

SEPTEMBER 2010

DALHOUSIE UNIVERSITY

CAMPUS MASTER PLAN

FRAMEWORK PLAN



TABLE OF CONTENTS

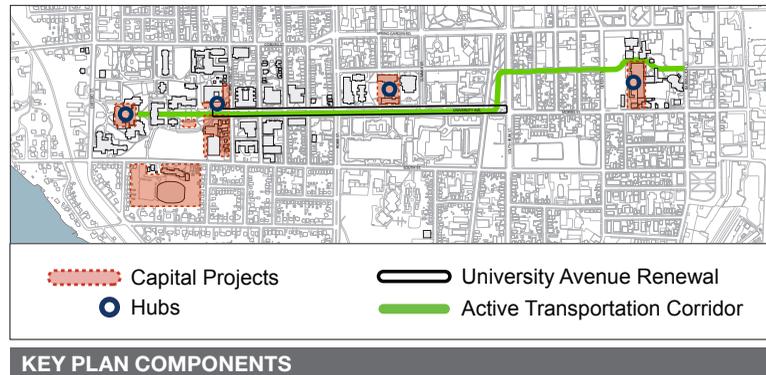
- A EXECUTIVE SUMMARY 1**
- B INTRODUCTION..... 3**
 - B.1 PROUD HISTORY AND DEMANDING FUTURE..... 3
 - B.2 CURRENT CONDITIONS 3
 - B.3 UNIVERSITY STRATEGIC OBJECTIVES..... 4
 - B.4 DEVELOPMENT REQUIRED 4
 - B.5 URBAN CONTEXT 5
 - B.6 PURPOSE OF THE CAMPUS MASTER PLAN..... 5
 - B.7 CREDITS..... 5
- C EXISTING CONDITIONS 6**
 - C.1 LINEAR CAMPUS FORM..... 6
 - C.2 TRANSPORTATION NETWORKS 6
 - C.3 BUILDINGS..... 6
 - C.4 ACCESSIBILITY..... 6
 - C.5 INFRASTRUCTURE..... 6
 - C.6 LANDSCAPE & OPENSACE 8
- D DEVELOPMENT STRATEGIES..... 9**
 - D.1 RENEWING UNIVERSITY AVENUE 9
 - D.2 INTENSIFICATION 9
 - D.3 REINVENTING CAMPUS IDENTITIES 9
 - D.4 MAXIMIZING OPPORTUNITY 10
 - D.5 STRENGTHENING COMMUNITY 10
 - D.6 SETTING PRIORITIES 11
- E MOVEMENT SYSTEMS 11**
 - E.1 ACTIVE TRANSPORTATION NETWORKS..... 11
 - E.2 TRANSIT 11
 - E.3 STREET NETWORKS..... 12
 - E.4 PARKING 12
 - E.5 TRAFFIC DEMAND MANAGEMENT (TDM) 12
- F UNIVERSITY RENEWAL..... 12**
 - F.1 RENEWAL CONCEPT 12
 - F.2 CORRIDOR STREETSCAPE COMPONENTS..... 13

- G LANDSCAPE & OPEN SPACE 14**
 - G.1 THE OPPORTUNITY 14
 - G.2 COMMON GUIDING PRINCIPLES..... 14
 - G.3 GATEWAYS AND TRANSITIONS 14
 - G.4 UNIQUE SPACES..... 14
 - G.5 SPACES BETWEEN 14
 - G.6 ATHLETIC FIELDS..... 14
 - G.7 CAMPUS OPEN SPACE SYSTEMS 15
- H CAMPUS CONCEPT PLANS 16**
 - H.1 UNIVERSITY FRAMEWORK PLAN 16
 - H.2 STUDLEY CAMPUS 18
 - H.3 HEALTH SCIENCES AT THE CARLETON CAMPUS..... 19
 - H.4 SEXTON CAMPUS IN THE DOWNTOWN..... 20
- I STUDENT LIFE FACILITIES..... 21**
 - I.1 LEARNING COMMONS HUBS 21
 - I.2 STUDENT UNION BUILDING..... 22
 - I.3 STUDENT RESIDENCES..... 22
 - I.4 ATHLETICS AND RECREATION 24
- J DESIGN GUIDELINES..... 26**
 - J.1 BUILDING SITE GUIDELINES..... 27
 - J.2 UNIVERSITY-WIDE LANDSCAPE & OPEN SPACE GUIDELINES: 29
 - J.3 LANDSCAPE DESIGN PRINCIPLES FOR EACH CAMPUS..... 33
 - J.4 LANDSCAPE GUIDELINES FOR UNIVERSITY AVENUE RENEWAL.... 35
- K PHASING..... 42**
 - K.1 PRIORITY PROJECTS 42
 - K.2 PROJECT OPTIONS..... 42
 - K.3 ULTIMATE GROWTH CAPACITY 42
- L IMPLEMENTATION 42**
 - L.1 MANAGING DEVELOPMENT 42
 - L.2 FINANCING STRATEGIES 42
 - L.3 PROCEDURES FOR ACHIEVING PROJECT QUALITY 42
 - L.4 TRANSPORTATION DEMAND MANAGEMENT (TDM)..... 42

APPENDICES

- A. CAMPUS SYSTEMS**
 - A.1 TRANSPORTATION DEMAND MANAGEMENT (TDM)
 - A.2 CAMPUS DEVELOPMENT CAPACITY
 - A.3 UTILITIES & SERVICES
 - A.4 ENERGY
 - A.5 SOLAR INVENTORY
- B. FACILITIES & SPACE**
 - B.1 LEARNING COMMONS HUBS
 - B.2 ATHLETICS & RECREATION PROGRAM
 - B.3 ACCESSIBILITY
 - B.4 SPACE FORECAST ANALYSIS





A EXECUTIVE SUMMARY

The President of Dalhousie has defined seven strategic principles for advancement of the University and the focus of the Campus Master Plan focusing on academic and research excellence, enhancement of the student experience, accommodation of enrolment growth from 15,000 to 17,500, enhancing the workplace environment, support for development funding, strengthening of financial resource management, and sustaining campus renewal funding. These strategic principles are now being refined as the Dalhousie University's Strategic Focus for 2010-2013.

Accordingly, the Campus Master Plan focuses on improving and increasing academic, research and administrative facilities, fostering student-based learning and enhancing student environments, strengthening the University's capacity to promote private and public capital funding, and identifying improvements and efficiencies in managing the physical environment and its further development. The major components of the Plan are:

- Renewing University Avenue to connect the campuses along a reconfigured, multi-modal, elegantly landscaped civic thoroughfare, in partnership with the HRM, the hospitals, the Province and public supporters of civic sustainability and urban design.
- Refocusing and Intensifying the Three Campuses: Studley, focused on its upper and lower Quads; Carleton, focused on its green Common and highlighted by adding two new interconnected towers to the Tupper to house integrated academics, research and public health services; and the Downtown Campus at Sexton, planned to develop over time as an urban centre of professional schools, continuing and executive education and diversified student residences combined with urban cultural and commercial uses.
- Learning Commons 'Hubs' that consolidate student-focused learning as centres of informal and group study, student services and leisure. These Hubs are located in four strategic locations: in-filling the LSC courtyard; expanding the Killam Library; the Tupper Link at Carleton; and as part of the proposed new IDEA Building at Sexton. Hubs will strengthen concepts of student-based interdisciplinary learning, foster academic integration and provide high tech state-of-the-art flexible group study facilities. The Hub concept is fully described in Appendix B.1.
- Investing in up-grading and maintaining the campuses to increase utilization of existing facilities (thereby reducing the demand for additional space and capital) and resulting in greater efficiencies, improved open space and increased sustainability.
- Sustainability strategies to support university-wide policies and practices, in four specific areas: transportation demand management (TDM) aimed at gradually reducing car dependency by offering greater travel options; energy

security aimed at shifting to more sustainable fuel sources; biodiversity in campus landscape design; and compliance with building standards that raise the bar of design excellence and energy efficiency.

- Upgrading and expanding Athletics & Recreation facilities to promote wellness and meet student needs, serve staff and the public and include accommodation for related academic programs in Health and Human Performance and sports medicine.
- Adopting a streamlined process for Managing Capital Projects that integrates planning, budgeting, design and construction to ensure that development policies and priorities are consistently followed and that the results are sustainable and of the highest quality and design excellence.

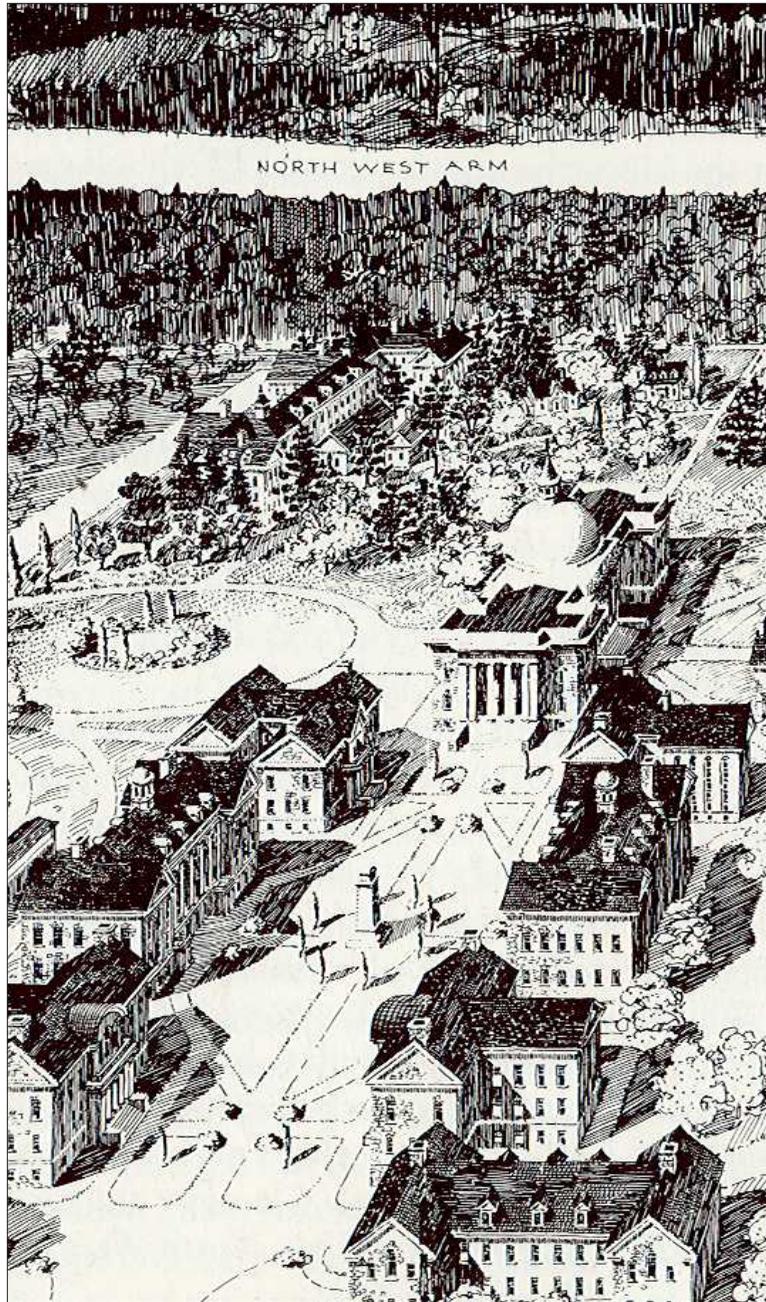
The Campus Master Plan anticipates development over the next 10 years of an unprecedented magnitude for Dalhousie, to address both unmet needs and future challenges required to maintain its competitive edge. Dalhousie's 10-year Capital Program is expected to include the following capital projects:

- Health Sciences academic and research buildings at the Carleton campus
- Addition and renovations to Dalplex and a future Recreation & Wellness Centre at Sexton
- Mixed-use complex of retail, service and student residences attached to an upgraded Memorial Arena
- Expansion and upgrades to the Killam Library and its facing Lower Quad
- Upgrades to the SUB
- Mixed-use academic buildings facing the Killam Library and framing the Lower Quad
- Joint Research Centre at Studley
- LSC Hub in-filling the present courtyard
- IDEA Building and Learning Corridor Hub at Sexton
- Addition to the Arts Centre
- Multi-Year Campus Open Space Improvement Program including renewal of University Avenue, the Lower Quad at Studley and modernization of university signage, street furniture and landscaping systems
- Annual Deferred Maintenance projects to renew and modify existing facilities and campus infrastructure systems.

This Framework Plan document is intended to provide a comprehensive overview of the vision and framework that will guide Dalhousie's future development, and is further supported by detailed appendices on topics discussed herein.



STUDLEY VIEW LOOKING EAST



1920's STUDLEY MASTER PLAN

B INTRODUCTION

B.1 PROUD HISTORY AND DEMANDING FUTURE

Since 1818 when Lord Dalhousie won approval of the Prince Regent of Great Britain to establish his “Halifax College”, this university has developed in quantum leaps of ambition, vision, community service, pursuit of excellence and inevitable struggle: in the 1880’s the college moved from its original site on the downtown Grand Parade to the newly constructed Forrest building, (today the University’s oldest remaining structure, located on what is now the Carleton Campus), but not without raging debate over the resulting debt and jurisdictional conflict; the speculative decision in 1911 by the Board to purchase the Studley farm and Andrew Cobb’s grand plan for the campus in 1920; the extension of Morris Street west across the peninsula, later to be renamed University Avenue in the 1950’s; the Tupper Tower, officially opened as Nova Scotia’s centennial project in 1967 by the Queen Mother, Prime Minister Lester Pearson and the 16th Earl of Dalhousie; annexation of the Sexton Campus in 1997. From local to regional to national role in academic leadership, Dalhousie now addresses the challenge of international responsibility: the university population is increasingly multi-cultural, its academic programs reach world-wide via the internet, and its research impacts global sustainability.

The responsibility of the Plan is to build on this history of ambition and vision, respecting the traditions and yet addressing the contemporary demands on the University.

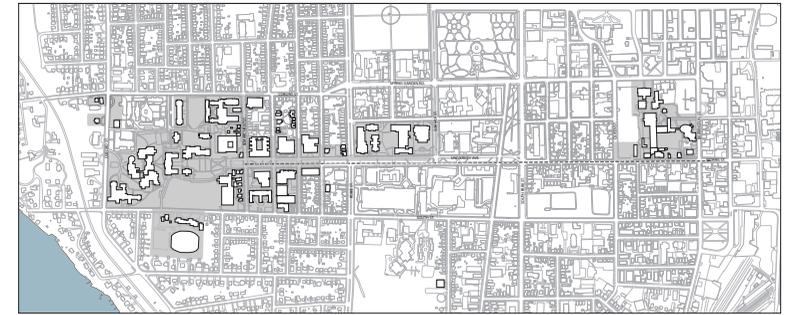
B.2 CURRENT CONDITIONS

Linear Campus Form

The Dalhousie campus actually comprises three campuses, identifiable by history, location and the mix of academic programs each campus houses. The university stretches across the Halifax urban peninsula along a mile-long east-west corridor centred on University Avenue and Morris Street. As a result, students and staff tend to identify with their particular campus more than with the University as a whole. This elongated campus configuration limits opportunities for social and academic interaction and presents travel and operational inefficiencies, duplication of services and facilities under-utilization.

Uncoordinated Development

In the recent past development has occurred on a project-by-



LINEAR CAMPUS

project basis in response to space demands, site availability and funding opportunities. With the pace of development expected to accelerate, the stated objective of this Campus Master Plan will be to provide an overall framework to guide how future development should effectively take place over time.

Campus Environment

Inclement weather defines a large part of the academic year, making pedestrian movement through the campus and between buildings often unpleasant, as is the wait for buses that are the reasonable alternative to travel by private auto. The linear configuration of the University adds to this difficulty for those having to move between the three campuses. Relentless driving winds and moisture also cause serious and costly damage to university buildings – particularly to the facades of traditional stone structures - that significantly compound the costs of campus maintenance.

Space Deficiencies

Measured by nationally accepted standards, Dalhousie is currently well served in most space categories, however deficiencies are most notable in graduate studies and research, and to a lesser degree, in administrative office and related space, food services, bookstore and merchandising facilities, plant maintenance, AV/ TV facilities and student activity space. In addition there are other deficiencies beyond these evaluation criteria that are unique to Dalhousie such as a shortage of student residence units and staff housing within walking distance of the University, study and social space that adequately meet student needs, adequacy and condition of Dalhousie’s athletic and recreation facilities, lack of day care facilities and accessory retail services, a wider range of food service choices, and attention to campus signage, way-finding aids and adequate outdoor furniture.

B.3 UNIVERSITY STRATEGIC OBJECTIVES

Dalhousie University's Strategic Focus for 2010-2013, currently being developed, stems from the president's earlier strategic direction upon which the Campus Master Plan is focused, namely:

- Enhancement of academic and research excellence with expected growth in research,
- Enrichment of the student experience and the supporting environment,
- Strengthening student enrolment from 15,000 to 17,500 and providing the facilities needed to accommodate that growth,
- Developing excellence in human resources and the workplace environment,
- Advancing philanthropic support for University development,
- Effectively managing the financial resources, with focus on improving the efficiency of facilities utilization and the effectiveness of building maintenance and development, and
- Ensuring that campus renewal is fiscally sustained.

B.4 DEVELOPMENT REQUIRED

Enrolment Growth

The University envisions an enrolment increase over the coming 5-10 years in the order of 2,500 students, resulting in a total enrolment in the order of 17,500.

Academic Needs

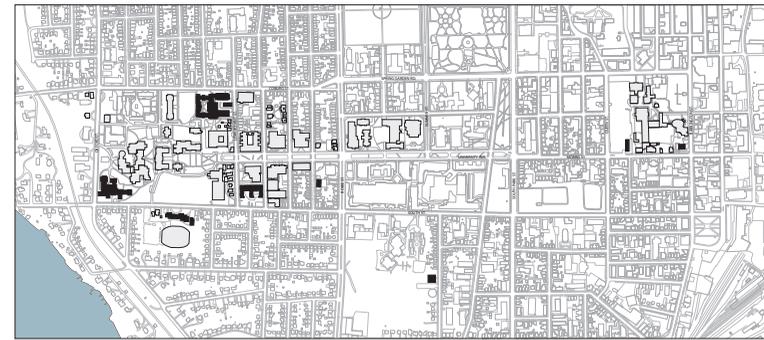
Enrolment growth to 17,500 is not expected to require significant additional class room, lab or faculty office space depending upon class room student/instructor ratios and scheduling practices that can increase utilization. However, there is estimated to be a significant need for graduate lab and office space - in the order of 500,000-600,000 gross square feet (gsf) – particularly in the health sciences and engineering faculties, that is expected to place development pressures particularly on the Carleton campus over the coming ten years. As well, need for future additional space at both Studley and Sexton for multi-disciplinary research is also anticipated.

Student Residences

Estimates of future demand for additional on-campus student housing spaces range between some 200 and 750 units depending on policy assumptions requiring refinement over time by the University with regard to providing on-campus housing for first year and returning students, foreign students and graduate students.

Other issues affecting provision of housing include:

- Design of residences capable of use in the summer season to support university special events such as executive training and professional conferences, as well as the region's tourism; presently undergraduate residences provide shared toilet and bath facilities not conducive to attracting such summer uses;
- Investment in up-dating and expanding existing residences to increase capacities;
- Accommodation of students with academic programs requiring them to be away from campus for interim periods of time due to intern and co-op placements.



EXISTING STUDENT RESIDENCES

Accessory and Complementary Uses

Comparison with other universities indicates a general deficit at Dalhousie of bookstore and convenience merchandising facilities. Students commonly cite lack of convenience retail services on campus such as a pharmacy, barber shop, post office, laundry/dry cleaning, pub/café, an art cinema. Acknowledging the proximity of downtown Halifax, students correctly note precedents at other leading urban universities for adequate provision of such amenities.

Student Life Facilities

In addition to the accessory uses noted above, there is a deficit in student activity and independent study space that reflects changing student preferences and advances in learning technologies. The Plan envisions four major Learning Commons Hubs in key locations on the Studley, Carleton and Sexton campuses, providing a concentrated mix of flexible multimedia study spaces, lounges and access to student services and library resources.

Athletics and Recreation

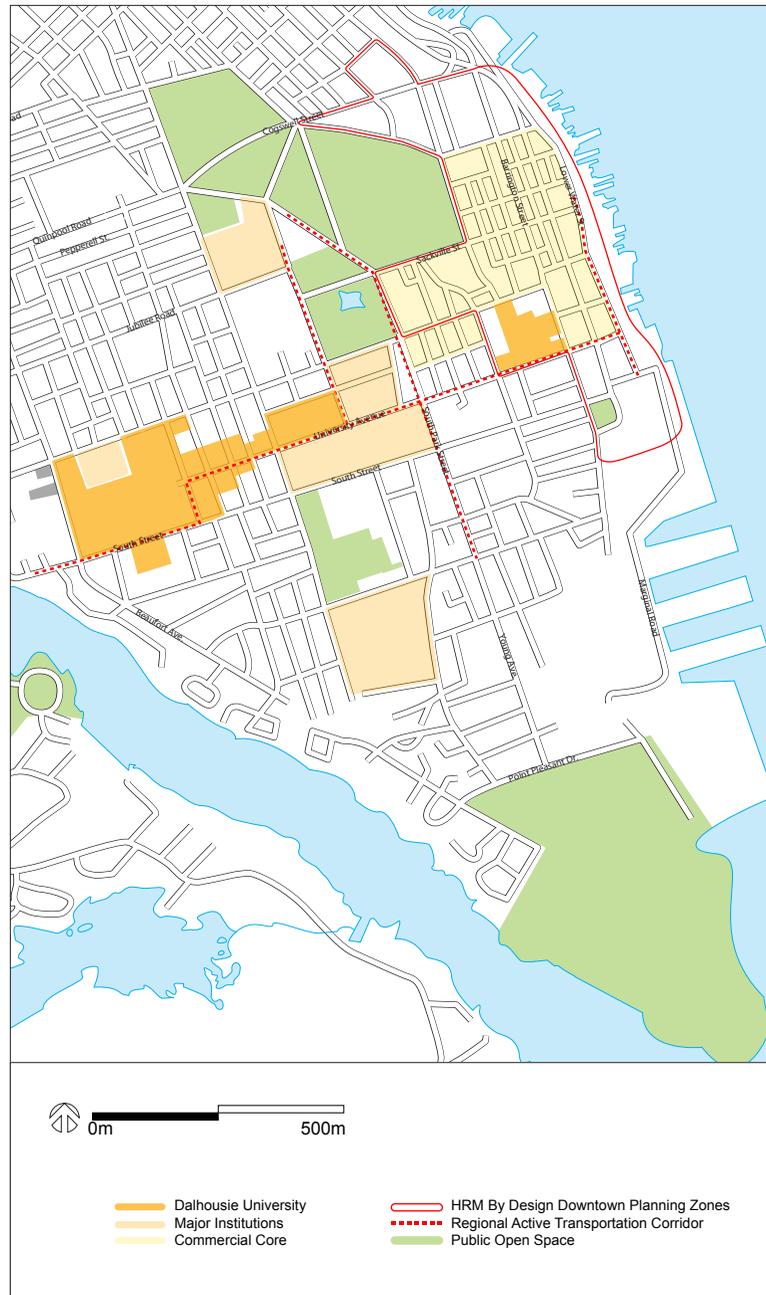
Dalhousie has not kept pace with many other universities in upgrading the quality of recreation facilities; for example McGill, Queen's, Memorial, UPEI, Western and UBC have all recently invested in new and up-graded student athletic and recreation facilities.

Indoor facilities at Dalhousie are concentrated in two facilities, notably at the Dalplex on the Studley campus, with more limited facilities also provided at Sexton; the aging Studley Gym is also used, as well as the Memorial Arena ice surface. The Sexton and Dalplex facilities require major renewal and the Studley Gym and Arena change areas are considered beyond cost-effective repair. Dalplex is heavily used – indeed over-used – resulting in having to limit access of students and staff as well as serve the public.

Comparisons with other universities are complicated by Dalhousie's particular mix of programs, and by an unusually high public use of its recreation facilities. Yet, due to locational condition, the Studley gym and the Sexton gym are underutilized and should be eventually replaced accordingly, the University is estimated to require an addition of some 100,000 gsf to Dalplex and in addition, the Dalplex itself requires a thorough spatial, structural and mechanical renovation to meet current standards and needs. The Plan provides for a major new addition and extensive renovations to the Dalplex and a future new Recreation & Wellness Centre at Sexton designed to provide suitable university and community recreation and fitness facilities and programs.

Deferred Facilities Maintenance.

The University maintains an inventory exceeding 100 buildings totalling some 4.8M gsf, many constructed in the early years of the last century. Replacement value of the campus buildings is assessed at a cost in excess of \$1 Billion. Although deferred maintenance has been seriously underfunded for some years, the Board of Governors has recently underfunded this problem and has adopted a policy of increasing the annual deferred maintenance allocation by \$1M per year up to a cap equal to 2% of the assessed replacement value of the campus building inventory. Even once this cap is reached, the challenge will be (a) to determine what levels of attention should be given to which buildings and (b) how the annual budget is to be allocated in doing so, using three basic criteria: building condition, importance of the building to Dalhousie, and return on investment.



URBAN CONTEXT

B.5 URBAN CONTEXT

Dalhousie is situated in the heart of the Halifax urban region with a population in the order of 400,000. The campus stretches across the City’s core peninsula, adjacent to established residential neighbourhoods and within walking distance of the vibrant commercial downtown, along with other public institutions such as St. Mary’s University, the Capital District and IWK hospitals and the Provincial Archives, to mention only a few. The Dalhousie Campus Master Plan is but one of many current development planning activities requiring consideration, including the Spring Garden Development Plan, a proposed new regional library, a new plan for redeveloping the Capital District hospitals, a current review of Metro Transit services, and a broad range of planning undertaken by the Halifax Regional Municipality (HRM) affecting the urban core.

Dalhousie’s future development will occur as an integral part of its urban surroundings and in collaboration with the other civic participants. For example, in the longer term context, Dalhousie will need to take active partnership roles in matters such as public transit and parking policies, district energy, community housing and the proposed regional library adjacent to the Sexton campus.

B.6 PURPOSE OF THE CAMPUS MASTER PLAN

University development is required both to improve current deficiencies and to accommodate future demands as enrolment grows and academic and research programs address the demands of a changing world. The pace of development is also expected to increase, requiring assessment of capacities, forecast of future requirements, vision of the future campus and its environs, a physical framework within which individual projects are developed, and an assessment of the capacity to effectively manage this increased pace of development.

The University’s stated focus of the Campus Master Plan is “to produce a physical framework that will provide a clear, concise vision of how the physical campus should develop to effectively support the overall strategic plans of the University”. Rather than provide a specific design for the future, this Framework Plan is intended to articulate a collective vision of how the University should improve and develop its campuses over time and to provide a guide to the many individual projects that will contribute to achieving these improvements. Once adopted, the Plan is intended to support the Administration’s role in making the detailed assessments, plans and decisions required to achieve the Plan’s principles.

B.7 CREDITS

University Administration

The University Administration, under the leadership of its President, Professor Tom Traves, and the Board of Governors chaired by Dr. Jim Spatz, has recognized the development challenges facing the University and the need for this Framework Plan to guide future development. The Vice-President Finance and Administration, Ken Burt and the Assistant Vice-President Facilities Management, Jeff Lamb have provided direction to this planning effort, along with the invaluable support of Mary Jane Adams, Director of Planning. The vice presidents, deans, directors and staff of the University have all contributed assistance and attention to this planning process.

Committee Structure

The committee structure established to guide the planning process has been led by the Campus Master Plan Steering Committee jointly chaired by Vice-President Ken Burt and Professor Frank Palermo. The Campus Plan Management Committee chaired by the Assistant-Vice President Jeff Lamb has periodically advised the planning team throughout the process. Four Working Committees have assisted in specific areas of academic programming, student services, athletics and recreation, and campus infrastructure and systems.

Consultation Within the University Community, the Neighbourhood and the Municipality

Within the university community, a broadly based consultative process has been carried out to provide the planning team with information, opinion and advice. These consultations have taken various forms including individual and group meetings, surveys, internet blogs, website applications and a week-long interactive campus design ‘charette’ involving students, faculty, administrators and representatives of the neighbourhood, the civic and business community and staff and Council members of the Halifax Regional Municipality (HRM).

Throughout the planning process, the Dalhousie University Community Committee comprising volunteer residents in the neighbourhoods surrounding the University have held public meetings to review the planning and advise the team. The planners have also received valuable cooperation and technical assistance from HRM staff members.

The Planning Team

IBI Group has been retained by the University to prepare the Campus Master Plan, in association with WHW Architects, CBCL Limited, Green Power Labs, Hanscomb Limited and Vollick, McKee, Petersmann.

C EXISTING CONDITIONS

C.1 LINEAR CAMPUS FORM

The physical structure of Dalhousie extends across Halifax's urban peninsula in a mile-long line of three campuses: Studley, Carleton (the Health Sciences campus), and Sexton in downtown Halifax. University Avenue extending into Morris Street serves as the major thoroughfare connecting these campuses; the enhancement of this important civic corridor is an important focus of the Plan.

C.2 TRANSPORTATION NETWORKS

Streets

Dalhousie is located within the peninsula's urban grid street system, framed by collector streets serving through traffic: South Street, Coburg Road/Spring Garden, Oxford, Robie, Summer, Queen and Barrington. Local streets serve the mainly residential neighbourhoods between the collectors. The Plan reinforces this network and the functions of these collector and local streets, strengthens the loop street access to Studley and connects a local loop street through Sexton, and provides for significant vehicular gateways to each campus.

Parking

Demand for campus parking is generated by commuting students and staff and by the visiting public such as patrons of recreation and cultural facilities. An estimated 11% of Dalhousie students and 39% of staff & faculty drive to work on campus, utilizing a total campus inventory of some 1,945 parking spaces.

Off-street parking is provided and regulated by the University dispersed throughout the campuses in a variety of forms, from small and large surface lots to multi-level structures. The result of such a wide distribution of parking spaces is in operating them efficiently and in driver difficulty in finding an available parking space; drivers cite frustration in the need to search and pedestrians express concern for the added traffic circulation and its impact on air quality, and in a campus appearance that visually places priority of parking over the quality of the pedestrian environment.

Public Transit

Metro Transit operates east-west bus routes along Coburg Road and South Street connecting the University with downtown Halifax and beyond, on 5-10 minute intervals during rush hours and 10-20 minute intervals during off-peak hours, daily between about 6 am

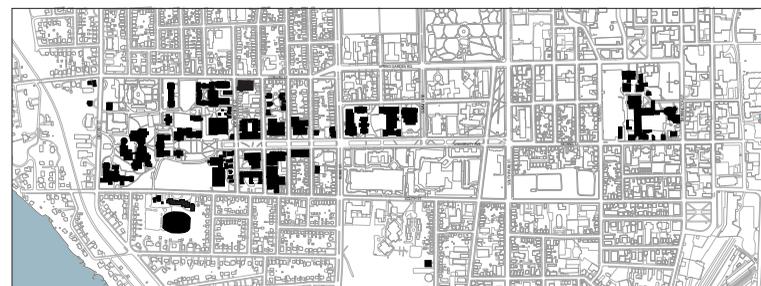
and midnight. A major bus terminus is located adjacent to the SUB on LeMarchant Street on a loop route off South Street; no other north-south route currently crosses the campus, requiring university users to walk to-from either Coburg or South. No service is presently operated on University Avenue dedicated to connecting the campuses. Other than open shelters, no weather protection is afforded waiting passengers. Although these conditions are inconvenient for users, there are limited options for travel beyond each Dalhousie campus.

Pedestrian Walkways and Bikeways

Despite maritime seasonal climates that discourage pedestrian and bicycle travel, the Dalhousie community uses these common modes to move between campus buildings as a matter of necessity. Over time, some weather protected pedestrian connections have been developed on the Studley campus and are popular routes. The Plan improves pedestrian and bike travel and proposes transit routes connecting the three campuses.

C.3 BUILDINGS

Dalhousie has a building inventory of more than 100 structures, most ranging in age over the past 90 years. The operations, maintenance and finance of this inventory presents an on-going facilities management challenge. The buildings are subjected to unusual wear from both their demanding users and from the unrelenting winter climate. Management decisions are typically made to determine the extent of investment that can be justified for their maintenance, repair and upgrading. The Plan provides guidelines for helping to make such decisions, taking into account (1) the condition of the building and the costs involved in modifying those conditions, (2) the desired and potential continued use of the building, and (3) the significance of the building to the university.



EXISTING BUILDINGS

C.4 ACCESSIBILITY

Typical of older campuses, Dalhousie is seriously deficient in meeting contemporary accessibility standards and as a result, loses opportunities to educate worthy people with disabilities. In many cases older Dalhousie buildings and campus walkways have not been adequately modified and/or maintained to allow accessibility to people requiring assistance. Dalhousie currently requires Universal Accessibility Design Guidelines (CSA-2004) to apply to all new building designs. However, a comprehensive multi-year program is needed to address the deficiencies in older buildings as well as much of the exterior campus facilities. A phased strategy to achieve an accessibility improvement program is outlined in Appendix B.3.

C.5 INFRASTRUCTURE

Water

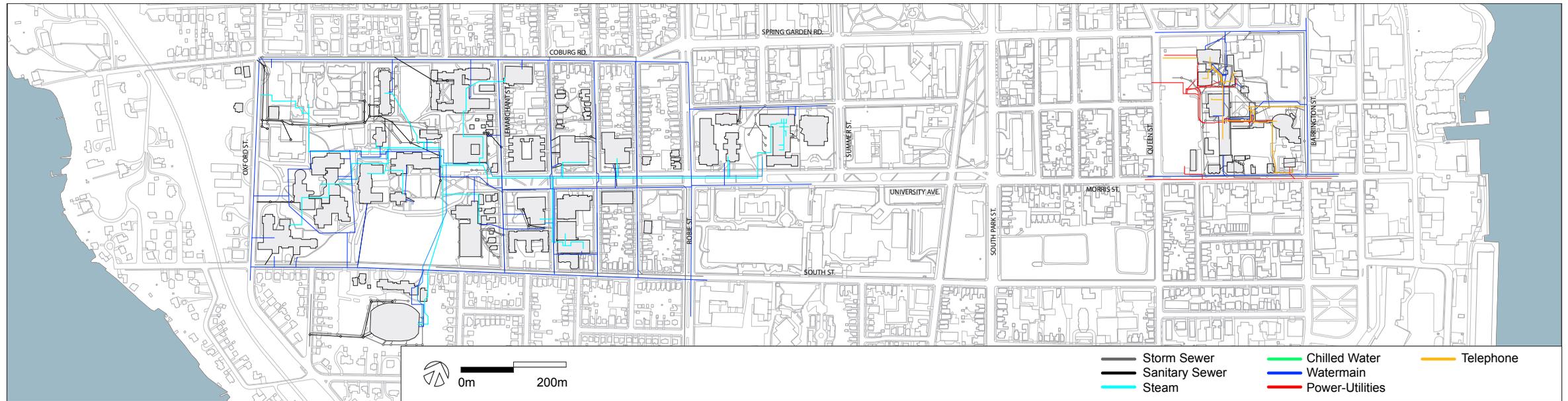
Dalhousie's existing domestic water supply and distribution systems are technically adequate. However, portions of the municipal system handling storm and sanitary sewer drainage generated by University facilities are undersized and do not meet current HRM standards; further campus facilities development is expected to require corrective investments in the municipal drainage system.

Electricity

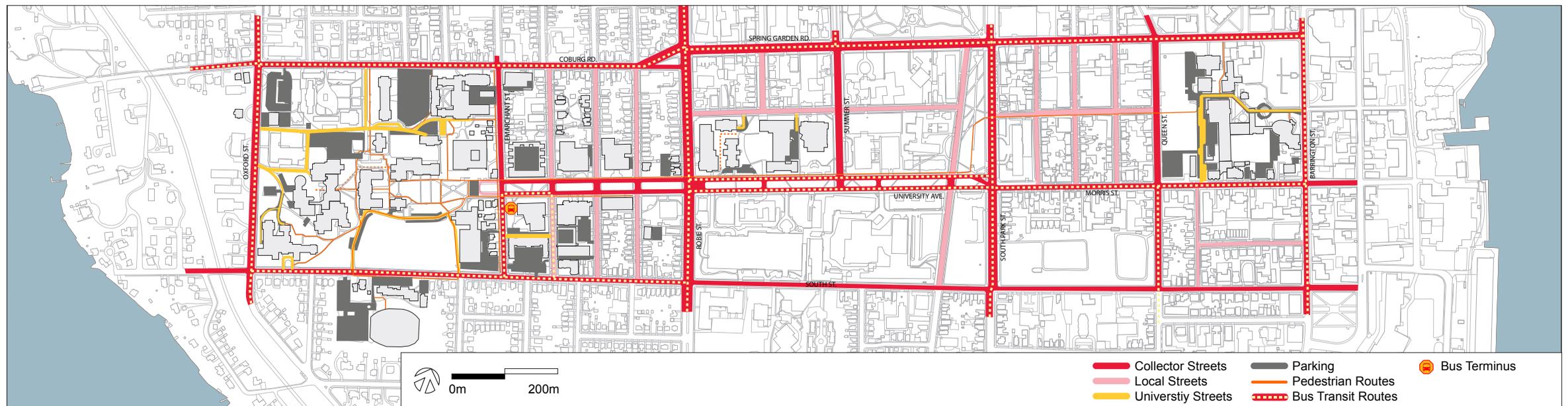
The existing 23kV electrical system serving the Studley and Carleton campuses is essentially operating at capacity; further campus development will require either increasing electrical capacity or creating new distribution systems.

Heating

The central heating plant is presently operating at maximum capacity and the 37 year old boilers will require replacing in the near future. The piped steam distribution network is in adequate condition, with the most significant exception being the connection between the Tupper Building and Sexton. The University is currently weighing options for replacing the oil-burning steam system with a more advanced, energy efficient co-generation plant, ideally in partnership with other downtown institutions. The Plan urges this initiative as a sustainable and efficient approach to serving the extensive campus development envisioned, and as a strategy to increase the long-term security of sustainable fuels.



EXISTING INFRASTRUCTURE

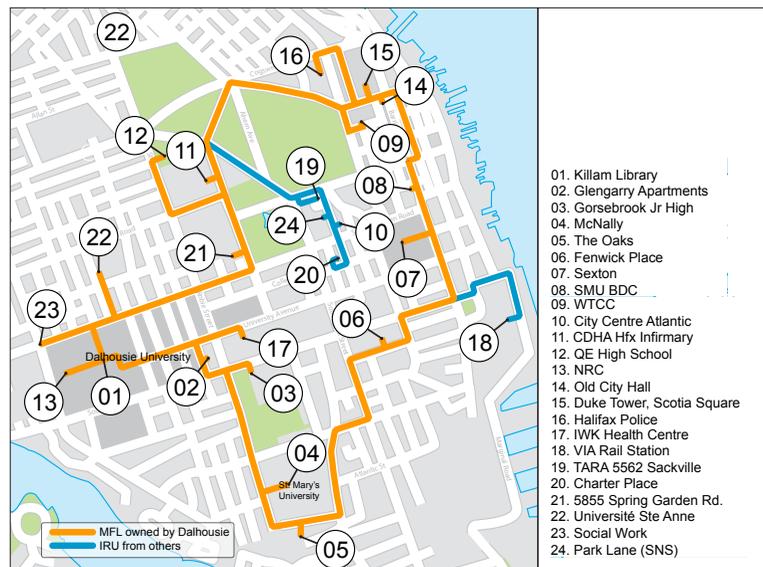


EXISTING TRANSPORTATION NETWORKS

Information Technology Systems (ITS)

Dalhousie's main ITS Data Centre is located in the basement of Killam Library in facilities that are spatially adequate but will require continued upgrading. Other data centres are located at the Carleton and Sexton campuses. Space presently allocated to the Sexton data centre is limited and without the expansion required to serve potential development.

The main Killam centre has recently undergone major upgrades of equipment and power supply and distribution systems including 300kVA of uninterruptible power supply (UPS) and a separate main service increasing the system's security, and another UPS is planned to replace the one remaining original UPS. A planned energy retrofit in the near future will present the opportunity to harvest the heat load from the Centre to provide heat to the building. Some 70 to 80% of the space of the Data Centre is presently occupied, suggesting an additional capacity to accommodate 5-10 years of growth in IT systems. The trend is a move towards higher density and virtualized platforms which tend to reduce the space needs but increase power and heat densities. The Killam is 42 years old; the Data Centre in the Killam basement has experienced ground water penetration and a mitigation project is anticipated within the next two years; no reliability issues are apparent.



METRO FIBRE LOOP



EXISTING OPEN SPACE

Dalhousie is moving to a wireless ITS campus which should reduce issues related to wiring its many and diverse buildings. There is an educational sector trend towards “cloud computing” which is expected to slow the demand for more research clusters dedicated in these data centres. Another trend is to locate data centres in low profile areas of the campus for security reasons.

Dalhousie owns a roughly 10 km long fibre network loop extending through much of downtown Halifax and connecting to the University. This is a significant asset since in the future Dalhousie thereby enjoys the ability to locate its data centre anywhere on or near this network.

C.6 LANDSCAPE & OPENSACE

Although landscape planning has occurred for specific sites and building projects, there is a need for a clear program and design for a university wide open space system. The existing landscape can be characterized as a series of disparate spaces, courtyards, quads, playing fields and pockets of informal woods and planted areas. They vary in scale and function and an overall lack of clarity

and sense of place. Although the campus enjoys a number and variety of well planted incremental spaces, scarce budgets for maintenance have allowed walkways to deteriorate and surface drainage to fail in many locations.

Of particular concern, University Avenue with its wide landscaped boulevard and divided traffic flow effectively divides University properties into two sides rather than forming a unified institutional and civic experience for drivers and pedestrians alike. Further, this important urban thoroughfare lacks a consistent language of street furniture, lighting, materials, signage and plant material that is recognizable as a proper civic experience and gateway to the University.

The Plan provides ways of physically and visually linking these spaces through the implementation of common elements such as site furnishings, paving, planting, lighting, and way-finding to create an interconnected and cohesive system that will connect Dalhousie's three campuses into a single university environment and enhance the user's orientation, health, enjoyment and safety.

D DEVELOPMENT STRATEGIES

D.1 RENEWING UNIVERSITY AVENUE

There is general agreement among the public and the University that this landscaped public thoroughfare has been neglected as a unique opportunity for both the Urban Region and the University. People agree that it should be a significant avenue lined with impressive buildings and landscape, that it should serve as an institutional gateway particularly at its western terminus at the Studley Quad, and that it should allow for safe linear and cross movements of vehicles, pedestrians and bike riders alike. This Plan proposes a bold vision for achieving these principles as a guide to the collaborative leadership of the HRM, the hospitals and Dalhousie.

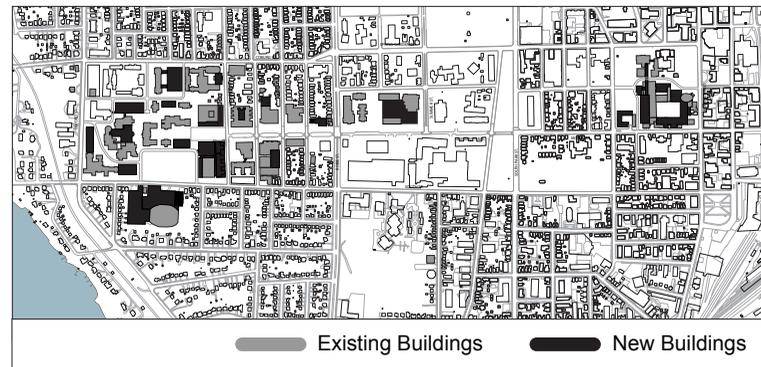
The plan envisions a renewed University Avenue that combines east and west traffic in one street along the south edge of the corridor, redesigning the narrowed pedestrian crosswalks for increased safety, increasing and enhancing the landscaped open space and providing safe alternative travel modes in the corridor including a separated bikeway and safe pedestrian walkway. The design provides for transit, parking and vehicular access to all properties facing the corridor and envisions a unique street furniture and lighting system to give special character to the avenue.

A well designed and landscaped corridor will require commitment and close collaboration between the University, the HRM and the other property owners facing onto the Avenue in planning, designing, engineering, funding, constructing and maintaining this renewed corridor.

D.2 INTENSIFICATION

Compact Campus Form

As Dalhousie adds to its facilities to meet its needs, it should logically do so by intensifying its existing campus rather than expanding its boundaries for a number of practical reasons: urban land is scarce and costly to acquire; Dalhousie's current land holdings are sufficient if efficiently used to expand its facilities by far more than its forecasted needs will require; building higher rather than wider offers significant operating as well as capital cost efficiencies; intensification enhances the pedestrian environment and allows for shorter travel distances between buildings in bad weather; a compact community of students and faculty make for a more vital and robust social environment; student and faculty



INTENSIFICATION

services (such as leisure, recreational, retail and academic) can be provided more efficiently and of higher quality when they serve larger (more dense) populations; intensification allows the University's adjacent neighbourhoods to evolve without the pressure of uncertain institutional expansion in ways that will also benefit university students and staff, such as provision of affordable student and staff housing, within walking distance of the university; intensification provides the greatest advantages to achieving environmental sustainability.

In Appendix A.2 the Plan analyses the capacity of the current University land holdings to accommodate additional building at reasonable densities, and concludes that there is ultimate development capacity far exceeding the University's growth expectation, and since this ultimate capacity is unlikely to ever be realized, the principle of Intensification proves feasible as well as desirable.

Build Within

While the campuses have very limited options for growing out, there are many benefits of planning to build up and within their present boundaries by three basic strategies:

- Redeveloping surface parking lots and underused building sites;
- In-filling and expanding existing buildings; and
- Improving and better using existing buildings through accelerated investment in deferred maintenance and increased space utilization.

D.3 REINVENTING CAMPUS IDENTITIES

Diverse Student Experiences

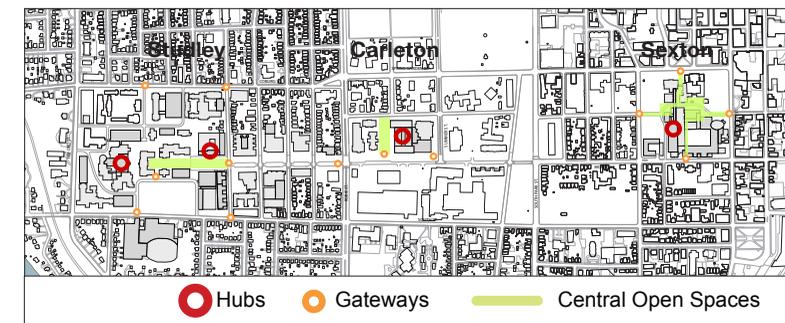
Notwithstanding the advantage of Dalhousie's location in the heart of a vibrant urban community, life on the campus itself should also be vibrant and diverse as a compact university community with centres of study, leisure, recreation and services. The Plan specifically identifies strategies for each campus that define gateways and central gathering spaces, and provides places that support student-focused social and study activities.

Defining Open Spaces and Campus Gateways

Each campus – Studley, Carleton and Sexton – is planned around a central open space intended to focus pedestrian movements and gatherings. The Studley Quad and the Carleton Common are planned as public gateways and identifiable landscape settings for the principal buildings that define them, and as such, these central open spaces should be designed and developed as part of adjacent capital building projects. The Sexton campus is organized around a central open space system linking the core of the campus with its four boundary streets: Spring Garden, Barrington, Morris and Queen; vehicle and/or pedestrian gateways to the campus occur in this open space from these boundary streets.

Learning Commons Hubs

The concept of "student-based learning" is emerging in post-secondary education as a powerful definer in transforming course delivery and academic space. In recent years the Killam has proven exemplary in its gradual transition from the traditional "information library" to a multi-faceted centre of learning resources, lounges and food services, and student and faculty services in support of independent study and social interaction. Here students will



CAMPUS IDENTITY

access information from a wide variety of digital and electronic means as well as from the printed word. The Plan envisions further improvements to the Killam and also identifies locations for three other such centres of informal study and leisure, in the LSC courtyard, at Carleton and at Sexton. Hubs will combine student-focused leisure, services and study resources and will be designed to foster social interaction and interdisciplinary group study supported by state-of-the-art information technology systems.

These two elements – the central open spaces and the Hubs - will define the ‘heart’ of each campus in ways that reflect the unique mix of their academic disciplines.

D.4 MAXIMIZING OPPORTUNITY

Achieving Overall Quality

The Plan provides a vision and framework for enhancing the campus and meeting its complex needs, not only by implementing incremental projects but also by ensuring that the quality of each project contributes to the quality of the University as a whole. This requires a dedication to ensuring that each project gives attention to the full range of factors that make up the campus environment: functionality, efficiency, sustainability, design quality, and attention to long term as well as immediate implications for and benefits to the University and the community. While each building project is designed to meet specific purposes and functional programs, it must also be designed to serve the general university population, for example, by providing ground floor transparency and accessibility to lobbies, services and gathering places open to the entire university community.

Design Excellence

The Plan is meant to guide each future building project as recognition of the University’s determination, investment and ability to exemplify significant institutional planning and design, in terms of aesthetics, function and sustainability, as symbols of Dalhousie’s leadership and responsibility to present and future generations.

Sustainability

Dalhousie’s commitment to both academic and administrative sustainability policies and programs is a significant demonstration of leadership and vision. The intent of the Plan is to provide focus and clear guidelines for how future physical development of the University will contribute to its sustainability objectives and how each capital project undertaken becomes an opportunity for publicly demonstrating sustainable initiatives of significance.

In support of the University’s broad sustainability initiative, the Plan focuses on five key areas where future physical development can demonstrate tangible investment and commitment to the University’s sustainability objectives:

- Long-term energy security aimed at leading a collaborative initiative to develop alternative energy sources that reduce dependency on carbon-based fuels and pollution;
- Enhancement of campus open space by promoting the biodiversity of natural environments that also provide pedestrian buffers against pollution and severe weather;
- Achieving excellence in building standards for new and renovated buildings and utilities, aimed at maximizing energy and space efficiency and demonstrating alternative energy-efficient systems (for example, solar collector systems detailed in Appendix A.5 on south facing buildings including the proposed Killam expansion and Tupper towers, and roof surfaces on the LeMarchant Mixed-use Building and the IDEA Building);
- Adopting a Multi-Year Transportation Demand Management (TDM) strategy that gradually reduces automobile dependency and provides attractive pedestrian and transit travel options.
- Increasing the utilization of existing university space to reduce the need for building new, by such means as centralized space management and scheduling, retrofit investments and value-added deferred maintenance that meet sustainability standards.

Flexibility, Mixed-Use and Space Utilization

Historically, university campuses have been vibrant, pedestrian scaled, mixed-use communities of scholars, defined by street level access to widely used services such as dining, lounges, recreation and learning resources, book stores and galleries; often with academic class rooms and offices above; and student residences above that. The vitality and efficiency of such forms are clear: safety



MIXED-USE EXAMPLE

and pleasure of more “eyes on the street” (and in the corridor) and more opportunity for spontaneous socializing as well as optimizing use of the space resource. Modern trends however tend to dedicate campus buildings to single departmental or administrative use, resulting in inefficiencies due to buildings being idle at certain hours or seasons, duplication of spaces due to users’ reluctance to share, and operational resources required to maintain spaces for full use even when they are vacant or underused. The intent of the Plan is to reinvent a typically urban mixed use model of pedestrian oriented activity at ground level and transparent from the street, with offices and instructional spaces above, and residential above that. This approach not only applies to new campus buildings but to redevelopment of existing buildings. No longer should campus buildings be designed as single purpose facilities, rather, the University should see each project as an opportunity to accommodate a variety of space uses. The Plan envisions a fundamental shift to developing and retrofitting buildings that can accommodate multiple uses, both to correct deficiencies and be capable of efficient modification dictated by changes in function and technological advances. Examples of underutilized spaces that have capacity for more intensive multiple uses are Memorial Arena, Sexton Gym, residence dining halls, McCain’s central courtyard, Wickwire Field and the SUB.

D.5 STRENGTHENING COMMUNITY

Dalhousie coexists as an urban university with its residential neighbours and its regional environs. The advantages most certainly outweigh the issues that complicate co-existence: student surveys illuminate the attraction of a nearby vibrant downtown; stable property values and access to university facilities benefit neighbours; the Region welcomes the nation’s attention to a world-class university in its midst. The challenge for Dalhousie is to meet the community’s expectations of partnering to address mutual urban issues and of leading by example in excellence of building and civic design.

The Plan is influenced by the potential for the University, the neighbourhoods and the Region working collaboratively to continually improve upon the shared environment and take advantage of the potential resources they represent: expanded services and residential opportunities within walking distance of the campus, shared secure energy sources, public access to advanced health services, employment opportunities, shared recreation and cultural facilities, the list seems endless. The Plan envisions new strategies and mechanisms for joint consultations and actions that

ensure transparency and optimum sharing of resources to achieve the benefits of urban interdependence, specifically

- Greater shared resources devoted to affording and improving recreational facilities,
- Attention to improved area transit services and an improved joint system for offering rental housing to the university community,
- On-going review of neighbourhood and campus planning,
- Provision of more day care, and
- Broader public programs for life-long learning.

D.6 SETTING PRIORITIES

The Framework Plan will serve as the University’s overall development policy that will guide priority-setting, capital budgeting and project development. An institutional strategy for setting priorities and phasing of campus development projects will require thorough examination and adherence to choice criteria: need for the project, importance of the project to the university, opportunity (in particular, available funding), and sequencing of projects that depend upon one another. These criteria require balance according to opportunities and obstacles at any point in time.

In terms of need, priorities include phased development of the Health Science campus at Carleton (Phase One - building the Inter-professional Health Education Building and renovating the Tupper

Link – is underway); the Learning Commons Hubs (underway) and Killam expansion; the Mixed-Use/Student Residence Building on LeMarchant Street (underway); and investments in the annual Deferred Maintenance program. The Addition and renovation of Dalplex is needed but requires replacement of the Eliza Richie residence units before commencing.

In terms of importance to the University, particular focus should also be given to the University Avenue Renewal Project that will provide enhanced gateways to the University. Other Studley projects will also be of importance, such as completing the Upper Quad with a new building on the last available site, and finishing the landscaping of the Lower Quad in front of the Killam.

E MOVEMENT SYSTEMS

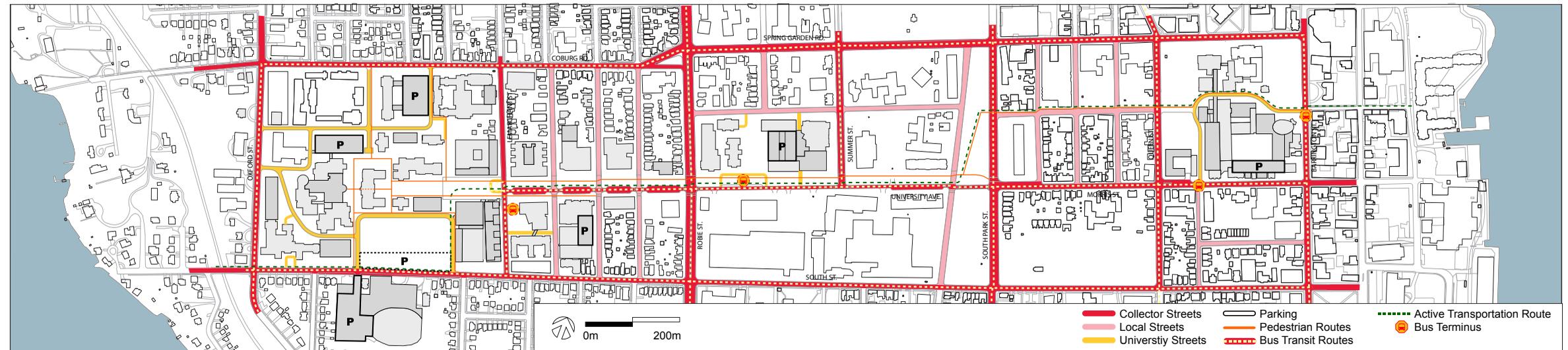
E.1 ACTIVE TRANSPORTATION NETWORKS

These are networks of other-than motorized vehicular movement: pedestrian, transit, skateboard, bicycle, etc. Pedestrian networks are defined by ‘indoor’ and ‘outdoor’ and include special attention to providing safe crosswalks at intersections with other modes of movement; transit can either be public (i.e. operated by HRM Metro) or private (e.g. University shuttle); movement such as bikes, skateboards and in-line skates require separation from vehicular and pedestrian movements to ensure safety. The Plan for Active

Transportation Networks contributes to the broader HRM network for the region by designating a continuous route through the campus connecting the Halifax Harbour with the Northwest Arm.

E.2 TRANSIT

Bus services within as well as to-from the university play a key role in active transportation and the reduction of automobile traffic. While the campus and adjacent neighbourhoods are currently served by east-west bus routes along Coburg Road and South Street, increased public as well as university demand between the campuses is anticipated over time, particularly along University Avenue with convenient stops at the Studley Quad, the Carleton gateway and at the western gateway to Sexton. A new transit route along University Avenue as envisioned by HRM would be of significant service to students and staff moving between campuses as well as commuters to the University; stops at each campus Hub could be weather-protected and the bus might loop through the Lower Quad at Studley with stops at the Killam Library and the new LeMarchant Mixed-use building. Failing a public service, a university operated shuttle bus should be initiated. Presumably the hospitals would also benefit from partnering with the University in promoting this shuttle.



PROPOSED TRANSPORTATION NETWORKS

E.3 STREET NETWORKS

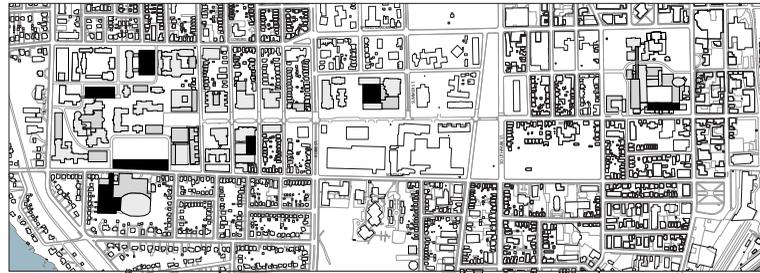
The present network of municipal collector and local streets serving Dalhousie is not expected to change. Within the campuses, the Plan identifies modifications that will have benefits for the Studley and Sexton campuses:

- The planned terminus of University Avenue on the Studley campus includes options for guest automobiles, taxis and buses to continue into a loop lane around the Lower Quad within the University's controlled discretion, providing flexibility to accommodate a variety of possible purposes including drop-offs, limited parking, bus services to the doors of adjacent buildings, and access for special events such as assembling for guest tours or convocation gatherings;
- Realignment and up-grading of the one-way Alumni Crescent loop street will provide important benefits: a proper gateway to the campus from South Street with enhanced lighting and identification; a proper guest drop-off and parking area between the Henry Hicks and University Club buildings and an improved pedestrian entrance to the Upper Quad; direct access and drop-off to the Memorial Arena team rooms by buses and automobiles; and improvements and additions to the spectator seating on the north side of the play field;
- A vehicular drop-off and Gateway to the Carleton campus is planned along the renewed University Avenue, providing convenience for both public going to the Dental Clinic and the future expanded Tupper Complex;
- A new limited access service lane is planned through the Sexton campus from Morris Street through to the eastern Barrington Street Gateway.

E.4 PARKING

Even as university populations grow, urban campuses tend to experience gradual decline in demand for parking as transportation options improve and costs of operating private vehicles increase. This trend is complemented by increasing costs of providing campus parking (typically passed on to users) and reduction in municipal parking requirements as public policies shift from ensuring supply to encouraging reduction in demand (regrettably, HRM continues to press Dalhousie to increase its parking supply commensurate with enrolment increase, however this policy is expected to change with greater public sensitivity to sustainability considerations). Typically, university policies do not dictate decreases in parking, but rather support TDM measures that foster reduced parking demand, both by the university community and the visiting public.

The Plan envisions a strategy of concentrating the supply of campus parking in larger, more efficient structured facilities at fewer locations, thus reducing the problems of searching and freeing underutilized land now used for surface parking. This strategy can result in increased



PARKING

operational efficiencies (maintenance and enforcement), increased campus open space and future opportunities for in-fill building sites. The University is cautioned however, not to overbuild parking structures in recognition of trends that may see reduced demand over time. These concentrated parking facilities will need to be conveniently located and provide an appropriate balance of reserved, public and disabled parking spaces.

E.5 TRAFFIC DEMAND MANAGEMENT (TDM)

In 2005 Environment Canada defined TDM as “the integrated approach to transportation planning that focuses on improving the efficiency of the existing transportation infrastructure and increasing the sustainability of the network through the management of transportation demand and modal integration...supports the policies and tools that result in a sustainable transportation system such as land use planning, parking policies sustainable site design and focused programs that seek to maximize the livability of a community through encouraging behaviour change.”

An integral part of the Plan is a Multi-Year TDM program aimed at increasing alternative transportation movements including public transit and reducing the need for (and volume of) private automobile trips within and to-from the campus. The long term advantages for the University community are:

- Freeing valuable land for development of more essential institutional purposes,
- Improving air quality,
- Reducing campus and neighbourhood traffic,
- Reducing travel costs and increasing convenience,
- Enhancing pedestrian safety and enjoyment.

A recommended multi-year TDM Implementation Program is outlined in Appendix A.1.

F UNIVERSITY RENEWAL

F.1 RENEWAL CONCEPT

The Challenge

University Avenue and its connections to Morris Street and Clyde Street form the major civic open spaces connecting the three Dalhousie campuses. While University Avenue functions as a transportation and parking corridor, it has become a major concern to the university community and dysfunctional as a public open space for pedestrians. There are functional and design challenges that need to be met in re-designing this corridor, including issues of property access, public ownership and maintenance responsibilities, access to below-grade public utilities, traffic flows and pedestrian cross walk safety. It is a system that needs to be re-designed in an integrated manner that balances aesthetics with function, vehicles and parking with pedestrian movement, hard surface with soft landscape. With respect to the overall appearance of the corridor, the space needs to be re-designed as one overall composition, accounting for a cross-section from building face to building face, with a coordinated approach for the entire length of the public and private realm.

The Concept

University Avenue is currently four lanes of traffic divided by a central treed boulevard. The Plan envisions combining vehicular traffic and street parking to a standard two-way thoroughfare on the south side of the corridor and creating open space and a separated active transportation corridor for bikes and pedestrians to the north (i.e. on the sunnier side of the street). An advantage of combining the traffic in one right-of-way is a reduced and safer pedestrian cross-walk (literally reducing the walking distance across university avenue by two-thirds). Thus in order to improve and rationalize vehicular, pedestrian and cyclist circulation and connect the three campuses with a renewed civic landscaped open space, the Plan proposes to:

- Realign two-way traffic to the south side of the existing treed boulevard;
- Add dedicated drop-offs and on-street parking on both sides of the street at strategic locations;
- Retain and expand the central treed green space to the north of the traffic lanes;
- Create pedestrian and bike corridors along the north side of the corridor,;
- Create identifiable paved 2-way intersections at road crossings for pedestrian safety;
- Maintain the private driveway access points along the active transit way to ensure adequate access to all facing properties.

The Potential Benefits

Renewing University Avenue offers a unique collaborative opportunity for Dalhousie, HRM, other institutions and the community in refining and implementing this concept, resulting in key civic benefits:

- Spatial connections between the three campuses contributing to the overall quality of moving within or by the University;
- Demonstrates Dalhousie’s commitment to sustainability by creating an improved pedestrian environment that promotes a healthy lifestyle and is in keeping with regional objectives of the Regional Active Transportation Plan;
- Provides opportunities to improve university and community relations by making public space improvements that benefit both the campus and the neighbourhoods;
- Showcases Dalhousie programs and commitment to public education and research by creating a themed public space corridor with opportunities for study, socialization, art, sculpture, public education, recreation and exposure to Dalhousie’s major professional buildings.

F.2 FOUR CORRIDOR STREETSCAPE COMPONENTS

1. Vehicular Travel Way

Two-way vehicular traffic, dedicated on-street parking and passenger drop-offs would be located in the south portion of the corridor;

2. Central University Green

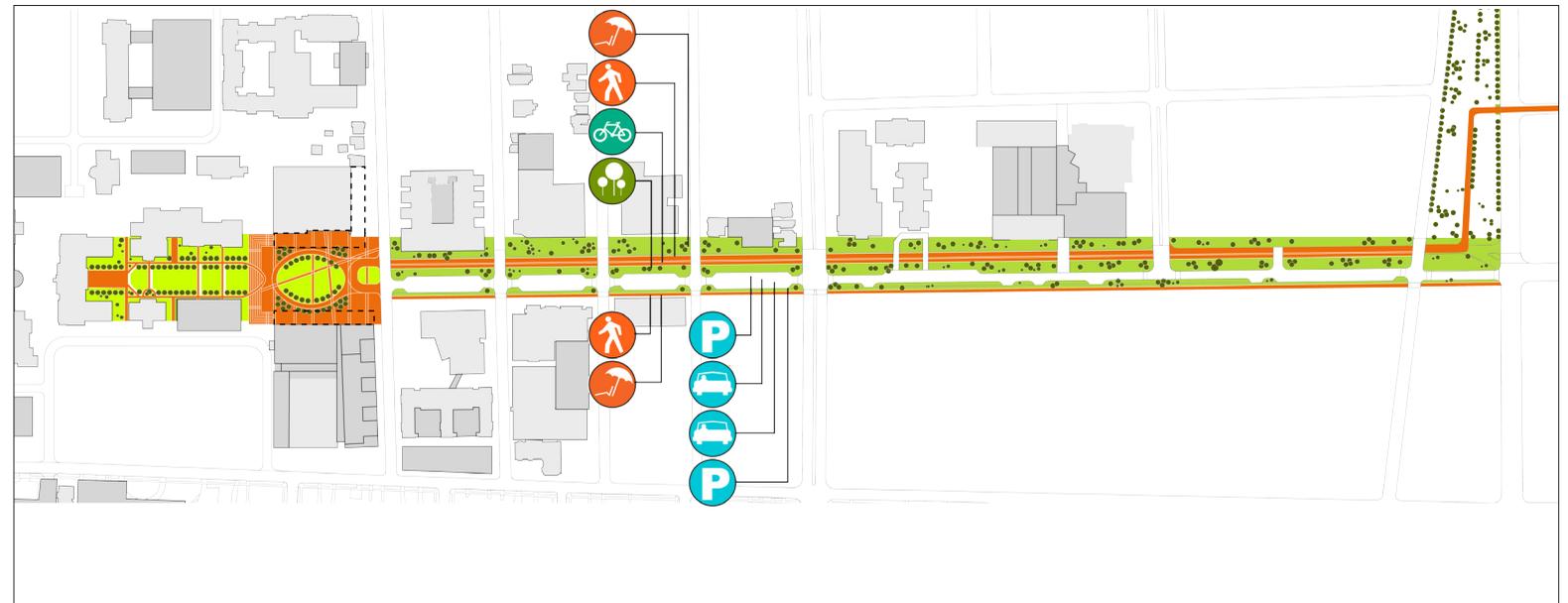
The existing green corridor is located down the centre of University Avenue and would be retained and enhanced;

3. Active Transportation Corridor

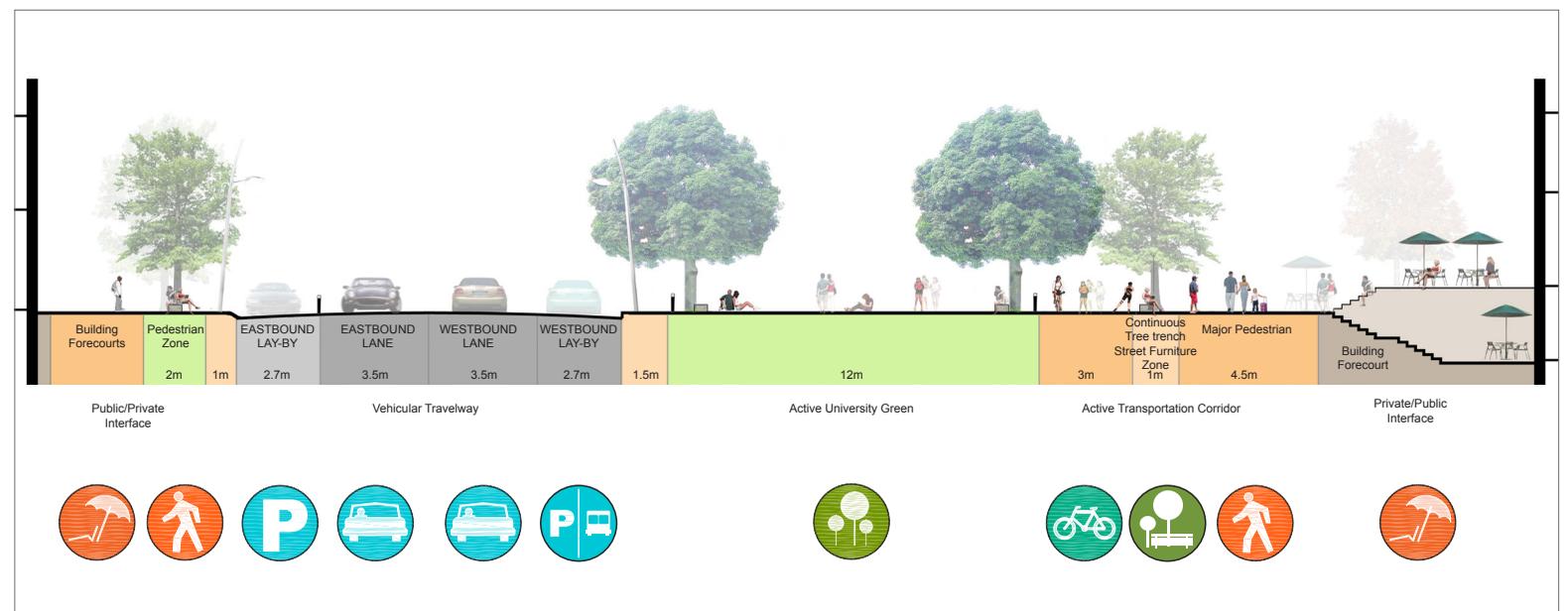
This component applies to the dedicated travel way that would run parallel to the vehicular traffic lanes and central green, reserved for pedestrians, cyclists, scooters, in-line skaters and skateboarders; and

4. Private/Public Realm and Building Forecourts

The private space that extends from the building face to the public right-of-way must be designed in such a way that it seamlessly blends with the design of the corridor’s public realm. The physical space extending from building face to building face crossing the corridor should read as one continuous, consistent outdoor aesthetic.



CONCEPTUAL UNIVERSITY AVENUE RENEWAL PLAN



ILLUSTRATIVE CROSS SECTION OF RENEWED UNIVERSITY AVENUE

G LANDSCAPE & OPEN SPACE

G.1 THE OPPORTUNITY

The Landscape Plan offers a new vision for an integrated and connected university-wide open space that reflects Dalhousie's commitment to sustainability and to fostering a healthy and active community lifestyle. The open space system builds upon the history of the campus, its growth over time, and its character as it has become knit into the fabric of the surrounding environs. The Plan further envisions a landscape that connects the University's three campuses – Studley, Carleton and Sexton. Although each of the three campuses has its own distinct character and landscape, the Plan envisions a common thread – the landscape and open space system that physically links and symbolically connects the University as a whole and becomes part of civic landscape.

G.2 COMMON GUIDING PRINCIPLES

The existing campus lacks coherence and legibility as an overall connected landscape. As the campus continues to grow, it is critical that the guiding principles help physically and visually re-unite the overall campus. Guidelines are provided in Section J for designing the landscape and open space system aimed at creating a comprehensive and integrated network of space that serves the adjacent buildings, the campus identities, the overall university open space environment and the community.

- Create visual and physical connections between buildings that are campus wide, and re-unite Dalhousie University as one complete campus;
- Create a clear and comprehensive pedestrian and open space network that supports healthy, active transportation corridors and gives priority to pedestrian orientation, comfort, safety and accessibility;
- Create a hierarchy of landscapes and formal open spaces within the entire campus, where the landscape has a clear role and responsibility to its adjacent buildings;
- Enrich the overall quality of the landscape throughout the campus, by encouraging excellence in design and giving importance to the landscape adjacent to every new development site;
- Enhance the natural environment by improving the quality of the open space systems located between the buildings;
- Encourage sustainable landscapes and open space planning that supports the principles of biodiversity and 'LEED for Neighbourhood Development' including protecting the surrounding ecosystem and respecting the environmental values of Dalhousie University;

- Treat the landscape and open space system as part of the infrastructure of the campus, by planning for proper maintenance, replacement, and planning accordingly for future growth;
- Design the public realm as “all space between buildings”, and take an integrated approach that ensures coordination between vehicles, transit, cyclists and pedestrians;
- Contribute to the campus' “green infrastructure” and urban ecology by planting trees and shrubs. This will help regulate climate, control storm water runoff, cleanse air and water, and provide habitat.
- Ensure that the landscape and open space system is designed to address microclimatic conditions for year round comfort. Sidewalks should be generous and well drained, and wherever possible, should offer weather protection;
- Strive for quality and character in paving materials, site furnishings, signage, and plant material.
- Integrate public art;
- Contribute to important vistas and linkages;
- Wayfinding signage should be integrated into the landscape and open space design, and should be a part of an overall comprehensive signage program; and
- Servicing, parking and loading areas and utility boxes should be properly screened with landscape or an architectural feature. On new buildings, these functions should be located away from the major entrances and clear of prime pedestrian routes

G.3 GATEWAYS AND TRANSITIONS

University and campus identity and way-finding are particularly challenging when considering the variety of purposes and occasions when clarity is needed. The Plan locates pedestrian and vehicle “gateways” to the campuses located at transitional crossroads where the City and the campus meet. These gateways are meant to both welcome and orient visitors, each well marked with the university's standard thematic signage and way-finding campus map. Throughout the campus, easily readable way-finding campus maps, mounted on durable standards, serve not only to orient but also to inform the visitor and offer a positive first impression. Primary gateways are sited at each campus as significant points of entry from major thoroughfares, and may also be marked by major campus open spaces, public art and planting features in addition to the standard signage and maps.

G.4 UNIQUE SPACES

Dalhousie is dotted with unique pockets of existing vegetation in a variety of shapes and sizes, characters and qualities: some are heavily wooded, others containing a variety of unique native plant and tree species, some attract birds, insects and amphibians. Some of the spaces are simply popular pedestrian circulation routes or places for pause, and yet others have significant potential in adding to the overall landscape due to plant maturity and years of growth if renewed. Landscape design attention needs to focus on these unique spaces as part of an overall campus open space improvement program.

G.5 SPACES BETWEEN

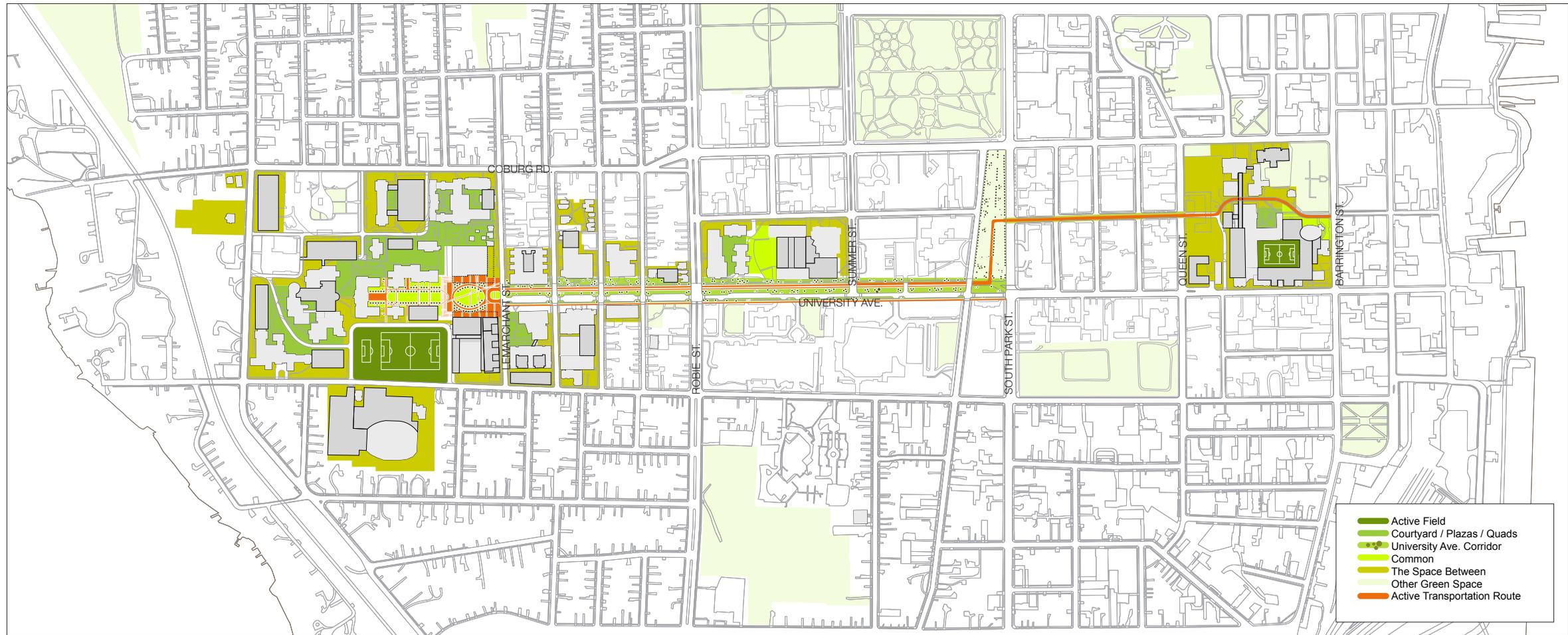
The term “spaces between” refers to somewhat leftover open spaces typically located between buildings. Often these interstitial spaces remain without design intention as remnants, yet they can play important roles in enhancing the overall quality and continuity of the campus, often as pedestrian links between spaces and buildings and as places of potential beauty, pause and inclement weather protection. These spaces should be designed as part of the design and maintenance of adjacent buildings and should be given due attention in improving the overall quality of the campus landscape.

G.6 ATHLETIC FIELDS

Dalhousie has two fields for active athletics. Wickwire Field on the Studley campus is sized to accommodate regulation soccer and is used extensively by both the University and the public in season; currently it is not covered for winter use. A smaller playing field on the Sexton campus is popular with students for informal seasonal field athletics and recreation.

The Plan identifies opportunities for significant changes to traffic circulation, parking and athletic facilities improvements affecting Wickwire Field including:

- An improved Alumni Crescent realigned to serve a new Memorial Arena addition and to better serve traffic circulation, drop-off points and the field's playing dimensions;
- A future opportunity for marginally raising the elevation of the playing field to allow a parking structure to be constructed under the south portion of the playing field parallel to South Street; this would support the concept of concentrating parking in larger lots with direct access to major streets;
- Potential future removable air suspended cover over the field to allow use during the busy 5-6 month winter season.



LANDSCAPE PLAN

G.7 CAMPUS OPEN SPACE SYSTEMS

For each campus, the Plan focuses on the major open spaces that characterize and orient that campus: the Studley Quad, the Carleton Commons and the connecting landscaped spaces at Sexton that define its downtown urban character. In each case, these major open spaces serve as landscaped activity places and points of orientation around which major buildings are located, and they serve as pedestrian thoroughfares and cross-roads of movement between major buildings. These open spaces should

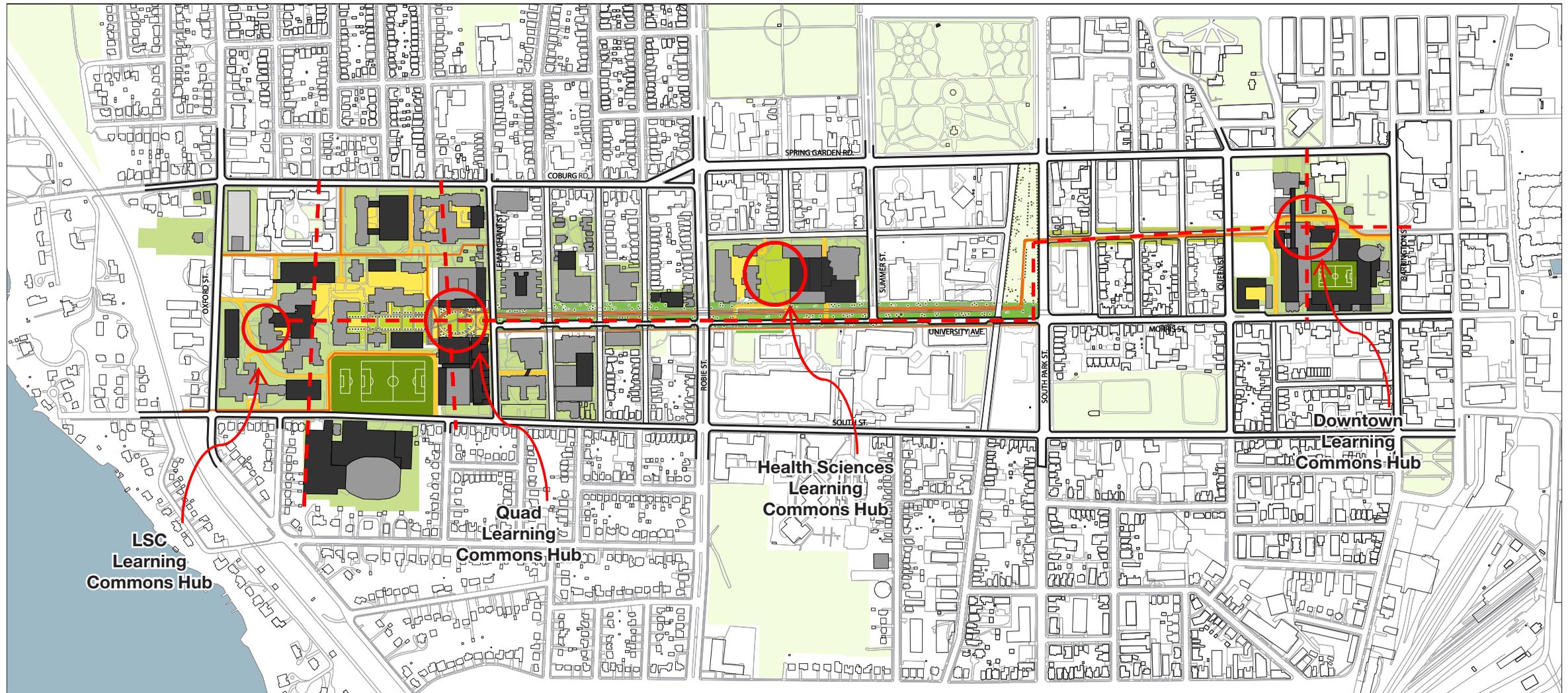
be thoughtfully designed for the many activities and functions they can accommodate and for the campus design setting they are intended to provide. In addition to University-wide landscape design principles in Section J.2, Section J.3 provides guiding design principles unique to each campus in recognition of open space qualities that characterize each campus.

H CAMPUS CONCEPT PLANS

H.1 UNIVERSITY FRAMEWORK PLAN



EXISTING UNIVERSITY CAMPUS



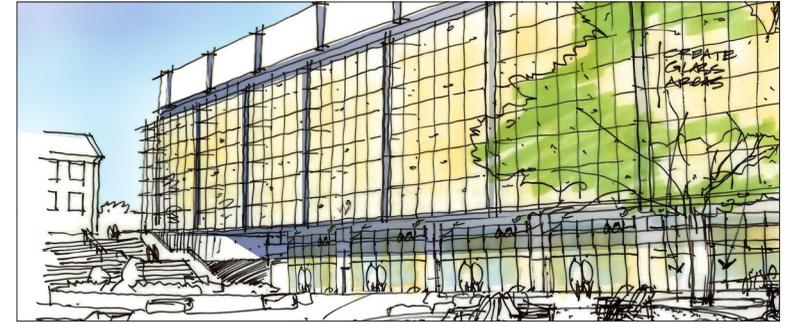
H.2 STUDLEY CAMPUS

Creating Focus and Gateway

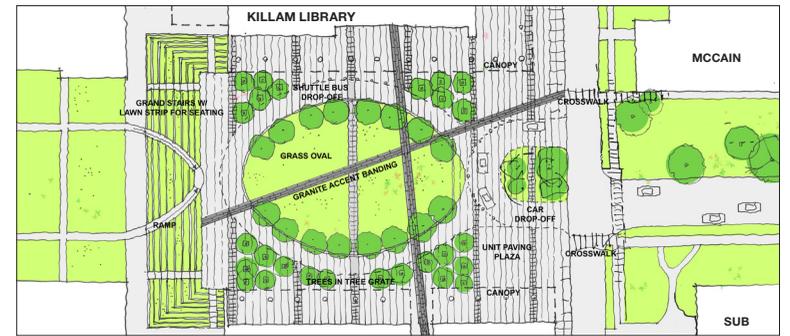
The Plan for the Studley Campus is driven by principles of intensification and focus on completing the Quad as the heart of the campus. The Plan is meant to guide the incremental capital projects that will occur over time to contribute to these principles, leading to a cohesive campus environment that enhances and enlivens student life and promotes design quality, efficiency and sustainability. As the western terminus of the renewed University Avenue, the Lower Quad is planned as a major welcoming gateway to Dalhousie both visually and functionally. This space will serve a variety of functions, therefore it is designed for flexibility. For example, vehicular access will be controlled by removable bollards such that various activities can be accommodated: tour buses, visitor parking, drop-offs, etc. Likewise surface materials, lighting and street furniture all need to be specially selected with various functions in mind from formal assemblies to daily pedestrian circulation.

In-fill projects are noted on the Studley Campus map opposite, and priority projects are numbered:

- | | |
|---|--------------------------------|
| 1. LeMarchant Street mixed-used residence, and addition to Memorial Arena | 5. SUB upgrade |
| 2. Lower Quad | 6. Arts Centre Addition |
| 3. Killam Library Addition | 7. LSC Hub |
| 4. Dalplex Addition and renovation | 8. Multi-use Research Building |
| | 9. Multi-use Academic Building |



KILLAM RENEWAL



LOWER QUAD DESIGN CONCEPT



VIEW FROM LE MARCHANT STREET



PERSPECTIVE VIEW



H.3 HEALTH SCIENCES AT THE CARLETON CAMPUS

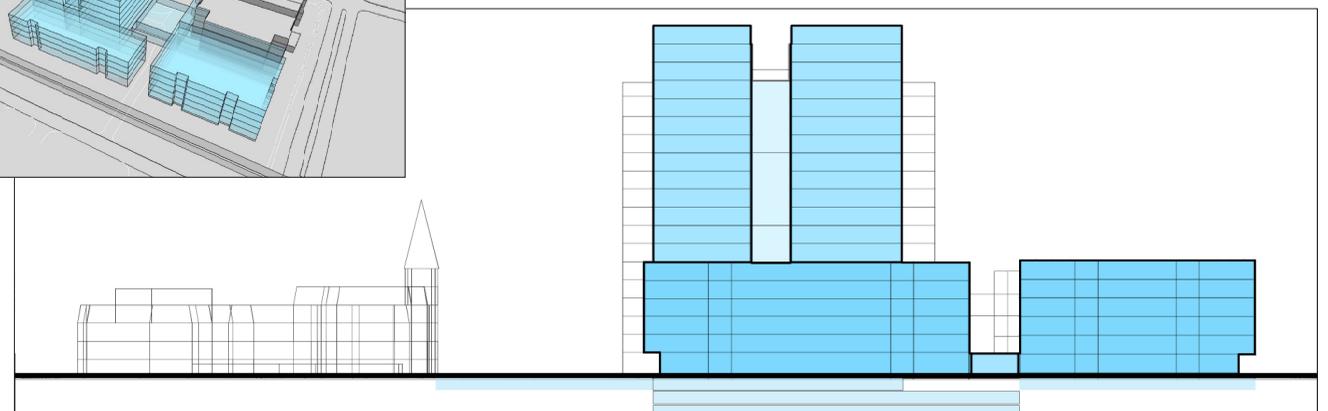
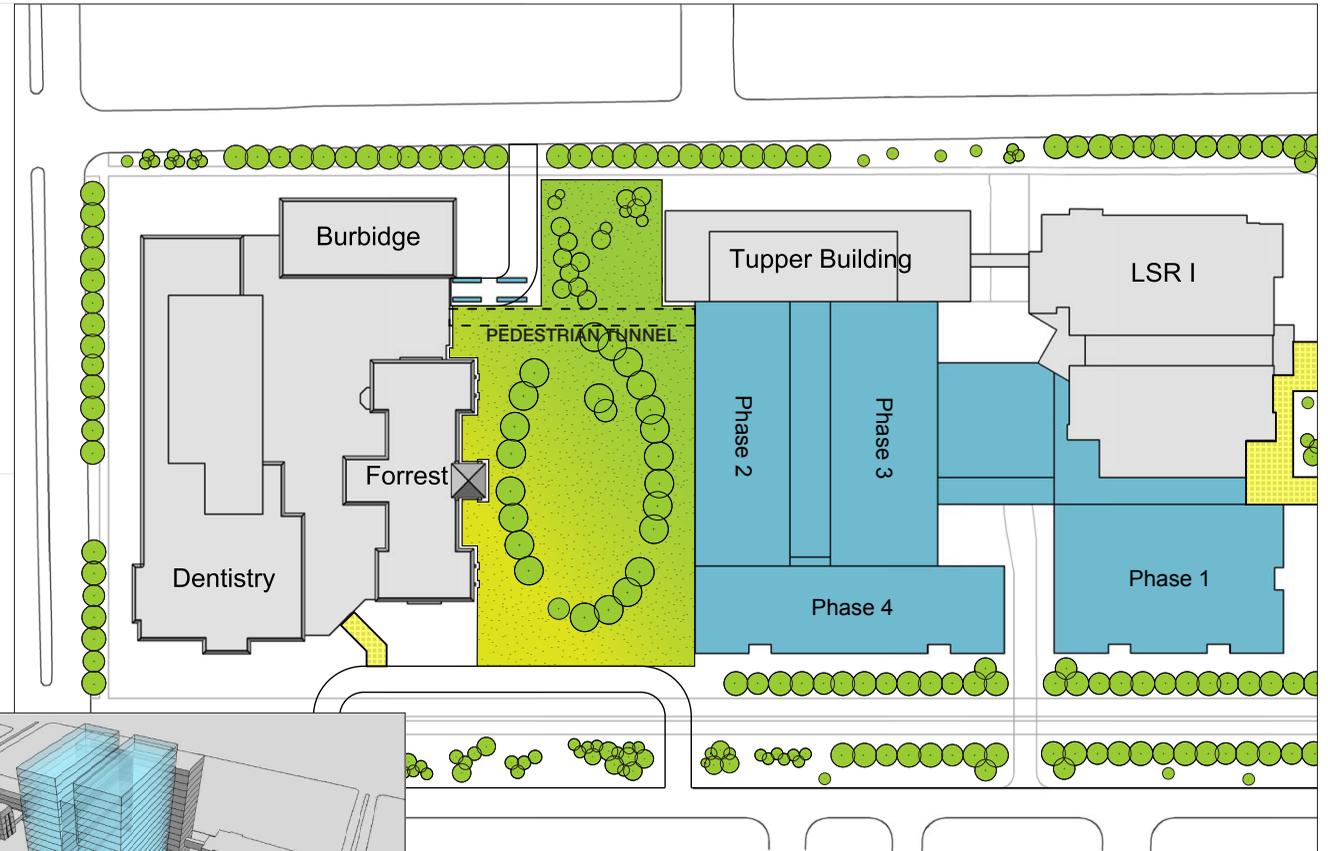
Priority Expansion and Limited Site

The health sciences are continually under pressure to expand and adjust their professional programs, research and service, driven by local demand, government policy, changing technologies and an expanding knowledge base. As a matter of priority, Dalhousie must plan to support future requirements for more and different facilities to serve the health science Faculties of Medicine, Dentistry and Health Professions in ways which are flexible and state-of-the-art, and foster professional integration and relationship with the region's hospitals. This expansion over the next 10 years is expected to be in the order of 300,000 gsf, to occur within the limitations of the existing campus block.

Phased Development Plan

With general community and HRM support, the Plan envisions this development taking place in four phases, comprising:

1. 6-storey Inter-professional Health Education Building at the corner of University Avenue and Summer with a pedestrian bridge connection to the Tupper Link and a below-grade pedestrian connection from the Dentistry, Burbidge and Forrest buildings;
2. The first of two 17-20 storey towers over the existing parking garage and connected to the existing service area;
3. The second 17-20 storey tower replacing the Tupper Link, a core atrium connecting the new towers to the Tupper and completion of the expanded underground parking garage and service area;
4. 6-storey replacement of the CRC Building, if required in the future.



CARLETON CAMPUS PLAN AND SECTION

H.4 SEXTON CAMPUS IN THE DOWNTOWN

Future Potential

As Dalhousie's future unfolds, the Sexton campus will offer two strategic development opportunities by virtue of (1) having a significant physical presence in the downtown core of Halifax, and (2) having a supply of land in the dense core upon which to expand, thus relieving further development pressures particularly at the Studley campus.

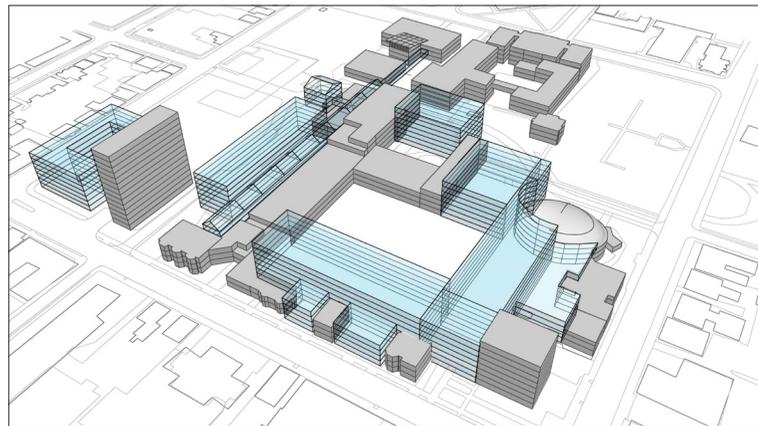
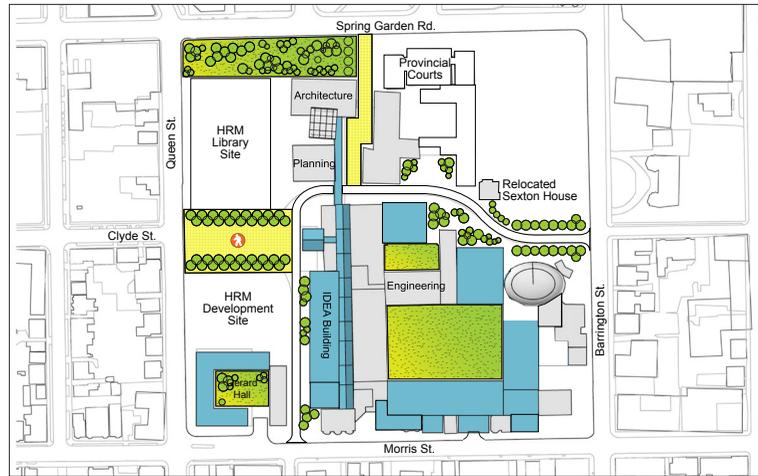
The plan anticipates future shifts in program location to Sexton where those programs can particularly benefit from proximity to other activities located in the core, for example, commerce and management, finance, law, computer science, social services, performance arts, and public administration, as well as research, continuing and executive education and professional conferencing.

Plan Response

The Plan for Sexton is aimed at maintaining Dalhousie's future options: the planning strategy is (1) to concentrate development needed in the foreseeable future to the centre of the campus, leaving development of the edges flexible to address future opportunities, and (2) to identify future development sites that have particular advantages of exposure and access to main thoroughfares for potential future development – either by Dalhousie alone or jointly with other public or private sector partners. This applies to future development of lands Dalhousie currently holds as well as sites that in the future might be acquired or developed jointly, including the present Provincial Courts property on Spring Garden Road.

The highest priority capital project for the Sexton campus is the proposed IDEA Building, critical to supporting the existing engineering departments located in the core of the campus, providing at grade materials labs and loading facilities and flexible labs and class rooms above for use by all of the engineering and design disciplines located at Sexton. A weather protected pedestrian bridge and “learning corridor” link these various academic units to encourage interdisciplinary activity.

The Plan also provides for a limited volume university lane through the campus allowing pedestrian and vehicle access to its buildings from Barrington and Morris. Major pedestrian entries are also sited at mid-block locations from Spring Garden and Queen, the latter through a public park at Clyde proposed in the HRM Public Lands Plan.



SEXTON CAMPUS PLAN



LEARNING COMMONS CORRIDOR



IDEA BUILDING VIEW FROM THE EAST

I STUDENT LIFE FACILITIES

I.1 LEARNING COMMONS HUBS

Hub Concept at Dalhousie

Post secondary education is facing new trends and universities are challenged by an evolving array of external forces, including advances in technology, emerging new user needs, increasing demands for real-world learning environments and a compelling wave of 'digital literacy' among today's students. "Learning Hubs" are emerging in universities throughout the world as a design concept that fosters interdisciplinary and group study beyond the class room by providing concentrated and highly interactive learning environments not restricted by subject boundaries, a single learning style, or fixed body of information, but rather allows students to communicate ideas, concepts, and arguments using a variety of mediums.

The Plan envisions creating four Learning Commons Hubs across the campus to address the changing nature of education and encourage idea exchange and socialization among students from various academic disciplines. Hubs will be located at the LSC, the Killam Library, at Carleton and at Sexton.

The four Learning Commons Hubs will be different in design but with a common philosophy. They will serve as the lobby entrance to their respective campus buildings as places of social and study gathering and mixing. They will be modern, attractive and flexible learning environments and information centres that provide access to a wide range of opportunities and accommodate different styles of learning. They should efficiently combine the provision of state-of-the-art multimedia technology with traditional information resources and support. Depending on the location, specific services and functions should be tailored to reflect the unique characteristics and culture of each campus location and academic disciplines represented while still providing a common set of services and facilities. Each Hub should be located adjacent to library and student service resources. The essential characteristics of all the Hubs will be concentrated resources, innovative technologies, social synergies and maximum flexibility.

LSC Hub

The Life Sciences Centre on the Studley campus is a complex of four departments (Psychology, Biology, Earth Sciences and Oceanography) with a weather protected link to Chemistry and the

Henry Hicks Administration Building. The LSC complex is joined by an open space courtyard with central student activity space below. The new multi-level LSC Hub is proposed to be located in this underutilized courtyard space, connected by major corridors to each of the three departmental buildings and, at ground level, will become the major entrance lobby for the LSC, thereby providing the central facility for fostering interdisciplinary science studies and student social interaction.

Killam Hub

In recent years the atrium of the Killam has been transformed into a popular lobby and student gathering place, with snack bars, lounge and informal study connected to ground computer labs, the main library service desk, student services and the Centre for Learning and Teaching. The Killam now needs additional space to accommodate Hub facilities and expansion of its library resources. The Killam would be extended along its south and east sides with glass walls replacing its present (and deteriorating) masonry panels, resulting in transparent exposure, solar collection potential and controlled natural day light penetration. With expansion space added, the Plan envisions this lobby space up-dated to include the central help and information desk extending to related ground floor high tech group study spaces and computer labs.

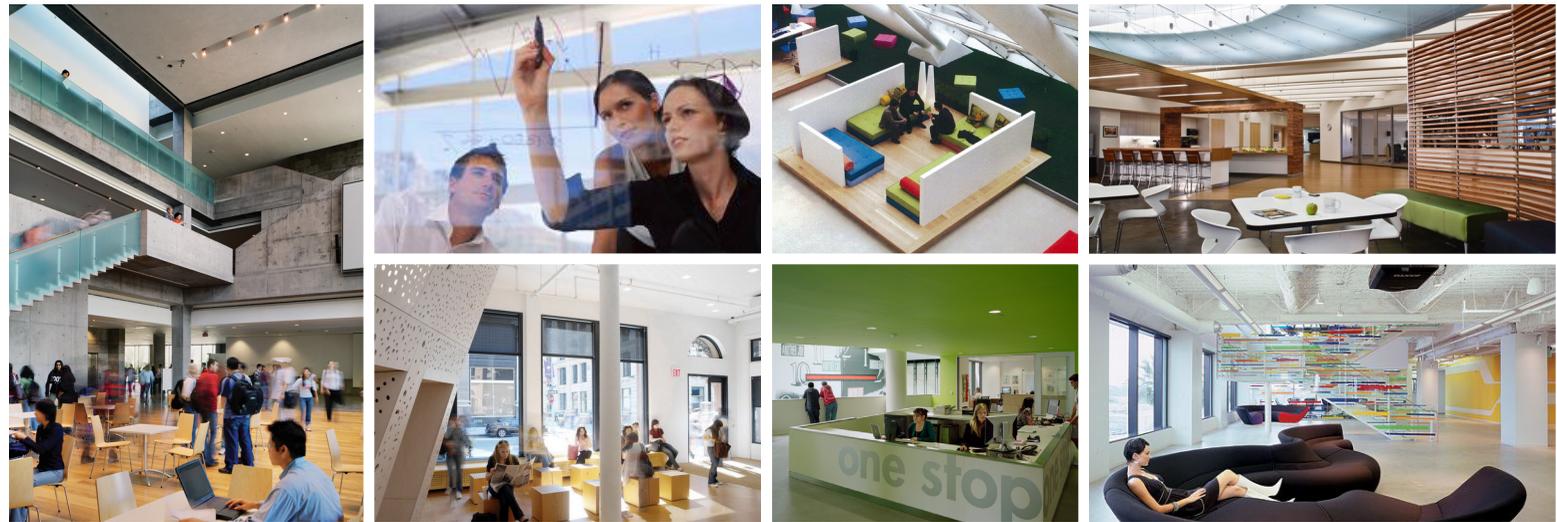
Once completed, the LSC and Killam Hubs will be connected by an existing continuous weather protected pedestrian corridor, with similar links to Chase and Henry Hicks.

Carleton Hub

The academic principle driving the Carleton Hub as defined by the health sciences faculties is to foster professional integration by providing an attractive central gathering place for student study, leisure and support services. Initially this Hub will be located in modernized space in the Tupper Link together with new video-conferencing labs, and ultimately relocated to the ground level entrance lobby in the future towers connecting to the Tupper, along with the central health sciences library to become a combined learning resource centre for the campus. The Plan includes weather protected pedestrian connections from the other campus buildings to the hub.

Sexton Hub

This Hub is planned as a "learning corridor" linking existing faculties of architecture, planning and engineering and focusing on the proposed IDEA Building as a shared multi-disciplinary facility of labs, class rooms, workshops and offices. The major "spine" of this facility will be the Hub, a linear pedestrian continuum of lounges, high tech group study spaces, information kiosks and exhibit and gathering spaces.



HUB EXAMPLES

I.2 STUDENT UNION BUILDING

The SUB symbolizes a strong commitment by the University to the Student Union. In the future, as new development intensifies around the Studley Quad and along University Avenue, the SUB will benefit from being rejuvenated and reprogrammed to integrate its activities and spaces with those of neighbouring buildings. A collaborative effort is required combining the leadership, resources and expertise of the Administration, the students and the Union in addressing this opportunity to revitalize the exterior, reprogram and design the interior and redevelop the open space corner at University Avenue and LeMarchant. The potential of redeveloping the corner offers potential to provide an attractive gathering place, better serve bus passengers with a transit lobby at the west end of the SUB, improve exposure and access to lower level uses, and provide more attractive connections to Risley Hall.



SUB RENEWAL

I.3 STUDENT RESIDENCES

Requirements

As undergraduate enrolment grows to 17,500 in the next 5-10 years, the need for additional on-campus student housing is estimated to fall in a range of some 200 to 750 units depending on assumptions regarding the degree and diversity of student categories to be accommodated; these policies are expected to be refined by the University over time. Such policies will include

- % of first year students from high school only (or for all first years)
- % of foreign students
- % of returning students
- Categories of graduate students to be accommodated (e.g. MBA, Health Sciences, married couples or families)
- The degree to which adequate student accommodation is provided within the adjacent residential neighbourhoods.

Site Options

Some university campuses have typically located student residences at the periphery and maintained the campus core for institutional buildings; however, the principle of campus intensification fundamental to this Plan takes the opposite approach, envisioning student residences in the dense campus core and away from adjacent neighbourhoods. This is a principle supported by Dalhousie's neighbours and HRM planners. As well, as the campus and its environs evolve as an urban university community, the concept of mixed-use buildings becomes more appropriate and economically practical. This concept suggests residential uses at the upper levels of multi-use spaces below, rather than isolated in single-function buildings. Prominent site options for such mixed-use buildings are cited in the Plan:

- LeMarchant Street Redevelopment project; Phase 1 over 2 level of mixed use provides approximately 325 units; similar phase 2 has potential for another 250 units;
- Over academic space in the new Studley Shared Research Centres and the New Upper Quad Buildings;
- Shirreff Hall Extension on the present tennis court site: approximately 130 units on 3 levels;
- Adjacent to Gerard Hall on Sexton Campus and over parking and academic facilities along Morris Street: capacity of approximately 1,000 units;

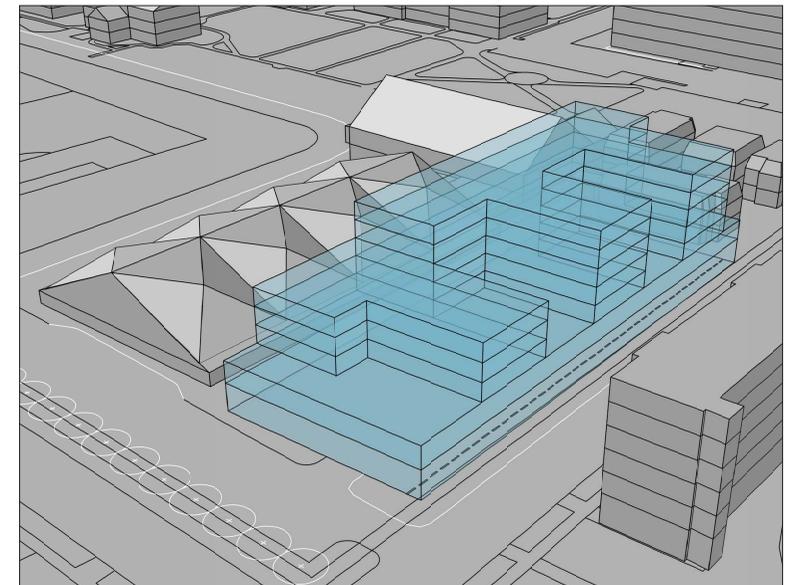
Note that the multi-year TDM Implementation Program (Appendix A.1) includes initiatives to increase the inventory of adequate staff and student rental housing in the neighbourhoods within walking

distance of the University, aimed at reducing longer distance commutes, campus parking requirements and car dependency. This nearby rental housing inventory should be supported by the University and included in its future housing demand forecasting.

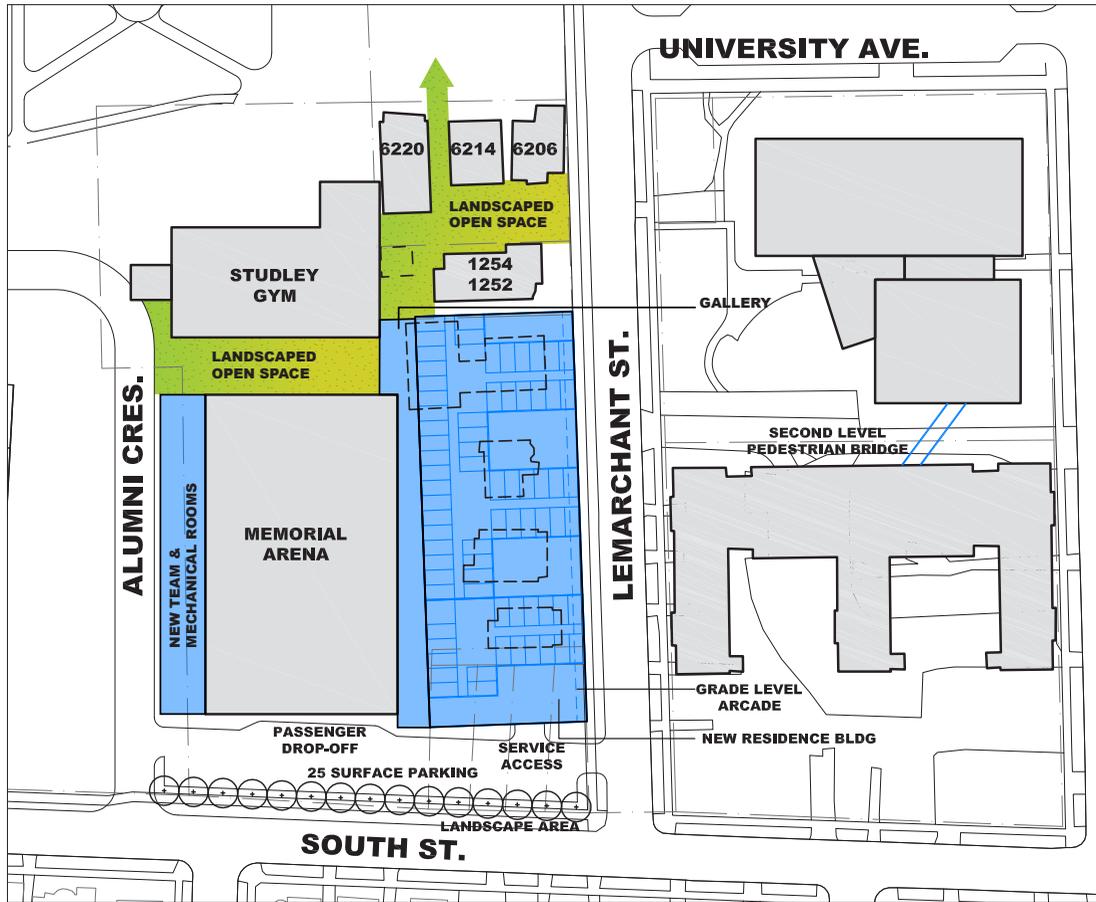


Existing Residences Potential New Sites

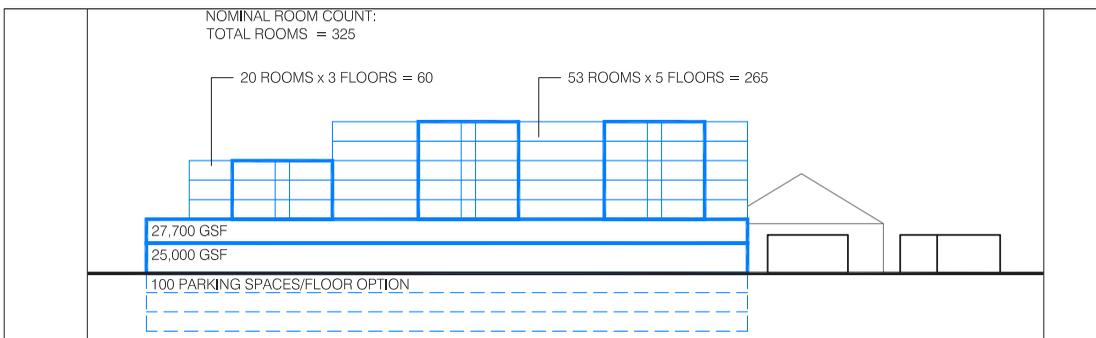
RESIDENCE SITE OPTIONS



LE MARCHANT ST. MIXED-USE/RESIDENCE



PHASE 1 PLAN



N-S SECTION

I.4 ATHLETICS AND RECREATION

Requirements

Assessment of the University's athletics and recreation facilities have needed to take into account space norms, the particular mix of programs offered by Dalhousie, the geographic spread of the campuses that requiring duplication of facilities, the generally poor condition of the facilities and – in the case of Dalplex – the crowding and over-use and the additional access accorded the public.

The University needs to make a significant phased capital investment in upgrading, and adding to its athletic and recreation facilities:

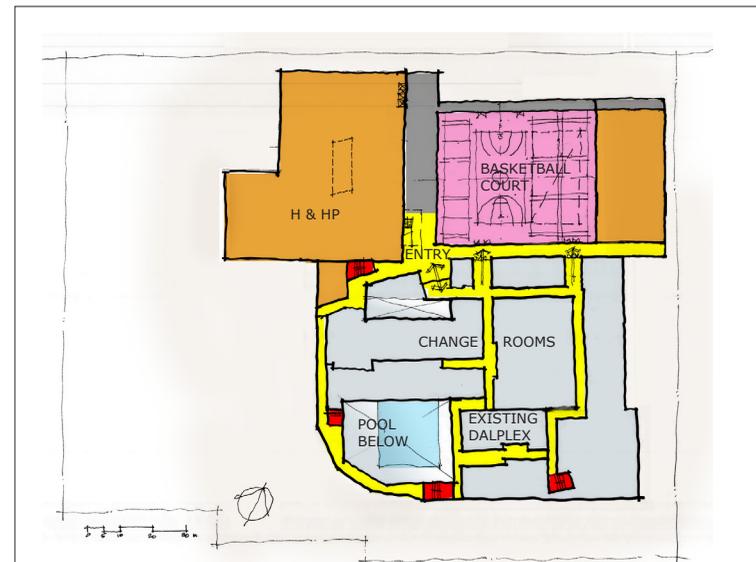
- Dalplex will require replacing its 30- year old air-supported roof in the near future with a new fixed roof that will improve operational efficiencies, and its mechanical systems require major renovations and up-dates; furthermore, Dalplex no longer provides adequate spaces to serve its primary and support functions for the volumes of users it serves – both university and community based; a building addition will be required to meet the demands of the desired program mix serving the university population and the public;
- Studley Gym is structurally and mechanically in need of major renovation, the cost of which will not justify its retention; the lower-level change and team rooms supporting Memorial Arena and Wickwire Field are sub-standard and should be replaced;
- Weather permitting, use of Wickwire Field by both the university and the community is optimized. However, its benefit is severely limited by not being available for use during the winter months as in the case of many comparable universities (most recently, Carleton and University of Toronto);
- Sexton Campus athletic facilities are in poor condition and underutilized in part, due to the types of facilities provided, i.e. they do not fully reflect the present needs of students and staff nor Dal's current program objectives.

Plan Summary

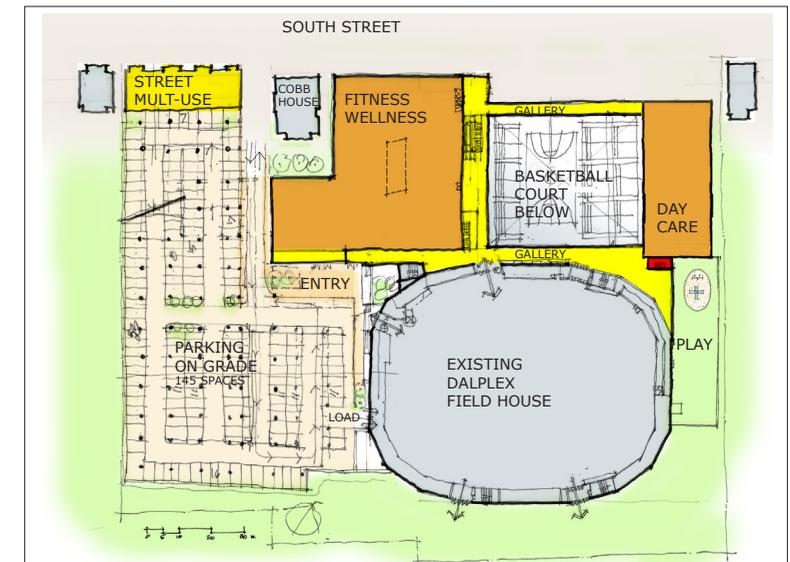
- Dalplex Addition on South Street of some 149,000 gsf (93,000 gsf athletics and recreation; 41,000 gsf academic space; 15,000 gsf day care centre). The addition will include two basketball courts with seating for 2,500; clinics for fitness, physiotherapy, wellness and sports medicine; a welcome centre, lounge and trophy exhibit; offices; class rooms and offices for the Department of Health and Human Performance; and a day care centre;
- Structural, spatial and mechanical renovations to Dalplex;
- Addition or redeveloped to the west side of Memorial Arena for new change and team facilities for Arena and Wickwire Field athletes;
- Elimination of the Studley Gym and conversion of the Sexton Gym to a large assembly and lecture hall;
- New Sexton Campus Recreation & Wellness Facility;
- Air-supported removable bubble covering Wickwire Field during the winter.



AERIAL VIEW



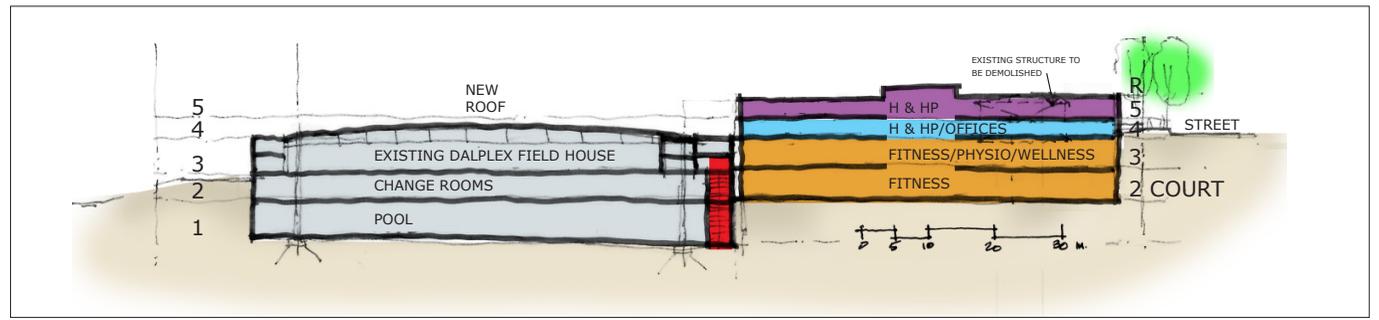
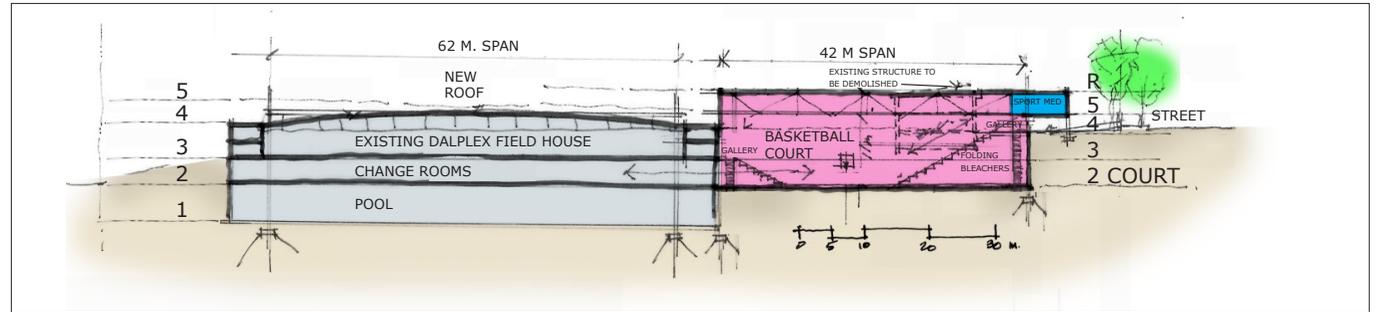
SCHEMATIC PLAN LEVEL 2



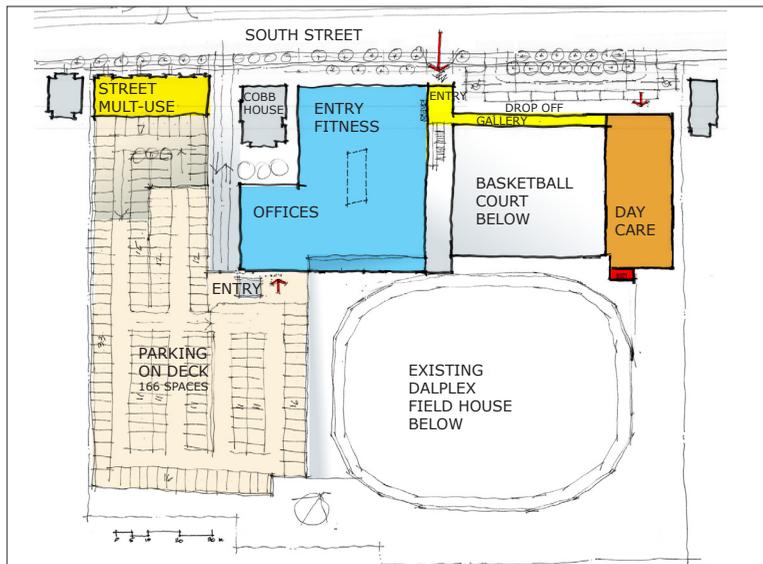
SCHEMATIC PLAN LEVEL 3



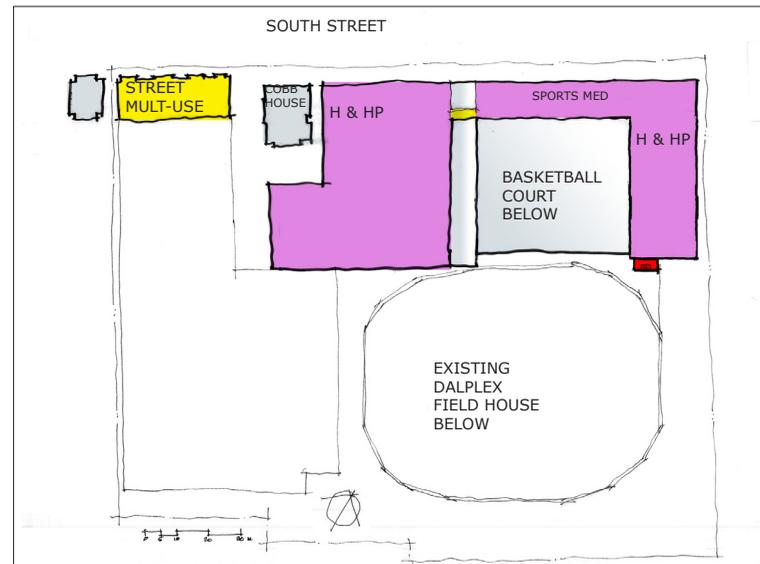
DALPLEX ADDITION STREET VIEW



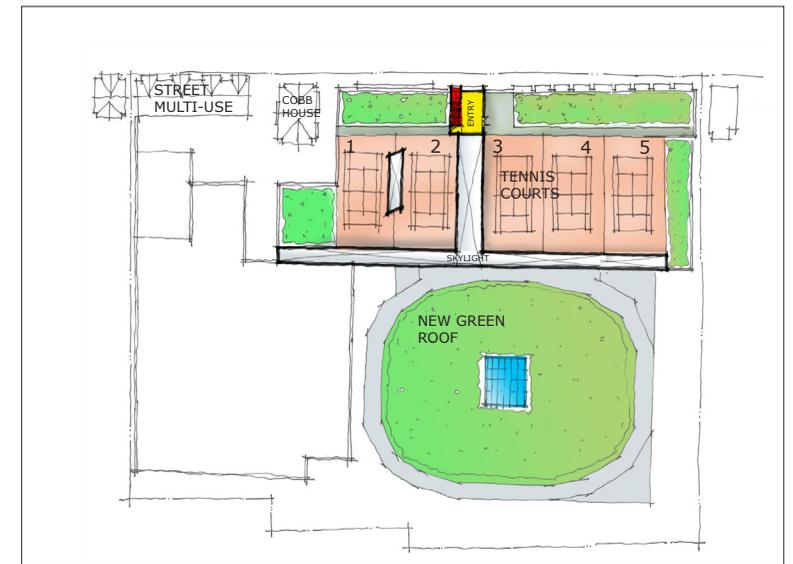
SCHEMATIC CROSS SECTIONS



SCHEMATIC PLAN LEVEL 4



SCHEMATIC PLAN LEVEL 5



SCHEMATIC ROOF PLAN

J DESIGN GUIDELINES

Introduction

Design guidelines are provided to assist planners and designers assigned to each capital project as campus development proceeds. These guidelines shall be read in conjunction with the urban design guidelines of the HRM's Official Plan and Comprehensive Zoning Bylaw. The guidelines are compiled in the four following sections:

J.1 - Building Site Guidelines

J.2 - University-Wide Landscape Open Space Guidelines

J.3 - Landscape Design Guidelines for each Campus

J.4 - Landscape Guidelines for University Avenue Renewal

THE 7 PRINCIPLES OF UNIVERSAL DESIGN

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

The Principles and Guidelines of Universal Design are a reference to a wide range of design disciplines including environments, products, and communications. These seven principles may be applied to evaluate existing designs, guide the design process and educate both designers and users about the characteristics of more usable accessible environments.

The following is from the Centre for Universal Design website www.design.ncsu.edu/cud/about_ud/udprinciples.htm and is copyrighted by NC State University and the Centre for Universal Design.

1. Equitable Use

The design is useful and marketable to people with diverse abilities.

Guidelines:

- 1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.
- 1b. Avoid segregating or stigmatizing any users.
- 1c. Provisions for privacy, security, and safety should be equally available to all users.
- 1d. Make the design appealing to all users.

2. Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

Guidelines:

- 2a. Provide choice in methods of use.
- 2b. Accommodate right- or left-handed access and use.
- 2c. Facilitate the user's accuracy and precision.
- 2d. Provide adaptability to the user's pace.

3. Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

- 3a. Eliminate unnecessary complexity.
- 3b. Be consistent with user expectations and intuition.
- 3c. Accommodate a wide range of literacy and language skills.
- 3d. Arrange information consistent with its importance.
- 3e. Provide effective prompting and feedback during and after task completion.

4. Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

- 4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- 4b. Provide adequate contrast between essential information and its surroundings.
- 4c. Maximize "legibility" of essential information.
- 4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- 4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

5. Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

- 5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- 5b. Provide warnings of hazards and errors.
- 5c. Provide fail safe features.
- 5d. Discourage unconscious action in tasks that require vigilance.

The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

- 6a. Allow user to maintain a neutral body position.
- 6b. Use reasonable operating forces.
- 6c. Minimize repetitive actions.
- 6d. Minimize sustained physical effort.

7. Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

- 7a. Provide a clear line of sight to important elements for any seated or standing user.
- 7b. Make reach to all components comfortable for any seated or standing user.
- 7c. Accommodate variations in hand and grip size.
- 7d. Provide adequate space for the use of assistive devices or personal assistance.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

CPTED is a pro-active crime prevention strategy utilized by planners, architects, police services, security professionals and everyday users of space. The incorporation of the principles of CPTED into the guideline document can lead to the reduction in the incidence and fear of crime and ultimately improve the quality of life.

There are four underlying CPTED concepts:

1. Natural Surveillance - Is the placement of physical features and/or activities, and people that maximizes natural visibility or observation.
2. Natural Access Control - Deters access to a target and creates a perception of risk to the offender.
3. Territorial Reinforcement - Defines clear borders of controlled space from public to semi-private to private, so that users of an area develop a sense of proprietorship over it.
4. Maintenance - Allows for the continued use of a space for its intended purpose.

Information obtained from the CPTED Ontario website:
<http://www.cptedontario.ca/index.php>

J.1 BUILDING SITE GUIDELINES

UNIVERSITY-WIDE PRINCIPLES

The intent throughout the guidelines is to respect the neighbourhood context, the traditional campus patterns, and the rhythm of the existing streetwall along University Avenue. The guidelines will ensure that new building developments relate harmoniously to the adjacent neighbourhood context through building siting, massing, setbacks, architectural details, and height. Consideration should be given to the protection and enhancement of prominent view corridors and the creation of gateways.

New buildings should contribute to the campus environment as well as serve their intended functions:

- Pedestrian weather protection along street frontages, either in the form of overhangs or facade set-backs (arcades) at ground level; [where existing campus buildings are set back from the street façade line, there is the opportunity to provide a linear canopy between adjacent buildings to ensure weather-protected continuity];
- Generous and readily identifiable pedestrian entrances and lobbies within, connected to university community spaces such as snack bars, lounges, information desks, locker and wash rooms, etc.; entrances and lobbies should be oriented to sidewalk points near street drop-offs and/or transit stops, where relevant;
- In campus buildings where significant numbers of students and staff are expected to gather or wait outside the main entrance, provide an appropriately sized building forecourt.
- Transparent facades at street level, informing the passer-by of the nature of activities within and providing “eyes on the street” safety and supplementary sidewalk night lighting; the ground floor of new building developments should encourage interaction with the public realm. Public uses, prominent pedestrian access points, and windows at grade all contribute to an active pedestrian realm.
- A building’s internal pedestrian circulation should be planned to connect to adjacent buildings and support planned campus circulation patterns, as indicated in J.3 below.

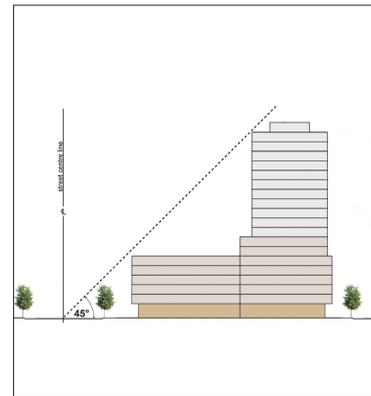
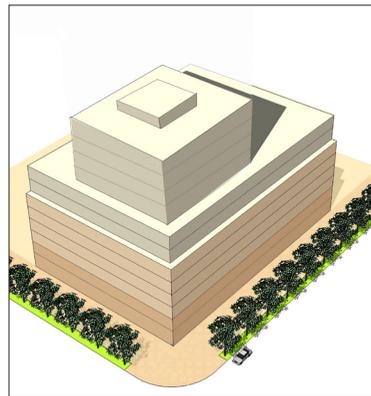
New buildings should fully utilize and enhance the building site:

- Buildings shall be oriented to the street in order to create a strong streetwall. The length of the building frontage on the street shall be maximized as much as possible.
- Where there is a disruption in the street wall to accommodate private forecourts, public spaces, pedestrian connections, or parking areas for example, the street wall may be defined by additional street trees, low architectural walls, public art or low decorative fencing.
- Primary building facades should face the street and the public realm.
- Buildings shall be placed at the front setback line where possible.

- Buildings on corner sites shall be located at the setback line of each street frontage.
- Arrange multiple building sites in such a way as to define outdoor spaces
- Building setbacks should be compatible and consistent with neighbouring buildings in order to create a strong street wall and urban edge.

While fenestration of new buildings will vary, certain overall principles of building massing should be followed:

- New buildings should in general, build to site envelopes outlined in J.3;
- Utilize architectural techniques such as recessed entries, arcades and alcoves for example to visually reduce large building mass. For example, a multi-storey building should follow three building lines: (i) a 2-3 meter setback at street level to provide the pedestrian weather protected arcade; (ii) a 4-6 storey mid-level façade above to reflect the surrounding ‘neighbourhood’ scale; and (iii) an articulated higher building mass where appropriate;
- Floor-to-Floor heights should be a minimum of 13’-6” or 4 metres;
- While building heights are generally described below as characteristic of each campus setting, in all cases the ultimate building height limit is set in consultation with HRM, including building height set-backs within a 45° angle from the facing street centre line.



CAMPUS & SITE DEVELOPMENT GUIDELINES

The following design principles and guidelines are related to the unique characteristics of each campus and the key building sites/ projects envisioned in the Plan.

Studley Campus

Although not the site of the oldest building, the Studley campus is known for its history that originated with a comprehensive vision and campus plan prepared by Andrew Cobb in the 1920’s. The original Studley buildings framing the upper Quad still provide a signature image of the campus. One major building site remains on the Quad’s south side, backing on to Wickwire Field; the Plan envisions completion of the upper Quad by locating a prominent building on this site designed to respect the character and massing of its existing neighbours and reflect the mix of professional faculties and arts and sciences programs for which the Studley campus is known.

The architectural character of the lower Quad and continuing east along University Avenue changes significantly, demonstrating the shift to modernity as characterized in particular by the Killam, McCain, Rowe and Goldberg, a design shift in keeping with Dalhousie’s view to the future; this trend also should be strengthened as other new buildings contribute to the intensification of the campus.

Setbacks, Orientation and Build-to-Line

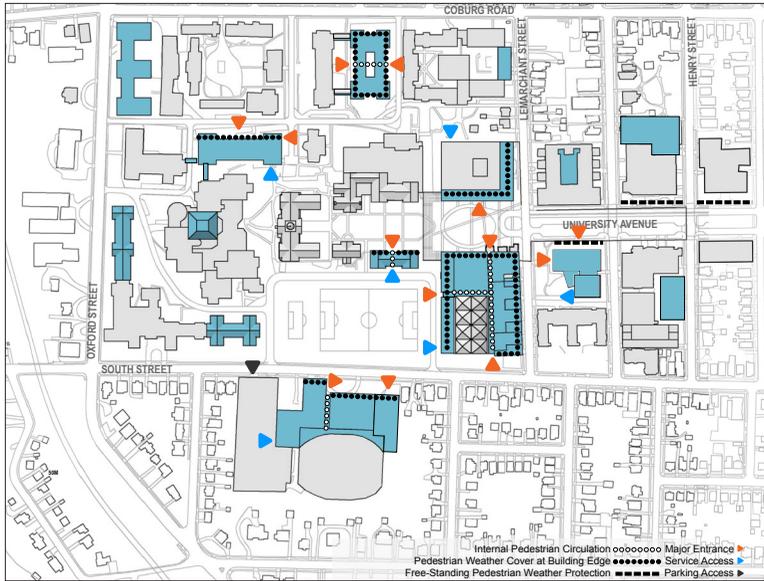
- Maintain the prominent view corridor from University Avenue into the campus. Avoid blocking this view with structures or plantings;
- Maintain the formal orientation of the building blocks with symmetry and balance.
- Use building mass to define urban plazas and courtyards.
- Building setbacks along public roads should be consistent with neighbouring buildings where appropriate.
- Define edge conditions with built form or a continuous tree canopy where appropriate.

Materials

- Building design and materials should promote a high standard of civic design, incorporate consideration for extreme weather conditions and contribute to the enhancement of the surrounding public realm.
- For buildings in the Upper Quad use building and paving materials that maintain and reinforce the traditional sense of the existing architecture;

Pedestrian Routes

- Reinforce pedestrian circulation with accessible building entrances off of main streets, internal campus roads and civic plazas.
- Provide strategic placement of seating areas and pedestrian scale lighting;
- Incorporate weather protection along principle building facades for pedestrians.
- Provide prominent pedestrian connections from the campus to transit stops and adjoining streets



Carleton Campus

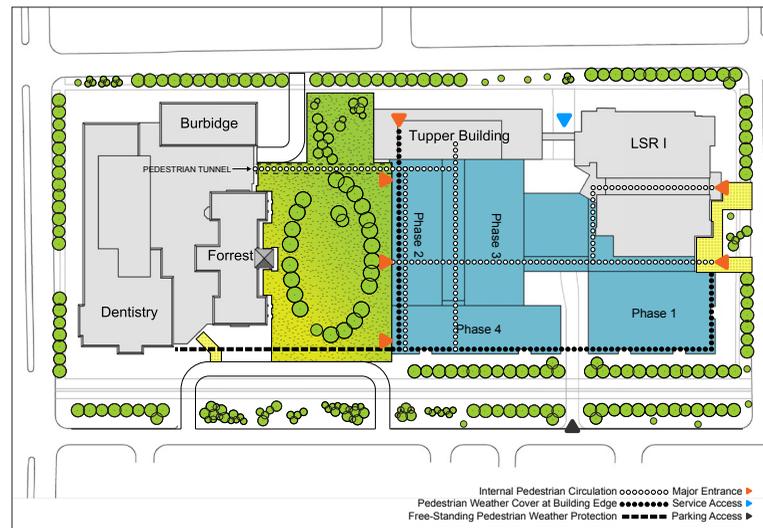
Carleton is clearly identified as the Health Sciences Campus, juxtaposed with the hospital complex across University Avenue. The site is enhanced by a valuable central landscaped open space valued by the University and the citizens of Halifax alike. Future development on this campus block is planned to reflect the University’s commitment to contemporary, state-of-the-art health science education, research and public service, and its architecture is expected to demonstrate the need for dense land use, efficient and sustainable engineering, and the transparency that invites public confidence. Likewise, there is the opportunity to include in the up-grading of the Carleton Common a “wellness park” theme utilizing native plants that promote healing as well as contribute to species and ecosystem biodiversity.

Setbacks, Orientation and Build-to-Line

- Building setbacks should be compatible and consistent with neighbouring CRC and LSR I buildings in order to create a strong street wall and urban edge along University Avenue.
- Building design and materials should promote a high standard of civic design, incorporate consideration for extreme weather conditions and contribute to the enhancement of University Avenue and Summer Street as major public thoroughfares.
- Building design at street level should express a sense of transparency to animate the public realm.
- Promote sustainability objectives through site design such as solar orientation, heat island reduction, on-site energy gain, waste water and stormwater management for example.

Pedestrian Routes

- Provide prominent connections within the Tupper-IEHEB Complex and from the Dentistry/Forrest/Burridge buildings to the Tupper Hub
- Provide prominent pedestrian connections from the campus to transit stops and the hospitals across the street.



Sexton Campus

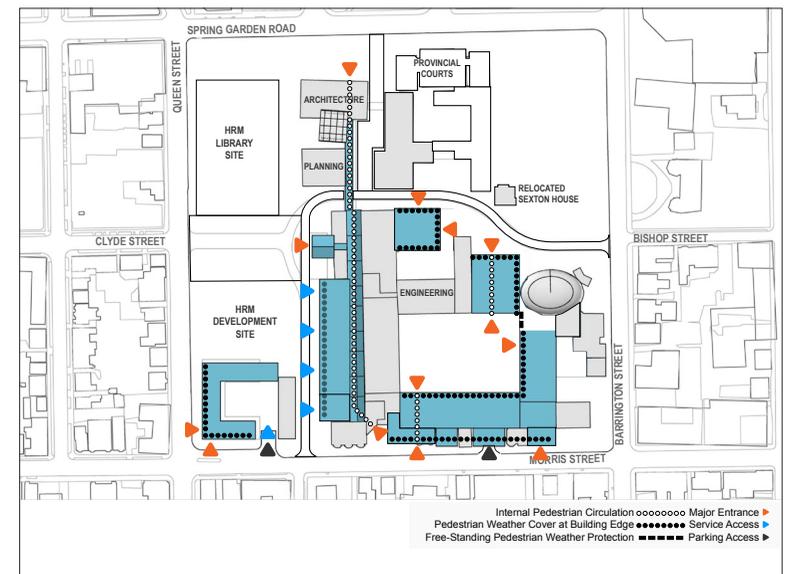
This campus will evolve as Dalhousie’s Downtown Campus, and as such, will be identified by the people of Halifax as a dense, mixed complex of historical and contemporary buildings reflecting institutional, recreational, cultural, business and residential activities that characterize the downtown itself.

Setbacks, Orientation and Build-to-Line

- Accentuate the gateways into the campus from downtown Halifax through strategically placed architectural and landscape forms;
- Building setbacks should be consistent with neighbouring buildings.

Pedestrian Routes:

- Contribute to a prominent pedestrian circulation route from the intersection of Queen and Clyde Street and Barrington and Bishop Street.
- Provide the interface between the public and private realm surrounding the campus by using contiguous paving material and plant materials;
- Reinforce pedestrian circulation with strategic placement of seating areas and pedestrian scale lighting;
- Utilize paving materials and paving patterns that maintain and reinforce the modern characteristics of the existing architecture;
- Differentiate between pedestrian and vehicular circulation through the use of paving materials, colours, patterns, textures, signage and street furniture;



J.2 UNIVERSITY-WIDE LANDSCAPE & OPEN SPACE GUIDELINES:

The Landscape and Open Space Design Guidelines in this section are intended to provide a clear design framework for future development and detailed site design throughout university campus environment. These guidelines will guide and inform the design details at the site planning stage and are intended to help to create a comprehensive and integrated network of space that serves adjacent buildings, campus identities and the overall university open space environment. Specifically, these guidelines affect University branding and way-finding, planting, trees, street corners, amenities, lighting site furniture, public art, parking and utilities. Sustainable landscape design and energy-efficient landscaping is concerned with the planning and design of outdoor space. Design techniques include planting trees to shade buildings from the sun or protect them from wind, specifying drought-resistant native plant species, minimizing the use of pesticides, and using local materials. These Landscape and Open Space Guidelines also apply to the University Avenue Renewal described in Section J.4.



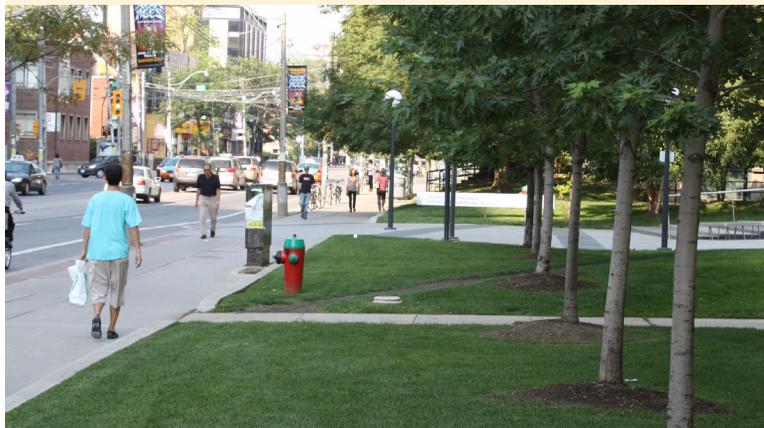
Branding and Way-finding:

- Develop a theme (or branding) for University Avenue corridor that will build, strengthen and communicate the identity of both University Avenue and the University Campus and establish it as a “place”. ③
- Utilize high quality paving materials and signature furniture pieces.
- Utilize a coordinated system of direction and information graphics that is easy to understand, accessible by all, and reflects the character and branding of University Avenue. ①
- Provide free-standing consistent graphic signage near main entrances to all campus buildings. ②
- Maintain up-to-date campus maps that are easily readable and support pedestrian orientation and way-finding; provide free-standing copies of this map at various pedestrian intersections and campus gateways. ① ②



Planting:

- Use plant species native and non-native that are hardy, drought and salt resistant.
- Consider substituting low maintenance drought-resistant native groundcovers instead of high maintenance grass. This will reduce manpower, maintenance and irrigation costs.
- Consolidate soft landscape areas to enhance tree and plant growing conditions.
- Expand rooting zones of landscaped areas under adjacent hard paving surfaces. Techniques may include the use of structural soils or cells, continuous planting trenches and/or permeable paving.
- Consider bio-swales where appropriate.



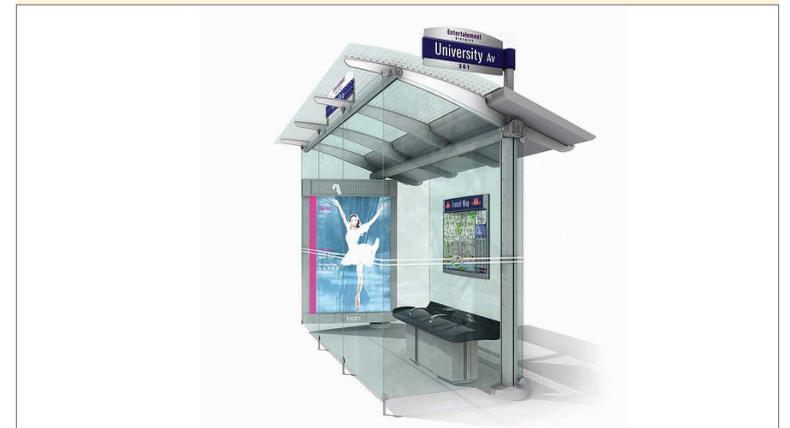
Trees

- Tree species should form a continuous canopy at maturity and be located at regular intervals.
- Select tree species that are native, salt and drought resistant to ensure survivability.
- At gateway locations, special plantings and landscape features should be encouraged.
- Where proposed development may impact on significant mature tree species, they should be assessed by a certified arborist or landscape architect.
- Where ever possible, provide a continuous soil trench for street trees to give tree roots more room to spread and access water thus improving growth.



Street Corners

- Street curb radii should not exceed municipal standards and should be reduced wherever possible in order to reduce the distance at crosswalk locations; provide more pedestrian area at intersections; and require vehicles to slow down as they turn corners;
- Street corners should be designed to accommodate multiple functions including pedestrian crossings, location of utility and traffic signal poles, traffic movements, and pedestrian waiting areas;
- The size of curb radii should consider the geometry of the intersection, the street classification, and whether there is on-street parking and/or a bike lane within the road right-of-way.



Amenities

- Where possible, pedestrian amenities such as pedestrian scale-lighting, public message centres, seating, trash receptacles, and shelters should be provided where the pedestrians gather. Locations include primary pedestrian circulation routes, street intersections, courtyards and building entrances; ①
- The pedestrian amenities should be coordinated in style, colour and scale to contribute to the overall identity of the campus.



Lighting:

- Provide a comprehensive lighting plan and consistent lighting system for the entire length of the corridor.
- Promote safety and enhance the pedestrian and cyclist environment through good lighting design.
- Provide a line of aesthetic, coordinated, functional, technologically flexible, and durable light standards that contributes to the identity of the University Avenue corridor.
- Solar powered lighting and LED lighting should be implemented throughout the campus to minimize energy consumption.
- Implement full cut-off lanterns to minimize light pollution, glare and light trespass and ensure protection of the night sky.
- Provide lighting that is appropriate to its location, ie. pedestrian scaled lighting along pedestrian routes.

Site Furniture:

- Implement a family of aesthetic, coordinated, functional, technologically flexible, and durable site elements for University Avenue.
- Coordinate the colour, graphics, materials and finishes of all site elements within the University Avenue corridor to promote identity and support the branding theme.
- Design, details, materials and colours should be simple, elegant and timeless.
- Promote ease of pedestrian movement and accessibility through the placement of site and furniture elements.
- Should be accessible to all users and follow the principles of universal design as defined by the Centre of Universal Design.
- Locate bicycle parking in highly visible, well-lit, accessible and weather protected locations. Incorporate wayfinding signage as appropriate.
- Site structures such as lighting, benches, trash receptacles, bicycle parking should incorporate sustainable local materials and technologies where possible.

Public Art

- Create opportunities for the implementation of public art pieces.
- Locate art in proximity to the active transportation network, other areas of high pedestrian activity, transit stops, public open spaces, and areas of special heritage or community significance.



Parking

- Short term parking facilities i.e. drop-off and pick-up areas should be limited to a single row with drive and should be screened from view of the street.
- Appropriate lighting levels should be provided in parking areas to assist pedestrian and vehicular safety while respecting adjacent land uses.
- Designated handicapped spaces to city standards should be located as close to the building entrance as possible.
- Integrate underground parking ramps into the architectural design of the building. ①
- If large surface parking lots are unavoidable next to public realm, screen with architectural walls or landscaping

Utilities

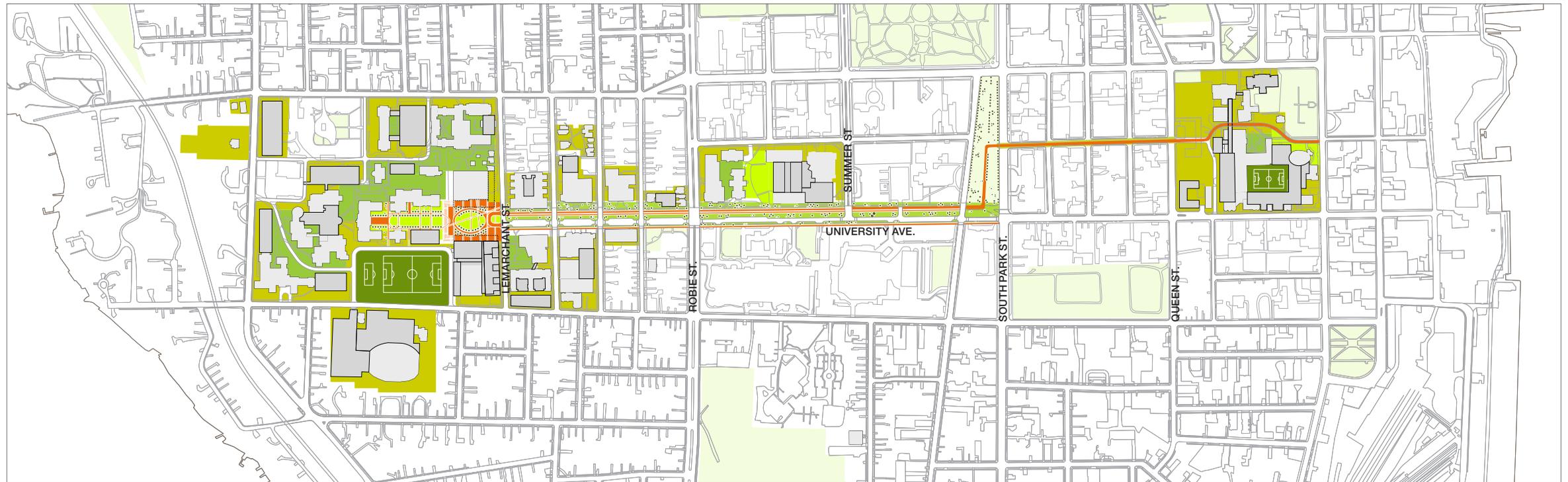
- Utilities should be buried underground where possible.
- All above grade utilities i.e transformers within view of public realm the road right-of-way should be screened from view of the street through the use of landscaping and/or architectural screen walls. ② ③ ④

Sustainability:

- Solar powered lighting and LED lighting should be implemented throughout the University Avenue corridor to minimize energy consumption. ⑤
- Implement full cut-off lanterns to minimize light pollution, glare and light trespass and ensure protection of the night sky.
- A direct convenient active transportation corridor with improved pedestrian comfort and circulation increases the appeal of walking and may reduce reliance on the automobile. ⑥
- Minimize the extent of impermeable surfaces by utilizing permeable pavers and soft landscaped areas. This will reduce the amount of storm water run-off and subsequent pressure on municipal systems. ⑦
- Reduce the urban heat island effect by minimizing the extent of paved surfaces.
- Manage rainwater and snowmelt on-site with designs that encourage infiltration, evapotranspiration and water re-use such as bio-retention areas and bioswales for example. ⑧
- Green roofs should be incorporated where feasible to improve building insulation, reduce surface runoff and minimize discharge into the storm drainage system. ⑨
- Existing mature non-invasive trees should be preserved and integrated in to the design where possible pending review by a certified landscape architect or arborist.
- Incorporate deciduous trees into the design to provide shade the summer and help reduce internal building temperatures. In the winter months, deciduous trees shed their leaves and allow sunlight to penetrate windows and warm internal temperatures.
- For soft landscaping, consider an Integrated Pest Management (IPM) strategy which is a sustainable ecological approach with a main goal of significantly reducing or eliminating the use of harmful pesticides while at the same time managing pest populations at an acceptable level.

J.3 LANDSCAPE DESIGN PRINCIPLES FOR EACH CAMPUS

Each of Dalhousie's three campuses has a major open space that characterize and orient that campus: the Studley Quad, the Carleton Commons and the connecting landscaped spaces at Sexton all help to define its downtown urban character. In each case, these major open spaces serve as landscaped activity places and points of orientation around which major buildings are located, and they serve as pedestrian thoroughfares and cross-roads of movement between the major buildings. These open spaces that tie each campus together should be thoughtfully designed for the many activities and functions they accommodate and for the campus design setting they are intended to provide. In addition to the Common Landscape Design Guidelines outlined in J.2, each campus open space system has landscape design principles aimed at enhancing the uniqueness of each campus as follows.



PLAN OF DALHOUSIE UNIVERSITY CAMPUS

STUDLEY CAMPUS

As an extension of the University Avenue open space corridor, the Studley Quad defines the heart of the Studley campus as a sweeping open space stretching from LeMarchant Street west to the steps of the Henry Hicks Administration Building and is framed by some of Dalhousie’s most prominent buildings. This space has two distinct personalities: the Upper Quad characterized by its older buildings (circa 1920’s) and the Lower Quad between the Killam Library and the Studley Gym having the potential of being designed as a Gateway to Dalhousie from University Avenue as other major new buildings are constructed with the redeveloped Lower Quad as their focus. The Plan envisions completion of the Upper Quad with a prominent new building defining the Quad’s southern edge sensitively designed to complement its neighbouring older buildings. The design of the Lower Quad itself presents a particularly challenging design opportunity in accounting for both pedestrian and vehicular movements, hard and soft landscaping and the seasonal microclimate variations as well as the need for the flexibility to adapt to a variety of special events such as involving congregations of large numbers of graduating students or invited guests.

Studley Quad Landscape Design Principles:

- Maintain the prominent view corridor from University Avenue into the campus. Avoid blocking this view with structures or plantings;
- Maintain the formal nature of the open space with symmetry, i.e. simple pathways along edges and criss-cross pathways that follow desire lines;
- Define edge conditions with a continuous tree canopy where appropriate.
- Reinforce pedestrian circulation with strategic placement of seating areas and pedestrian scale lighting;
- Utilize paving materials and paving patterns that maintain and reinforce the traditional flavour of the existing architecture;
- Select a family of site furnishings such as benches, trash receptacles and pedestrian scale lighting in a style keeping with the existing character of the Common.



CARLETON CAMPUS

The Carleton campus is expected to be transformed in the next decade in response to mounting pressures for expansion of the health sciences at Dalhousie. The Carleton Common is the significant central open space and organizing element of the Campus and is valued by the public as part of the local civic landscape. As design of new buildings adjacent to the Common are undertaken and the University Avenue renewal plan is realized, edge conditions of the open space will require redesign and redevelopment; indeed, this ambitious campus redevelopment presents an unusual opportunity to redefine the Carleton Common to complement the overall theme of integrated health and wellbeing.

Carleton Common Landscape Design Principles:

- Intensify and animate edge conditions with public seating, lighting, furniture and tree planting that defines the Common and creates spatial enclosure;
- Provide a vehicular drop off zone to mark a significant university campus gateway and serve the needs of public access to the Dentistry building from University Avenue, considering weather protection and minimizing conflict with the adjacent active transportation zone;
- Integrate new landscape features with the existing central landscape of the Commons;
- Maintain existing significant mature vegetation where appropriate, pending analysis by an arborist, and add plant materials that demonstrate biodiversity and use of native species such as local grasses and plants with particular medicinal and wellness qualities;
- Ensure a clear view corridor into the common from University Avenue and the College/Carleton intersection;
- Define edge conditions with a continuous tree canopy;
- Reinforce pedestrian circulation with strategic placement of seating areas and pedestrian scale lighting;
- Utilize paving materials and paving patterns that maintain and reinforce the modern characteristics of the existing architecture;
- Select site furnishings such as benches, trash receptacles and pedestrian scale lighting in a style keeping with the existing modern character of the Common.



SEXTON CAMPUS

Dalhousie’s presence in the downtown will develop the Sexton campus as an extension of urban Halifax core, and as such, will become a dense collection of interconnected buildings and urban activities knitting together education, research, commerce, culture and residential living. The structure giving this urban block its environmental quality will be its system of pedestrian scaled landscaped open spaces, thoughtfully limiting vehicular infiltration. The campus is envisioned as a system of connected public open spaces that will signify entrance gateways to the campus from Clive Street on the west, from Barrington Street on the east and from Morris Street on the South. The open spaces will organize and link the main buildings on the campus by creating a planned system that physically provides clear linkages to the buildings located on the core of the campus.

Sexton Campus Landscape Design Principles:

- Intensify and animate edge conditions with public seating, lighting, furniture and tree planting that defines the Common and creates spatial enclosure;
- Accentuate the gateways into the campus from downtown Halifax through strategically placed architectural and landscape forms;
- Respectfully integrate new soft landscape features with the existing cemetery;
- Define edge conditions with a continuous tree canopy;
- Blend the interface between the public and private realm surrounding the campus by using contiguous paving material and plant material;
- Reinforce pedestrian circulation with strategic placement of seating areas and pedestrian scale lighting;
- Utilize paving materials and paving patterns that maintain and reinforce the modern characteristics of the existing architecture;
- Differentiate between pedestrian and vehicular circulation through the use of appropriate paving materials, colours, patterns, textures, signage and street furniture;
- Select a family of site furnishings such as benches, trash receptacles and pedestrian scale lighting in a style keeping with the existing urban architectural character of the Common.



J.4 LANDSCAPE GUIDELINES FOR UNIVERSITY AVENUE RENEWAL

The Concept design for renewing University Avenue is discussed and illustrated in Section F. The following streetscape design guidelines refer to the components that make up the concept.

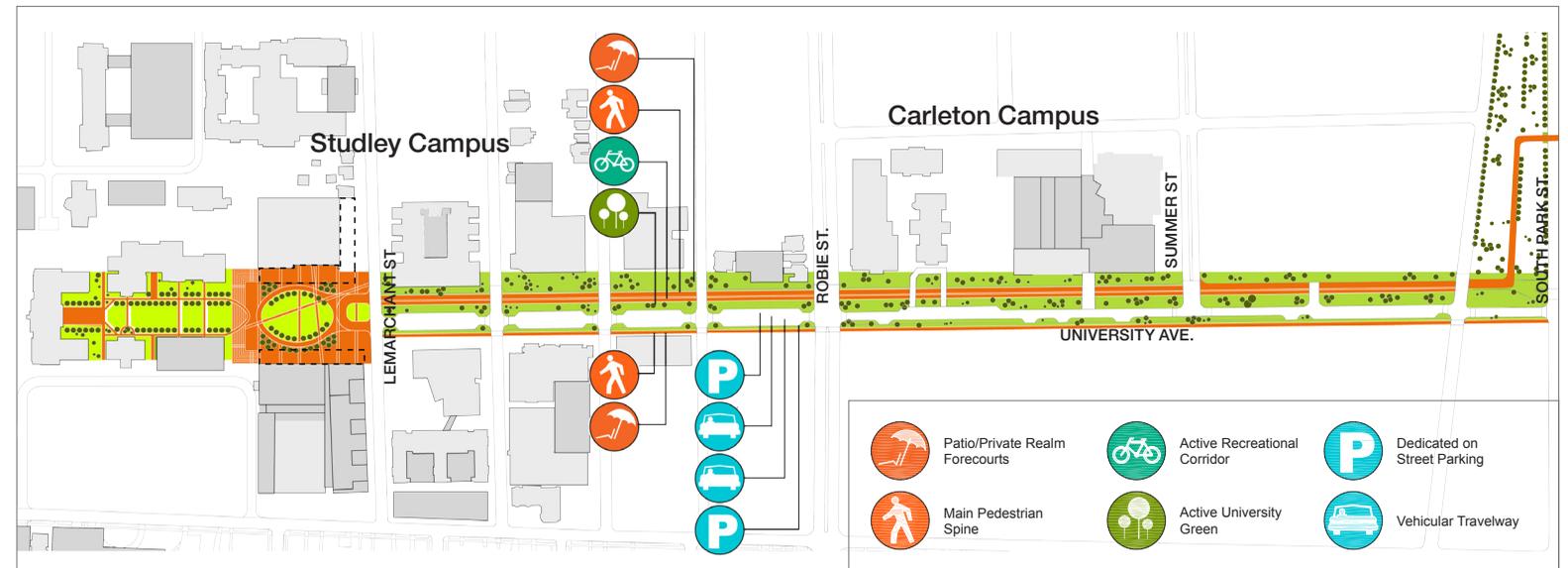
University Avenue Corridor Components

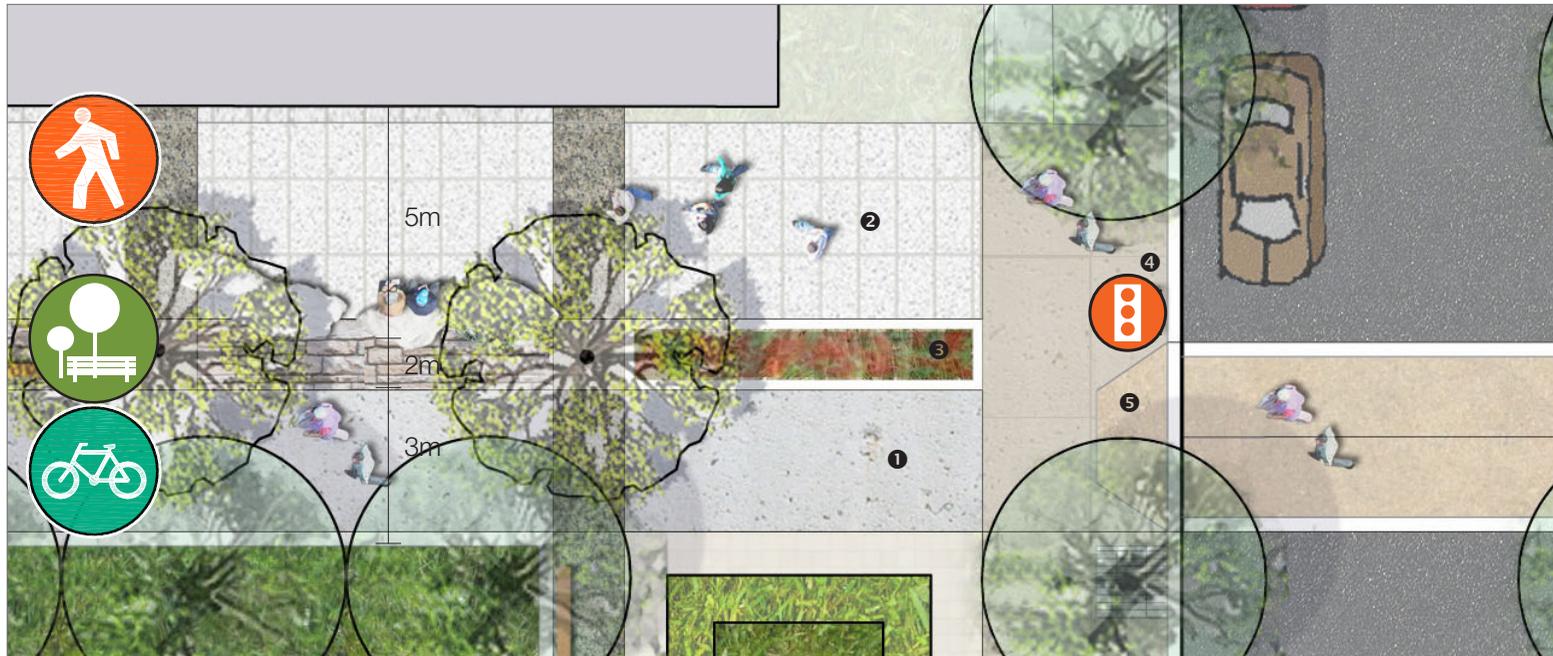
The University Avenue corridor is made up of five essential parts: the active transportation corridor, Central University Green, vehicular travel way, and the building forecourts and the private/public interface. The design guidelines that follow apply to all parts of the University Avenue Corridor and should be considered early during the preliminary design stage.

The University Avenue corridor is made up of five essential parts:

- 1 Active Transportation Corridor
- 2 Active University Green
- 3 Vehicular travel way
- 4 Private/Public Interface & Building Forecourts

The guidelines that follow are targeted to the five essential parts of the University Avenue Corridor. These guidelines should be considered early during the preliminary design stage and should be supported by the detailed design and analysis of the vehicular travel way by a transportation engineer.





1 Active Transportation Corridor

The active transportation corridor is a dedicated travel way for pedestrians, cyclists, scooters, in-line skaters and skateboarders. It is a 9.0m wide travel way that facilitates commuting and carrying out one's personal business without the use of the automobile. The active transportation corridor travels through downtown Halifax and the Dalhousie campus predominantly along University Avenue on the north side of the street. It is separated and buffered from the vehicular traffic by the Central University Green.

Design Guidelines:

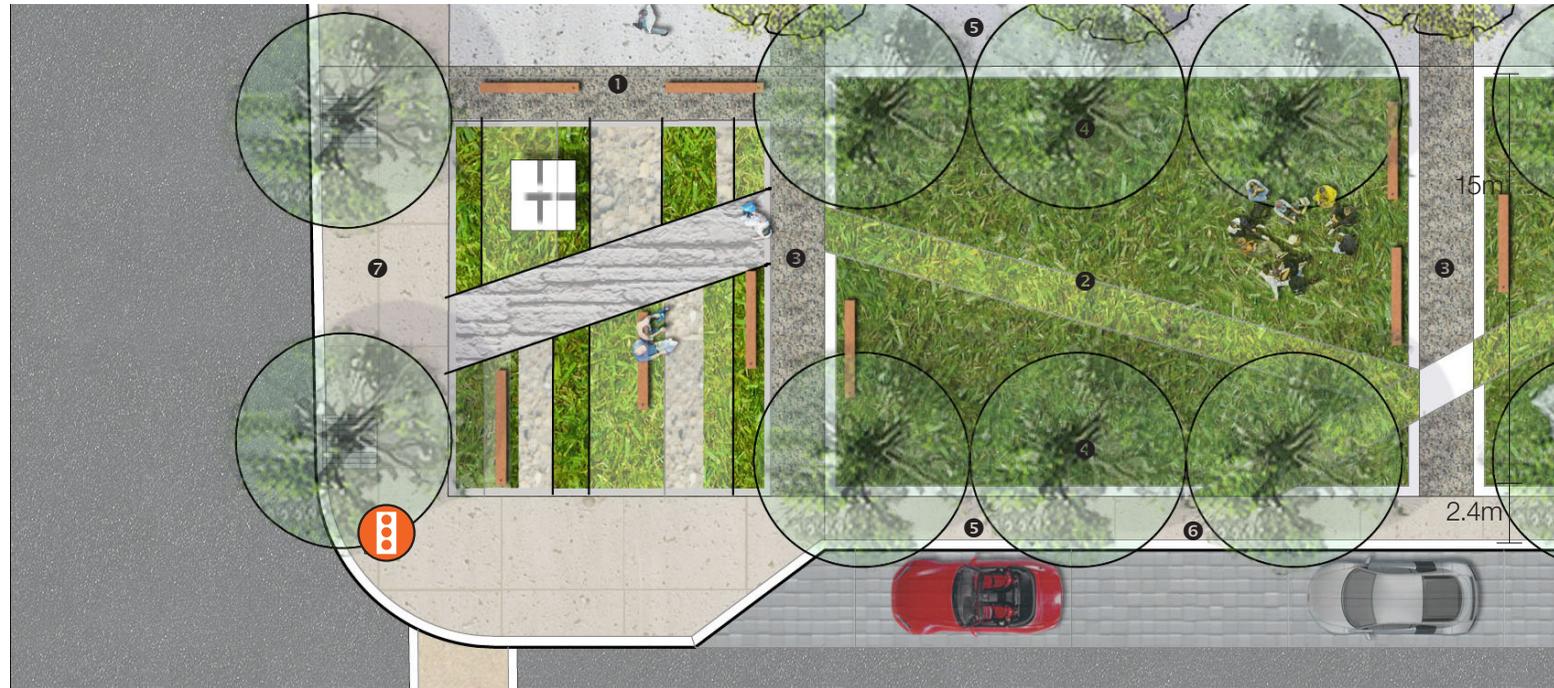
Layout

- Provide a 3m wide Active Recreational Corridor free of obstructions for use by cyclists, scooters, and in-line skaters **1**
- Provide a 5m wide Major Pedestrian Spine free of obstructions for use by pedestrians. **2**
- Separate the Active Recreational Corridor and the Major Pedestrian Spine with a 2m wide buffer zone that runs parallel with the Active Transportation Corridor. **3**
- Provide a continuous system that takes priority over the automobile by minimizing driveway crossings to access adjacent buildings.
- Limit the number and width of curb cuts for street access driveways to minimize interruption of the Major Pedestrian Spine and Active Recreational Corridor.
- Maintain sightlines at road crossings for safety. **4**
- Provide access to surface parking lots from secondary north south streets or laneways where possible.
- The active transportation corridor should flow into the intersecting roadways with a ramping system (no curbs) for a seamless transition. **5**
- Keep the active transportation corridor free of obstructions and obstacles.
- Utilize principles of Universal Design and ensure full accessibility.

Materials

- Use high quality, durable, smooth pavement materials to ensure accessibility and safety.
- Utilize identifiable pavement treatment where pedestrian/cyclist pathways cross street roadways for pedestrian safety and pedestrian priority.
- Use high quality materials.
- Define edges and transitions with creative use of paving materials and textures.





2 Active University Avenue Green

The Central University Green is located down the centre of University Avenue and is flanked by the active transportation corridor to the north and the vehicular travel way to the south. It is a continuous green corridor with an average width of 15.0m that provides for active and passive activities such as seating, reading, Frisbee playing and an informal game of catch. It provides a green buffer between the bustle of the road and the pedestrian action of the transportation corridor.

Design Guidelines:

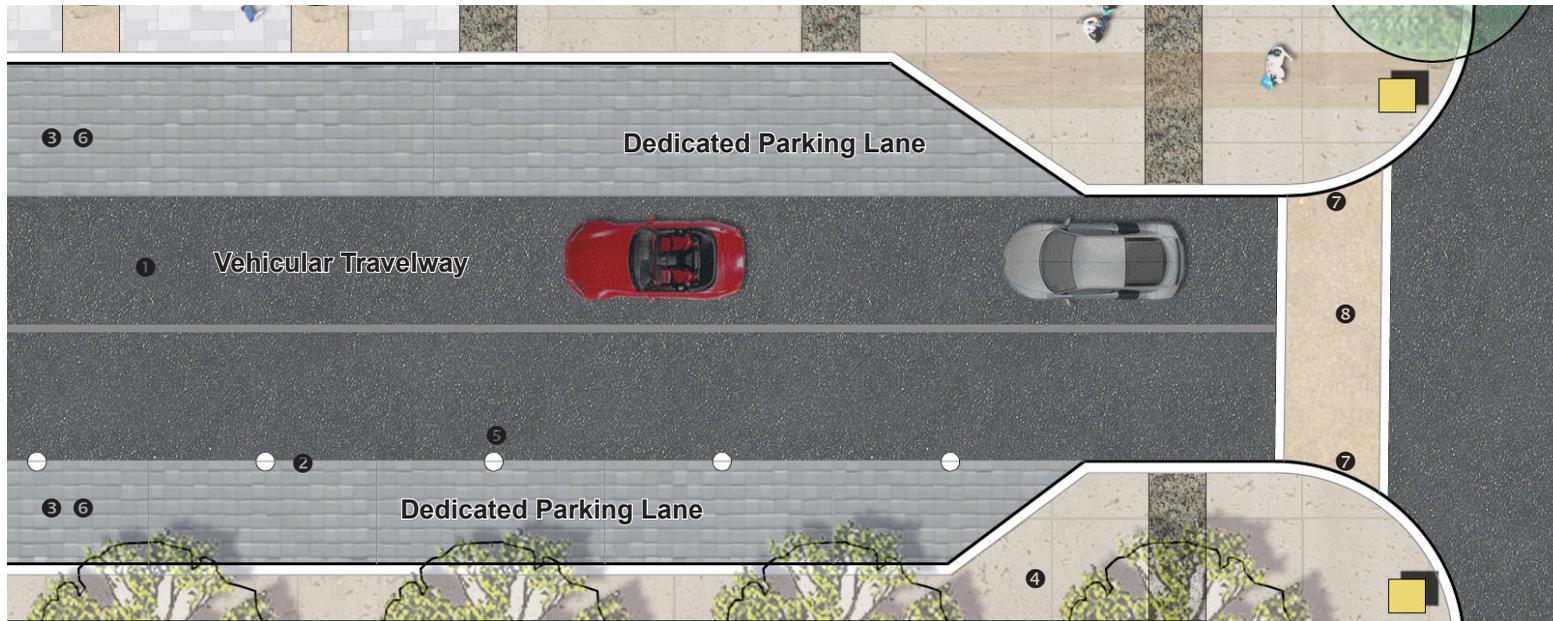
Layout

- Maintain and preserve existing significant vegetation pending review by a certified arborist.
- Bury existing overhead hydro lines below grade to reduce visual clutter.
- Provide a paved pedestrian /furniture zone along the edges of the Active University Green. **1**

- Provide sodded areas that are free of obstructions for active recreational activities such as Frisbee or catch. **2**
- Implement paved north-south pedestrian connections with a minimum width of 2.4m at the end of city blocks and at intersections. **3**

Paved Pedestrian/Furniture Zone

- Provide a continuous green canopy along the north and south edges of the green space. **4**
- Plant native and non-native plant material that is hardy, salt and drought resistant.
- Provide pedestrian scaled lighting on the north side of the Green to illuminate the active recreational corridor. **5**
- Provide vehicular scaled lighting on the south side of the Green to illuminate the travelway. **6**
- Provide vehicular and pedestrian scaled lighting on the east and western edges to accommodate the needs of intersecting pedestrian and vehicular traffic at Robie St. and Summer St. for example. **7**



Example of flexible parking using movable bollards

3 Vehicular Travelway

The new University Avenue corridor will be reduced in vehicular capacity from what it has today with one eastbound and one westbound lane. The travel ways will be flanked by dedicated on-street parking where appropriate to service the needs of local businesses and the University campus.

Design Guidelines:

Layout

- Use reduced lane widths to slow traffic down and promote positive congestion. **1**
- Implement semi-mountable curbs to improve pedestrian accessibility **7**
- Implement movable bollards that will allow for temporary closure of University Avenue for special events particularly between Lemarchant Street east to Seymour Street. This will allow the formal courtyard plaza at Studley Campus to flow seamlessly into the street for special events. **2**

Materials

- Consider using a decorative paving material (i.e. pigmented concrete, heavy duty concrete pavers) rather than asphalt to highlight the travel way. This will reinforce the theme and contribute to its identity.
- Utilize high quality accent paving at intersections to signal to cars to slow down for pedestrians and cyclists. **8**

Parking

Parking on University Avenue will be a combination of dedicated on-street and off-peak on-street parking. It will be transient short term metered parking to meet the demands of the local businesses and users of the university campus.

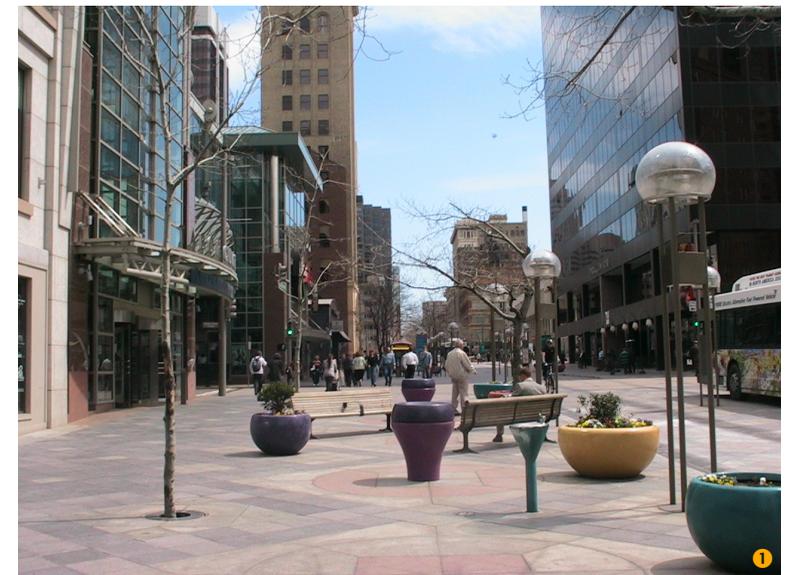
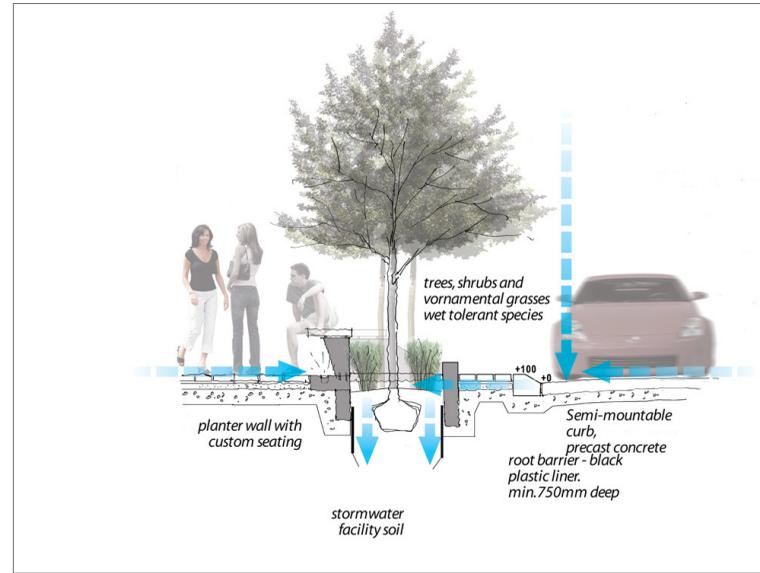
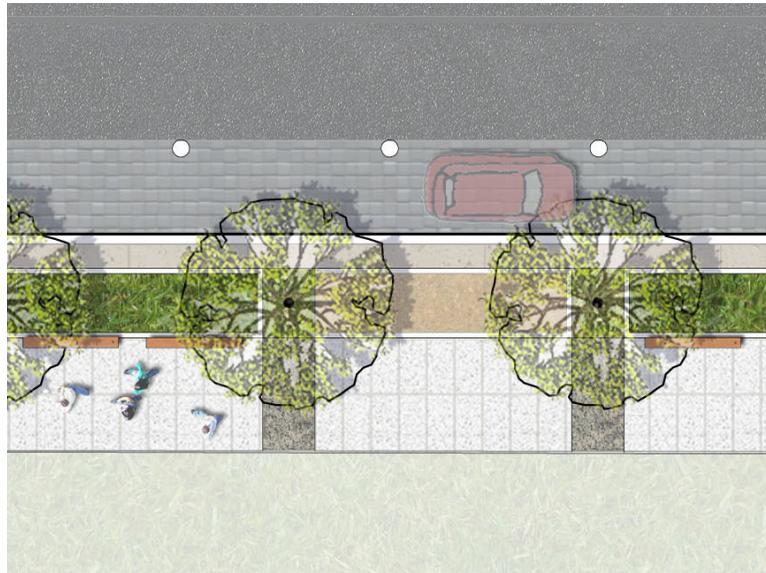
Design Guidelines

Layout

- Provide dedicated on-street parking along University Avenue to satisfy demand, act as passive traffic calming and to provide a buffer between pedestrians and vehicular travel lanes. **3**
- Provide a minimum 1.5m wide walkway on the north side of the dedicated parking stalls along University Avenue that abut the Central University Green

to accommodate passengers as they exit and enter their cars, parking meters, and lighting. **4**

- Consider a flexible parking design through the use of movable bollards that maximizes on-street parking during colder months while allowing for additional street activity particularly on the south side of University Avenue during warmer months. Movable bollards provide an opportunity to convert dedicated on-street parking spaces into space for outdoor cafes, restaurant seating as well as pedestrian circulation. **5**
- Utilize distinctive paving to differentiate the on-street parking stall from the University Avenue travel lanes. **6**
- Utilize solar powered parking meters.



4 Private/Public Interface & Building Forecourts

The private space that extends from the building face to the public right-of-way must be designed in such a way that it seamlessly blends with the design of the University Avenue public realm. The physical space from building face to building face should read as one continuous, consistent outdoor aesthetic for the entire length of University Avenue from Lemarchant Street East to Seymour Street including the connection to Sexton Campus along Clyde Street. Paving material, pattern, and texture including site elements such as seating and lighting should match that of the public right-of-way in order to blur the line between the public and private realm. ①

Design Guidelines:

- Provide a 2.4 m wide furniture/planting zone on the northern edge of the Major Pedestrian Spine to accommodate street tree planting, pedestrian scale lighting, benches, trash receptacles, media boxes etc.
- Minimize physical barriers into buildings as much as possible to facilitate accessibility.
- Minimize private driveway crossings over pedestrian circulation routes wherever possible. Locate them off of rear laneways or side streets whenever feasible.

Materials

- Coordinate paving materials and paving patterns of the public and private right-of-way.
- Coordinate the design, colour and scale of site furnishings such as benches, trash receptacles, light standards, and wayfinding signage with that of the adjoining public realm.

TYPICAL UNIVERSITY AVENUE PLAN



UNIVERSITY AVE INTERFACE AT PROMINENT BUILDINGS



K PHASING

K.1 PRIORITY PROJECTS

Four criteria for priority-setting have been outlined in Section D.6: Need, Importance, Sequence and Opportunity. By applying these criteria, the following chart illustrates three potential stages of capital projects, and in addition, projects are noted that occur as part of an annual improvement program (such as Deferred Maintenance, Phased Landscape Improvements and TDM). The chart below is not intended to be prescriptive but rather as a guide to the senior decision-makers having responsibility for adopting the University's annual Multi-Year Capital Program and to demonstrate the sequence of project phases envisioned in the Plan. Other projects are expected to be undertaken in any of the phases, determined by available funding.

K.2 PROJECT OPTIONS

In addition to considering the priority capital projects requiring phasing, the following are other projects that can be undertaken as opportunity arises. Depending on the timing of the opportunity, such projects then become part of the priority staging outlined above including:

- Addition to the Arts Centre
- New building on the Studley Upper Quad
- Additional student residences
- New building on the Dunn parking lot site
- Shared Research Building at Studley
- SUB renewal and renovation
- University Avenue renewal

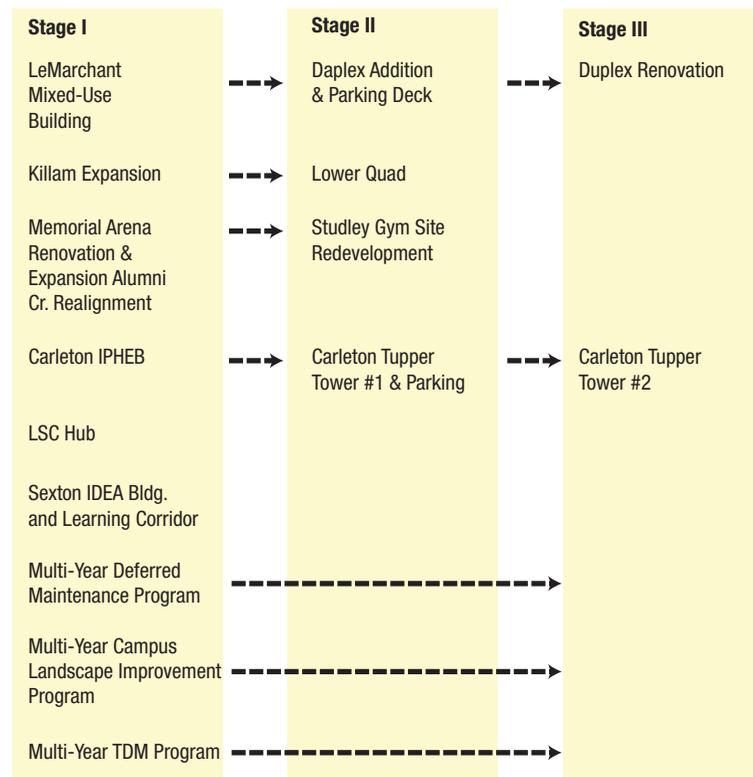
K.3 ULTIMATE GROWTH CAPACITY

Appendix A.2 provides an analysis of the estimated build-out of the campus to its reasonable development capacity, based on conservative assumptions of the development capacity of each site comprising the University's land holdings. The resulting calculations indicate that the campus is capable of development far exceeding the University's growth expectation. A conclusion of this finding can justifiably be that since the University policy does not anticipate such growth, there is no need for the University to plan on acquiring additional land for development purposes based on growth demand alone.

L IMPLEMENTATION

L.1 MANAGING DEVELOPMENT

The magnitude and pace of both new and renewal development anticipated in this Plan over the next ten years significantly exceeds development in past years at Dalhousie, suggesting that the University will need to strengthen its organizational capacity and resource base devoted to managing its facilities operations and development function. The additional human resources that will be needed, both in numbers and in qualifications, are typically justified as part of the cost of development and maintenance of the physical plant of large institutions such as Dalhousie. A review of organizational structure will demonstrate the need for a staff capacity that balances facilities planning and design with that of operations, maintenance and renewal.



L.2 FINANCING STRATEGIES

The magnitude and pace of development outlined in the Plan will also require considerably increased annual capital expenditure without expecting comparable increases in funding from traditional sources. The University will need to adopt approaches beyond its traditional practices for financing the development, and even operations of new projects. Such practices are now commonly employed by the public and private sectors throughout Canada. Creative new approaches are continually emerging in the arena of institutional development forged by equally creative partnerships of owners, investors, constructors and users of new and renewed facilities, also often made possible by collaboration with local and senior government agencies.

L.3 PROCEDURES FOR ACHIEVING PROJECT QUALITY

Although guided by a sound overall Framework Plan, ultimately the quality of the campus environs will depend upon the quality of each individual project – no easy undertaking considering the complexity of tasks required, the input needed to inform decision-making and the control and resources necessary to manage the process efficiently. The essential individuals and groups involved in the evolution of a capital project must be expected to employ procedures that are sanctioned and clearly articulated by those in authority, enforceable, transparent, dependable, efficient, and able to be readily tracked. Without such characteristics, the process can be frustrating and poorly informed, usually resulting in compromised quality. An effort to streamline the process of capital project development, coupled with strengthening the administrative capacity to manage development, will demonstrate the University's commitment and ability to thoughtfully implement the Plan and achieve its strategic objectives.

L.4 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Coordinating the many initiatives needed to achieve tangible TDM results over time will require designated staff focus and responsibility. The Plan recommends establishing a Dalhousie Transportation Management Association (TMA) to promote and coordinate TDM initiatives, similar to McMaster University's successful All-modes Commuting & Transportation (ACT) Program created in 2002. The Plan outlines three key strategies that comprise Dalhousie's TDM Plan aimed at gradual change over time: increasing transit ridership, increasing the supply of staff and student housing within walking distance of the University, and reducing demand for parking. A detailed strategy for phased implementation of the TDM program is outlined in Appendix A.1.