through the addition of plaza(s) fronting onto University Avenue, Wilfrid Laurier University can enhance pedestrian activity and the animation of University Avenue as a community spine.

At Phillip Street

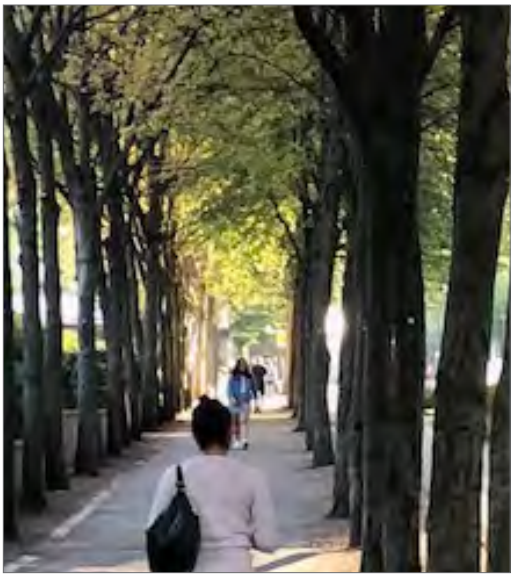
If and when future development occurs at Phillip Street on the north side of University Avenue, the introduction of small plazas and patio spaces at the intersection will aid in animating the space.

University of Waterloo

East of the ION LRT corridor there is an opportunity to provide a small plaza space that introduces the University of Waterloo that students can use and in which special events can be held.

Lincoln Heights School

There is an opportunity to engage with Waterloo Region District School Board to highlight the frontage of Lincoln Heights School along University Avenue to improve access, transit access, and landscaping. For instance, the walking path leading to the school off of University Avenue, east of Glenridge Drive, can be demarcated more clearly with signage or a wayfinding treatment.



Trees on Private Property

Green canopy can be added to frame University Avenue through planting within privately owned property. As the streetscape geometry will likely be significantly altered to realize the Gateway vision, investment in street trees within the public right-of-way is not recommended at this stage.

Programs can be put into place to encourage tree planting on private property such as public funding for tree planting along University Avenue.

Long-Term Improvements

The final build-out of the Gateway Strategy is a long-term goal that will require significant coordination and funding. The realization of the Strategy may occur in conjunction with potential future development along the corridor.

The first phase of the complete vision build-out (as shown in the concept plans) should occur between the ION LRT corridor and Marsland Drive, accompanying the burying of overhead utilities. If the burying of utilities is not feasible, the streetscape vision can be realized using hydro-form street trees (i.e. small trees), with planned space retained for future burying of hydro.

The second phase of the complete build-out vision should involve the realization of the streetscape from Westmount Road to the ION LRT corridor, and from Marsland Drive to Highway 85. As with phase 1, in an ideal condition this would accompany the burying of overhead utilities. If burying of utilities is not feasible, the streetscape vision can be realized using hydro-form species street trees, with planned space retained for future burying of hydro.

Long-Term Improvements Key Map

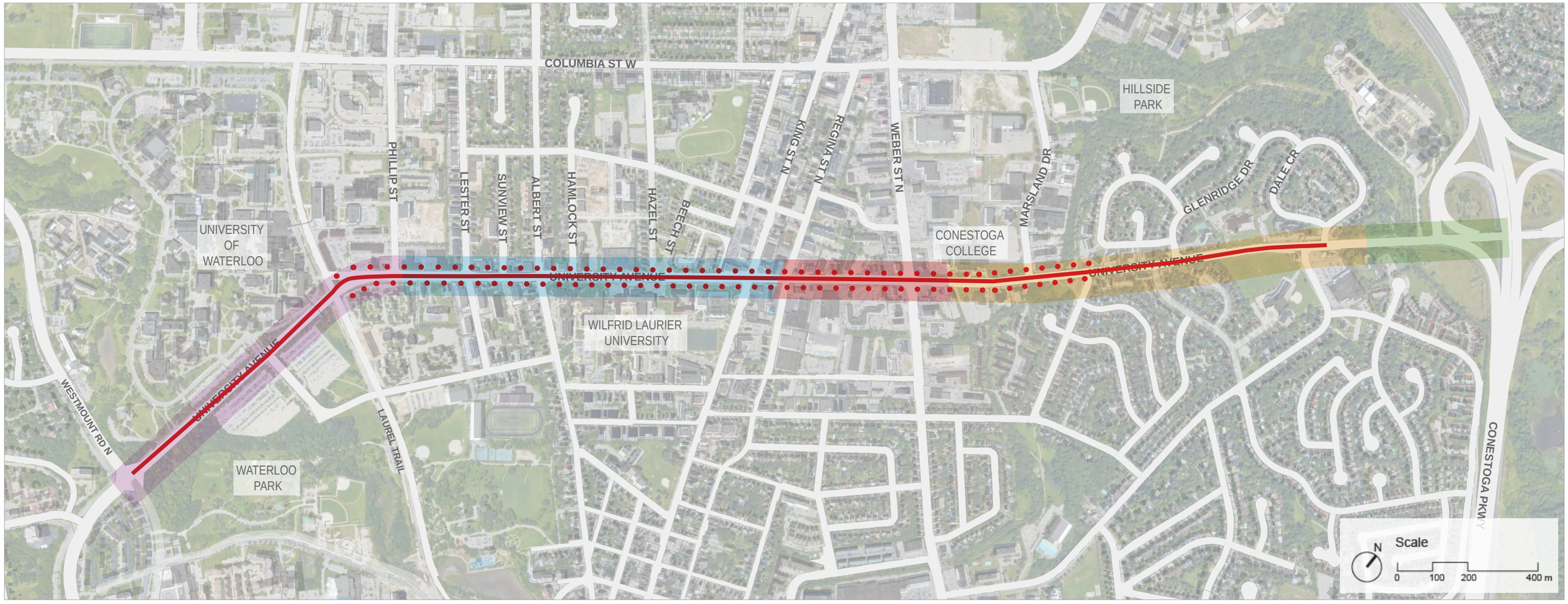
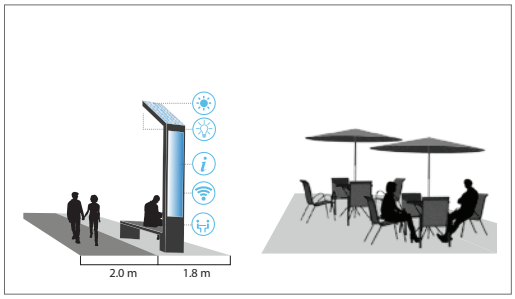


Figure 39 | Long-Term Improvements Key Map

Legend of Long-Term Streetscape Improvements

- Phase 1 Buried Hydro & Streetscape Improvements
- Full Streetscape Vision Build Out
- Focus Area 1
- Focus Area 2
- Focus Area 3
- Focus Area 4
- Focus Area 5

Long-Term Improvements in the Public Realm:



Full Streetscape Build Out with Burying Hydro

The full build out of the streetscape will occur in the long-term, complete with the elements outlined in the Concept Plans.

If/when funding is available to bury hydro, it would be preferable to implement the Gateway Strategy along this segment of the corridor while construction is already underway. The timeline for burying hydro is presently unknown.

The full realization of the Gateway Strategy will occur with an extension of the streetscape implemented in the segments of the corridor beyond those slated as a priority for burying hydro.

In an ideal condition, hydro would be buried within the remainder of the corridor in order to reduce visual clutter and provide optimal conditions for full-form street trees and public realm amenities. If it is not financially feasible to bury hydro within the remainder of the corridor, it is possible to implement a variation of the vision with hydro-form tree species.

Potential Long-Term Improvements in Privately Owned Lands:


Source: http://www.macerich.com/Leasing/Property/202

Future development along the corridor may respond to streetscape improvements and/or aid in funding the realization of the design concept. Future development along the corridor should be encouraged to uphold the University Avenue vision, including providing a vibrant pedestrian realm.

Smart Technology

Implementing smart technologies in key areas along University Avenue can improve the functionality, safety and experience of all modes of mobility and users, helping realize the Gateway vision. Smart technology is typically digital technology that responds to data inputs to create a responsive, optimized condition. Smart Technologies not only respond to our needs, but respond to our actions, providing information on real time conditions and can assist in improving the overall conditions of a street.

By improving the infrastructure through smart technologies, a foundation for an optimized and well-functioning street is created. Pedestrians, cyclists, transit users and vehicles will all benefit from smart technologies as a whole and individually.

The smart technologies explored in this section provide a high-level overview of the potential types of smart technologies that could be employed in the long-term future of the corridor.

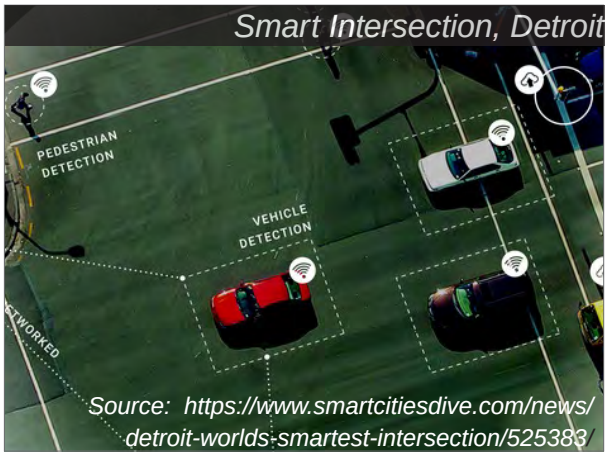
Smart Sidewalk , Washington DC

Source: https://www.dezeen.com/2012/07/05/escale-numerique-by-mathieu-lehanneur-and-jcdecaux/

Smart Sidewalk

A floor tile created by a London-based firm Pavegen produces kinetic energy when stepped on. Through one footstep the tile is able to generate enough off-grid energy to light an LED lightbulb for approximately 20 seconds. Utilizing similar tiles on frequently traveled routes can power lighting within open spaces. Incorporating smart technologies that involve the participation of the public engage more users within the public realm.

Smart Intersection, Detroit



Source: https://www.smartcitiesdive.com/news/detroit-worlds-smartest-intersection/525383

Smart Intersection

A smart intersection which incorporates a combination of hardware and software can respond to what is happening on the road in real time. The technology can protect against collisions with vulnerable road users as well as other road users. A smart intersection will ultimately lead to increased safety as well as improved traffic flow. Further analysis will be required by the Region to assess feasibility and implementation.

Digital Break, Paris

Source: https://www.dezeen.com/2012/07/03/escale-numerique-by-mathieu-lehanneur-and-jcdecaux/

Smart Stations (Street Furniture)

Smart street furniture can aid in creating a more vibrant and functional public realm along the corridor. For instance, providing wifi internet access and interactive information about the area. Smart furniture such as Digital Break provides the opportunity for instantaneous activity, work, creation, learning and collaboration. It prevents the necessity of waiting to reach a destination and allows for instant access and action.

Interactive Kiosk, Kansas City

Source: https://www.digitaltrends.com/home/kansas-city-smart-city-technology/

Smart Wayfinding

Wayfinding assists in notifying visitors of the destinations and opportunities within the area and connects the different public realm elements together. The Gateway should be easy and understandable to navigate. Providing an interactive information board that adjusts to a users required destination can assist in the expansion and exploration of University Avenue. Smart wayfinding can enhance the real world experience and point people to areas of interest.

Bigbelly Trash Receptacle, San Fransisco

Source: https://www.smartcitiesdive.com/news/bigbelly-smart-trash-receptacles-san-francisco/523355/

Smart Trash Receptacle

A clean street is important for an active pedestrian realm. Smart trash receptacles provide solar-powered, sensor equipped waste and recycling stations. The waste receptacles communicate real-time status to collection crews and enable efficiencies. Smart trash receptacles can assist in the efficiency and frequency of cleaning services.

Roles and Responsibilities

In implementing the visions for University Avenue, the Region and City of Waterloo should take a leadership roles.

As a regional road that acts as the gateway to the City of Waterloo, it is essential that both stakeholders coordinate regularly to ensure mutually-beneficial results for both parties. The Regional Arterial Road status should be respected when considering the implementation of the vision for University Avenue. Prior to the commencement of any implementation, the design intent should be vetted by the Region's infrastructure, maintenance, planning and engineering departments. While the vision for the University Avenue corridor is integral to its future, the corridor must still be able to function as a main artery for the Region and the City.

Additionally, with various other stakeholders impacted by the visions for University Avenue, having an ad hoc advisory group for the projects will allow for all impacted voices to be heard.

The three post-secondary institutions along University Avenue, ***Conestoga College, Wilfrid Laurier University and the University of Waterloo, will all have a vested interest in the implementation of these visions for University Avenue***. As the main corridor through which students, visitors and staff enter and interact with each post-secondary campus, it is important for each institution's priorities and individual visions to be heard and equally considered in the designs for the corridor. All three institutions, as study partners, will have equal opportunity and claim over the newfound opportunities brought forth by the visions for University Avenue and should be consulted regularly to provide updates and receive continuous feedback on the changes being implemented along the University Avenue Gateway.

The Ministry of Transportation Ontario should also be engaged in the implementation of the Gateway vision, particularly with regards to the Active Transportation connection over the bridge, and additional wayfinding elements.

Further, with ***various stakeholders living, working and learning along the University Avenue corridor, ensuring there is continuous and transparent consultation with the public will be a necessity to securing community buy-in and support throughout the iterative visioning and implementation process.*** Neighbourhood councilors, post-secondary institution leaders and student associations should be empowered as project champions throughout the implementation process to help promote the vision and objectives of this Gateway Strategy to the community as a whole.

Implementation and Funding Strategies

The successful implementation of the University Avenue Gateway Strategy will require commitment from key decision makers in order to move forward into planning detailed design, implementation and the on-going maintenance required to upkeep a streetscape. Public realm improvements are necessary to create animated communities that encourage people to live, work and play in the City of Waterloo.

The University Avenue Gateway Strategy vision and initiatives should be included as key elements within capital project scope and budget including long-term maintenance.

This requires a coordinated approach between the Region of Waterloo, City of Waterloo and stakeholders including Grand River Transit, Waterloo North Hydro Inc, Utilities, Ministry of Transportation of Ontario (MTO), Grand River Conservation Authority (GRCA), educational institutions, local businesses, developers and private land owners. An ad hoc advisory group may help facilitate this coordination.

The Region and the City will need to collaborate on an approach to funding the improvements to University Avenue. As far as maintenance is concerned, it is likely that a cost sharing agreement will be reached between the City and the Region.

The following description outlines high level implementation and funding strategies:

Strategies Related to Policy

Ensure Consistent Direction in the Official Plan and Zoning By-Law

Ensuring that the City's land use planning framework is complementary to the goals, objectives and recommendations of this Gateway Strategy is fundamental to its implementation of this Plan. The City should conduct a detailed review of its Official Plan and Zoning By-Law to determine where updates may be required in order to support the successful delivery of this Strategy.

It is noted that both the City of Waterloo's Official Plan and Zoning By-Law have recently been reviewed and identify much of the corridor as an area for growth and development, including large portions of the study area. Several areas are already zoned and designated high density, mixed-use development, and will be designed in a manner that is consistent with the direction of this Strategy. Given this, it is not expected that significant updates to the Official Plan or Zoning By-Law will be required to implement the recommendations of this Plan.

The City should also consider the appropriateness of developing a Community Improvement Plan, Community Planning Permit System, or Development Supplementary Design Guidelines and/or Brand Standards specific to the corridor and if required establish the policy basis for these items in the City's Official Plan.

Community Improvement Planning

In order to support private land development along the University Avenue Gateway consistent with the goals and recommendations set out in this report, the City of Waterloo may consider designating all or part of the corridor as a Community Improvement Planning Area.

Section 28 of the Planning Act provides that municipalities may identify and designate areas within the community as Community Improvement Areas in their Official Plans to support the maintenance, rehabilitation, development and redevelopment of targeted areas or neighbourhoods, such as the University Avenue Gateway Corridor.

Under the umbrella of a Community Improvement Plan, municipalities can provide grants, loans and tax assistance to support the achievement of community objectives including: the remediation and redevelopment of brownfield sites, building façade improvements, and structural/functional improvements to existing buildings (e.g., for Building Code or accessibility related upgrades), among other matters. Many municipalities have also implemented programs to reduce or waive planning and development-related fees within target areas of redevelopment.

One specific program that could be introduced under a Community Improvement Plan would be Tax Increment Financing (TIF). TIF is a public financing tools that can be used to subsidize community improvement and infrastructure projects, such as the recommended improvements set out in this Plan. TIF uses likely future gains in taxes to subsidize current improvements. Typically, improvements to streetscaping and the public realm will positively affect the property values of properties within a project area. When an increase in property value is achieved and higher taxes assessed, it is referred to as a tax increment. TIF dictates these tax increments within a defined district (such as the University Avenue Gateway corridor) to finance the debt issued to pay for the public realm infrastructure improvements. TIF could create funding for the implementation of this Plan by borrowing against the future increase in property tax revenues expected along the corridor.

The City should assess whether the establishment of a Community Improvement Plan is appropriate for the corridor, and if so, take steps to update its Official Plan to designate the corridor as a Community Improvement Plan Area.

Community Planning Permits

In 2007, the Planning Act was amended to introduce a new municipal land use planning tool referred to as the Development Permit System (DPS), and revised to the terminology of Community Planning Permit (CPP) in 2015. A CPP is a "one stop" planning service, which combines Zoning By-Law Amendments, Site Plan Applications and Minor Variance applications into one streamlined application and approval process.

Similar to a Zoning By-Law, with a CPP the City can regulate growth and development by determining how land may be used (permitted uses), where buildings can be located, setbacks from property lines, parking requirements, and matters relating to the height and massing of buildings.

In addition to typical Zoning matters, a CPP can make the provision for discretionary uses that can be permitted upon the completion of additional studies or requirements. Likewise, a CPP can provide flexibility in the application of development standards based on established minimum and maximum criteria as set out in an Official Plan.

In order to implement a CPP, the City must establish a policy framework for the CPP in its Official Plan, which would include the delineation of the subject area on a land use schedule, outline the vision and goals for the area, and set out the policy basis for how the CPP will be implemented. This policy framework would also need to establish maximum and minimum development standards and conditions for the same.

While the City has yet to develop a CPP, the creation of a CPP specific to this area could help support a streamlined development process for redevelopment applications along the University Avenue Gateway corridor and support the achievement of many of the goals and recommendations outlined in this report.

Supplementary Urban Design Guidelines

A portion of the study area borders the Northdale Neighbourhood and is subject to the Northdale Urban Design and Built Form Guidelines, while development of lands along the remainder of the University Gateway corridor is guided by the City's Urban Design Manual.

To build up the recommendations of this report with regards to streetscape and public realm improvements, the City should consider the creation of Supplementary Urban Design Guidelines specific to the University Avenue Gateway, in order to establish a consistent urban design program along the corridor.

These Supplementary Urban Design Guidelines could build upon the guidance set out in the City's Urban Design Manual and provide specific design guidance with respect to the following matters, among others:

- Built form, orientation and massing of new buildings;
- Tower design;
- Façade heights and openings;
- Landscaping and sustainable site design;
- Amenity space;
- Private / public art;
- Patio design; and,
- Building materials.

These Supplementary Urban Design Guidelines could provide guidance to the land development community for projects along the corridor. They could also provide the City with a tool for the review and evaluation of development applications, and provide supporting strategies for the implementation of goals and recommendations of this Gateway Strategy.

Strategies Related to Utilities

Underground hydro services are preferred to overhead service from an aesthetics perspective and to create an urban form with street-oriented buildings. Buried hydro also allows for smaller building setbacks, increasing the developable area (building footprint) and providing return on investment to developers. Given the cost of burying hydro, it will be considered in phases and through the long term street improvement and development projects. The areas which contain the most potential for immediate intensification should be prioritized for burying hydro. Future development set closer to the street will be able to greater contribute to the public realm and best reflect the Gateway Strategy.

In the pre-planning preliminary engineering stage of future phases, it is important to identify and if possible, protect an ideal duct bank location along the corridor for the future potential of burying hydro. The proposed duct bank location should be situated to minimize disruption to the streetscape elements in the future as the corridor intensifies and funding becomes available to move electrical services underground. It is recommended that the burying of hydro services be prioritized between Weber Street and Phillip Street.

It is noted that neither the City nor the Region currently contemplate burying utilities along University Avenue. Any burying of utilities will required a significant financial cost and more detailed technical evaluation. Neither of which have been budgeted for nor undertaken at this time.

Strategies Related to Public Art

Public art fosters a vibrant community that is inclusive, progressive, sustainable, expresses the unique character of the corridor, and contributes to the identity and place making of the avenue along with the three adjacent educational institutions. The City of Waterloo Public Art Policy provides a study process, feedback,and policy framework, with a proposed public art program of commissioning methods, donations, site selection, collection management, implementation and administration. According to different site-specific context, public art should vary depending on the location. This could include art forms catered to marking gateways, providing placemaking and wayfinding or creating unique street furniture, etc. Public art can be temporary or permanent in nature. The commissioning methods can include open call or invitational competitions, and inclusion of artists as design team members. The selection panels would include a majority of art professionals as well as community representatives and private stakeholders. The City should develop an effective review and approval procedure, implementation plans, funding plan to facilitate the process, and collections management plan for long-term maintenance.

Strategies Related to Inter-Departmental Collaborations

It is imperative that the various departmental decision makers at the Region of Waterloo and the City of Waterloo work closely to ensure that the design, implementation, inspection and maintenance of capital and redevelopment projects along the University Avenue corridor is being met. The importance of a well designed, constructed and maintained public realm must be extended to the various service operators and providers that impact public realm throughout the City of Waterloo and the Region of Waterloo. It is essential to explicitly outline expectations and deliverables. The quality of urban design and the level of service must be clearly established and supported with appropriate funding from all stakeholders.

Strategies Related to Development

Public realm improvements along the University Avenue corridor will likely make development in the area more attractive.

Private developers should be required to contribute to the enhancement of the public realm and streetscape according to the University Avenue Gateway Strategy. New development proposals should incorporate the Gateway Strategy into the detailed design of the public realm fronting their land parcel.

There should not be a harsh and noticeable separation between the public and private realm. Any future intensification along the corridor should take advantage of the frontage and assist in contributing to the public realm. Privately Owned Public Spaces are a great example of open spaces which are welcoming to the public, but remain privately owned.

Strategies Related to Public Private Partnerships

In order to help augment the costs of certain elements of the project such as smart benches, bus stops and information kiosks, the Region and City should look for opportunities to partner with private sector companies and developers. “Public-Private Partnerships”, commonly referred to as P3s, are operational partnerships between governments (in this case which could include the City of Waterloo, Region of Waterloo, Province of Ontario, or the federal government) and private companies that are formed to build public sector infrastructure. Historically P3s have been used to help fund public infrastructure, such as museums, roads and healthcare facilities, however there could be potential to explore partnerships for the provision of many of the smart technology and infrastructure related elements of this project.

P3’s have been successfully implemented in cities around the world, to benefit private interests while at the same time providing smart city infrastructure. The City of New York, for example, entered into a P3 with the private telecommunication consortium named “Intersection." The consortium was tasked with replacing the City’s aging and nearing obsolete payphones. In exchange for advertising rights and the ability to locate on City-owned lands, the consortium now provides and maintains smart kiosks throughout the downtown which provide digital maps, device charging stations and video calling free of charge to both the user and the municipalities.

A similar model could be explored for the University Avenue Gateway corridor to help provide many of the smart technologies recommended by this Plan. In addition to potentially augmenting the cost of providing these services, a similar model could help ensure flexibility in the types of smart technology provided and to ensure that the technology implemented stays current and responsive to future changes in technology.

Potential Business Improvement Association (BIA)

The creation of a Business Improvement Association (BIA) could aid in the realization of the visions in the short, medium, and long term through community events, branded banners, planting, and more extensive streetscape elements. This potential BIA could be a collaboration between Northdale and the University/College precinct.

Strategies for Long-Term Success

Implement a strategy of this scale and importance requires a strong framework of planning in order to encourage its success. The following tactics should be employed to realize the vision of University Avenue:

Project Champions

Staff from the Region and City, in addition to the Post-Secondary Institutions can encourage the implementation of the vision for University Avenue within their projects. Through this, the differing organizations involved and the Region of Waterloo as owners, can ensure all interests and aspects of the Gateway Strategy are considered.

Stakeholder Consensus

Open lines of communication between all project stakeholders throughout the process will aid in providing clear direction from the outset, and help avoid potential future issues.

Collaboration with Post-Secondary Institutions

Due to the cultural significance of these institutions and their substantial frontage along University Avenue, the City and the Region should work with Conestoga College, Wilfrid Laurier University, and the University of Waterloo to collaborate in realizing the vision for the corridor.

Additionally, through undertaking projects such as creating a more active street edge and providing flexible and animated pedestrian spaces along the corridor, these institutions can aid in the improvement of the corridor as a whole through their master planning and campus improvements.

Community Input

Keeping the community informed on the progress of this Streetscape and Gateway Strategy, and providing opportunities for feedback, will aid in establishing public support for the project.

Capital Budget

Establishing the necessary capital costs for implementing the project, and securing funding is key to the realization of the Gateway Strategy. The Region and the City can explore potential partnership and/or funding opportunities with institutional partners and future developments along the corridor.

Maintenance

As the vision for University Avenue begins to be realized, it is important to ensure that a comprehensive maintenance plan (including a list of tasks, funding, and resources) is put in place. A clear maintenance plan will encourage the continued success of the vision.

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