



RUTGERS UNIVERSITY PHYSICAL MASTER PLAN

RUTGERS 2030

VOLUME 1: NEW BRUNSWICK

JUNE 18, 2015



PREFACE

Rutgers University embarked on Rutgers 2030 in May 2013, the first comprehensive master plan in over a decade, and the first to incorporate Rutgers Biomedical and Health Sciences (RBHS), created from the integration of the University of Medicine and Dentistry of New Jersey (UMDNJ) with Rutgers University in July 2013. The physical master plan complements the Rutgers University Strategic Plan, prepared in conjunction with the Boston Consulting Group, and approved by the Board of Governors in February 2014, and the strategic plans of each of Rutgers' component institutions.

Rutgers 2030 envisions development at Rutgers over a 15-year time frame, 2015 to 2030, and is comprehensive in its scope; taking into account buildings, the natural and constructed landscape, transportation, and infrastructure. The report consists of three volumes:

- Volume 1: Rutgers University–New Brunswick
- Volume 2: Rutgers University–Newark
- Volume 3: Rutgers University–Camden

RBHS is considered primarily within Volume 1 although constituent elements are found across Rutgers.

The scope of input was broad, involving survey responses from approximately 8,000 members of the community, over thirty presentations and town hall meetings, and meetings with many administrators, faculty, and student groups.

This study would not have been possible without the leadership of Rutgers University President Robert L. Barchi and support of Chancellors Nancy Cantor, Richard Edwards, Phoebe Haddon, and Brian Strom. In addition, the Physical Master Plan Executive Steering Committee, Rutgers University Facilities and Capital Planning members, Deans, staff, faculty and students contributed invaluable insight to the development of the project.

The master plan consulting team included Robert A.M. Stern Architects, Sasaki Associates, VHB, Buro Happold, and Toscano Clements Taylor.



Volume 1: New Brunswick

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INTRODUCTION: TAKING RUTGERS UNIVERSITY–NEW BRUNSWICK FORWARD

This report grows out of a comprehensive study of the Rutgers University–New Brunswick campus undertaken between June 2013 and December 2014, and is part of a broader planning study for all of Rutgers, The State University of New Jersey. The overall planning effort follows upon a Strategic Planning study completed by Rutgers in 2014 and the reintegration of many elements of the University of Medicine and Dentistry of New Jersey (UMDNJ) into the Rutgers system to create RBHS.

This chapter of the overall report tackles the particular and somewhat unique situation of Rutgers University – New Brunswick as a geographically dispersed yet administratively centralized campus that has evolved from several physically and culturally distinct colleges. In the context of this volume, the term “Rutgers” will be used to refer only to Rutgers University – New Brunswick.

Written at a time of fundamental change in higher education under the influence of revolutionary digital technologies, the report imagines and provides concrete recommendations that will, if enacted, significantly improve the quality of the college

experience for Rutgers University–New Brunswick students, faculty, and staff, and will create a more efficient and environmentally sustainable campus.

Led by the Rutgers administration under the leadership of President Robert Barchi, our study team has been encouraged to think of the Rutgers University–New Brunswick campus as more than an amalgamation of classroom buildings, residence halls and academic malls; rather shifting our focus to its large scale infrastructure and physical systems. We have studied Rutgers’ far-flung transportation networks, the daily ebb and flow of students between their living spaces and classes, the ways in which classes are assigned and how technology might enhance time usage and reduce the need to travel. We have also looked closely at Rutgers University–New Brunswick as a natural ecosystem centered on the Raritan River, and traced how future development could enhance and reinforce that ecosystem.

The sheer size and complexity of the Rutgers – New Brunswick campus, equivalent in size to a small city, combined with its history as a series of independent campuses, has led to an overall lack of legibility for the

campus as a whole. While there is a certain strength in the variety of environments in Rutgers University–New Brunswick, ranging from urban to rural, there is also a separation and balkanization that results, which diminishes a unified sense of purpose and school spirit and is reflected in the relatively low level of engagement of Rutgers alumni.

In this report, five general planning principles have been utilized to organize the recommendations of the master plan. Each principle represents an important aspect of the report. They are:

- **Learning at Rutgers** - Enhancing classrooms, libraries and ancillary learning spaces;
- **Life at Rutgers** - Enhancing experiences outside of the classroom;
- **Navigating Rutgers** - Improving transportation within and between campus districts;
- **Stewardship at Rutgers** - Effectively and appropriately using land and resources; and
- **Personalizing Rutgers** – Using information technology to better communicate options to improve decision-making and educational

outcomes.

Closely related to these broad planning principles, this report offers many significant and concrete proposals for change. These proposals range from specific buildings to a broad re-thinking of the way students move around campus, as well as a new relationship between Rutgers – New Brunswick and the Raritan River, along whose banks both town and University originally grew. Proposals can be grouped into categories related to academic initiatives, transport, student life, housing and health, wellness and recreation.

- **Campus Connectivity - Transportation**
Creation of district transit hubs; bus rapid transit, improvements to parking, pedestrian and bicycle paths;
- **Strategic Academic Initiatives** -
Improvements to learning environments, use of technology to augment classroom teaching, and partnerships with industry;
- **Student Life** - Focus on non-academic quality of life for both residents and commuters;

- **Housing** - Replacement over time of sub-standard housing, creating student communities; new housing proposals for junior faculty; and
- **Health, Wellness and Recreation** –
Improved opportunities for recreation and improved stewardship of the Rutgers natural environment.

Environmental sustainability is a central element pervading all aspects of the proposals in this study. From reducing bus and vehicle traffic, to centralizing hubs, increasing opportunities for biking and walking, reconnecting to the Raritan, planning building locations with an eye to the under-lying hydrology, to significantly upgraded landscape plantings throughout Rutgers-New Brunswick, this plan provides a road-map to a significantly more sustainable campus.

The integration of the former UMDNJ and the creation of Rutgers Biomedical and Health Sciences (RBHS) will have significant impacts to the future planning of Rutgers-New Brunswick. RBHS has a large presence both on Busch and in downtown New Brunswick adjacent to College Avenue. The plan proposes a

possible future scenario for the redevelopment of RBHS Facilities on Busch.

There are many other specific proposals at the district level for new, renovated, and re-purposed buildings, streets, and landscapes. A proposed series of projects, time-line and budgets are included. The evolving discussion regarding the place of the physical campus within the University will of course play a significant role and where it will lead cannot be fully known at this time. Yet, no matter what the future holds, we believe the fundamental actions and orientations embodied in this report will, when implemented, significantly improve the functioning the University, the quality of experience for those who attend and work at it, and of the central New Jersey region beyond.

In Chapter 2 of this volume, the context for planning decisions is established. We look at existing natural systems, land use, transportation and academic scheduling. In Chapter 3.1, the five key principles: Learning, Life, Navigation, Stewardship, and Personalization, are developed. Chapter 3.2 establishes an overall campus framework in response to these principles. Chapter 4 presents detailed

KEY INITIATIVES

FIVE PROPOSED AREAS OF FOCUS
ILLUSTRATE RUTGERS 2030'S PRIORITIES;
TAKEN TOGETHER THEY WILL TRANSFORM
THE NEW BRUNSWICK CAMPUS AND
SUPPORT THE UNIVERSITY'S STRATEGIC
PLAN.

Campus Connectivity – Transportation

This report calls for the reduction of overall stress on the transportation system, and for a physical reorientation of each of the former campuses (now more properly thought of as districts within Rutgers – New Brunswick) around a central and enhanced transit hub. These hubs will form the entry point into each district, and will be surrounded at close proximity by the district’s most intensively used academic and social elements (Figure 1.1). Express bus lines, using dedicated lanes where possible, will connect district hubs. Within each district, a local circulator bus system will complement the express routes (Figure 1.2).

To strengthen the connection between the College Avenue, Cook, and Douglass on the New Brunswick side of the Raritan, the study proposes that Rutgers and the City of New Brunswick enact a loop of dedicated bus rapid transit (BRT) lanes connecting the districts (Figure 1.3). This one action, long under discussion, would significantly improve the quality of the student experience for thousands of Rutgers students, especially those living, studying, and working at Cook and Douglass, and would bind them much more forcefully to the rest of Rutgers University–New Brunswick.

A new bridge incorporating a pedestrian and bicycle pathway is proposed to connect College Avenue with Livingston through the existing ecological preserve; balancing open space preservation with a new direct connection between Rutgers properties on either side of the Raritan. The bridge would also stand as a potent symbol of the potential of 21st century Rutgers – New Brunswick (Figures 1.4, 1.5). Busch and Livingston connections are strengthened by a new dedicated roadway and bridge over Route 18 (Figure 1.6); College Avenue and Cook/Douglass are further connected by an enhanced bicycle and pedestrian route along the Raritan, and restoration of bus service across the Route 27 bridge to serve the Rutgers community at Highland Park.

Transportation can be improved in many ways. Commuter parking can be rationalized and inconveniently located lots can be relocated. The system of bike paths, which is at present incomplete and contains several dangerous conditions, can be improved. Enhancements to landscaping and planning of pedestrian walkways, can, for a relatively small expense, improve the quality of life for many.

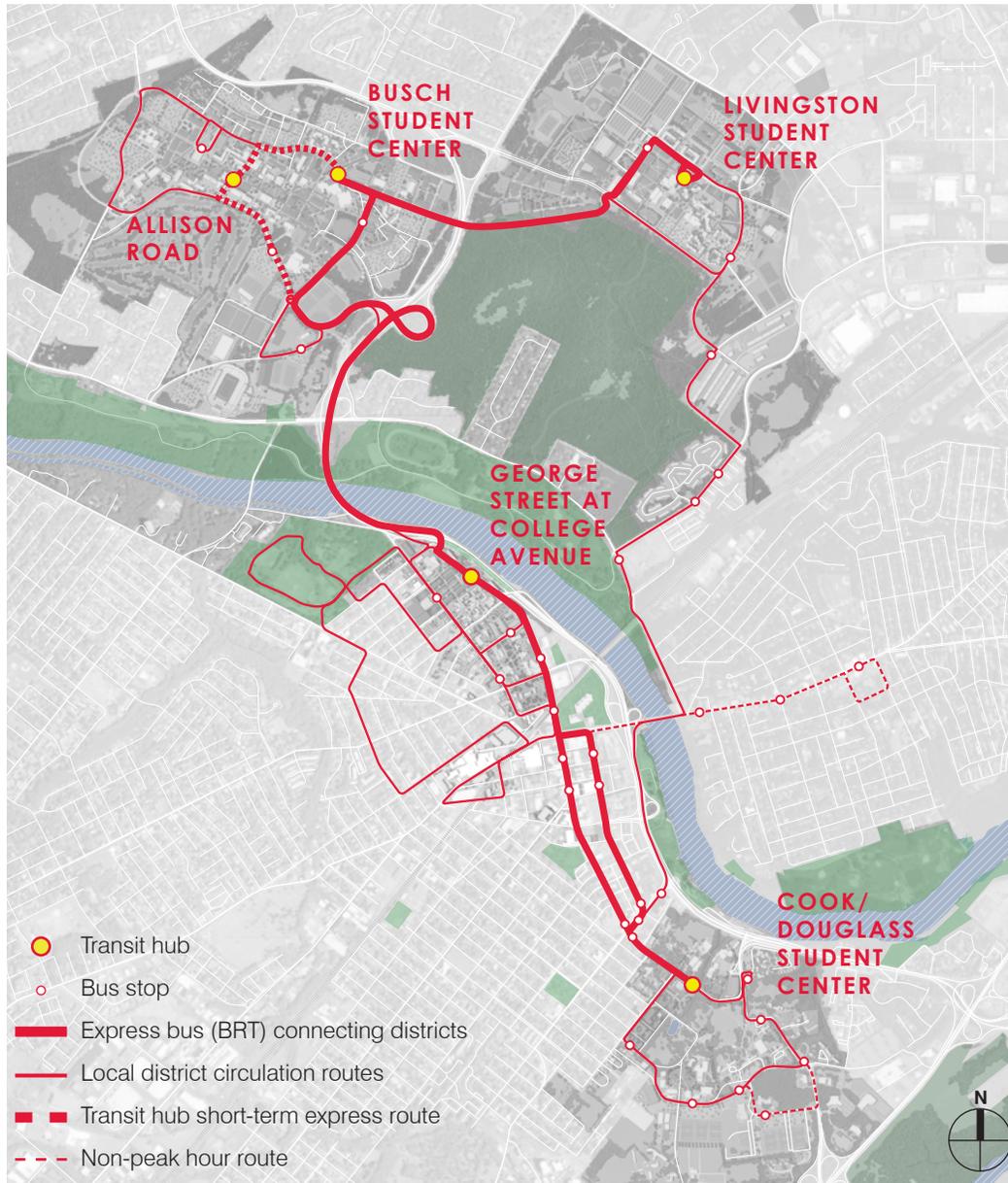


Figure 1.2 Proposed bus network with hubs at each district

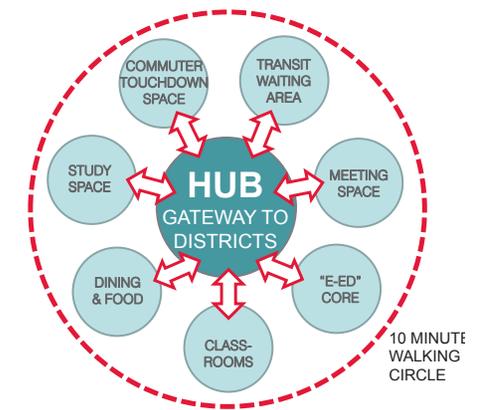


Figure 1.1 Components of a hub

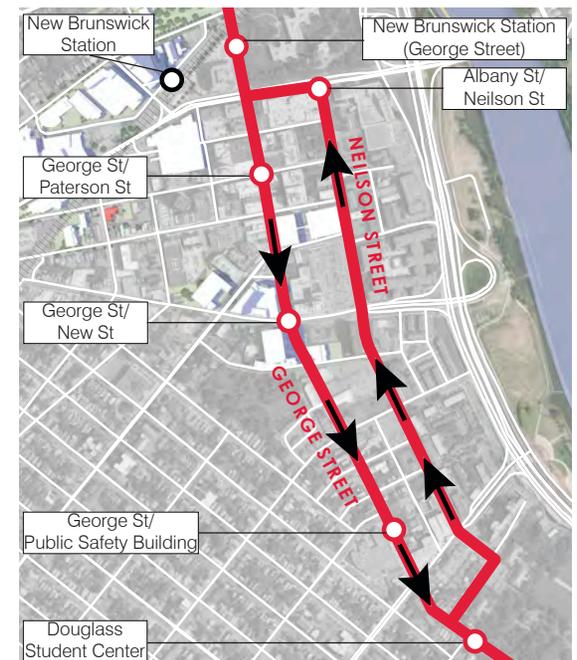


Figure 1.3 Proposed BRT route connecting College Avenue and Cook/Douglass



Figure 1.4 New Trans-Raritan connection between College Avenue and Livingston



Figure 1.5: New bridge across the Raritan



Figure 1.6: New connection from Busch to Livingston

Strategic Academic Initiatives

A significant issue today on the Rutgers University–New Brunswick campus is that too many students spend too much time getting to, from, and between their classes. A fleet of Rutgers buses and a complex series of routes has developed to take students back and forth to far-flung locations. While the system is well managed, the underlying systemic stresses could be reduced by better coordination between different administrative groups that assign housing and class scheduling, along with increased usage of intra-campus distance learning technologies to reduce the need to travel while retaining the quality of classroom learning (Figure 1.7).

In each district there should be a center of student academic activity. The center would include principal classrooms and lecture halls, student dining and recreational spaces, and libraries and study spaces (Figures 1.8-1.11). From these bustling hubs, landscaped, multi-modal streets and pathways will radiate to encompass the remainder of the district, and a secondary bus loop will augment the express BRT lines connecting district hubs.

In order to leverage the enormous intellectual capital at Rutgers University–New Brunswick especially in the sciences, engineering and medicine, a significant new research park is proposed as a physical connection between Busch and Livingston (Figures 1.12, 1.13). Conceived as a partnership between Rutgers and the large New Jersey scientific and technical business communities, the new research park will take advantage both of the proximity to the core of Busch and the new Rutgers business school on Livingston. Straddling Route 18, the research park will be easily accessible from throughout central New Jersey and especially from the Route 1 technology corridor. A conference hotel is proposed as an initial element in this development.

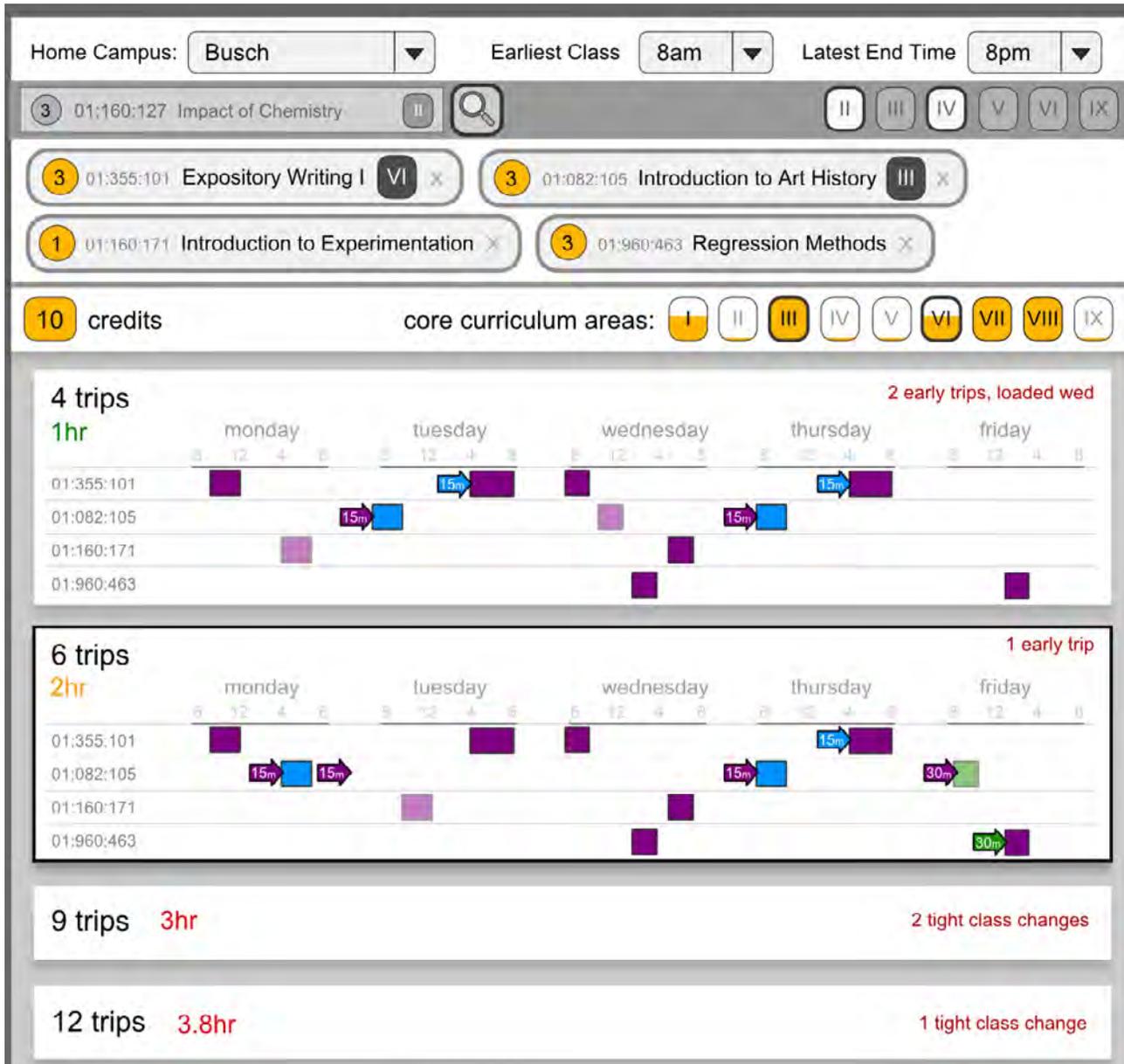


Figure 1.7 “Dashboard” integrating class schedule with transit criteria



Figure 1.8 Hub at College Avenue new quadrangle



Figure 1.9 Hub at Cook/Douglass Student Center



Figure 1.10 Hub at Busch Student Center



Figure 1.11 Hub at Livingston Student Center



Figure 1.12 Plan of high-tech research and innovation park



Figure 1.13 View of high-tech research and innovation park

Student Life

Recent improvements at Livingston have demonstrated that an investment in the quality and quantity of spaces related to the life of students outside of the classroom pays significant dividends (Figure 1.14). Our surveys showed new and renovated facilities are far preferred by students. Currently, several dining halls, gyms, meeting spaces for on-campus clubs, touch-down spaces for commuters, and convocation spaces for larger events are deficient and below the level of Rutgers University – New Brunswick peer institutions (Figure 1.15).

There are many specific recommendations in this report related to the improvement of student life facilities. A significant expansion to the student center at Cook/Douglass is proposed, as is a facility geared toward RBHS students on the west end of Busch. One of the boldest proposals is the reconstruction of the block between College Avenue, George Street, Morrell Street, and Senior Street to create a new quadrangle incorporating a new student center, dining hall, club spaces, a high-tech classroom, below grade parking, and a new transit hub to create a new nexus of student activity not just for College Avenue but for all of Rutgers University – New Brunswick . (Figure 1.16-1.18)

Improvements to one aspect of the student experience has already begun with the consolidation of all student services into a “one-stop shop” at the ASB 1 building on Busch.



Figure 1.14 Dining Room at Livingston Dining Commons



Figure 1.15 Brower Commons at College Avenue

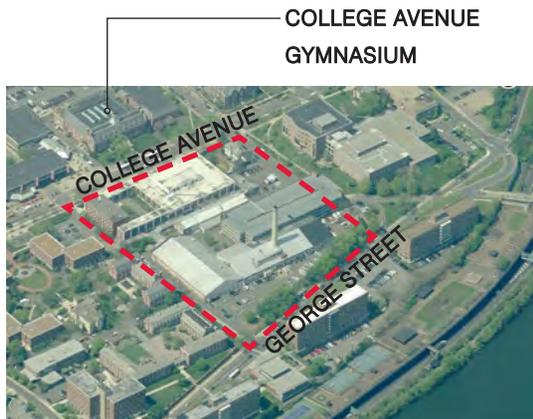


Figure 1.16 Existing condition at College Avenue

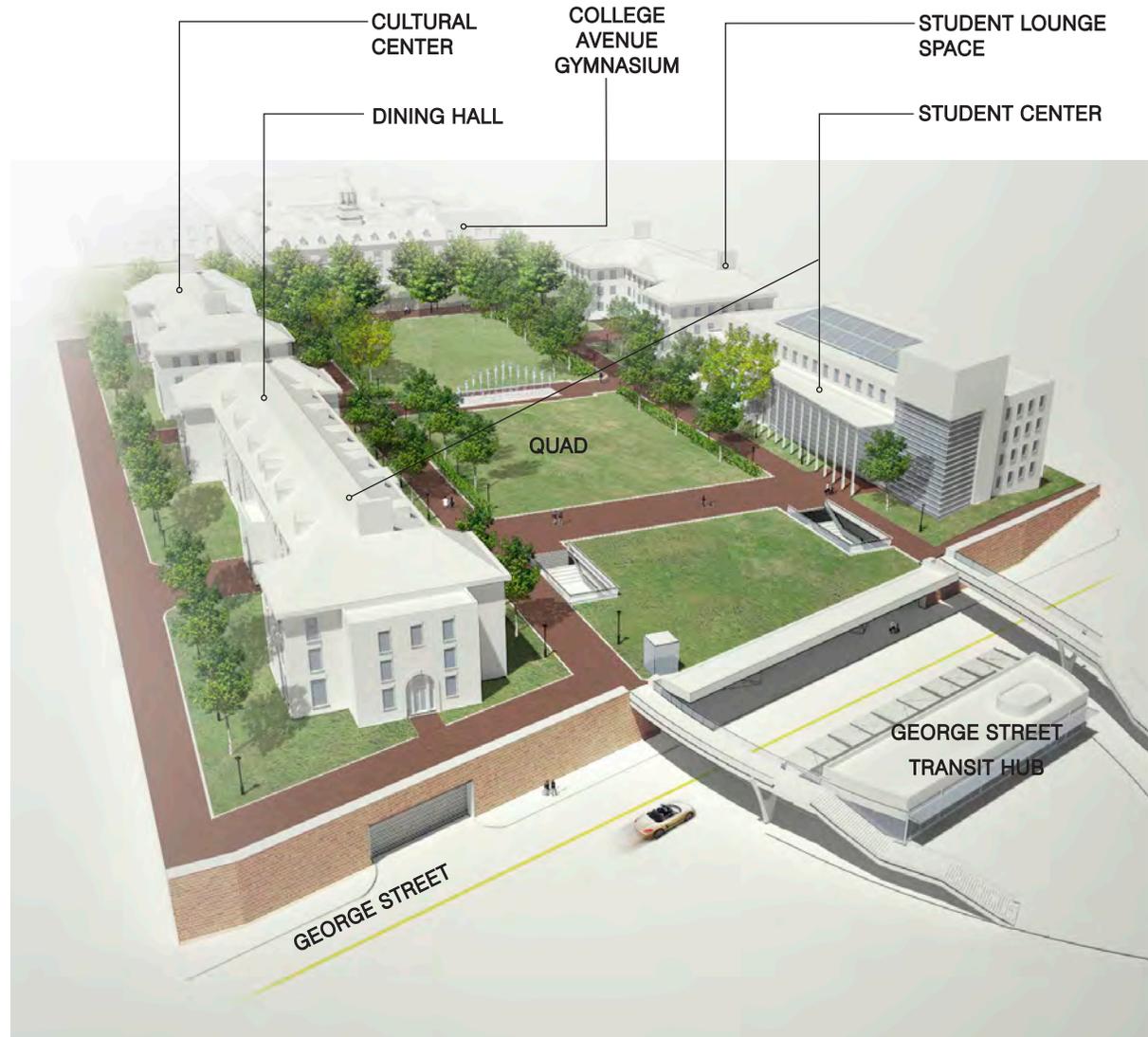


Figure 1.17 New quadrangle at College Avenue



Figure 1.18 College Avenue transit hub - George Street

Housing

Rutgers University–New Brunswick includes a very large residential housing program, among the biggest in the country, with many different types and qualities of housing. Much housing is geographically dispersed and has the tendency to isolate residents from the life of the University, while requiring either a commute by car or extended trip by bus. Further, many units of housing are nearing the end of their useful lives (Figure 1.19). The master plan proposes the rationalization, over time, of Rutgers University–New Brunswick housing stock and the co-location of new housing with Rutgers academic and student amenities. Significant new housing is proposed for Busch and Cook/Douglass, to complement recently completed projects or those currently under way at Livingston and College Avenue (Figure 1.20). Included in the plan for housing is the creation of new living-learning communities, which simplify transport and can lead to the esprit-de-corps found in more intimate college settings.

The provision of high quality, reasonably priced housing is a key ingredient in the ability of Universities to compete for the best talent among young faculty and researchers. A major initiative is proposed to add new housing for faculty at the south

side of Cook, largely within the catchment of the desirable North Brunswick school district, and close to Route 1 (Figures 1.21, 1.22). This location also benefits from its proximity to Rutgers recreational spaces, Rutgers Gardens and the many public performances and exhibitions at the Mason Gross School of the Arts.



Figure 1.20 Livingston retail and housing



Figure 1.19 Russell apartments at Busch

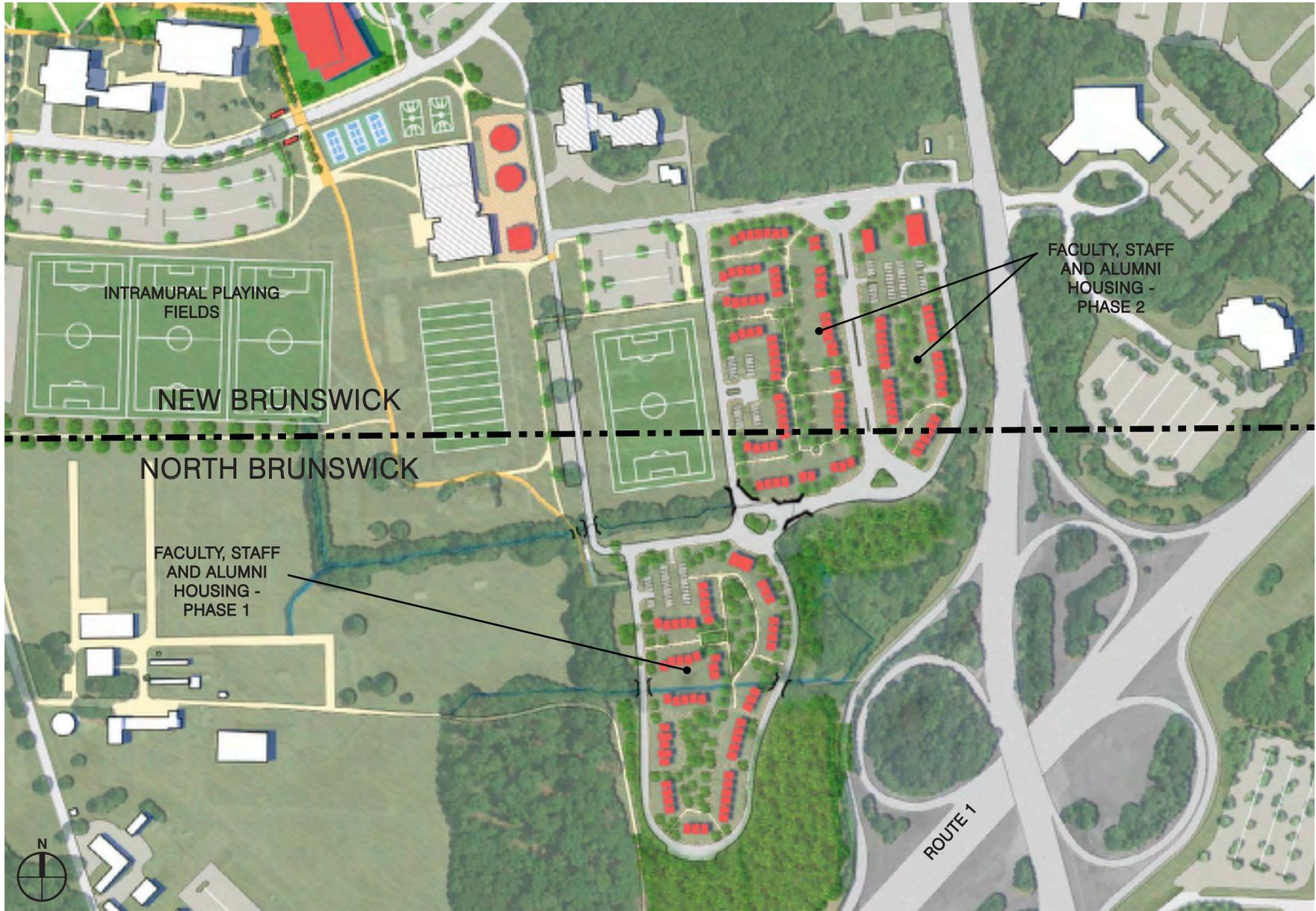


Figure 1.21 Plan diagram of faculty housing at Cook



Figure 1.22 Aerial view of faculty housing at Cook

Health, Wellness and Recreation

Improving quality of life within the Rutgers community include both increasing opportunities for healthy physical activities and reinforcing the values of stewardship and sustainability with respect to Rutgers University–New Brunswick’s large and diverse natural setting.

Benchmarking surveys indicate that Rutgers-New Brunswick trails its peers in the creation of spaces for clubs and intramural sports, a problem that is particularly acute at College Avenue, where outdoor recreational space is minimal and the College Avenue gym is out-moded. The master plan proposes the bold gesture of connecting College Avenue to the plentiful park-land and recreational opportunities across the Raritan River by means of a new bicycle and pedestrian bridge (Figure 1.23).

A second over-arching theme is to reconnect Rutgers University – New Brunswick to its historically central relationship to the Raritan River and to strongly tie together the districts to either side of the Raritan. A walkway, to be created along the New Brunswick side of the River and connecting the College Avenue and Douglass, would be accessible from new and restored

stairs and ramps from the river’s bluff, and will revive town, campus, and river connections severed by Route 18. On the north bank of the Raritan, this report proposes collaborating with local constituencies to increase the recreational use of the necklace of parks that inhabit the River’s flood plain (Figure 1.24).

New playing fields are proposed at Cook/Douglass and improvements are proposed for each of the district recreational centers (Figure 1.25).

Rutgers is also the steward of a large ecological preserve adjacent to Livingston. Our plan calls for measured development within the preserve to allow for another, more direct connection between College Avenue and Livingston, and for the use and enjoyment of the Rutgers University – New Brunswick Community (Figures 1.26).



Figure 1.23 New bridge and campus development at College Avenue

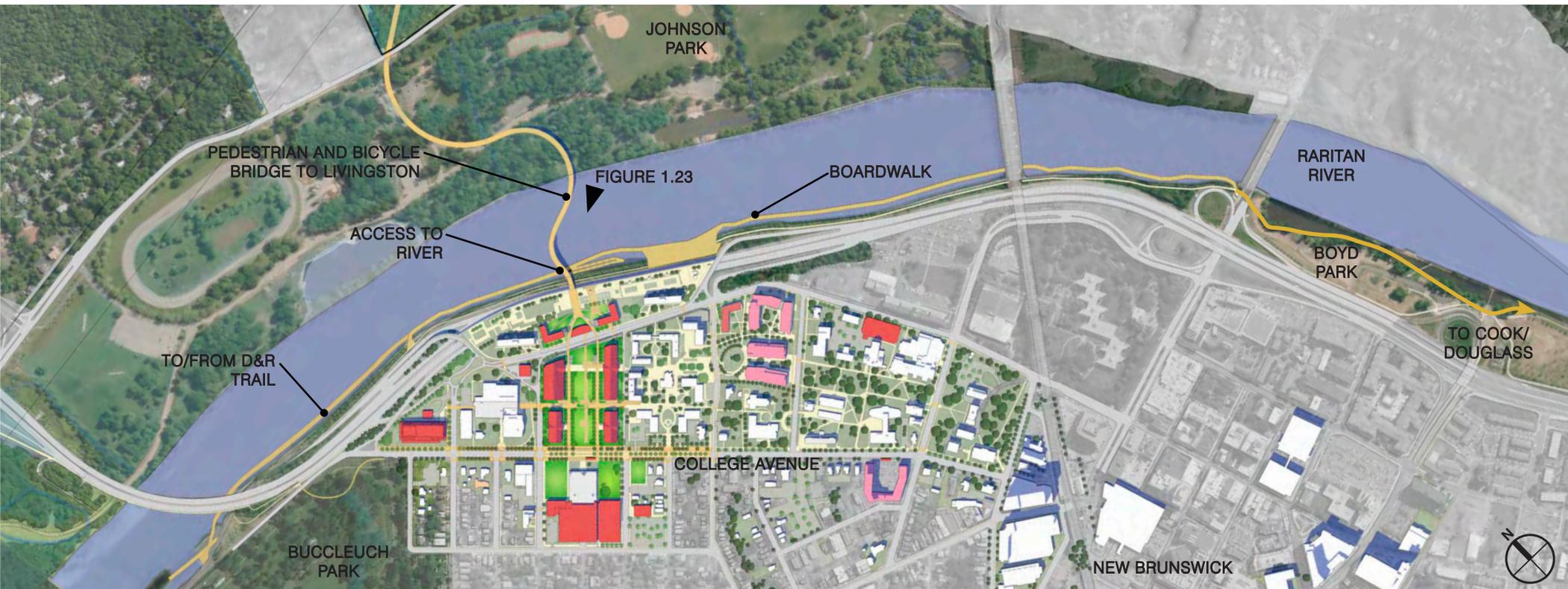


Figure 1.24 New boardwalk extension to the Delaware and Raritan (D&R) tow path with connection to Cook/Douglass campus



Figure 1.25 New playing fields at Cook/Douglass

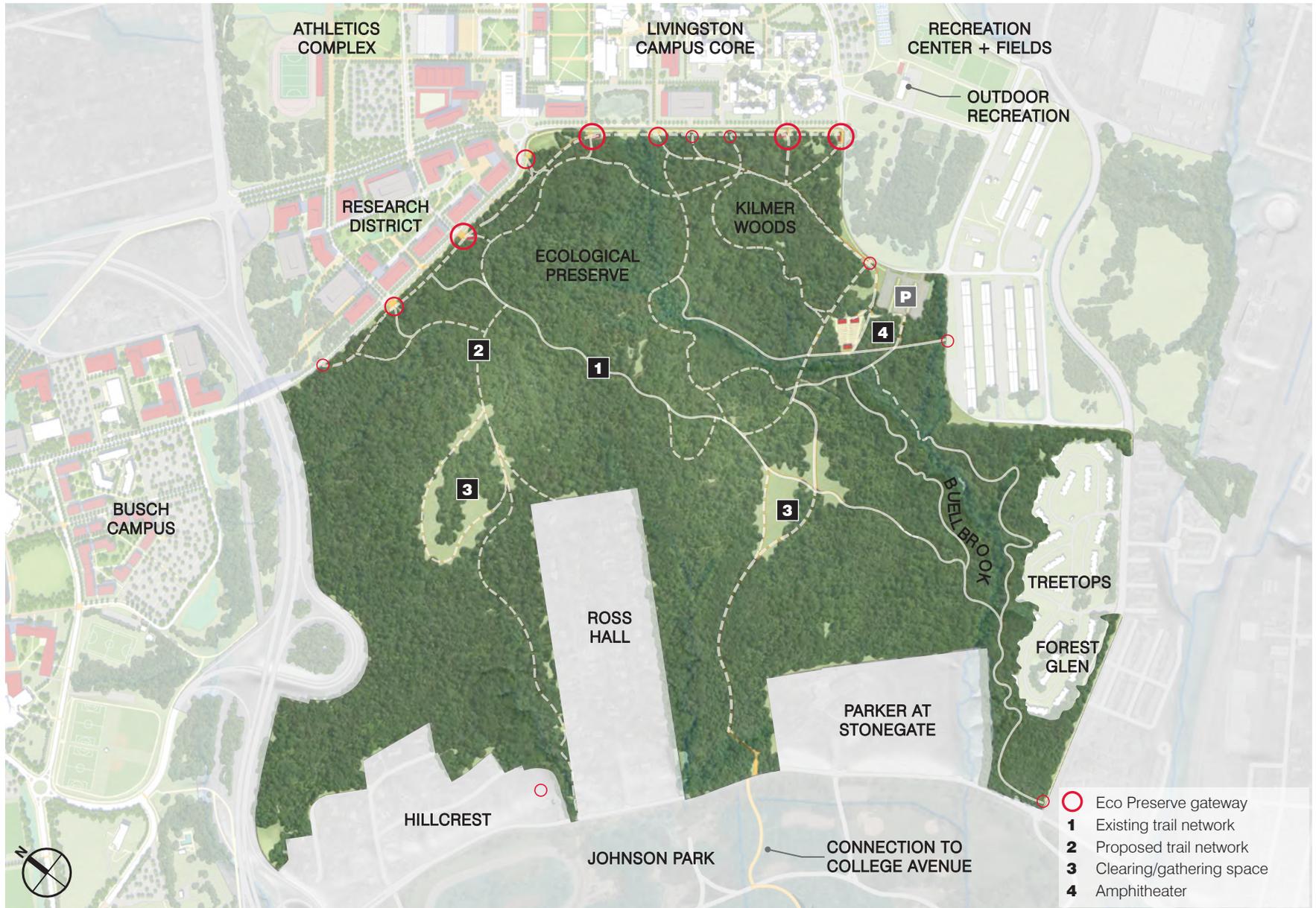


Figure 1.26 Proposed network of connections through the Rutgers ecological preserve

DISTRICT PLANS

THE FOLLOWING ILLUSTRATIONS DESCRIBE THE PROJECTS IN THE RUTGERS UNIVERSITY – NEW BRUNSWICK 2030 MASTER PLAN. PROJECTS ARE DESCRIBED IN DETAIL IN CHAPTER 4.

FIGURE 1.27 COLLEGE AVENUE

FIGURE 1.28 COOK/DOUGLASS

FIGURE 1.29 BUSCH

FIGURE 1.30 LIVINGSTON

FIGURE 1.31 PROPOSED AERIAL VIEW OF RUTGERS UNIVERSITY - NEW
BRUNSWICK

COLLEGE AVENUE 2030

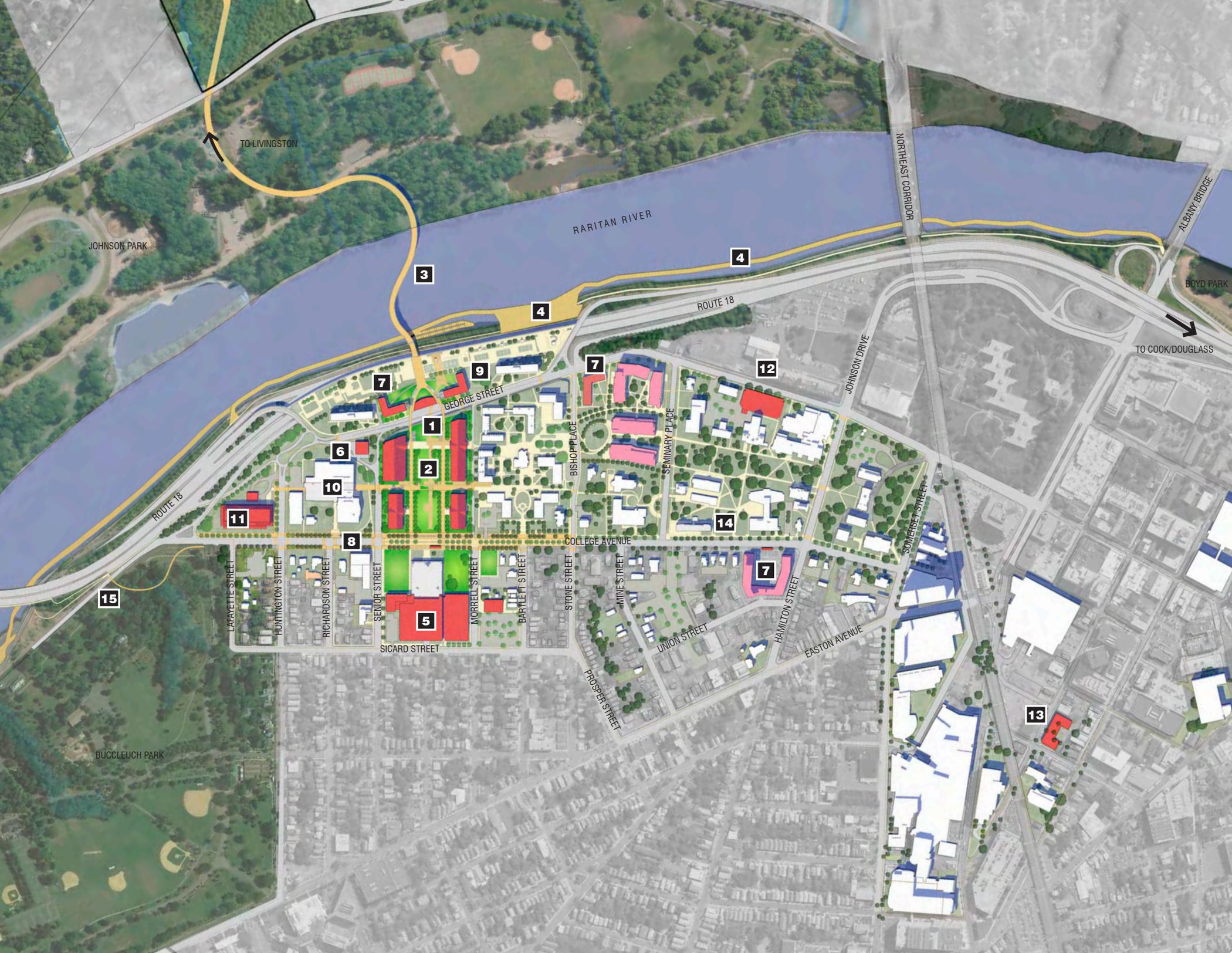
-  Existing Building
-  Proposed Buildings
-  Buildings Under Construction
-  Key Projects

KEY PROJECTS

- 1 George Street Transit Hub
- 2 Student Center complex and quad
- 3 Pedestrian and bike bridge over the Raritan
- 4 Raritan River boardwalk
- 5 College Avenue Gym renovation and expansion
- 6 Power plant
- 7 Undergraduate housing
- 8 College Avenue greening
- 9 Deiner Park renewal
- 10 Alexander Library renovation
- 11 North Gateway mixed-use building
- 12 Parking Garage
- 13 Academic building (RBHS)
- 14 Ford Hall Renovation
- 15 Bicycle Connection to Route 18



Figure 1.27 College Avenue master plan



TO LIVINGSTON

RARITAN RIVER

NORTHEAST CORRIDOR

ALBANY BRIDGE

TO COOK/DOUGLASS

JOHNSON PARK

BOYD PARK

ROUTE 18

JOHNSON DRIVE

3

4

7

9

7

12

6

1

2

14

11

10

8

5

7

13

15

ROUTE 18

LAFAYETTE STREET

HUNTINGTON STREET

RICHARDSON STREET

SENIOR STREET

MORRELL STREET

BARTLETT STREET

STONE STREET

MINE STREET

UNION STREET

HAMILTON STREET

EASTON AVENUE

SOMERSET STREET

GEORGE STREET

BISHOP PLACE

SEMINARY PLACE

COLLEGE AVENUE

PROSPER STREET

BUCCLEUCH PARK

COOK/DOUGLASS 2030

-  Existing Building
-  Proposed Buildings
-  Key Projects

KEY PROJECTS

- 1 Douglass Student Center Expansion and Transit Hub
- 2 Undergraduate Housing
- 3 Faculty and Graduate Family Housing
- 4 Pedestrian and Bike Bridge over George Street
- 5 Recreation Field Complex
- 6 Mason Gross Phase 2 + 3 Expansion
- 7 Academic Buildings
- 8 Rutgers Gardens Visitor Center and Expansion
- 9 Woodlawn Art and Sculpture Park
- 10 Passion Puddle Education Gardens

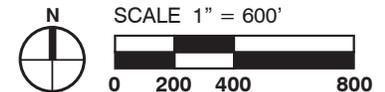
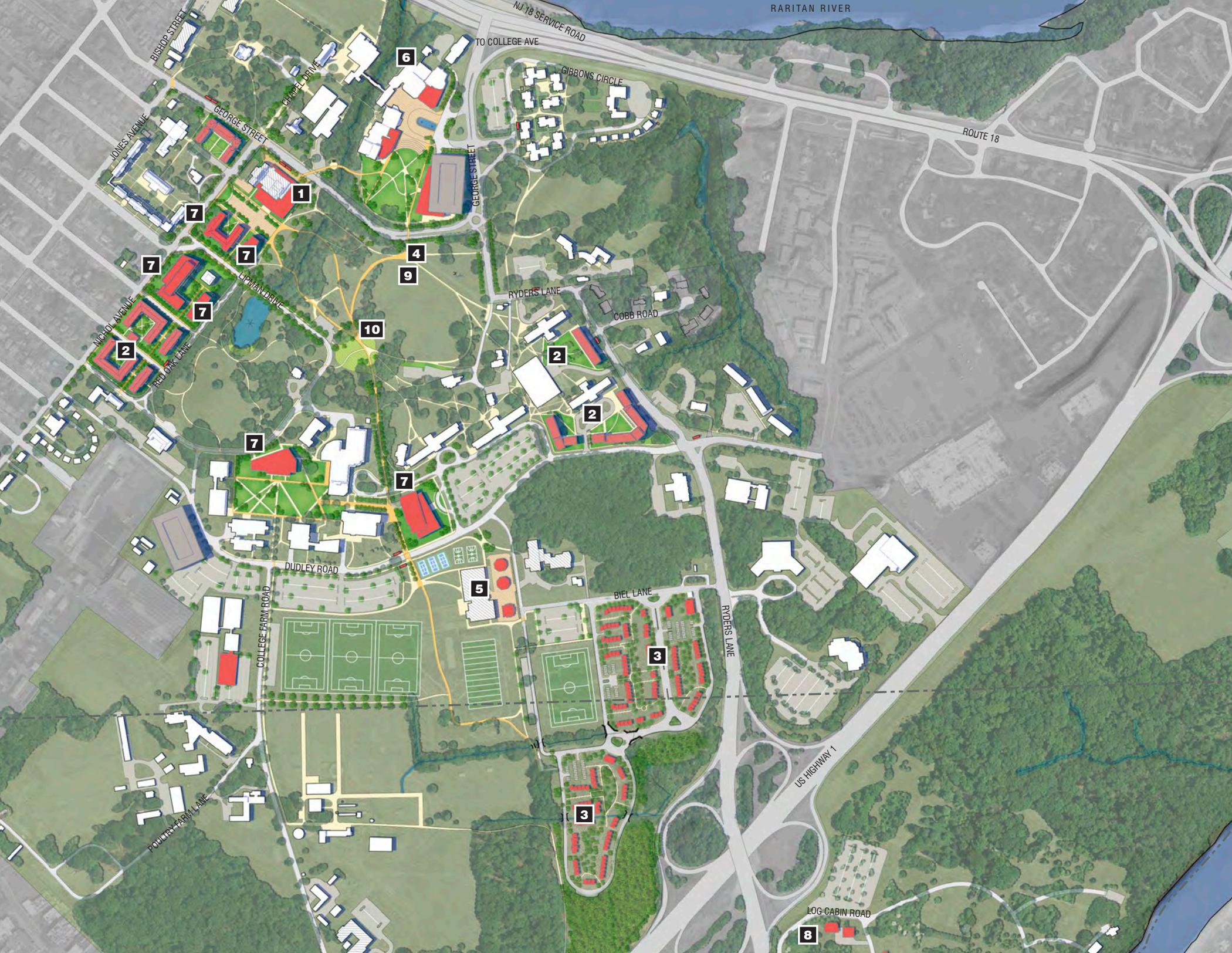


Figure 1.28 Cook/Douglass master plan



RARITAN RIVER

TO COLLEGE AVE

ROUTE 18

6

GIBBONS CIRCLE

1

GEORGE STREET

7

4

7

9

10

RYDERS LANE

COBB ROAD

2

2

7

7

7

LIPMAN DRIVE

7

7

DUDLEY ROAD

5

BIEL LANE

3

RYDERS LANE

US HIGHWAY 1

POWERS FARM LANE

COLLEGE FARM ROAD

3

LOG CABIN ROAD

8

BUSCH 2030

-  Existing Building
-  Proposed Buildings
-  Key Projects

KEY PROJECTS

- 1 Busch Student Center Transit Hub
- 2 Allison Road Transit Hub
- 3 Busch Gateway realignment
- 4 RBHS Research Tower replacement
- 5 Kessler Teaching Labs replacement + Quad
- 6 Busch Mall landscape
- 7 Administrative buildings
- 8 High-Tech Classroom Building
- 9 Werblin Center addition
- 10 Undergraduate Housing
- 11 Graduate Housing
- 12 North Garage
- 13 High-speed transit and bicycle connection to Research Park and Livingston
- 14 Central Heating Plant



Figure 1. 29 Busch master plan



ROUTE 18

TO LIVINGSTON

DAVIDSON ROAD

BUSCH-LIVINGSTON BRIDGE

BEVIER ROAD

HOES LANE WEST

ALLISON ROAD

FREUNGHUUSEN ROAD

FITCH ROAD

SCARLET KNIGHT WAY

BART HOLMENEY ROAD

CAMPUS ROAD

SUTPHEN ROAD

11

11

11

4

5

2

2

6

8

10

3

12

3

1

10

10

7

13

14

9

LIVINGSTON 2030

- Existing Building
- Proposed Buildings
- Key Projects

KEY PROJECTS

- 1 Livingston Student Center Transit Hub
- 2 Ecological Preserve trail network and gateways
- 3 Busch-Livingston Research Park
- 4 Future Mixed-Use District
- 5 High-Tech Classroom Building
- 6 Academic Building
- 7 Undergraduate housing
- 8 Livingston Recreation Center expansion
- 9 Practice Facility with Integrated Parking
- 10 Hotel and Conference Center
- 11 Scarlet Knight Park

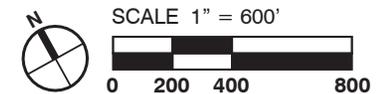


Figure 1.30 Livingston master plan



SUTTONS LANE

CLIF PRESCOD LN

METLARS LANE

HOSPITAL ROAD

ROCKAFELLER ROAD

ROAD 4

ROAD 3

KILMER RD

ROAD 2

KILMER AVE

ROAD 3

11

4

4

8

6

6

1

5

9

10

6

7

POSTAL PLAZA

AVENUE E

AVENUE E

2

2

2

2

2

ROAD 1

STREET 1803

CEDAR LANE

3

2

2

2

2

BUSCH-LIVINGSTON BRIDGE

2

2

WAREHOUSE RD

- Rutgers University – New Brunswick
- Non - Rutgers buildings

*Figure 1.31
Proposed Aerial view of Rutgers University -
New Brunswick*



2

PLANNING CONTEXT

2.1 OPEN SPACE AND NATURAL SYSTEMS

Hydrological Context

Natural Systems on Campus

2.2 LAND USE

Land Use Patterns

Space Utilization Study

Core Facilities and the Need to Travel

Class Schedule-Based Transportation Demand

2.3 MOBILITY AND THE NEED TO TRAVEL

Pedestrian and Bicycle Connectivity

Rutgers Buses

Commuters and Regional Connections

Introduction

With over 40,000 students, 20 million square feet of buildings and set on 2,677 acres, Rutgers University–New Brunswick is a complex campus environment – comparable in physical size to the University of Michigan, but over a less contiguous area of land. Whereas the University of Michigan is completely contained within the City of Ann Arbor, Rutgers University–New Brunswick has land in six cities and municipalities: New Brunswick, North Brunswick, East Brunswick, Piscataway, Edison, and Highland Park. This physical context, in combination with the resulting operational context, comprises a foundation for analysis – campus organization and development, space needs, future growth, inter-district travel, and natural systems – that informs the master plan vision and principles, as well as future decision-making. Components of the physical context analysis include:

- **2.1 Open Space and Natural Systems:** Natural resources on campus, topography and hydrology, regional resources
- **2.2 Land Use:** Campus history and land use patterns, space utilization, and the need to travel
- **2.3 Mobility:** Campus connectivity, regional transportation context

The analyses in this chapter establish existing conditions for Rutgers University–New Brunswick; their conclusions provide a foundation for the master plan vision and principles, revealing opportunities to improve the physical environment at Rutgers and consequently, the student experience, and the campus experience for the greater community.

2.1 OPEN SPACE AND NATURAL SYSTEMS

The characteristics of the natural environment are significant components of the planning context, providing the fundamental context in developing a sustainable master plan. This section surveys the following:

Hydrological Context: an analysis of stream corridors, topography, and hydrological connections to the Raritan River and its floodplains; and,

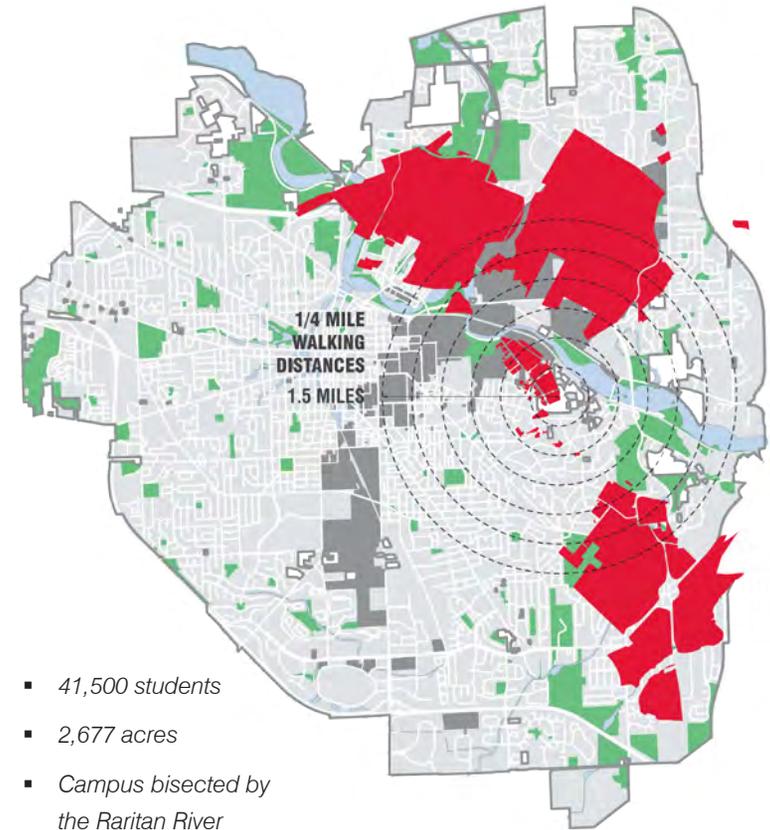
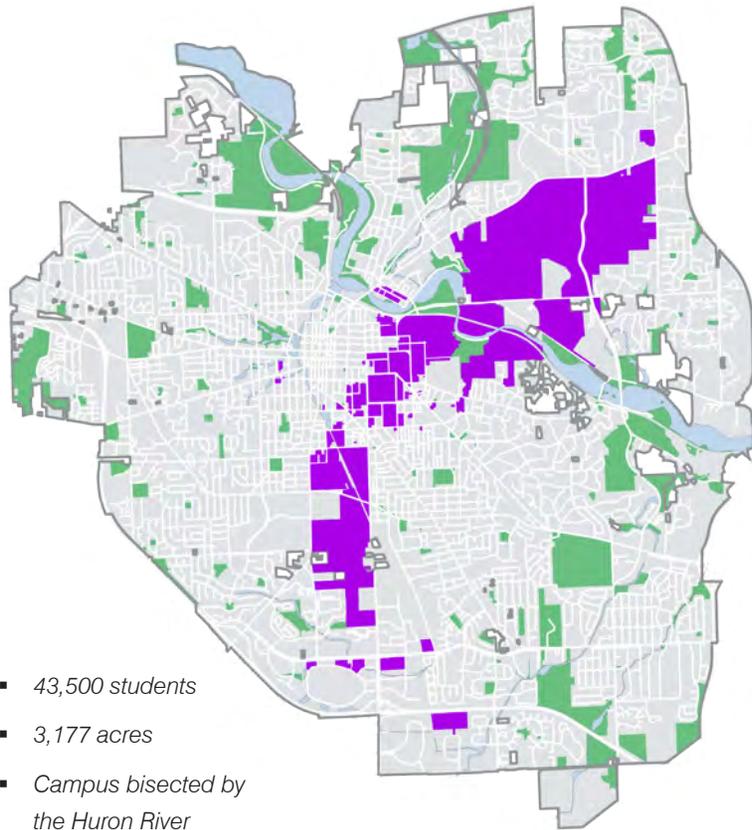
Natural Systems on Campus: a history of existing forested areas and resources on and off campus, as well as other pervious surfaces and stormwater management initiatives.

Rutgers University–New Brunswick is unique in its combination of urban and natural environments, from the urban Voorhees Mall to the natural environment at the Ecological Preserve. This section identifies underutilized resources and opportunities for sustainable growth, given the priority of preserving natural habitats.

2.2 LAND USE

Nearly 250 cumulative years of development, history, and growth have defined the current physical environment at Rutgers, and this context provides an understanding of how it functions today. The complexity of the need to travel between distant districts, and the conditions that contribute to it, are reflected in the breadth of analysis required to comprehensively document its impact on the student experience. This section examines the need to travel and how the Rutgers University–New Brunswick campus has evolved over time, in the following four areas:

Land Use Patterns: an analysis of the current campus environment, as affected by the University’s historical development;



PHYSICAL CAMPUS COMPARISON: RUTGERS UNIVERSITY-NEW BRUNSWICK, UNIVERSITY OF MICHIGAN-ANN ARBOR

Space Utilization Study: a data-driven approach to identifying specific space needs, establishing a baseline for strengthening each district individually, and the campus as a whole;

Core Facilities and the Need to Travel: findings of the MyCampus survey, which reveal patterns of use on and off campus, and how they create the need to travel; and

Class Schedule-Based Transportation Demand: the findings of the “Swarm” analysis, which further reveals the extent of the need to travel.

2.3 MOBILITY

The size of the Rutgers University–New Brunswick campus has necessitated the creation of the Rutgers bus system – a condition that is expected to continue in the long term, even with the increased use of alternative modes of transportation.

Mobility at Rutgers University–New Brunswick extends beyond the campus proper to the larger region. More than 15,000 students live on campus, but the

majority of students commute from the surrounding neighborhoods as well as from greater distances.

This section examines the existing conditions regarding mobility at Rutgers University–New Brunswick, for all members of the campus community, in order to identify where the transportation network is functioning well, and where there are opportunities for improvement:

Bicycle and Pedestrian Networks: an assessment of existing networks, missing links, opportunities, and constraints;

Rutgers Buses: an assessment of the existing bus network and operational context; and

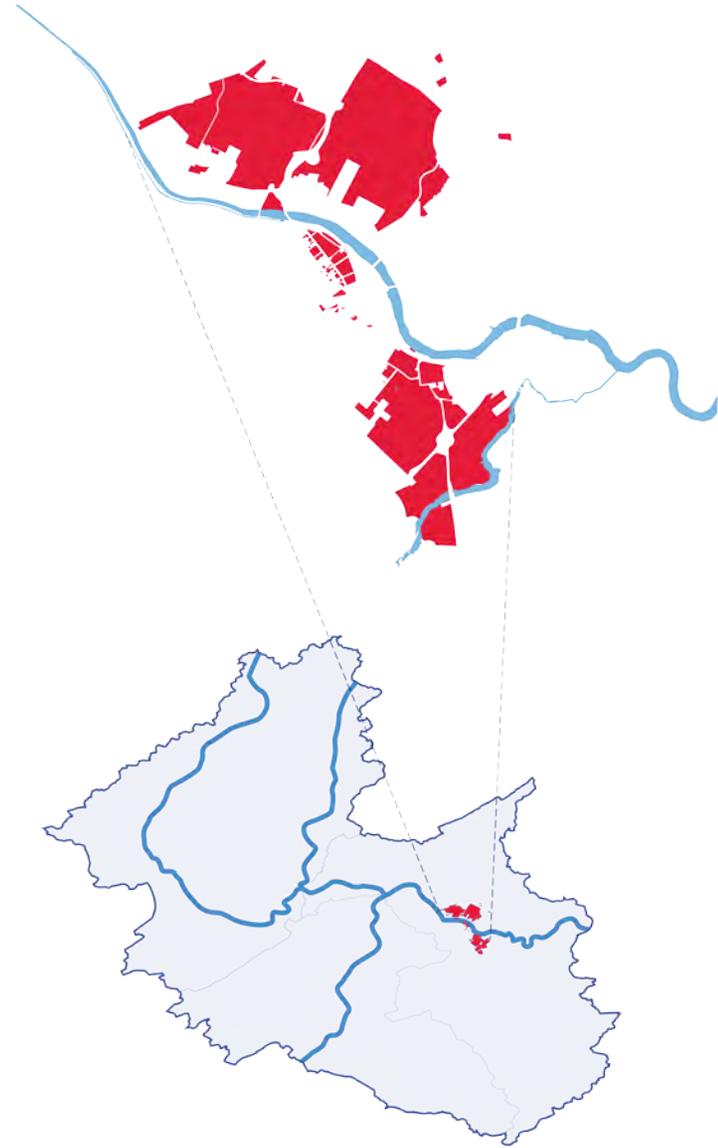
Commuters and Regional Connectivity: an assessment of regional transit and vehicular connections and parking.

The physical separation of the four Rutgers University–New Brunswick districts requires a comprehensive transportation network, encompassing transit, Rutgers bus, bicycle, and pedestrian connections in order to

maximize efficiency and convenience, and minimize vehicular congestion. This section assesses existing networks and reveals opportunities for completing and improving them.



NEW JERSEY AND THE RARITAN



RARITAN RIVER BASIN

2.1 Open Space and Natural Systems

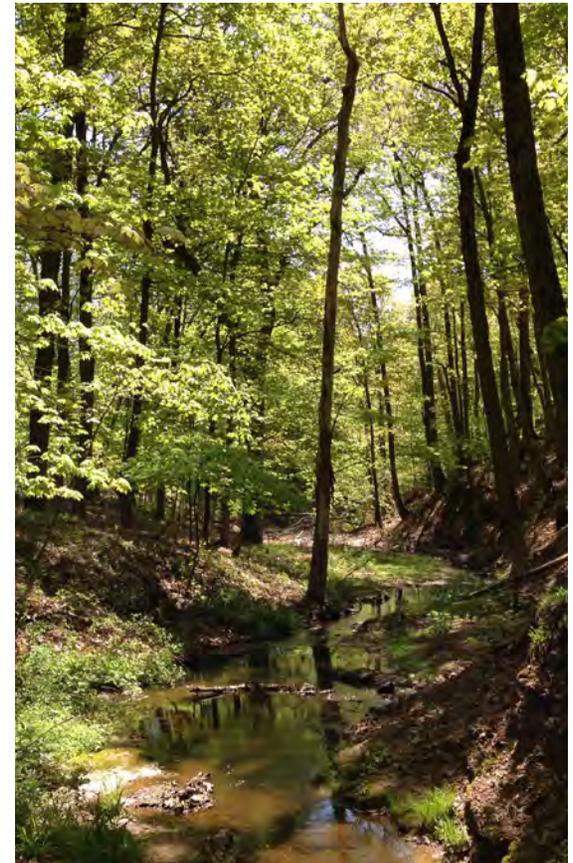
At nearly 2,700 acres, the Rutgers University–New Brunswick campus is one of the largest college campuses in the United States, on par with the University of Michigan - Ann Arbor, and significantly larger than Ohio State University at 1,777 acres. While the campus encompasses 20 million square feet of built space, it is also home to significant natural resources, including the Rutgers Ecological Preserve forested area, Rutgers Gardens, and a system of riparian streams and wetlands. These natural resources are supplemented by campus open space, agricultural research fields, and athletics and recreation facilities including play fields and a golf course.

The Rutgers University–New Brunswick campus is bisected by the Raritan River, one of New Jersey's major rivers. The campus lies within the Lower Raritan River watershed, a part of the 1,100-square-mile Raritan River Basin. The Raritan River Basin is the largest river basin located entirely within the state of New Jersey, and includes parts of seven counties and over a hundred municipalities. The majority of Rutgers University–New Brunswick students come from cities and towns inside the boundary of the basin.¹ The Raritan is a tidal river in the New Brunswick area, and

empties into the Atlantic Ocean from Raritan Bay in South Amboy. Several streams are located at Busch, Livingston, and Cook/Douglass, draining into the Raritan River, including two first-order streams: Buell Brook and Metlars Brook, both located at Livingston.

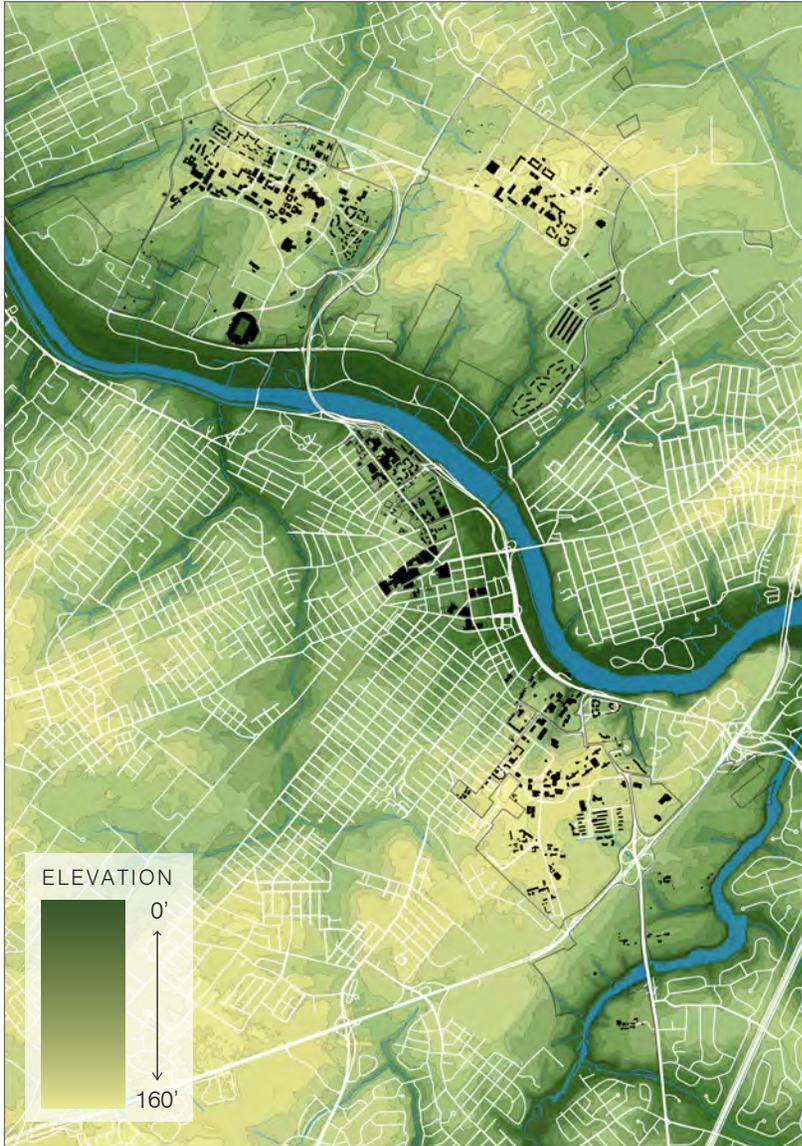
Formerly the primary mode of transportation in colonial New Brunswick, the Raritan is now used for recreational boating. The City of New Brunswick experienced significant growth as a colonial town, due to its proximity to the Raritan River and its location between Philadelphia and New York City. The Delaware and Raritan Canal, located along the southern bank of the river in New Brunswick, provided links between these three cities, before being supplanted by railroads; it is now a state park.

Today, the Raritan River is one of central New Jersey's sources of drinking water, with two water treatment plants located at the nexus between the Raritan and the Millstone Rivers. However, numerous contaminated sites are adjacent to the lower Raritan River, or drain into the river, despite continuing efforts over the past two decades to improve water quality.

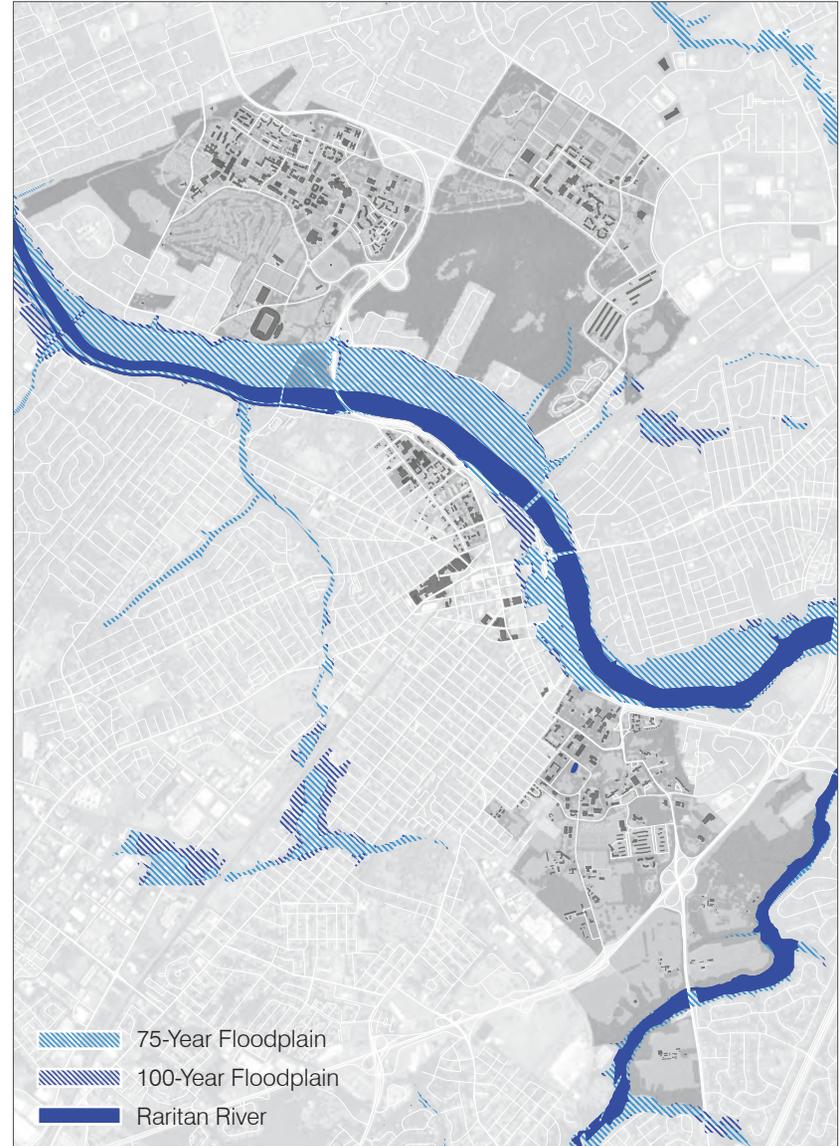


Buell Brook at Livingston

1. *Rutgers University Fact Book 2012-2013*: p 29.



ELEVATIONS



RARITAN RIVER BASIN FLOODPLAIN

2.1.1 HYDROLOGICAL CONTEXT

In general, water drains to the Raritan River from the Rutgers University–New Brunswick campus, aided by streams and wetlands on Busch, Livingston, and Cook/Douglass. Situated in the lower foothills of the Raritan Valley, the campus is relatively flat, with significant elevation changes at the edges of the river's floodplain – for example, at the football stadium, and at the river dorms. These steep slopes affect access to the system of City and county riverfront parks, which is currently primarily by car, or by circuitous pedestrian routes. Cook/Douglass is also defined topographically by a ridge running generally along Dudley Road; water drains towards the river on either side of the ridge.

Stream corridors in the less-developed areas of Busch and Livingston drain to the river; these areas include the Ecological Preserve and campus golf course. At Cook/Douglass, the ravine running along the edge of the Mason Gross School of the Arts buildings also drains to the river. According to an assessment completed by Biohabitats in 2010, first-order streams have been degraded by stormwater runoff from the campus buildings and Route 18.² Other streams are in good condition, but have narrow buffers that increase the impact of stormwater runoff.

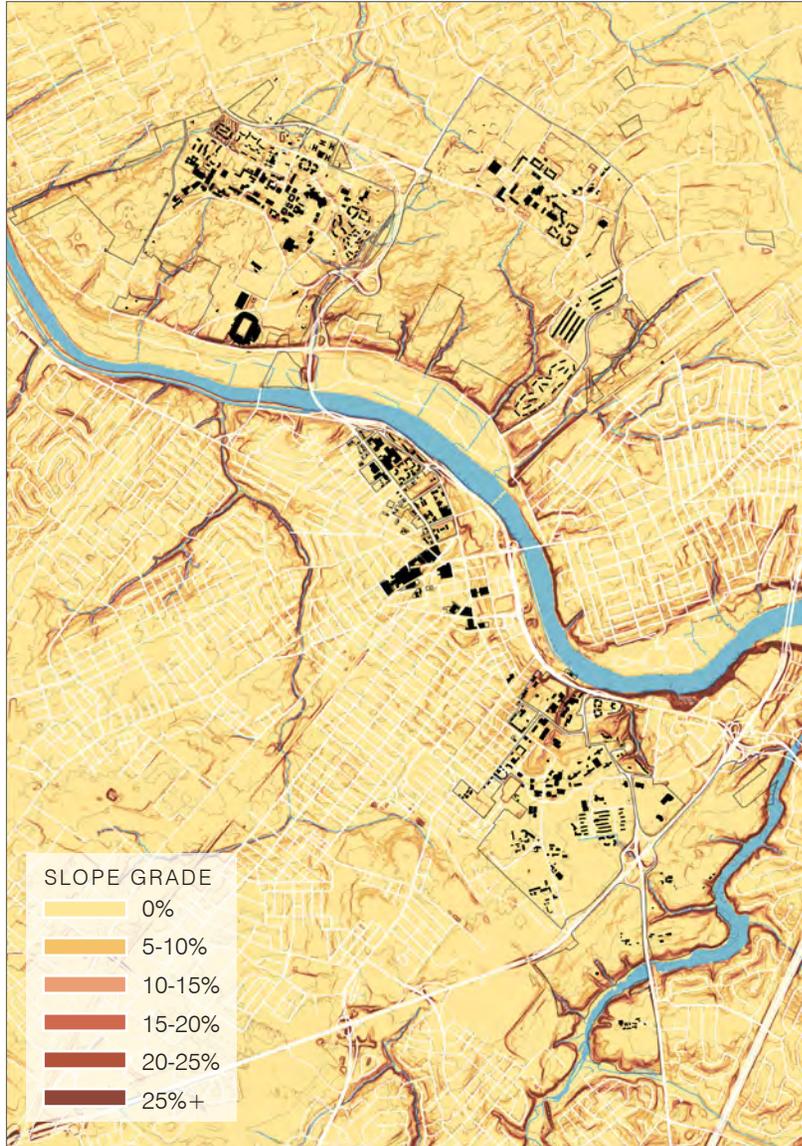
The Raritan River floods during major storms with high levels of rainfall; however, nearly all of Rutgers University–New Brunswick falls outside the boundaries of the floodplain, which is primarily occupied by the

riverfront parks that provide a buffer between the river and developed areas. The river was dredged in 2003 and 2013 as part of a flood mitigation program.

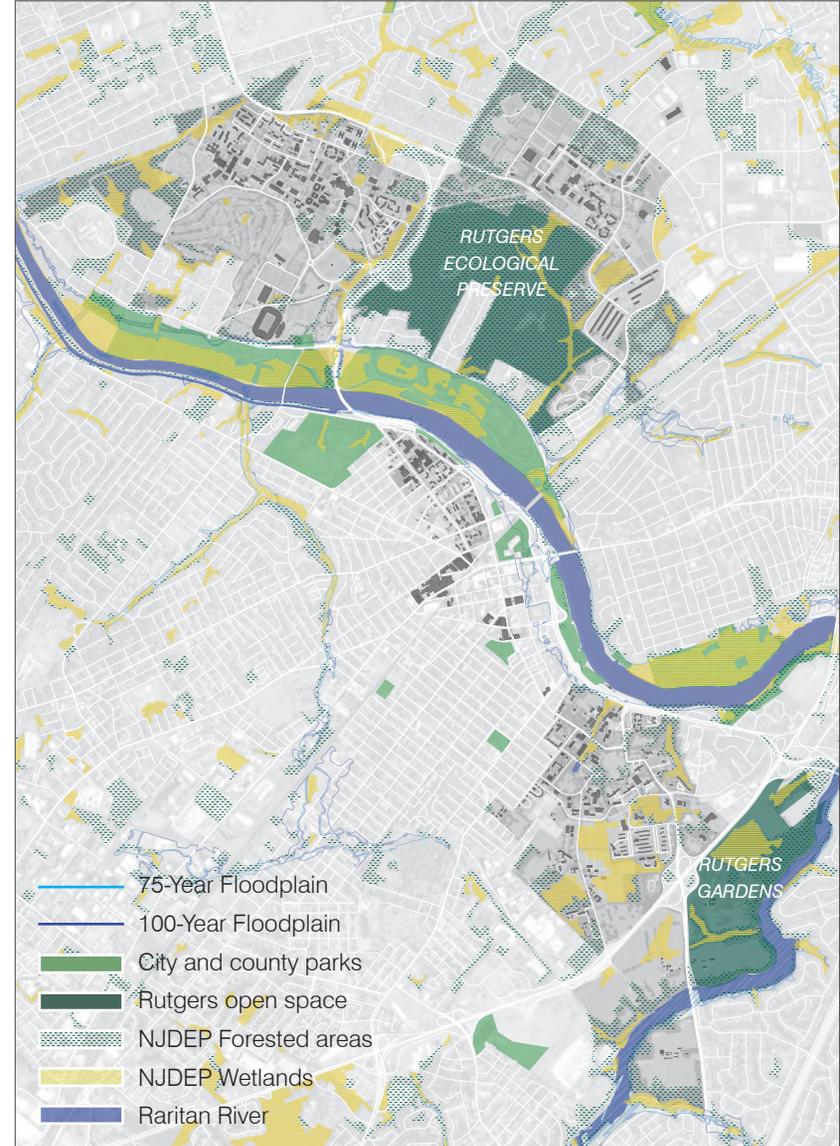


Flooding in New Brunswick after Tropical Storm Irene in 2011

2. *Stormwater & Landscape Management Master Plan*, Biohabitats, 2010: p C-13.



STEEP SLOPES



OPEN SPACE + WETLANDS

2.1.2 NATURAL SYSTEMS ON CAMPUS

NATURAL RESOURCES

Forested areas on campus boost the ability of the natural environment to manage stormwater runoff and groundwater recharge, thus providing protection in flood conditions. The Ecological Preserve, located at Livingston, is one of the last remaining areas of undeveloped, forested land in Middlesex County. Currently used for recreation and occasional research, the use of the Preserve has been limited by a lack of resources. Formerly owned by the members of the Johnson and Johnson family, the Ecological Preserve was created in 1976 by the Rutgers Board of Governors, and encompasses 316 acres of upland forest, woodlands, wetlands, and meadows. The intent of the Board of Governors at the time of the transfer of ownership to Rutgers was to preserve the land's natural ecology, and use it as an outdoor teaching resource.

Although the Eco Preserve is currently a forested habitat, it was farm land in the 1700s and early 1800s. Some of the pin oak, maple, and cherry trees that formed hedgerows between fields are still present in the Eco Preserve. In the northeastern part

of the Preserve, the Kilmer Woods were reforested in the mid 1800s, with various species of cedar, oak, beech, maple, and hickory trees. The Kilmer Woods attract several species of warblers and other birds.

The area of the Eco Preserve near Ross Hall was a golf course in the early 1900s, but was abandoned after the Depression. The Eco Preserve has been used infrequently as a teaching resource in the past,



Forested area in the Eco Preserve



Bioswales were included in the Livingston Apartments landscape as a stormwater management strategy

although these requests are increasing, primarily for classes in mapping and ecology.

A primary concern in the Eco Preserve is the encroachment of invasive species. A large population of deer – estimated at over 100 deer per square mile² – currently occupies the Eco Preserve. This overpopulation led to the development of a Deer Damage Management Plan in 2012. The plan is modeled after the plan used on other New Jersey Agricultural Experiment Lands; its primary strategy is to reduce the population through bow hunting. The plan is a collaborative effort between the RU Police Department, Office of Risk Management, Facilities Management, RU Ecological Preserve Advisory Committee, and Dean of the School of Environmental and Biological Sciences.

CONSTRUCTED OPEN SPACES

In addition to its natural environments, each district has a network of constructed open spaces, anchored by a major open space. These include Voorhees Mall at College Avenue; Passion Puddle and Woodlawn at Cook/Douglass; the Mall at Busch; and the Quad at

Livingston. These large, central open spaces are tied to the history of the University, particularly at College Avenue and Cook/Douglass, where original buildings surround these open spaces. The open space network provides essential connective tissue between buildings, in addition to acting as a wayfinding aid and a venue for informal gathering and interaction for students, faculty, and staff. Currently, the linkages between open spaces are not always clear and consistent, leading to underutilization. The open space network should also be coordinated with new development, in order to align programmatic uses between buildings and open spaces.

The open space networks in the district cores is supplemented by Rutgers Gardens, which comprise a series of display gardens and horticultural facilities. Located at the southeastern edge of Cook, Rutgers Gardens was established in 1927 and is a campus and teaching asset, in addition to a regional community resource. Rutgers Gardens is in the process of planning for its future, with a focus on raising its profile on campus and in the region, and on enhancing its existing facilities.

STORMWATER MANAGEMENT

Since the completion of the Stormwater & Landscape Master Plan by Biohabitats in 2010 for Busch and Livingston, the University has implemented several projects that follow recommended stormwater best management practices. Bioswales and rain gardens have been integrated into the landscape at the Livingston Apartments, the quad surrounding the Livingston Student Center, and in the area behind the Livingston Dining Commons. At Busch, the new Chemistry & Chemical Biology building design includes a rain garden in the plaza in front of the building.

The University has also limited the creation of additional lawn space in favor of native plants that require less water and maintenance. The continuing incorporation of green infrastructure – bioswales, rain gardens, native plantings, stormwater detention areas, etc – into new building projects is one of the University's goals in future development. Biohabitats is currently in the process of completing a Stormwater & Landscape Master Plan for Cook/Douglass.

2. *Deer Damage Management Plan for Rutgers Ecological Preserve FAQ*, Rutgers University, 2013: p2.



HISTORICAL MAP OF RUTGERS IN 1939

- 1808 Old Queens
- 1864 Rutgers Scientific School (land grant)
- 1914 College of Engineering
- 1918 New Jersey College for Women
- 1921 College of Agriculture
- 1924 School of Education
- 1939 Construction of Rutgers stadium
- 1945 Designated as State University University College
- 1963 Creation of federated college system
- 1969 Livingston College
- 1970 Rutgers Medical School
- 1971 Rutgers Medical School becomes UMDNJ
- 1982 Residential colleges centralized
- 2003 Physical Master Plan
- 2006 School of Arts and Sciences
- 2013 Integration with UMDNJ

HISTORICAL CONTEXT

2.2 Land Use

Rutgers University was originally chartered in New Brunswick as Queen's College in 1766, named in honor of King George II's Queen consort. Established to train future ministers in the Dutch Reformed Church, classes were held at the Sign of the Red Lion tavern and in private homes until Old Queens was built in 1808. Queen's College shared Old Queens with Queen's College Grammar School (now Rutgers Preparatory School) and New Brunswick Theological Seminary until these institutions moved in 1830 and 1856, respectively.

Queen's College was renamed after the War of 1812 as Rutgers College, in honor of Colonel Henry Rutgers. In 1864, Rutgers College expanded as New Jersey's land-grant college, establishing Rutgers Scientific School on what is now the Cook district.

From 1914 to 1993, Rutgers experienced two periods of major growth, adding nearly 15 million square feet. In the first, from 1914 to 1963, four new colleges were founded: the College of Engineering in Piscataway (Busch), the New Jersey College for Women (Douglass), University College (for part-time and commuter students), and the School of Education.

Rutgers Scientific School was also re-established as the College of Agriculture. The University also expanded its residential facilities, adding seven new residence halls.

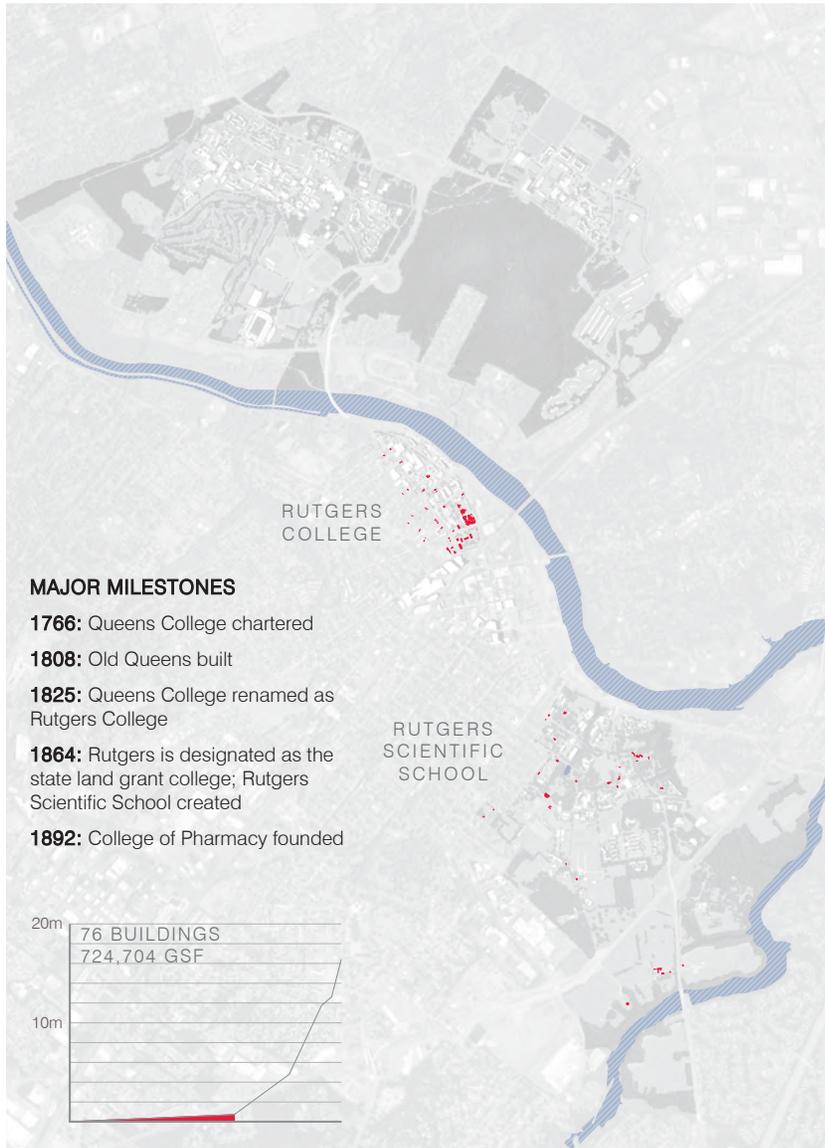
In the second period of growth from 1964-1993, nearly 10 million square feet was added. One new school was established at the former Camp Kilmer military base - Livingston College. Beyond the new college and general academic expansion, the majority of the University's residence halls, dining facilities, and student centers were built during this period. Rutgers Medical School was also established, in 1970. It became a separate institution in 1971 as part of the College of Medicine and Dentistry of New Jersey (later renamed in 1981 as the University of Medicine and Dentistry of New Jersey, UMDNJ).

The ten-year period from 1994 to 2003 was marked by a slower pace of growth. More than half of the space acquired during this period is comprised in three major projects: the University Center apartments, Civic Square in downtown New Brunswick, and Foran Hall on Cook. The balance of space was largely administrative and support facilities.

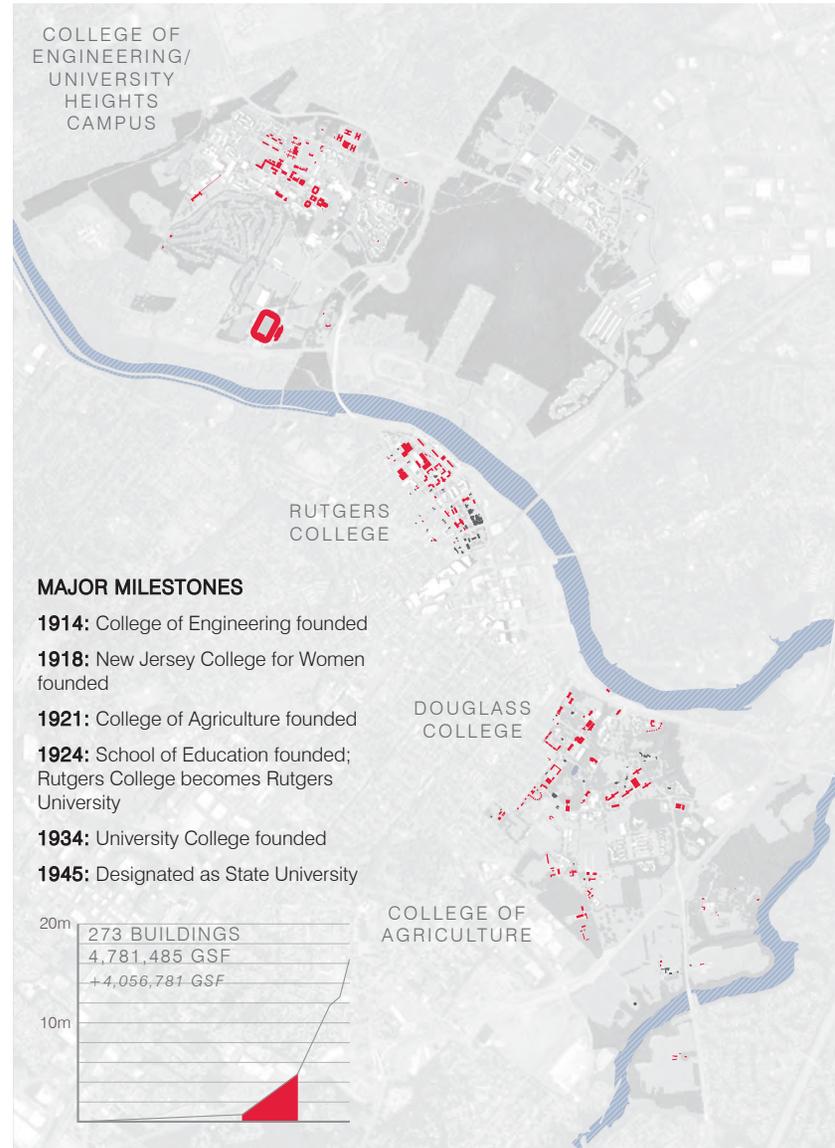
RECENT DEVELOPMENT: 2004-2013

The 2003 Physical Master Plan signaled a new capital campaign for Rutgers under previous president Richard L. McCormick, with over twice as much growth as in the previous decade, not including the addition of UMDNJ facilities. More than half of this growth has occurred at Livingston, where development has transformed the district with the construction of the dining commons, 1,600 new beds, a new building for Rutgers Business School, and the partial renovation of Tillett Hall. In addition to this new construction at Livingston, the student center has been recently renovated. The cumulative improvements to the Livingston district have made it one of Rutgers' most popular destinations among students.

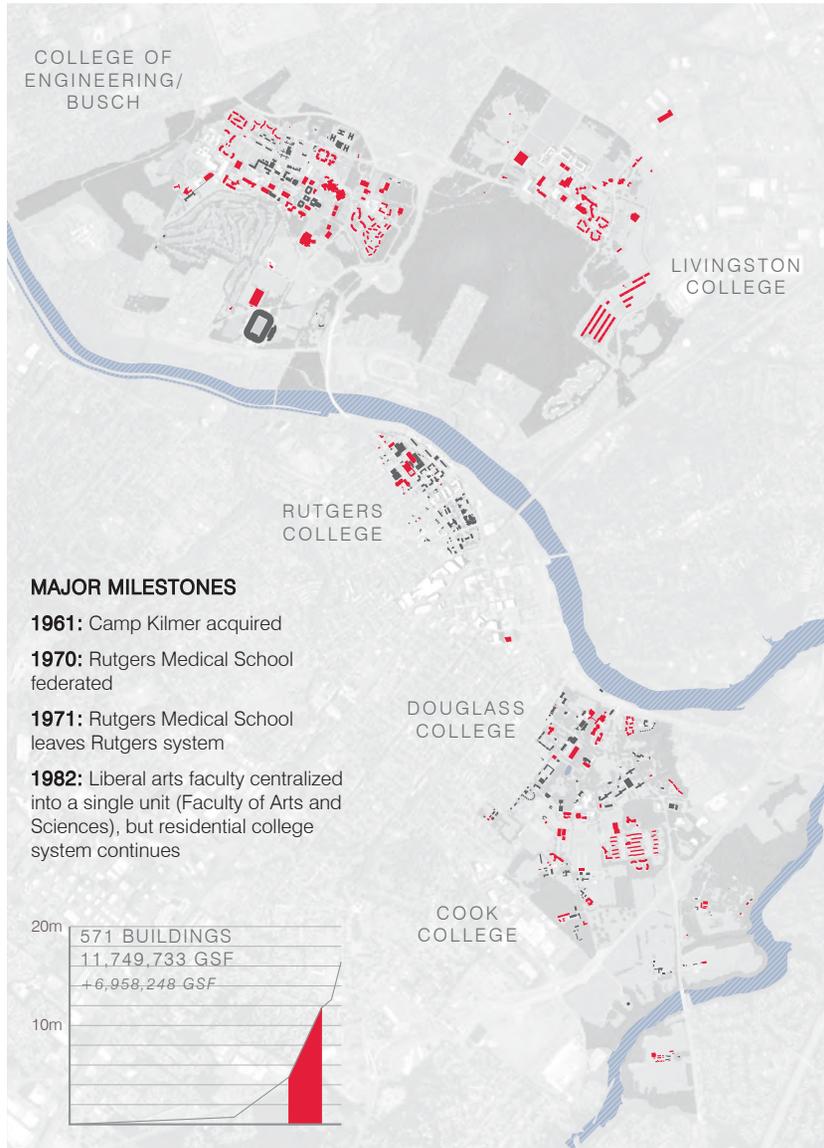
A significant amount of growth has also occurred at Busch, though at a slower pace than Livingston. The addition of the Life Sciences Building, the Biomedical Engineering Building, and the Center for Integrative Proteomics Research have improved research facilities in science and engineering. Busch Engineering, Science & Technology Hall has added a 500-bed living-learning community, targeted at



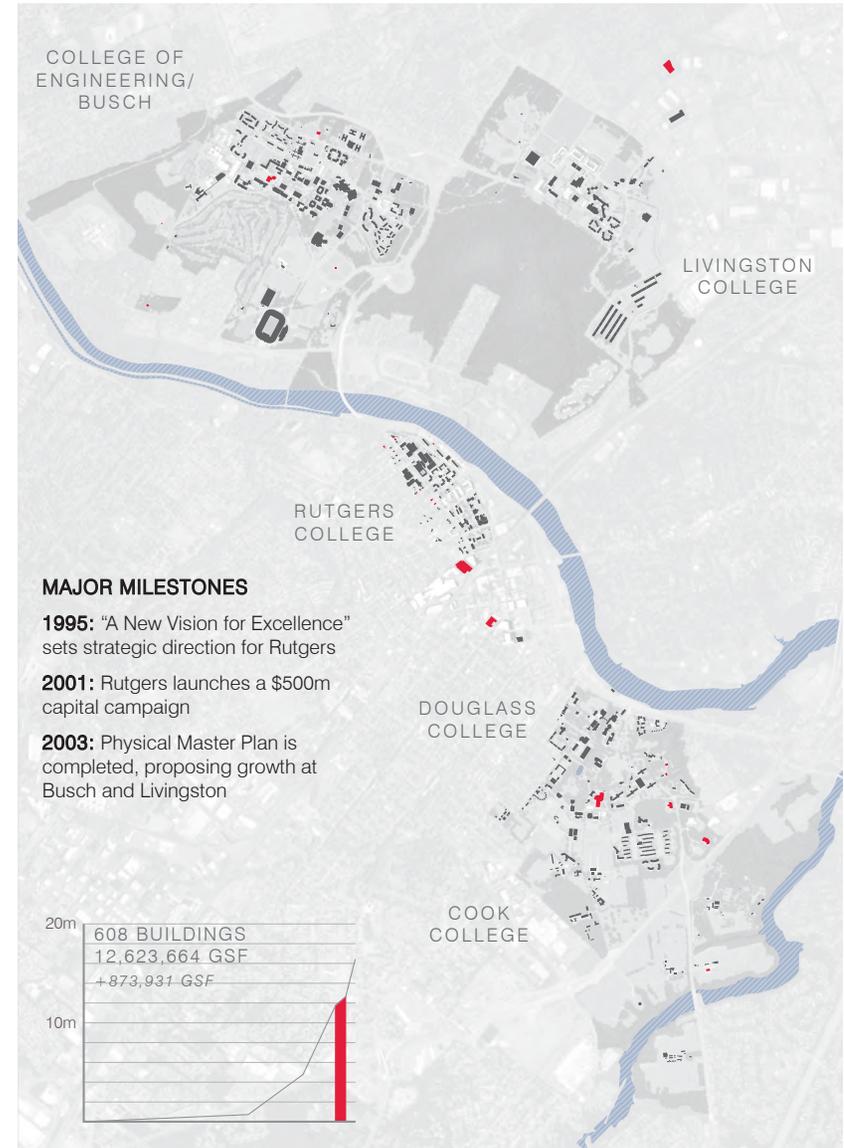
1766-1913: FOUNDING + ORIGINS



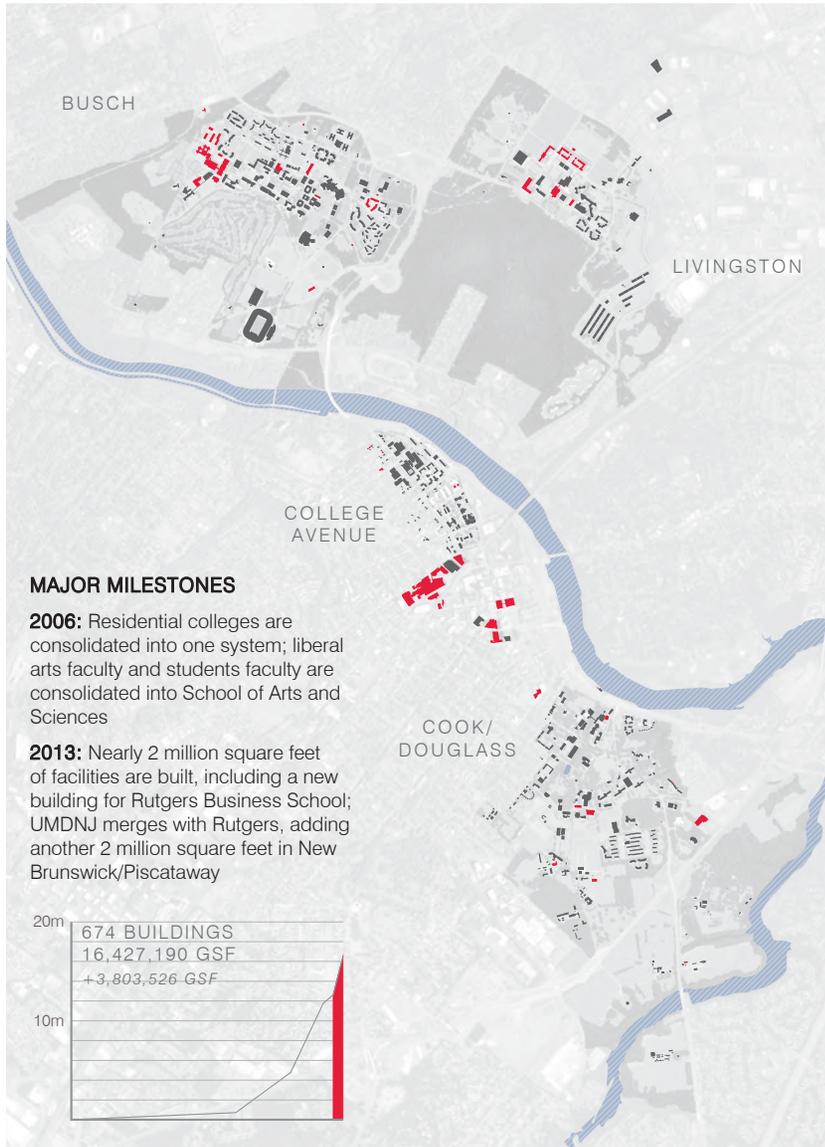
1914-1963: ACADEMIC EXPANSION



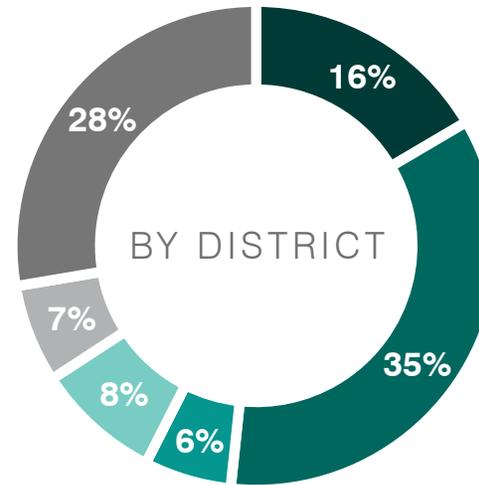
1964-1993: POSTWAR GROWTH



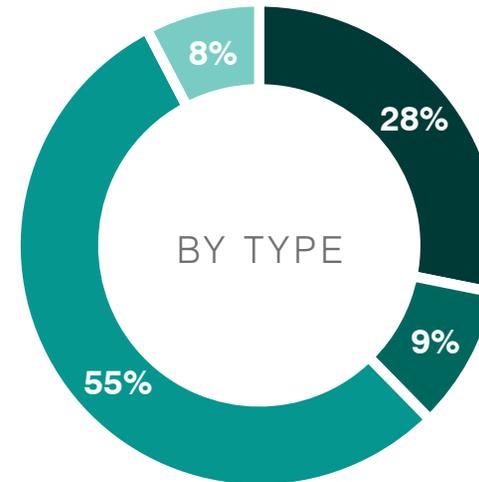
1994-2003: NEW STRATEGIC DIRECTION



2004-2013: SIGNIFICANT GROWTH



- Busch
- Livingston
- College Avenue
- Cook/Douglass



- Academic
- Research
- Residential
- Admin/Student Life

GSF BUILT FROM 2004-2013

improving student life. The football stadium was also expanded in 2009.

While less investment has been dedicated to College Avenue and Cook/Douglass in the past decade, there has been some growth. College Avenue has seen limited growth in academic and student life space, with the Institute for Health, Health Care Policy and Aging Research, and the relocation of the bookstore to Gateway Transit Village. At Cook/Douglass, the School of Environmental & Biological Sciences has a new building currently under construction – the Institute for Food Nutrition and Health in the Cook academic core. The Mortensen Hall Performing Arts Wing, an addition to Nicholas Music Center, opened in Fall 2013, and included classrooms, practice space, and a cafe on the ground floor.

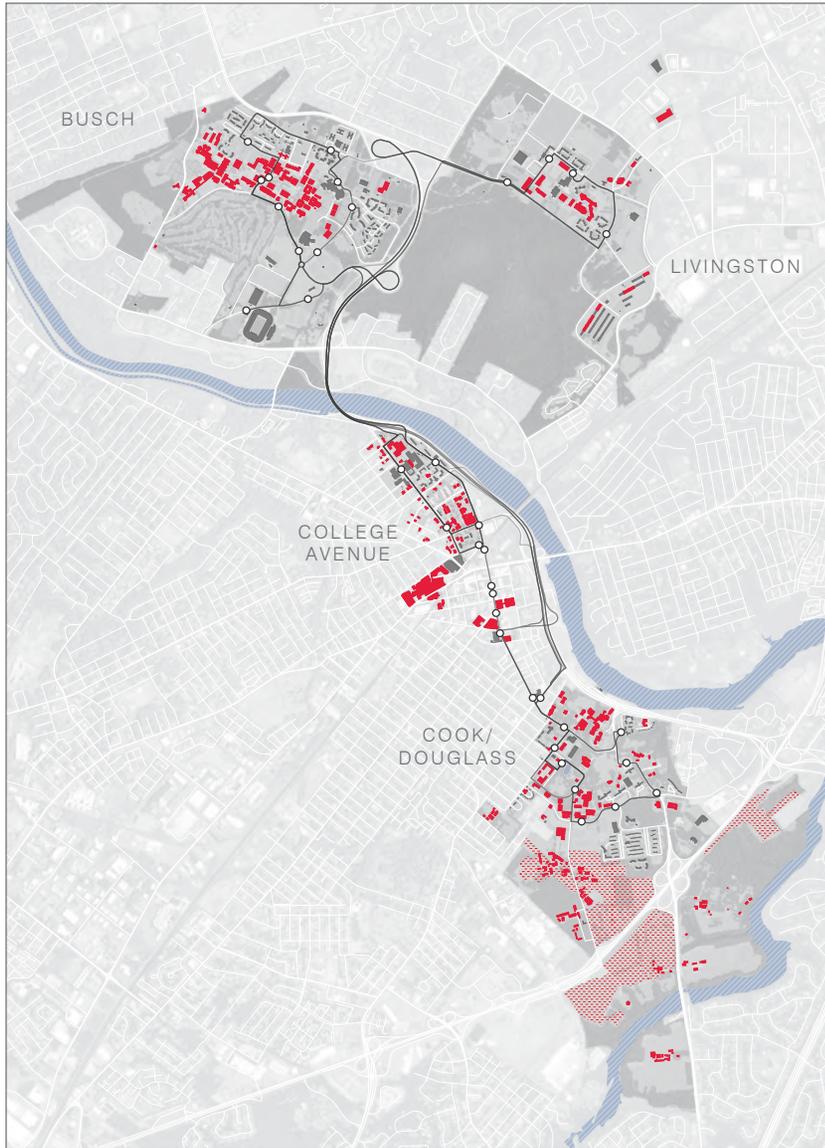
The merger of UMDNJ with Rutgers has also added a significant amount of space to Busch and College Avenue in Piscataway and New Brunswick, respectively. UMDNJ brings research, clinical, health care, instructional, and administrative space to Rutgers. UMDNJ is reorganized at Rutgers as the Rutgers Biomedical and Health Sciences (RBHS) and

a long-term vision and strategy for RBHS is currently being developed by the University.

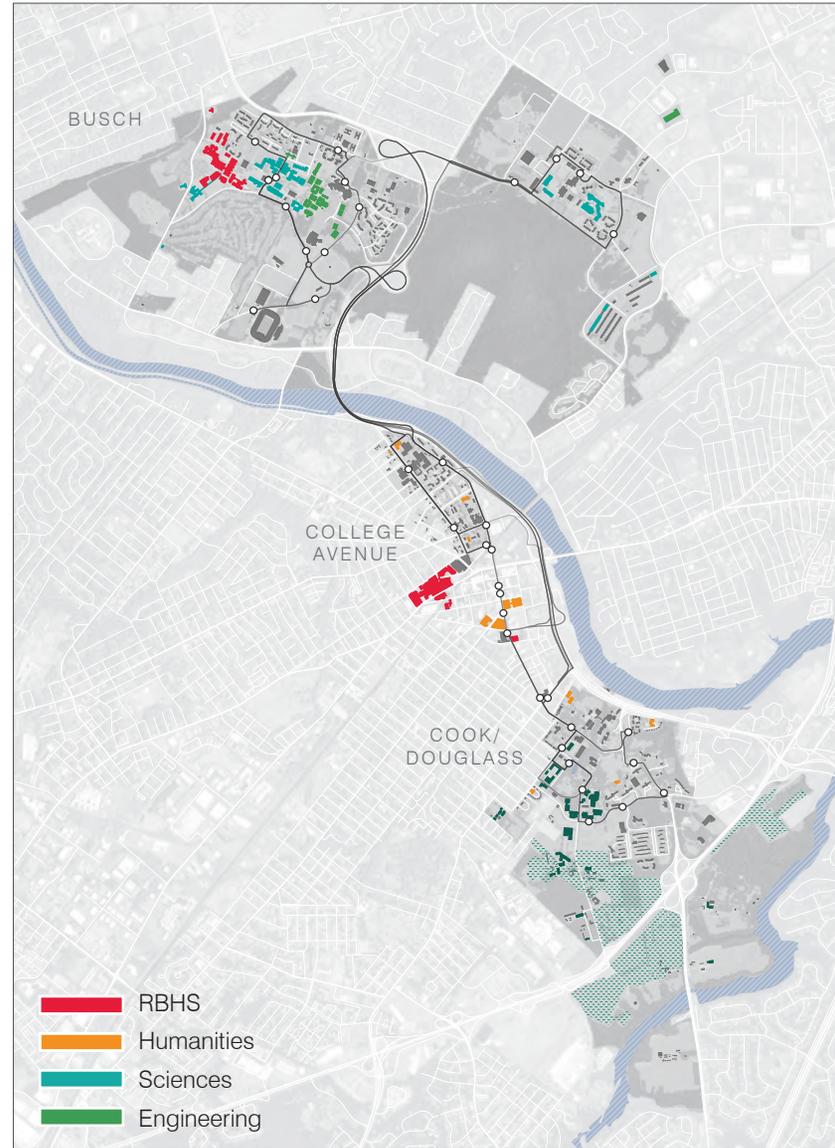
CURRENT PROJECTS

The University currently has several projects in the pipeline, including those in planning, in design, and under construction. Those projects include:

- College Avenue Power Plant replacement at College Avenue, in planning
- Chemistry & Chemical Biology Building at Busch, under construction
- Ernest Mario School of Pharmacy expansion at Busch, in design
- School of Engineering building at Busch, in design
- Honors College at College Avenue (with DEVCO), under construction
- Academic Building at College Avenue (with DEVCO), under construction
- Lot 8 Housing at College Avenue (with DEVCO), under construction
- Busch-Livingston Power Plant replacement at Busch, in planning



EXISTING ACADEMIC FACILITIES



EXISTING RESEARCH FACILITIES

2.2.1 LAND USE PATTERNS

Land use patterns at Rutgers University–New Brunswick have developed over a long period of time. The opportunities and inefficiencies revealed by current land use patterns lay a foundation for many of the master plan strategies in this report. Patterns that have significant impacts on the master plan are summarized in this section.

ACADEMIC FACILITIES

Rutgers University–New Brunswick’s academic schools are split between the districts, based on the origins and history of each former college:

- **College Avenue (humanities):** Arts and Sciences - Arts, Communication & Information, Social Work, Planning & Public Policy, Education, RBHS
- **Cook/Douglass (women’s college, agriculture):** Douglass Residential College, Management & Labor Relations, Environmental & Biological Sciences, Arts and Science, Mason Gross Performing Arts
- **Busch (engineering):** Engineering, Arts and Sciences - Sciences, Applied & Professional Psychology, RBHS, Pharmacy

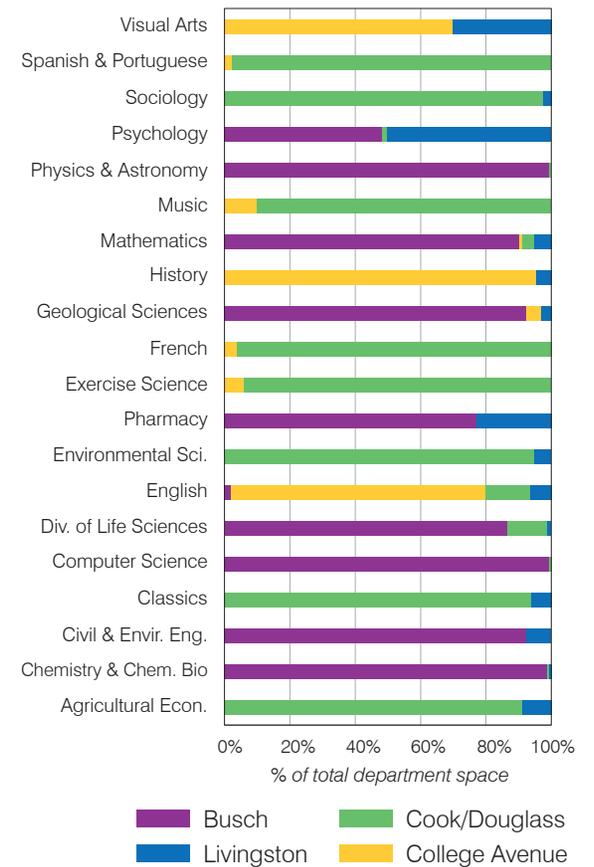
- **Livingston (professional schools):** Rutgers Business School, Arts & Sciences

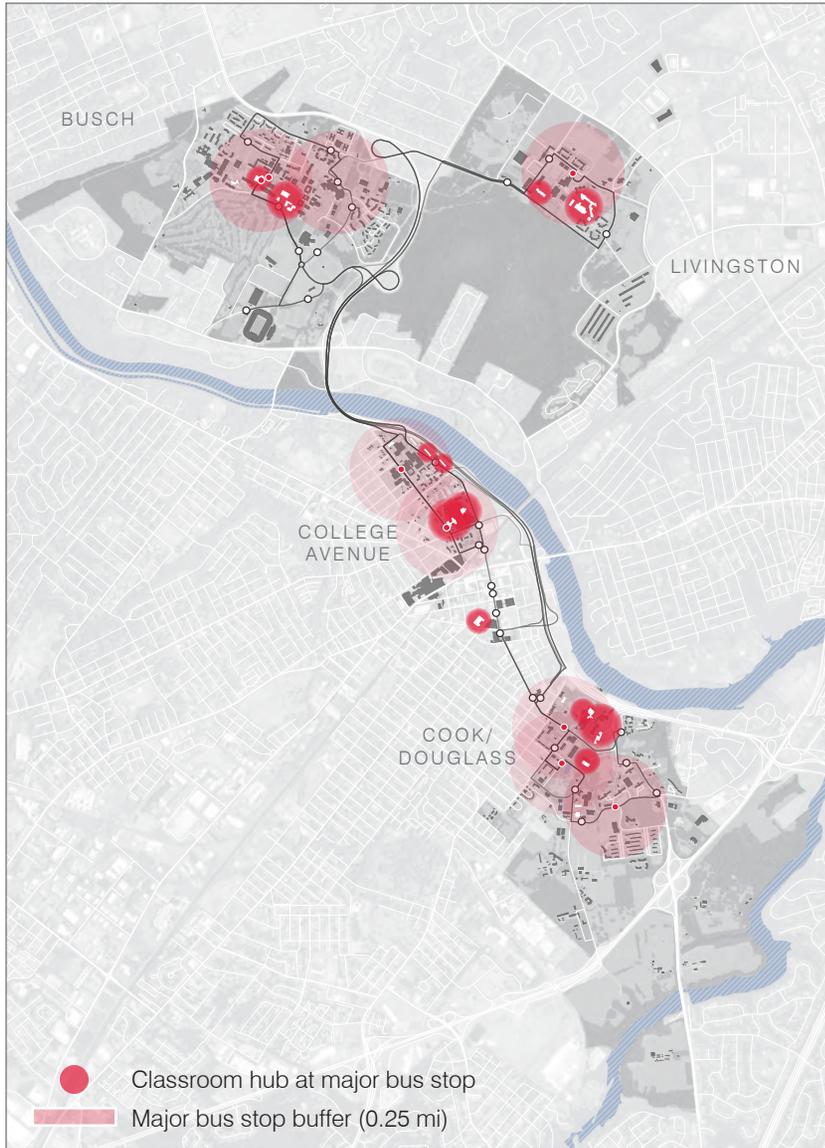
Academic facilities dedicated to these schools are dispersed not only across the four districts, but also within each district. A pattern of sprawl and lack of organization makes it difficult to navigate the campus. Facilities over spread over a large area. Several departments are located on more than one district. This may accommodate faculty who teach large introductory lecture classes with sections in all districts. Other departments have multiple locations due to a lack of available space, and may have a preference for consolidation in order to increase academic interaction and administrative efficiencies.

RESEARCH FACILITIES

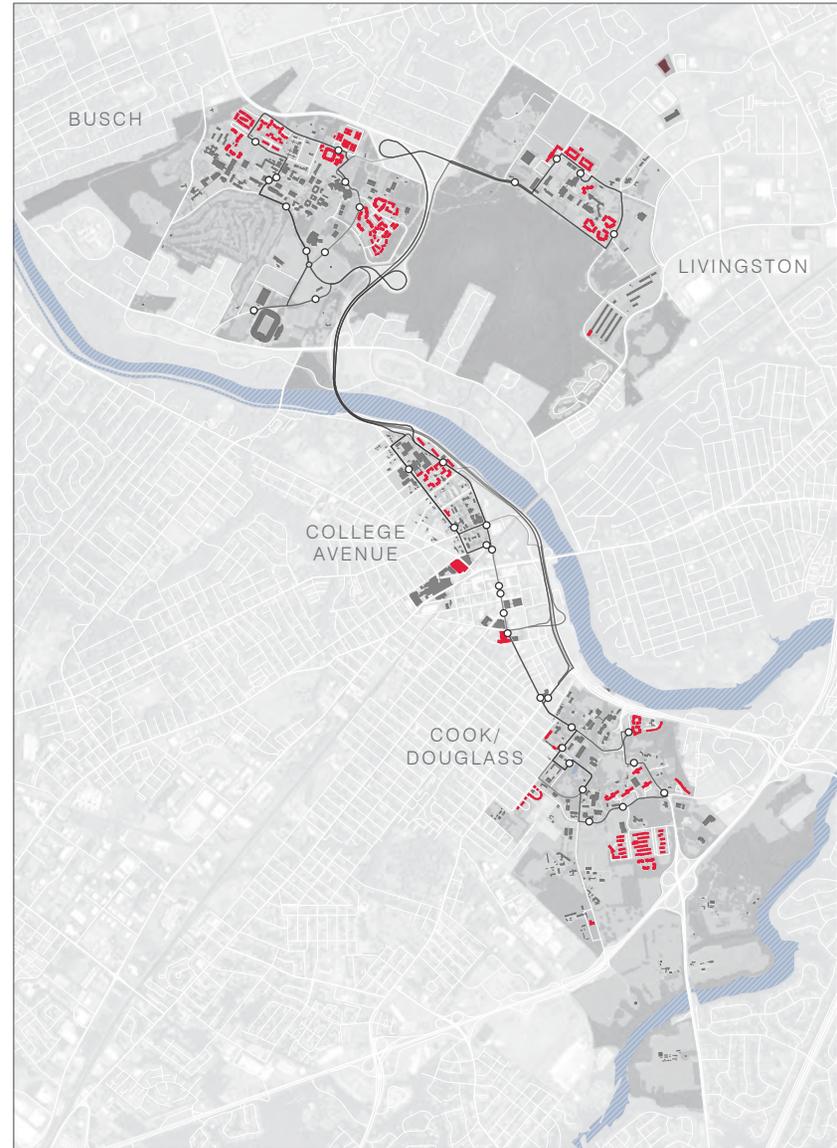
Research facilities are also dispersed across the campus. Shared core facilities are an essential component of any research institution and their efficacy can be impacted by dispersion. The integration of UMDNJ facilities has also added research space at Busch and College Avenue. As UMDNJ’s research operations are integrated, departmental synergies should be considered.

FIGURE 2.2.1 Departments located in multiple districts





EXISTING CLASSROOM HUBS



EXISTING RESIDENCE HALLS

CLASSROOM HUBS

As is the case with academic departments, instructional space is dispersed across the campus. Each district has one or two major classroom hubs, with a high concentration of classroom seats:

- **College Avenue:** Scott Hall/Murray Hall (2,688 seats), River dorms (1,358 seats)
- **Cook/Douglass:** Hickman Hall (1,734 seats), Loree Classroom-Office Building (596 seats), Ruth M. Adams Building (584 seats)
- **Busch:** Allison Road Classroom Building (942 seats), Hill Center/SERC (2,062 seats)
- **Livingston:** Lucy Stone Hall/Tillett Hall (1,874 seats), Beck Hall (1,071 seats)

Although bus stops are located near each classroom hub, the distance between district hubs is reflected in the class change durations, which, at twenty minutes, are longer than typical for a university. Staggered schedules between Busch-Livingston, College Avenue, and Cook/Douglass accommodate students who need to travel to another district for their next class. In general, facilities at the outer limits of the academic

core on all districts tend to be instructional labs located within departments. However, facilities that are farther from transit become increasingly difficult to reach for students, and they may forgo enrolling in a class because of its location. This is a particular concern at Cook/Douglass, where classroom seats are the most dispersed. Rutgers has also built two temporary classroom facilities to meet increased demand - the Livingston Classroom Building and the Cook/Douglass Lecture Hall; these facilities are nearing the end of their useful life.

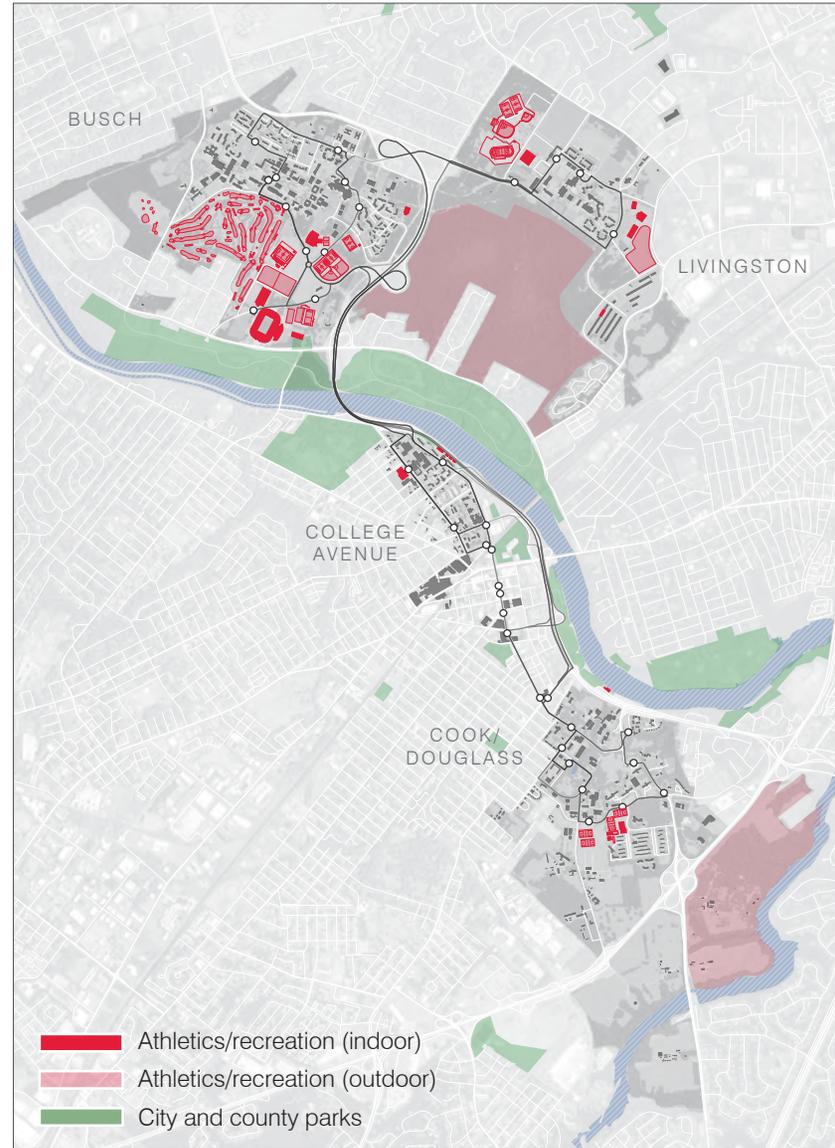
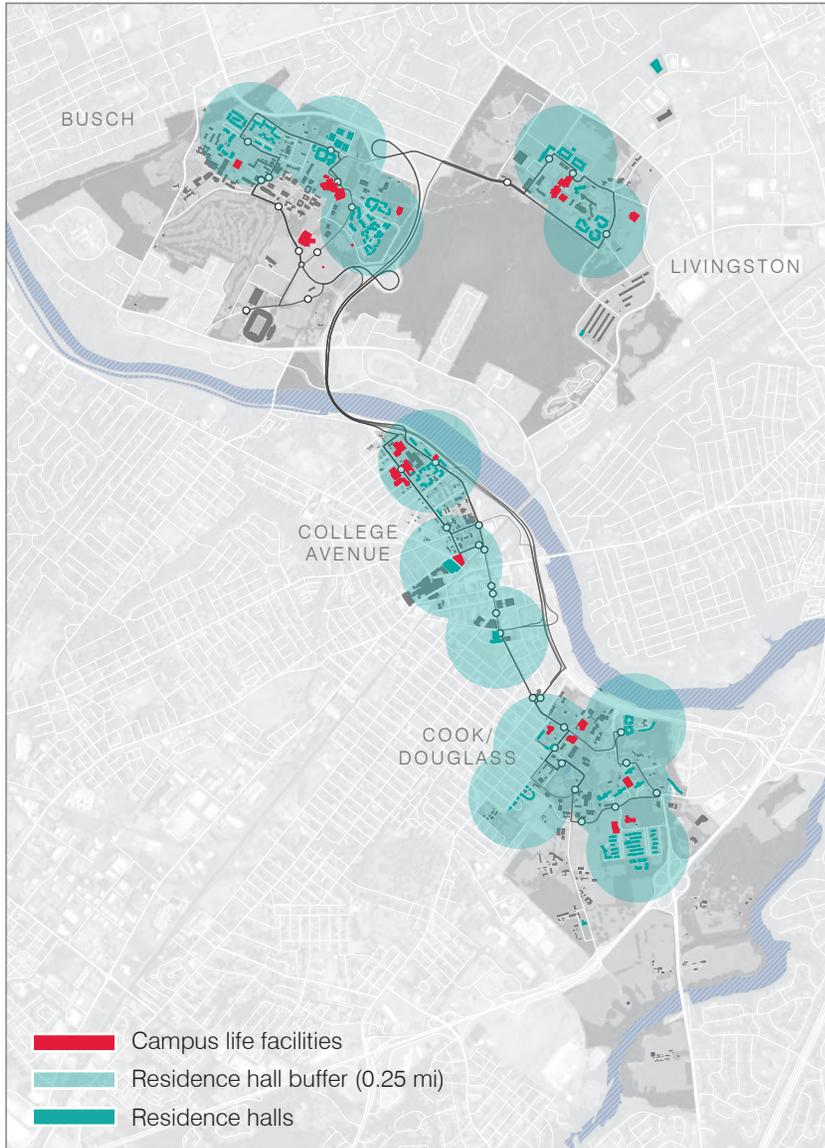
RESIDENCE HALLS

Rutgers University–New Brunswick is home to the largest residential system in the country, with over 15,000 beds. Built primarily in the 1960s, 1970s, and 1980s, the housing portfolio is split mostly between traditional residence halls (50%) and apartment-style units (40%), with a small proportion of suite-style housing (10%). Freshmen live in traditional residence halls, while upperclassmen live primarily in apartments and suites; housing is guaranteed only for first-year students. The majority of the University's residence halls were built prior to the reorganization

of the individual colleges into a single institution. At Cook/Douglass, this is particularly visible, with dispersed housing clusters on Cook and on Douglass.

Residence halls are inconsistently located in relation to student amenities and classrooms. For example, the Nichols and Richardson Apartments were built at the western edge of Busch – remote from most undergraduate housing, the student center, the dining hall, and the recreation center. With its urban, compact pattern of development, College Avenue is most successful at clustering housing near popular destinations. The Livingston Apartments were also designed as an urban context, located across from the student center, with retail on the ground floor of the residence halls.

Transportation to the residence halls is tailored to the dispersed nature of their locations, with some bus stops located to serve residents. For example, the Quads, Nichols Apartments, and Old Gibbons stops are intended to serve large concentrations of residents who are located at a distance from major bus stops and amenities. However, students who live in larger residential districts with only one bus stop are



EXISTING CAMPUS LIFE

EXISTING ATHLETICS AND RECREATION

underserved, including the eastern part of Busch, and the Newell Apartments at Cook/Douglass. Because the bus system is currently running at capacity with respect to the existing stops, investment in more centrally located housing is desirable.

CAMPUS LIFE

Student amenities like campus centers, dining halls, libraries, and recreation centers are hubs of activity, and are often clustered for ease of access. At Rutgers, student facilities have been built with more emphasis on available land than connectivity. At College Avenue, the compact district reduces the effect of these dispersed cores. At Livingston, the student center, dining hall, and library are all located adjacent to each other, but the recreation center is on the periphery of the district. Busch and Cook/Douglass are particularly spread out, and as a result, students must travel farther on these districts.

Student amenities are also located at distance from many residence halls. Two exceptions include the River Dorms and Bishop Quad dorms at College Avenue, and the Livingston Apartments. In some cases, other

barriers impede access to otherwise nearby facilities. Students who live in the eastern part of Busch, for example, live in close proximity to the student center and dining hall, but must cross Bartholomew Road to get there. Vehicular traffic frequently disregards the posted speed limits along Bartholomew, making the road a hazard for students crossing the road.

Student services – financial aid, the registrar, residence life, health centers – are also located in a dispersed manner. Most, but not all of these services are located within ten minutes' walk from a bus stop. Given that students have reported that they make a trip to one office, only to be directed to another office that may be located on a different district, it would be beneficial to consolidate these functions in a central location.

ATHLETICS AND RECREATION

Athletics facilities are located at Busch and Livingston, although the wrestling, volleyball, and gymnastics teams currently practice outside of the athletics core facilities due to a lack of space. Football, lacrosse, soccer, tennis, and golf facilities are located on Busch, with basketball, track and field, baseball, and softball at Livingston. While Rutgers University–New

Brunswick has only about 700 student-athletes – a small fraction of the total 40,000+ students – students and alumni flock to the stadium en masse on game days. Accordingly, game days have a major impact on both parking and transportation. Parking is at a premium, and is limited; special parking rules are enforced throughout Busch and at the Yellow and Green Lots at Livingston. Rutgers also runs special buses to and from the stadium, and students also walk across the river using the Landing Lane and Route 18 bridges.

As Rutgers has recently joined the Big Ten, the impact of game day on transportation is expected to increase. The University completed a game day traffic study in 2009, which explored three options for transit and parking: “total transit,” “park everyone,” and “balanced offense.” More in-depth study is needed to assess physical needs of the athletics department due to the integration into the Big 10 Conference.

2.2.2 SPACE UTILIZATION STUDY

The Space Utilization Study for Rutgers University–New Brunswick was completed in February 2014, and it establishes a foundation for data-driven planning. The study provides a baseline assessment of existing space, current needs, and future needs based on enrollment projections and Council of Education Facility Planners International (CEFPI) guidelines. The New Brunswick campus is anticipated to experience enrollment growth of approximately 7% in total headcount enrollment between 2011 and 2016. The following section is a summary of the findings; the full report is available from the University.

CEFPI space planning guidelines are widely used to benchmark higher education space needs according to specific categories determined by the Facilities Inventory and Classification Manual (FICM) codes published by the US Department of Education. FICM codes (formerly known as Higher Education General Information Survey, or HEGIS) are organized in the following categories:

- **100:** Classroom facilities
- **200:** Laboratory facilities

- **300:** Office facilities for faculty and staff, including conference rooms
- **400:** Library and study facilities
- **500:** Special use spaces including athletics and recreation facilities
- **600:** General use spaces including assembly and exhibition spaces, dining, student life space, and meeting rooms
- **700:** Support facilities
- **800:** Health Care facilities

Consistent with the typical method of CEFPI-based analysis, residential facilities are excluded. The CEFPI guidelines, which focus on indoor space, were supplemented with National Intramural-Recreational Sports Association (NIRSA) guidelines to assess outdoor field space.

The space assessment supports the master planning process, reporting on the University's current portfolio of space and identifying areas of current and future need within the context of campus operations. The study also includes an analysis of instructional space utilization – one of the University's most intensely used

physical resources – providing a baseline for decision making and further action. New teaching pedagogy, as well as changes in the way that students learn and socialize, also affect the University's physical context, and some of the needs identified in this report emphasize the importance of adapting to those changes.

On the New Brunswick campus in particular, the legacy of the individual college system presents a challenge to operating an efficient and connected campus. The distribution of space often contributes to perceived shortages; better connectivity and a more balanced allocation of different types of space will improve access to facilities for teaching and learning and for student life.

The space assessment projects current and future needs, but does not take into account quality of space. The University is in the process of assessing the facility condition and deferred maintenance needs of all University buildings through an independent analysis by ISES. The master plan team recommends that the University complete additional analysis following the completion of the ISES study, comparing

building condition to overall needs. This analysis should include a comprehensive space audit and updated space needs following the completion of the current capital campaign, both within the context of the physical conditions detailed in the ISES study.

Academic space dedicated to departments, including office, research, and instructional labs, should be considered within the context of the next step of the strategic planning process, in which each of Rutgers' schools will develop its own individual strategic plan for growth. More detailed growth projections can be used to refine the space assessment.

OVERVIEW OF FINDINGS

The New Brunswick campus has more than enough total square footage to meet its programmatic needs, both at present and for the near term future; that is one of the primary findings of this study. However, having enough space does not necessarily correlate with having the right space, in the right place.

New trends in teaching and student life continue to emerge, changing the way campuses develop,

operate, and make capital plans. In addition to responding to the changing nature of the college campus, at RU-NB, the legacy of the individual college system continues to affect the campus as a system, and how students access both learning spaces and social environments. This study seeks to identify key areas in which the University can redistribute space to improve the campus experience, not only for students, but also for faculty and staff. Major findings are summarized below, followed by additional detail by space type:

- **At 9,055,675 total asf, the University has sufficient space** — the legacy of the individual college system is apparent in the duplication of facilities on each campus (i.e., dining, recreation, lounge, health care, library). The rationalization of the University's space towards efficient campus operations and a more accessible campus core for students is an important next step.
- **The need for duplicated spaces at each campus is reflected in the distribution of space types across each campus** — the distribution is not always equal, however, creating

local shortages. The rationalization of space should also include a strategy for resolving these shortages, while maintaining efficient utilization.

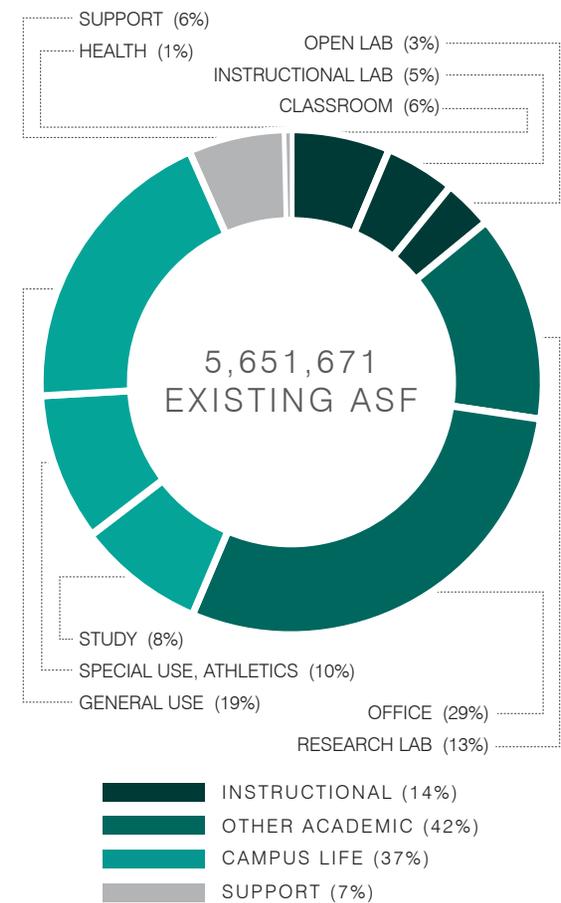
- **Adjusting the classroom inventory will help distribute classroom utilization more evenly.** Overall classroom utilization is above average on all districts for most of the day. In addition, while a number of individual rooms at each district are hyperutilized, with more than 40 weekly room hours (WRH), other classrooms are underutilized. This is due to a number of factors, including: classroom size vs. section size, location, faculty preference, and, in particular, departmental ownership. Departmental ownership frequently limits the number of hours that a classroom is available because unscheduled hours cannot be used by other departments, thus increasing shortages of classroom types and decreasing the efficiency and utilization of the overall inventory. Adjusting the classroom inventory to fit desired section sizes and accommodate the distance between districts, both through technology integration and updating the physical spaces, will help balance utilization and increase efficiency

TABLE 2.2.2 Partial Space Need Summary (ASF)

SPACE TYPE	EXISTING SPACE	CURRENT NEED	FUTURE NEED
LIBRARY + STUDY	779,910	596,935	616,694
Study	418,320	324,794	343,038
Stack	303,539	218,925	218,925
Service	58,051	53,217	54,730
ATHLETIC + PHYSICAL EDUCATION	340,477	598,936	609,969
CAMPUS LIFE	929,213	521,776	550,547
Assembly + Exhibition	133,691	130,596	136,835
Dining	265,212	160,472	169,484
Student Life	530,310	230,708	244,228
Lounge	122,624	74,064	78,224
Merchandising	83,248	74,064	78,224
Recreation	221,300	55,548	58,668
Meeting	103,138	27,032	29,112
Health Care	20,138	12,210	12,834
SUPPORT	276,822	137,006	137,006
TOTAL ASF	2,346,560	1,866,863	1,927,050

Note: Classrooms, instructional labs, and office space are not included in this table; projections of current and future need are under review by the University. Projections of space needs should also be completed at the departmental level as a part of the strategic planning process currently underway.

The chart to the right shows the distribution of space between major types (SuperFICM - i.e., 100, 200, 300, etc). The data excludes residential space, consistent with CEFPI-based space analyses.



across the board. Finally, a significant number of spaces classified as classrooms did not appear in the class schedule, which suggests that these spaces may be in use for other academic functions and should be considered for reclassification.

- **Comprehensive UMDNJ space data was not available**, and space analysis for the former UMDNJ could not be included in this study. A separate study should be undertaken for RBHS, in conjunction with current and future strategic planning efforts.
- **This analysis represents a foundation for department-level strategies and space needs.** The findings of this study should inform a separate study following the development of each school's strategic plan.
- **Maintaining accurate and up-to-date space data should be an institutional priority.** Accurate space data, especially with regards to the space inventory, is essential to comprehensively assess the University's facilities.

In addition to the above summary of findings, the

following section details space needs by type. Looking at space by type, within the context of location, owner, and distribution, provides more nuanced analysis; these findings are discussed below.

CLASSROOMS

Overall, the classroom supply appears to be sufficient across the New Brunswick districts. However, classroom types are not in sync with current teaching pedagogy and the trend towards smaller classrooms—there is high demand for small classrooms (1-25 seats) and a surplus of medium classrooms (26-75 seats). The shortage in small classrooms can have a wide-ranging effect: class sections migrate into larger classrooms after the supply of small classrooms has run out, causing a ripple effect of shortages across the entire inventory. Strategies for resolving this problem include building additional classrooms and subdividing surplus medium-sized classrooms. Better matching classroom and section sizes will also improve individual and overall classroom utilization.

While classroom occupancy is generally within range of its target, pressures on classroom scheduling

reported by University stakeholders may be attributable to a number of hyperutilized classrooms – classrooms scheduled for over 40 WRH. 22% of classrooms at Busch, 47% at Livingston, 44% at College Avenue, and 9% at Cook/Douglass had 40 or more WRH. These hyperutilization of these classrooms, while balanced in overall utilization by underutilized classrooms, increases wear and tear, impacting the scheduled cycle of maintenance and renovation, and, more importantly, the learning experience.

Nearly twenty percent of spaces classified as classrooms are not listed in the Fall 2012 class schedule. In addition, while these spaces represent twenty percent of the total number of classrooms, they only comprise twelve percent of total classroom space in square feet – indicating that some spaces are too small to be classrooms. It is likely that many “unused classrooms” are classified incorrectly; the majority of these rooms are under departmental control and may have been repurposed for other needs. While these rooms were not included in the utilization analysis, they should still be addressed; unused rooms may have potential use as instructional or departmental growth space. A current, up-to-date space inventory,

in addition to ongoing collaboration with departments, will help resolve classification issues.

The University has several projects under construction or in planning and design that will impact the supply and scheduling of classrooms and may alleviate some of the pressure on existing classrooms. However, technology strategies, including cutting-edge classroom technology and more robust scheduling software, could help improve efficiency even further, achieving a greater degree of alignment between class sizes, courses, and teaching pedagogy.

INSTRUCTIONAL LABS

Instructional labs are highly variable in occupancy and should be assessed individually – each department uses its instructional labs in a different way. However, on average, instructional labs meet the target WRH of 25. Instructional labs that have low WRH may be reserved for student use outside of class (i.e., painting studios), or might be in need of upgrading – a level of detail that illustrates why it is recommended that instructional labs be assessed in collaboration with the given department. For example, it might be beneficial

to include an assessment of lab space in the strategic planning process at the school level.

Almost half of all spaces classified as instructional labs are not listed in the Fall 2012 course schedule, a finding that indicates that they may be classified incorrectly, similar to unscheduled classrooms. Many of these labs are under departmental control, and belong to engineering or science disciplines. As is the case with classrooms, better space data and ongoing collaboration with the departments are needed.

RESEARCH LABS

With respect to research labs and other research space, traditional space analysis is typically customized based on conversations with the departments. This information was not available for this study, but existing space is summarized in the full findings of the Space Utilization Study for RU–NB. However, the 2014 strategic plan predicts growth in science and engineering, so it is likely that additional research space will be needed, as well as the ongoing modernization of older research space.

OFFICE

Total office space appears to be sufficient. However, office space can be more accurately assessed with station counts, which indicate how many actual offices are needed. Space-based assessments of office space may not take into account variations in office size or large areas of cubicles that might be classified as a single office space. Station counts, the most accurate method of office space accounting, were not available for this study. Current and future office space needs should be assessed at the departmental level, when the data is available.

LIBRARY + STUDY

Library and study space encompasses stacks, study, and library support space. The apparent surplus of space — 779,910 asf existing, compared to 616,694 asf needed according to CEFPI guidelines — masks a need for additional study space. Many open labs, which are traditionally classified as part of study space, are scheduled for class activities. This practice limits their availability to the entire student community, creating a shortage of study space. As libraries move more towards providing collaboration space in

a learning commons model, the University's libraries can be re-envisioned as hubs of active learning.

ATHLETICS

There is a shortfall in athletics space, with 340,477 asf existing, compared to 609,969 asf needed according to the CEFPI guidelines. The 340,477 asf of existing space does not include recreation centers, which were coded in the inventory as athletics space; for this study, space coded as athletics space in the recreation centers has been excluded from athletics space, and added to student recreation space, given the University's entrance into the Big Ten, and the prevalence of separate athletics and recreation facilities at Division I schools. The shortfall of athletics space is evidenced by the use of recreation centers for intercollegiate athletics – wrestling and volleyball practice and compete at the College Avenue Gym, while gymnastics uses the Livingston Recreation Center. The University has just entered the Big Ten, which may provide additional incentive to upgrade existing athletics facilities. Further study to identify specific needs and solutions is recommended as a next step.

GENERAL USE

For the purposes of this study, general use space – open to the entire campus community – has been gathered into three categories: assembly and exhibition, dining, and student life. Student life space, which is space open to all, but generally used by students, has four subcategories: lounge, merchandising, recreation, and meeting.

As is the case with many other categories of space at the University, in general, the total amount of existing space is sufficient for current and future needs. However, especially in the case of general use space, it is the quality and distribution of space where there are remaining unmet needs. Some facilities are in need of modernization or have a significant amount of deferred maintenance. Many students noted Brower Commons as their least favorite dining hall in the MyCampus survey conducted in Fall 2013, and the need to renovate this facility was confirmed in stakeholder interviews. Despite the condition of this facility, it still records a high level activity due to its central location. However, it is likely that if it were modernized, more students would use the facility.

Neilson Dining was also mentioned as a facility in need of renovation.

While the space model suggests a certain proportion of each kind of general use space, those proportions are not the same between campus locations. Perceived shortages, in many cases, might be due to the facilities at one campus location being disproportionately busy, with a corresponding lack of activity at other campus locations. This is especially true of meeting space, which is in high demand at College Avenue.

Assembly and Exhibition

Assembly and exhibition space are adequate for current enrollment, according to CEFPI guidelines. However, assembly spaces are operating close to capacity, and University stakeholders have expressed concern that there is no indoor venue at the New Brunswick campus that is large enough to accommodate campuswide concerts and events with special speakers. Many assembly spaces are under departmental control, further decreasing the availability of existing spaces.

Exhibition

Exhibition space is currently sufficient according to CEFPI guidelines, but is located primarily in large venues, including the Voorhees Zimmerli Art Museum. One other such venue, the New Jersey Museum of Agriculture, is currently closed, although the School of Environmental and Biological Sciences (SEBS) is developing a plan for this space. In the interim, additional exhibition space, especially informal exhibition space to showcase research or student work, is a potential need.

Dining

Dining space is more than sufficient, with nearly 100,000 asf more than future need, according to CEFPI guidelines. Some of this surplus is due to the duplication of facilities that is required to serve each campus location. However, some dining facilities are in need of renovation, particularly Brower Commons at College Avenue and Neilson Dining at Cook-Douglass. Students cite the dining facilities at Livingston as their preference due to its recent modernization, as well as its wide range of retail options. A campuswide vision for dining facilities is needed.

STUDENT LIFE - LOUNGE

Lounge space currently exceeds current and future need, with 122,625 asf existing, compared to 78,224 asf needed. Stakeholder interviews noted a lack of lounge space in student centers; this was echoed by student responses to the MyCampus survey, which noted that lounges at the student centers can be crowded and that lounge space for commuters is insufficient. This localized, high-intensity use of lounge space in student centers may indicate a need to redistribute lounge space to the student centers, and should be studied further with Rutgers Student Life. Surplus lounge space that may exist outside of the student centers could also be repurposed as flexible multi-purpose space, a need identified by students and staff.

STUDENT LIFE - MERCHANDISING

Merchandising space appears to be sufficient, with 83,248 asf existing, compared to 78,224 asf needed. There is some variation in the distribution of merchandising space between campus locations, but the lower proportion of space at Livingston is likely filled by the additional retail dining options located

on the ground floor of the Livingston Apartments residence hall.

STUDENT LIFE - RECREATION

Recreation centers are another area where quality is the primary need, rather than additional square footage. Some of the existing space beyond current and future need is due to the duplication of facilities at each campus location; the facilities at each location are likely to remain in use. Recreation space is often ad hoc from institution to institution, and policies towards recreation space affect space needs beyond what is projected by CEFPI guidelines.

As is the case with dining space, local shortages can occur when users show a clear preference for the facilities at a specific location. The Werblin Center at Busch is most frequently chosen over the facilities at other campus locations, because it is the most modern of facilities, while the College Avenue Gym was highlighted as being in need of renovation. The allocation of program within a given recreational facility may also need rethinking, as new trends emerge in recreational activities. According to National

Intramural-Recreational Sports Association (NIRSA) guidelines, there is a significant need for additional outdoor field space. The findings of this study, in addition to the 2012 recreation master plan, should be considered in creating an overall vision for recreation.

STUDENT LIFE - MEETING

As is the case with classrooms, meeting space is characterized by having an outdated range of room sizes. The mismatch between room size and event attendance can push events into rooms that are not suited for the event, which also puts pressure on the high-demand larger meeting rooms. Although the amount of meeting space is far more than adequate according to CEFPI guidelines, with 103,138 asf existing and 29,112 asf needed, student organizations are very active at RU–NB and generate above average use of available meeting rooms. Academic departments, as the second largest user, primarily use meeting rooms for student-related programming, such as workshops, lectures, and career fairs. In FY13, over 20,000 reservations were booked into not only the inventory of meeting rooms, but also available classrooms—classroom use accounted for

nearly 6,000 reservations. Location also plays a role in the shortage of meeting space, with College Avenue representing 42% of all reservations. Clearly, further study, involving the Department of Student Life, is needed to identify specific needs with regards to room size, quantity of rooms, and location.

SUPPORT

Support space is currently more than adequate, with 276,822 asf existing, compared to 137,006 asf needed. A large majority of this space is dedicated to central storage (45%), facilities shops (30%), and computer and telecom space (20%). No shortages in space were reported in stakeholder interviews. The University might consider conducting an inventory of its central storage.

OTHER FINDINGS

This study provides a baseline snapshot of the current portfolio of space based on the data provided by the University. However, the University has several projects under construction, or in planning, for which data was not available, and thus could not be included in this

study. Once the current round of capital construction and the Sightlines facilities assessment are completed, a future assessment should be undertaken in order to provide a more comprehensive view of campus space needs. This proposed study would reassess space needs, and rationalize the entire portfolio of space towards balancing efficient use and necessary duplication at each campus location. Specific departmental space needs can be identified as the University completes the New Brunswick strategic plan.

Better data translates directly to better analysis; this study was affected by gaps in data, including employee station counts, that would have enabled a more detailed analysis. An audit of the current space inventory is also recommended, as more consistent data will allow for the most accurate analysis. For example, recreation centers were coded as athletics space, although there is a FICM code for indoor recreation space; some classroom spaces are too small to be used for teaching, and might be better coded as classroom service. Many institutions perform an annual audit of their space, in order to maintain a current inventory as space goes inactive,

new space is added or modified, or the actual use of the space is changed by its user. Coordination with other administrative departments on consistent data collection, including the Registrar and Human Resources, will also aid future analysis efforts.

Maintaining a current inventory of space with consistent FICM codes, as well as associated datasets – such as station counts, dining information, and class schedules – will help the University operate as efficiently as possible. In addition to efficiency, better data will improve access to space, help the University plan for future growth, and provide more accurate reporting for University initiatives such as indirect cost recovery.

2.2.3 CORE FACILITIES AND THE NEED TO TRAVEL

With over 65,000 students, 9,000 faculty, and 15,000 staff across three campuses, Rutgers University comprises a large community of stakeholders. The master plan team used web-based technology to maximize participation from the Rutgers community in the planning process, customizing Sasaki's interactive MyCampus survey to gather feedback on aspects of the physical campus, from the best classrooms to popular places to study and eat, and how students, faculty, and staff get around and between the districts. The survey extended the team's outreach efforts beyond the initial round of stakeholder interviews, allowing a larger proportion of the community to provide their feedback on the feel and function of the campus. Approximately 8,000 students, faculty, and staff completed the survey across all three Rutgers campuses, with the majority coming from the New Brunswick/Piscataway campus. The primary findings are summarized below.

CORE CAMPUS FACILITIES

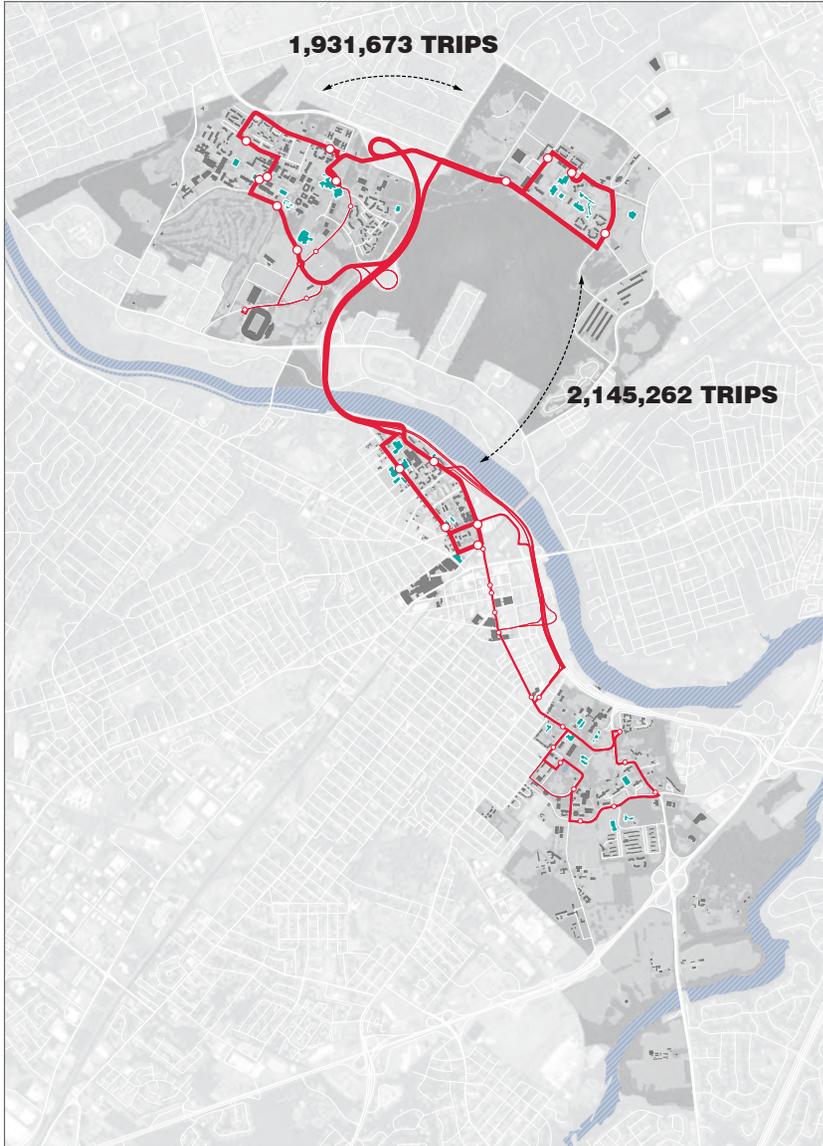
The survey confirmed that the most important campus spaces are student centers, dining halls, major classroom buildings, libraries, recreation centers, and

residence halls. These facilities serve as formal and informal learning environments, social spaces, and meeting spaces for the entire Rutgers community. Students, in particular, travel between these facilities on all of the districts to attend class, meet friends for meals or to study, work out, and go to student organization meetings and events. The core facilities are also the most frequented by first- and second-year students – more so than juniors and seniors, who also socialize and study with friends in Highland Park, along Easton Avenue, and within their academic departments. Similarly, commuter students were more likely to use off-campus resources like Johnson Park, while resident students typically stayed on campus.

Faculty and staff use many of the same core facilities as students, especially dining and student centers. While these spaces primarily serve students, they do not always accommodate faculty and staff as easily; this part of the community was concerned with their needs being addressed by the master plan. The need for faculty and staff-specific spaces is reflected in requests for dedicated lounge and dining space, where faculty and staff can relax in a quieter environment, or where they can bring guests.

The primary factors in the popularity of different core facilities are quality and location. For example, while many students described Brower Commons as an outdated facility, they still ate meals there because of its central location. Still, a shift towards the newer facilities at the Livingston Student Center and Dining Commons is apparent from the University's trip data for the Rutgers buses: College Avenue-Livingston was the connection with the highest number of trips, followed by Busch-Livingston. Investment in the core facilities, as evidenced by Livingston, clearly benefits the entire campus community. However, the higher level of activity at the most popular facilities can result in localized crowding, due to the range in quality of the facilities across all of the districts.

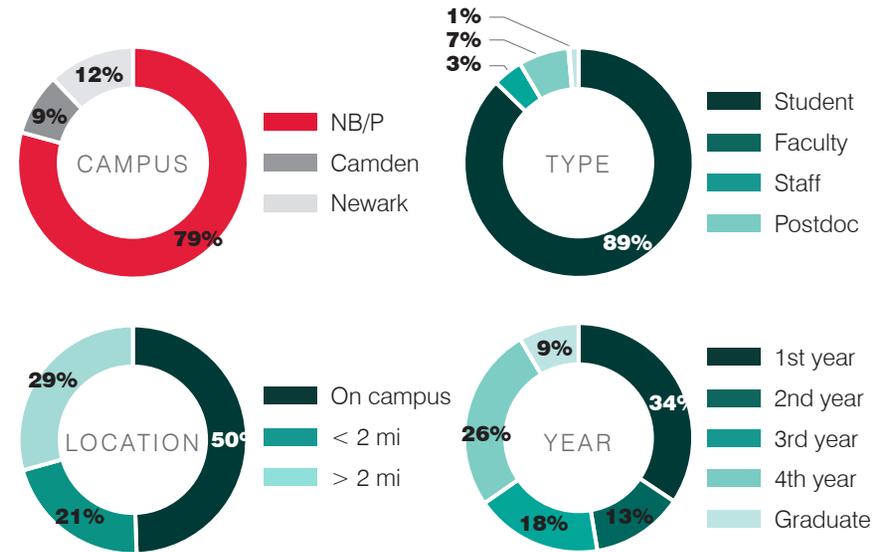
Another finding revealed by the survey is that students view the variety of the facilities on different campuses as a benefit – for example, when they tire of the dining hall on their campus, they can take a bus to a different campus with alternate dining selections. Similarly, each campus has distinctive recreation facilities, defined by its natural resources and pattern of development, which contributes further to their specific identities and sense of place. The distinctive nature of each campus



MOST POPULAR BUS ROUTES

TABLE 2.3 Rutgers Bus Ridership on Major Routes (AY2012-2013)

	RIDERSHIP	CAMPUSES	TRIP TIME	PEAK HOURS
A	1,175,096	CAC-B	35 MIN	11am-10pm
B	1,931,673	B-L	30 MIN	1pm-9pm
C	177,238	WEST LOT-BCC	12 MIN	
EE	1,391,804	CAC-C/D (local)	45 MIN	11am-9pm
F	1,488,225	CAC-C/D (Rte 18)	35-40 MIN	12pm-9pm
H	1,158,741	CAC-B	35 MIN	10am-10pm
LX	2,145,262	CAC-L	30 MIN	11am-9pm
XB	762,355	B-C/D	36 MIN	12pm-10pm
XL	879,690	L-C/D	36 MIN	1pm-8pm
WK1	467,744	ALL	60-70 MIN	
WK2	436,939	ALL	60 MIN	



MYCAMPUS RESPONSES

is a quality that is clearly important for the University to nurture and enhance, while simultaneously creating a cohesive New Brunswick/Piscataway campus overall.

INTER-DISTRICT TRAVEL

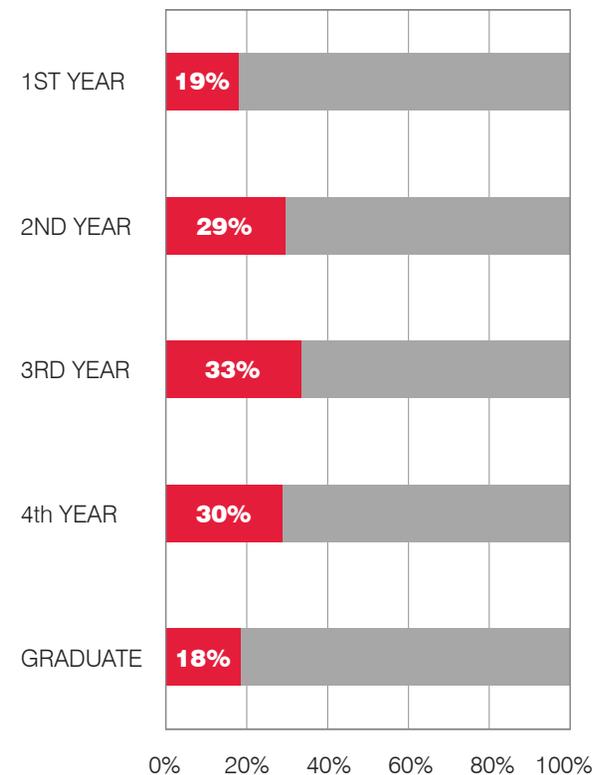
The transportation section of the survey also confirmed that students spend a significant amount of time on Rutgers buses, for both academic and social activities. For example, because the most popular facilities are generally dispersed between different campuses – dining at Livingston, library at College Avenue, recreation at Busch, etc – students frequently use Rutgers buses to travel between them. Students are the primary users of the bus; faculty and staff drive to avoid delays and because it is generally more convenient to them than taking the bus. The effectiveness of core facilities and, consequently, the student experience, are thus firmly intertwined with the experience of riding the bus.

While students were generally satisfied with the buses, the majority of student survey respondents, including those who were satisfied with the service, thought that buses were overcrowded. NextBus, while a positive

addition to the bus service, was seen as sometimes inadequate, as it does not account for unpredictable wait times at high-volume bus stops. The limitations of intercampus travel sometimes prevent students from taking classes they might otherwise enroll in, although they generally feel that they still receive a high-quality education. In some cases, transportation-related constraints can delay graduation if a required class does not fit within a student’s schedule.

Some specific improvements were cited by survey respondents. For example, better service between Busch and Livingston is desired; both campuses are on the same block schedule, but have a bus route that can exceed the allotted class change time. The former bus stops along Cedar Lane are missed by students, faculty, and staff who live in the Highland Park and Edison area.

FIGURE 2.2.3 *Transportation constraints: Have you ever been unable to take a class because of a tight class change schedule? Is the inability to take this class likely to delay your expected graduation?*





2.2.4 CLASS SCHEDULE-BASED TRANSPORTATION DEMAND

Analysis of current scheduling practices and the resulting impact on student travel demand was carried out during the planning process. The results of this analysis, including the visualization known as the “Swarm,” supports concepts included in the master plan to decrease inter-district travel and to develop software that will help students make better choices and enhance their campus experience. As noted in the introduction to this report, Rutgers University–New Brunswick faces logistical challenges due to the distance between the Busch, Livingston, College Avenue and Cook/Douglass districts. Consequently, the student experience for many is defined by the time spent on the Rutgers bus system.

Analysis of student data revealed the inefficiency of current scheduling practices and confirmed a link between scheduled academic activity, housing choices, and the need to travel between districts. While the existing bus, housing, and class scheduling systems have each been designed to handle activities within their purview, they have not been coordinated with each other to maximize efficiency and convenience.

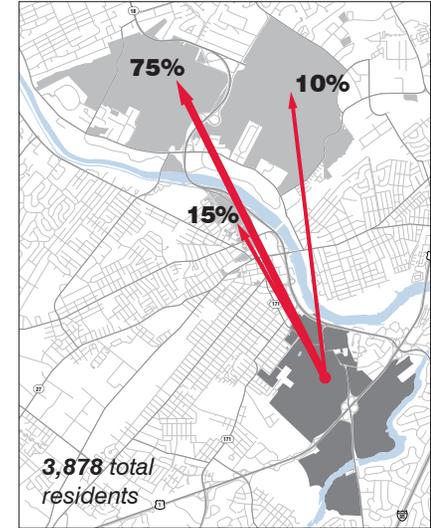
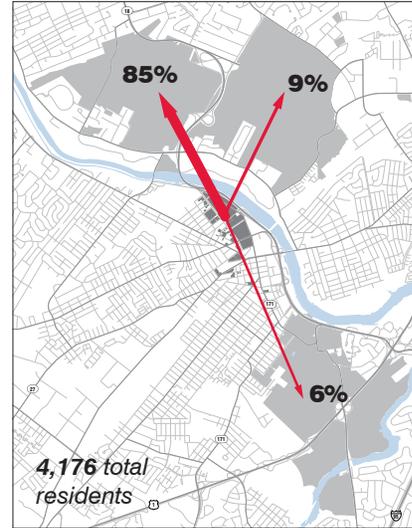
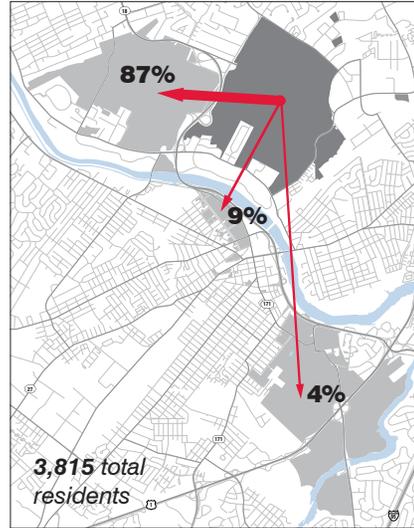
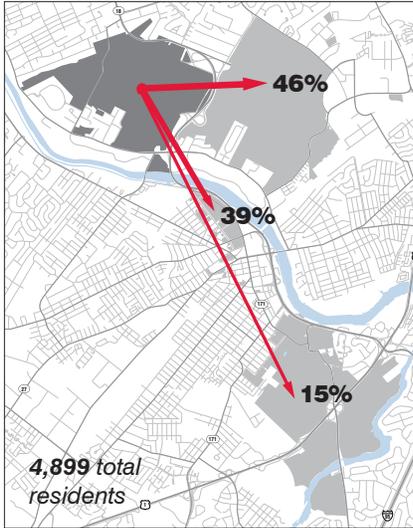
Rutgers is planning to upgrade its scheduling software package; this change presents an opportunity to implement a system that will improve the efficiency of multiple aspects of the student experience. Beyond improving the way that classes are scheduled and managed, the system can provide better coordination with the housing and bus systems. For example, the Rutgers bus system provides efficient and convenient connectivity between districts; however, current scheduling practices require more trips than necessary. Furthermore, the system is sometimes overwhelmed when several large classes end at the same time, in the same building, and students seek to travel to other districts. Housing assignments for resident students further increase the need to travel, since they are made independently of their class schedule. At present, students are not provided with adequate information to understand the travel consequences associated with class scheduling and housing decisions.

EFFICIENCY ANALYSIS

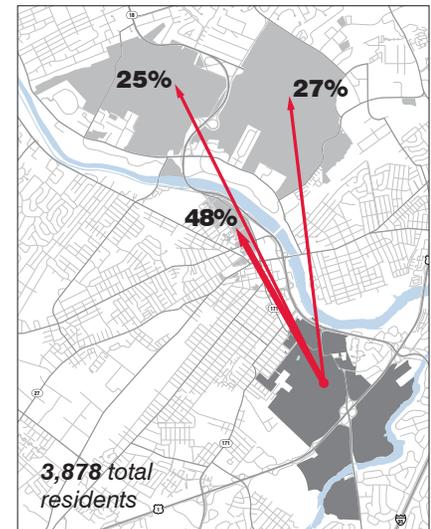
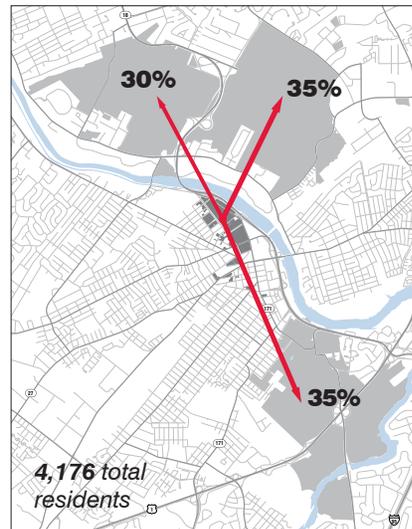
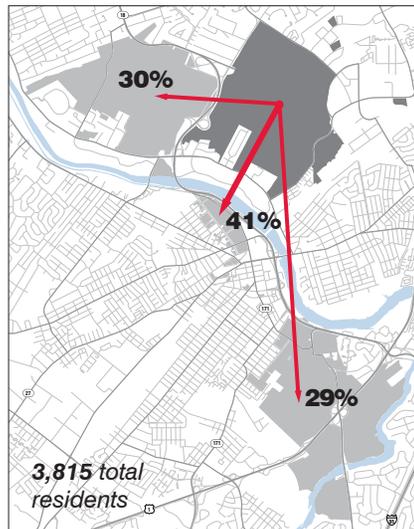
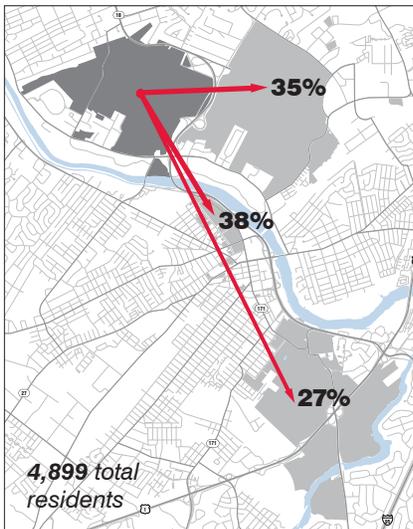
To better understand the inefficiencies of current

class scheduling and housing assignment practices, and the associated need to travel, a series of analyses were performed on the Fall 2012 resident student dataset. The dataset is weighted towards first and second year undergraduates, as they are most likely to live on campus, and are particularly important relative to retention and recruitment. The dataset included 11,651 resident students, representing a majority of the resident Rutgers student population, and 19.8% of the total Rutgers student population.

The efficiency analysis was developed by utilizing a custom data analysis and visualization tool developed for Rutgers to view and synthesize the dataset. Known as the “Swarm”, the tool assisted the master planning team in analyzing the complexity of movement at Rutgers University–New Brunswick – first, by quantifying the number of inter-district movements resulting from the Fall 2012 class schedule; and second, by quantifying the travel associated with current housing choices, and classroom and section selection practices, among other factors. The second quantitative measure reflects the inefficiency of the given combination of factors. The results of the analysis are detailed in the appendices of this report.



Resident students in the School of Engineering travel to other campuses at varying rates over the course of the week to attend their classes. Students living at Livingston, College Avenue, and Cook/Douglass travel to Busch most frequently, while students living at Busch travel to Livingston most frequently.



In comparison to resident students in the School of Engineering, resident SAS students travel to other campuses in relatively equal proportions. The travel associated with taking classes in SAS is due both to large introductory classes, which are offered on all campuses, as well as the dispersed nature of SAS departments and higher level classes.

The analysis revealed the extent to which the class schedule resulted in inter-district movement. Students whose major is in the School of Arts and Sciences and the School of Engineering – the University’s two largest schools – experienced the highest amount of travel, with 8.7 and 6.2 weekly trips per student, respectively. In the aggregate, SAS generates 57,635 weekly trips, while Engineering generates 9,590 trips. The proportions of trips between the districts varied, relative to the location of the school’s facilities; the School of Engineering is concentrated on Busch, while the School of Arts and Sciences has departments located on all districts. Trips between districts for Engineering students were primarily to go to Busch, while for SAS students, trips were spread out throughout the New Brunswick campus. The high number of trips suggests that students are making many trips away from their home district, and that housing could potentially be better coordinated with class schedules.

SAS, with its more dispersed departments, faces particular challenges with respect to inter-district travel. SAS generates 65% of all class schedule-generated trips, in part because it has the most majors, but also

because it offers many of the University’s introductory level subjects, including Expository Writing and General Chemistry. Many of these courses are offered on multiple districts in order to meet demand, maximize convenience to students, and utilize existing facilities. However, in practice, the analysis found that courses offered on multiple districts are generating the most inter-district travel, indicating a need to better understand location in relation to the class schedule.

The potential for developing a data-driven approach to scheduling practices and housing selection – both of which impact the bus system – is highlighted by this analysis. Each part of the efficiency analysis isolated a specific set of practices, to better understand their impact on the need to travel. While the efficiency analysis does not represent fully developed scenarios, it highlights the inefficiency and impact of ongoing practices and decisions. Improving coordination between these systems would have multiple benefits, including more efficient use of classrooms, and a better student transit experience, towards a better overall student experience. These findings imply changes to current student life and academic scheduling practices, facilitated by technological and

data-driven strategies.

TABLE 2.2.4 Top 20 Courses by Trips Generated

COURSE	TRIPS	WSCH	CAMPUS
General Chemistry	4,505	8,029	CA, C/D, L
Expository Writing I	3,333	10,889	B, CA, C/D, L
General Biology	3,321	10,794	B, C/D
General Psychology	3,203	8,120	B, CA, L
Calculus I	3,197	8,425	B, CA, C/D, L
Organic Chemistry	2,565	8,029	CA, C/D, L
Intro to Microecon	1,950	3,979	CA, C/D, L
Precalc College Math	1,590	3,723	B, CA, C/D, L
Abnormal Psychology	1,416	2,699	B, C/D, L
Theater Appreciation	1,406	2,925	CA, C/D
Intro Comm & Info	1,382	2,792	CA, C/D
Multivariable Calculus	1,363	3,180	B, CA, L
General Physics	1,269	2,505	B, C/D
Calculus I Math/Phys	1,266	3,388	B, CA, C/D, L
Intro to Sociology	1,258	2,106	CA, C/D, L
Calculus II Math/Phys	1,257	2,620	B, CA, C/D, L
Social Psychology	1,204	2,368	C/D, L
Qnttv Methd in Psych	1,128	2,080	L
Planet Earth	1,108	3,180	B, CA, C/D, L
Analyt Physics II	1,026	1,650	B

Note: Top 20 courses by Weekly Student Contact Hours (WSCH) are highlighted in light turquoise.



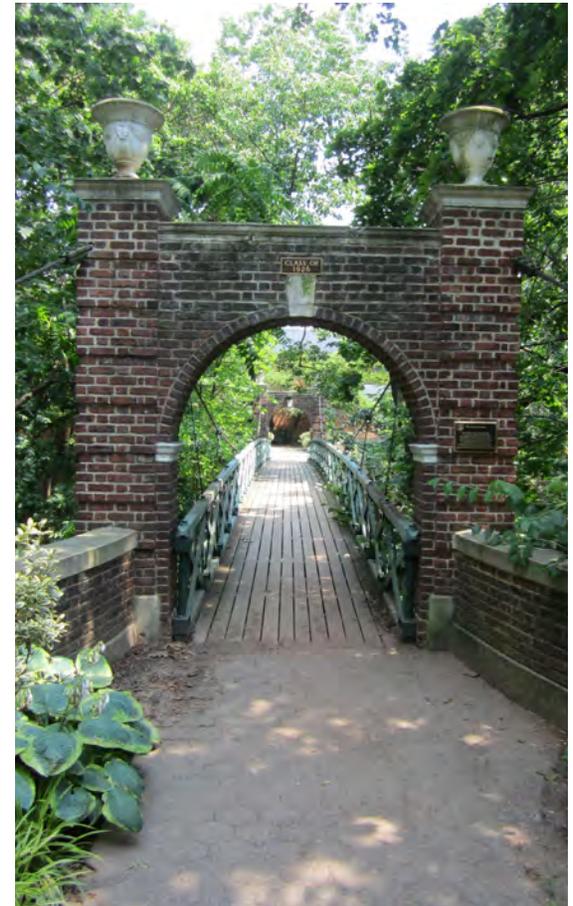
2.3 Mobility and the Need to Travel

As discussed in the previous section, the distributed layout of Rutgers University–New Brunswick combined with its centralized class scheduling and housing policies has led to a significant transportation challenge. For Rutgers to thrive as a vital institution, convenient access is critical. Historically, this access has in large part, by automobile. However, the nature of its role is changing. Today, the Rutgers bus system is providing a majority of inter-district trips by students, to the point of straining its capacity. As the University and the surrounding region continue to grow and change, the transportation system must also evolve, not merely to remain functional, but to enhance the quality of student life, the environment, and the community.

For many, discussion of campus travel conjures the thought of student and employee commutes to and from campus. While the commute continues to be a substantial component of travel at Rutgers, internal transportation is an increasingly large – and for many, frustrating – element of the Rutgers experience. Rutgers operates the largest university housing operations in the country with additional buildings being planned or under construction. Redevelopment

in New Brunswick is providing expanded housing options within walking distance of the University. The communities adjacent to the University are working to expand a network of dedicated bike lanes, enabling more to bike to campus.

Movement within and between districts is a central part of the Rutgers experience. As survey and space analysis show, classes, recreation, and social opportunities are spread throughout New Brunswick and Piscataway. Students and employees need to move across campus to capitalize on the best Rutgers has to offer. The challenge is to improve the quality of experience and, where possible, eliminate the need (but not the opportunity) to travel altogether.





PEDESTRIAN CONNECTIVITY



BICYCLE CONNECTIVITY

2.3.1 PEDESTRIAN AND BICYCLE CONNECTIVITY

Safe, comfortable, and convenient pedestrian connections are essential to the vitality of any campus. Walking is not only important as the most common mode of on-campus travel; it is also critical to the success of transit, and even to the success of travel by automobile. Every trip begins and ends on foot. A pedestrian connection that is perceived as difficult, unpleasant, or unsafe will reduce the attractiveness of the parking lot or bus stop it serves, jeopardizing the success of an otherwise sound facility or service.

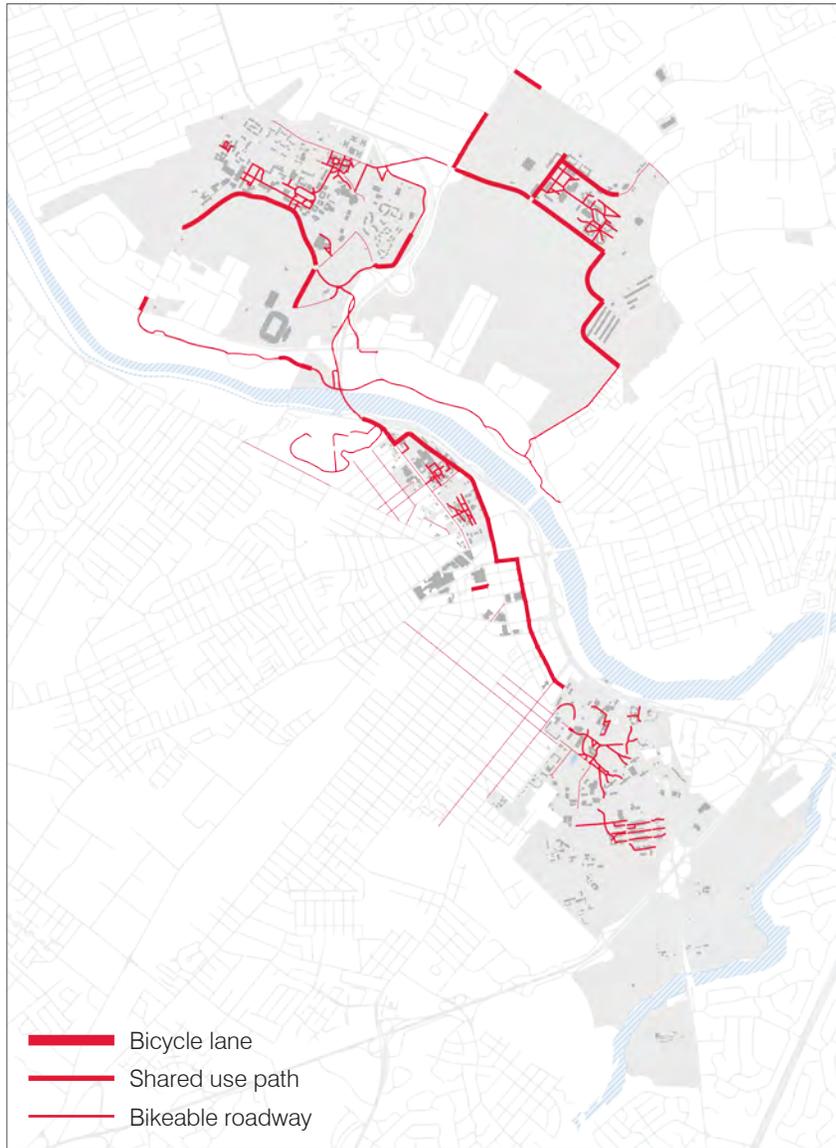
While there are few large gaps in the Rutgers pedestrian network, there are many locations where connections are missing or unclear. At other locations, the connections exist but do not reflect Rutgers' vision of itself a leading educational institution. Enhanced landscaping and wayfinding improve the pedestrian experience. This includes improvements to the quality of walking surfaces, to a landscape palette reflecting unique qualities of campus and districts, to building placement and orientation that reinforces intuitive circulation.

Although some will walk between districts, for most travel on foot is limited to within a district. On the other

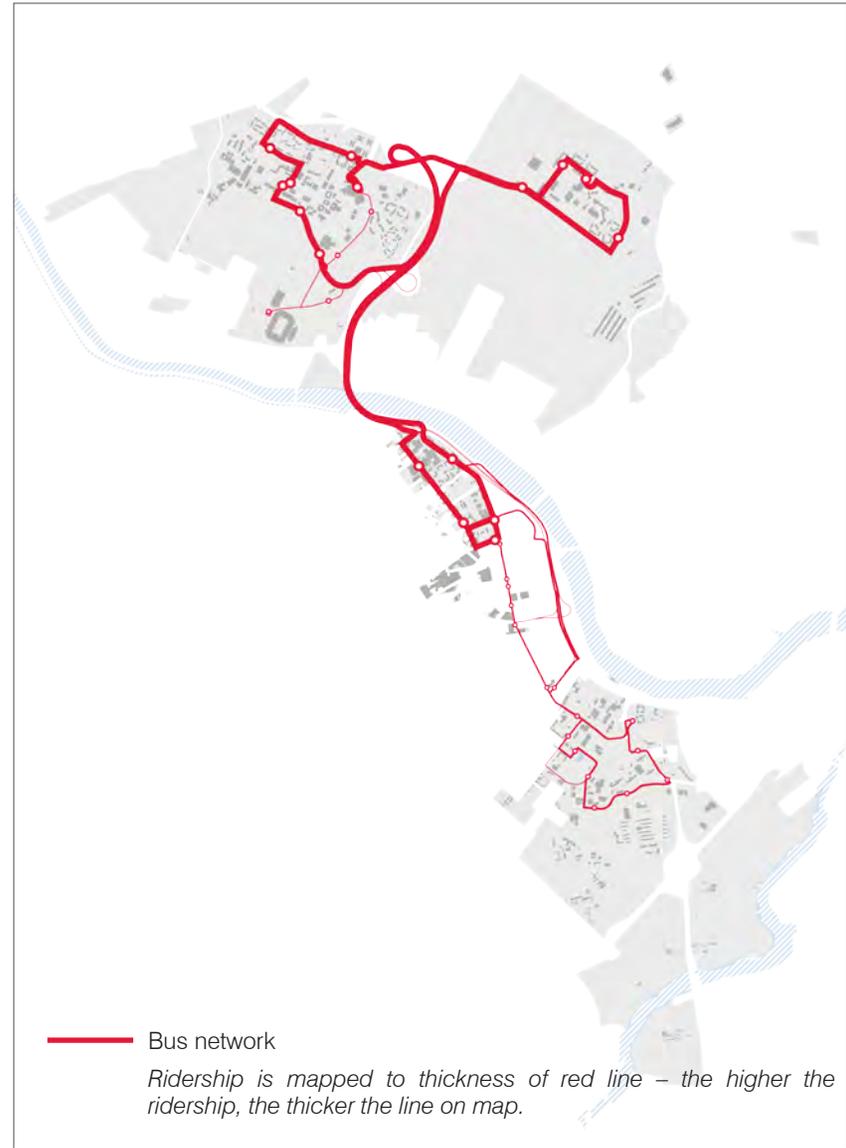
hand, Rutgers University–New Brunswick is well-suited to travel by bicycle: the terrain is generally flat and the travel distances are achievable by bicycle. Congestion on city streets between the College Avenue and Cook/Douglass is such that travel by bicycle is often the fastest means of transport between them.

Despite this potential, bicycling is currently a minor form of transport at Rutgers University–New Brunswick. While there are a number of recreational paths, there are some critical missing links and other locations where a route exists, but may parallel or utilize high-volume roadways or otherwise be unsafe. The University and the community have recognized the desirability of increased bicycle use and are working to improve conditions for cyclists. In summer of 2014, the City of New Brunswick began work on its first major bicycle corridor, striping bicycle lanes between Cook/Douglass and College Avenue. The University has developed a number of programs to promote bicycling and support its usage for commuting and campus travel, including long-term bicycle rentals, free bike repair stations, education campaigns, and cycling workshops.

The New Brunswick/Piscataway area has a strong network of recreational paths, particularly focused along the river. While some connections between Rutgers and these paths exist, there are gaps which, if filled, would noticeably enhance the regional trail and path network and provide Rutgers students and staff much-improved access to public recreation opportunities.



EXISTING BICYCLE NETWORK



EXISTING BUS NETWORK

2.3.2 RUTGERS BUSES

Rutgers operates one of the busiest campus bus transit systems in the country, averaging over 70,000 riders on a typical class day or over 12.5 million in a year. Nationally, this makes them roughly the 55th busiest bus operation of any kinds and would be in the top 40 if operated at peak levels year round.

The bus system is designed as a series of express and local routes connecting the four districts. There are nine weekday routes and two weekend routes. The express routes primarily connect Cook/Douglass with the other districts; the other interconnections provide travel both within and between districts. Given the high passenger volume, the system has focused on academic connections, offering limited service to recreation areas and limiting off-campus service. The EE route travels George Street between College Avenue and Cook/Douglass and stops along the way to provide access to Rutgers locations in the City of New Brunswick. At College Avenue, Livingston and Douglass, the student centers serve as bus hubs. At Busch, Allison Road is a classroom hub, complementary to the hub at the Busch Student Center. Cook Campus Center is not directly served by transit.

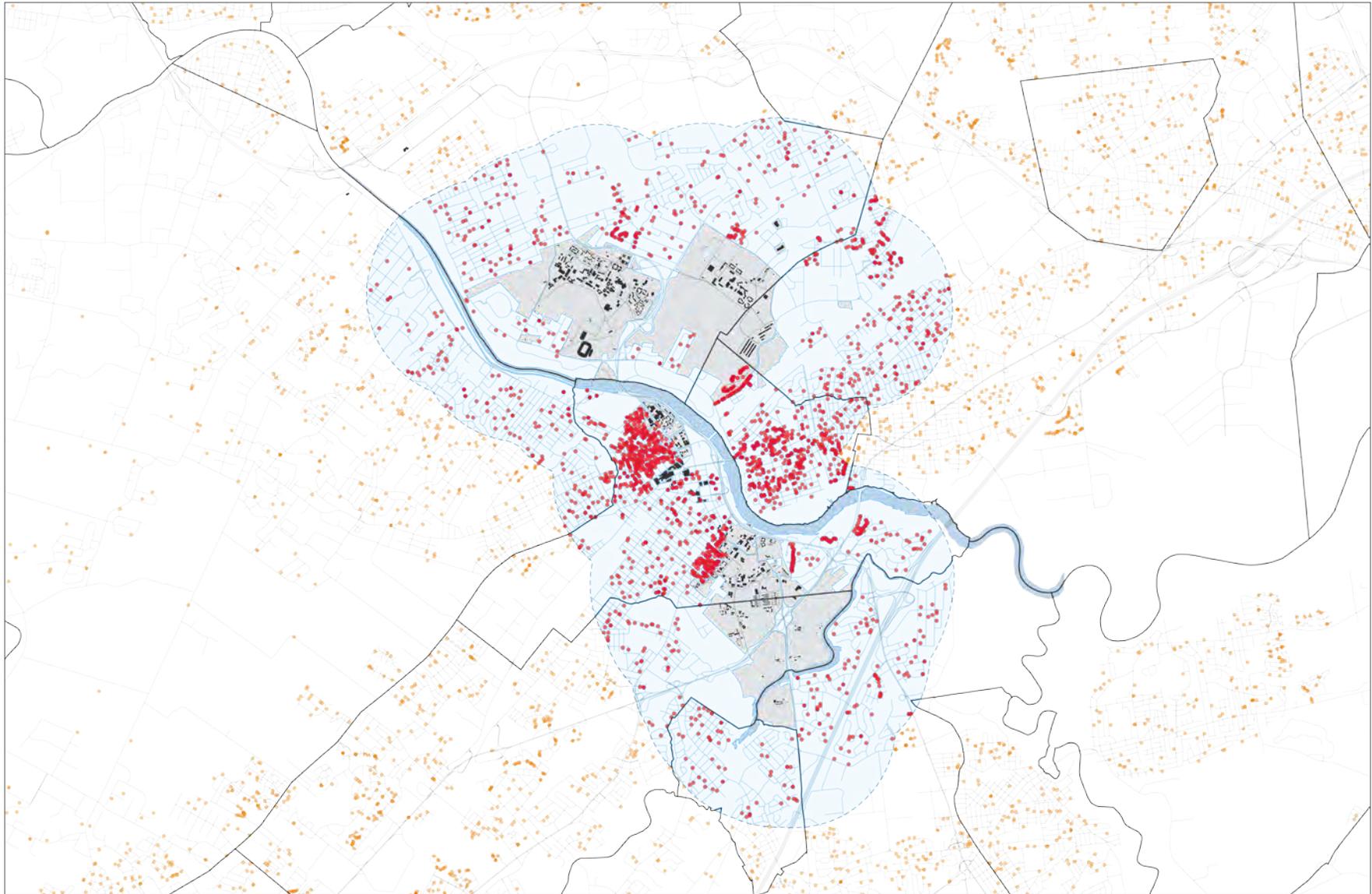
The Rutgers fleet consists of 40-foot and 60-foot buses, the latter being articulated. Most routes run full at class change time. Loading and unloading passengers can be problematic as there can be 100 or more students waiting at the busiest stops. In addition, congestion both on and off the campus slows many of the routes. This is particularly problematic for travel to and from Cook/Douglass as traffic on Route 18 often slows to a crawl in the afternoon and is similarly congested along George Street. Travel time, wait time, and congestion

on the buses are all common complaints about the transit system.

In addition to the Rutgers bus system, Rutgers operates two New BrunsQuick Shuttle routes jointly with the City of New Brunswick to provide improved connections to campus. The routes serve neighborhoods, large apartment complexes, and other key destinations south and west of College Avenue and include a stop in front of the Rutgers Student Center.



Students waiting at the College Hall bus stop at Douglass



COMMUTER LOCATIONS

2.3.3 COMMUTERS AND REGIONAL CONNECTIONS

Rutgers lies at the center of one of the best connected transportation networks in the country. Yet despite of robust capacity of the surrounding networks, there are few direct connections to the University.

The primary vehicle connection to the University is New Jersey Route 18, a four lane controlled-access road extending from north of Busch east to the New Jersey Turnpike and beyond. Route 18 also connects to US 1, a key north-south arterial for central New Jersey providing connections to neighboring townships and boroughs, many of which are home to Rutgers employees and students. There are a number of connections to I-287 to the north, though all are local arterials.

Despite improvements in recent years to Route 18 and other local arterials, roads in the area are frequently congested, particularly in the afternoon and evening. Traffic headed east on Route 18 backs up starting in the mid-afternoon and can extend from the Turnpike all the way to the Raritan River. In an attempt to avoid congestion, many commuters will use George Street and cut through Douglass to Route 18 and Ryders Lane. Much of the congestion along Route 18 is

associated with access to and from the Turnpike; there is currently a project under construction to improve this access with the hope that it will reduce the congestion along Route 18. In addition to the congestion along Route 18 and its associated spillover, traffic generally moves slowly in downtown New Brunswick but the overall speeds and delay are typical of a dense urban area.

Once on campus, there is typically little vehicle congestion. Not all roads into campus are well-marked which can be problematic for visitors. Some of the connections and circulation patterns are convoluted. There can be localized congestion around the entrances and exits to parking lots. Parking on campus is generally sufficient though at peak there is little excess. The biggest concern is spatial allocation in that there is often excess supply on Livingston and portions of Busch and Cook but not at College Avenue, Douglass and the core of Busch. Changes in parking policy and pricing in recent years, in particular for students, have helped to temper demand and avoid a parking crisis. It is not clear, though, how much further student demand can be suppressed, and staff parking pricing is controlled by a labor agreement, limiting the

ability to keep pricing in line with the market.

While the majority commute to campus via automobile, many use other means to travel. The New Brunswick train station has frequent service via NJ Transit, with connections north to Newark and New York City and south to Trenton. While rail service is relatively frequent, reaching the Rutgers districts, for some, is not convenient. The station is an easy walk to College Avenue and the EE route stops a block from the rail station providing direct service to the Cook/Douglass as well as to College Avenue. Commuters headed to Busch and Livingston must transfer however.

In addition to rail connections, there are a number of bus routes which serve New Brunswick, though few enter the campus. NJ Transit operates six routes connecting New Brunswick to its surrounding communities, all of which stop at the train station. Additionally, Middlesex County operates a handful of connector routes serving areas to the south. Commuter bus service provides alternate connections to New York City.

3

RUTGERS 2030

3.1 VISION AND PRINCIPLES

Learning at Rutgers

Life at Rutgers

Navigating Rutgers

Stewardship at Rutgers

Personalizing Rutgers

3.2 CAMPUS FRAMEWORKS

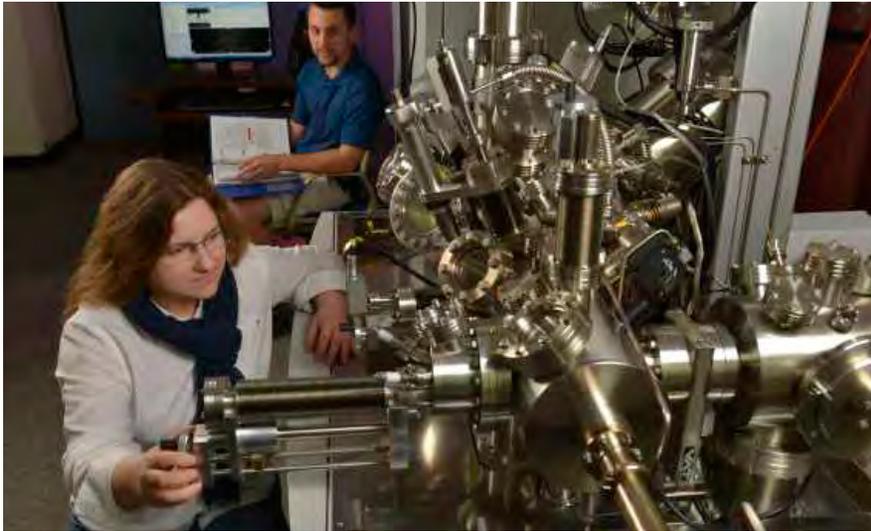
Sustainability Framework

Land Use

Open Space and Natural Systems

Mobility

Gateways and Signage



3.1 Vision and Principles

The vision for Rutgers 2030 coordinates the academic, research, and partnership aspirations of Rutgers and establishes a foundation for future planning decisions. It provides a vision for the next ten years and beyond, and accommodates the evolving teaching and research mission of the University while focusing on providing a better campus experience for resident students, commuter students, staff, faculty and visitors.

Rutgers 2030 includes recommendations for the functional, physical and psychological connections within and between campus districts as well as to the surrounding community and natural ecosystem. It is based on several overarching considerations responsive to the existing and future organization of activity:

- Rutgers 2030 is designed to support the teaching, research and partnership focus areas of Rutgers University–New Brunswick. In doing so, it provides a unified and coordinated vision for the four districts in New Brunswick - Piscataway: College Avenue, Cook/Douglass, Busch and Livingston.

- Rutgers 2030 responds to the unique history and traditions of each former campus, while providing a renewed vision—a vision responsive to the strategic plan for the University and the colleges, schools and administrative units that occupy them.
- Rutgers 2030 provides a vision for future land and space planning on each district. It is driven by and reflective of the goals and initiatives of the strategic plan and by the plans of the individual districts.

Rutgers 2030 is based on a strong commitment to sustainability and five primary principals that support the Strategic Plan:

Learning at Rutgers: Create a world-class learning environment at Rutgers, through new technology and learning environments that foster collaboration and innovation.

Life at Rutgers: Reinforce amenities that improve the experience at Rutgers for resident students, commuter students, faculty, staff, and visitors.

Navigating Rutgers: Enhance the experience of moving through and between the districts by developing a multi-modal transportation system.

Stewardship at Rutgers: Implement strategies for more efficient and effective utilization of land, facilities and resources.

Personalizing Rutgers: Utilize technology, consolidated services and amenities to enable students to better coordinate the choices they make with regard to class schedules, housing, and transportation.



3.1.1 LEARNING AT RUTGERS

Create a world-class learning environment at Rutgers, through new technology and infrastructure that fosters collaboration and innovation.

The campus and classroom analyses completed in support of Rutgers 2030 revealed several issues with regard to the learning environment at Rutgers. Key among the findings: changes in pedagogy and technology along with new methods of delivery undoubtedly require a transformation of the existing learning environment. While technology has been enhanced in most classrooms, the shift towards flexible learning environments is transforming current classroom technology standards. This finding, coupled with the dispersed nature of Rutgers' students and faculty, and the associated need to travel between locations, provides an opportunity for Rutgers to be a leader in this transformation.

The Strategic Plan offers guidance on learning at Rutgers; the University plans to assess institutional

opportunities and weaknesses in the face of three major challenges facing higher education:

- The impact of new communication, research, and teaching technologies on the University;
- The need to remodel the traditional structure of academic units to create an environment that is more responsive to the needs of tomorrow's faculty, students and staff; and
- The imperative to seek adaptive and flexible connections between the academy and the broader economy.

Information technology continues to transform the way we teach, making it possible to implement new pedagogical tools on a broad scale, including interactive and online courses, "flipped classrooms," learning technologies inspired by the video game industry, and simulation technology in which students practice skills virtually. At Rutgers, broadcast technology can enable professors to move virtually to students, rather than students moving to professors as they currently do. These changes have the potential to reduce travel to classes, thereby enhancing the

educational experience and reducing strain on the physical infrastructure.

The University will assist its faculty in adopting new teaching and research technologies, while continuing to support hands-on learning; student-faculty interactions; experiential learning in the field, lab, or archives; student-student interactions; and mentoring, which will set the Rutgers residential experience apart from its online competitors.

Rutgers 2030 suggests several planning concepts for future study:

UNIVERSITY LIBRARIES – the physical nature of libraries is radically evolving as a result of changes to the ways in which people are accessing information. The result: less emphasis on printed matter, and more reliance on digital information that is widely available on the internet or via digital sources maintained by libraries.

This suggests that Rutgers' libraries will need to change in response. The buildings themselves could be transformed to address the specific needs

and unique circumstances encountered at Rutgers. It is suggested that Rutgers study the future of the New Brunswick-Piscataway libraries with the aim of transforming them into learning commons—places where people, information, and ideas come together. The libraries could also address additional issues: What if the libraries were the location for “broadcasting” lectures across Rutgers New Brunswick? The idea would enable professors in high demand courses to deliver their lecture, say at Busch, and broadcast the lecture to College Avenue, Cook/Douglass or Livingston. The advantage: one professor could reach more students and those students would not necessarily need to travel across campus. This would have the benefit of enabling students to stay at their “home” district and would potentially decrease the demands placed on Rutgers buses.

CLASSROOM + LEARNING ENVIRONMENT STRATEGY – looking ahead, Rutgers must anticipate how changes in pedagogy will transform the learning environment. How might these changes improve learning outcomes? How might courses be tailored for different learning styles? How might courses be offered online or in blended models?

How might these changes result in new and different types of classrooms? How might they change the overall amount of space dedicated to classrooms? Like libraries, these questions require more study. Regardless, the learning environment strategy will require a combination of renovation in appropriate locations and, potentially, new learning environments that are positioned to be more accessible.

TECHNOLOGY – As new technologies emerge, Rutgers must keep pace in order to maintain its education potential and its role in providing graduates with computer literacy and readily applicable skills in the workplace. Rutgers must also prepare and respond to challenges presented by online learning, consider opportunities for a technology-rich and blended learning environment, and explore software options that would enhance the student experience. In exploring the application of new technologies, Rutgers also has the opportunity to address transportation and scheduling constraints.

3.1.2 LIFE AT RUTGERS

Reinforce amenities that improve the experience at Rutgers for all: resident students, commuter students, faculty, staff, and visitors.

The Strategic Plan for the University outlines several important priorities for the student experience to which Rutgers 2030 responds. Looking forward, Rutgers will need to:

- Deliver efficient, student-centered academic and career services and counseling;
- Create the infrastructure that has the greatest impact on the quality of life, including personalized student communities such as honors colleges, research units and societies and academic groups that make Rutgers a more intimate learning environment;
- Create and promote additional unique living and learning environments to engage students in scholarship and intellectual achievement outside the classroom;

- Create personalized learning environments such as living and learning communities, honors colleges, and interdisciplinary learning environments that help diminish the perceived scale of Rutgers;
- Cultivate existing first-year honors colleges on each campus and tailor them to the strengths and vision of each campus; and
- Develop additional programs and mechanisms for early and direct interaction of undergraduate students with faculty.

The Student Experience

Rutgers 2030 places people first. It focuses on the student experience and by extension, the experience of all staff, faculty and visitors to the campuses. The Master Plan proposes a number of strategies that are intended to transform the day-to-day experiences and quality of life for both resident and commuter students. These include:

- **Create learning environments** where the overall quality, comfort and access to technology and the

transit system will be enhanced.

- **Transformation of Rutgers Libraries** into learning commons offering access to technology, group study areas, and services / amenities that will support students in their academic pursuits.
- **Improve the transit experience**, beginning with software applications that will assist students in better managing their time and the need to travel as part of their daily routines.
- **Develop transit hubs as gateways** into and out of each campus, where amenities, convenience and comfort for the student population will be provided alongside complementary facilities such as housing and recreational facilities.
- **Expand the use of technology** that will assist students in making more informed choices with regard to their academic schedules and housing options.

Transforming the Student Experience is a key strategic priority outlined in the University's strategic plan. In response to student dissatisfaction with the academic experience, Rutgers will need to "deliver efficient, student-centered academic and career services and

counseling, and improve the infrastructure that has the greatest impact on students' daily lives.”¹ This includes making the University a more intimate, personalized learning group, by creating and supporting research units and societies, academic groups, student activities, and programs like the Honors College. Students need early and ongoing interaction with faculty and their peers, in order to develop the support networks and learning environments that they need to achieve academic success.

Improving the college experience for all students is thus critical to improve retention rates and ensure student success; this effort is dependent both on the campus and its facilities, as well as the complementary programming initiatives that maximize the benefits of the physical campus. As students graduate, having a distinctive and robust Rutgers experience will boost alumni engagement.

Rutgers 2030 includes strategies for improving campus centers, housing, dining and recreation in response to the above noted goals of the Strategic Plan and, more specifically, “to construct a campus environment that supports student social needs and improves student

satisfaction while encouraging academic growth and engagement.”² To that end, the following strategies are proposed:

TRANSIT HUBS – Rutgers Buses provide an essential service for the Rutgers community. Rutgers 2030 includes recommendations for improving bus services, but also takes into consideration the total experience for both resident and commuter students. A key recommendation is the goal of establishing transit hubs in each of the districts. In general, the hubs are associated with the student centers at College Avenue, Douglass and Livingston. Two transit hubs are proposed for Busch, one at Allison Road Classroom Building in response to current travel demand patterns, and the other at the Busch Student Center. The transit hubs are envisioned as gateways into and out of each district, where express bus services are provided across campus. In addition to the amenities offered in the student centers, other student services and high tech classroom facilities are proposed to be developed in close proximity to each hub.

STUDENT CENTERS – Rutgers 2030 includes recommendations for comprehensively considering campus life. Recommendations are provided for transforming the student centers at Busch and Douglass, and for creating an entirely new student center at College Avenue — envisioned to not only serve those students living and commuting to College Ave, but the entire Rutgers - New Brunswick community. At present, the student centers are a legacy of the former college model and do not provide for the entire Rutgers community.

HOUSING – over the long term, housing at Rutgers will need to be transformed and redeveloped in response to changing student needs and deferred maintenance considerations. The master plan anticipates this need for redevelopment, and identifies potential areas for strategic redevelopment. In each case, the intent is to better coordinate housing locations with the creation of transit hubs. In support of this strategy, future housing is proposed in close proximity to the hubs – within a five minute walk of a given hub. Rutgers 2030 illustrates a long-term redevelopment strategy for housing at Busch and Cook/Douglass. Limited housing is proposed for

College Avenue and Livingston, given the recent and ongoing housing investments in these campuses. In recommending new housing, the opportunity also exists to specifically address the desire for stronger living and learning communities across all campuses.

RECREATION – Rutgers 2030 focuses on improving recreational opportunities at Rutgers. An expansion is proposed for the College Avenue Gymnasium to address current and anticipated high demand for recreation at this location. At Busch, the Werblin Recreation Center will be expanded. The Livingston Recreation Center is expanded and the adjacent fields enhanced, in support of the outdoor recreation program. Recreation at Cook/Douglass is addressed by transformation of the existing Cook/Douglass Recreation Center and Cook Campus Center into the campus-wide location for Rutgers club and intramural sports and also through the creation of new recreational fields proposed at Cook.

ATHLETICS – 2014 was marked by Rutgers University–New Brunswick’s entrance to the Big Ten. As a member of the Big Ten, Rutgers’ existing facilities should be brought on par with its conference

members. Rutgers 2030 proposes a framework for Rutgers athletics facilities, integrating them into the campus fabric, identifying development opportunities, and transforming existing facilities into cohesive athletics districts at Busch and Livingston. Busch will retain its focus on football, soccer and lacrosse, while the existing facilities at Livingston will be redeveloped into an athletics complex hosting basketball, baseball, softball, tennis, track and field, field hockey, wrestling, volleyball and gymnastics. In both districts, pedestrian access and parking options are improved, providing easier access to sporting events that will form a new athletics tradition at Rutgers.

1. *A Strategic Plan for the New Rutgers*, February 2014: p 39.
2. *A Strategic Plan for the New Rutgers*, February 2014: p 33.



3.1.3 NAVIGATING RUTGERS

Enhance the experience of moving through and between the districts.

The proposed mobility improvements of Rutgers 2030 promote multi-modal connectivity and feature the concept of transit hubs. Enhancement of the pedestrian and bicycle networks, in conjunction with investment in the landscape, is critical to improving the overall transit experience, and the ease of navigating each campus as a cohesive whole.

Rutgers 2030 emphasizes the importance of landscape in defining a sense of place at Rutgers University–New Brunswick, an element of the campus environment that helps orient users. The landscape also provides users with cues that help them find their way, collapsing the psychological distance between destinations. At College Avenue, for example, Voorhees Mall serves not only as open space, but also serves to help users find their way and orient themselves in relationship to the rest of the district. Rutgers 2030 proposes landscape overlays for each campus, aimed both at creating active open spaces, and at providing a series

of visual cues that help users to successfully navigate each district. The landscape overlays are customized to retain each former campus' history and character, terrain, and topography.

The pedestrian and bicycle network is augmented where appropriate. The bicycle connectivity between Busch and Livingston is improved by a new bridge over Route 18, providing safer and more direct access, especially for students traveling between the districts for class. Bicycle connectivity between College Avenue and Cook/Douglass are improved by a new dedicated bicycle lane planned by the City of New Brunswick, along George and Neilson Streets. The new bicycle lane will help complete the bicycle network between College Avenue and Cook/Douglass. In areas where campus roads are proposed to be realigned or replaced, there are opportunities to create complete streets, with infrastructure dedicated to pedestrians, bicycles, and vehicles.

Access to information is also viewed as an important enhancement to the travel experience. Real-time technologies that keep students informed about Rutgers buses, including NextBus, are essential

for ensuring a better transit experience. Such technologies can help students make decisions about the best mode of transportation for them. The master plan recommends implementing this technology in the proposed transit hubs.



Interactive real-time display in London bus shelter

AT LEFT: STUDENTS BOARDING A RUTGERS BUS



3.1.4 STEWARDSHIP AT RUTGERS

Implement strategies for more efficient and effective utilization of land, facilities and resources.

The Master Plan embraces sustainability, making stewardship one of the guiding principles for future planning and design decisions. Recommendations focus on protecting natural systems and water resources, promoting compact land use patterns, enhancing the landscape and open space structure, and providing multi-modal connectivity.

One of the five themes identified in the strategic plan is *Creating a sustainable world through innovation, engineering and technology*:

“Rutgers will create living laboratories for sustainability by performing discovery and applied research, and by implementing models of sustainable practices on our campuses in New Jersey. The University will seek to provide students with opportunities to live and work in a sustainable environment, leverage the University’s field stations and extension services in support of both discovery and community outreach, and become a

national center for measuring sustainability outcomes for industries, businesses, and communities. Furthermore, Rutgers will form strategic alliances with business and government to address sustainability challenges.”³

Rutgers 2030 emphasizes the importance of more efficient utilization of existing space, and of rationalizing space needed to serve the mission of the University. Rutgers 2030 acknowledges and accommodates the need for new construction, in support of the University’s mission and goals, but proposes that the addition of buildings be offset by decommissioning or renovating existing buildings. The master plan also advocates for constructing new buildings within the district core, towards the creation of a more compact, high-activity district within the campus.

As noted in Chapter 2, the Space Utilization Study suggests that Rutgers University–New Brunswick is overbuilt. Rutgers University–New Brunswick has over 175 gsf of space per student, which places it well beyond its peers. This is, in part, due to the duplication of student centers, recreational facilities, classroom buildings and libraries – an outcome associated with

the former college model.

The goal set out in Rutgers 2030 is to rationalize the space usage, with the intent of reducing operating costs, energy consumption and associated greenhouse gas emissions. To that end, Rutgers 2030 proposes that historic or contributing buildings be maintained; existing buildings be renovated to address deferred maintenance and functional use issues; new buildings be provided to support the academic and research mission; and buildings be demolished that are no longer fit for their purpose or continued investment.

3. *A Strategic Plan for the New Rutgers*, February 2014: p 50.

Home Campus: **Busch** | Earliest Class: **8am** | Latest End Time: **8pm**

3 01:160:127 Impact of Chemistry | 01:355:101 Expository Writing I VI x | 3 01:082:105 Introduction to Art History III x

1 01:160:171 Introduction to Experimentation x | 3 01:960:463 Regression Methods x

10 credits | core curriculum areas: I II III IV V VI VII VIII IX

4 trips 1hr | 2 early trips, loaded wed

Class	Monday	Tuesday	Wednesday	Thursday	Friday
01:355:101	8-12	12-4 (15m)	11-12	12-4 (15m)	
01:082:105		12-4 (15m)	11-12	12-4 (15m)	
01:160:171		12-4	11-12		
01:960:463			11-12		12-4

6 trips 2hr | 1 early trip

Class	Monday	Tuesday	Wednesday	Thursday	Friday
01:355:101	8-12	12-4	11-12	12-4 (15m)	
01:082:105		12-4 (15m)	11-12	12-4 (15m)	12-4 (30m)
01:160:171		12-4	11-12		
01:960:463			11-12		12-4 (30m)

9 trips 3hr | 2 tight class changes

Example of potential student-facing user interface for selecting classes

3.1.5 PERSONALIZING RUTGERS

Use technology and co-located services and amenities to enable students to better coordinate the choices they make with regard to class schedules, housing, and associated transportation.

Today much of the student experience at Rutgers is defined by the University's size: the New Brunswick campus is both geographically dispersed and immense in its size and resources. For incoming students, success at Rutgers often depends on identifying personal pathways through their undergraduate experience.

Rutgers needs to implement methods to coordinate first-year housing assignments, first-year course locations, and all classroom assignments in real time using software, in order to reduce student travel time and dependence on the bus transportation system during peak academic hours. The analysis conducted on current scheduling practices at Rutgers, combined with feedback received from the student community,

suggests that there is a significant opportunity to utilize technology to assist students in personalizing or structuring their experiences at Rutgers. In addition to technology, co-locating services, amenities, and classrooms in proximity to commuter parking and residence halls could provide further benefits to the student experience.

Rutgers 2030 promotes the point of view that robust and interconnected data management and software applications, in combination with corresponding physical development, are essential for an efficient and successful Rutgers. Technology is not only essential to the operation of the campus; it is also critical for the way in which Rutgers students organize their activities. Several points are worth noting:

TECHNOLOGY AND LEARNING – Technology could help bridge the distances and dispersed nature of activities at Rutgers. For example, technology could enable the University to broadcast lectures between “collaboration centers” on each campus—enabling faculty and students to “move ideas, not people.” Rutgers libraries and major classroom facilities could potentially be reimaged as collaboration centers

where ideas would be transferred between the districts in New Brunswick - Piscataway, as well as to Camden, Newark and beyond.

CLASSROOM UTILIZATION – In order to more efficiently utilize and schedule available instructional space, technology could be implemented with the intent of minimizing the total amount of space needed, and to better use existing space.

CLASS SCHEDULE AND TRAVEL – Technology could help students schedule their courses with an understanding of the associated travel required. Currently, students schedule their courses on the basis of the time offered, but not necessarily location. For many, the result can be a significant amount of travel time, given the dispersed nature of instructional facilities. The recommendation of the master plan is to develop scheduling software that will assist students in building their schedule while taking into account class time, location, and associated travel.

The inefficiencies in housing assignment and scheduling practices have a significant impact on travel demand and the student experience – an impact

unlikely to be solved by additional classroom capacity alone. To assess the full potential of revising current practices, it is recommended that Rutgers establish an internal task force to develop a software-based solution that would enable students to make more informed decisions about class schedules, housing decisions, and the need to travel between them. The task force would be charged with striking a balance between improved efficiency and pedagogical, policy and cultural changes, and exploring the costs and benefits associated with the different strategies. The cost of building additional housing, for example, might exceed the resulting reduction in travel demand.

As imagined, the software would coordinate the scheduling, housing, and bus systems on both sides – institutional and student user. On the institutional side, the scheduling software would also address opportunities for aligning course section locations and classroom assignments on the basis of where a majority of the enrolled students are located, in addition to other possible enhancements. On the user end, the software would guide housing choices based on anticipated class schedule, and provide scheduling options noting the associated number of bus trips per week.

Commercially available scheduling software packages include Schedule 25 and Ad Astra, with Schedule 25 being utilized by a majority of institutions in the Big Ten. As Rutgers considers potential software options, a sophisticated, robust software program may be beneficial. Schedule 25, Ad Astra and other software packages should be researched to determine if the programs are capable of accommodating the unique conditions at Rutgers. With respect to a software package that would allow students to make more informed decisions, one option is College Scheduler, which links to a university’s scheduling software, then provides students with a web-based interface to help them choose their classes and activities. Ohio State University, Pennsylvania State, and Wisconsin currently use College Scheduler. Regardless of which software package is chosen for this project, Rutgers Office of Information Technology should be involved early on to ensure seamless integration with other systems.

Based on the efficiency analysis, any software package utilized by Rutgers will need to coordinate the scheduling, housing, and bus systems, with the following capabilities:

- Link and coordinate student housing assignments

and course choices

- Take into account housing and classroom inventory
- Forecast and optimize travel associated with the class schedule, accommodating the complexity of travel times between locations
- Facilitate institutional course scheduling objectives and pedagogy
- Create an interface that shows students the amount of travel required as a result of their schedule and housing choices, thus allowing them to make informed decisions

Once the opportunities illustrated by the efficiency analysis are more fully understood and defined relative to the culture and policies of Rutgers, the task force could then consider issuing a Request For Proposal (RFP) for developing the type of software imagined. The scheduling software could offer innovative approaches to course delivery while simultaneously improving the student experience. The development of the software will be an iterative process, most likely requiring multiple rounds of fine-tuning to find the optimal balance between the involved systems. Actual travel reductions, while based on components

identified in the efficiency analysis, will be less than the illustrated inefficiencies. This reflects the fact that even well-coordinated systems cannot reach 100% efficiency.

Bus services will remain an essential and important aspect of the campus experience at Rutgers, given the distribution of activities and the distances between locations. While a software package will help coordinate the systems and reduce travel demand, bus services will always be required. In addition to reducing demand, the overall experience of using the system would benefit from physical improvements to several of the bus stops, as well as improvements to the pedestrian network connecting destinations on each campus. It may be helpful to consider providing wireless internet access on the bus system.

Coordinating the class schedule and housing assignments will positively impact the system, reducing its peak loads and improving the Rutgers bus experience. The full magnitude of this impact requires further study. Beyond managing travel demand, the transit experience should also be considered, from physical improvements to bus treatments and to individual bus stops, to better connectivity between

the bus, bicycle, and pedestrian networks. The cumulative impact of all of these changes will provide all students with an improved, more robust Rutgers experience.

HOUSING SELECTION – Similar to class schedule technology, software could be utilized to assist students in making housing choices that would take into account preferences including minimizing their need to travel between campuses. By giving students the knowledge necessary to make informed decisions, housing selection software could help ensure that they have the rich and rewarding Rutgers experience of their choice.



3.2 Campus Framework

Rutgers University–New Brunswick is comprised of four districts: College Avenue, Cook/Douglass, Busch and Livingston. Together they form an institution of unparalleled size, steeped in history and legacy, yet thriving with individual identities. The physical master plan for Rutgers University–New Brunswick responds to these unique characteristics by proposing strategies for improving connections between the districts, student centers, residence halls, dining, and recreation, in response to the above noted goals of the Strategic Plan.

The presence of the districts, combined with the natural setting of the Raritan River and its associated park system, create a unique sense of place in New Brunswick - Piscataway, supported by the ongoing planning and design initiatives of the local communities. Rutgers 2030 seeks to enhance the overall sense of place by providing a planning framework for the four districts relative to the functional role they each play in supporting the mission of the University, the open space structure of the Raritan River and local communities, and the connectivity within and between them.

The Rutgers University–New Brunswick districts are linked and coordinated in Rutgers 2030 by means a series of interrelated and coordinated framework plans including land use, open space and natural systems, and mobility frameworks. The framework plans provide guidance to New Brunswick - Piscataway on matters of density, development patterns, land uses and connections.

Rutgers 2030 takes a practical approach to linking the districts with transit serving as the primary means of connection between College Avenue and Cook/Douglass south of the river; Busch and Livingston north of the river. Pedestrian, bicycle and programmatic connectivity are promoted between College Avenue and Cook/Douglass via the New Brunswick's street grid, primarily along George and Neilson Streets. Similarly, stronger connections are proposed between Busch and Livingston such that they may be thought of as a co-joined, rather than as separate entities. This is achieved by means of a new bridge over Route 18, which will physically connect Busch and Livingston via an internal pedestrian, bicycle and vehicular route. Symbolically, the bridge will connect Rutgers Business

School at Livingston to Engineering, Pharmacy and RBHS at Busch. A proposed pedestrian and bicycle connection across the Raritan River will connect College Avenue to the municipal and county park system along the riverbanks, offering improved access to running paths, play fields, and other recreational facilities.

The master plan balances the administrative, academic, and operational strengths of “One Rutgers” with each district’s individual identity. College Avenue continues to serve as the overall hub for Rutgers–New Brunswick, in addition to its history as one of the original colonial colleges. Busch and Livingston have a shared vision as a center for the sciences, engineering, and business, with the research park and its potential partnerships and synergies, as well as with improved athletics facilities. Livingston’s vibrant student life amenities and Cook/Douglass’ academic activities are enhanced with better access to recreation and the natural environment.

AT LEFT: AERIAL VIEW OF THE CITY OF NEW BRUNSWICK, HIGHLAND PARK BOROUGH AND PISCATAWAY TOWNSHIP LOOKING NORTH. COOK/DOUGLASS IS AT BOTTOM AND CENTER. COLLEGE AVENUE, BUSCH, LIVINGSTON DISTRICTS ARE AT TOP.

1: A Strategic Plan for The New Rutgers, February 2014. Pg 33

The master plan will “construct a campus environment that supports student social needs and improves student satisfaction while encouraging academic growth and engagement.”¹ To that end, the following is a summary of key proposed enhancements:

CLASSROOM DISTRIBUTION + CAMPUS CONNECTIVITY – Unique to Rutgers University–New Brunswick is the high frequency of travel between the four districts for both academic and social reasons. Rutgers 2030 considers existing classroom inventory, course distribution, and teaching methods and proposes to match student course selection with housing selection, employing technology for broadcasting of classes, in order to reduce travel needs for academic purposes. Rutgers 2030 recommends a bus rapid system in downtown New Brunswick, express and local bus loops, and a comprehensive network of bicycle and pedestrian connections, with consideration for safety and accessibility. Transit hubs and enhanced bus tracking software help riders plan their travel and make the most out of their transit experience.

TRANSIT HUBS – Transit hubs are envisioned as the gateways into and out of each district. They offer the first impression for any arrival, a distinctive place that serves to orient visitors to their surroundings, and a place where classrooms and amenities are within a five minute walk. The hubs offer a consistent and recognizable identity for Rutgers across its four districts, and provide a place for students to meet or grab a snack while waiting for a bus in a protected environment. Rutgers buses will provide efficient and direct service between districts via a proposed express route that links the hubs.

CAMPUS CENTERS + AMENITIES – Rutgers 2030 includes recommendations for considering campus life in a comprehensive manner. Proposals include enhancement or expansion to existing student centers to provide a central location for much needed food service, event, meeting and programming space. Student centers are typically adjacent to the transit hub and often reflect the character and unique identity of each district.

HOUSING – Rutgers 2030 recognizes the need to continue to provide a robust residential experience for Rutgers students. Over the long-term, housing at

Rutgers will need to be transformed and redeveloped in response to changing student needs. The master plan identifies potential areas for redevelopment in order to locate housing nearer to transportation and amenities.

HEALTH, WELLNESS + RECREATION – Rutgers 2030 elevates health and wellness of the Rutgers community by improving access to underutilized resources like the Ecological Preserve on campus, and the Raritan River and adjacent county parks adjacent to campus. The natural resources available within and around the campus provide opportunities for integrating recreation and health centers, collaborating with Exercise Science and athletics, towards providing a well-rounded experience and enhancing the well-being of the Rutgers community.

ICONIC LANDSCAPES – Rutgers 2030 embraces the use of landscape design to define open spaces, establish a sense of place, and enhance wayfinding. The historic Voorhees Mall at College Avenue is complemented by landscape projects across campus. At Busch, the central mall is rejuvenated as a gathering space and visual landmark, tying into a

network of open spaces that provide a more inviting outdoor experience. Similarly, Cook-Douglass' existing Woodlawn and Passion Puddle landscapes are improved. At Livingston, walkways connect the academic quad west of the student center to the athletics complex and the Ecological Preserve.

PARTNERSHIPS – Rutgers 2030 capitalizes on existing and potential partnership opportunities for the University. The master plan proposes a research park between Busch and Livingston, aimed at partnerships with technology-intensive New Jersey businesses. A planned hotel and conference center will support athletics and the research park, in addition to executive education and academic conferences. Additional partnership opportunities are identified, including the Lot 8 Residential Building, the SAS Academic Building and Honors College projects at New Brunswick, and possible community partnerships at Livingston regarding the Ecological Preserve. Extending to and from the Ecological Preserve is a proposed pedestrian and bicycle bridge across the Raritan River, connecting Livingston with College Avenue. Proposed work at the Raritan River would involve stakeholders ranging from county and municipal partners to business partners and regional environmental organizations. Rutgers is

an institution with both regional and national impact, and the partnerships that the University's prominence can attract is supported by the physical master plan.

SUSTAINABILITY + STEWARDSHIP – Sustainability is central to the planning and design recommendations of Rutgers 2030, and is addressed at multiple scales. Regionally, the New Brunswick/Piscataway campuses all lie within the Raritan River Basin, and play an important role in the overall health of the river ecosystem. The master plan's land use and landscape strategies incorporate recommendations from the stormwater master plans developed for Busch, Livingston, and Cook/Douglass, in responding to the impact of proposed development. The master plan landscape framework also prioritizes stewardship of the University's forested and open areas, including the Ecological Preserve, Rutgers Gardens, and the agricultural research fields at Cook/Douglass.

Rutgers 2030 promotes the model of compact, walkable centers at each district, closely coordinated with the transit system and landscape strategy. Over the long term, the master plan proposes to rationalize land use, concentrating activity around transit hubs - the "town center", where key amenities are integrated

with transit, in close proximity to academic facilities and housing.

The University is also in the process of assessing its utilities distribution systems, extending its efforts from the solar farm and solar canopies completed in 2009 and 2012. Rutgers 2030 incorporates potential improvements, including new power plants at Busch and College Avenue.

PHASING + IMPLEMENTATION – Rutgers 2030 is an ambitious but achievable vision that will transform the University. The phasing and implementation strategy considers available funding sources, and aligns them with existing priorities through a phasing strategy that is responsible, immediate, equitable and effective. Rutgers 2030 outlines how projects can be prioritized in order to support a forward-looking vision that reflects the commitment of Rutgers University to be one of the nation's leading public institutions, preeminent in research, excellent in teaching, and committed to community.

3.2.1 SUSTAINABILITY FRAMEWORK

The concept of sustainability is central to the planning and design recommendations of Rutgers 2030. It is addressed at multiple scales in the master plan.

Rutgers 2030 acknowledges the important position that the New Brunswick campus occupies in the regional natural systems network of northern New Jersey. Rutgers University–New Brunswick is the steward of some of the most significant areas of forested and open agricultural lands in the heavily developed regional context of northern New Jersey. The master plan encourages the preservation and enhancement of these important remaining regional assets including: the Ecological Preserve at Livingston; the forested periphery of Busch; and the agricultural research fields and Rutgers Gardens at Cook/Douglass. These areas are protected by means of land use policy recommendations, specifically, growth boundaries which have been identified to contain future development and campus expansion in areas where infrastructure is in place, where land has been previously disturbed, and where pedestrian, bicycle and transit-oriented development can be facilitated.

The preservation of these lands is promoted in support of Rutgers' stewardship role and in support of the

educational, research and broader land grant mission of the University. This land is performing important ecological services in the region and serves as the habitat for wide range of wildlife. Rutgers also is the steward of public land that supports the agricultural and environmental mission of various colleges and departments. Preservation of the open farm land and gardens is promoted in support of the current mission of the University and in support of the mission that may be identified by future generations.

Rutgers 2030 acknowledges the important link between the space provided in campus facilities and the energy consumed whether these spaces are occupied or not. All space consumes energy at varying levels depending on the uses, the intensity of activity, the number of people involved, and the hours of operation. Rutgers 2030 recommends that the overall quantity of space be rationalized to serve the mission and take into consideration the energy profile of the space. Looking ahead, under-performing buildings should be upgraded or demolished. It is suggested that Rutgers develop targets for reducing energy use and emissions. As part of this accounting, future new buildings would need to be offset by reducing or eliminating consumption and emissions in existing

facilities. The aim is to cap and reduce the emissions associated with overall University activity.

Campus utilities and generation facilities are an important consideration in campus sustainability. Rutgers has already made significant progress with regard to renewable energy as is evidenced by the solar farms at Livingston. Key opportunities moving forward include the continued application of building integrated solar on both renovation and new construction projects as well opportunities for geothermal. The replacement of the energy plants at Busch and College Avenue, as proposed in the master plan, also represents an opportunity for significant reductions in energy use.

SUSTAINABILITY PLANNING

Few institutions have made as much impact on the science and practice of sustainability as Rutgers University. Programs like the Rutgers Energy Institute bring together schools, institutes, and research groups from across the university into multidisciplinary research teams engaging with schools like the Edward J. Bloustein School of Planning and Public Policy, which studies implementation of sustainable

strategies. Rutgers has also shown great initiative as with the multi-disciplinary and university funded Climate and Environmental Change Initiative which leveraged Rutgers' expertise in environmental research and education to investigate the effects of climate change both regionally and globally. Students also collaborate with partners outside of the university; the Rutgers Center for Green Building has worked with the New Jersey Meadowlands Commission to perform an environmental life cycle assessment of a LEED gold building.

Additionally, the EPA reported that from 2009-2014, University Facilities and Capital Planning at Rutgers reduced their operating costs by \$41 million and prevented 261,080 metric tons of CO² emissions through environmental initiatives.

Rutgers' tradition in sustainability excellence reveals the breadth of knowledge and expertise it has to draw from while pursuing a path of sustainable development. From the New Brunswick Campus's participation in the Sustainable Tracking, Assessment, & Rating System (STARS) program as a pilot institution, to exploring sustainable topics in both their master plan and University Strategic Plan, Rutgers has demonstrated

the value it places on sustainability. The master plan provides a framework for a University-wide and inclusive organizational structure, and builds upon the foundation that has been laid by recent efforts.

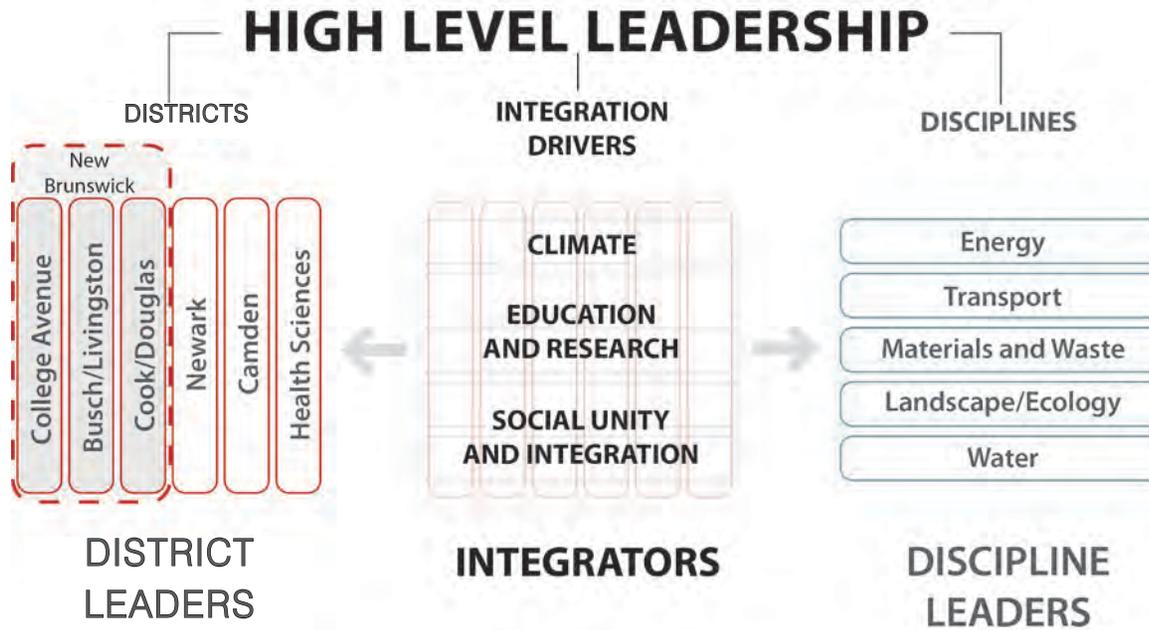
Past Initiatives - Efforts to foster a sustainable campus date back to 1980s. In the past ten years, key members of the University gathered together formally to align individual missions towards a common goal for a sustainable institution.

- **Committee for Sustainability, 2005:** The university established the Committee for Sustainability, comprised of faculty, staff, and students to engage the university community and advise senior administration on sustainability issues. A member of the President's Advisory Council on Health, Safety & Environmental Affairs, the committee was charged with:
 1. Recommending appropriate policies for sustainability;
 2. Assisting with identifying suitable projects for sustainable initiatives;
 3. Assisting with completing sustainability audits of the University;

4. Recommending appropriate goals; and
5. Assisting with preparing annual reports on achievements.

The committee published a report in 2007, highlighting University achievements and proposing a baseline for measuring the success of future efforts.

- **Sustainability Report, 2007:** Developed by the Committee for Sustainability as an annual report outlining University's achievements in sustainability. The document's purpose was to catalogue the University's performance and to make recommendations for new initiatives, activities, projects, courses, and research within the University.
- **Sustainability Plan, 2009:** Developed by Rutgers University Facilities and Capital Planning, the report inventories current sustainable practices and proposes phased goals and strategies for improvement.
- **University-wide Strategic Plan, 2014:** The University-wide Strategic Plan establishes a University-wide vision and includes a sustainable agenda as a strategic priority through the



District Leaders are geographically defined. These leaders are the primary contacts and assist with the implementation of sustainable policies within their unique environments.

Integrators are dedicated staff whose main objective is to facilitate connections between discipline leaders and campus leaders. Integrators facilitate collaboration and track the connections between faculty efforts. They are also stewards for the University’s carbon commitments.

Discipline Leaders are Heads of defined disciplines – Energy, Transport, Materials and Waste, Landscape/Ecology, and Water. These leaders are members of the faculty, staff and administration who promote efforts within their discipline and provide insight into sustainability opportunities.

PROPOSED ORGANIZATION STRUCTURE

enhancement of the physical campus and as a foundational element for an effective and efficient infrastructure and personnel management.

- **University Sustainability Committee, 2014:** Within 100 days of the release of the University-wide Strategic Plan, President Barchi issued a directive to establish the University Sustainability Committee, with a mission to organize and articulate sustainable practices and principles in education and research, and in University operations, with the goal of reducing Rutgers’ impact on the environment. The master plan team has worked with this committee as well as University Facilities and Capital Planning to develop the recommendations contained in this report.

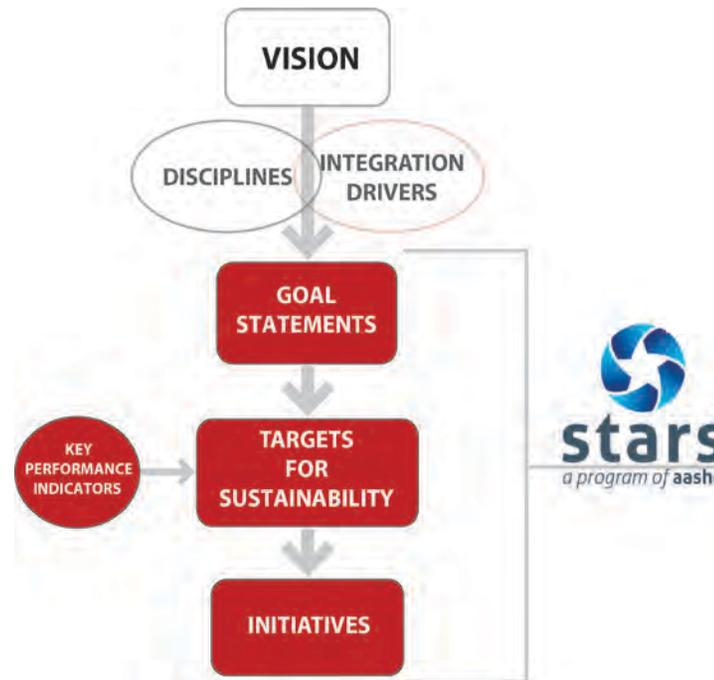
Looking Ahead - The master plan proposes to put in place four drivers that contribute to the success of initiatives stemming from the University Sustainability Committee.

- **High-Level Buy-in** : Commitment from the University leadership team in support of sustainable

initiatives;

- **Dedicated Staff** : Employ committed, qualified personnel who are wholly engaged in the process;
- **Organizational Structure** : A clear organizational structure for engagement is crucial to bringing together leaders from all campuses and divisions in order to align efforts towards University-wide goals;
- **Tracking and Communication of Success** - In order to achieve a lasting impact in its efforts, the master plan proposes an Implementation Framework to unify all goals under a single set of measures on which to gauge its success.

With these factors in place and under the leadership of the University Sustainability Committee, Rutgers is poised to establish a more sustainable campus and with measurable achievements.



Vision is the over-arching statement of aspiration. With the different missions of each campus a one size fits all approach is not effective. Having a guiding vision will allow each campus to adopt policies that work for them in spirit of the greater university vision.

Discipline Leaders, District Leaders, and Integration Drivers form the University Sustainability Committee.

Goal Statements are detailed descriptions of desired results

Key Performance Indicators are measurable values through which impacts on emissions can be assessed.

Targets for Sustainability are levels of performance to be achieved.

Initiatives are the programs, policies and actions proposed to meet the established targets.

PROPOSED IMPLEMENTATION FRAMEWORK

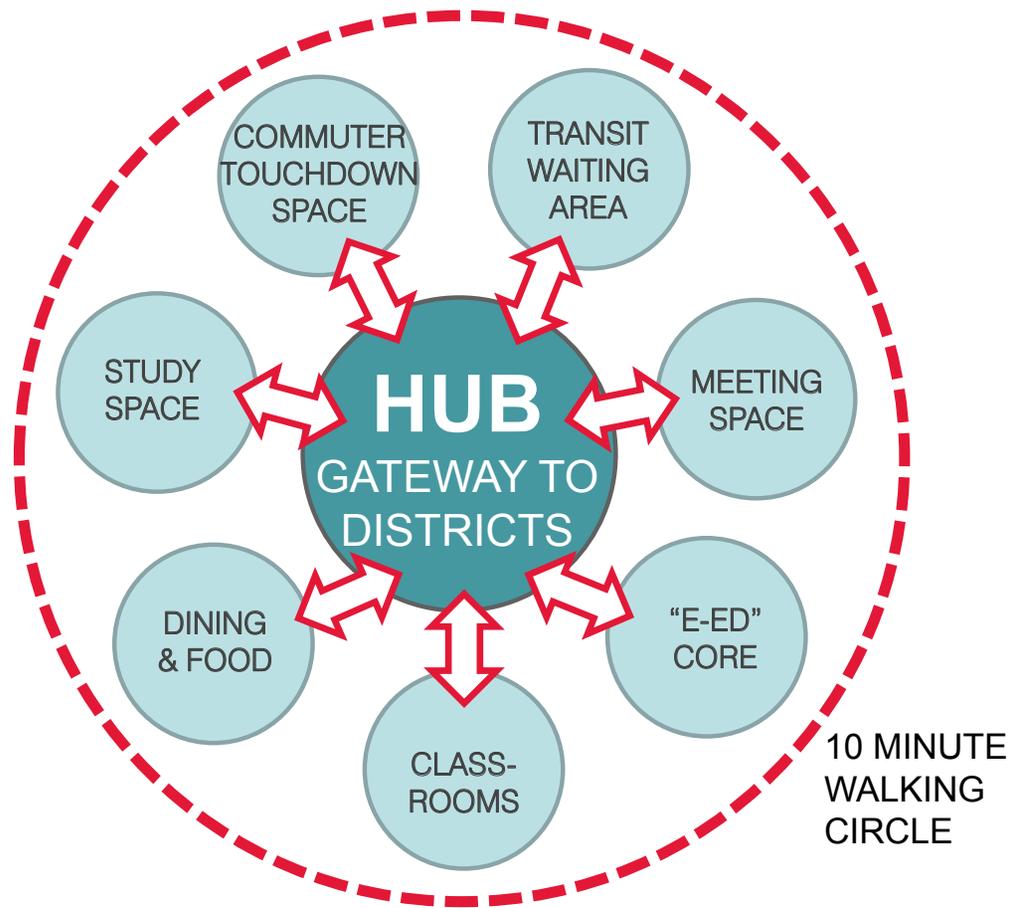


DIAGRAM OF ADJACENCIES AT PROPOSED HUBS

3.2.2 LAND USE

Extending over a four square mile area of New Brunswick and Piscataway, students at Rutgers University–New Brunswick are closely tied to a district rather than to the larger campus for most of their academic and recreational activities. Changes to the operational structure of the University in 2006 dispersed teaching, research and other activities across the campus. Today, the operational structure of Rutgers is not aligned with the physical development pattern of the campus. This has resulted in the need for a robust bus network to move students between districts. The associated travel impact on students is a noted issue and a key concern for the University.

While the proposed land use framework of Rutgers 2030 reinforces many existing patterns for some districts, a major transformation is proposed; the most significantly at Cook/Douglass and Busch. Each district is enhanced by opportunities for development in the areas of academics, research, campus life, active and passive recreation, and operations and support areas.

LAND USE GOALS

- Establish an identity and sense of place for each district;
- Support and enhance emerging district identities;
- Define a “center” for each district focused around the transit hubs; and
- Improve facilities to meet the needs of current and future Rutgers students.

TRANSIT GOALS

Rutgers 2030 puts forth an integrated land use and transportation strategy for reconciling the current misalignment between the operational model of the University, the physical distribution of activities, and the development pattern of the campuses. The strategy is twofold:

- **Express bus services** – direct and efficient express bus services are proposed to connect College Avenue, Busch, Cook/Douglass and Livingston which will operate as the portals into-and-out-of each district; and

- **Transit hubs** – The intent of each Hub is to create “town centers” in each district in close proximity to major classroom facilities, dining, libraries, and undergraduate housing as illustrated in the diagram below:



3.2.3 OPEN SPACE AND NATURAL SYSTEMS

Rutgers 2030 establishes an open space framework defined by a combination of natural, iconic, ceremonial, athletic and recreational spaces. The framework encompasses a wide range of natural and constructed open spaces across the campus: the Ecological Preserve at Livingston, Rutgers Golf Course at Busch, Voorhees Mall at College Avenue, Woodlawn at Douglass, Passion Puddle, agricultural fields and Rutgers Gardens at Cook. The open space and natural system framework at Rutgers University–New Brunswick is also considered in the context of the surrounding communities, the Raritan River basin, and the associated municipal and county parks system.

Rutgers 2030 provides guidance regarding the campus' natural environment and resources. The campus is located within an underlying, in many cases ignored, topography, with a network of stream corridors and riparian ecosystems. The Ecological Preserve at Livingston is considered as a natural feature at the center of the College Avenue, Busch and Livingston districts, linked to the riverine parks by means of new trails and amenities. A new pedestrian and bicycle bridge over the Raritan is proposed connecting College Avenue to Johnson Park and to

Livingston through trails at the Ecological Preserve. This link would create easy access to Johnson Park's running paths and playing fields for the College Avenue community, in addition to providing a recreational connection to the Ecological Preserve.

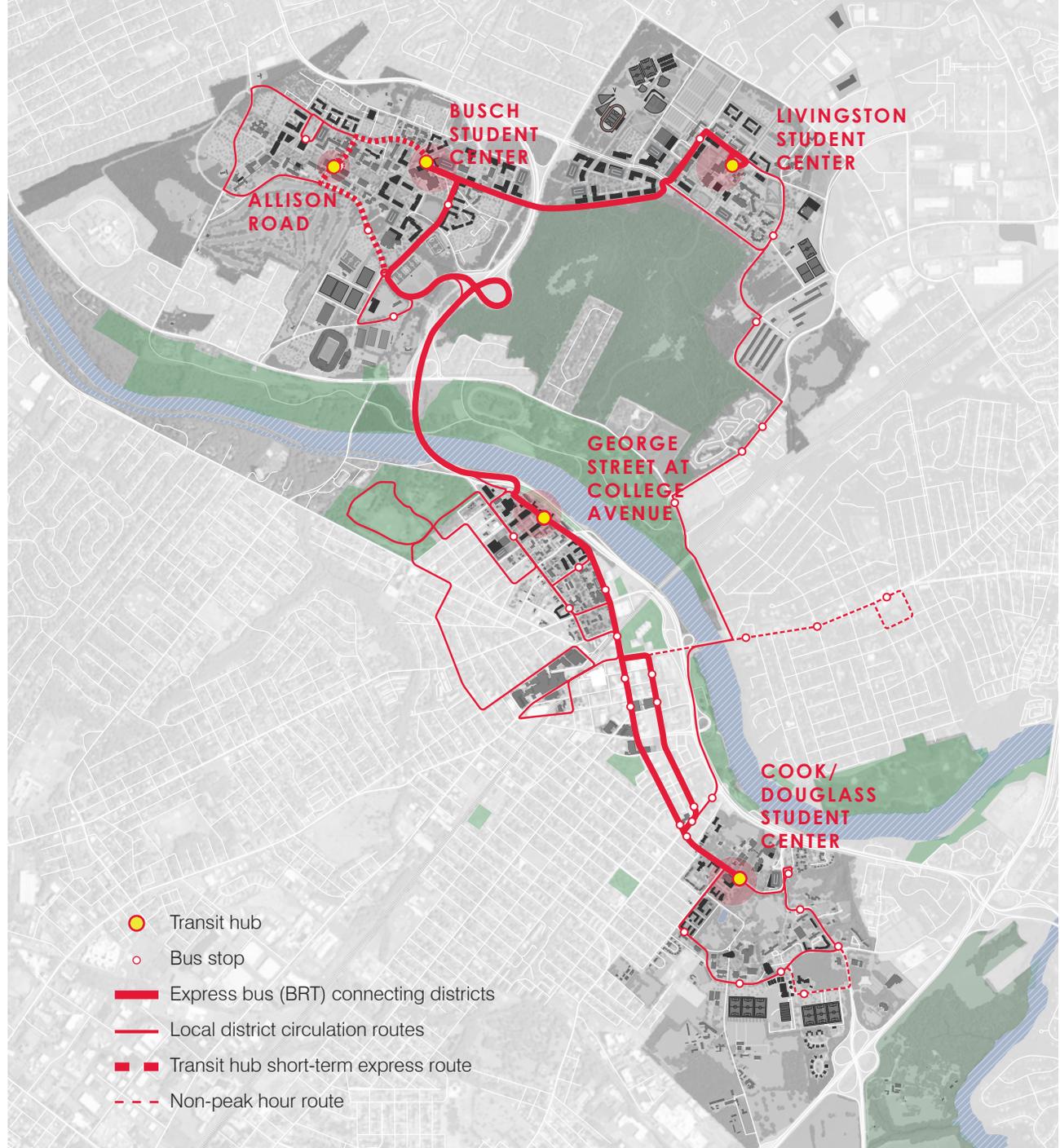
Extending from this new bridge is a boardwalk running along the Raritan River, connecting the Delaware and Raritan (D&R) canal and trail network at the north end of College Avenue to Boyd Park and the Rutgers Boathouse at Douglass. This boardwalk increases access to the river and connects two disconnected recreational areas within New Brunswick.

At the district level, the open space structure informs the placement of buildings while also establishing a hierarchy of open spaces, from large nature preserves to open spaces and quadrangles, plazas, and smaller scale courts. Rutgers 2030 provides recommendations for using landscape elements to establish a sense of place, and for improving the connections between each of the open space types and the broader campus context. The master plan addresses the differences between the open spaces.

Major pedestrian and bicycle connections are reinforced through the landscape, with hardscape, allées of trees, and adjacent open spaces. Strengthening of the visual qualities of central areas like the Busch Mall, and the Livingston Quad, in addition to providing better access to Passion Puddle and Woodlawn, enable users to orient themselves on campus and find their way to their destinations.

Rutgers' open spaces provide an important counterpoint to the campus' 20 million square feet of built space. The open space framework establishes an outdoor campus experience that complements the built environment to create an improved overall environment for the Rutgers community.

AT LEFT: RENDERING OF COLLEGE AVENUE PROPOSED QUADRANGLE WITH PEDESTRIAN AND BICYCLE BRIDGE OVER RARITAN RIVER.



PROPOSED BUS NETWORK

3.2.4 MOBILITY

The need for a robust mobility framework is evident in the geographic distance across campus, in addition to overcoming physical barriers like the Raritan River. Operational conflicts between the class schedule, the bus schedule, and housing assignments add complexity to the existing transportation network.

The Rutgers 2030 mobility framework provides a comprehensive and unified multi-modal system of pedestrian, bicycle, transit and vehicular connections within and between the New Brunswick districts and seeks to improve connectivity and supports all modes of transportation, according to the following goals:

MOBILITY GOALS

- Improve bicycle and pedestrian connectivity to ease congestion;
- Enhance the overall transit experience by improving transit stops, connections to amenities, and route infrastructure;
- Develop strategies for improving both residential and commuter access;
- Enhance the user experience on Rutgers buses

Improvements to transit networks proposed within

districts and between them, across several modes of transportation as described below:

RUTGERS BUS NETWORK - Direct, high-speed connections between districts are a central element of the mobility framework proposed in Rutgers 2030. Rutgers 2030 identifies two types of service for Rutgers buses: an express route between districts, and local routes within and between two districts. Both types of service utilize Route 18 and George Street as the major corridors, including potential bus rapid transit (BRT) lanes connecting College Avenue to Cook/Douglass.

NEW BRUNSWICK BUS RAPID TRANSIT (BRT)

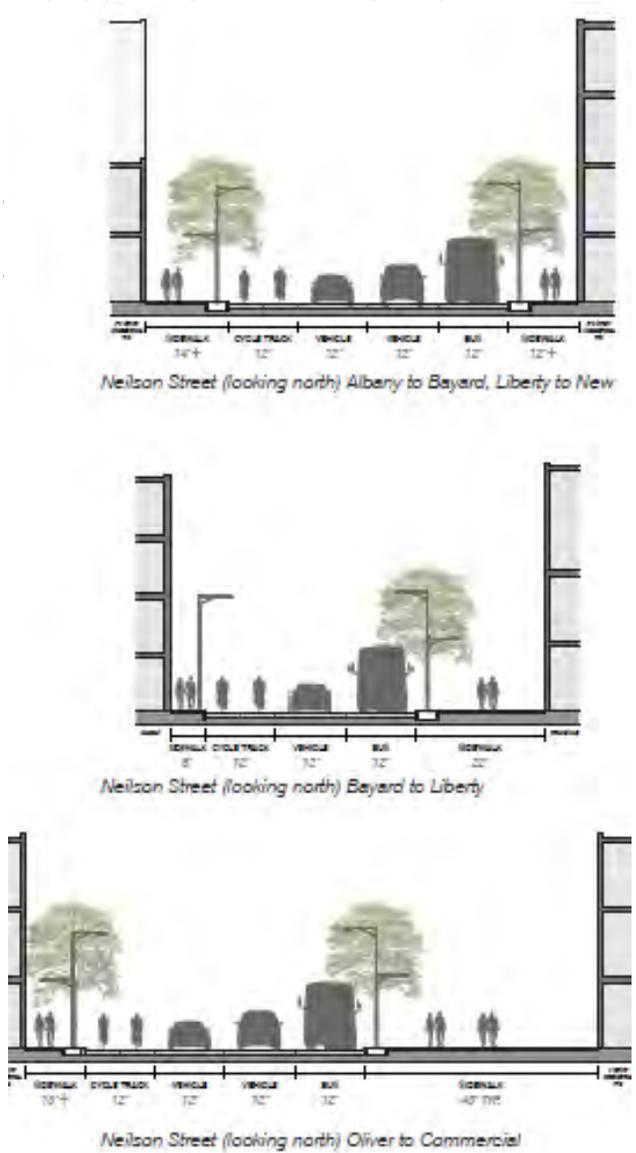
- Connections between Livingston and Busch, and between Busch and College Avenue generally experience limited congestion today. The connection between College Avenue and Cook/Douglass however, is much more problematic. Despite recent improvements to Route 18, traffic regularly backs up through New Brunswick, often as far as the Lincoln Highway (Route 27) and occasionally all the way to George Street near the John Lynch Memorial Bridge. This congestion not only slows traffic and increases the travel time between campuses, it makes the trip

very unreliable.

Previously, the City and NJDOT, in collaboration with other regional partners including Rutgers, examined the possibility of bus rapid transit (BRT) within the New Brunswick/Piscataway area. The most recent study, completed in 2008, recommended multiple corridors, including a route that would connect Busch, College Avenue and Cook/Douglass. The essential element was the creation of bus-only lanes through downtown New Brunswick to decrease bus travel time and increase reliability. Without a BRT lane, the bus system can perhaps be reconfigured to provide more direct connections, but there is no way to ensure reliably swift movement between Cook/Douglass and College Avenue.

Rutgers 2030 confirms that the route is still feasible within the existing right-of-way (see diagrams on the following page) and reflects the 2008 recommendation of a one-way pair with George Street southbound and Neilson northbound.

In addition to the BRT route, the 2008 study included bike accommodations – primarily in the form of a cycle track (a two-way bikeway separated from vehicular



BUS RAPID TRANSIT (BRT) STREET SECTIONS



BUS RAPID TRANSIT (BRT) THROUGH DOWNTOWN NEW BRUNSWICK

traffic) – to reflect the City’s efforts to make Neilson Street a primary bike route through downtown New Brunswick. The master plan team confirmed that the BRT and bike lanes can both still be implemented with minimal shifts to curb lines. Any additional street width beyond the basic accommodation of one lane each for bus and vehicles and the bicycle accommodation on Neilson would be given to a combination of vehicle traffic and parking, depending on adjacent land uses and available right-of-way.

Rutgers 2030 also proposes a southbound bus-only lane from Bishop Place to the Northeast Corridor station at Somerset Street. This addresses the difficulty of southbound travel, particularly in the afternoon and evening. This requires relocating bicycle lanes to College Avenue at Somerset Street.

COMPLETE STREETS - Central to the support of pedestrian, bicycle, and transit on the campus, Rutgers 2030 establishes that the mobility of all modes of transportation is important and that all streets on the campus should be Complete Streets. Streets should accommodate all users, with some streets giving priority to vehicles while others to bicycles or mass transit. This approach seeks to broaden and

strengthen Rutgers’ existing efforts to provide bicycle and pedestrian accommodations, ensuring that the network is complete and provides a high-quality experience for all users.

Where roads are owned by the University, in particular at Busch and Livingston, new roads should be constructed with bicycle and pedestrian accommodations. Existing roads should be reviewed to assess the feasibility for providing bicycle and pedestrian accommodations. In the long term, as roads are relocated or rebuilt, they should incorporate Complete Streets design principles.

While Rutgers does not have direct control of some roads through campus and roads off-campus, it is important to continue to work collaboratively with local jurisdictions to enhance bicycle and pedestrian accommodations. In some cases, it may be preferable to provide parallel facilities where modifications to existing roadways are too complicated or too costly.

BICYCLE NETWORK - Rutgers 2030 envisions a prominent role for bicycles in campus transportation. Bicycle use is growing nationally, particularly in urban areas, for many of the same reasons that it is well-

suited to Rutgers University–New Brunswick. There are many distances that are a long walk or may not be conveniently served by transit but can be rapidly traversed by bicycle.

The plan builds upon current efforts to increase awareness to bike riding, with bicycle safety orientation events and bike-sharing outreach programs. The plan includes improvements to both intra-district and inter-district bicycle networks. Busch is particularly well-suited to bicycle riding but has relatively low bicycle use today. Through improvements to bicycle parking and storage and better bicycle paths, increased use may be expected.

While inter-district distances are longer, in good weather a bicycle trip may be as fast and pleasant as a car or bus. The plan suggests that Rutgers works closely with its adjoining government partners to improve the bicycle network to aid both resident and commuter travel. The City of New Brunswick has taken a first step this summer with the construction of bicycle lanes between Cook/Douglass and College Avenue; future connections include enhancements to Route 18 and Route 27 bridges, and the proposed pedestrian and bicycle bridge over the Raritan.



Rutgers 2030 envisions three elements of improvements to bicycling on and around the campus:

- **Eliminate existing gaps and barriers within the bicycle network.** This includes the gap along College Avenue between the new bicycle lanes and the Route 18 bridge as well as the lack of a quality connection between Neilson Street to new bicycle lanes and the path adjacent to River Road in Highland Park, just east of the Raritan. The proposed plan calls for bike lanes to be completed on Bartholomew Road, between Bevier Road and Brett Road on the Busch campus, as part of an implementation of complete streets.
- **Install amenities to enhance the bicycling experience** and construct new facilities where appropriate. This includes expanded bicycle parking and storage as well as new bike lanes and paths, such as the new crossing of the Raritan and bike lanes on College Avenue.
- **Preserve and enhance existing facilities.** While much of the attention will be on improvements and enhancements to the quality of facilities, it is essential that what already exists be well-

maintained and, where appropriate, improved to reflect new standards and accommodate increasing use.

By improving the bicycle facilities within and to Rutgers University, Rutgers 2030 increases the options for travel within and to the campus. Many cities and some universities have implemented bike share programs. Rutgers should consider whether such a program is suitable at New Brunswick.

PEDESTRIAN NETWORK - While the existing pedestrian network is robust, the walking experience can be much improved. Walking distances may be long, way-finding unclear, quality landscaping lacking, and in some cases no walkway exists at all. Through careful changes to the campus structure, coupled with thoughtful landscape overlay and renewal, the plan aims to rationalize the pedestrian network greatly improve the pedestrian experience.

In addition to improving the overall wayfinding and quality of the experience, the plan will establish a hierarchy of paths within each district. This will ensure that the width and materials are suitable to its usage.

Such enhancements will also improve accessibility of the campus by removing barriers or improving site grades where appropriate.

Rutgers2030prioritizesimprovements to key pedestrian facilities on each district through the remaking of public spaces and landscape enhancements. Existing paths and walks are upgraded, and ongoing maintenance and enhancement is planned for secondary and tertiary paths.

PARKING - The parking system at Rutgers is complex. Land constraints have led to differing levels of supply on each campus. Housing inventory differs between districts leading to different levels of demand. As might be expected, there are a wide range of events associated with a large, prominent public research university. Athletic events, whose attendance is anticipated to increase with Rutgers' joining of the Big Ten, can place tremendous strain on parking and transportation.

While the initial reaction to parking pressures is to desire additional parking, Rutgers, like many universities, recognizes the financial and land constraints of such

AT LEFT: RENDERING OF GREENING OF COLLEGE AVENUE, WITH COLLEGE AVENUE GYMNASIUM
AT LEFT AND PROPOSED QUADRANGLE AT RIGHT

Shared use: *Vehicles and bicycles share the road*



Typical bicycle lane: *Bicycle lane is adjacent to vehicular traffic*



Separated bicycle lane at hub: *Bicycle lane is separated from vehicular traffic*



Separated bicycle lane: *Bicycle lane is separated from vehicular traffic*



Street Sections: A central element of the bicycle network is the establishment of uniform street sections for the campus. These sections create Complete Streets, accommodating cars, bicycles, pedestrians, and buses.

a response. Ultimately, parking supply will be a major factor limiting reliance on automobile travel at Rutgers.

The implementation of Rutgers 2030 will displace and replace many existing parking spaces with new and expanded facilities. Replacement parking is clustered close to vehicular approaches to campus but within a five minute walk to hubs. Where availability of land is limited, new parking structures are proposed as the most efficient way to fulfil parking needs.

Rutgers' current parking fee structure (both for students and for employees) does not appear to generate sufficient revenues to support construction of new parking; significant fee increases would be required. Such increases, combined with continuing escalation in the overall cost of owning and operating a car, begin to reduce the viability of the automobile as a mode of transportation. This substantially increases the cost of attendance for students dependent on an automobile. Employees can be similarly affected by the increased costs to commute by car.

As with other elements of Rutgers 2030, the plan aims to improve the parking experience for Rutgers students, employees, and visitors. Commuter parking

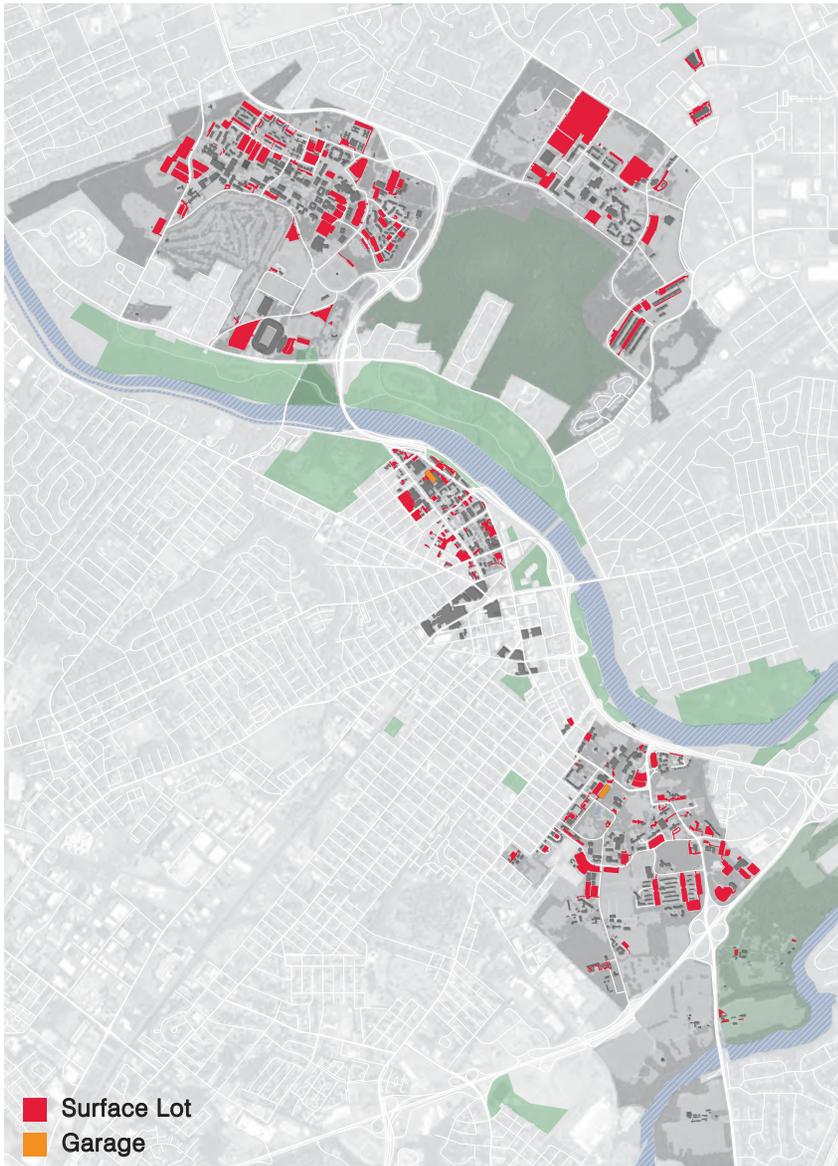
for students has often been inconvenient and the time between vehicle and class frequently noted as an issue. The master plan aims to relocate commuter lots closer to the core of each district, in some cases setting aside space specifically for commuters. Some of these spaces may be designated as hourly spaces for visitor parking.

As the building inventory changes under the master plan, many centrally-located surface parking lots will be replaced with buildings. Generally there are three options for addressing such losses: replace spaces in a parking structure nearby, replace in a remote surface lot, or forgo replacing the space completely. The current demand and projected growth in activity on campus indicates that every space lost should be replaced, even if at a future time Rutgers decides not to replace it.

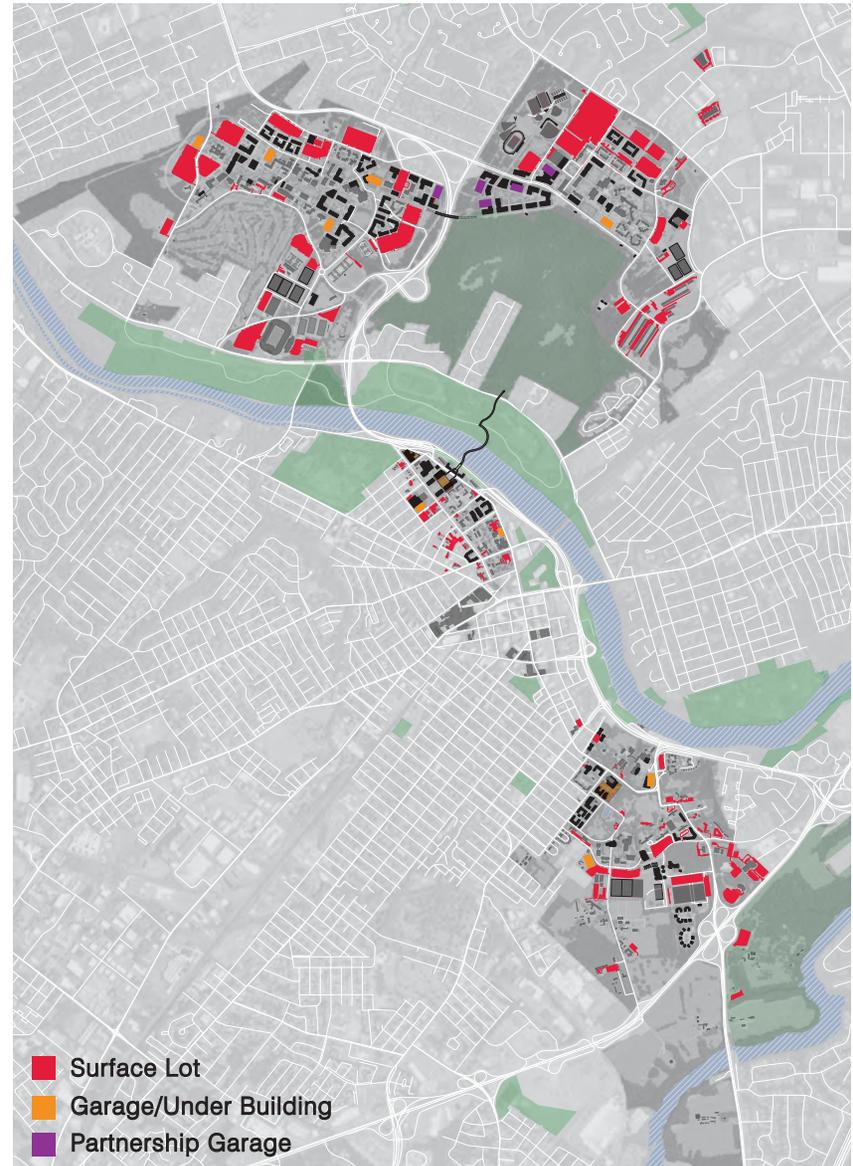
Overall, there are 20,500 spaces on campus today. Rutgers 2030 phases in replacement parking to ensure adequate supply with the goal of providing replacement parking in advance of taking parking offline.

The Rutgers 2013 plan embraces a set of integrated, incremental strategies to address parking needs. At the core of these strategies are several fundamental principles:

- Park once - Once a commuter has arrived on campus and parked, there should not be a need to use his or her car to drive to another Rutgers destination. Such trips should be made on foot, by bicycle, and/or a combination of transit connections. While anyone should be able to obtain an appropriately-priced parking permit if desired, there is no guarantee of parking at multiple locations.
- Provide choices - In addition to having a range of efficient transportation options, travelers should have access to reliable information about travel conditions and costs, to help them make rational decisions. These choices should extend to parking, allowing consumers to weigh convenience for price, if desired. A broader range of permit options, including pay-as-you-go and variably-priced metered parking, can make more efficient use of available parking supplies, reduce user costs, and promote the use of alternative modes for some trips. Lost revenues can be at least



EXISTING PARKING



PROPOSED PARKING

partially offset by higher premium parking fees and reduced infrastructure needs.

- Optimize resources - Before committing to long-term infrastructure investments, less costly and disruptive measures to manage demand and maximize use of existing capacity should be pursued. Such measures often involve frequent monitoring of real-time data.

Recognizing that not all commuters place the same value on a given parking space, and that demand (and therefore value) varies both by location and time-of-day, a range of parking choices is proposed. To ensure that cost is not an undue burden, inexpensive surface parking is provided at outlying locations. Enhanced bus, pedestrian, and bicycle connections provide safe and convenient access. By intercepting traffic before it enters the campus core, these lots also reduce traffic congestion and pedestrian conflicts, requiring less extensive roadway infrastructure, and allowing land in core areas to be devoted to more essential uses.

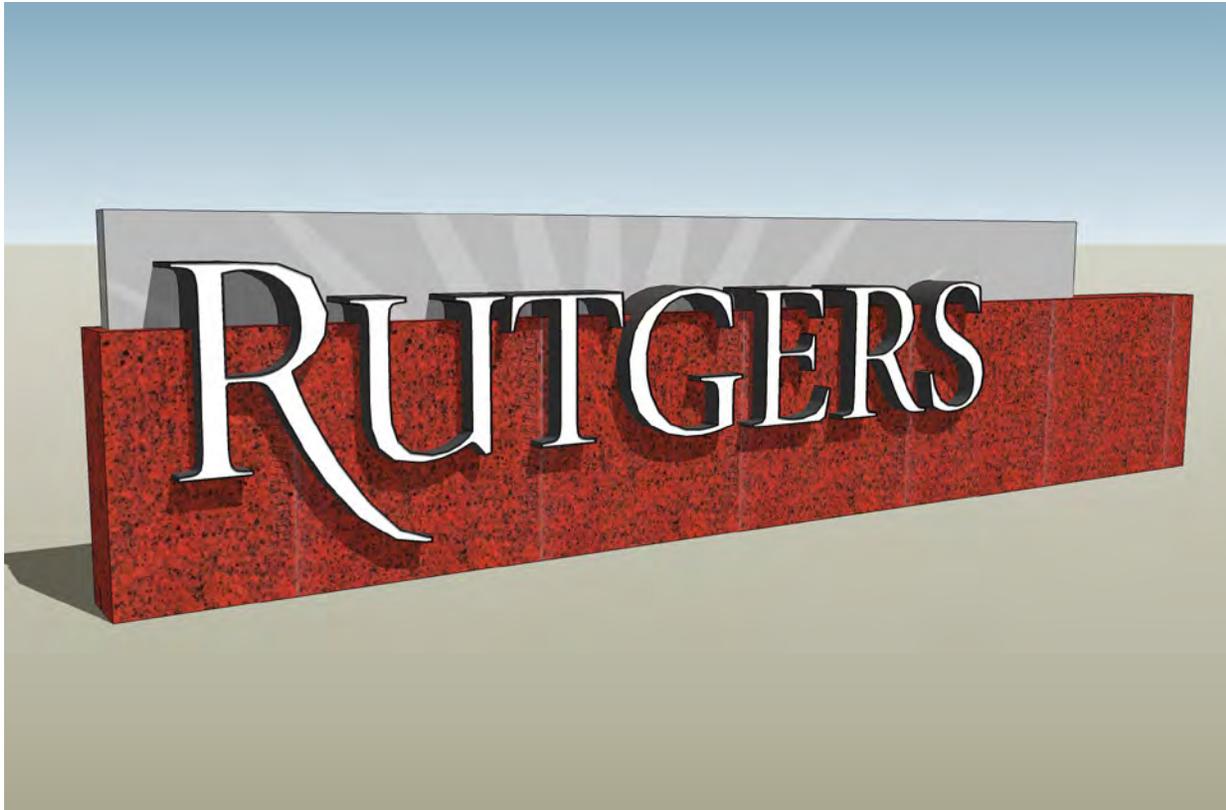
Remote lots are desirable for parking by residential students. Residents' cars remain parked for longer periods than do commuters', resulting in a lower turnover rate. In other words, a typical commuter

parking space can serve more users than a comparable residential space. More convenient parking is available to those who desire it, but at a higher price, reflecting the greater costs associated with building and maintaining attractive, functional decks on valuable land near the campus cores. Careful placement and design of these decks is needed to provide good pedestrian and vehicular access while minimizing traffic conflicts and visual impacts.

Many existing parking lots represent an older construction style. Surface lots have little shade and many do contribute to stormwater runoff beyond current standards. Most Rutgers parking structures too, do not meet current standards for quality. Rutgers 2030 envisions more pleasant parking facilities, to include shade and vegetation in lots, improved lighting, all in proximity to amenities.

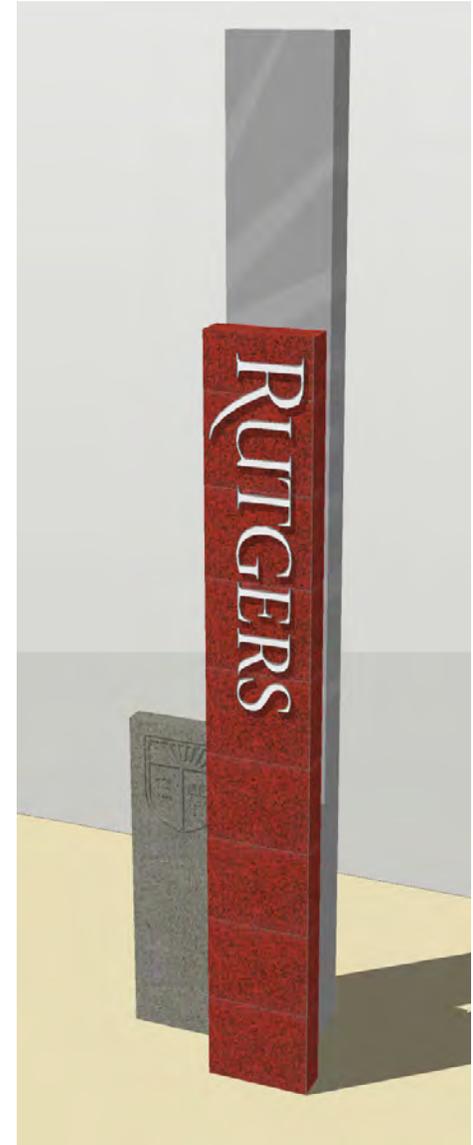
As new facilities generate additional trips, thorough and committed planning will be needed to account for changes in inventory to ensure that reasonable access to all parts of the campus is maintained throughout all interim stages of implementation. To accomplish this, Rutgers 2030 recommends that each new facility planned give consideration to transportation and

parking at the earliest planning stages. This includes accounting for the cost of replacing displaced parking, as well as satisfying any increased travel demand generated by the new construction. Transportation-related impacts, whether to traffic, parking, bus service, or pedestrian and bicycle activity, should be identified and addressed in the planning of any project, and factored into both initial and ongoing costs. New capital projects must either cause no net loss of parking supply, or demonstrate reasonable alternatives to replace parking. However, since transportation is a complex, ongoing activity dependent on interactions beyond the influence of a single facility, a holistic approach is ultimately more effective, leading some universities to assess "impact fees" in support of more systemic programs and infrastructure improvements. Fully capturing the true costs of transportation and land use decisions can have significant effects on consumer behaviors, shifting the relative attractiveness of alternate travel modes, times, and destinations. It can also lead to more rational and cost-effective institutional investments, as well as environmental benefits. In any case, a dynamic transportation plan is needed to provide the flexible framework needed to manage this anticipated change and inherent uncertainty.



HORIZONTAL GATEWAY ELEMENT

Design concepts and rendering by ex;it.



VERTICAL GATEWAY ELEMENT

Design concepts and rendering by ex;it.

3.2.5 GATEWAYS AND SIGNAGE

Concurrent with the development of Rutgers 2030, Rutgers University collaborated with ex;it to develop a vision for signage, brand development for the University, and wayfinding master plan strategies that maximize opportunities across all campuses, resulting in a visitor-focused vision for the future of campus navigation. Rutgers, with its multiple campuses, diversity of place, and the creation of Rutgers Biomedical and Health Sciences (RBHS) division, necessitates a cohesive vision for the entire University, to unify and make consistent the various signs, gateways, emblems and logos that have come to represent Rutgers and its 250 years of history. Specific to the Rutgers 2030 physical master plan, gateway elements and signage both internal and external to campus grounds, are important considerations that complement the physical development and key initiatives proposed in the plan.

GATEWAYS

Gateways provide a unique opportunity to welcome visitors to the campus and create a symbolic ceremonial arrival as visitors transition from highway ramps, vehicular entrances and parking to an on-

campus pedestrian journey. Gateways visually connect and differentiate the different districts within the New Brunswick campus, relate campus to campus within the University organization, link primary and secondary entrances and enhance physical surroundings. In addition, gateways add to a sense of place and to the unique urban design character of the campus. All of the campuses of Rutgers University have multiple arrival points along the campus boundaries and gateway elements work to define the campus edge from the surrounding neighborhoods.

In addition to defining the campus edge, gateways mark the core of the district and campus, reinforcing it as the heart of the University. This provides an opportunity for a signature branded moment on each campus with focus towards the pedestrian experience. These gateway elements can be visual anchors or portals to gathering spaces and provide continuity in identification across Rutgers campuses.

VISION

All of the Rutgers campuses are diverse and eclectic in character so a flexible, modular concept, coupled

with architectural and/or landscape solution will be necessary. The best approach for many universities is to allow the unique urban character and context of each campus drive the design solution that respects the established Rutgers brand. Signage should complement and not compete with the holistic gateway design.

The design of gateway elements is intended to be a celebration of the Rutgers brand, and unique to the University. The design is bold in message and understated in form, creating a timeless design that works with the campus environment now and as it continues to develop. The gateway system is designed as a family of elements that include both vertical and horizontal configurations. Each configuration is scalable allowing for flexibility to work at the varying conditions across multiple locations. The design incorporates red granite with illuminated white lettering, recessed shield on a pre-cast panel with a tone-on-tone burst on a painted aluminum panel.

Horizontal elements are designed around the Rutgers logotype. The dimensional typography is designed to mount to an existing vertical element that is part

of the campus landscape, for example, as depicted at the George Street and Bishop Place entrance, or to stand on its own when an architectural feature is not present. The horizontal configuration is proposed for use at campus edges, where space allows. Used on its own, the horizontal configuration includes the Rutgers logotype and incorporates the burst extracted from the University seal in the backdrop.

Vertical elements are designed as the signature moment at the heart of the campus and the primary pedestrian gateway. This configuration includes the Rutgers logotype, the burst (extracted from the University seal) and the newly designed University shield. The vertical element consists of three forms, each representing the three campuses – Rutgers University–New Brunswick, Rutgers University–Newark and Rutgers University–Camden – and housing the brand elements.

DETERMINING PRIMARY ENTRANCES

A gateway serves as the first moment of the Rutgers brand experience in its physical environment. As the visitor anticipates their arrival, they look for the visual

“aha” moment to confirm that they have arrived. At Rutgers University–New Brunswick, Route 18 is the connecting spine of all four districts: Busch, Livingston, College Avenue, Cook/Douglass. These arrival ramps should be considered as primary gateway entrances.

The Rutgers brand can extend to the major arterial roads and highway ramps. As visitors approach campus, beautifully landscaped entrances punctuated by signage will create recognizable signals that welcomes one to the “Front Door” of the campus. All these locations offer opportunities to connect the University to the public transportation system as users arrive to the campus from train stations and begin their journey at Rutgers.

AT THE HEART OF EACH CAMPUS

The signature arrival element is located within the heart of each campus. This arrival moment radiates out and connects to each of the perimeter arrival moments along the line of a ray that emanates from the center of the burst. The strategic placement and prominence of these elements invites community gathering spaces. Therefore, there is a physical connection between

places— the tradition and history of the past and the vision and innovation for the future. These locations need to be carefully selected coordinated with the campus landscape and campus plan.

To date, ex;it has developed a comprehensive wayfinding master plan and University-wide signage standards for exterior and interior signage. Rutgers is currently working to implement these standards throughout new buildings and existing construction across all campuses. The RBHS division has been the first to receive the proposed exterior signage as part of the integration of UMDNJ with Rutgers. A phased implementation plan has been developed to allow for exterior campus signage to be replaced as the campus is developed and funding is made available. While a design direction has been approved and preliminary locations for gateway signage identified, final confirmation of signage placement will be coordinated with campus development in order to fully support the vision for each campus. As the signage program is implemented, it will enhance the user experience by creating a clear, strong first impression, and facilitate navigation of the campus, and visually relate all of Rutgers under one cohesive and recognizable identity.

THE RUTGERS SHIELD

The Rutgers shield is a fundamental expression of the university's identity. Introduced in celebration of Rutgers' 250th anniversary in 2016, the new shield—a simplified interpretation of its 1966 Rutgers bicentennial predecessor—honors the university's roots and affirms its values, while providing greater flexibility when used as 21st-century iconography in pageantry, publishing, and promotion.

SYMBOLISM IN THE RUTGERS SHIELD

The shield's elements convey where Rutgers University has been and who it is now. The shield is divided into thirds, representing Rutgers' deep connections to New Jersey's three regions—north, central, and south—and denoting the university's tripartite mission—teaching, research, and service.

Five symbolic elements both acknowledge Rutgers' past and signify that as it evolves, it will uphold core values that have been integral to its identity from the university's earliest days.

The sunburst conveys illumination—light as metaphor for knowledge—and it is the motif of Rutgers' seal and

the heart of its motto, "Sun of righteousness, shine upon the West also." Rutgers University's centuries-old seal and motto are both variants on those of Utrecht University, the Netherlands; its motto reads, "Sun of righteousness, enlighten us." Rutgers' 18th-century founders took inspiration and support from the Old World as they provided for "the education of youth ... in the liberal and useful arts and sciences" in the New World: America.

The crown represents the university's founding in 1766 as Queen's College, named in honor of Queen Charlotte, wife of Great Britain's King George III who reigned over the American colonies when its charter was signed. Queen Charlotte is an apt early namesake: current scholarship finds she cared deeply for education, and, against convention, ensured that her six daughters were educated as well as her nine sons. Inclusion and equality are Rutgers hallmarks.

Rutgers was founded in 1766 and the date confirms its standing as one of America's nine original colonial colleges. A decade later, as the American Revolution erupted, the college gave itself over to the cause of freedom, as all "who were able to bear arms immediately marched to oppose the enemy." Rutgers people today continue to passionately champion just causes.

The three stars represent the State of New Jersey, the third state to ratify the U.S. Constitution. Rutgers is devoted to serving its home state as New Jersey's land-grant school and is proud to be The State University of New Jersey.

The book is a timeless symbol of Rutgers University's enduring commitment to teaching, learning, academic inquiry, and scholarship. Across generations and disciplines, at its core, Rutgers University creates, shares, and applies knowledge for the enrichment of individuals and the betterment of the broader society.



THE FINAL RUTGERS SHIELD



PROPOSED GATEWAY AND SIGNAGE AT GEORGE STREET AND BISHOP PLACE.

Design concepts and rendering by ex;it.

4 DISTRICT FRAMEWORKS

4.1 COLLEGE AVENUE

4.2 COOK / DOUGLASS

4.3 BUSCH

4.4 LIVINGSTON

4.5 RUTGERS BIOMEDICAL AND HEALTH SCIENCES
(RBHS)

4.6 INTERCOLLEGIATE ATHLETICS



Introduction

Based on the vision and principles outlined in Chapter 3, Rutgers 2030 plans for each individual district, including Rutgers Biomedical and Health Sciences (RBHS), as an element within the overall Rutgers University–New Brunswick campus. While the districts are collectively considered within the context of “One Rutgers,” linked by means of the road network and the surrounding open space structure, the unique identities of each district remain a distinctive asset to the University. The master plan proposes detailed plans for College Avenue, Cook/Douglass, Busch, Livingston and RBHS. The following sections provide an detail for the planning and design recommendations of each district and addresses the following:

- The place and context of the district;
- A vision for the district, in keeping with the master plan principles;
- Three integrated frameworks: land use, open space and natural systems, and mobility.

4.1

COLLEGE AVENUE

4.1.1 VISION AND PRINCIPLES

4.1.2 LAND USE

4.1.3 OPEN SPACE

4.1.4 MOBILITY



4.1.1 College Avenue District Vision and Principles

College Avenue is what many think of when picturing Rutgers University. Old Queens, the first building built at Rutgers dates back to 1807 and is sited on a historic block with other architecturally significant buildings, surrounded by tree lined lawn and curved driveway. Four historic gates welcome all to the Old Queens block into a world of academic excellence and advanced research. Today, Old Queens is the home of the University administration and is the southern gateway to the College Avenue campus.

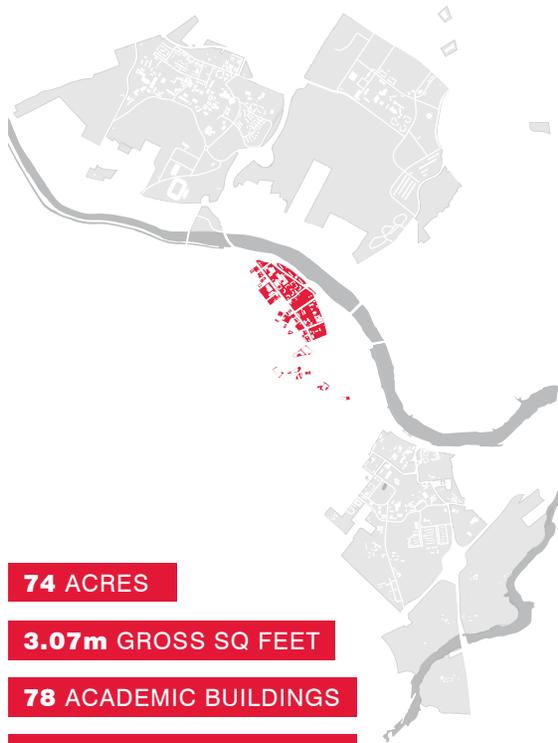
Easily accessible from the Northeast Corridor, it is 45 minutes from New York City and approximately 70 minutes from Philadelphia by train. The district is a short walk from downtown New Brunswick and is bounded to the west by a residential neighborhood and to the east by the Raritan River. The recent merger with the University of Medicine and Dentistry of New Jersey (UMDNJ) extends College Avenue to the southwest along Somerset Street. The acquisition of the northwest parcel at the New Brunswick Theological Seminary and subsequent development of the academic buildings and honors college infills a missing link that now connects the campus from north to south.

COLLEGE AVENUE: THE VISION

The master plan builds upon recent work at Seminary Place and at Hamilton Street to provide new academic buildings, an honors college, and a residential building. The master plan turns the focus on north campus, starting at Morrell Street, at the dining hall Brower Commons, and student services building Records Hall, to Alexander Library and Rutgers Club at George Street and College Avenue to reorganize the northern campus to be a vibrant hub of activity, with its buildings, functions and outdoor space relating to the southern part of district. The River Dorms and Deiner Park are also studied, in order to provide a connection to the Raritan River.

The master plan is guided by the following principles and goals:

- **Reinforce College Avenue as the heart** of Rutgers University – New Brunswick through continued investment to provide classrooms, services and amenities that serve a University-wide purpose, like a cultural center and multi-purpose event venue,
- **Transform the student experience** by providing a centralized student service venue and increased student organization and programming space,
- **Elevate and inspire academic excellence** and discourse by providing meeting and programming space suitable for internal and external events,
- **Enhance the user experience** by providing a comprehensive network of pedestrian and bicycle paths, interwoven with an open space network that connects College Avenue from north to south and east to west,
- **Extend resources** by engaging with the surrounding city and state parks and with the Raritan River.



74 ACRES

3.07m GROSS SQ FEET

78 ACADEMIC BUILDINGS

3,909 BEDS

5,651 CLASSROOM SEATS

114,693 WKLY STUDENT CONTACT HOURS

The vision for College Avenue is organized by the five overarching planning principles:

LEARNING AT COLLEGE AVENUE

The new academic building under construction at Seminary Place provide space for the School of Arts and Sciences (SAS) with approximately 2,500 classroom seats and a lecture hall. It is the first academic building to be constructed in the College Avenue campus since 1961 and is targeted to open in 2016, coinciding with the University’s 250th anniversary.

The building provides needed expansion space for classrooms and relieves the heavy use of classrooms at Scott Hall and New Jersey Hall, which are both proposed to be renovated and upgraded with new finishes and technology features consistent with the new classrooms on campus.

Rutgers 2030 also proposes a new high tech classroom and student lounge building at Senior Street and College Avenue, in close proximity to student services and transit hub.

LIFE AT COLLEGE AVENUE

A Campus Center for the University – A 300,000 gsf campus center is proposed to replace the Rutgers Student Center, the Student Activities Center and Brower Commons Dining Hall. This expanded student center will include dining, event space and student organization meeting space. This new campus center is located adjacent to the Alexander Library, and is part of a configuration of new buildings including a cultural center, classrooms and student lounge space, accessed directly from the George Street Transit Hub.

George Street Transit Hub – A transit hub at George Street provides a gateway into College Avenue via the Rutgers bus network. The transit hub is connected to the proposed campus center and opens into the lawn to the west and Deiner Park to the east. A transit pavilion is proposed for the east side of George Street.

Lawn – The Lawn at the proposed campus center provides a central space for the Rutgers Community for events and passive recreation. It is also imagined as a new iconic space for Rutgers University – New Brunswick, one that has a view of the proposed

pedestrian and bicycle bridge across the Raritan River.

Rutgers Gymnasium and Deiner Park – Access to recreation and physical fitness space on College Avenue is enhanced by the proposal to expand and renovate the Rutgers Gymnasium and to improve access to Deiner by the replacement of Hardenbergh Hall, thus opening up views of the park and of the river.

Undergraduate housing – Current efforts to renovate existing housing and provide new housing at the Honors College and Hamilton Street Residential Building provide updated housing on College Avenue, improving quality of the student experience. Displaced from the reorganization of the Records Hall site, Stonier Hall and Hardenbergh Hall are replaced elsewhere on the campus.

NAVIGATING COLLEGE AVENUE

Proposed improvements related to mobility include clarifying traffic circulation at the north end of George Street, improving bicycle connections north to Route 18 and south through downtown New Brunswick, and transforming College Avenue into a pedestrian and

bicycle friendly street, with limited access for vehicles during business hours. Under this plan, the open space on campus is connected throughout campus along a north-south axis, leading to a more pleasant walking experience across the district.

STEWARDSHIP AT COLLEGE AVENUE

College Avenue, with its west boundary running along the Raritan River and easy access to the Delaware and Raritan (D&R) canal and to Boyd Park allows for opportunities to engage and showcase the Raritan River. Partnerships with neighboring communities and stakeholders including Johnson and Johnson, the City of New Brunswick, and the Friends of the Raritan are in order to provide riverfront access and boardwalk along a stretch between the heart of College Avenue and the Rutgers boathouse at Douglass. A proposed pedestrian bridge across the Raritan also will be developed in concert with public authorities having jurisdiction over the area in order to maintain requirements for maintaining boat clearance requirements and ecology of the river.

PERSONALIZING COLLEGE AVENUE

The campus center proposed at College Avenue is intended to provide student organizations with ample and suitable space for programming and events. A cultural center adjacent to the campus center brings together the cultural centers currently spread across the New Brunswick campus.

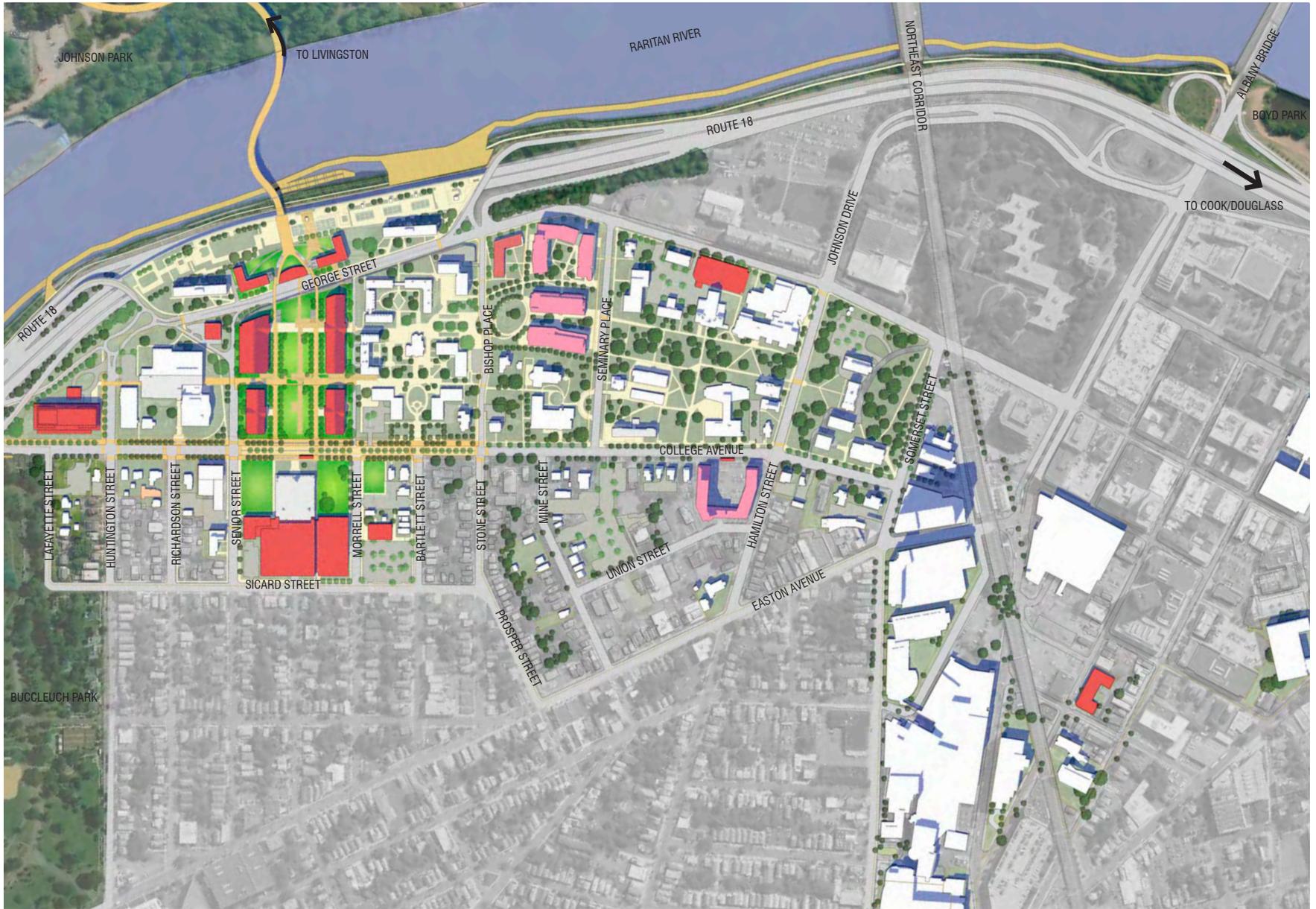


COLLEGE AVENUE TODAY

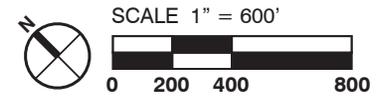


SCALE 1" = 600'





COLLEGE AVENUE 2030





Proposed aerial view of College Avenue

4.2.2 LAND USE FRAMEWORK

The Land Use framework for College Avenue builds upon recent investments in the district, including the Academic Building and Honors College at Seminary Place proposed to be completed Spring 2016, and housing development at Hamilton Street and College Avenue on a surface parking lot, scheduled to open Fall of 2016. Rutgers 2030 recognizes that College Avenue is the heart of the New Brunswick campus, and is in a unique position to provide amenities to the entire Rutgers Community. With its central location between Busch-Livingston and Cook/Douglass, College Avenue is poised to be home to a student center and event venue that would provide much needed student service and programming space for the University.

A NEW GATEWAY

For many, coming to Rutgers means arriving at Old Queens, home to the University administration, and taking a stroll through Voorhees mall, the central lawn surrounded by classroom and administrative buildings. College Avenue is easily accessible from the northeast corridor train station due to the development of the Gateway building at Somerset Street, providing

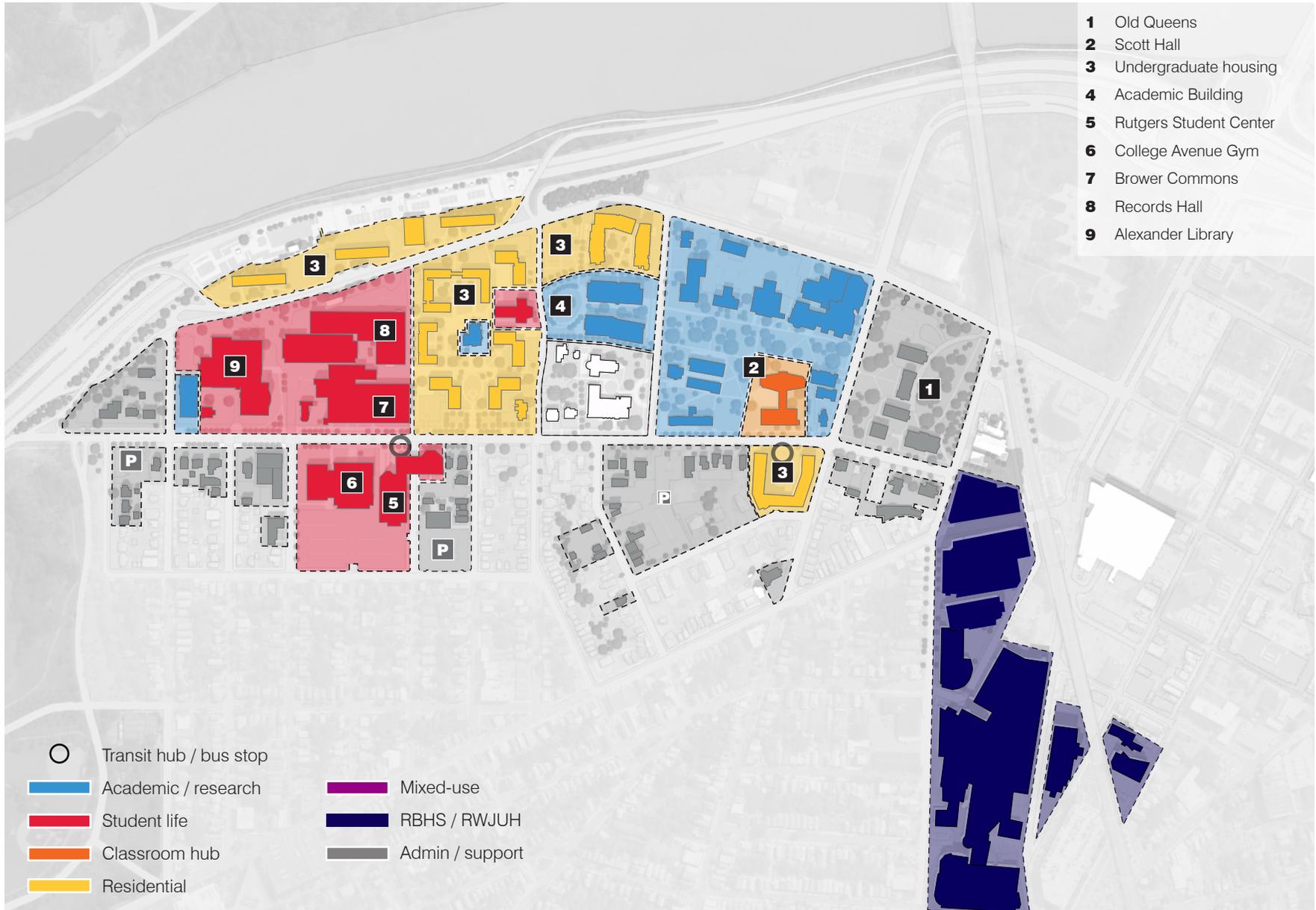
a connection directly from southbound platform to Somerset Street and to Old Queens. Rutgers 2030 proposes an anchor building at the north end of College Avenue. This north gateway building could support retail or community functions on the street levels, and a parking garage on the lower levels. Upper levels could provide market-rate housing, for the RBHS community since this site will be near the Robert Wood Johnson hospital and surrounding medical buildings, and to Busch with easy access to Route 18. This building would be visible from Route 18 and serve as the major gateway into College Avenue from the north end.

THE HEART OF COLLEGE AVENUE

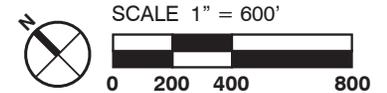
A New Student Quadrangle – Rutgers 2030 proposes the creation of a new quadrangle bordered by College Avenue, George Street, Morrell Street and Senior Street. The quadrangle will replace the current jumble of buildings on this block, many of which are in poor repair or have exceeded their useful lives. A broad lawn will be centered on the iconic facade of the College Avenue Gymnasium to the southwest, and to the northeast will bridge across George Street

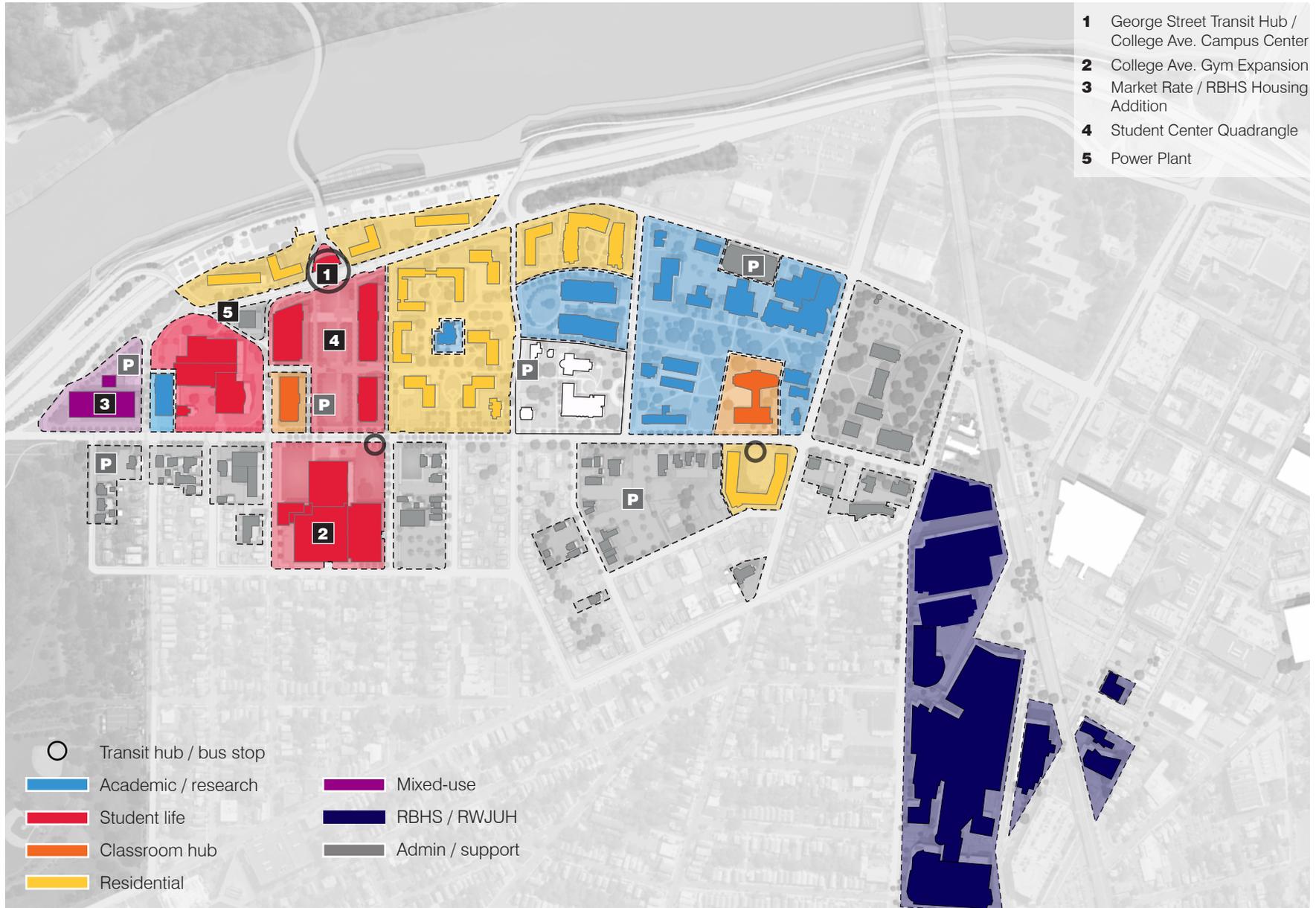
and will restore Rutgers' historical connection to the Raritan River. The quadrangle will be lined with new buildings including a University-wide campus center, with large performance and meeting venues currently lacking at Rutgers, as well as enhanced meeting space for student organizations. A new dining hall will replace outmoded Brower Commons. Classroom spaces and a building housing the many clubs and organizations representing Rutgers' cultural diversity will flank the new lawn, and will be proximate to a centralized student services building. The creation of this new quadrangle can be accomplished in stages as described in Chapter 5.

Rutgers Gymnasium – Rutgers Gymnasium is proposed to be renovated and expanded to hold six basketball courts and to integrate health and wellness into recreation. As part of the proposal for expansion of gymnasium, Rutgers 2030 proposes to demolish the outmoded gymnasium annex and replace its functions in a new addition to the west. The area occupied by the annex would be left open as a memorial to the first college football game ever played between Rutgers and Princeton University.



COLLEGE AVENUE TODAY

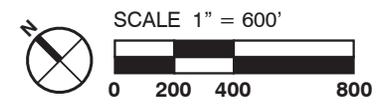




- 1** George Street Transit Hub / College Ave. Campus Center
- 2** College Ave. Gym Expansion
- 3** Market Rate / RBHS Housing Addition
- 4** Student Center Quadrangle
- 5** Power Plant

- Transit hub / bus stop
- Academic / research
- Student life
- Classroom hub
- Residential
- Mixed-use
- RBHS / RWJUH
- Admin / support

COLLEGE AVENUE 2030



CHAPTER 4 COLLEGE AVENUE



Alexander Library – The creation of the new quadrangle will make the Alexander library more accessible to the rest of College Avenue. Rutgers 2030 proposes to provide a new entrance at the south side of the library, and to reconfigure the interior of the library to provide a north-south gallery space to supplement the existing entry from the west from College Avenue. This north-south connection through the library will connect the quadrangle to the north gateway building one block north.

ROTC – ROTC currently occupies the corner of College Avenue and Senior Street. The building is a Queen Anne residence in good condition, with a recent addition towards the west. Rutgers 2030 proposes the University explore opportunities to relocate the building along College Avenue, possibly to Richardson Street and adjacent to Air Force ROTC, instead of demolishing it entirely. This would contribute to the architectural character of the neighborhood and the campus.

RBHS - NEW BRUNSWICK

The 2014 RBHS strategic plan calls for growth in areas that would affect departmental and academic space in New Brunswick, adjacent to the Robert Wood Johnson University Hospital (RWJ). Rutgers 2030 recognizes Somerset Avenue as a main street that connects RBHS space to College Avenue, and proposes to improve streetscape along this street. Adjacent to the School of Nursing and Institute for Health, Health Care Policy and Aging Research, a site at Paterson Street and Joyce Kilmer Avenue, south of the Northeast Corridor railroad tracks, is identified as future RBHS academic expansion.

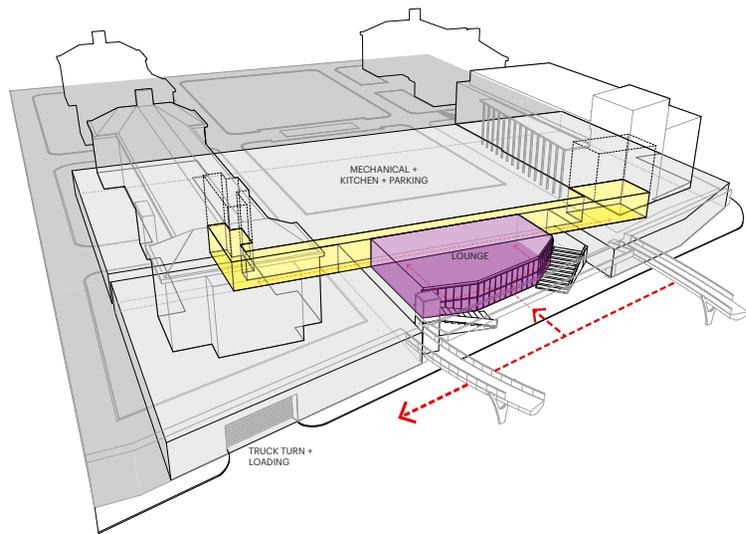
STUDENT RESIDENCES

Rutgers is currently building student residences at Seminary Place and on Lot 8. The proposed new quadrangle and Raritan River connection will displace two residential buildings: Stonier Hall and Hardenbergh Hall. Replacement housing for these two displaced buildings are proposed for the site of Hardenbergh Hall, in a configuration that allows for views to the river from the student center and student

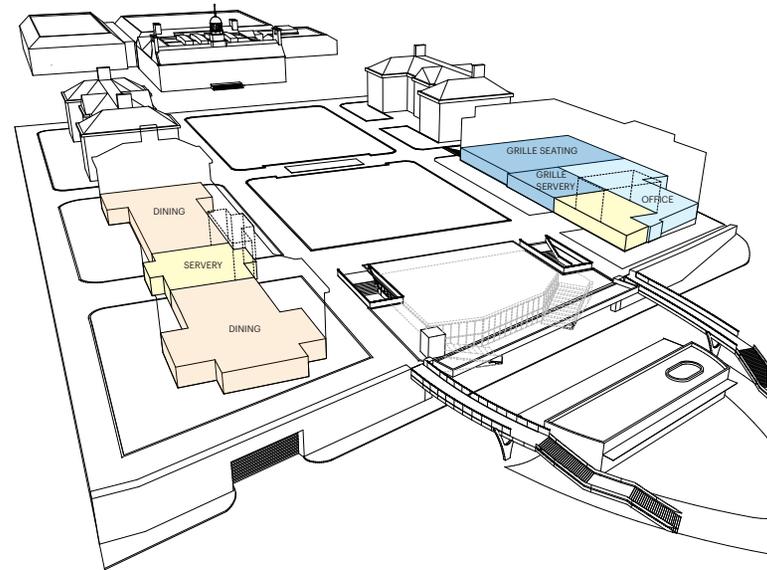
lawn. A potential site for future expansion of student residences is identified north of the Honors College currently under construction at Seminary Place.

INFRASTRUCTURE

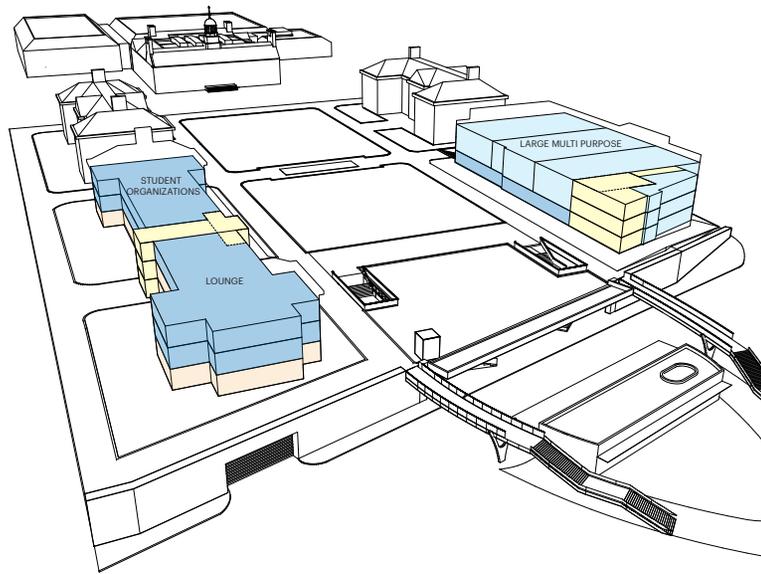
The University has completed a feasibility study to replace the College Avenue central heating plant, which is approaching the end of its useful life, and is inefficient. A replacement plant is proposed to be located directly west of the Alexander Library. The site was selected due to its proximity to the current location of the plant, thereby keeping costs for relocating and extending utilities at a minimum. The building can be discreetly nestled into the steep grade at this site. Above grade utility lines along George Street should be relocated underground, especially in the vicinity of the proposed bridge across George Street.



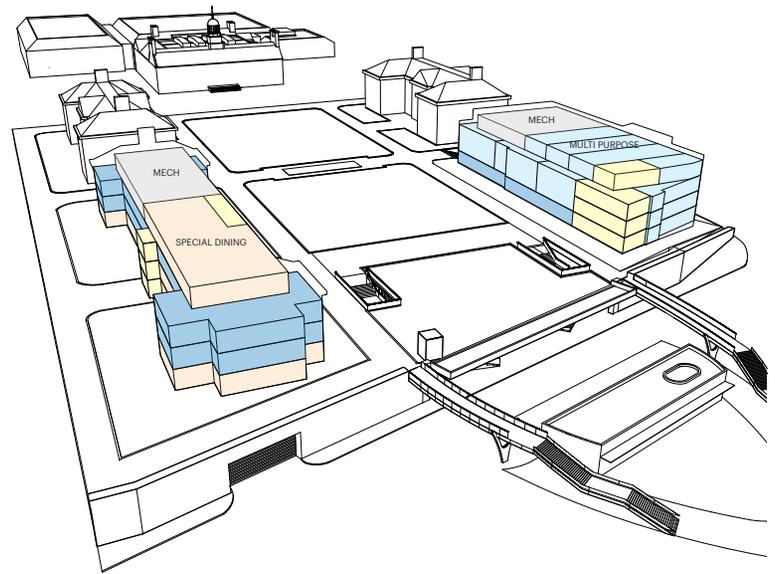
Lower Level



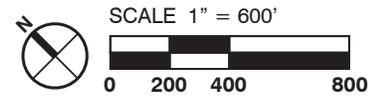
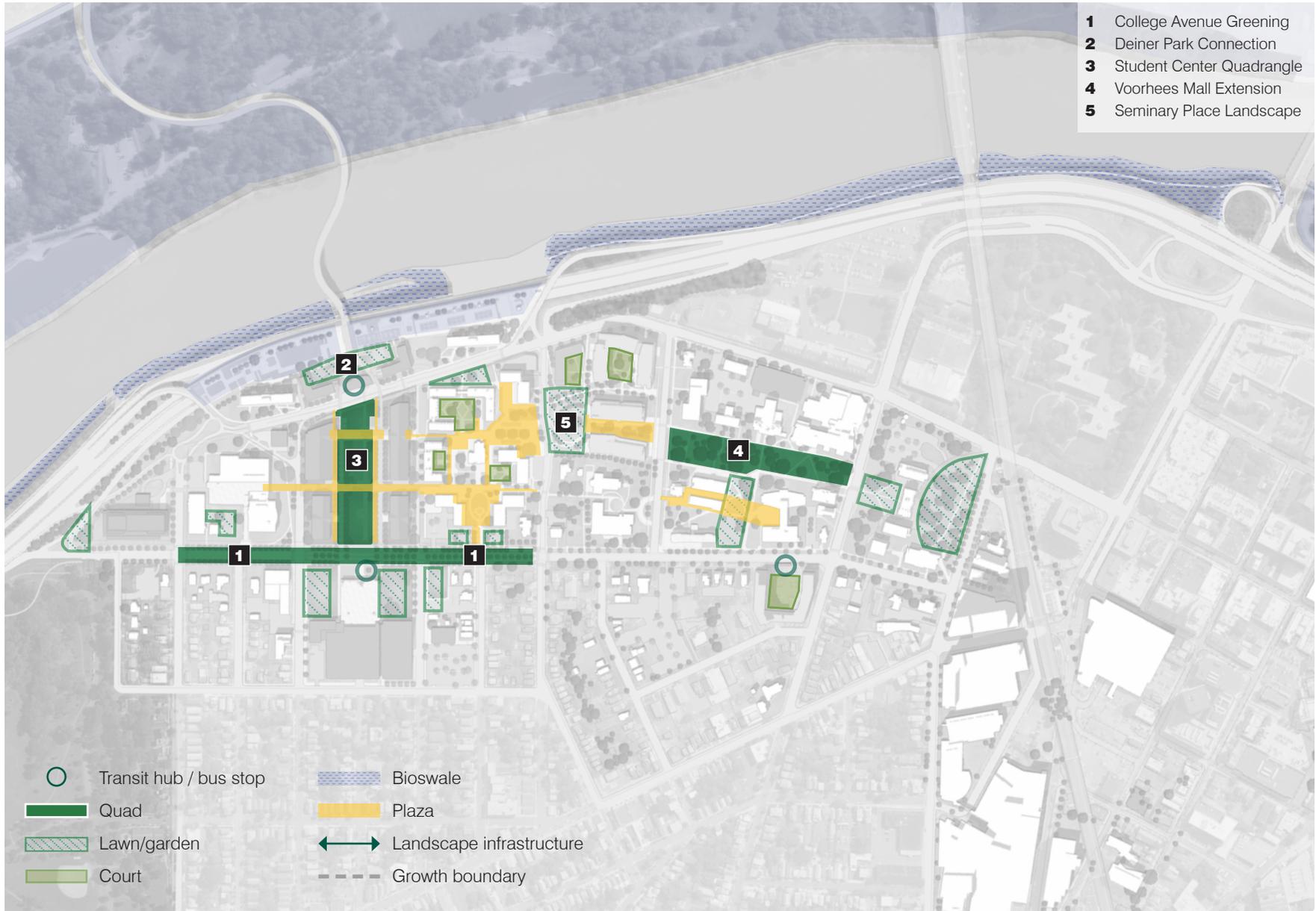
Courtyard Level



Typical Floor



Top Floor



4.2.3 OPEN SPACE / NATURAL SYSTEM FRAMEWORK

College Avenue's urban setting does not provide as much open space as Busch, Livingston or Cook/Douglass. However, the open space that does exist at College Avenue represents some of the most beautiful and memorable at Rutgers. Old Queens and Voorhees mall, with their mature trees, imbue a sense of history and grandeur. The soon-to-be-completed academic buildings at Seminary Place extend Voorhees mall visually to the North to Bishop Place. The proposed open space framework for College Avenue aspires to build upon these outdoor spaces and provide continuity across the campus moving north-south, and also east-west to the Raritan River.

New Quadrangle - The lawn flanked by the proposed student center provides outdoor space for gatherings, programming, and passive recreation. This open area is lined with allees of trees on the periphery. This lawn serves to orient visitors arriving at the George Street Transit Hub, and will provide space for students coming to the student center and guests at events.

Deiner Park - Deiner Park currently provides inadequate outdoor recreation space for College Avenue campus. Access to the park is limited through

one entry from a road off of Hardenbergh Hall parking lot. The park is unattractive, under-utilized, and often does not feel safe. The grade change from George Street to Deiner Park is also significant, adding to its sense of isolation. Rutgers 2030 proposes to open access to the park, by linking it directly to both George Street and the new quadrangle. George Street at the location of Hardenbergh Hall is also the transit hub for northbound busses where a pavilion is proposed to provide shelter and meeting place, with an outdoor terrace with views of the river.

A new stair and ramp between the park and the river will provide access to the park from the east, and connect the park to the rest of the network of parks along the river, and to the DNR canal.

Boardwalk and Bridge across Raritan - The city of New Brunswick recently invested in upgrading Boyd Park, which extends from Cook/Douglass to the Route 27 Bridge. There is a trail through Boyd Park, with highlights including three-quarter mile tow path and historic swing bridge. Access to the river north of the Route 27 bridge is limited, and the river edge is very close to Route 18. Rutgers 2030 envisions a boardwalk

along the west river edge to provide safe and enjoyable pedestrian and bicycle access along the river, with areas of seating and activity along the boardwalk. The boardwalk is connected to the proposed pedestrian and bicycle bridge across the Raritan. The proposed bridge provides access to Johnson Park from College Avenue, and extends north to the Livingston.

COLLEGE AVENUE LAWN

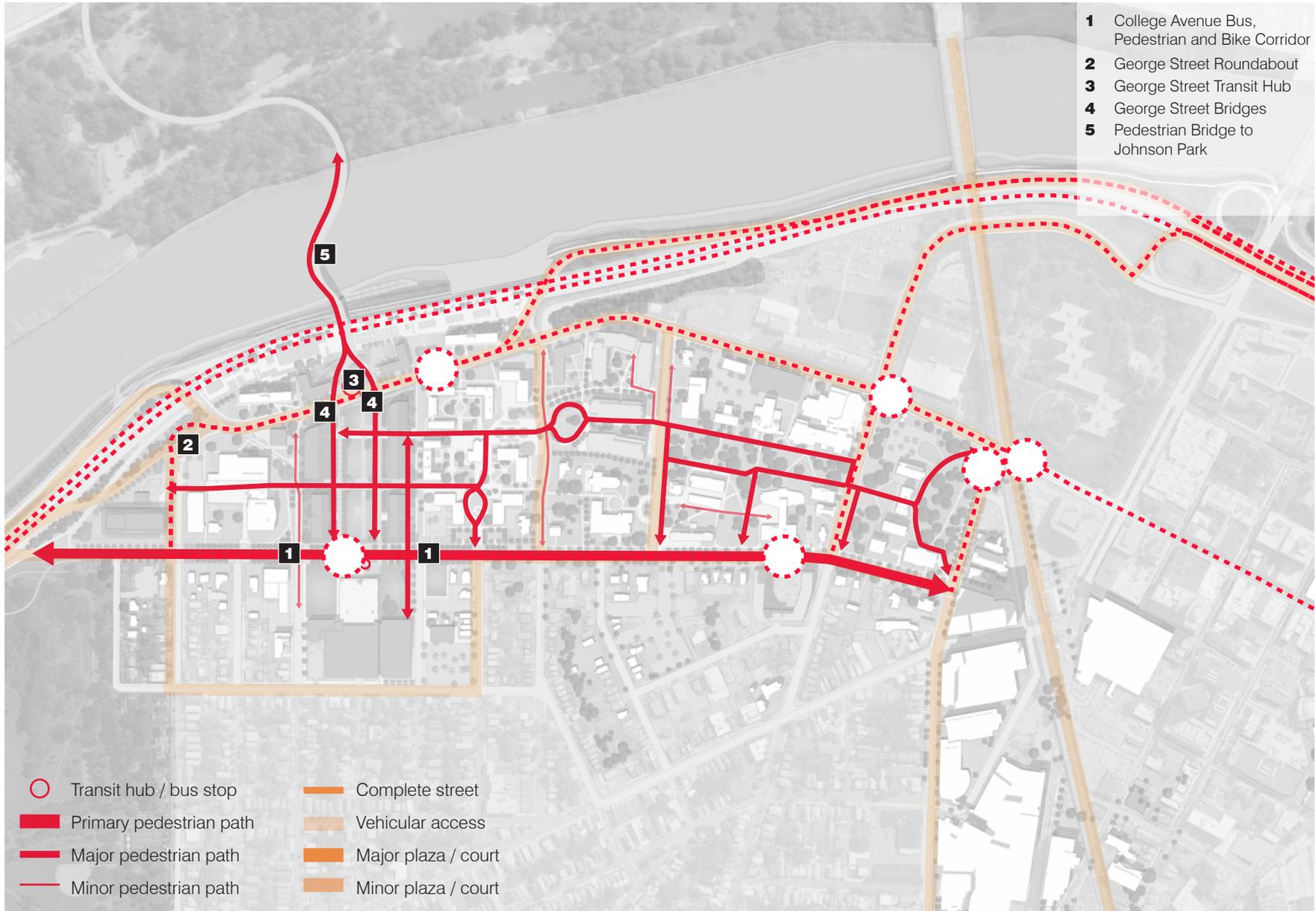
A new quadrangle is proposed for the heart of the College Avenue. It is flanked on north and south by the campus center, the cultural center and a classroom building with student lounges and will provide a place suitable for events and passive recreation. Trees flanking the lawn provide shaded paths while maintaining the openness of the lawn. The quadrangle is connected to the proposed George Street Transit Hub, and will connect an expanded Rutgers Gymnasium with the Raritan River.



Existing view of College Avenue Quadrangle







4.2.4 MOBILITY FRAMEWORK

The mobility framework for College Avenue includes proposed enhancements within the College Avenue boundary and beyond to its north and south in order to connect two large gaps in the overall New Brunswick campus system – to its north the Route 18 bridge over the Raritan River and to the south, Downtown New Brunswick. The experience of moving about College Avenue includes gateways and iconic imagery like that of Old Queens and Bishop House, and recognizes that the College Avenue campus, being close to the Northeast corridor train system, serves as the central node from which Busch, Livingston, and Cook/Douglass are connected.

PEDESTRIAN NETWORK

At College Avenue, there are two strong pedestrian spines: the first along College Avenue, and the second interior to the district, from Old Queens to Voorhees Mall, northward to Bishop Place through the soon-to-be-completed lawn at the Academic Buildings at Seminary Place. Recent investments in landscaping along College Avenue in the area directly adjacent to Brower Commons, Rutgers Gymnasium and directly west of Bishop Place have enhanced the pedestrian

experience along College Avenue. Rutgers 2030 proposes to continue to prioritize the greening of College Avenue, with a partial closing of the Avenue, from Huntington Street to Bartlett Street, restricting vehicular traffic to buses and bicycles, and redirecting cars to Sicard Street for the hours of 8 am to 5 pm. Increased landscaping with mature shade trees along College Avenue shape the space and pedestrian experience at an already established pedestrian spine.

Walking and crossing at George Street north of Seminar Place is discouraged due to significant grade changes and fast-moving vehicles.

Within College Avenue, Rutgers 2030 proposes to extend walkways north past Bishop Place, into the proposed quadrangle at the site of Records Hall and farther north to the Alexander Library and the proposed North Gateway building at George Street and College Avenue. This north-south pedestrian corridor will physically link Old Queens and Voorhees Mall with the northern portion of the campus.

Rutgers 2030 also proposes a connection from the proposed quadrangle at the site of Records Hall

eastward, towards Deiner Park and to a proposed pedestrian and bicycle bridge across the Raritan River. This proposed bridge provides a connection to a proposed boardwalk along the Raritan River between the DNR Canal and Boyd Park. This pedestrian bridge is a central element to connecting College Avenue with Piscataway through Johnson Park and northwards to the Ecological Preserve, forming a recreation axis extending north to the Livingston.

BICYCLE NETWORK

The City of New Brunswick began work summer 2013 to implement dedicated bicycle lanes through downtown New Brunswick, to Route 27 and the Albany Bridge, providing a critical link for bicycle riding between College Avenue and Cook/Douglass for the Rutgers community. Together with efforts by RUDOT to increase bicycle ridership, Rutgers 2030 proposes enhancing existing bicycle routes and providing connections at locations where bicycle routes currently end:

At the north end of College Avenue and Buccleuch Park – in conjunction with closing College Avenue to

vehicular traffic during business hours, Rutgers 2030 proposes to add dedicated bicycle lanes to north and southbound lanes, and using a median with planting to separate traffic and reduce vehicular speed. At the north end of College Avenue, a bicycle route is proposed to continue into Buccleuch Park through an existing trail, ascending with a gentle slope within the natural topography of the park to an elevation of approximately ten feet above street level on the north side of the park, at the existing bicycle ramp on to Route 18 bridge. A pedestrian and bicycle bridge is proposed to span over George Street, directly connecting to the Route 18 bicycle ramp to provide a safe way to cross George Street at a location of high speed and high volume vehicular traffic. From this bridge, the bicycle network connects to Busch through an existing bicycle path that ramps off the Route 18 bridge over the Raritan River and sharrows along Bartholomew Road.

VEHICULAR NETWORK

George Street is a major thoroughfare at College Avenue and connects the district to Route 18 Bridge and to Downtown New Brunswick and to Cook/

Douglass. Rutgers 2030 proposes several initiatives related to George Street:

Roundabout at George Street north - An elongated roundabout is proposed at the north end of George Street at College Avenue in order to reduce vehicular speeds and to allow traffic to move northward from George Street.

George Street Transit Hub - George Street is well suited for the express bus route since it is easily accessible from Route 18 to connect to and from Busch-Livingston, and extends continuously south towards Cook/Douglass campus. Rutgers 2030 proposes a gateway and transit hub at George Street, at the approximate location of Hardenbergh Hall and Records Hall. This will provide an efficient drop off and pick up on both northbound and southbound routes. A drop off at this location also improves accessibility to Deiner Park and to the proposed Raritan River pedestrian bridge. Existing bus stops at College Avenue will be retained, and one may be added at approximately French and George Streets in order to provide service to downtown New Brunswick.

PARKING

The recent integration of UMDNJ and recent developments at College Avenue campus has increased the demand for parking. Rutgers community working with the Robert Wood Johnson Hospital and the medical community along Somerset Street travel each day between Busch and Somerset Street. Rutgers 2030 proposes to implement a proposal from a recent study to provide parking at Lot 16, east of Murray Hall. This parking garage provides 300 cars and will serve the south side of the College Avenue campus, located suitably close to the RWJ hospital.

At the north end of College Avenue, Rutgers 2030 proposes a major destination and gateway to Rutgers University through the College Avenue campus, including new structured parking. In conjunction with the proposed new quadrangle, the efficacy of associated underground parking should be studied.

COLLEGE AVENUE GREENING

Building upon work to improve landscape and to provide outdoor plazas along College Avenue, Rutgers 2030 proposes to continue the greening of College Avenue by limiting vehicular access to College Avenue between Hamilton Street and Bartlett Street. The street is re-spaced to include a median with planting and bicycle lanes and refinished with pavers. Existing sidewalk and crossings widths are maintain. Street trees are spaced evenly and continued southward along the street, with ample seating areas interspersed between trees. Rutgers banners on street lamps are proposed to be elongated to provide a stronger sense of place and intensify campus pride and spirit.



Existing view of College Avenue





RUTGERS
The Great University of the State

RUTGERS

RUTGERS

GEORGE STREET TRANSIT HUB

George Street is transformed at the location of Records Hall and Hardenbergh Hall into a bustling transit hub, with sheltered access to the campus through a lower level campus center entry on the southbound route and with a transit pavilion with waiting, meeting and cafe service on the northbound route. Two pedestrian and bicycle bridges extend over George Street to connect the proposed Cultural Lawn at the upper level to Deiner Park at the east. George Street is re-spaced to include bus lay-by lanes and a high planter median to discourage crossings at street level. Signage consistent with campus standard is proposed for the transit pavilion to announce location of stop.



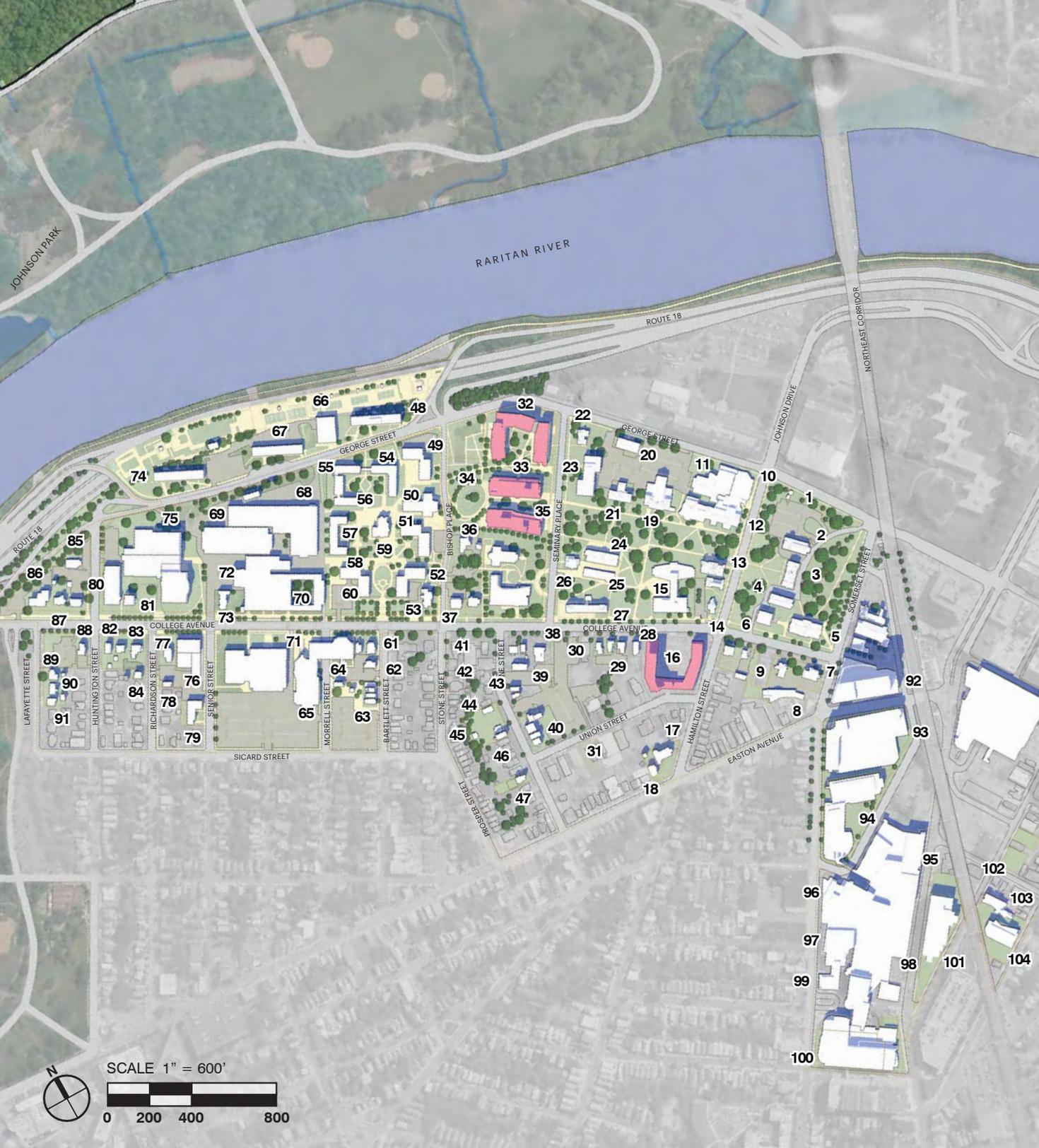
Existing view of George Street towards bus stop





GEORGE STREET @ COLLEGE AVENUE

ST COLLEGE AVE

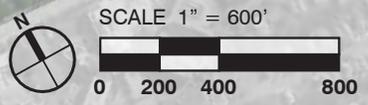


COLLEGE AVENUE TODAY

- Existing Building
- Projects Under Construction or in Design
- #** Buildings
- #** Major Parking Lots
- #** Athletics, Recreation + Open Space

BUILDINGS

1. Schanck Observatory
2. Kirkpatrick Chapel
3. Old Queens
4. Geology Hall
5. Winants Hall
6. Van Nest Hall
7. Alexander Johnston Hall
8. Miller Hall
9. Bildner Center for the Study of Jewish Life
10. Voorhees Hall/Art Library/Zimmerli Art Museum
11. School of Social Work Annex
12. New Jersey Hall
13. School of Arts & Sciences/Dean's Office



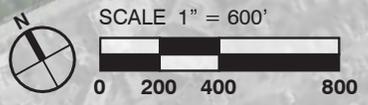
14. School of Arts & Sciences/Office of Undergraduate Education
15. McKinney Hall
16. Scott Hall
17. Career Services
18. 73 Easton Avenue
19. Murray Hall
20. School of Social Work
21. Milledoler Hall
22. 542 George Street
23. Graduate School of Education
24. Van Dyck Hall
25. Language Lab
26. Linguistics
27. Ford Hall
28. Career Services Administration
29. 60 College Ave
30. 64 College Ave
31. 36 Union Street
32. 1 Seminary Place
33. 3 Seminary Place
34. Center for Cultural Analysis
35. New Brunswick Theological Seminary
36. Graduate Admissions
37. Hillel
38. Italian House
39. 26 Mine Street
40. IEEE History Center
41. Global Programs
42. Rutgers Federal Credit Union
43. Canterbury House
44. Center for Historical Analysis
45. 17 Mine Street
46. 29 Mine Street
47. 43 Mine Street
48. Frelinghuysen Hall
49. Clothier Hall
50. Hurtado Health Center
51. Brett Hall
52. Tinsley Hall
53. Graduate School-New Brunswick Dean
54. Hegeman Hall
55. Pell Hall
56. Leupp Hall
57. Wessels Hall
58. Demarest Hall
59. Bishop House
60. Mettler Hall
61. CTAAR
62. 3 Bartlett Street
63. Fraternity & Sorority Affairs
64. Center for Latino Arts and Culture
65. IT Office of Undergraduate Education and Student Affairs
66. Student Activities Center
67. Hardenbergh Hall
68. Records Hall/RPO/Financial Aid



COLLEGE AVENUE TODAY

BUILDINGS - CONTINUED

- 69. Kreeger Learning Center
- 70. Stonier Hall
- 71. Rutgers Student Center
- 72. Brower Commons
- 73. Army ROTC
- 74. Campbell Hall
- 75. Archibald Stevens Alexander Library/East Asian Library
- 76. Les Turchin Chabad House
- 77. 172 College Ave
- 78. Jewish Studies
- 79. Rutgers Counseling Center
- 80. School of Communication & Information
- 81. Simeon De Witt Building
- 82. Airforce ROTC
- 83. Huntington House
- 84. Center for International Faculty and Student Services
- 85. 191 College Avenue



- 86. Rutgers Club
- 87. 195 College Ave
- 88. SC&I Annex
- 89. Health Outreach, Promotion and Education
- 90. 12 Lafayette Street
- 91. 14 Lafayette Street
- 92. Gateway
- 93. University Center at Easton Avenue
- 94. Cancer Institute of New Jersey
- 95. RWJMS Medical Education
- 96. Robert Wood Johnson University Hospital
- 97. RWJMS Clinical Research Center
- 98. Core Pavilion
- 99. Bristol-Myers Squibb Children's Hospital RWJUH
- 100. Child Health Institute of New Jersey
- 101. Clinical Academic Building
- 102. Robert Wood Johnson Professional Center
- 103. College of Nursing
- 104. Institute for Health

MAJOR PARKING LOTS

- 1. Lot 1
- 2. Lot 2
- 3. Lot 4
- 4. Lot 5
- 5. Lot 9
- 6. Lot 8
- 7. Lot 16
- 8. Lot 14
- 9. Lot 6
- 10. Lot 7
- 11. Lot 11
- 12. Lot 11A
- 13. Lot 13
- 14. Lot 12
- 15. Lot 35
- 16. Lot 19
- 17. Lot 37
- 18. Lot 18
- 19. Lot 18A
- 20. Lot 17
- 21. Lot 35
- 22. Lot 25
- 23. Lot 26
- 24. Lot 22
- 25. Lot 20
- 26. Parking Deck
- 27. Lot 24
- 28. Lot 23
- 29. Lot 27
- 30. Lot 30
- 31. Lot 32
- 32. Lot 34
- 33. Lot 33
- 34. P
- 35. Lot 36
- 36. Lot 38

ATHLETICS, RECREATION + OPEN SPACE

- 1. Old Queens Lawn
- 2. Voorhees Mall
- 3. Bishop Place
- 4. Academic Buildings Lawn
- 5. Honors College Quadrangle
- 6. College Avenue Gymnasium
- 7. Residence Hall Quadrangle



TO LIVINGSTON

JOHNSON PARK

RARITAN RIVER

NORTHEAST CORRIDOR

ROUTE 18

JOHNSON DRIVE

GEORGE STREET

BISHOP PLACE

SEMINARY PLACE

COLLEGE AVENUE

SOMERSET STREET

ROUTE 18

10

LAFAYETTE STREET

HUNTINGTON STREET

RICHARDSON STREET

SENIOR STREET

MORRELL STREET

BARTLETT STREET

STONE STREET

MINE STREET

HAMILTON STREET

EASTON AVENUE

BUCCLEUGH PARK

SICARD STREET

PROSPER STREET

UNION STREET

13

CAC Proposed Conditions

SCALE 1" = 600'



COLLEGE AVENUE 2030

- Existing Building
- Projects Under Construction or in Design
- Proposed Buildings

- A** Projects Under Construction or in Design
- #** New Construction + Renovation
- #** Infrastructure + Parking
- #** Landscape + Stormwater

Projects Under Construction or in Design/Planning

- A** 1 & 3 Seminary Place
- B** New Brunswick Theological Seminary
- C** Career Services

New Construction + Renovation

- 1** George Street Transit Hub
- 2** Dining and Student Organizations
- 3** Cultural Center and Student Space
- 4** High-tech Classroom Building
- 5** Events Venue
- 6** Undergraduate Housing
- 7** College Avenue Gym Renovation
- 8** College Avenue Gym Expansion
- 9** Health Center
- 10** Ford Hall Renovation

- 11** Alexander Library Renovation
- 12** North Gateway Building - Housing with Retail
- 13** RBHS School of Nursing Expansion

Infrastructure + Parking

- 1** George Street Garage
- 2** College Ave Bus Stop
- 3** Morrell Street Garage
- 4** Facilities Maintenance Building
- 5** Campus Center Underground Garage
- 6** Power Plant
- 7** George Street Roundabout
- 8** North Garage
- 9** College Avenue Greening and Bicycle Lane
- 10** Bicycle Bridge at Buccleuch Park

Landscape + Open Space

- 1** College Avenue Greening
- 2** Bishop Place South
- 3** College Avenue North + South
- 4** Cultural Lawn + Social Green
- 5** Deiner Park
- 6** Pedestrian + Bicycle Bridge over Raritan River
- 7** Boardwalk along Raritan River

4.2

COOK/DOUGLASS

4.2.1 VISION AND PRINCIPLES

4.2.2 LAND USE

4.2.3 OPEN SPACE

4.2.4 MOBILITY



4.2.1 Cook/Douglass District Vision and Principles

Cook/Douglass, originally separate colleges with origins dating back to 1864 and 1918 respectively, are now physically intermingled while each retains something of their original characters. Both are set in a natural landscape of ravines, wetlands and heavily forested areas, with buildings nestled in clusters of development. Cook, established as the land grant institution of New Jersey straddles Route 1, and has much of its land at the south devoted to agricultural research. Douglass, originally a women's college is in some ways a counterpoint to Cook, with a more urban setting, closer to downtown New Brunswick. Together they make up a district that is truly unique from the rest of Rutgers University – New Brunswick.

COOK/DOUGLASS: THE VISION

Rutgers 2030 proposes to strengthen the functional organization of Cook/Douglass, which currently suffers from inefficiencies caused by its widely distributed, non-walkable built environment, and to strengthen its historical cores and iconic open spaces.

Proposed development is concentrated in the district's core, north of Dudley Road. Developments outside of

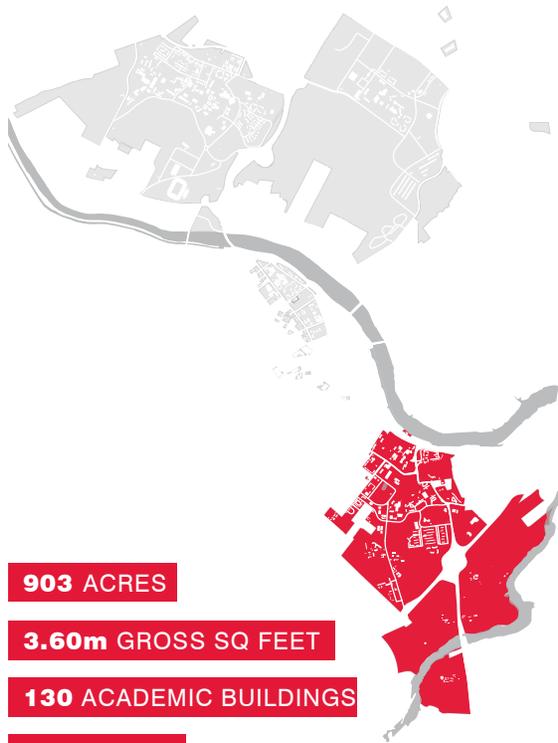
this core focuses on the creation of new playing fields and housing for junior faculty and graduate students.

The master plan addresses the edge of campus along Nichol Avenue as an opportunity to redefine the University's boundary with New Brunswick. An expanded hub along Nichol Avenue at the gateway to Cook/Douglass is close to classrooms, is centrally located and provide much needed amenities for the district. Housing is reimagined to provide more residences for underclassmen close to the hub. The district is supported by a network of bicycle and pedestrian connections to improve access between different areas of the district.

The master plan for Cook/Douglass is guided by the following principles and goals:

- **Shift distribution of residences and classrooms** to create a series and denser living-learning hubs, and a more open, park-like landscape,
- **Define the campus boundary along Nichol Avenue** to engage the community,

- **Strengthen the student center** as a place that is more central to student life
- **Foster communities through clustering of underclass housing** in close proximity to proposed hub
- **Reserve land** for research that supports the mission of the University
- **Create housing for faculty** to improve hiring and retention



903 ACRES

3.60m GROSS SQ FEET

130 ACADEMIC BUILDINGS

3,609 BEDS

5,011 CLASSROOM SEATS

95,816 WKLY STUDENT CONTACT HOURS

The proposed vision for Cook/Douglass is organized by the overall master plan principles:

LEARNING AT COOK/DOUGLASS

Rutgers 2030 considers a phased replacement of several of Douglass’ classroom and administrative buildings over the next fifteen years. These buildings are replaced along Nichol Avenue, in close proximity to an expanded district hub. Several under-utilized or remote classroom and administrative buildings along Lipman Drive are proposed to be replaced. A future building to the east of the recently completed Institute for Food, Nutrition and Health provides for future expansion of the Cook academic core.

In an internal reorganization of departments, Rutgers has identified opportunities to re purpose ASB III for the Department of Continuing Studies (DOCS), a fast growing academic and administrative unit providing extension classes. ASB III, located close to Route 1 and with its own parking areas is well-suited for this function.

LIFE AT COOK/DOUGLASS

Residential and student life at Cook/Douglass is improved by an expanded student center, and with the addition of recreational and intramural sports facilities. Housing is proposed to be upgraded over time, and clustered along Nichol Avenue. Graduate, married, and junior faculty housing is proposed in a large new “academic village” close to the southern gateway to Rutgers at Route 1.

NAVIGATING COOK/DOUGLASS

As proposed throughout Rutgers University – New Brunswick, a bicycle and pedestrian friendly network of paths, trails and roads provide increased mobility and safer connections throughout Cook/Douglass. Because of the district’s large scale, supporting increased bicycle usage is critical for connecting the core to the area of campus south of Route 1 where Rutgers Gardens is located. The landscape and topography of the campus also lends itself to a bicycle circuit of off-road bicycle riding, for recreational purposes.

Recent improvements to the George Street entry have made it possible to walk to the Rutgers Boathouse along Route 18. This connection will provide access from Cook/Douglass to the Raritan River, and north to the College Avenue, through Boyd Park and proposed boardwalk on the Raritan.

STEWARDSHIP AT COOK/DOUGLASS

Rutgers 2030 proposes to adopt stormwater management strategies proposed by Biohabitats' recently completed study, and to focus development on disturbed land to minimize disruption to existing ecology. By slowly reclaiming land disturbed by campus "sprawl", and decreasing the development footprint by concentrating program, environmental degradation may be reversed.

PERSONALIZING COOK/DOUGLASS

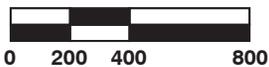
The relatively isolated location of Cook/Douglass can provide students with a sense of community within the larger University. Technology improvements described elsewhere can be very cost effective at Cook/Douglass, diminishing the time spent in transit and

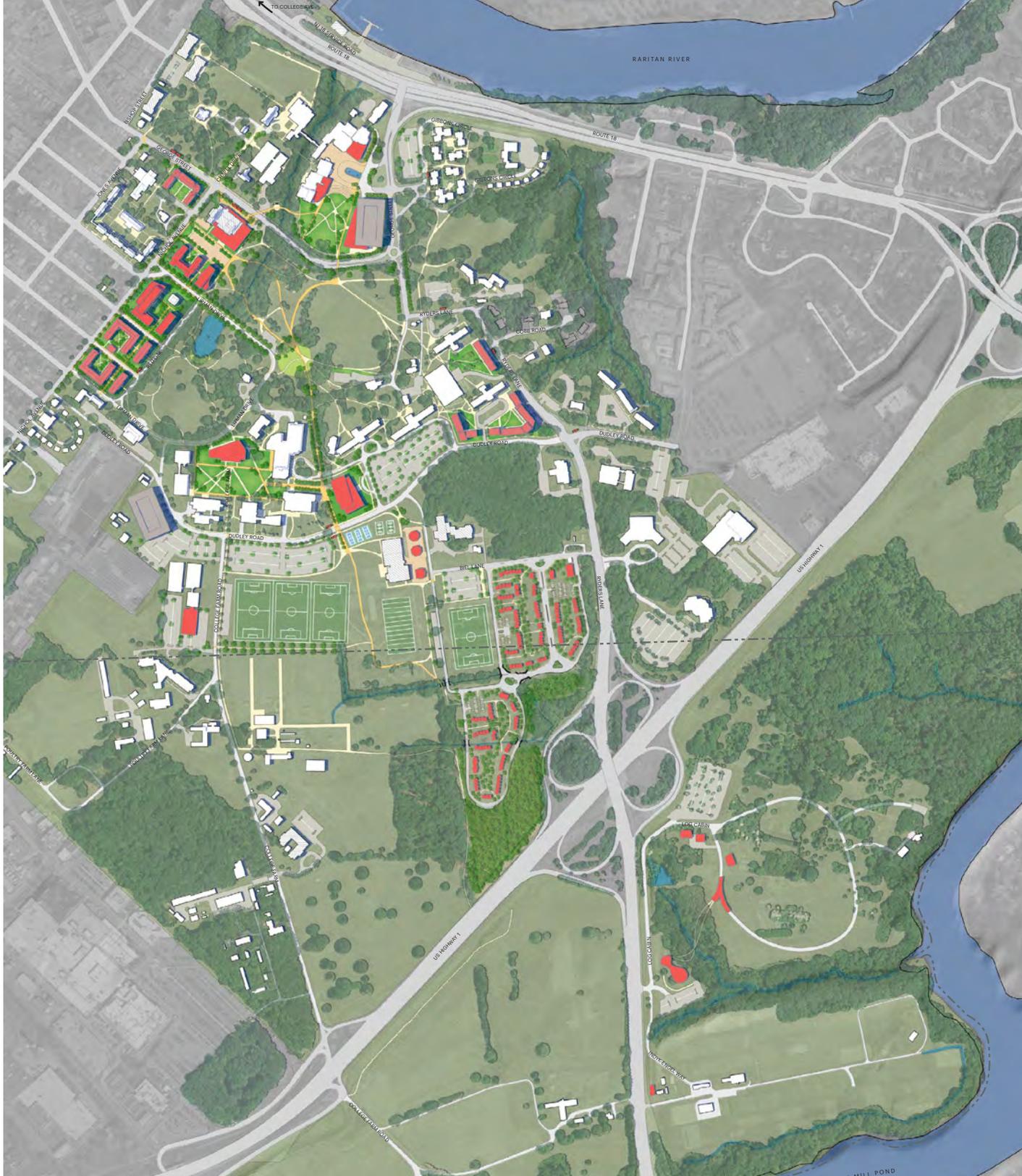
in other non-productive activities, and connecting the community more robustly to the University as a whole. For example, intra-campus distance learning may be particularly effective at Cook/Douglass.



COOK/DOUGLASS TODAY

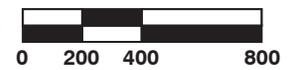
SCALE 1" = 1000'





COOK/DOUGLASS 2030

SCALE 1" = 1000'



Woodlawn Art and Sculpture Park
Mason Gross Quad
Ravine
Student Walk
Passion Puddle
The Lawn



4.2.2 LAND USE FRAMEWORK

Cook/Douglass currently is home to two major schools, the School of Arts and Sciences (SAS) and the School of Environmental and Biological Sciences (SEBS). Facilities are broadly distributed throughout, with the SAS buildings mostly located to the north while the SEBS buildings are clustered to the south and along College Farm Road. Land towards the south of the campus is primarily used for academic research. The Mason Gross School of Arts also calls Douglass its home. Recent investments in Livingston and College Avenue and imminent work on Busch campus now allow the University to direct their attention to Cook/Douglass. Rutgers 2030 creates a more compact district that is easily traversed and for renewal of facilities.

Projects currently under development and in discussion for Cook/Douglass include a Living-Learning Community at the Douglass Jameson Residential College, phases 2 and 3 of the 2007 master plan for Mason Gross, reuse of the Agriculture Museum along College Farm Road, and a new visitor and experience center at the Rutgers Gardens south of Route 1.

ACADEMIC CORE

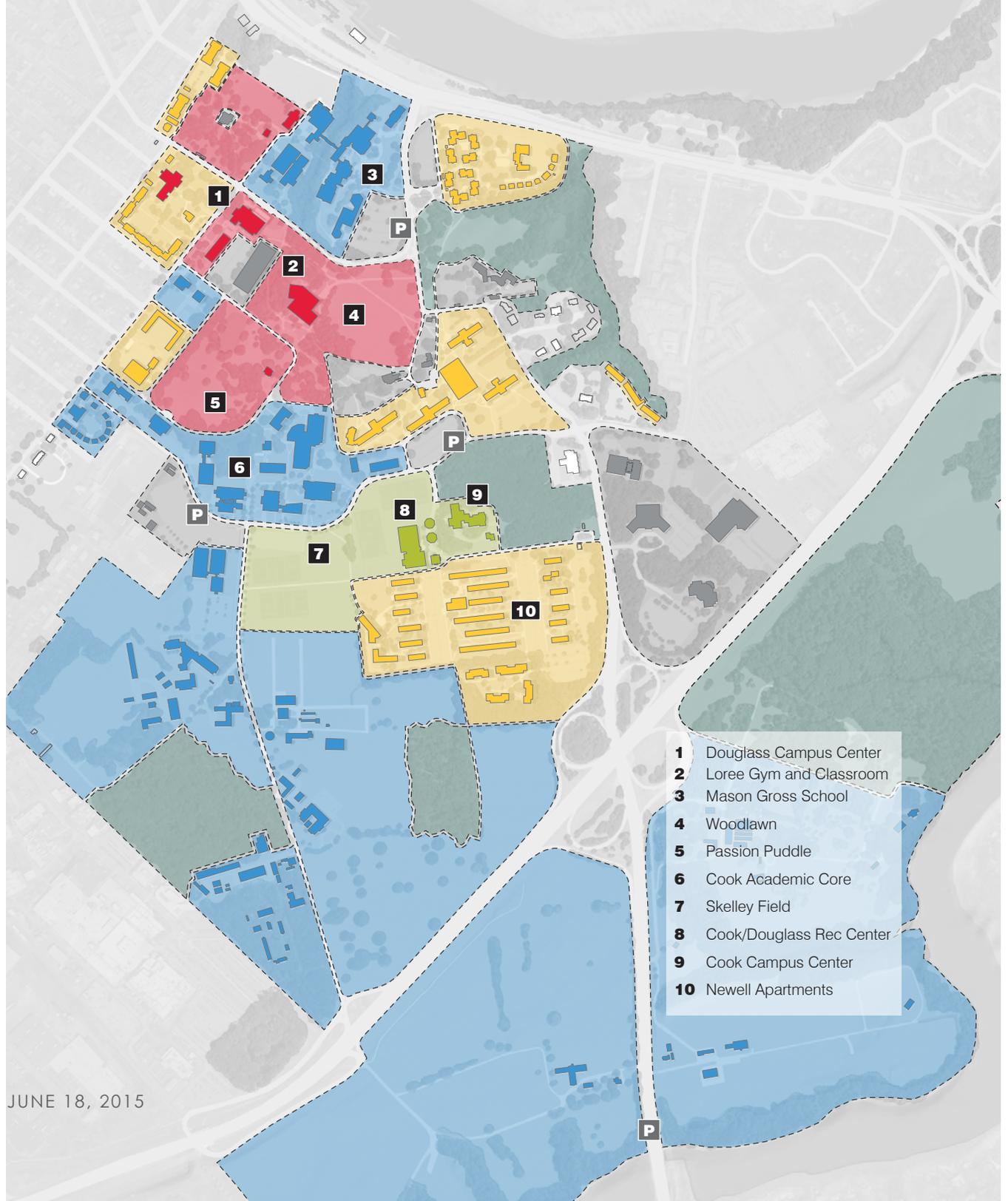
Rutgers2030proposes a decommissioning of outdated academic facilities throughout Cook/Douglass and their replacement with new and renovated buildings in close proximity to the proposed transit hub. Mixed used buildings with high-tech classrooms, academic departments, and student services like gyms, food service or meeting space bring life to hubs and these buildings throughout the day.

The group of academic buildings at the northwest corner of Douglass -- Ruth Adams Building, Biological Sciences Building and the Heldrich Science Building & Annex date back to 1920s and contribute to the character of the historic quad around College Hall. These buildings are no longer suited for academic use. Rutgers 2030 proposes these buildings be renovated as residences for upperclassmen.

Loree building and gymnasium is located in a low-lying area with frequent flooding. The building no longer serves its mission successfully. Rutgers 2030 proposes to demolish this building and to replace its functions in closer proximity to Nichol Avenue. The site of Loree could then be restored.

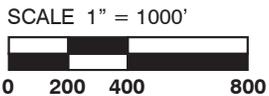
Mason Gross School of the Arts (MGSA) occupies a site that is isolated from Douglass by a ravine and the Route 18 entry and exit. MGA recently completed a master plan for a three phase expansion to their campus, with the first phase completed in 2013. Two future phases are anticipated. Rutgers 2030 proposes to strengthen MGA and its connection to the rest of the district by relocating Hickman Hall closer to Nichol Avenue and reconfiguring phases two and three to create a central green space facing south and opening towards the rest of Cook/Douglass. Two new bridges are proposed to cross over George Street from Woodlawn to the new MGA quadrangle, and another from the student center towards the Mabel Smith Library and eastward to MGA.

With the recently completed Institute for Food, Nutrition and Health, the Cook academic core along Dudley road continues to take shape, increasing its density in an area already established with a library, classrooms and academic departments. Rutgers 2030 proposes to complete the quadrangle by removing the temporary classroom building that is the Cook/Douglass Lecture Hall and the low-density Plant Physiology Building, and replacing them with a new SEBS building with two important facades, one facing College Farm Road to

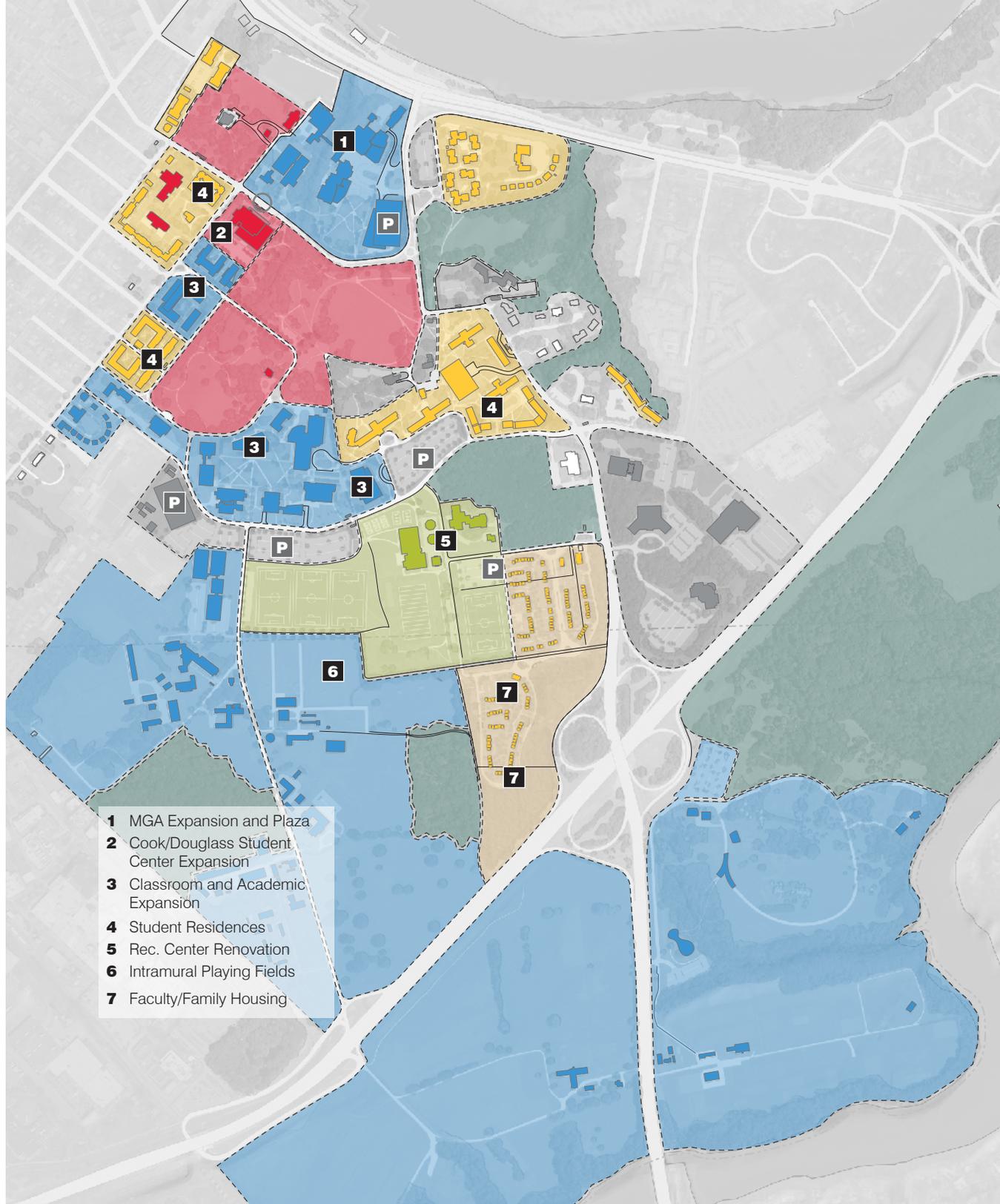


COOK/DOUGLASS TODAY

- Transit hub / bus stop
- Academic / research
- Student life
- Classroom hub
- Residential
- Athletics / recreation
- Forested
- Admin / support
- Campus core



- 1** Douglass Campus Center
- 2** Loree Gym and Classroom
- 3** Mason Gross School
- 4** Woodlawn
- 5** Passion Puddle
- 6** Cook Academic Core
- 7** Skelley Field
- 8** Cook/Douglass Rec Center
- 9** Cook Campus Center
- 10** Newell Apartments



- 1** MGA Expansion and Plaza
- 2** Cook/Douglas Student Center Expansion
- 3** Classroom and Academic Expansion
- 4** Student Residences
- 5** Rec. Center Renovation
- 6** Intramural Playing Fields
- 7** Faculty/Family Housing

COOK/DOUGLASS 2030

- Transit hub / bus stop
- Academic / research
- Student life
- Classroom hub
- Residential
- Athletics / recreation
- Forested
- Admin / support
- Campus core

SCALE 1" = 1000'

the south and the other facing Passion Puddle to the north and along Lipman Drive. A future building to the east continues the expansion of the academic core along Dudley road, anchoring a new path north to the student center from Dudley road.

NICHOL AVENUE - DISTRICT EDGE

Nichol Avenue forms the west edge of campus and is on axis with the Voorhees Chapel. South of the Jameson Residence Quadrangle, the west side of the avenue is lined with residential buildings while the east side of the avenue has a mixture of low density buildings, interspersed between surface parking lots and empty fields. Buildings are set back from the street, often times hidden behind mature trees and shielded from view.

Rutgers 2030 proposes to develop this edge of campus to have larger mixed-use buildings. Directly south of the Douglass Campus Center, across the campus center plaza, two high-tech classroom and academic buildings are proposed to complete the hub.

At the terminus of Suydam Street, a high-tech classroom building is proposed with a ground floor function that would benefit the neighboring community, like a grocery store or a coffee shop.

Farther south along Nichol Avenue, a series of wood frame houses dating back to the beginnings of the Douglass campus offer a glimpse of what the campus was back then. These houses unfortunately no longer serve the University well since they are not accessible and do not have the necessary mechanical, electrical and network infrastructure. The University plans to demolish these houses.

HOUSING

As with Busch, the planning models for much of the housing is suburban, which today is considered wasteful of land resources, car dependent, and inconveniently distant from the center of activity. Rutgers 2030 proposes to replace housing inventory over time, to relocate undergraduate housing that is on the periphery of campus closer to transit hubs and amenities, and in close proximity to other undergraduate housing.

Junior faculty, married and graduate student housing is proposed near the Ryder's Lane exit off of Route 1, in a comprehensive development, with a community center, day care and playground.

FARMLAND AND RESEARCH PARCELS

South of Dudley Road and extending past Route 1, land is designated for research use. Rutgers Gardens is undertaking a feasibility study for an expanded visitor center.

RECREATION AND INTRAMURAL SPORTS

The area currently occupied by Newell Apartments as well as vacant land to its west have been identified as a potential area for intramural sports fields, with support from the adjacent Cook/Douglass Recreation Center. Rutgers recently completed a feasibility study for Skelley Field; Rutgers 2030 adopts this plan with some minor adjustments. A pair of picnic houses and a field house is proposed for the area between the Cook/Douglass Recreation Center and the Cook Campus Center, and in lieu of an expansion to the Cook/Douglass Recreation Center, Rutgers 2030 considers

renovating and reusing the Cook Campus Center to support a recreation program. Approximately 23 acres of land vacated from the Newell Apartments, Perry Hall and Voorhees Hall and Skelley Field offer playing fields for the Rutgers Community.

Rutgers 2030 also seeks to revitalize the Rutgers Boathouse at the north edge of the campus, along the Raritan River as the southern terminus of the riverwalk network, providing an alternate route for connecting the New Brunswick districts. Current plans for the boathouse include a larger boat launching dock and expansion of the boathouse with a second level, which will provide much needed event space for the University.



NICHOL AVENUE REVITALIZATION

The master plan proposes a strengthened campus boundary along Nichol Avenue, with a series of mixed - use academic and residential buildings. This street is proposed to be a major thoroughfare with amenities like a coffee shop and grocery store, providing opportunities for engaging the neighboring New Brunswick community.



Existing view looking north on Nichol Avenue

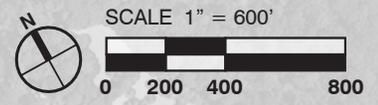






-  Transit hub / bus stop
-  Quad
-  Lawn/garden
-  Court
-  Bioswale
-  Plaza
-  Landscape infrastructure
-  Growth boundary

- 1** Campus Hub
- 2** MGA Quad
- 3** Woodlawn Sculpture Park
- 4** The Lawn
- 5** Education Gardens
- 6** Cook Academic Quadrangle
- 7** Campus Walk



4.2.3 OPEN SPACE / NATURAL SYSTEM FRAMEWORK

Cook/Douglass has some of the most iconic landscapes at Rutgers. Antilles Field is on the National Register of Historic Places and offers views of the Raritan River from the oldest part of Douglass. Graduation ceremonies for Douglass graduates are held here. From Antilles Field west, a ravine forms a natural divide between Douglass and the Mason Gross School, connected by the Bridge of a Thousand Kisses. The remainder of Douglass still has traces of its roots as a bucolic Women's College on the model of the "Seven Sisters", where fresh air and a pleasant environment were considered as essential elements of the college experience.

On Cook, the Passion Puddle offers a peaceful place to pause between classes. An allee of mature trees mark the boundary between two former farm properties. The Woodlawn Mansion with its gate house, carriage house and stables remains largely as they were when they were inherited by the University. Wetlands, forests and open agricultural research land define the periphery of the district.

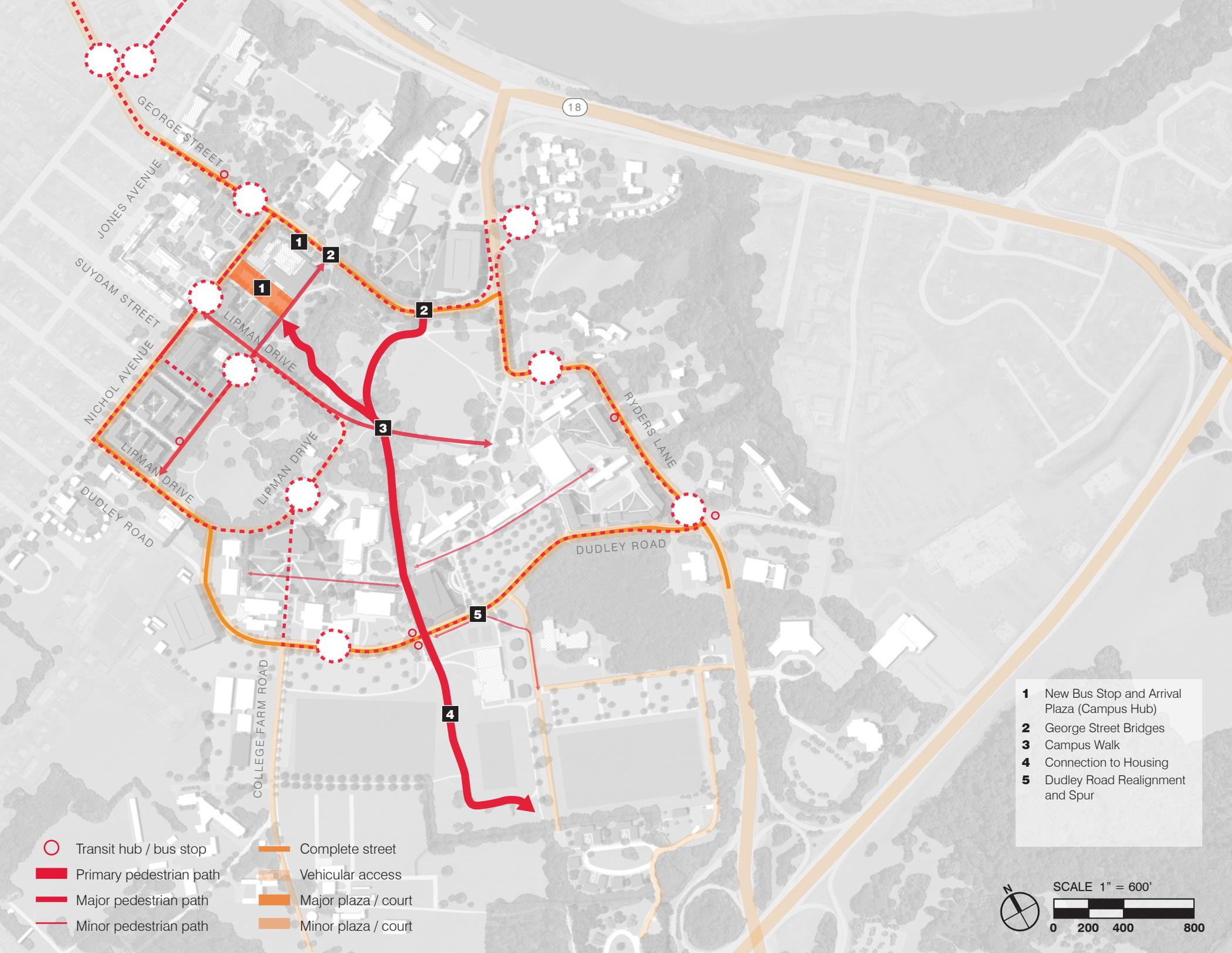
NATURAL LANDSCAPES

Rutgers 2030 proposes where possible to undo the environmental damage caused by poor planning and building siting decisions, and conceive this district as an integrated ecosystem, reinforcing the mission of SEBS.

Woodlawn Art and Sculpture Park – The Woodlawn property is currently maintained as open land; following the original intent of preserving a view of the Raritan River. Rutgers 2030 proposes to better define the edges of this space by planting trees along its periphery. Building upon the Art at Rutgers Program, a sculpture park is proposed for this area, in conjunction with the University and Mason Gross School of the Arts.

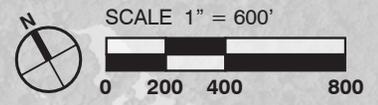
Stormwater management strategies – The Biohabitats report suggests different ways of managing run-off throughout the campus. The master plan adopts these strategies and builds upon this study and proposes development in areas already disturbed to minimize disruptions to existing ecology. Buildings interfering with existing water courses should be decommissioned and removed over time.

Wetlands, agricultural research land and natural landscapes – Rutgers 2030 proposes to maintain the majority of open space around the periphery of Cook/Douglass, to preserve wetlands and forested areas, and retain agricultural research parcels to support the academic mission of the University.



- Transit hub / bus stop
- Primary pedestrian path
- Major pedestrian path
- Minor pedestrian path
- Complete street
- Vehicular access
- Major plaza / court
- Minor plaza / court

- 1** New Bus Stop and Arrival Plaza (Campus Hub)
- 2** George Street Bridges
- 3** Campus Walk
- 4** Connection to Housing
- 5** Dudley Road Realignment and Spur



4.2.4 MOBILITY FRAMEWORK

Cook/Douglass is the southern gateway into Rutgers University, accessed off of Routes 1 and 18, but separated from the rest of the University by downtown New Brunswick, and by the Raritan River. Buses to and from Cook/Douglass often encounter heavy traffic through downtown New Brunswick and on Route 18 during rush hour.

The proposed mobility framework is closely linked to the open space framework and seeks to strengthen pedestrian and bicycle corridors and reduce reliance on the bus system by identifying campus walks and bicycle routes that are safe, well-lighted, and clearly marked.

PEDESTRIAN NETWORK

The pedestrian experience that Rutgers 2030 proposes for Cook/Douglass is one that is enhanced by paths through the natural landscape. From the gateway at the Douglass Student Center transit hub on the express bus route, a network of pedestrian paths emanate into the rest of the district, extending north, south and east. To the north, two new land bridges are proposed to provide connections to Mason Gross and the Library

across George Street. A major pathway winding through the mature growth of trees north of Passion Puddle and around Woodlawn connects south across Dudley Road and extends to the Cook Student Center, Cook/Douglass Recreation Center and onward to the proposed residential community for junior faculty. A direct north-south connection is created with a path directly linking the Douglass Student Center to Blake Hall at the entry to Cook Campus. A major east – west connection is aligned with Suydam Street and extends east to the Nelson Dining Hall.

BICYCLE NETWORK

The proposed downtown New Brunswick bicycle route will bring riders to the northwest corner of Cook/Douglass. From here, Rutgers 2030 proposes to extend this bicycle route along George Street to Jones and Nichol Avenues, which then connects to the district at Dudley Road or Lipman Drive. Dudley Road accommodates a sharrow connecting to College Farm Road and to Ryders Lane, across Route 1 towards Rutgers Gardens.

VEHICULAR NETWORK

Entry to Cook from Nichol Avenue – University efforts to provide clarity to the vehicular network include a proposal to provide a new gateway to Cook from Lipman Drive, instead of at Dudley Road. This new entry off Nichol Avenue by Thompson Hall allows for a direct connection east, and keeps vehicular traffic on campus limited to buses and authorized vehicles.

College Farm Road – As part of the new gateway to Cook at Dudley Road, a spur is also proposed to connect Lipman Drive to Dudley Road, directly west of Bartlett Hall. This allows College Farm Road to be terminated at Dudley Road and to eliminate vehicular traffic heading north through the Cook academic core, allowing for a central quadrangle to be created in its place.

Dudley Road – With the exception of development along College Farm Road, Dudley Road marks the edge of the Cook/Douglass academic core. The long term plan for Dudley is to ease the curve of the road north of the Cook/Douglass Recreation Center to accommodate future buildings north of Dudley, and



maintain non-academic functions relating to open space south of Dudley.

PARKING

The master plan considers current and anticipated needs, both surface parking lots and garages. The need for more parking is strongest at the north side of campus, to serve the Mason Gross School and the academic core of Cook/Douglass.

Mason Gross Garage – Additional parking is required to support the growth of Mason Gross as embodied in its 2007 precinct plan, which proposes enlarged public performance venues. A new garage associated with Mason Gross is prioritized.

Douglass Student Center Parking Garage – with the increase in activity from the proposed expansion of the student center and added density of the academic core, the need for parking in the vicinity of the Douglass Student Center is anticipated to increase. A below-grade parking garage is proposed as part of the expansion of the student center and redevelopment of the site of Davison Hall, to replace lost parking spaces

from the existing above grade parking garage and at Lot 70. A parking garage at this location, accessed off of George Street, provides convenient approach both from the north and south, and will reduce the number of vehicles entering campus. Existing topography allows for one level of below-grade parking with minimal excavation.

South Garage – A third garage at the vicinity of Dudley and College Farm Roads is proposed for the future to support future development. The short term proposal is to provide surface parking in this vicinity, to serve the south side of Cook. Skelley Field may be repurposed as surface parking in the short term, depending on phasing of proposed work.

Recreational Field Parking – Parking in the area surrounding the Cook/Douglass Recreation Center is reconfigured to provide parking to the proposed playing fields. These parking areas are close to the field house.



COOK/DOUGLASS TODAY

- Existing Building
- Projects Under Construction or in Design
- #** Buildings
- #** Major Parking Lots
- #** Athletics, Recreation + Open Space

BUILDINGS

1. Biological Sciences Building
2. Ruth Adams Building
3. Heldrich Science Building & Annex
4. Writing Center
5. College Hall
6. 132 George St
7. Federation Hall
8. Cooper Dining Hall
9. Jameson Residence Campus
10. Willets Health Center
11. Agora
12. Cabaret Theater
13. Dean's Residence, Douglass Campus

Cook/Douglass Existing Conditions



14. Graduate Music Building
15. Voorhees Chapel
16. May Duff Walters Hall
17. Mabel Smith Douglass Library
18. Art History Building
19. Blanche & Irving Laurie Music Library
20. Carpender House
21. Victoria J. Mastrobuono Theater
22. Nicholas Music Center/Rehearsal Hall
23. Philip J. Levin Theater
24. Music Annex
25. Marryott Music Building
26. Robert E. Mortensen Hall
27. Hickman Hall
28. Douglass Campus Center
29. Davison Hall
30. Co-op Bookstore
31. Counseling & Psychological Services
32. Waller Hall
33. Floriculture Greenhouses
34. Blake Hall
35. Thompson Hall
36. Little Theater
37. Corwin Buildings
38. Martin Hall
39. Lipman Learning House
40. Loree Building
41. New Gibbons Residence Campus
42. Douglass Developmental Disabilities Center School
43. Old Gibbons Residence Campus
44. Farm Crop Greenhouses
45. Chiller Building
46. Institute of Marine & Coastal Sciences
47. Bartlett Hall
48. Plant Physiology
49. Lipman Hall
50. Chang Science Library
51. Foran Hall
52. Cook/Douglass Lecture Hall
53. Food Science Building
54. Eagleton Institute of Politics/Wood Lawn
55. Ruth Schillin Hennessy Alumnae Center
56. Carriage House
57. Woodbury Residence Hall
58. Bunting-Cobb Residence Hall
59. Cook Office Building
60. Facilities Maintenance/Key Shop
61. Wood Lawn Gatehouse
62. Katzenbach Hall
63. Neilson Dining Hall
64. Nicholas Residence Hall
65. Lippincott Hall
66. University Inn & Conference Center
67. 176 Ryder Lane
68. Wittenborn Scholars Residence
69. Ruth Dill Johnson Crockett Building



COOK/DOUGLASS TODAY

BUILDINGS - CONTINUED

- 70. Center for Women's Programs
- 71. NJ Federation of Women's Clubs
- 72. Henderson Apartments
- 73. NJAES Research Greenhouses
- 74. Avian Research Building
- 75. Endocrine Research Facility
- 76. Environmental & Natural Resource Sciences Building
- 77. Dairy Barn & Creamery
- 78. Perry Hall
- 79. Cook Campus Center
- 80. Douglass Developmental Disabilities Center
- 81. Labor Education Center
- 82. School of Management & Labor Relations
- 83. NJ Law Center
- 84. ASB II/University Human Resources
- 85. ASB III
- 86. PAL/CPO

- 87. Newell Apartments
- 88. Starkey Apartments
- 89. Livestock Research & Teaching Facility
- 90. Piggery
- 91. Livestock Granary Barn
- 92. Round House
- 93. Livestock Barn
- 94. Heifer Barn
- 95. Animal Nutrition Barn
- 96. Blacksmith Shop
- 97. Operator Training Center
- 98. RCE Resource Center
- 99. Helyar House
- 100. Holly House
- 101. Horticulture Research
- 102. Welshman's Farmhouse
- 103. Log Cabin
- 104. Thompson House
- 105. Rutgers Gardens Office

- 106. Equine Research Facility
- 107. Rutgers NJAES Office of Continuing Professional Education
- 108. Ralph Geiger Turfgrass Education Building
- 109. Institute for Food, Nutrition, and Health

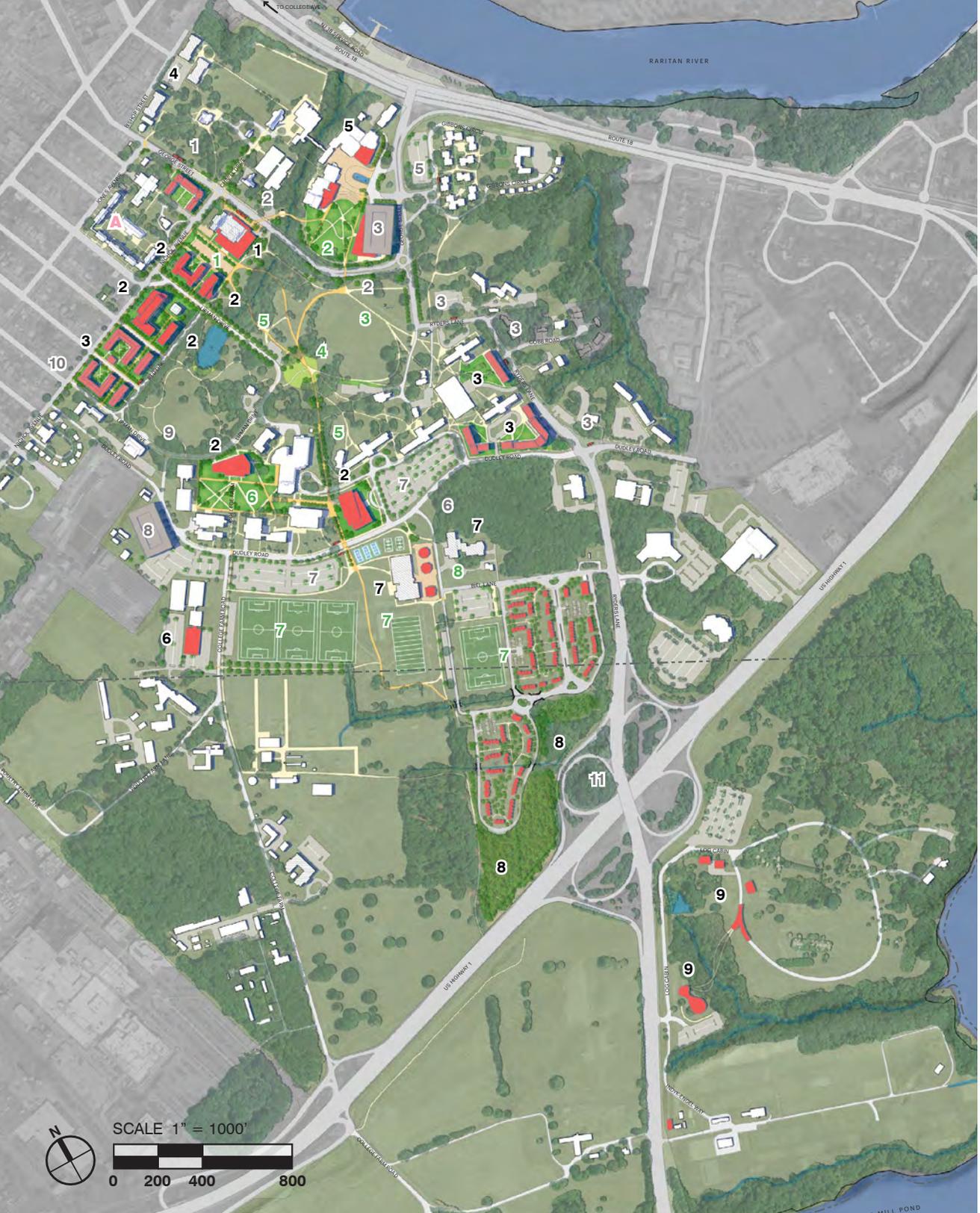
MAJOR PARKING LOTS

- | | |
|-----------------|-------------|
| 1. Lot 69 | 14. Lot 86 |
| 2. Lot 73 | 15. Lot 91 |
| 3. Lot 72 | 16. Lot 78 |
| 4. Lot 79A | 17. Parking |
| 5. Lot 79 | 18. Lot 81 |
| 6. Lot 74A | 19. Lot 76 |
| 7. Lot 74 | 20. Lot 71A |
| 8. Lot 70 | 21. Lot 80 |
| 9. Parking Deck | 22. Lot 98A |
| 10. Lot 82 | 23. 98B |
| 11. Parking | 24. Lot 97 |
| 12. Lot 89 | 25. Lot 90 |
| 13. Lot 87 | 26. Lot 88 |

- | | |
|-------------|-------------|
| 27. Lot 96 | 33. Lot 83 |
| 28. Lot 96A | 34. Lot 84 |
| 29. Lot 99A | 35. Lot 85 |
| 30. Lot 99B | 36. Lot 94 |
| 31. Lot 99C | 37. Parking |
| 32. Lot 99D | 38. Parking |

ATHLETICS, RECREATION + OPEN SPACE

- 1. Class of 1914 Boathouse
- 2. Antiles Field
- 3. Ravine
- 4. Woodlawn
- 5. Skelley Field
- 6. Passion Puddle
- 7. Cook/Douglass Recreation Center



RARITAN RIVER

TO COLLEGE AVE

ROUTE 16

ROUTE 16

US HIGHWAY 1

US HIGHWAY 1

US HIGHWAY 1



SCALE 1" = 1000'



MILL POND

COOK/DOUGLASS 2030

- Existing Building
- Projects Under Construction or in Design
- Proposed Buildings

- ▲ Projects Under Construction or in Design
- # New Construction + Renovation
- # Infrastructure + Parking
- # Landscape + Stormwater

Projects Under Construction or in Design/Planning

- A Global Village Learning Center at the Jameson
Dormitory Complex

New Construction + Renovation

- 1 Douglass Campus Center Expansion + Transit Hub
- 2 High-tech Classroom Building
- 3 Undergraduate Housing
- 4 Graduate Housing
- 5 Mason Gross Phase 2 + 3 Expansion
- 6 Greenhouse
- 7 Recreation Center Renovation + Expansion
- 8 Faculty + Graduate Housing
- 9 Rutgers Gardens Visitor Center and Expansion

Infrastructure + Parking

- 1 George Street Bus Stop
- 2 Pedestrian + Bicycle Bridge over George Street
- 3 Parking Garage
- 4 Mason Gross Arrival + Drop Off
- 5 New Bus Stop
- 6 Dudley Road Realignment
- 7 Parking (Future expansion sites)
- 8 West Parking Garage
- 9 Lipman Drive Connection
- 10 Nichol Avenue Bicycle Lane
- 11 Shared Path along Ryders Lane

Landscape + Open Space

- 1 Campus Plaza
- 2 Mason Gross Quadrangle
- 3 Sculpture Park
- 4 Education Gardens
- 5 Campus Walk
- 6 Cook Academic Quadrangle
- 7 Intramural Playing Fields
- 8 Picnic Area + Field House

4.3

BUSCH

4.3.1 VISION AND PRINCIPLES

4.3.2 LAND USE

4.3.3 OPEN SPACE

4.3.4 MOBILITY



4.3.1 Busch District Vision and Principles

From its beginnings in the 1950s, the Busch district has evolved to become a major center of medical, science and engineering academic and research activity at Rutgers. It is now home to the School of Engineering; science departments of the School of Arts and Sciences; the Graduate School of Applied and Professional Psychology; and as of July 1, 2013, Rutgers Biomedical and Health Sciences (RBHS), of which the Ernest Mario School of Pharmacy is now a member. It is also home to the largest residential community of the New Brunswick, with nearly 5,000 undergraduate and graduate students.

BUSCH: THE VISION

Rutgers 2030 proposes a renewed vision for Busch. In doing so, it is anticipated that Busch will play an increasingly important role in supporting the focus areas identified in the Strategic Plan: medicine, engineering and health sciences. The proposed vision provides a flexible approach for improvement and development; it responds to known facility needs and anticipates responses to future programmatic requirements that cannot be fully predicted at this time.

The vision for Busch focuses on near-term strategies that will improve its character and enhance the experience of its residents. It also provides a framework for transformation over the long term as key facilities and areas are redeveloped. The master plan is guided by the following principles and goals:

- **Enhance the landscape and open space structure** to unify the Busch, improve aesthetics and enhance pedestrian connectivity as well as overall mobility;
- **Reinforce the Busch Student Center** as the location for gathering and amenities;
- **Create a new graduate commons** in the Library of Science & Medicine, to better serve the west end of Busch and to integrate RBHS into the district;
- **Reimagine existing dormitories** as neighborhoods with improved centers for learning and collaboration as well as other social amenities; provide a long-term strategy for redevelopment;
- **Integrate RBHS** by reorienting RBHS to relate to



771 ACRES

5.07m GROSS SQ FEET

46 ACADEMIC BUILDINGS

4,899 BEDS

4,368 CLASSROOM SEATS

107,402 WKLY STUDENT CONTACT HOURS

the rest of Busch in a sense of connections and student amenity hubs

- **Encourage renovation, redevelopment and decommissioning** of buildings as appropriate;
- **Establish a robust physical and programmatic connection between Busch and Livingston** in support of broader strategic goals for the University.

The proposed vision for Busch is organized by the five overarching master plan principles:

LEARNING AT BUSCH

The major classroom centers of the Busch district, including Allison Road Classroom Building (ARC), the Hill Center and the Science & Engineering Resource Center (SERC) are maintained in the master plan for the foreseeable future but are slated for upgrades and improvements to the quality of the facilities and technology. They are also better connected by means of improvements to the broader pedestrian and landscape context. The Library of Science and Medicine is also reimagined as a learning commons

focused on the graduate experience, complemented by food service and lounge amenities.

LIFE AT BUSCH

The quality of the Busch experience is enhanced in Rutgers 2030 by means of several major initiatives:

Student Center Improvements – the student center is reimagined as part of a new gateway to the Busch. Specifically, a new building entry landscape and plaza is proposed in conjunction with a reconstructed northwest corner of the building featuring the “Busch Forum,” a new lounge space that provides a more generous and inviting entrance to the building. The Forum is intended to provide a greater sense of place for students who live on Busch, those who travel to Busch from College Avenue, Cook/Douglass and Livingston, and those who commute to the campus.

Allison Road Transit Hub – the primary transit hub for express services to and from Busch will be located on Allison Road for the foreseeable future, given the concentration of major classroom and academic support facilities in this area. To enhance the transit

experience, new pavilions are proposed directly adjacent to the Allison Road Classroom Building, and on the opposite side of the road. The pavilions are envisioned to include waiting and socializing areas, as well as convenience food service facilities.

Graduate District – improvements to graduate housing and the addition of amenities are proposed to establish a graduate district on the west side of Busch. The phased redevelopment of graduate housing will bring it closer to Bevier Road and the academic core, as undergraduate housing is shifted to the east. The Library of Science and Medicine is re-envisioned as a graduate and research commons, providing a home base for graduate students, dining options providing them additional, and with close proximity to the academic core.

Werblin Center – the Busch recreation center is expanded and enhanced, with a new entry oriented to the north, where a majority of the daytime population is located. The location of the proposed South Garage and surface parking immediately south of Werblin will improve access to the facility, in addition to a new bus lay-by on Frelinghuysen that will replace the existing

bus stop.

Undergraduate Housing – Rutgers 2030 plans ahead for the long-term repositioning and replacement of housing at Busch. The strategy calls for a consolidated undergraduate experience on the east side of the district, in which existing housing is supplemented by new facilities proposed to the north of the student center on the new gateway road. The overall strategy is to concentrate the undergraduate residential experience with the amenities offered in the student center and the Werblin Center; as existing residence halls reach their replacement age, they will be replaced in closer proximity to amenities. The intent is to establish a critical mass of resident students sufficient to support the retail, food service and other amenities envisioned for the student center.

NAVIGATING BUSCH

Mobility improvements are a key component of the vision for Busch. The primary portal into and out of Busch for express transit services is proposed on Allison Road. This transit hub will serve as the arrival and departure point for students traveling to Busch

from the other districts. Over the long term, the transit hub could be transitioned to the student center.

At the district level, the mobility strategy focuses on the pedestrian and bicycle networks with the intent of discouraging the use of automobiles, and providing attractive and competitive alternatives to driving. The overall, convenience and safety of the pedestrian network are given particular focus in the master plan. A renewed network of coordinated interior/exterior walkways connectivity is proposed along with significant landscape improvements. To that end, the pedestrian network is coordinated with the landscape framework to ensure that pathways are well organized, follow the appropriate desire lines, and offer shade during the warmer months.

Bicycle connectivity is addressed by means of a policy to establish complete streets and a coordinated network of bicycle routes within Busch, in addition to offering connections to Livingston and the Raritan park system to the south.

Parking at Busch is relocated to the periphery, with a combination of surface lots and garages. Commuter

parking is located on the periphery of Busch in the West Lot, from which a bus connection is required to get to the Busch core or to other districts. Rutgers 2030 proposes parking for commuters and visitors at the North Garage, with the intent of improving the commuter experience with better access to the amenities at the campus center. At this location, commuters will find bus and pedestrian connections to destinations within the Busch campus, as well as express bus services to College Avenue and Cook/Douglass. In general, commuters will be encouraged to “park once and walk” to their destinations via the enhanced pedestrian network. The proposed garage is envisioned to include easily accessible campus visitor services and a waiting area for bus riders.

The proposed concentration of academic and student life uses in the core will eliminate the majority of existing surface parking. Existing parking, as well as additional spaces to accommodate growth, is replaced in two proposed garages, as well as consolidated surface lots outside the core. The proposed garages – the South and West Garages, located northwest of Werblin and east of the Library of Science & Medicine, respectively – have been sited to maximize convenience for users,

as well as provide additional flexibility for special events such as gamedays.

STEWARDSHIP AT BUSCH

The master plan for Busch is based on several sustainable planning and design strategies that will collectively assist Rutgers in achieving broader stewardship goals. These strategies are best described in the context of the physical planning frameworks for the campus including: mobility, land use, and open space.

PERSONALIZING BUSCH

Rutgers 2030 focuses on creating a more compact, better connected core at Busch. The creation of a transit hub at the student center supports this initiative, with proposed additional amenities clustered around each transit hub. New high-tech classroom buildings are proposed to be located in close proximity to the student center, shifting the concentration of undergraduate class-related activity towards the eastern side of the district over the long term. The vision for undergraduate housing reinforces this shift

by bringing the residence halls closer to the campus student.

This master plan addresses Rutgers' need to provide a centralized student service building, thus improving efficiency and reducing travel demand. This building is proposed to be located at ASB-1 at Busch, and will be a place where the offices of Financial Aid, Admissions, Cashier Office, Residence Life, Counseling and Registrar could be co-located. The one-stop center could also include the relocation of the Busch-Livingston Health Center, which will be displaced by development at Livingston and needs a more accessible location.



BIOMEDICAL ENGINEERING
IRA S. GOTTSCHO PACKAGING ENGINEERING LABORATORY

599
Taylor Rd
Biomedical
Engineering



TO LIVINGSTON

ROUTE 18

DAVIDSON ROAD

BEVIER ROAD

ALLISON ROAD

HOBBS LANE WEST

FRELINGHUYSEN ROAD

FITCH ROAD

BARTHOLOMEW ROAD

SCARLET KNIGHT WAY

CAMPUS ROAD

SUTPHEN ROAD

BUSCH TODAY



ROUTE 18

DAVIDSON ROAD

TO LIVINGSTON

BUSCH-LIVINGSTON BRIDGE

HOES LANE WEST

BEAVER ROAD

NEW CAMPUS ROAD

ALLISON ROAD

BRETT ROAD

ERIE INGHTYSEN ROAD

BARTHOLOMEW ROAD

FITCH ROAD

CAMPUS ROAD

SCARLET KNIGHT WAY

SUTPHEN ROAD

BUSCH 2030



ROUTE 18

DAVIDSON ROAD

TO LIVINGSTON

BUSCH-LIVINGSTON BRIDGE

NEW CAMPUS ROAD

BEAVER ROAD

ALLISON ROAD

BIRCH ROAD

HOSP LANE WEST

FREILINGHOYSEN ROAD

BARTHOLOMEW ROAD

FITCH ROAD

CAMPUS ROAD

SCARLET KNIGHT WAY

SUPPHEN ROAD



SCALE 1" = 600'



4.3.2 LAND USE

Rutgers 2030 plans for a transition in the land use pattern over the long term, towards improved mobility and walkability, a rich student experience, and a better experience for all users. To that end, the Allison Road area is designated as the transit hub for the near term. The hub will eventually be transitioned to the Busch Student Center, following the completion of the proposed North Garage, the Busch Forum, and new classroom facilities adjacent to the hub.

The proposed land use plan reinforces the established academic core and incorporates the concentration of academic and research facilities within a more compact area and fewer buildings, including the redevelopment of the School of Engineering complex. Along with the mobility and open space frameworks, the land use strategy integrates proposed facilities with projects currently under construction or in planning by Rutgers, including the new Chemistry, Engineering and Pharmacy buildings. The master plan is informed by previous studies for Engineering. A total of 300,000 gsf of new academic space is accommodated in the master plan, with the understanding that additional development is possible. Facilities under construction or in planning include:

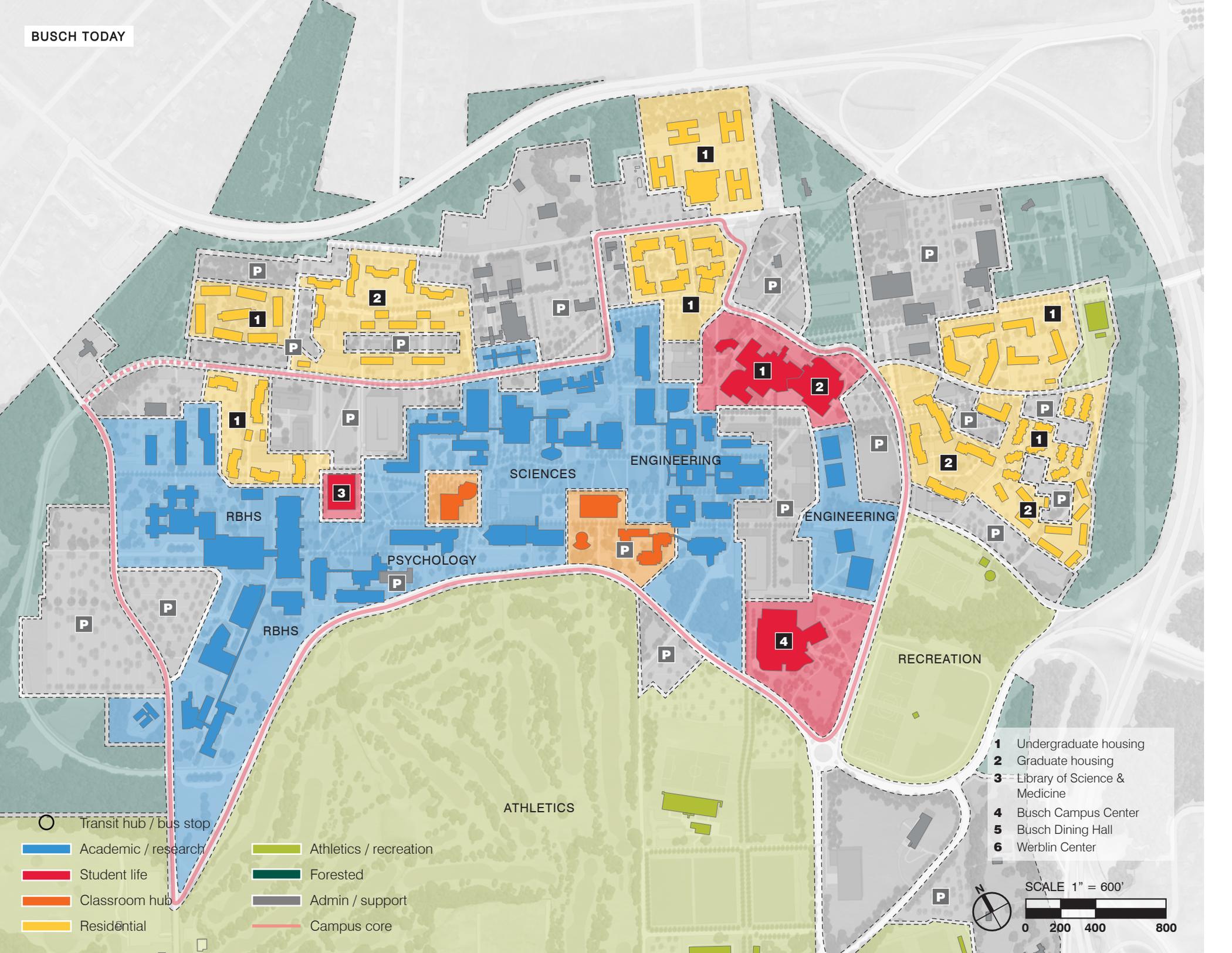
- **Chemistry and Chemical Biology Building** – a new facility located north of the Wright Rieman Laboratories, with 145,000 sf of flexible research space and classrooms intended to facilitate collaborative research and learning.
- **Sustainable Systems Engineering Building** – imagined as a gateway to the School of Engineering, this 112,500 sf facility is located east of the Biomedical Engineering Building, with high visibility at the terminus of the new gateway road to Busch. The building is an interdisciplinary facility supporting the school's three major research initiatives: sustainability, wireless communication technologies, and advanced manufacturing research.
- **Ernest Mario School of Pharmacy expansion** – this 85,000 sf addition to the front of the existing Pharmacy building will provide the school with a new atrium with adjacent student commons, a range of new classrooms, and additional research lab space.
- **Busch Central Energy Plant** – the comprehensive replacement of the existing plant,

which will not accommodate planned growth over the next 10 years, is reaching the end of its life and supplies both Busch and Livingston. The new facility will significantly improve energy efficiency, with a combination of combustion turbines, heat recovery steam generators, boilers, steam-driven chillers, electric centrifugal chillers, and an extraction generator.

The master plan proposes several initiatives to consolidate the Busch core, with respect to academic, student life, and administrative functions. These initiatives create a zones within the core that are linked by landscape improvements and an enhanced pedestrian network.

RBHS

Rutgers 2030 anticipates the potential redevelopment of the RBHS facilities on the west side of Busch. While the future needs of RBHS are under consideration, the land use framework offers the flexibility to accommodate a variety of renovation and redevelopment scenarios for the existing medical education and research complex. However, the intention of the master plan

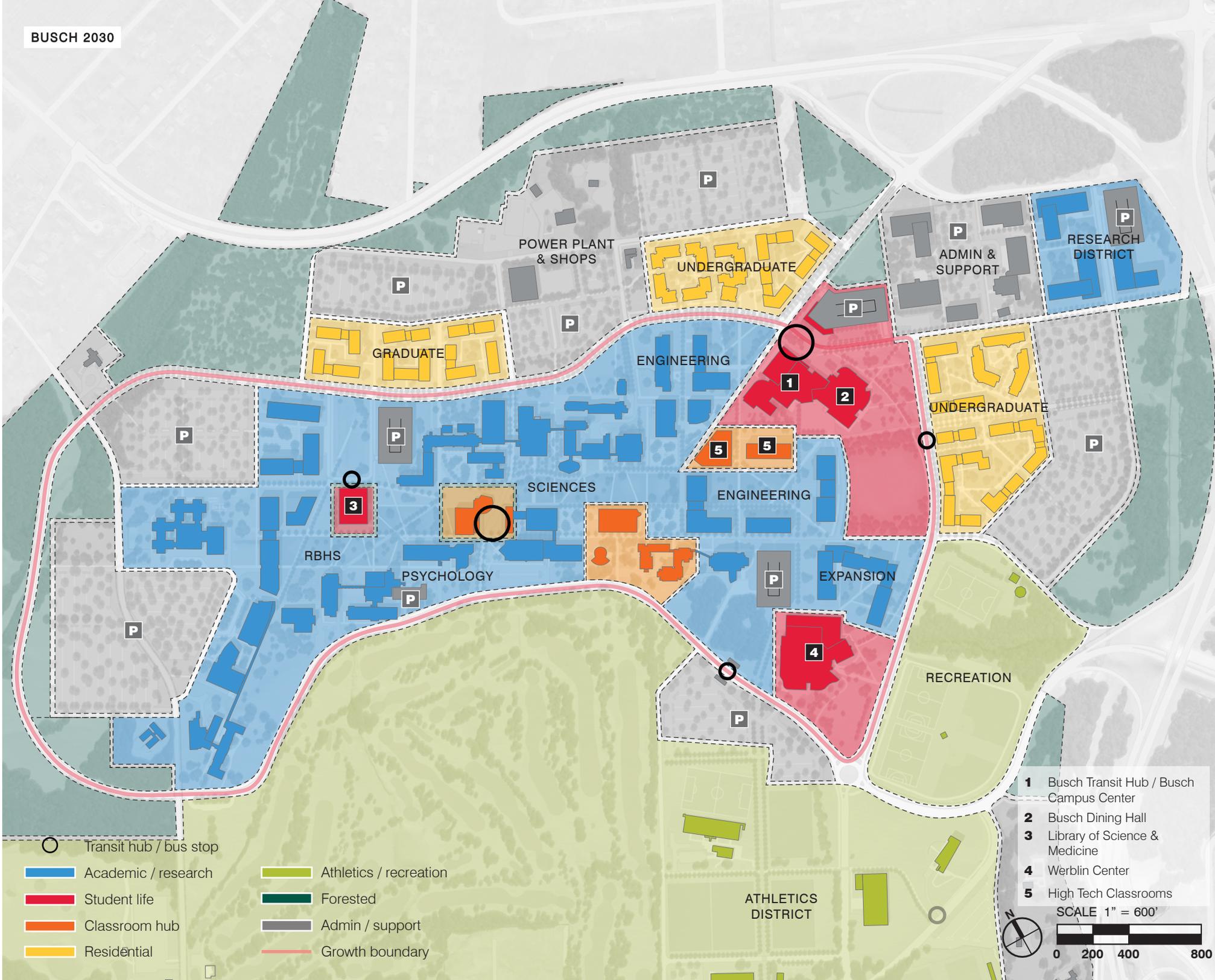


- Transit hub / bus stop
- Academic / research
- Student life
- Classroom hub
- Residential
- Athletics / recreation
- Forested
- Admin / support
- Campus core

- 1** Undergraduate housing
- 2** Graduate housing
- 3** Library of Science & Medicine
- 4** Busch Campus Center
- 5** Busch Dining Hall
- 6** Werblin Center

SCALE 1" = 600'





- 1** Busch Transit Hub / Busch Campus Center
- 2** Busch Dining Hall
- 3** Library of Science & Medicine
- 4** Werblin Center
- 5** High Tech Classrooms

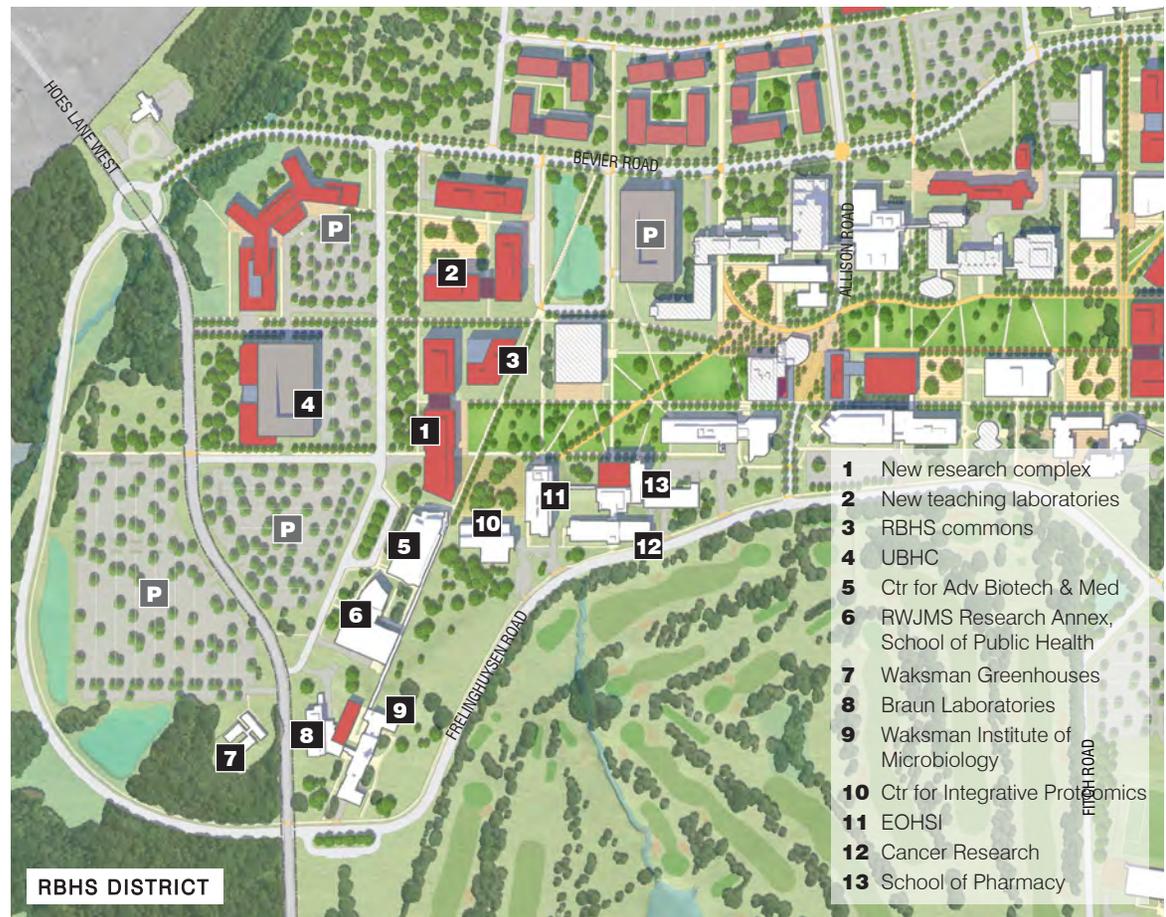
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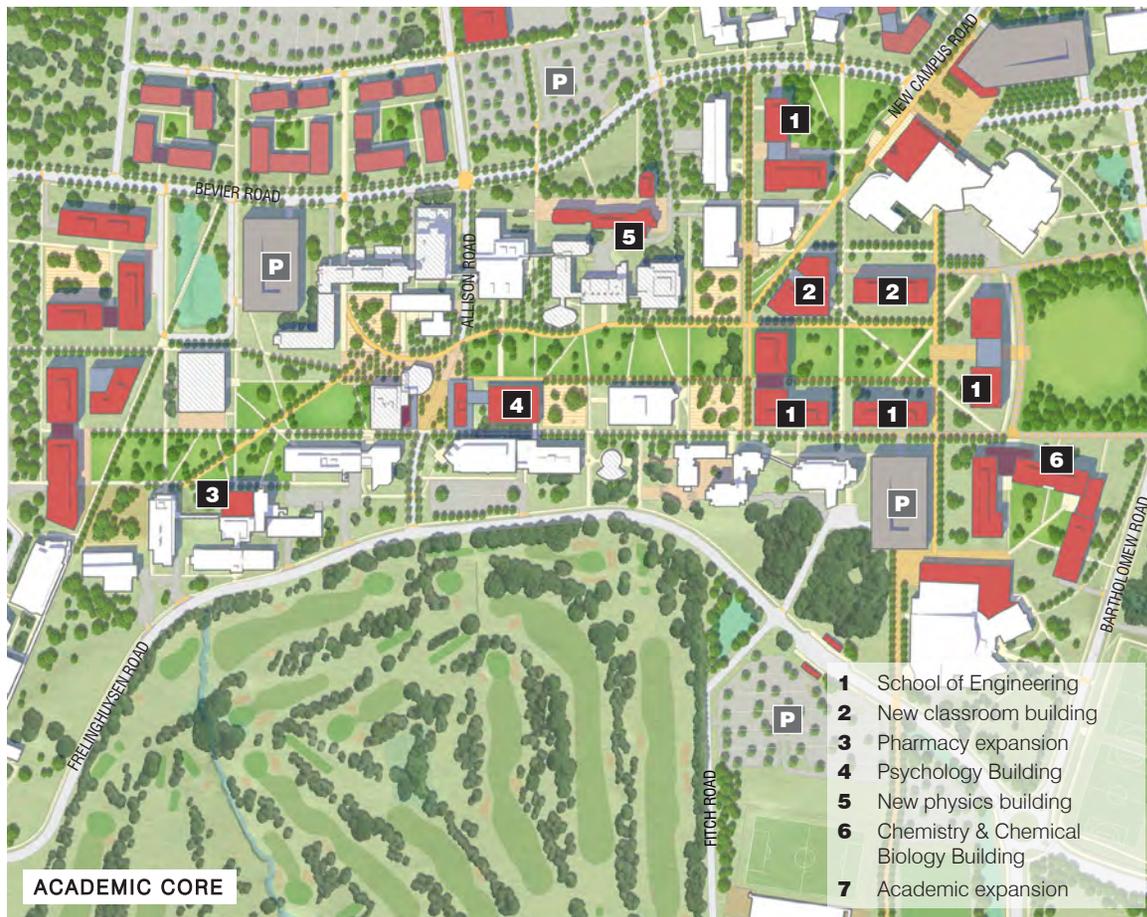


is to reorient RBHS to face east, relating to the rest of Busch, and to redevelop RBHS facilities in a higher-density configuration, with closer proximity to science and engineering departments. The master plan physically reestablishes links between RBHS facilities, extending the pedestrian axis established by the Waksman Institute, the Research Annex, and the Center for Advanced Biotechnology & Medicine. This axis continues into the core through a new quad, terminating north of the Library of Science & Medicine, which is envisioned as a graduate and research commons. Proposed new buildings include replacement space for the Research Tower, Kessler Teaching Labs, and other RBHS space that is currently scattered across the northwest quadrant of Busch. A commons building dedicated to RBHS is located adjacent to the new quad, and could include collaboration space for interdisciplinary activities.

ACADEMIC CORE

The master plan incorporates elements of the School of Engineering master plan, including the original idea of a quadrangle at the eastern end of the academic core. This complex replaces the existing





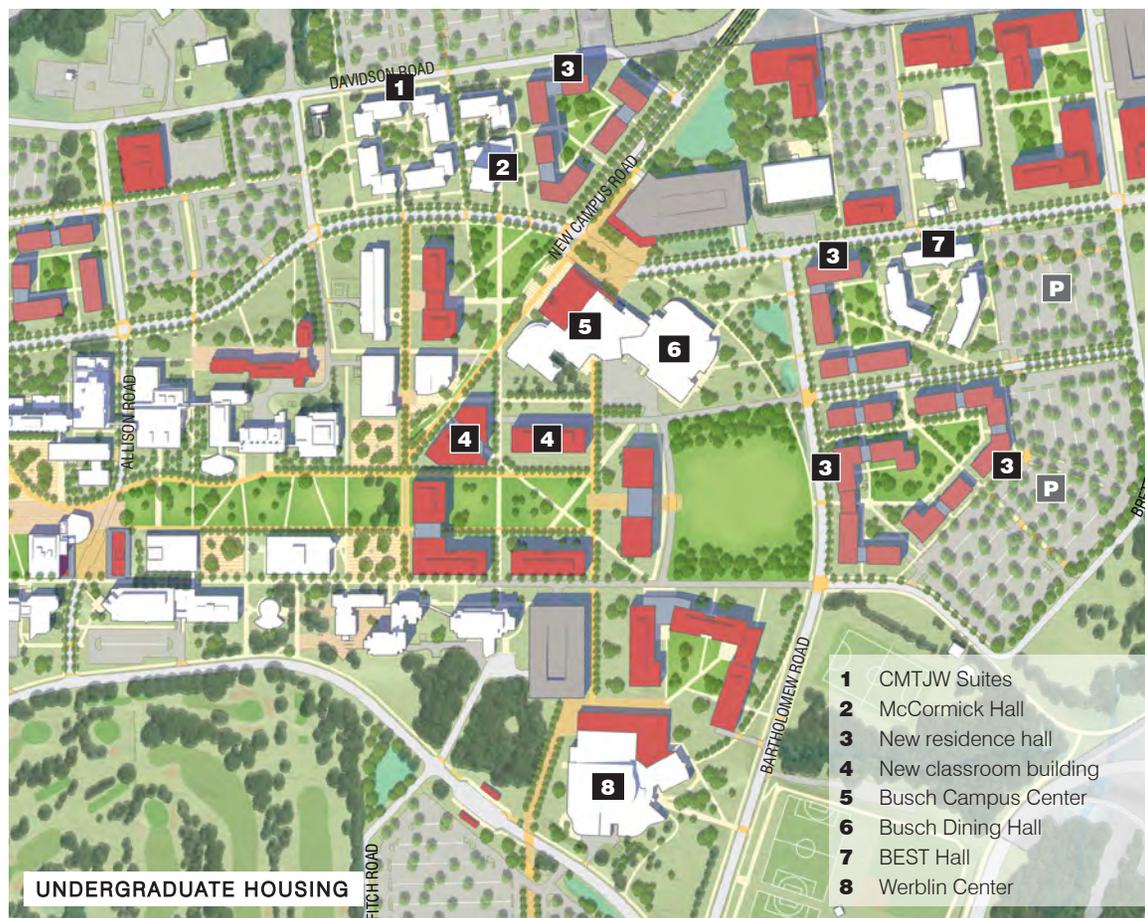
engineering buildings. This location allows the School of Engineering to terminate the new entry road, strengthening Busch's identity as the science and engineering district. The remaining buildings in the Engineering Quad will be built in a phased manner, as replacement parking can be built and as wings of the existing building are demolished. The Engineering Quad is completed by two high-tech classroom buildings, which will supplement the Hill Center and SERC classrooms. The Engineering Quad also forms an important part of the landscape redevelopment at Busch, and provides pedestrian link between the student center and Werblin.

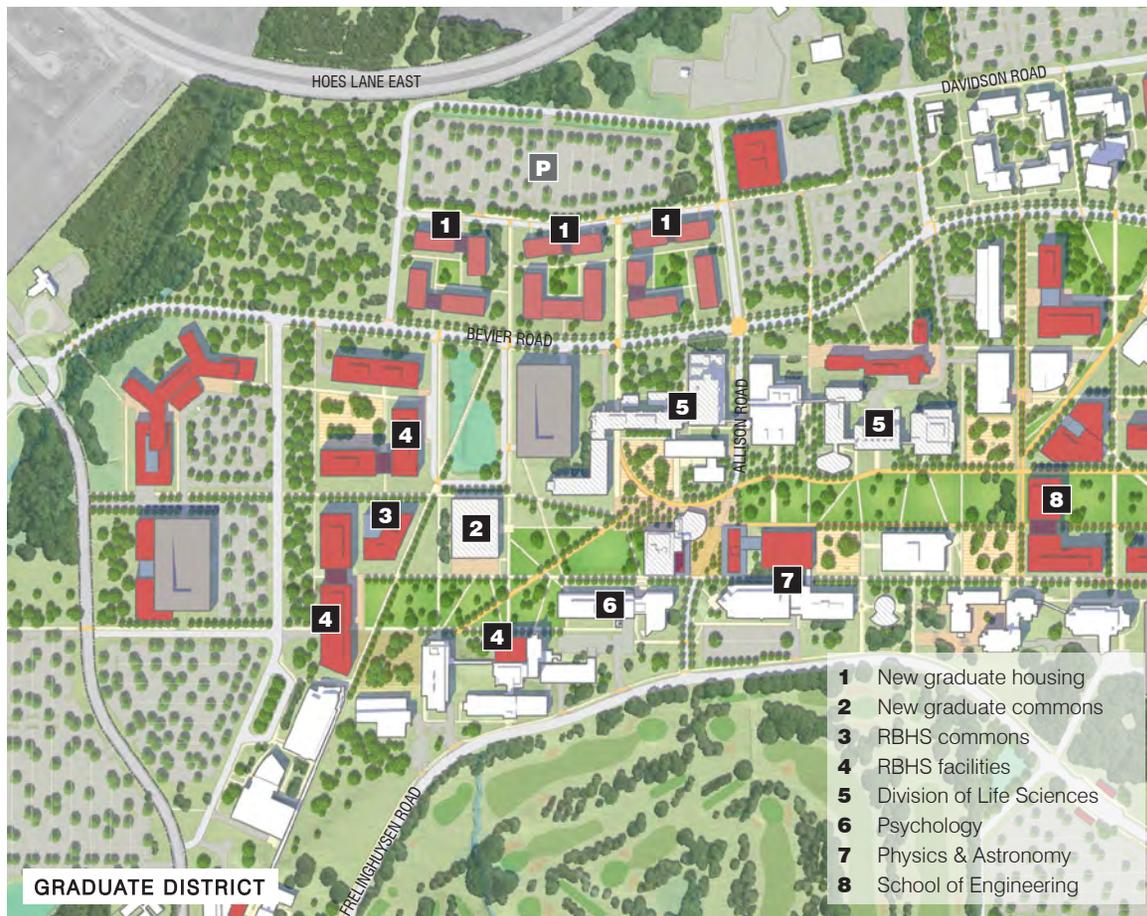
In addition to the Engineering Quad, the master plan incorporates growth in the School of Arts and Sciences, whose science departments are located on Busch. A new instructional facility for physics will allow existing facilities to be repurposed for research. Several building renovations are proposed, including the Nelson Biology Laboratories, the Wright Riemann Laboratories, and the Physics Lecture Hall. The department of Exercise and Sports Studies, currently located on Cook/Douglass, has research synergies with the Division of Life Sciences; the Graduate School

of Applied and Professional Psychology has outgrown its current building. These space needs could be accommodated in the long term at the Allison Road Classroom Building, as new classroom space is built. SAS is in the process of vetting its long-term needs; the master plan allows for academic expansion with two new buildings south of the Engineering Quad.

UNDERGRADUATE HOUSING

Over the long term, a redevelopment strategy for undergraduate housing is proposed at Busch. Recent investment resulted in BEST Hall, a suite-style residence hall with an integrated living-learning community. The CMTJW Suites and McCormick Hall, built in the 1980s, are in good condition, and are in proximity to the transit hub at the campus center; these residence halls have been maintained in the master plan. While no specific plans are in place for this redevelopment, Rutgers 2030 anticipates the need and provides a strategy for coordinating housing with other planning strategies for the transit hubs and the Student Center. The master plan proposes to replace residence halls built in the 1960s and 1970s, as they wear out. The plan illustrates the potential for a series of new residence halls to the east and north of





the campus center. Residence halls that are currently located on the west side of Busch – the Nichols and Richardson Apartments – will be shifted to the east, creating more undergraduate housing in proximity to student services and amenities. The plan also brings residents closer to the Werblin Center for recreation, and to the stadium. The lawn east of the Engineering quad is envisioned as an open space that could be used for recreational activities that currently compete for time on the Rutgers Sports Club Field.

GRADUATE DISTRICT

The shift of undergraduate housing to the east facilitates the creation of a graduate zone on the west side of Busch. All graduate housing will be replaced over time, into a single area with easy access to the academic core. The Library of Science & Medicine (LSM) is reenvisioned as a graduate commons, including dining, group study space, and a research commons and library, while the adjacent RBHS commons could offer fitness facilities. The surface lots between the loop road and the LSM are proposed to be transformed into a wetland landscape; similarly, the site of the Nichols Apartments is proposed to be reforested.

BUSCH STUDENT CENTER TRANSIT HUB

In the long term, the transit hub at Busch will transition to the Busch Student Center. The transit hub will be integrated with an addition to the center, providing a new entrance and waiting area to the building, and moving the meeting rooms to a new upper level. Outside the center, a plaza connects to the North Garage, a potential location for commuter parking that would bring them closer to both amenities and the Busch core. The new gateway road to Busch will provide access and views directly to the student center. Undergraduate residences are proposed to be replaced near the hub, which will add to the already high level of student activity.



Existing view from Busch Student Center entrance towards bus stop



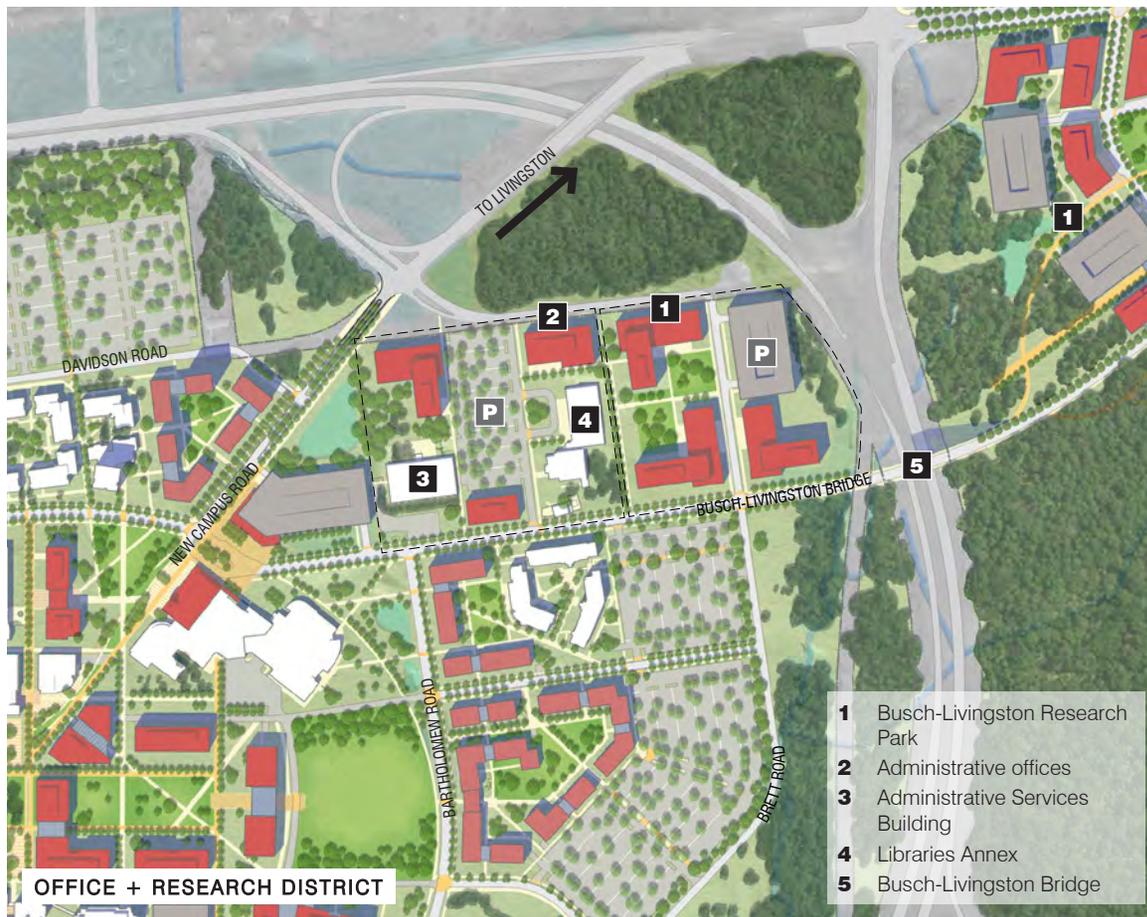


Proposed transit Hub at Bush Student Center

ATHLETICS COMPLEX

The existing athletics area at the south side of Busch is enhanced in this master plan. New pedestrian pathways, landscape edges, and stormwater management features give structure to the practice fields and buildings facilities required to support the athletics program. The Busch core is connected to the athletics complex by new walkways, enhancing the fan experience for game days, and for student athletes on their way to practice. Fitch Road is improved to help limit congestion on game days. Surface parking lots are located to provide operational flexibility on game days; proposed North and South Garages add further options. A list of proposed projects associated with athletics is provided in Chapter 4.6.





OFFICE AND RESEARCH

A new group of office and research building are proposed in the northeast corner of Busch. Back-of-house administrative offices are be consolidated at this location, offering increased operational efficiency. This area is also a potential location for the one-stop student services center for the campus, including the Busch-Livingston Health Center. Proposed new research building, anchor the Busch side of the Busch-Livingston bridge, while are a programmatic link to Livingston.



- Transit hub / bus stop
- Quad
- Lawn/garden
- Court

- Bioswale
- Plaza
- Landscape infrastructure
- Growth boundary

- 1** Busch Mall
- 2** LSM Quad
- 3** RBHS Quad
- 4** Engineering Quad
- 5** Gateway Quad
- 6** East Lawn
- 7** The Garden
- 8** Waksman Lawn

SCALE 1" = 600'

4.3.3 OPEN SPACE + NATURAL SYSTEMS

The open space and natural systems framework for Busch acknowledges and maintains the underlying factors of the land: topography, streams and wetlands. The existing pattern of vegetation and wooded areas informs the proposed framework; wherever possible, these assets are preserved and enhanced as part of the broader stormwater and landscape strategy. The framework builds on the existing central mall and more loosely defined quadrangles. These areas are the focus of landscape improvements intended to enhance the appearance and function. The framework consists of three primary areas: major landscape interventions, supporting landscapes, and landscape infrastructure.

MAJOR LANDSCAPE INTERVENTIONS

The Mall – the mall features a rejuvenated landscape, activated by east-west pedestrian routes that lend a more human scale to the open space. The mall is the centerpiece of the landscape network at Busch, giving the campus a sense of place, and providing visitors with a way to orient themselves. The edges of the mall walkway are defined by trees and paving, located on the north edge of the mall, serves as the primary east-west route of travel, connecting RBHS to

the Engineering Quad.

The Garden – the Garden, located between the mall and the Nelson Biology and Wright Rieman Laboratories, is a zone of more densely planted landscape. This zone features a bold pattern of tree planting on a 20'x20' grid, in addition to native species ground cover, and is designed to unify the varied architectural styles that define the north side of the mall.

Busch Gateway – as part of a coordinated strategy of new development around the student center, a new access road is proposed from the Route 18 interchange to the north. This new road is envisioned as a landscaped corridor, featuring a central median planted with street trees, and a pond adjacent to the North Garage. The road terminates in lawn bounded by the student center and the first School of Engineering building. The corridor continues, diagonally into the campus, and connects to the mall. A visual axis links the mall to the campus center, providing views of the campus interior, and serving as a wayfinding guide.

SUPPORTING LANDSCAPES

The Quads – the two connected quads located west of Allison Road are enhanced by new planting diagonal walkways and a new stormwater detention area is proposed adjacent to the Allison Road Classroom building.

The RBHS Quad – this quad, located at the western end of Busch, links to diagonal walkway from the Center for Advanced Biotechnology & Medicine, the RWJMS Research Annex and School of Public Health, and the Waksman Institute, integrating these facilities into the rest of open space structure.

Library of Science & Medicine Quad – this landscape component includes a new drop-off from Bevier Road, which will provide an address for RBHS. The landscape is a constructed wetland.

The Engineering Quad – designed as a more traditional quad, it will provide links between the campus center, the Mall, and to the Werblin Center. Walkways along the north side of the quad links it to the residence halls to the east.

East Lawn – located to the east of the Engineering Quad, a lawn is proposed as the foreground and the automobile entrance for the School of Engineering. It is also intended to serve as recreation space for the residence east of Bartholomew Road.

Plazas and Courts – along the perimeter of the mall and quads, spaces between buildings are filled by shaded plazas and courts. These intimate and human-scaled spaces contrast with the open and large-scale quads.

Residential Quads – the new undergraduate housing on the east side of Busch and the graduate housing on the west, are designed to complement Rutgers recent investment at BEST Hall .

The Allée - the existing allée of trees passing east-west between Allison Road and the Nanophysics Lab is maintained. The tree line and pedestrian corridor is extended east to the School of Engineering complex and west to RBHS.

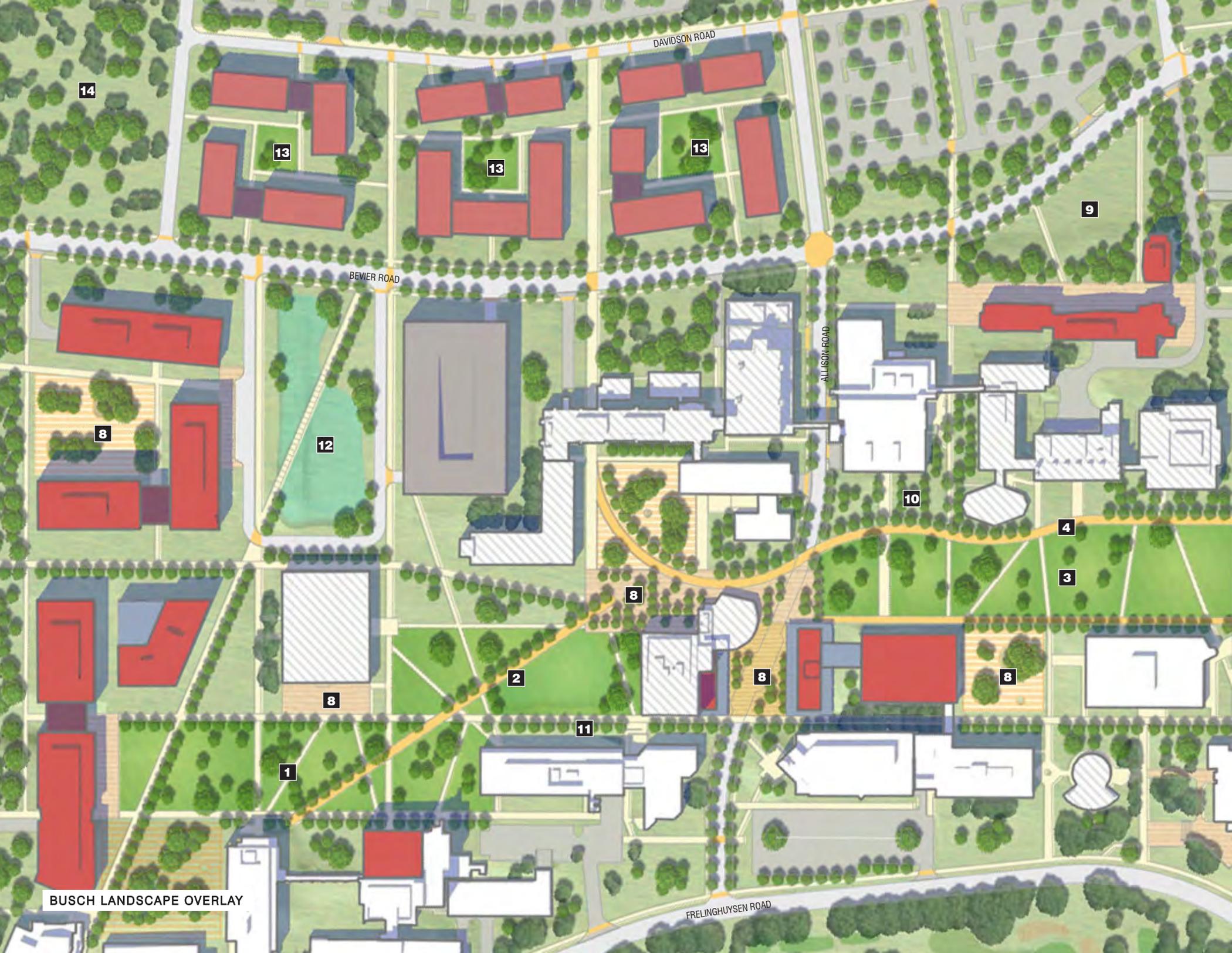
LANDSCAPE INFRASTRUCTURE

Beyond the district's core, existing forested and wetland areas are rehabilitated, reverting to a more natural state where possible.

In the athletics district south of the campus core, a framework of new landscape corridors are proposed, integrated with pedestrian and bicycle routes. These corridors are intended to better link existing and future athletic venues into the campus core and to enhance the fan experience on game days.

Large expanses of developed land on which buildings are demolished may be reclaimed through reforestation. These areas include the Nichols Apartment site and the area behind Davidson Hall.





DAVIDSON ROAD

14

13

13

13

9

BEVIER ROAD

ALLISON ROAD

8

12

10

4

3

8

2

8

8

8

11

1

BUSCH LANDSCAPE OVERLAY

FRELINGHUYSEN ROAD



NEW CAMPUS ROAD

BARTHOLOMEW ROAD

- 1 RBHS Quad
- 2 LSM Quad
- 3 The Mall
- 4 The Spine
- 5 Engineering Quad
- 6 East Lawn
- 7 Gateway Lawn
- 8 Plaza/court
- 9 CCB Lawn
- 10 The Garden
- 11 The Allée
- 12 Bioswale/wetland
- 13 Residential quad
- 14 Reforested area

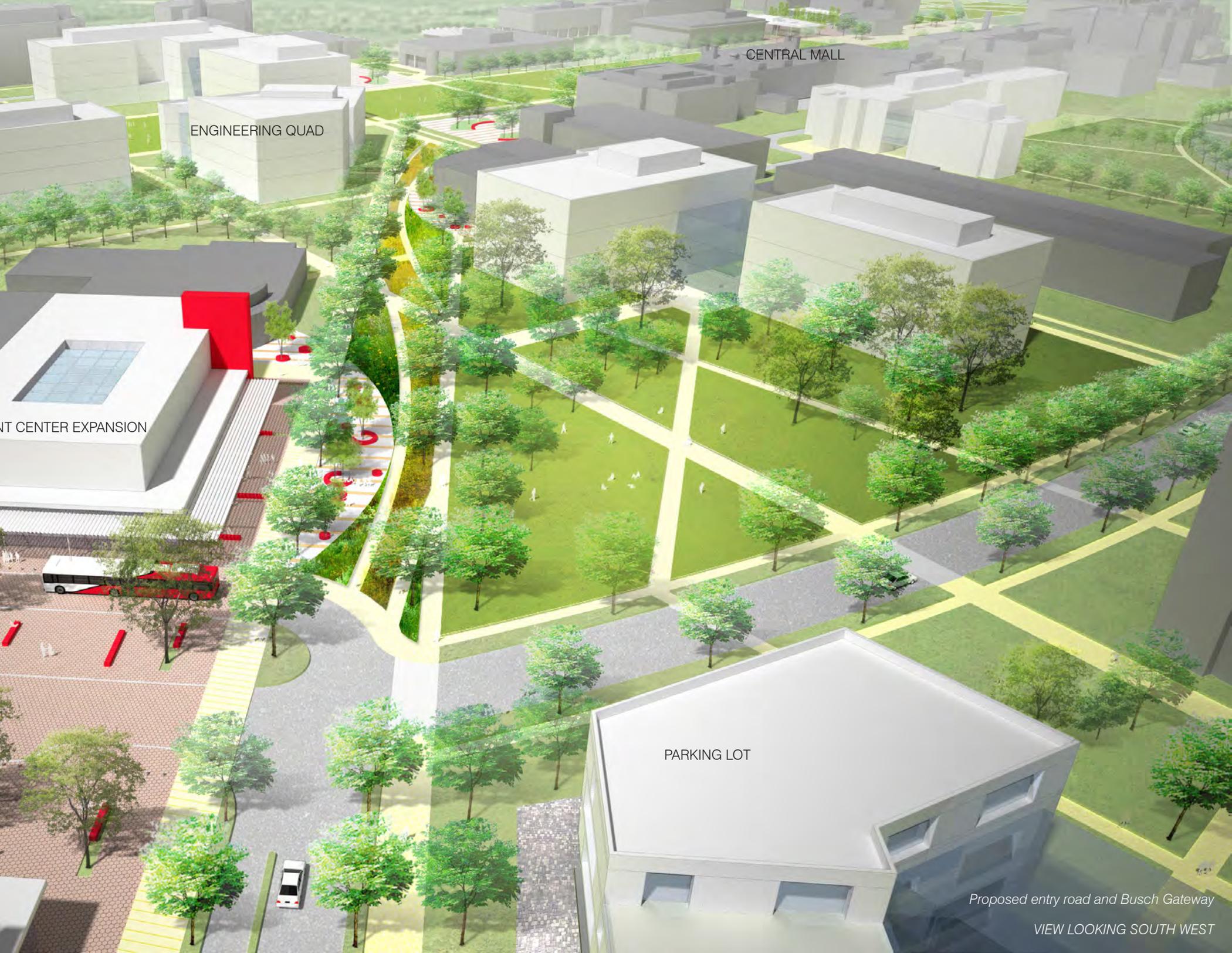
BUSCH GATEWAY

The proposed gateway to Busch integrates the mobility, land use, and landscape frameworks, creating a new road alignment that links the Student Center, Engineering Quad and malls at the Busch district core.



Existing view from Busch Campus Center towards Biomedical Engineering Building





ENGINEERING QUAD

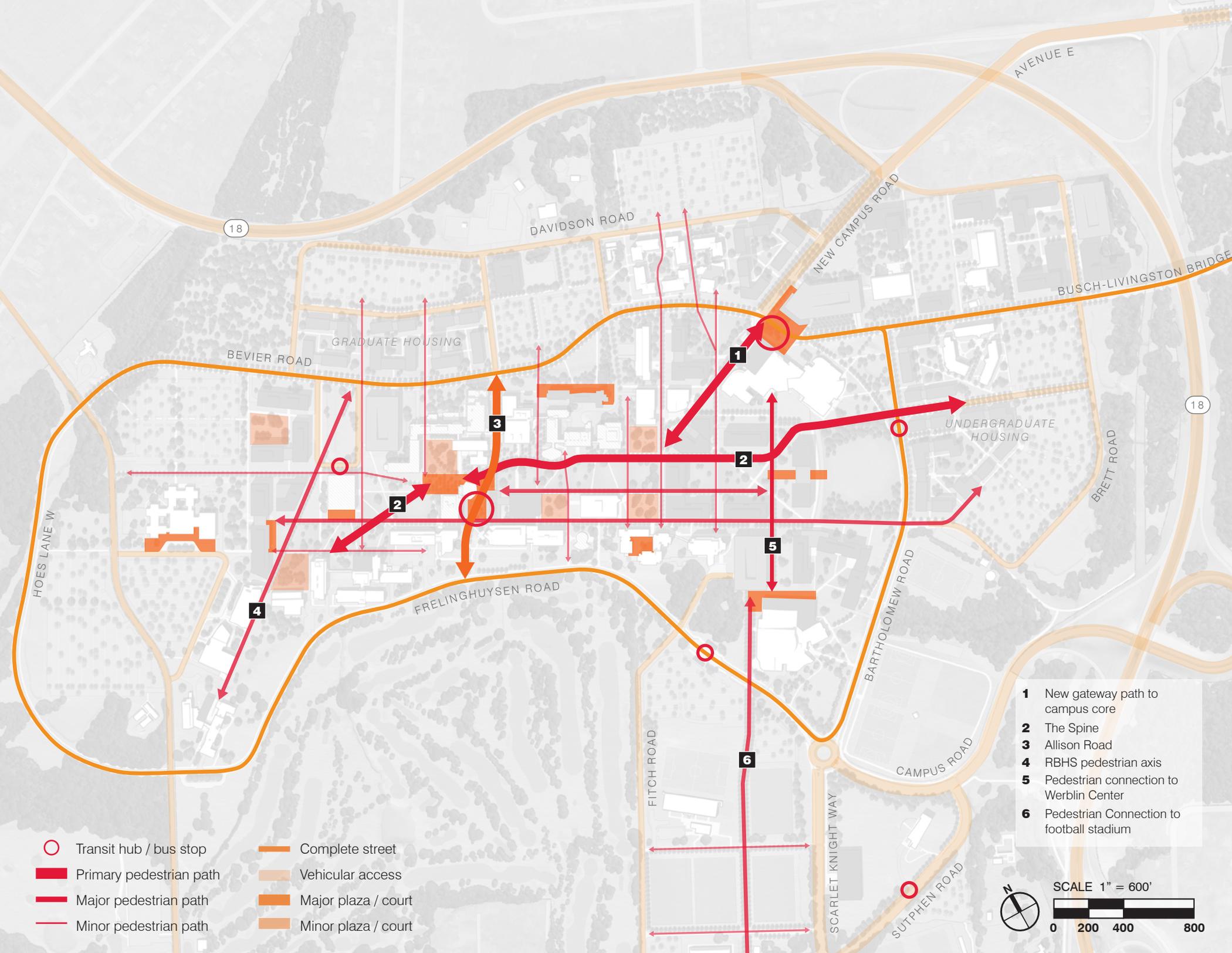
CENTRAL MALL

STUDENT CENTER EXPANSION

PARKING LOT

Proposed entry road and Busch Gateway

VIEW LOOKING SOUTH WEST



18

18

AVENUE E

DAVIDSON ROAD

NEW CAMPUS ROAD

BUSCH-LIVINGSTON BRIDGE

BEVIER ROAD

GRADUATE HOUSING

UNDERGRADUATE HOUSING

BRETT ROAD

HOES LANE W

FRELINGHUYSEN ROAD

BARTHOLOMEW ROAD

FITCH ROAD

CAMPUS ROAD

SCARLET KNIGHT WAY

SUTPHEN ROAD

- 1** New gateway path to campus core
- 2** The Spine
- 3** Allison Road
- 4** RBHS pedestrian axis
- 5** Pedestrian connection to Werblin Center
- 6** Pedestrian Connection to football stadium

- Transit hub / bus stop
- Primary pedestrian path
- Major pedestrian path
- Minor pedestrian path
- Complete street
- Vehicular access
- Major plaza / court
- Minor plaza / court



SCALE 1" = 600'

0 200 400 800

4.3.4 MOBILITY

The mobility framework proposed for the Busch campus is closely linked to the land use and open space frameworks, and includes three components: pedestrian, bicycle, and vehicular. The proposed land use strategies associated with the transit hubs are intended to concentrate activities and population density around these key portals into-and-out-of the Busch district, and the mobility framework is based on land use. The circulation pattern is coordinated with proposed landscape improvements to ensure that pleasant, safe and attractive pedestrian and bicycle routes are reinforced and established.

PEDESTRIAN NETWORK

Pedestrian routes are targeted for improvement across the Busch campus, taking into account existing and anticipated desire lines. Pedestrian movement is considered comprehensively, both inside buildings and outside. Traffic calming measures are proposed where pedestrians cross major roads, including the proposed loop road. Major improvements to the pedestrian network include:

The Spine – an east-west circulation route, extending from RBHS past the reimagined School of Engineering,

to the undergraduate housing district, is proposed as the central corridor of the district.

The Busch Gateway – a new pedestrian link from the Busch mall to the student center is imagined to better integrate the center into the daily patterns of movement on the campus.

Allison Road – this route is reimagined as a transit corridor, bicycle and pedestrian route and as the main north to south connector through the district.

North-South routes – these routes will provide direct access across the central academic core in key areas. Of particular note is the pathway linking the Student Center to Werblin, a route that currently lacks a direct path, instead requiring pedestrians to walk through a series of service areas and surface parking lots.

BICYCLE NETWORK

Existing bicycle routes are expanded and enhanced with a combination of dedicated bike lanes and shared use paths, with the goal of promoting bicycle use within Busch and to Livingston. In addition to the routes proposed through the core, roads at the perimeter of

the core are imagined as complete streets – streets designed to accommodate pedestrians, bicycles and vehicles in a coordinated and safe manner.

VEHICULAR NETWORK

The vehicular network proposed for Busch proposes several changes of significance. Key changes are as follows:

Busch Gateway Road – a realigned gateway road is proposed from the Avenue E/Davidson Road intersection, at the Route 18 off ramp located north of the student center. It is designed to define a new undergraduate housing district, a new parking garage, and an arrival landscape integrated with an expanded and enhanced Campus Center.

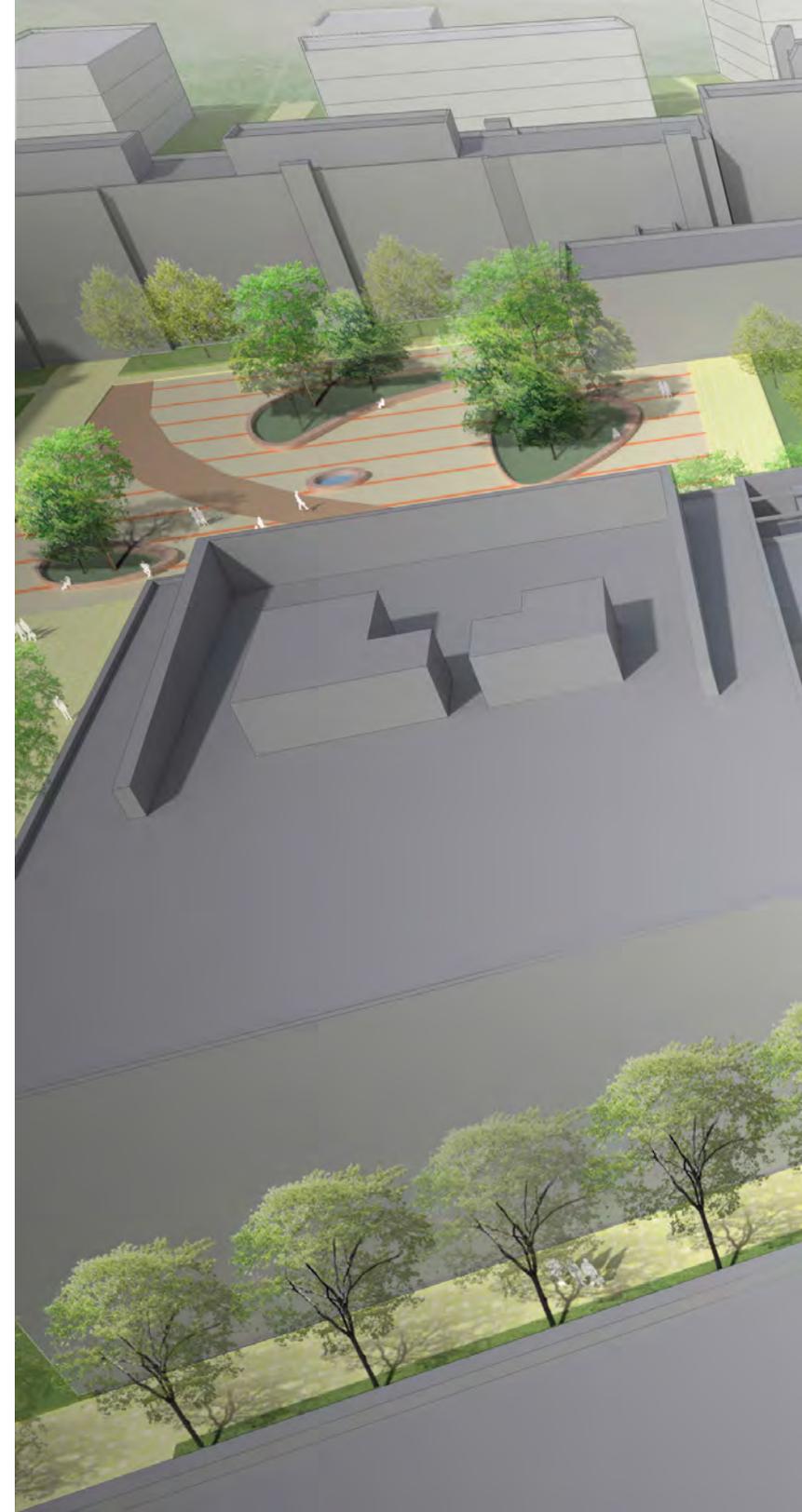
Loop Road – the master plan endorses a longstanding planning goal to complete the loop road around the established core of Busch. To that end, a new segment is proposed to connect Bartholomew Road to Bevier Road, a missing link needed to complete the northern portion of the loop. Two additional segments are proposed to link Bevier Road to Hoes Lane West, and to realign Hoes Lane West and Frelinghuysen

ALLISON ROAD IMPROVEMENTS

Allison Road Classroom Building (ARC) is a major bus stop and classroom hub at Busch. Rutgers 2030 plans for all modes of transportation, reimagining Allison Road as a complete street with integrated transit, bicycle, and pedestrian routes and decreased vehicular traffic. The existing bus stop is transformed into a transit hub, with an at-grade lay-by. Vehicles, buses, and bicycles share the road, while the paving design indicates crosswalks to pedestrians; vehicular access into the core from Allison Road is limited to service deliveries. Bicycle racks surround the transit hub.



Existing bus stop and crosswalk along east side of Allison Road





NEW TRANSIT HUB
BUILDING

ALLISON ROAD

BUS WAITING AREA

Road following the realignment of Hoes Lane West. The Chemistry and Chemical Biology Building has been sited to take into account the loop road, with its frontage on the future road. The proposed School of Engineering Phase 1 building is also oriented to take advantage of its high-visibility location on the loop road as well as the gateway road.

Improvements to Bevier Road, including a consistent street width, new sidewalks, and a dedicated bike lane, will improve access to the core from undergraduate and graduate residences to the north. In the long term, the loop road will function as a complete street, supporting coordinated pedestrian, bicycle and vehicular circulation.

Busch-Livingston Bridge – a new Rutgers-controlled bridge is proposed to connect Busch and Livingston. The bridge is a physical expression of the potential synergies between science, engineering, and RBHS at Busch, and business at Livingston, anchored by the proposed Research District on either side. The new bridge is intended to provide more direct pedestrian, bicycle and bus connections between districts. The bridge is an internal campus road thereby eliminating traffic lights, a condition on the current public road

connection, Avenue E. Students traveling between Busch and Livingston, who have observed that the bus ride can take up to 40 minutes when the class change time is only 20 minutes, will find it easier to get to class both by bus and by bike. Students at Busch will also have improved access to amenities on Livingston, including the student center, dining commons, and the Eco Preserve and vice versa.

Campus Road – this road will continue to function as a key southern gateway to the campus from Route 18, serving the existing Visitor Center and athletics district. Landscape enhancements are proposed along this important visitor entrance to the campus.

TRANSIT

Two transit hubs are proposed at Busch: one at Allison Road Classroom Building (ARC) and one at Busch Student Center. The hub at ARC proposes a new glassy pavilion on either side of Allison Road, providing a waiting area with soft seating, and a café in the eastern enclosure. The hub takes advantage of the critical mass of students who travel there for class, giving them a more efficient connection to other campuses. It also adds a potential dining option to

the western side of campus, where Woody's at RBHS is the only current dining venue. The hub at Busch Student Center re-envisioned the entrance to the center, replacing it with the Busch Forum, a new lounge that is open and lit with natural light. The existing bus turnaround is reconfigured with the new gateway road, providing a more coordinated bus stop for pedestrians, buses, and other vehicles.

In addition to the proposed transit hubs at ARC and the campus center, several improvements are targeted towards improving transit operations. The Hill Center and Werblin Center bus stops will be replaced with a new lay-by between the existing stops, east of the access road to the proposed South Garage. This will streamline bus service at Busch, and eliminate bus-pedestrian conflicts at the existing Hill Center stop. To support transit users who walk along Frelinghuysen Road, as well as gameday visitors, a new sidewalk on the north side of the road will provide safer movement. The improvement of Fitch Road will also improve gameday bus operations. A proposed bus turnaround at the realignment of Frelinghuysen and Hoes Lane West will add flexibility.

PARKING

Parking at Busch serves the resident, commuter, faculty, and staff population, as well as the broader Rutgers community. The master plan takes into consideration the demand generated by current and future activities at Busch, and provides a strategy for improving parking for all users. Parking is shifted to the periphery of the established campus core, outside the loop road lots and garage are connected to the center of Busch enhanced walkways.

In order to maintain sufficient parking as the core of Busch is redeveloped, a combination of garages and surface lots are proposed: the North Garage at the Busch Student Center; the South Garage at the Werblin Recreation Center; and West Garage at the Library of Science & Medicine. The timeline for implementing the garages is flexible, although the North Garage is a priority. Surface parking has been sited in close proximity to transit hubs and amenities.

North Garage – located north of the campus center, this garage is intended to serve the demands associated with student center and to provide parking for commuters. Currently, commuters are required to

park in the West Lot, which is located adjacent to the stadium far from major bus routes. The proposed North Garage will provide commuters convenient express bus connections to Livingston, College Avenue and Cook/Douglass. The garage will also support convenient visitor parking.

South Garage – located immediately west of the Werblin Recreation Center, this garage replaces large surface parking lots displaced by the redevelopment of the Engineering Quad. The garage takes advantage of the topography, which rises northward from Frelinghuysen Road into the campus core. Garage entrances are located at the north and south ends of the building, providing at-grade pedestrian access into both the campus core and the Werblin Center. This facility will serve day-to-day parking needs, as well as the need associated with events at the Werblin Center and on game days.

West Garage – this garage, located immediately east of the Library of Science and Medicine, is imagined as a long-term opportunity as new development creates demand for replacement of existing parking or increased level at RBHS.

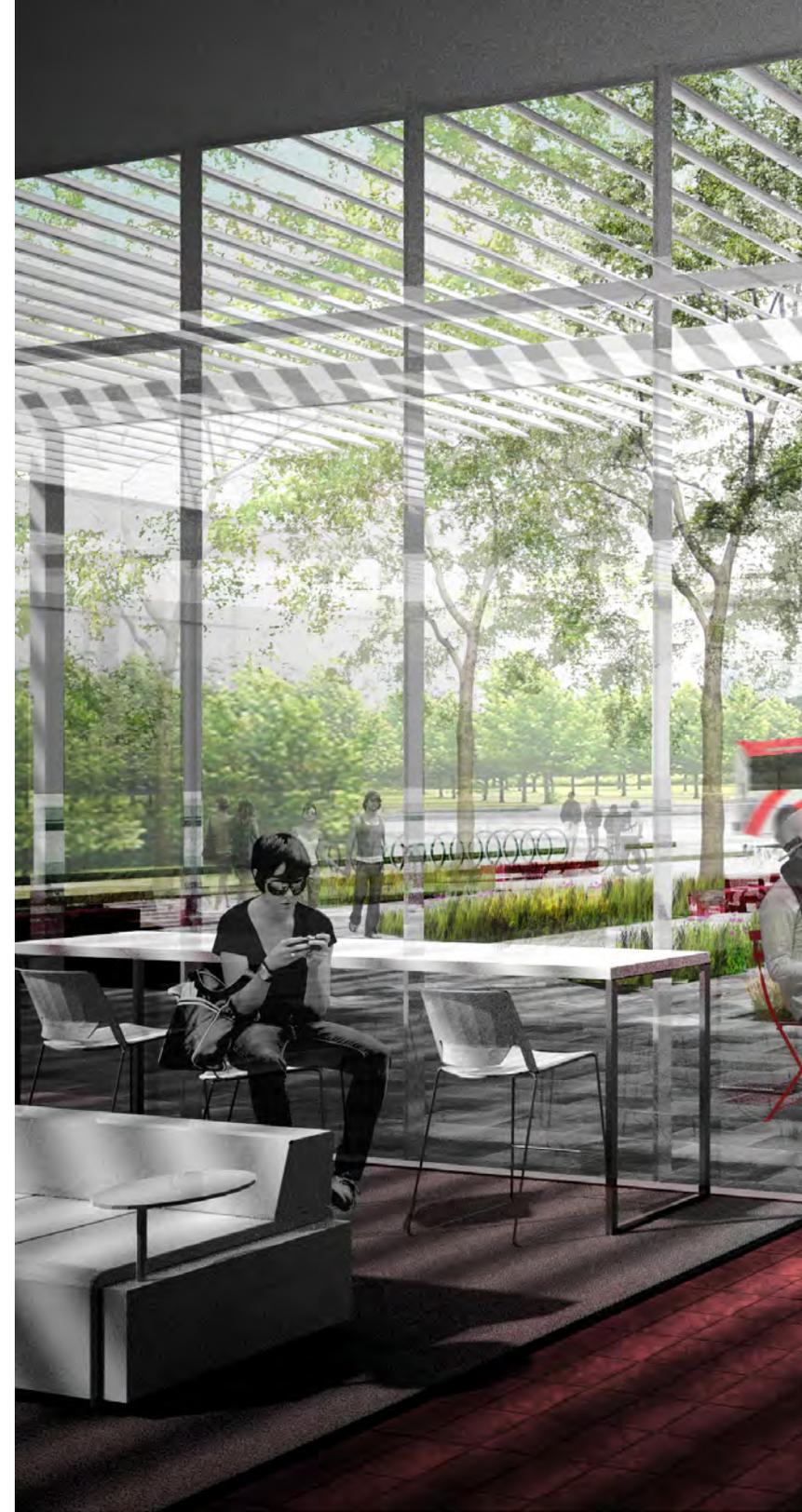
Stormwater Management – surface parking and garages contribute to the campus' impermeable surface area and capacity to handle stormwater. Consistent with the 2010 Biohabitats plan, bioswales and constructed wetlands have been integrated into the landscapes adjacent to large surface lots and the North Garage, to help mitigate the impacts of stormwater runoff.

ALLISON ROAD TRANSIT HUB

Rutgers 2030 proposes to transform Allison Road Classroom Building into a transit hub for Busch. The existing bus stop is replaced by enclosed pavilions on either side of Allison Road, with sheltered waiting areas supplemented by a cafe. The pavilions are glassy and transparent so students can see approaching buses, and they are also equipped with real time schedule displays. The plaza between the pavilions includes crosswalks. There is additional shaded seating outside for use in good weather. Buses stop at grade, in order to minimize loading and, consequently, travel times.



Existing view of Allison Road Classroom Building and bus stop





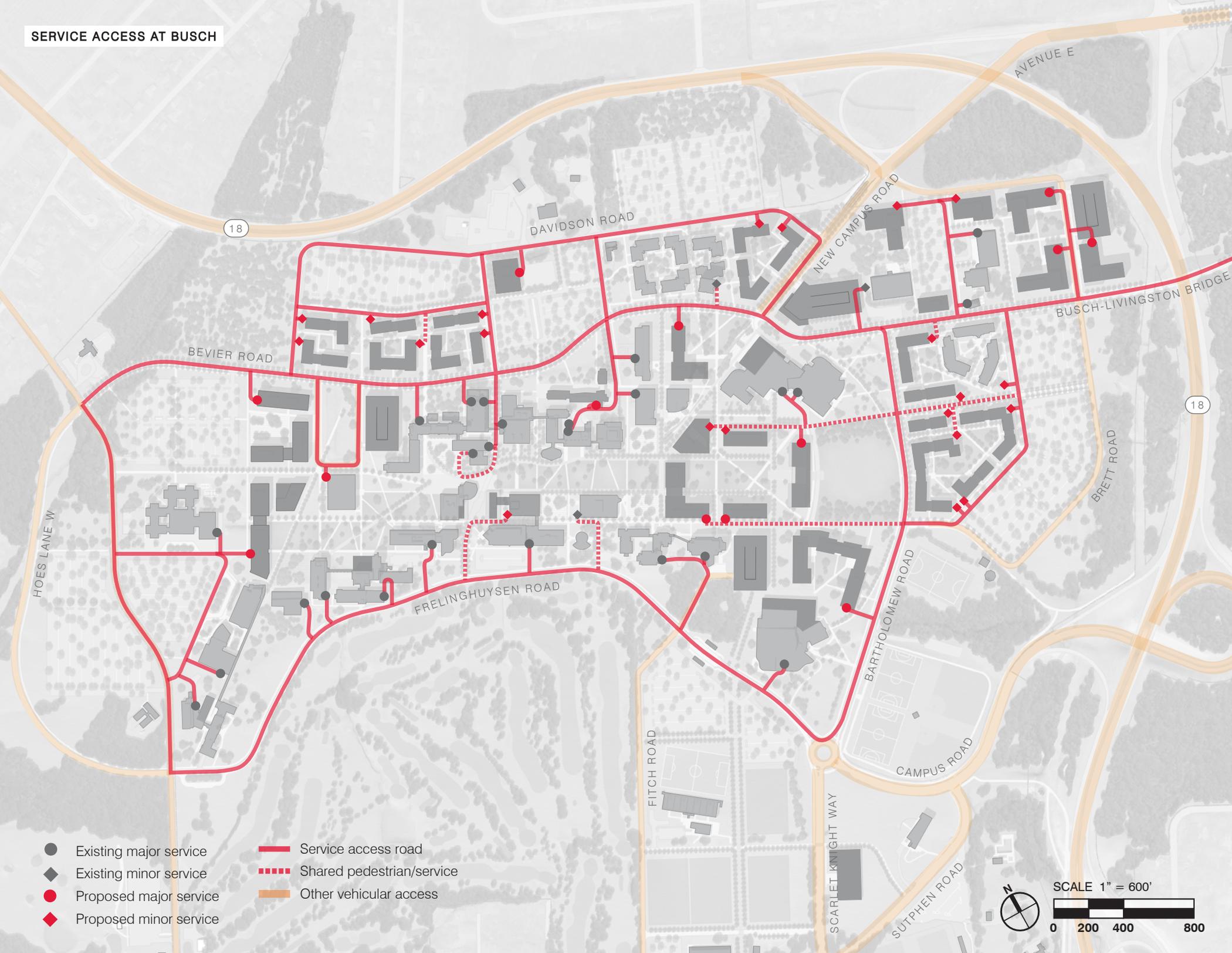
RUTGERS

ALTON RIVER

DECEMBER

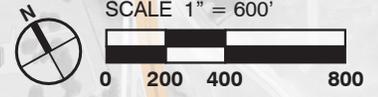
2018

SERVICE ACCESS AT BUSCH



- Existing major service
- ◆ Existing minor service
- Proposed major service
- ◆ Proposed minor service

- Service access road
- ⋯ Shared pedestrian/service
- Other vehicular access



SERVICE ACCESS

Service access to buildings on Busch is vital to the academic mission, supporting research and teaching activities, in addition to regular building operations. Major service access is needed at Busch for delivery of gases, research equipment, office supplies, and other materials specific to the departments located on Busch. Food service operations also require significant access and space for service. Minor service access includes activities like trash and recycling pickup.

Wherever possible, service drivers and hoarding docks are separated from pedestrians. Service in existing buildings is maintained, with the exception of the Fiber Optic Materials Research Building, whose service access will need to be relocated to make way for new access into the core. Proposed buildings are sited to respond to service needs. Service docks have been located to minimize their frontage on major roads.

Major existing service and pedestrian conflicts are resolved in the master plan, including the service yard on the south side of the Busch Student Center and Dining Hall.



Existing service yard and parking lot at Busch Dining Hall and Busch Campus Center



HOEL LANE EAST

HOEL LANE WEST

AVENUE E

DAVIDSON ROAD

BEVIER ROAD

ALLISON ROAD

FREILINGHUSEN ROAD

FITCH ROAD

BARTHOLOMEW ROAD

SCARLET KNIGHT WAY

CAMPUS ROAD

SUTPHEN ROAD



SCALE 1" = 600'



BUSCH DISTRICT TODAY

- Existing Building
- Projects Under Construction or in Design
- # Buildings
- # Major Parking Lots
- # Athletics, Recreation + Open Space

BUILDINGS

1. Nichols Apartments
2. Children's Transitional Residence
3. KinderCare
4. UBHC - North Building
5. RWJMS Research Annex
6. RWJMS Staged Research Building
7. Richardson Apartments
8. SHRP - Physician Assistant Building
9. University Behavioral Health Care (UBHC)
10. Research Tower
11. Center for Advanced Biotechnology & Medicine
12. RWJMS Research Building/Sch. of Public Health
13. Waksman Greenhouse
14. Braun Laboratory
15. Waksman Institute of Microbiology
16. Center for Integrative Proteomics
17. Kessler Teaching Laboratories
18. Environ. and Occupational Health Sci. Institute
19. Cullman Laboratory for Cancer Research
20. Ernest Mario School of Pharmacy
21. Library of Science & Medicine
22. Silvers Apartments
23. Russell Apartments
24. Nelson Biology Laboratories
25. Allison Road Classroom Building
26. Psychology Building
27. Physics & Astronomy Building / Serin Physics Building
28. Nanophysics Laboratory
29. Life Sciences Building / Smithers Hall
30. Wright-Rieman Laboratories
31. Doolittle Building / Geological Sci. Lab Building
32. Center for Packaging Engineering
33. Central Heating Plant
34. Facilities Maintenance & Operations
35. Power grid / Environmental Services
36. Fire and Emergency Services
37. Facilities Maintenance & Operations
38. Davidson Hall
39. CMTJW Residence Halls
40. McCormick Residence Hall
41. Rutgers Federal Credit Union
42. Biomedical Engineering Building
43. Paul Robeson Cultural Center
44. McLaren Center for Ceramic Research
45. Fiber Optic Materials Research Building
46. Science & Engineering Resource Center (SERC)
47. Physics Lecture Hall
48. Hill Center Building
49. Computing Research & Education Building



HOES LANE EAST

HOES LANE WEST

DAVIDSON ROAD

AVENUE E

BEVIER ROAD

P3

P4

P2

ALLISON ROAD

2

P7

P5

2

3

P1

FREINCHUUSEN ROAD

6

BARTHOLOMEW ROAD

FITCH ROAD

5

CAMPUS ROAD

SUTPHEN ROAD

SCARLET KNIGHT WAY

P6



SCALE 1" = 600'



- 50. Electrical Engineering Building
- 51. School of Engineering complex
- 52. Center for Advanced Infrastructure & Transportation
- 53. Civil Engineering Laboratory
- 54. Busch Campus Center
- 55. Busch Dining Hall
- 56. CBIM Modular Building
- 57. Civil & Environmental Engineering Modular Building
- 58. Center for Advanced Energy Systems Modular Building
- 59. RUTCOR Modular Building
- 60. Werblin Recreation Center
- 61. Rutgers Welcome Center
- 62. Silvers Apartments
- 63. Marvin Apartments
- 64. Buell Apartments
- 65. Busch Tennis Center

- 66. BAMB Residence Halls
- 67. Busch Science, Engineering & Technology Residence Hall (BEST Hall)
- 68. Administrative Services Building Annex II
- 69. Administrative Services Building Annex I
- 70. Administrative Services Building
- 71. Libraries Annex

MAJOR PARKING LOTS

- 1. RWJMS Parking Lots
- 2. Lots 55, 58, 58A, 58B
- 3. Lot 54
- 4. Lot 51
- 5. Lots 59, 60A, 60B, 64
- 6. West Lot (commuter)
- 7. Lots 67, 67B

ATHLETICS, RECREATION + OPEN SPACE

- 1. Waksman Institute Lawn
- 2. Busch Mall
- 3. Scarlet Knights Sports Club Field
- 4. University Park & Recreation Complex
- 5. Yurcak Field
- 6. Rutgers Golf Course



ROUTE 18

TO LIVINGSTON

DAVIDSON ROAD

BUSCH-LIVINGSTON BRIDGE

HOBBS LANE WEST

BEVIER ROAD

MILLISON ROAD

NEW CAMPUS ROAD

SPRETT ROAD

FREILINGHUSEN ROAD

BARTHOLOMEW ROAD

FITCH ROAD

CAMPUS ROAD

SCARLET KNIGHT WAY

SUPPHREN ROAD



SCALE 1" = 600'



BUSCH 2030

- Existing Building
- Projects Under Construction or in Design
- Proposed Buildings

- A** Projects Under Construction or in Design
- #** New Construction + Renovation
- #** Infrastructure + Parking
- #** Landscape + Stormwater

Projects Under Construction or in Design/Planning

- A** Chemistry + Chemical Biology Building
- B** School of Engineering Phase 1
- C** School of Pharmacy Addition
- D** Power Plant Replacement

New Construction + Renovation

- 1** Allison Road Hub + Pavilion
- 2** Library of Science + Medicine renovation
- 3** Undergraduate Housing
- 4** Werblin Center addition
- 5** School of Engineering Phases 2-4
- 6** High-tech classroom building
- 7** Physics Lecture Hall renovation
- 8** University Behavioral Healthcare Center (UBHC)

- 9** Ambulatory Care Center and Parking Garage
- 10** New teaching laboratories and classrooms
- 11** New research complex and RBHS expansion
- 12** RBHS Commons / Graduate Fitness Center
- 13** Braun Laboratory Addition
- 14** Administrative Complex
- 15** Research District
- 16** Graduate Housing

Infrastructure + Parking

- 1** North Garage
- 2** South Garage
- 3** West Garage
- 4** Bevier Road (loop road)
- 5** New road from Livingston
- 6** Busch-Livingston Bridge
- 7** Fitch Road realignment
- 8** Bevier Rd/Hoes Lane W connection
- 9** Frelinghuysen north sidewalk
- 10** New bus stop
- 11** Bus turnaround
- 12** Realigned gateway road
- P** Parking Lot (new or restriped)

Landscape + Stormwater

- 1** Busch Mall
- 2** Busch Campus Center
- 3** School of Engineering Quad
- 4** East Lawn
- 5** RBHS Quad
- 6** Stormwater detention
- 7** Athletics pedestrian axis
- 8** Athletics Practice Field
- 9** Reforestation

4.4

LIVINGSTON

4.4.1 VISION AND PRINCIPLES

4.4.2 LAND USE

4.4.3 OPEN SPACE

4.4.4 MOBILITY

4.4.1 Livingston District Vision and Principles

Livingston was the site of Camp Kilmer, a logistics facility built during World War II. Rutgers acquired the land in the 1960s, and by the end of that decade, had completed the initial phases of development for Livingston College including Lucy Stone Hall, the Quads, and the Lynton Towers. In the past decade, significant investment in the student center, housing and retail amenities has transformed Livingston into an emerging model for the other Rutgers University – New Brunswick districts. Today, Livingston features the types of housing and retail sought after by students and exemplifies the level of density and activity imagined for the transit hubs throughout the Rutgers University – New Brunswick campus.

In addition to student life facilities, Livingston is also home to major a new academic building: the Rutgers Business School, located at the roundabout at Avenue E and Rockefeller Road. Bridging over Rockefeller Road, the building frames the major gateway into Livingston.

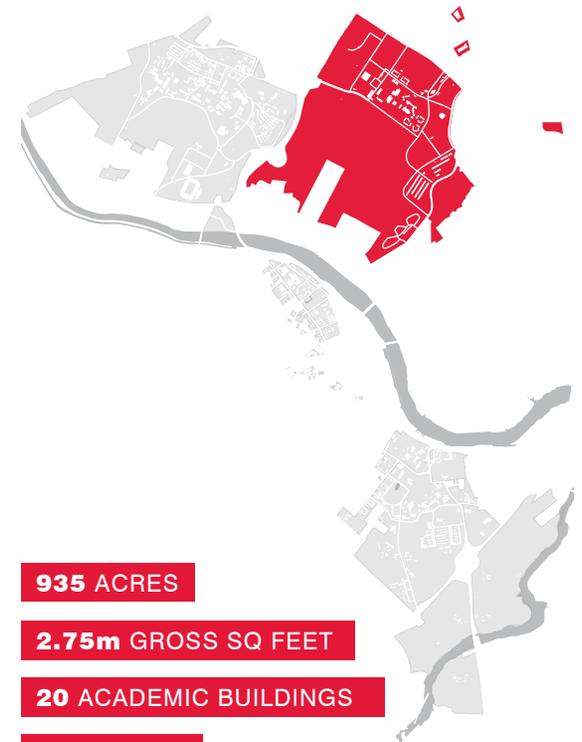
The emerging identity of Livingston is more urban in character, featuring a higher density of housing with ground floor retail, restaurants, cafes and social

spaces surrounding a dynamic student center. The district is enhanced by quality investment in the landscape and pedestrian environments. It is also notable for its sustainable planning and design elements, including a 8.5-megawatt solar farm, bioswales and other elements taken from the 2010 Stormwater & Landscape Master Plan.

Livingston is also defined by the 316-acre Eco Preserve, located to the south of the established district. The Eco Preserve is integrated into the overall landscape and open space structure of Livingston as an recreational amenity, featuring walking, jogging, bicycling and cross country trails. The Eco Preserve is also used as a teaching resource. Proposed improvements to this natural resource include new gateways along its north boundary, and linkages to Johnson Park to the south.

LIVINGSTON: THE VISION

Rutgers 2030 builds upon the emerging planning direction and identity of Livingston. The the positive qualities of recent plan extends investments, and provides increased connections to the Eco Preserve.



935 ACRES

2.75m GROSS SQ FEET

20 ACADEMIC BUILDINGS

3,815 BEDS

3,483 CLASSROOM SEATS

83,320 WKLY STUDENT CONTACT HOURS

It also seeks to enhance the planned pattern of development through additional infill and density, and illustrates two new development areas in response to the University's evolving needs. These include a hotel and conference building, located on Avenue E west of the Rutgers Business School, and a future research district north of the Eco Preserve on Avenue E. The research district is planned to accommodate Rutgers' research and partnership initiatives. The athletics zone on the west side of Livingston is also transformed, taking into account the optimal orientation for the fields and the fan experience.

The long-term vision for Livingston is to connect the district physically and programmatically to Busch.

The master plan is guided by the following district specific principles and goals:

- **Enhance the landscape and open space to unify the campus**, improve aesthetics and enhance pedestrian connectivity as well as overall mobility
- **Integrate the Eco Preserve** into the district
- **Reinforce the Livingston Student Center** as the location for gathering and amenities
- **Integrate the hotel and conference center** into the existing and potential activity patterns of Rutgers University – New Brunswick
- **Reserve land** for future research partnerships

The proposed Vision for Livingston is organized by the overall master plan principles:

LEARNING AT LIVINGSTON

Recent investments in Rutgers Business School and the renovation of Tillett Hall has enhanced and improved the learning environment at Livingston. The Livingston Classroom Building, in reality a temporary trailer, is slated for demolition in the coming years; this space will need to be replaced elsewhere on campus. Looking ahead, it may be beneficial to transform the Kilmer Library into a learning commons and state-of-the-art technology facility linked into the broader network of libraries across Rutgers.

LIFE AT LIVINGSTON

The overall quality of the Livingston experience has been greatly enhanced by recent investment in housing, the student center and other retail/food service projects. The effectiveness of these investments is apparent in the shift in activity towards Livingston, including not only its resident population, but also the broader Rutgers community. Looking ahead, additional investment is proposed to further contribute to the campus experience:

Student Center – the Livingston Student Center is the model for future renovations at Rutgers. Minor enhancements are proposed to make this facility function more smoothly with the expansion of the new transit hub. To that end, the bus drop off area is reconfigured to align with a proposed addition to the student center, which would feature indoor and outdoor waiting areas, as well as a covered outdoor concourse. The existing building entrance and C-store space will be combined into a more spacious entry to the student center, with the C-store relocating to an addition on the east corner of the building. Both C-store and building entrance will be visually and physically open to the

bus lay-by. These changes also create a conditioned waiting area for Rutgers Bus passengers.

Livingston Recreation Center – an addition is proposed to the Livingston Recreation Center, to provide additional program space and to create a better entrance to the building. The existing building is sited in a topographic bowl, making it difficult to see from Road 3, its primary access route; the addition will create a more prominent entry that welcomes users into the building, and is visible from afar. The addition includes an indoor track, tennis courts inside the track, and additional administrative space. A new outdoor recreation equipment distribution center is located in an existing storage building south of the recreation fields. The master plan adds restrooms to serve both the distribution center and play fields to the north.

NAVIGATING LIVINGSTON

Circulation at Livingston has benefited from the recent improvements. The Master Plan expands upon these improvements by extending pathways outward from the core to enhance connections to the Recreation Center, the Eco Preserve, the athletics complex, and

to new development zones proposed for the hotel/conference center and research district.

Bike lanes are proposed along existing campus streets. In the case of Avenue E, a dedicated bike trail is proposed along the south side of the street adjacent to the Eco-Preserve. This trail would continue along the proposed new road and proposed Busch-Livingston Bridge. Recreational bike trails are augmented in the Eco-Preserve.

PERSONALIZING LIVINGSTON

Recent investment at Livingston has transformed it into a hub of activity where students can reliably find what they need at the student center and dining commons. The master plan builds on this success in the campus core, proposing investment in the library, a new classroom building east of the library that could feature new technology.



METLARS LANE

SUTTONS LANE

HOSPITAL ROAD

ROCKAFELLAR ROAD

ROAD 4

ROAD 3

CLIF PRESCOD LN

KILMER AVE

ROAD 2

KILMER RD

ROAD 1

POSTAL PLAZA

AVENUE E

AVENUE E

ROAD 1

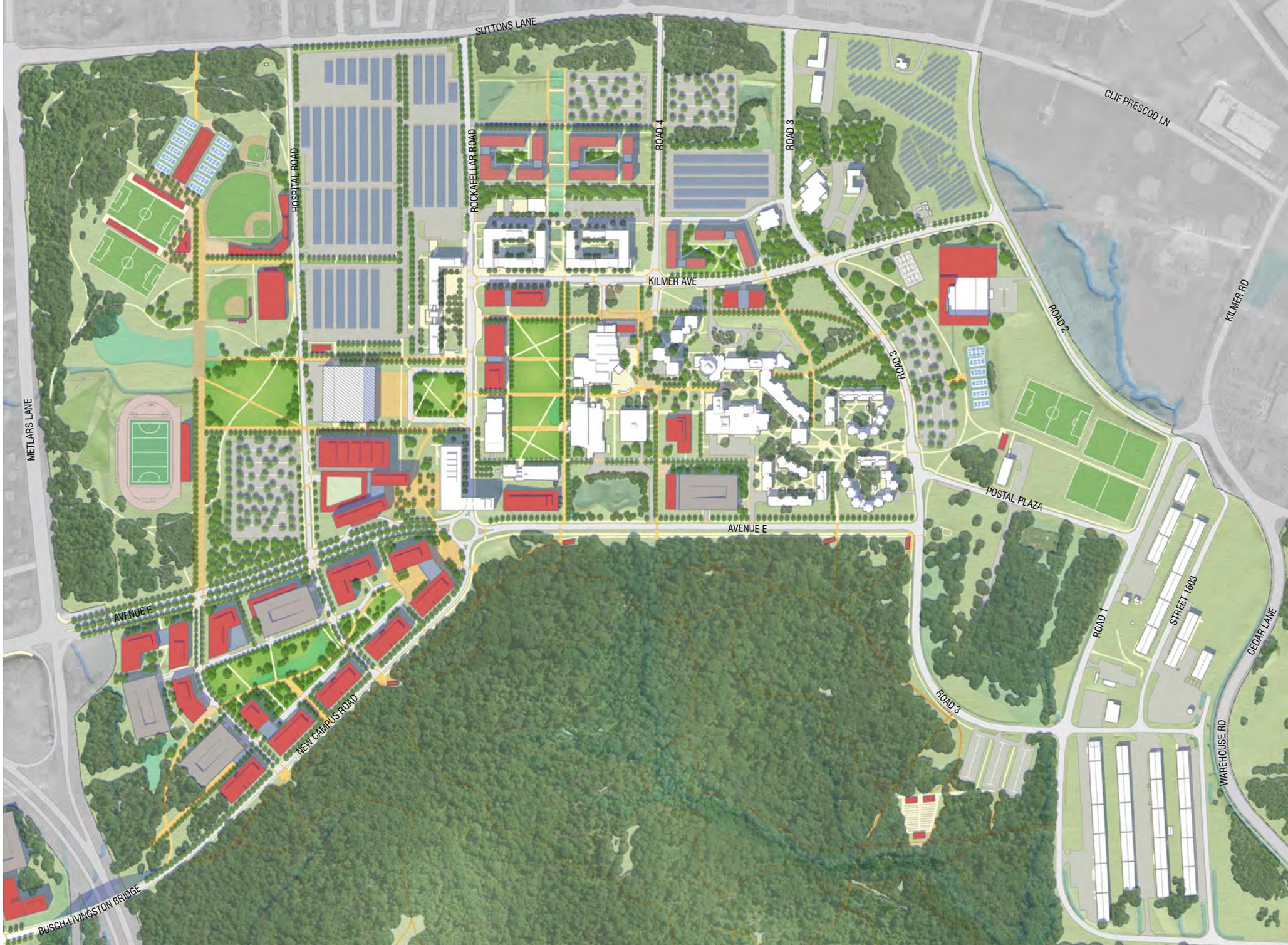
STREET 1003

CEDAR LANE

ROAD 3

WAREHOUSE RD

LIVINGSTON TODAY



LIVINGSTON 2030



METLARS LANE

SUTTONS LANE

HOSPITAL ROAD

ROCKAFELLAR ROAD

ROAD 4

ROAD 3

CLIF PRESCOD LN

KILMER AVE

ROAD 2

KILMER RD

POSTAL PLAZA

AVENUE F

AVENUE E

ROAD 1

STREET 1003

CEDAR LANE

ROAD 3

WAREHOUSE RD

BUSCH-LIVINGSTON BRIDGE



4.4.2 LAND USE FRAMEWORK

Rutgers 2030 reinforces the existing compact land use pattern established within the core of Livingston. Future academic, housing and student life facilities are sited in close proximity of existing development in the campus core and along Kilmer Avenue, and is intended to both strengthen the core as well as complete the frontage on major campus roads. New development proposed on Livingston is limited in Rutgers 2030.

The potential for additional infill development is indicated around the quad west of the student center, and in the development zones identified for the hotel/conference center and the research district. In addition to these zones, two other areas are identified for future development. The master plan proposes the reorganization of the athletics zone to more optimally arrange existing and future fields, and provide for a better fan experience. Rutgers 2030 incorporates elements of the Ten Arcquitectos plan for the area between the Rutgers Business School building and the student center/dining complex, integrating it into the larger campuswide and New Brunswick-wide framework. The zones are as follows:

HOTEL/CONFERENCE CENTER – A Rutgers hotel and conference center is proposed directly west of the Rutgers Business School (RBS) building on Avenue E. The facility is planned to serve the needs of the entire Rutgers community, including athletic events, RBHS executive education, academic conferences, and other events. Its location near the Route 18 exit, in proximity to RBS and the proposed Research District, is intended to further support the success of the facility. The hotel also includes a new plaza to the east, bounded by the RBS building; this plaza will allow for outdoor events. Enhanced walkways are proposed to the student center and the restaurants and retail located on Rockefeller Road. The complex includes a garage that connects to the hotel.

RESEARCH DISTRICT – A new research park is proposed at the Avenue E entrance to the Livingston campus. The district is located on a triangular parcel of land defined by Avenue E on the north and on the south by a new road linking the Avenue E/Rockefeller Road roundabout to the proposed Busch-Livingston Bridge. The district is envisioned as the location for private sector businesses and other organizations who may want to locate in close proximity to the

academic and research activities of the University. It is provided in direct response to the objectives set out in the Strategic Plan to¹:

- *Reach out and cooperate with the business communities that will employ students and translate Rutgers research into practice (p 36);*
- *Enhance corporate partnerships and relationships through a variety of avenues that include: creating a single, business friendly portal of entry to Rutgers;*
- *Engage with the State and higher education partners to develop a shared location for business and technology innovation; and,*
- *Consider innovative ways in which public-private partnerships can build and support the interface between the University and economic entities.*

The district is planned around a central open space. It will define the entry to Livingston along Avenue E, and will offer views over the Eco Preserve to the south. In keeping with recent development at Livingston, the central open space incorporates bioswales and native plantings. The district also has direct pedestrian

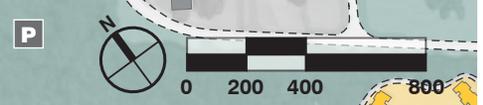
1. A Strategic Plan for the New Rutgers, February 2014: p 36.

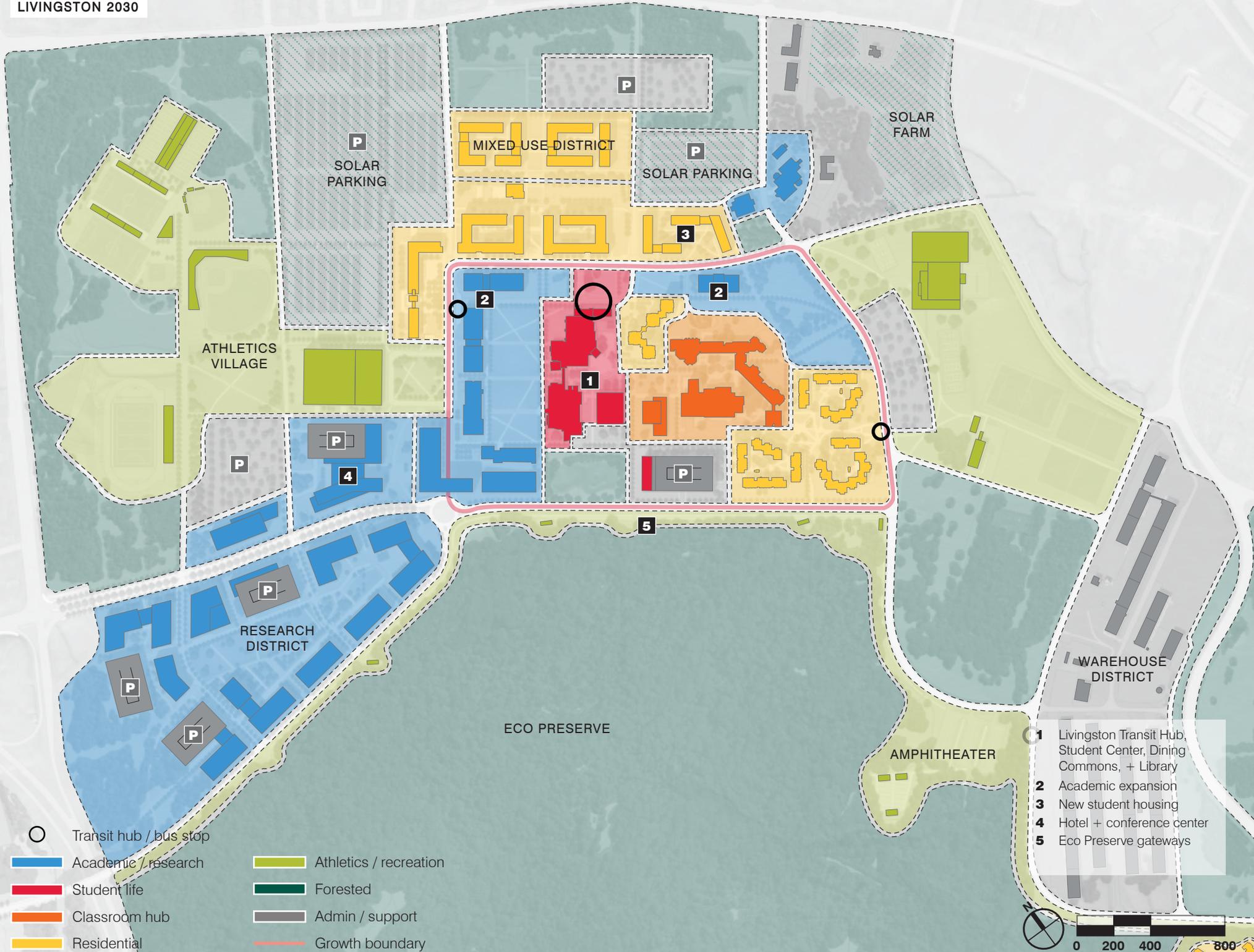
LIVINGSTON TODAY



- Transit hub / bus stop
- Academic / research
- Student life
- Classroom hub
- Residential
- Athletics / recreation
- Forested
- Admin / support
- Campus core

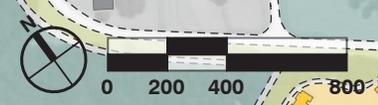
- 1** Livingston Student Center, Dining Commons, and Kilmer Library
- 2** Lucy Stone Hall, Tillett Hall
- 3** Livingston Apartments
- 4** Lynton Towers
- 5** Quads I-III
- 6** Busch-Livingston Health Ctr





- Transit hub / bus stop
- Academic / research
- Student life
- Classroom hub
- Residential
- Athletics / recreation
- Forested
- Admin / support
- Growth boundary

- 1 Livingston Transit Hub, Student Center, Dining Commons, + Library
- 2 Academic expansion
- 3 New student housing
- 4 Hotel + conference center
- 5 Eco Preserve gateways

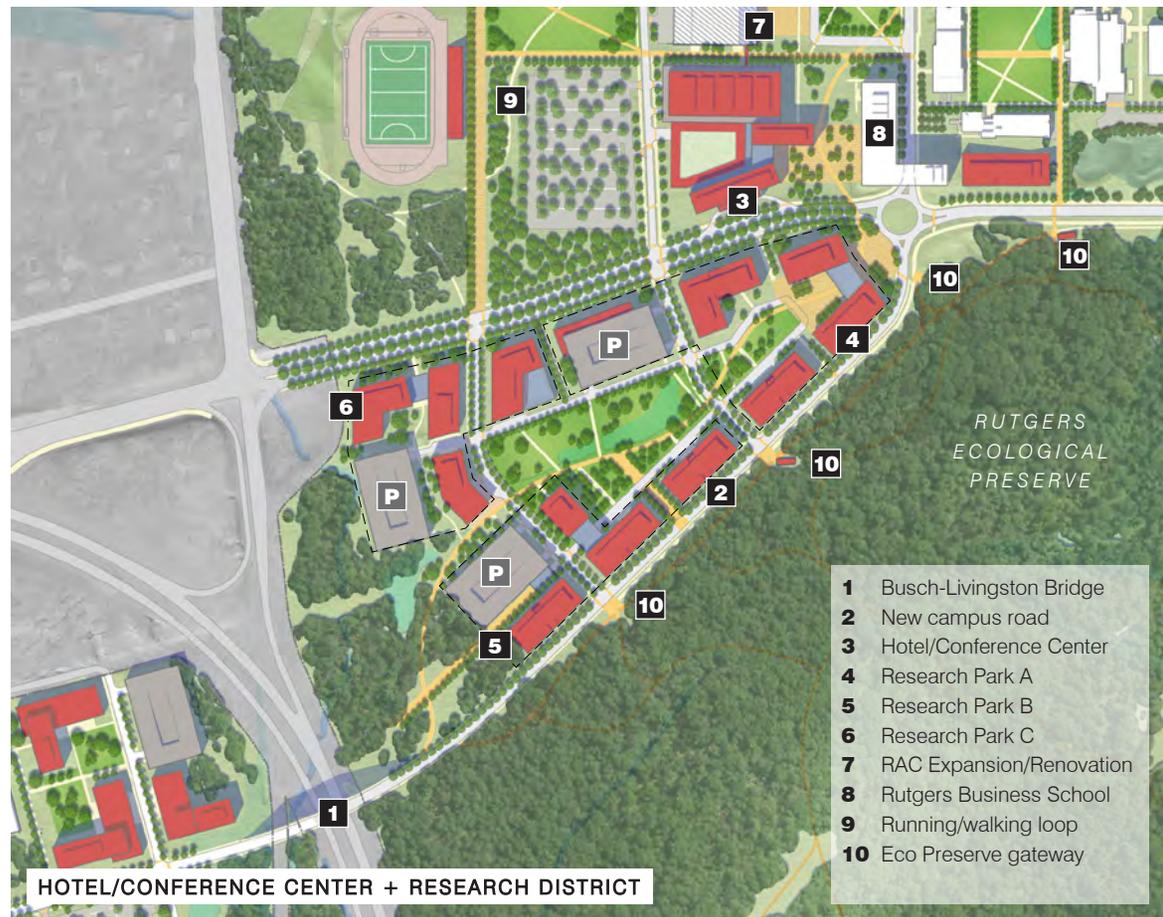


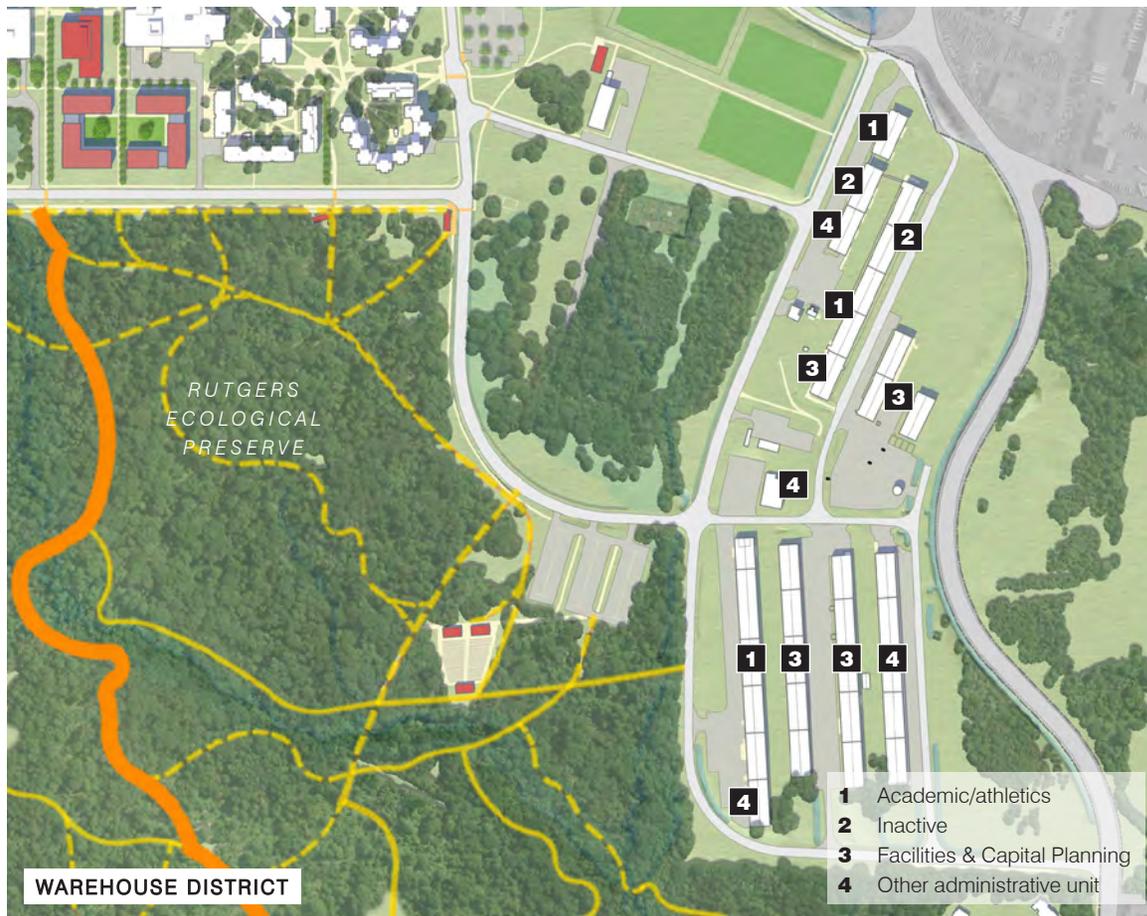
access to the 1.1-mile walking/running loop that circumscribes the athletics complex.

On Livingston, the research park will accommodate in the range of 1.2 million gsf and 3,000 parking spaces. An additional phase of development on the Busch campus adds 400,000 gsf to the research park, anchoring the district between the two campuses on either side of the Busch-Livingston Bridge.

The research district is planned for incremental and flexible implementation over several decades, during which surface parking would be built until the development can support each garage. The development area includes an underground steam line between Busch and Livingston, and buildings in its vicinity have been sited to avoid conflicts with it.

ATHLETICS COMPLEX – the existing athletics complex west of the RAC is reimagined over time, as facilities need to be replaced or improved. The proposed plan is intended to provide optimal orientation for the fields, and create a cohesive complex of athletics venues, with pedestrian improvements and new landscape amenities intended to enhance the





visitor experience. A detailed list of proposed projects is described in Chapter 4.6.

MIXED USE VILLAGE – the area north of the Livingston Apartments is reserved in the master plan for the potential development of a mixed use village featuring market rate housing and other amenities. This proposal was included in the 2003 Physical Master Plan, and is reintroduced in Rutgers 2030 as a strategy to enhance the vibrancy of the Livingston district and as a way to establish a stronger retail presence. Retail in the “village” would supplement the retail at the Livingston Apartments. The sites identified in Rutgers 2030 will support approximately 350-400 living units, assuming development similar to the Livingston Apartments. Surface parking for residents is provided north of the buildings.

WAREHOUSE DISTRICT – the former Camp Kilmer facilities are maintained in the Master Plan for use by University Administration. A handful of warehouses are used for storage by dining services, housing, and academic departments. These spaces may be available as swing space for offices, shops, or storage.

BUSCH-LIVINGSTON RESEARCH DISTRICT

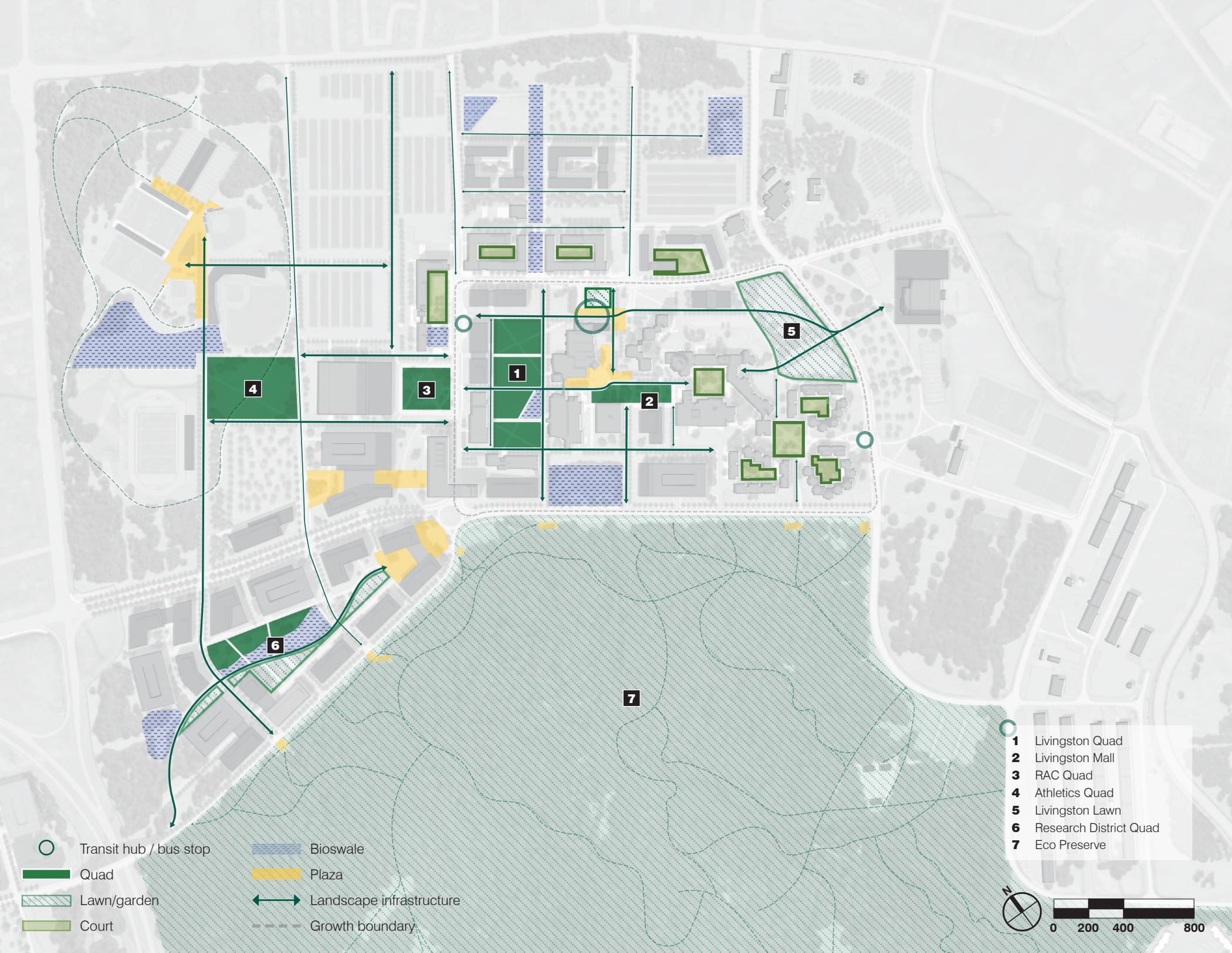
A new research district is proposed at the Avenue E entrance to Livingston. The district is proposed on a triangular parcel of land defined by Avenue E on the north and on the south by a new road linking the Avenue E/Rockefeller Road roundabout to the proposed Busch-Livingston Bridge. The research district also extends across the bridge into Busch, with additional development anchoring the west end of the bridge. The district is envisioned as the location for private sector businesses and other organizations who may want to locate in close proximity to the academic and research activities of the University, while the bridge provides access to both research district users and the Rutgers community.



Existing view of research district parcel looking southwest from the new Business Building







- 1** Livingston Quad
- 2** Livingston Mall
- 3** RAC Quad
- 4** Athletics Quad
- 5** Livingston Lawn
- 6** Research District Quad
- 7** Eco Preserve

4.4.3 OPEN SPACE AND NATURAL SYSTEMS FRAMEWORK

The open space and natural systems framework for Livingston acknowledges and maintains the underlying factors of the land: topography, streams and wetlands. The existing pattern of vegetation and wooded areas informs the proposed framework; wherever possible, these assets are preserved and enhanced as part of the broader stormwater and landscape strategy for the campus. The Eco Preserve is embraced as an important ecological environment, teaching resource, and recreational area for the broader Rutgers community.

CONNECTIVITY THROUGH LANDSCAPE

Landscape is used as a strategy to reinforce pedestrian connections all of the New Brunswick districts, especially at Livingston. While Livingston core is compact, it lacks sufficient connections to its peripheries. The result is that destinations like Bainton Field, the Recreation Center, and even the RAC appear to be far away, when in reality they are no more than a ten minute walk from the campus core. The Rutgers 2030 plan proposes a pedestrian framework that is bounded by sequences of buildings and open spaces that shortens the psychological distance to

Livingston's athletic and recreational destinations. The framework provides a sense of scale on the campus that is oriented towards pedestrians, rather than vehicles.

The pedestrian framework also establishes better connections to the Eco Preserve. Currently, entrances to the Eco Preserve are uninviting and difficult to discern along the forest edge. The master plan proposes to create a permeable edge that invites visitors into the trail network within, while maintaining the character and intent of the preserve. The existing network is augmented by additional trails that traverse the entirety of the Eco Preserve, with two clearings at high points that can be used as gathering spaces. An amphitheater on the eastern side of the Eco Preserve, adjacent to Buell Brook, creates an additional event space, for use by the University and local community. The master plan also includes a potential bridge connection across River Road into Johnson Park, and to the bridge across the Raritan to College Avenue.

LANDSCAPE INFRASTRUCTURE

The master plan expands Livingston's initiatives with

stormwater management. Potential runoff from new development is offset by extension of the bioswale system adjacent to the Livingston Apartments. Trees are added strategically to the larger open spaces. Improving the ability to handle stormwater.

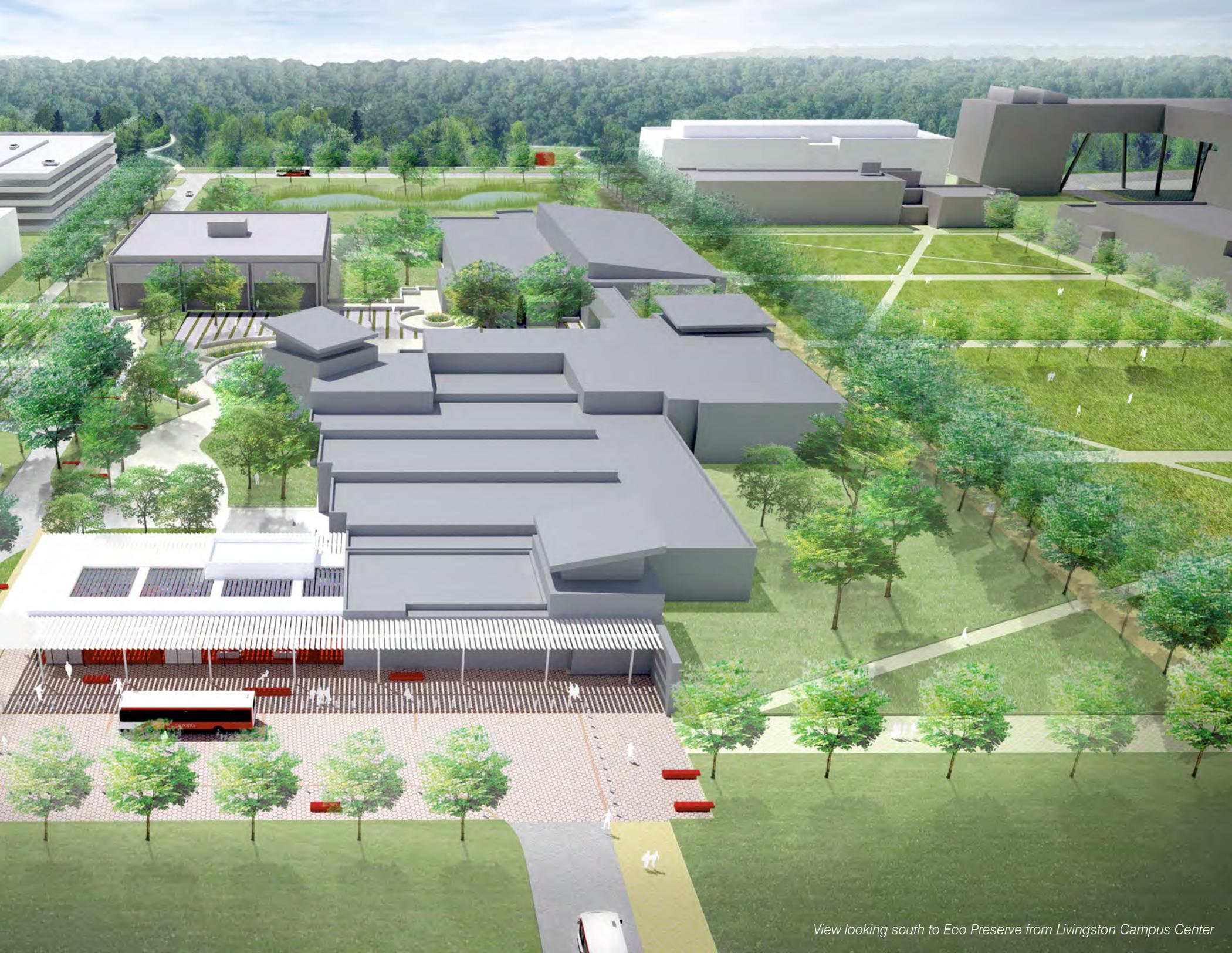
CONNECTION TO THE ECOLOGICAL PRESERVE

The Rutgers Ecological Preserve (Eco Preserve) is currently underutilized. The master plan proposes to make the Eco Preserve legible and accessible from Livingston, through a series of gateways, including signage, open-air pavilions, plazas, and shaded seating. A new trail system is also proposed, linked to two new clearings and an amphitheater for programming and events.



Existing view of an entrance to the Ecological Preserve





View looking south to Eco Preserve from Livingston Campus Center



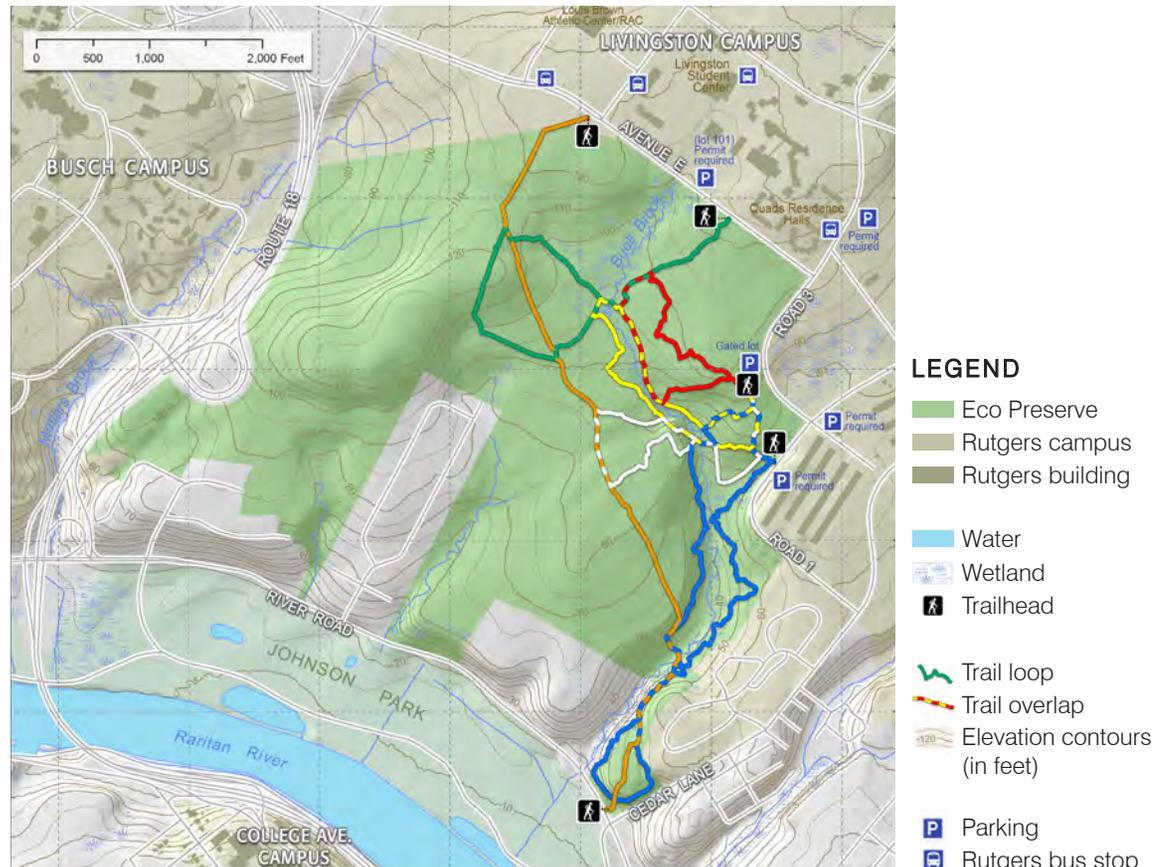
Buell Brook in the Ecological Preserve

Rutgers Ecological Preserve

Formerly owned by the members of the Johnson and Johnson family, the Rutgers Ecological Preserve was created in 1976 by the Rutgers Board of Governors, and encompasses 316 acres of upland forest, woodlands, wetlands, and meadows. The Board of Governors intended to preserve the land's natural ecology, and use it as an outdoor teaching resource.

TOPOGRAPHY + HYDROLOGY

The Eco Preserve's topography is closely linked to its hydrology. The eastern side is relatively flat, with the exception of the increasing slope of the Buell Brook stream corridor. The western half rises to a higher elevation, with a high point at a 125' elevation above the river. Smaller valleys are located along two unnamed streams that run within the preserve, adjacent to the Ross Hall development. The southern edge of the Eco Preserve is defined by the Raritan River's floodplain, with steep slopes abating only at the preserve's southeastern corner. Water from the Eco Preserve's streams flows into the Raritan River; the streams have been impacted by increased infiltration due to Route 18 and development at Livingston.



Existing trail network and topography in the Eco Preserve



ATHLETICS
COMPLEX

LIVINGSTON
CAMPUS CORE

RECREATION
CENTER +
FIELDS

OUTDOOR
RECREATION

RESEARCH
DISTRICT

KILMER
WOODS

P

4

2

1

3

3

BUEL BROOK

TREETOPS

FOREST
GLEN

BUSCH
CAMPUS

ROSS
HALL

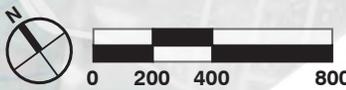
PARKER AT
STONEGATE

HILLCREST

JOHNSON PARK

CONNECTION TO
COLLEGE AVENUE

-  Eco Preserve gateway
- 1** Existing trail network
- 2** Proposed trail network
- 3** Clearing/gathering space
- 4** Amphitheater



EXISTING HABITAT

Originally used for agriculture in the 1700s and the early 1800s, the Eco Preserve has since been reforested. The Kilmer Woods, bounded by Buell Brook to the south and Avenue E to the north, is the preserve's largest concentration of old-growth trees; it was reforested in the mid 1800s with oak, beech, maple, and hickory trees. Traces of the Eco Preserve's prior agricultural use are still present, in the pin oak, maple, and cherry trees that formed hedgerows between fields.

The Kilmer Woods attract multiple species of warblers and other birds. A primary concern with the Eco Preserve is the encroachment of invasive species; in particular, the preserve has been degraded by the large population of deer. The University has established a Deer Management Plan in 2012.

RECREATIONAL USE

The master plan seeks to improve access to the Eco Preserve, both for recreation and research. The visibility of the preserve will be increased through a creation of new entrances and gateways.

The gateways will create a permeable edge to the preserve and improve wayfinding to and within the preserve.

A major gateway at the corner of Avenue E and Road 3 connects the Eco Preserve to the Recreation Center, and is also in proximity to the new Outdoor Recreation equipment facility. Two gateways are included at the southern edge of the Preserve.

Inside the Eco Preserve, the existing trail network will be augmented by a new trails. On the eastern side of the preserve, two trails generally follow the path of Buell Brook. Two clearings, at the preserve's two high points, will provide views, as well as programmable space. An amphitheater is proposed at the eastern edge of the Eco Preserve. The amphitheater is envisioned being fully integrated into the landscape, similar to the amphitheater at Swarthmore College.

EDUCATION + RESEARCH

Establishing the Eco Preserve as a center for research will integrate it into the University's core missions. The Eco Preserve is a particularly unique resource



Entrance to Bristler's Hill at Walden Woods in Concord, Massachusetts



Amphitheater in the Scott Arboretum at Swarthmore College

to the University as a resource for research, given its accessible location on campus. A plan identifying strategies in these areas was developed in 2012 by the Rutgers Ecological Preserve Task Force. The plan emphasized the untapped potential of the Preserve for academic use as an outdoor laboratory, including academic courses, research, community outreach, and public education.

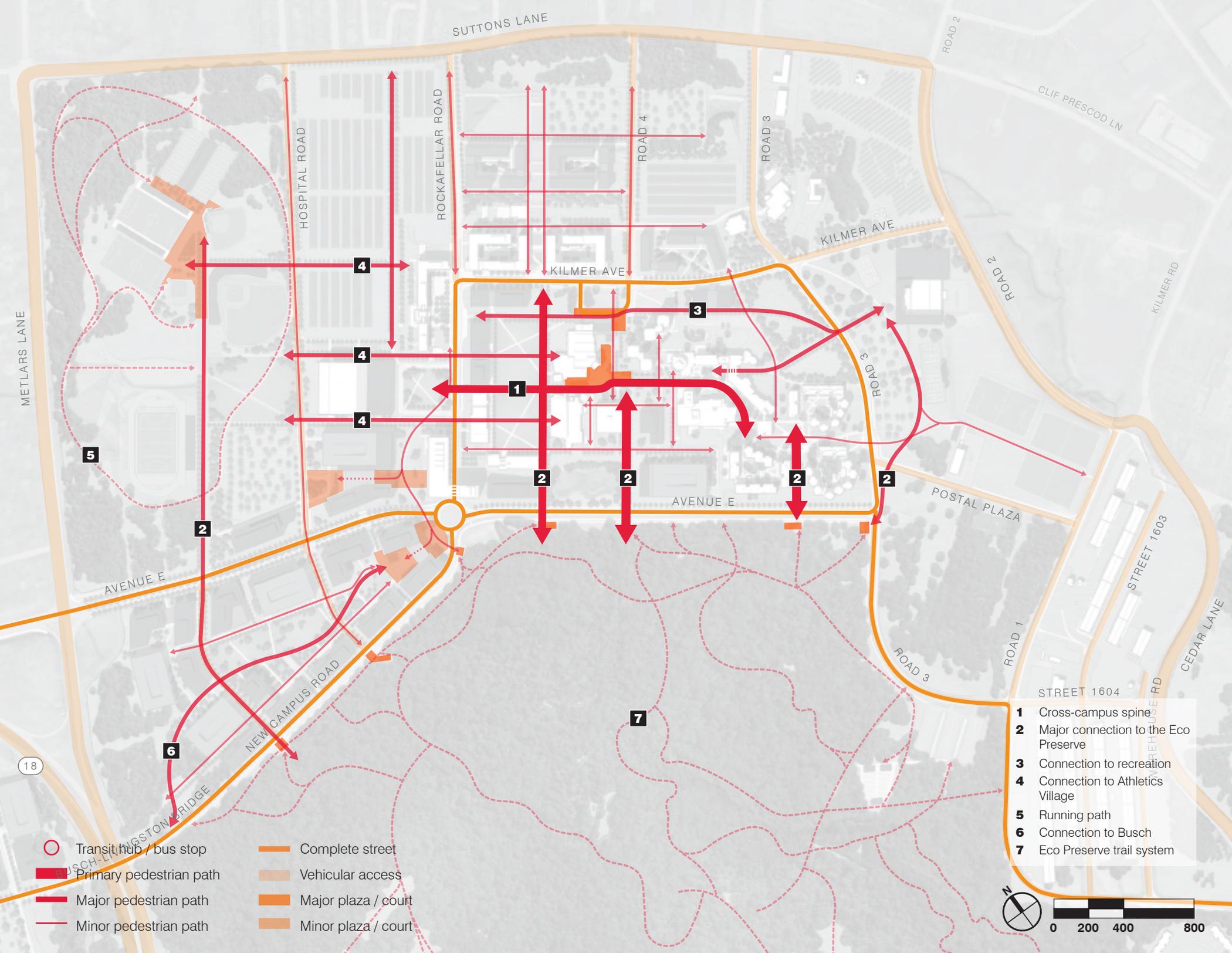
The Eco Preserve already sees some academic use, including research by the Center for Remote Sensing and Spatial Analysis (CRSSA), as well as through lab assignments in introductory classes, including General Biology 102. Rutgers' ROTC program also uses the Eco Preserve in its land navigation and survival training. The Task Force recommended the creation and maintenance of a database for the Eco Preserve, including GIS mapping and other data related to natural resource monitoring.

Research activities are related to the effort to restore the Eco Preserve's natural habitat. Restoration strategies related to the stream network, meadows, and wetlands were proposed by the RUEP Task Force, and would help manage stormwater flows in addition

to the long-term management of invasive species. The master plan recommends further discussion within the University and with community stakeholders and development of a natural resource management plan.



Research activities in the Eco Preserve



SUTTONS LANE

ROAD 2

CLIF PRESCOD LN

HOSPITAL ROAD

ROCKAFELLAR ROAD

ROAD 4

ROAD 3

KILMER AVE

ROAD 2

KILMER AVE

METLARS LANE

KILMER RD

5

4

4

4

1

3

2

2

2

ROAD 3

POSTAL PLAZA

AVENUE E

2

AVENUE E

ROAD 3

ROAD 1

STREET 1603

CEDAR LANE

STREET 1604

7

6

NEW CAMPUS ROAD

- 1** Cross-campus spine
- 2** Major connection to the Eco Preserve
- 3** Connection to recreation
- 4** Connection to Athletics Village
- 5** Running path
- 6** Connection to Busch
- 7** Eco Preserve trail system

- Transit hub / bus stop
- Primary pedestrian path
- Major pedestrian path
- Minor pedestrian path
- Complete street
- Vehicular access
- Major plaza / court
- Minor plaza / court



18

STONESTON BRIDGE

SCHL...

4.4.1 MOBILITY FRAMEWORK

At Livingston, the master plan is focused on expanding pedestrian and bicycle access to the campus. The plan proposes to improve access not only to the campus core, but also to campus resources like the Eco Preserve, athletics complex and recreation facilities. The plan reinforces the existing transit hub at the Livingston Student Center, with both improved access and more extensive connections to the rest of campus.

PEDESTRIAN NETWORK

Within the established core of the Livingston campus, two major north-south pedestrian corridors are proposed to improve circulation. Pedestrians have not always been prioritized at Livingston, although the Livingston Apartments have begun to transform the campus. The master plan seeks to extend this model.

Pedestrian Corridors – The master plan proposes a system of direct connections to the Eco Preserve, athletics village, and recreation facilities. These new corridors include:

- a route west of the Campus Center, linking Joyce

Kilmer Avenue to Avenue E;

- a route east of the library, linking the transit hub to the Eco Preserve via a reimagined combined pedestrian-service pathway;
- a route connecting the quads to the Eco Preserve.

Enhanced east-west routes are proposed to link the quads to Rutgers Business School and the athletics village, and to link the campus core to the Recreation Center.

BICYCLE NETWORK

Bicycle access is improved throughout the campus, with dedicated bike lanes introduced into the roads around the campus core. Easier access to Busch will be available in the long term with the construction of the Busch-Livingston Bridge. This new link, which represents a safer bicycle route between the two campuses, may also attract more students to biking between Busch and Livingston, diverting them from Rutgers buses.

VEHICULAR NETWORK

The master plan reinforces the existing street network at Livingston. New development in the mixed use district follows the grid set up by the Livingston Apartments, while Berrue Circle is closed to traffic in order to rationalize the street network on the northeast side of campus. The new road connects the proposed Busch-Livingston Bridge to the campus core through the roundabout, thus preserving the corner of Avenue E and Rockefeller Road as the primary vehicular gateway into Livingston. The roads circumscribing the campus core are widened where necessary to create a complete street.

Busch-Livingston Bridge – a new bridge is proposed to connect Busch and Livingston. The new bridge is intended to provide more direct pedestrian, bicycle and bus connections between the campuses. The bridge will provide easier access to Livingston, potentially attracting more students, faculty, and staff to the Eco Preserve and other campus amenities.

TRANSIT

Livingston currently has a highly active transit hub at the Livingston Student Center. The master plan proposes to supplement this hub by creating a new addition to the east side of the student center. The addition creates additional space for the convenience store, and a more generous entrance to the building, where a waiting area for the bus will be located. Pedestrian routes from the bus stop will connect to the classroom hub at Tillett Hall and Lucy Stone Hall.

PARKING

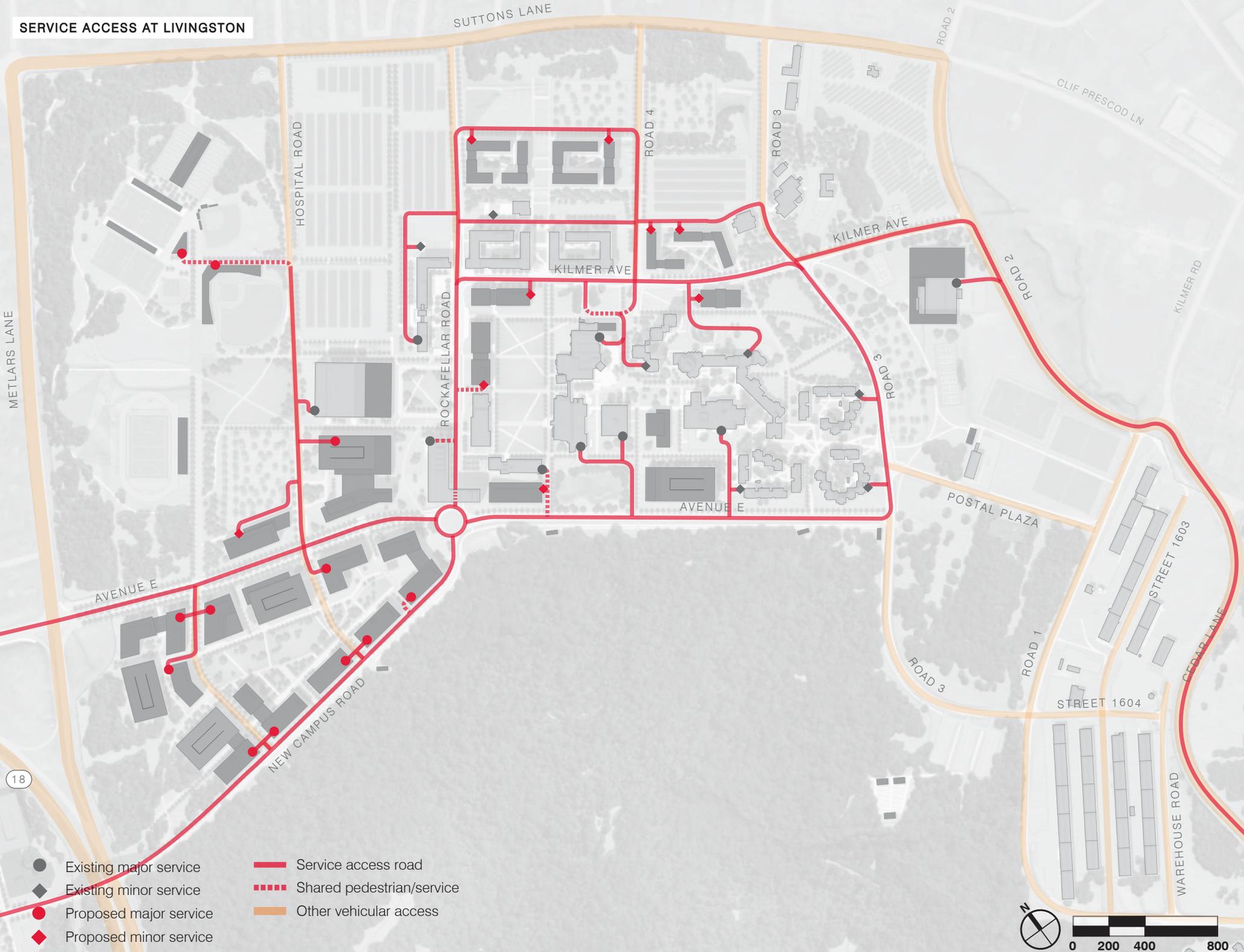
Changes in parking will be implemented incrementally as needs change, and demand increases from continued development. Land that will eventually be developed could be used temporarily for other uses, including parking. For example, the land at the future mixed use district could be used as surface parking in the interim. Similarly, the solar panels at the Yellow and Green Lots and Lot 105 have an anticipated working life of about 25 years. While this sustainability-minded model has been very successful, new technologies are likely to be available in the long term.

A new deck is proposed on the site of Lot 101; the demand for this garage will be determined by the pace of academic and residential growth. The research district and the hotel and conference center will have local parking requirement and have been planned with appropriately sized garages.

SERVICE ACCESS

Service access is currently needed for food service operations; in the future, it will also be needed for the research district, hotel, and athletics village. Minor service access includes activities like trash and recycling pickup. The master plan seeks to separate service access from pedestrians and remove service yards from major roads. The pedestrian-service conflict at the Student Center is improved by the separation of service access and the pedestrian path.

SERVICE ACCESS AT LIVINGSTON



- Existing major service
- ◆ Existing minor service
- Proposed major service
- ◆ Proposed minor service
- Service access road
- - - Shared pedestrian/service
- Other vehicular access



LIVINGSTON STUDENT CENTER TRANSIT HUB

The master plan proposes enhancing the existing transit hub at the Livingston Student Center. An addition to the student center will house the existing c-store, allowing the entrance to be expanded and combined with the transit hub waiting space. Flows of pedestrian and vehicular traffic are improved. Walkways are separated and screened from service yards.



Existing view of Livingston Student Center pedestrian access and service area







SUTTONS LANE

ROAD 2

CLIF PRESCOD LN

HOSPITAL ROAD

P1

P2

P3

P5

ROAD 4

ROAD 3

KILMER AVE

ROAD 2

KILMER RD

METLARS LANE

1

2

4

3

4

5

2

3

7

8

9

11

14

10

12

18

19

22

21

25

24

20

6

26

7

8

POSTAL PLAZA

AVENUE E

AVENUE E

KILMER WOODS

5

ROAD 3

28

29

30

31

STREET 1604

32

33

34

35

WAREHOUSE ROAD



LIVINGSTON CAMPUS TODAY

- Existing Building
- Projects Under Construction or in Design

- # Buildings
- # Major Parking Lots
- # Athletics, Recreation + Open Space

BUILDINGS

1. Louis Brown Athletic Center (RAC)
2. Rutgers Business School Building
3. Livingston Apartments
4. Rutgers Business School Annex
5. Janice H. Levin Building
6. Beck Hall
7. Livingston Student Center
8. Livingston Dining Commons
9. Kilmer Library
10. Lynton Towers
11. Livingston Classroom Building
12. Former Livingston Bookstore
13. Lucy Stone Hall
14. Tillett Hall
15. Quad I Residence Hall
16. Quad II Residence Hall
17. Quad III Residence Hall
18. Livingston Day Care & Asian Amer.Cultural Center
19. 44 Road 3 Building
20. MGSA Visual Arts Building
21. ITV Studio
22. Facilities Operations Services
23. Housing Grounds Operation
24. Rutgers Computer Repair
25. Livingston Solar Farm
26. Livingston Recreation Center
27. Surplus & Material Services
28. Environmental Health & Safety
29. Livingston Art Studios
30. Facilities Grounds, Utilities Shops
31. RUNet Field Offices
32. Academic storage
33. Facilities & Capital Planning, Storage
34. Facilities & Capital Planning
35. Administration & Public Safety

MAJOR PARKING LOTS

1. Yellow Lot
2. Green Lot
3. Scarlet Lot
4. Lot 101
5. Lot 105
6. Lot 103

ATHLETICS, RECREATION + OPEN SPACE

1. Multi-purpose fields
2. Softball complex
3. Bainton Field
4. Bauer Track & Field/Field Hockey Complex
5. Rutgers Ecological Preserve
6. Outdoor basketball courts
7. Outdoor tennis courts
8. Grass track and multi-purpose fields



METLARS LANE

SUTTONS LANE

ROAD 2

CLIF PRESCOD LN

HOSPITAL ROAD

ROCKAFELLAR ROAD

ROAD 3

ROAD 2

KILMER RD

KILMER AVE

KILMER AVE

11

9

8

10

P

8

9

7

1

2

7

6

5

4

4

4

POSTAL PLAZA

AVENUE E

12

12

2

2

2

2

2

14

14

12

12

13

2

11

14

14

13

2

13

2

NEW CAMPUS ROAD

1

2

ROAD 3

P

ROAD 1

STREET 1603

CEDAR LANE

STREET 1604

WAREHOUSE ROAD



0 200 400 800

LIVINGSTON CAMPUS 2030

-  Existing Building
-  Projects Under Construction or in Design
-  Proposed Buildings

-  Projects Under Construction or in Design
-  New Construction + Renovation
-  Infrastructure + Parking
-  Landscape + Stormwater

New Construction + Renovation

- 1 Livingston Student Center Pavilion + Hub
- 2 New Academic Building
- 3 High tech Classroom Building
- 4 Livingston Recreation Center addition
- 5 Recreation Fieldhouse
- 6 RAC expansion
- 7 Undergraduate housing
- 8 Multi-Use Facility and Integrated Parking
- 9 Hotel and Conference Center
- 10 Baseball and Softball Training Facility
- 11 Future Market Rate Housing
- 12 Research Park Phase 1
- 13 Research Park Phase 2
- 14 Research Park Phase 3

Infrastructure + Parking

- 1 Berrue Circle closure (no through traffic)
- 2 New Campus Road
- 3 Busch-Livingston Bridge
- 4 Livingston Student Center bus stop realignment
- P Parking Lot (new or restriped)

Landscape + Stormwater

- 1 Livingston Mall
- 2 Ecological Preserve gateway + trails
- 3 Ecological Preserve Amphitheater
- 4 Multi-Purpose Fields
- 5 Picnic area
- 6 North Lawn
- 7 RAC Quad
- 8 Scarlet Knight Quad
- 9 Scarlet Knight Park
- 10 Scarlet Knight Park Pedestrian Axis
- 11 Stormwater detention
- 12 Research Park Quad

BUSCH-LIVINGSTON TODAY





4.5 RUTGERS BIOMEDICAL AND HEALTH SCIENCES (RBHS)

4.5.1 VISION AND PRINCIPLES

4.5.2 NEW BRUNSWICK FRAMEWORK

4.5.3 NEWARK FRAMEWORK

4.5 Rutgers Biomedical and Health Sciences (RBHS)

The 2012 New Jersey Medical and Health Sciences Education Restructuring Act established Rutgers Biomedical and Health Services (RBHS) in July 2013 as the health care education, biomedical research, and clinical division of Rutgers University, comprising most of the former University of Medicine and Dentistry of New Jersey (UMDNJ) and several existing Rutgers units with health-related missions. The integration resulted in eight schools, four centers and institutes and a behavioral health care network, spread across several locations, at Rutgers University – New Brunswick, Rutgers Health Sciences at Newark, Scotch Plains, Stratford, Rutgers University - Newark, Rutgers University - Camden, and at additional locations throughout New Jersey. RBHS is most closely aligned with Rutgers University – New Brunswick and is described in detail here in this section within Volume 1 of the Rutgers Physical Master Plan for Rutgers University – New Brunswick.

In 2014, upon completion of the Rutgers University-wide Strategic Plan, RBHS spent several months developing its own strategic plan, resulting in its release October 2014. The RBHS Strategic Plan sets out its mission and vision for the near term future,

building on the University-wide strategic plan. The plan's mission is as follows:

RBHS aspires to be recognized as one of the best academic health centers in the US, known for its education, research, clinical care, and commitment to improving access to healthcare and reducing healthcare disparities.

The strategic plan is closely tied to changes in health care triggered by the Affordable Care Act, which has put an increased focus on preventive care and population health. The plan identifies signature programs built upon current programs of strength, where the primary focus of research investment will occur over the next five years:

- Cancer
- Environmental and Occupational Health
- Infection and Inflammation

- Neuroscience
- Community Health and Health Systems

Complementary programs, Educational and Clinical Initiatives, and other community service activities are also identified.

Beyond the Rutgers campus, the strategic plan notes the potential impact of RBHS activities on regional and statewide health care. As part of an initiative to increase RBHS' regional impact, the strategic plan sets out the goal of working with the Office of the Governor and state legislators to develop incentives to attract RBHS students to stay in New Jersey after graduation.

The master plan for RBHS is organized geographically to address RBHS space in Rutgers University – New Brunswick, in Rutgers Health Sciences - Newark, and in Rutgers University - Newark and described in detail here in this section.

4.5.1 RBHS Vision and Principles

Rutgers 2030 developed simultaneously with the RBHS strategic plan in the Fall of 2014. Rutgers 2030 takes into consideration existing RBHS space on the Rutgers University – New Brunswick and Rutgers University - Newark campuses, and the former UMDNJ campus in Newark. The master plan identifies the following principles and goals for RBHS:

- **Provide spaces that support the goals of the RBHS strategic plan** - while specific space needs are being discussed, Rutgers 2030 proposes zones of development for addressing RBHS's priorities and the replacement of aging facilities over time in order to address the state of its facilities. As identified in the RBHS Strategic Plan, overall space utilization across RBHS will be evaluated during the first year of the strategic plan and inform decisions on space needs. Housing for RBHS students is taken into consideration in this plan as part of a vision to transform student housing at Rutgers.
- **Strengthen physical connections to RBHS** - As the integration of RBHS brings about the potential reorganization of academic units in

biomedical and basic science units across Rutgers and RBHS, Rutgers 2030 proposes to strengthen physical connections to and from RBHS facilities in order to enhance opportunities for inter-disciplinary collaboration. This is especially true at Busch - pedestrian and vehicular connections are improved between RBHS facilities, and also between RBHS and non-RBHS facilities. Initiatives range from landscape and streetscape improvements to provision for convenient and adequate parking to support RBHS needs. Additional study for current and future space needs will be necessary to determine efficient use and sharing of space.

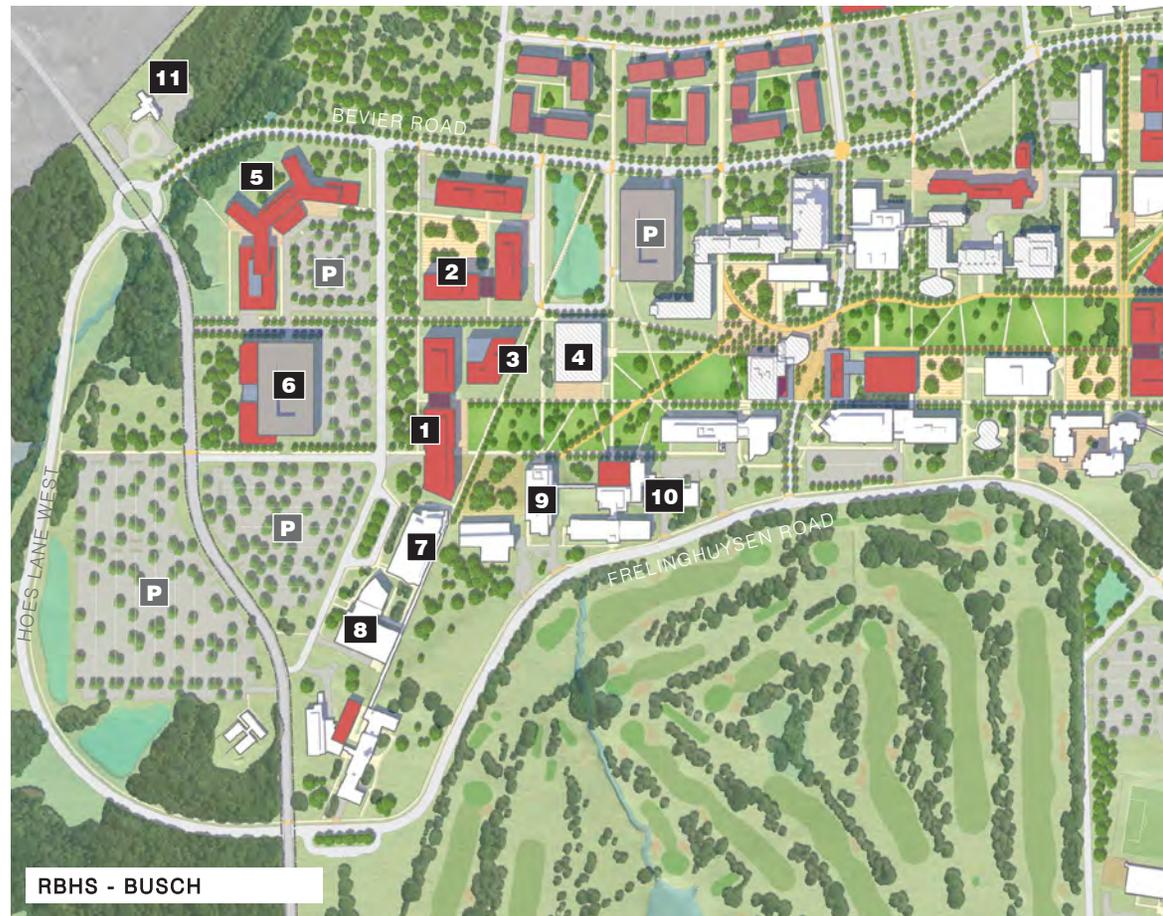
- **Strengthen collaboration among RBHS departments** - Rutgers 2030 proposes to provide cohesive campus environments for RBHS space, even as the eight Schools of RBHS remain unique in their cultures and programmatic elements. Common spaces are proposed to be centrally located among RBHS facilities, for example, at Busch.

The master plan proposes a flexible planning framework for RBHS, identifying future development parcels that accommodate current and future needs. Due to the technical nature of biomedical education and clinical facilities, including accreditation requirements, a detailed study of RBHS space is needed to fully assess space needs.

- Existing Building
- Projects Under Construction or in Design
- Proposed Buildings

BUILDINGS

1. New research complex and School of Public Health expansion
2. New teaching laboratories and classrooms
3. RBHS Commons
4. Library of Science and Medicine (LSM)
5. University Behavioral Healthcare Center (UBHC)
6. Ambulatory Care Center and Parking Garage
7. Center for Advanced Biotechnology and Medicine (CABM)
8. RWJMS Research Tower II, School of Public Health Building
9. Environmental and Occupational Health Sciences Institute (EOHSI)
10. School of Pharmacy and expansion
11. Children's Transitional Residence



4.5.2 New Brunswick Framework

RBHS is integrated into the Rutgers University – New Brunswick campus primarily at Busch and College Avenue, comprising 6.5 million square feet, not including space at the Robert Wood Johnson University Hospital which is an independent institution closely affiliated with RBHS. For RBHS programs at New Brunswick, Undergraduate, Graduate, Doctoral and Certificate programs are primarily located at Busch, while Graduate Medical Education is primarily located at College Avenue.

Originally established in Newark, the oldest pharmacy school in New Jersey, the Ernest Mario School of Pharmacy (EMSOP) is now housed primarily at Busch. Busch is also home to the Center for Advanced Biotechnology and Medicine (CABM), the Environmental and Occupational Health Sciences Institute (EOHSI), University Behavioral Healthcare Center (UBHC), School of Public Health and RWJMS Basic Science.

At College Avenue, RBHS is mostly located along Somerset Street, in a group of buildings clustered around the Robert Wood Johnson University Hospital (RWJUH).

Rutgers 2030 plans for RBHS at the Rutgers University – New Brunswick campus as part of the larger framework of land use, open space and mobility, and integrates RBHS space into the Rutgers University – New Brunswick campus. Proposals for RBHS conform with the planning principles of each district.

RBHS - BUSCH

RBHS space at Busch is clustered at the western edge of the district, bounded by Hoes Lane West to its west, Bevier Road to its north, Allison Road at east, and Frelinghuysen Road at its south. RBHS entities at Busch work closely with nearby engineering and other science departments.

Key components of Rutgers 2030 related to RBHS described in the Busch section are expanded upon here:

RBHS core at Busch

At Busch, the RWJMS Research Tower and Graduate School of Biomedical Sciences anchors the RBHS cluster of buildings. Built in 1966, the Tower has 9

floors and a lower level that connects to the Kessler Teaching Laboratories. Both the research tower and teaching laboratories are outdated and are proposed to be replaced in a reoriented configuration to face west and north. A reorganized, higher density plan for RBHS is proposed, with closer proximity and direct connections to the science and engineering departments. Proposed replacement buildings for teaching laboratories and for new classrooms and located closer to Bevier Road, providing RBHS with a stronger presence along its northern edge. A commons building dedicated to RBHS is located adjacent to the Library of Science and Medicine (LSM), providing collaboration spaces for interdisciplinary activities and possibly other amenities like fitness facilities for the RBHS community. Landscape and streetscape improvements proposed for the Busch campus extend to RBHS to strengthen access to the RBHS core.

The clinical functions of RBHS on Busch are expanded on the western edge of Busch, adjacent to the RBHS core. A replacement hospital for University Behavioral Health Care (UBHC) is provided, to replace the fifty-year old existing facility. A new Ambulatory Care

- Existing Building
- Projects Under Construction or in Design
- Proposed Buildings

BUILDINGS

1. Cancer Institute of New Jersey
2. RWJMS Medical Education Building
3. Robert Wood Johnson University Hospital
4. RWJMS Clinical Research Center
5. Bristol-Myers Squibb Children’s Hospital RWJUH
6. Child Health Institute of New Jersey
7. Clinical Academic Building
8. School of Nursing
9. Institute for Health, Healthcare Policy and Aging Research
10. School of Nursing Academic Expansion



Center is proposed, to the south of the proposed UBHC, providing an opportunity for outpatient clinical contact and revenues for RBHS on Busch. A new parking deck, allowing for clinical staff, patient, and visitor parking near these facilities is provided as well.

Graduate District

A major initiative for Busch is the reorganization of housing at this district, including increasing graduate housing for new RBHS students. Existing housing directly north of the RBHS district, at the Richardson Apartments, and north of Bevier Road, are outdated and are proposed to be replaced with new graduate housing over time, in a single area with easy access to the academic core of the district. The LSM, is reenvisioned as a graduate commons, with dining, group study space, research commons and library, offering complementary amenities to the proposed RBHS commons.

RBHS quadrangle

The RBHS quadrangle is an extension of the plaza proposed around the Allison Road Classroom building, to connect RBHS with the rest of Busch. It

links diagonal walkways from the Center for Advanced Biotechnology & Medicine, the RWJMS Research Tower II and the School of Public Health, and the Waksman Institute, integrating these facilities into the rest of the district in a series of outdoor spaces.

A new gateway and LSM quadrangle

Modifications include a new drop-off from Bevier Road, providing an address for RBHS and allowing visitors to arrive deeper into the heart of RBHS at the intersection of the LSM, the proposed teaching laboratories and research tower.

Loop road and parking

As RBHS expands, the western edge of Busch will be transformed. Hoes Lane West is proposed to arc farther west, and will connect to a loop road system around Busch. A new entry to University Behavioral Health Center (UBHC) and a parking garage are proposed as part of the work to relocate Hoes Lane West. This area will provide for future growth for RBHS and Busch programs.

RBHS - COLLEGE AVENUE

RBHS and the Robert Wood Johnson University Hospital (RWJUH) anchor Somerset Street, starting at the northeast end with the Cancer Institute of New Jersey (CINJ), easily accessible from the New Brunswick Train Station. Adjacent to RWJUH to the west are the Clinical Research Center, the Bristol-Myers Squibb Children's Hospital RWJUH and the Child Health Institute of New Jersey. Three additional buildings front Paterson Street to the south of RWJUH: the Institute for Health, Health Care Policy and Aging Research (IFH), the School of Nursing (SON), and the Clinical Academic Building.

Cancer program (CINJ)

The Rutgers Cancer Institute of New Jersey (CINJ) serves the entire State, as its only National Cancer Institute (NCI)-designated comprehensive cancer center. Initiatives to expand the Cancer program include state-wide enhanced research and patient care, specifically to include the expansion of the cancer program to the Newark campus. Expansion opportunities for facilities at New Brunswick is limited in the immediate vicinity of the existing CINJ building,

and additional studies are being planned to assess space needs and funding sources for supporting this program.

School of Nursing (SON)

The integration with UMDNJ brought with it the integration of the Rutgers College of Nursing programs in Newark and New Brunswick with the Rutgers School of Nursing Newark to form the new Rutgers School of Nursing (SON). The SON is emerging as a key player in the development of the RBHS. Rutgers 2030 identifies a potential development site for academic expansion for the SON along Paterson Street, east of the existing nursing building.

RBHS Housing at College Avenue

With the creation of RBHS as a division of Rutgers, Rutgers 2030 anticipates the need to provide increased services for an expanded RBHS community. At College Avenue, a proposed mixed-use tower at the northern end of College Avenue is ideal for RBHS students, with close access to Route 18, parking at the lowest levels of the building, and housing above. This

northern gateway building would connect to the bus rapid transit system, moving north to Busch, and south to downtown New Brunswick and the RWJUH district.

Pedestrian connections

The greening of College Avenue enhances this street as a major pedestrian and bicycle route, allowing for safe and efficient access from College Avenue to the RWJUH district. Proposed missing links to the bicycle network connect to Busch along Route 18 also serves to provide an alternate way for the RBHS community to travel between Busch and College Avenue.

Parking

The increased demand for parking in New Brunswick is proposed to be mitigated in the short term by parking at Livingston, with bus shuttle service to New Brunswick. For the long term, Rutgers 2030 proposes to provide structured parking east of Murray Hall, at Parking lot 16, to serve the southern portion of College Avenue, including RBHS.

4.5.3 Newark Framework

Formerly the Newark location of the University of Medicine and Dentistry of New Jersey, most of UMDNJ's Newark facilities were integrated with Rutgers following the July 2013 merger. Located west of the Rutgers University–Newark (RU–N) campus, between the University Heights and Fairmount neighborhoods, RBHS specializes in biomedical research and education, health related professions, public health, nursing, and dentistry at its Newark location. The integration also combined the separate School of Nursing at UMDNJ and at Rutgers University - Newark, into one organization with both undergraduate and graduate nursing programs. Today, undergraduate nursing education is taught by the SON on the RU–N campus, while graduate nursing education is headquartered at RBHS. RBHS is also affiliated with University Hospital, Newark's major academic hospital, which is adjoined with and amidst RBHS buildings. Future plans may include renovations and reuse of University Hospital for other purposes.

Specific to RBHS in Newark, the master plan framework follows the following principles:

- Complete the quad: intensify academic activity

within the block bounded by 12th Avenue, West Market Street, Bergen Street, S Orange Avenue, and Norfolk Street

- Provide a place for students to gather and collaborate, with food service
- Identify sites for future partnerships and research
- Better define the corner of 12th Avenue and Bergen Street
- Improve pedestrian connections from parking to academic, research, and support buildings
- Improve the streetscape to enhance the pedestrian experience and define the campus boundary

The following summarizes the proposed master plan framework.

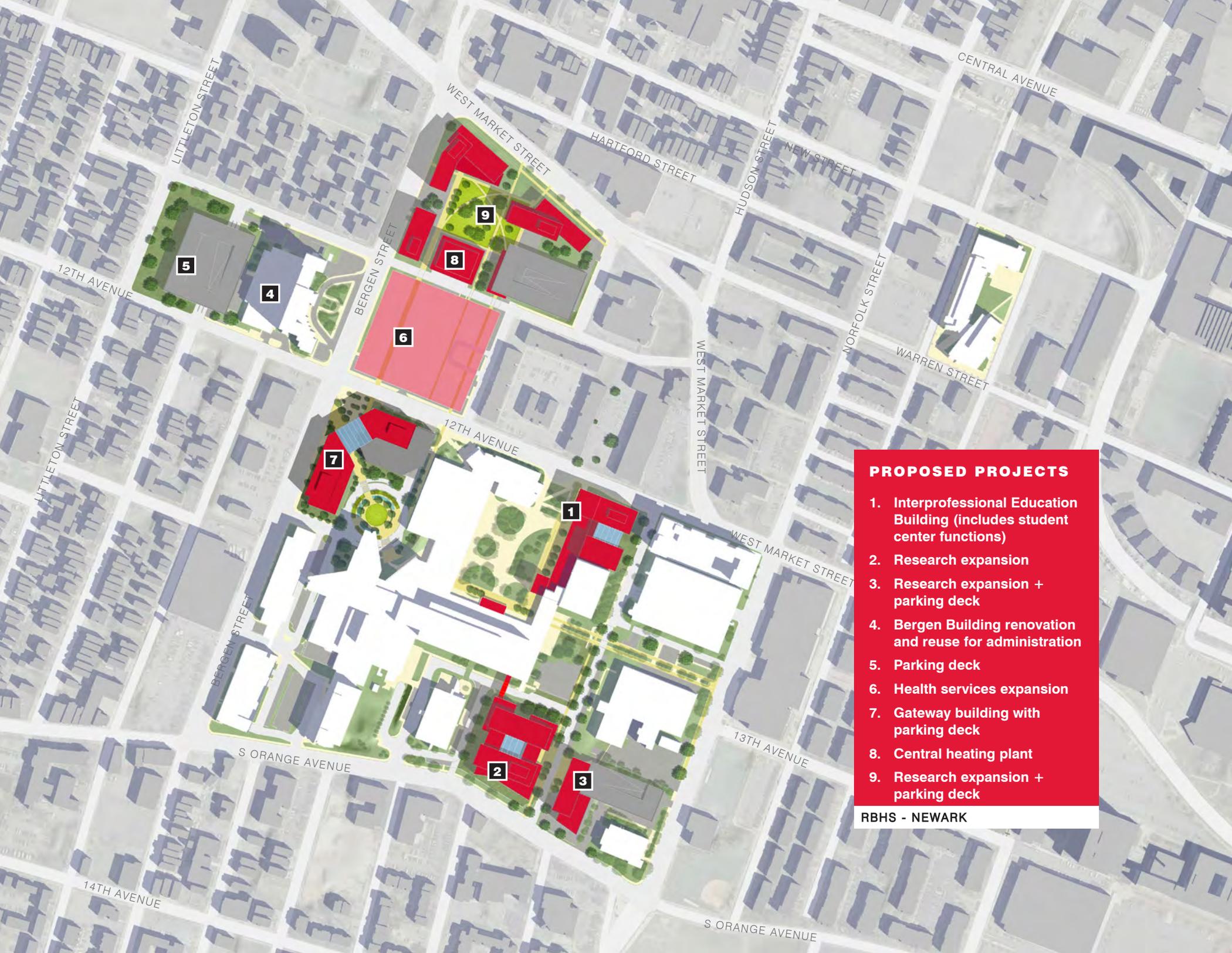
PRIORITY NEEDS

A priority of the strategic plan is a new building for interprofessional education, as part of a strategic initiative for more interdisciplinary programs and collaborations that result in improved health outcomes. The simulation center, also identified in the strategic

plan to improve the learning environment, will focus on introducing innovative learning environments to the campus. Multiple locations on the campus are available for this facility, and it should be studied in further detail.

Student life needs include a student center, as well as study, dining, and fitness space; the latter types of space are insufficient, while there is no student center. While there is a small gymnasium in the Medical Science Building, it is not sized to accommodate RBHS faculty, staff, and students.

Landscape improvements have been proposed in strategic locations to enhance the pedestrian connections from structured parking to academic buildings. Streetscape improvements have also been proposed, to better define and brand the campus boundary, and enhance the pedestrian realm. While the streetscape is fairly well defined along 12th Avenue, along Bergen Street, South Orange Avenue, and Norfolk Street, the campus boundary is not consistent.



PROPOSED PROJECTS

1. Interprofessional Education Building (includes student center functions)
2. Research expansion
3. Research expansion + parking deck
4. Bergen Building renovation and reuse for administration
5. Parking deck
6. Health services expansion
7. Gateway building with parking deck
8. Central heating plant
9. Research expansion + parking deck

RBHS - NEWARK

LONG TERM DEVELOPMENT

With regards to the long-term development of the campus, the master plan proposes a framework for future expansion and uses. Educational facilities will be concentrated on the quad, while ancillary, support, and partnership research space would be located on existing property adjacent to the quad. The expansion of academic facilities on the quad will enable the reuse of the Bergen Building for administration, opening up the existing administration complex to future development for health care services. Enclosed pedestrian bridges are proposed to link buildings on either side of 12th Avenue, in order to provide convenient and sheltered connections between buildings. The pedestrian bridges will also provide an alternative to the street-level crossing.

Future growth will also necessitate additional parking. Structured parking has been sited to accommodate this demand, in three locations: on the south side of the quad, north of the health services expansion parcel, and to the west of the Bergen Building. This parking will be phased, and the order will depend upon the sequencing of the proposed physical program.

As RBHS raises its profile in its signature research programs, additional research space will be needed; increased research activity may also attract opportunities for research partnerships. Potential sites for these facilities has been located on the south side of the quad, and north of the parcels proposed for health care services expansion.

Additionally, sites for research expansion exist to the east of RBHS, near its International Center for Public Health building, and near the New Jersey Institute of Technology. This area, known as University Heights Science Park, should be considered in future research planning efforts.

4.6 INTERCOLLEGIATE ATHLETICS

4.6.1 VISION AND PRINCIPLES

4.6.2 PRIORITIES



High Point Solutions Stadium

IMAGE COURTESY OF BEN SOLOMON, RUTGERS ATHLETICS

4.6 Intercollegiate Athletics

Planning for Rutgers University Intercollegiate Athletics has occurred within the context of its entrance to the Big Ten conference, as well as the broader framework of the Rutgers University physical master plan. Also known as the Scarlet Knights, Rutgers Athletics competes at the NCAA Division I level and became the newest member of the Big Ten Conference in November of 2013. This move to the Big Ten has planning and facility implications. For Rutgers Athletics, the master plan proposes a vision focused on enhanced accommodation of each sport; rationalizing space relationships, adjacencies, and efficiencies; and improving the overall fan experience. The result is a proposed framework that can accommodate changing priorities, funding sources, and phasing.

HISTORY AND TRADITION

Rutgers University is known as the Birthplace of college football, having hosted and won the first ever collegiate football game in 1869, as “the Queensmen” of Queens College. Since then, Queens College has transformed into Rutgers University, and has continued to build an athletic program based in a tradition of excellence in the classroom and in competition. The

bell that hangs in the cupola of Old Queens, originally rung to mark the change of classes, has now taken on a more symbolic meaning and is rung only on special occasions – including athletic achievements; the term “the bells must ring” has become a common phrase during home football games. Rutgers team have earned multiple championships, including six recent post-season bowl game victories.

EXISTING RUTGERS ATHLETIC VENUES

Currently, Athletics precincts are adjacent to the district cores at Busch and Livingston. As proposed in Rutgers 2030, Athletics will continue to occupy its current precincts, but will have improved pedestrian, vehicular, and Rutgers bus connections, to better link these areas to the campus. The master plan aims to provide easy vehicular access to competition venues for spectators and visitors from Route 18, as well as better pedestrian access for members of the Rutgers community.

Rutgers Athletics offers 24 men’s and women’s sports, including:

- Baseball
- Basketball (Men’s and Women’s)
- Cross Country (Men’s and Women’s)
- Field Hockey
- Football
- Golf (Men’s and Women’s)
- Gymnastics
- Lacrosse (Men’s and Women’s)
- Rowing
- Soccer (Men’s and Women’s)
- Softball
- Swimming & Diving
- Tennis
- Track and Field (Men’s and Women’s)
- Volleyball
- Wrestling



Scarlet Knight fans at a Rutgers University football home game
IMAGE COURTESY OF BEN SOLOMON, RUTGERS ATHLETICS

4.6.1 Vision and Principles

Rutgers University has a variety of practice and performance venues that support each program. These facilities are primarily distributed between the Busch and Livingston districts of the Rutgers University–New Brunswick campus, with a small presence on College Avenue. Busch is currently home to High Point Solutions Stadium, the Hale Center, and the Rutgers Golf Course. Busch also hosts competition venues for soccer at Yurcak Field, and tennis at the Tennis Complex east of the stadium. Livingston is home to the Rutgers Athletic Center, the Bauer Track and Field/Field Hockey Complex, Bainton Field, and the Rutgers Softball Complex.

An initiative of the master plan at both Busch and Livingston is to eliminate overlaps between varsity space and recreational space. Currently, volleyball and wrestling have practice and competition facilities at the College Avenue Gym, while gymnastics has its practice facility at the Livingston Recreation Center. By creating dedicated practice facilities for all varsity teams, previously shared spaces can be available exclusively for recreational users. The master plan aims to improve and enhance athletic facilities both qualitatively and spatially by expanding and reorganizing existing programs to create the best experience for students, student-athletes, spectators and staff.

Specific to Intercollegiate Athletics at the Rutgers University–New Brunswick campus, Rutgers 2030 builds upon recent efforts completed by the University to enhance its facilities and grounds for the twenty-four Division I athletics teams and for Scarlet Knight fans, and provides an updated overview of priorities for Athletics, aligning these priorities with available funding streams. In conjunction with University Administration and the Athletics Department, the physical master plan identifies the following vision and principles to guide these priorities for Intercollegiate Athletics:

- **Address existing deficiencies** – Rutgers is committed to providing and enhancing facilities that support greater opportunities under Title IX and best practices under the National Collegiate Athletic Association (NCAA) and Big Ten Conference. This plan provides a framework that allows a long term vision to be established, and for long term investments and fundraising efforts to be realigned or put in place.
- **Capitalize on parallel investments** – Proposed projects are encouraged to capitalize on available funding streams through incorporation of complementary functions other than athletics, whenever possible.

- **Prioritize flexibility in sequencing** – The process of upgrading existing facilities or providing new facilities should involve careful planning to avoid temporary construction and minimize disruption to teams and their operations.
- **Optimize access** – Projects are proposed to have functions that support athletics operations and the larger campus community, for example, providing easily accessible parking or event spaces that will be used by both Athletics and other campus groups, including visitors and academic departments. Rutgers 2030 identifies opportunities to take advantage of spaces readily available to be repurposed for Athletics use, in many instances identifying areas to be renovated in lieu of building new facilities for Athletics use.

Rutgers 2030 recommends consolidating the majority of varsity sports to Busch and Livingston, in order to enhance the athletics experience for both athletes and fans and to maximize operational efficiencies. The planning framework maintains optimal adjacencies currently in place and proposes to relocate several teams when funding becomes available. Specific projects are described in the following pages.



- 1** Multi-use facility and integrated parking
- 2** Scarlet Knight Park
- 3** Rutgers Tennis Complex
- 4** Bainton Field / Gruninger Baseball Complex
- 5** Rutgers Softball complex
- 6** Baseball/Softball Practice Facility
- 7** Bauer Track and Field Complex
- 8** RAC renovation and expansion
- 9** Gathering/event space
- 10** Major pedestrian path
- 11** Expanded wetland
- 12** Hotel and Conference Center
- 13** Livingston Recreation Center

SCALE 1" = 600'

4.6.2 Priorities

LIVINGSTON ATHLETICS DISTRICT

The area west of the Livingston academic core, bounded by Avenue E to the south, Metlars Lane to the west, Suttons Lane to the north and Hospital Road to the east is the athletics precinct, named the Scarlet Knight Park in the Athletics Master Plan completed in 2008. It is home to baseball, softball, field hockey, track and field teams. The Louis Brown Athletic Center, also known as the RAC, is home to the men's and women's basketball teams. This park is bordered to the north by large parking lots, and are separated from other activities occurring at the Livingston core.

Rutgers 2030 proposes to strengthen connections between the Scarlet Knight Park and the rest of Livingston through the introduction of facilities that will develop land between the park and Rockefeller Road, and by establishing clear pedestrian paths and landscape elements connecting the park to the academic quadrangle, student center and dining commons.

A new lawn is proposed directly west of the RAC,

providing a central location for informal gatherings, as well as staging for athletics competitions and events.

Specific to Athletics, the following projects are identified as priorities:

- **Louis Brown Athletic Center (RAC) Multi-Use Facility and Integrated Parking Facility** – The proposed RAC Multi-Use Facility will satisfy program needs for Rutgers basketball program, and other varsity teams currently accommodated in recreation facilities. The new Multi-Use Facility, attached to the RAC, will be home to men's and women's basketball, gymnastics, wrestling and volleyball. These programs will have state-of-the-art locker rooms, practice venues, strength and conditioning and sport medicine suites, coaches' offices and meeting rooms. Wrestling and volleyball are proposed to be relocated from the College Avenue Gymnasium, while gymnastics will be relocated from the Livingston Recreation Center. The multi-use facility will be embedded within a four-story parking structure, with a direct connection from parking to the existing RAC at the second floor level. This multi-use facility will also house administrative offices for the Athletics Department.
- **Scarlet Knight Park** – The master plan proposes a reorganization of the facilities in the northern part of Livingston athletics district. Currently comprised of two multi-purpose fields, a softball complex, Bainton Field Baseball Complex and Bauer Track & Field/Field Hockey Complex, some of the facilities are partially located in environmentally sensitive areas. The new design proposes the implementation, over time, of a high quality practice and competition venues with optimal orientation for competition, connected by a central pedestrian spine and adjacent access from on Hospital Road. The newly configured complex will provide a distinctive and unique experience for student athletes, staff and spectators, with close proximity to surface parking. Tennis and soccer venues will be relocated from Busch to Livingston, to consolidate programs and provide dedicated practice and competition facilities. Specific upgrades are proposed for these venues, as listed in the following pages.
 - **Rutgers Tennis Complex** - A new home for the tennis team with twelve outdoor courts is proposed to be located at Livingston. The



Rutgers Scarlet Knights men's basketball take on Wisconsin Badgers at the RAC, January 11, 2015.
IMAGE COURTESY OF BEN SOLOMON

tennis complex facility is anticipated to have exterior lighting and spectator seating.

- **Bainton Field / Gruninger Baseball Complex** – The baseball complex is proposed to be relocated and will allow for the reclamation and expansion of the existing wetland. A new facility and stadium will accommodate 2,000-3,000 seats, team rooms, press areas, suites and concessions, and a club house; a practice infield is located adjacent to the complex. The proximity of the new complex to parking provides convenient logistics for competitions.
- **Rutgers Softball Complex** – A new stadium is proposed to replace the existing softball complex, along with team rooms, press area and suites, club house and concessions area. The proposed improvements and enhancements to softball and baseball will allow these sports to host NCAA events.
- **Baseball/Softball Indoor Practice Facility** – An indoor practice facility is proposed, adjacent to the baseball and softball outdoor facilities, and will be shared by both teams.

This facility will allow for indoor practice and training for hitting, pitching, and infield play. This facility and the baseball and softball complexes take advantage of their proximity to the RAC, where team locker rooms will be located

- **Bauer Complex** – track and field and field hockey share a relocated facility towards the south side of Scarlet Knight Park. The area is protected by adjacent growth of trees to the west. Additional seating, press boxes, locker rooms are planned for this complex, along with upgrades to the exterior lighting system enabling night competitions and practice.
- **Louis Brown Athletic Center (RAC) renovation and addition** – The Rutgers Athletic Center (RAC) is an 8,000 seat venue, home to the men’s and women’s basketball teams. The master plan proposes to renovate the RAC to accommodate evolving program needs and to address qualitative concerns within the facility. Upgrades to the existing RAC include plans to expand the concourse level of the RAC, increase seating capacity

and club space, improve lighting and restroom facilities. The fan and visitor experience is also enhanced by an addition of new ticketing area and lobby and a spirit ware retail shop. The realignment of the drop-off road in front of the RAC building will accommodate walkways routes from the campus core to the RAC and into Scarlet Knight Park. By relocating training functions to the proposed new basketball facility, the RAC can be optimized for the fan experience.

MULTI-USE FACILITY

A new multi-use facility for men's and women's basketball, volleyball, wrestling and gymnastics is proposed to the south of the Louis Brown Athletic Center (RAC), with a connection between the two buildings. This facility also includes an integrated four-story parking structure accessed from Hospital Road, which will provide parking for events at the RAC, the adjacent Rutgers Business School and future hotel and conference center directly south of the training facility.



Existing view of proposed site for Basketball Training Facility with Louis Brown Athletic Center (RAC) at right, and Rutgers Business School at left.





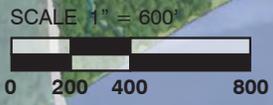
MULTI-USE FACILITY

The top floor of the proposed multi-use facility will house courts for basketball, volleyball and training space for wrestling. The light-filled training areas are supported by strength and conditioning space, locker and team rooms and coaches offices.





- 1** High Point Solutions Stadium South End
- 2** Hale Center
- 3** Yurcak Field
- 4** Rutgers Golf Training Complex
- 5** Multi-purpose Field House
- 6** Werblin Recreation Center
- 7** Stadium west upgrades
- 8** Future Practice Fields
- 9** Major pedestrian way
- 10** Game day pedestrian way
- 11** Football Practice (existing)
- 12** Tennis Complex (existing)



JOHNSON PARK



BUSCH ATHLETICS DISTRICT

Since 1938, the southeast sector of Busch has been home to the Rutgers football team. The original Rutgers Stadium was the first Rutgers facility to be built north of the Raritan River. Today, Busch is home to golf, soccer, lacrosse and tennis as well as football. Athletics projects proposed at Busch are as follows:

- **High Point Solutions Stadium South End**– High Point Solutions Stadium is the largest athletic venue on campus, with a seating capacity of 52,454, and is considered a key venue of Rutgers athletic facilities. The 2009 renovations to the stadium created seating at the south end of the field and created a large unfinished area below the seats. This area is proposed to be fitted out as locker rooms and athletics support space. Visiting team locker space will improve game operations management. Preliminary studies include a connection between the Hale Center and the south end.
- **Hale Center Renovations** – Directly adjacent and connected to High Point Solutions Stadium

is the Hale Center, home to administrative and academic services, as well as training facilities for football, soccer, lacrosse, golf and tennis programs. The master plan proposes renovating the Hale Center to become a dedicated football training facility and shared academic center for all athletes. Working in conjunction with the south end fit-out at the High Point Solutions Stadium, the Hale Center will provide updated support spaces including an enhanced football locker room and student lounge, expanded sport medicine, a new training and hydro therapy suite, additional coaches' offices, meeting rooms, and an expanded academic center. The Hale Center will have a new entry, allowing for a more spacious Hall of Fame and entry for students; and will be easily accessible from the stadium. Rutgers 2030 also looks to improve spectator circulation to the stadium by creating continuous sidewalks along Sutphen Road, lined with red maples to enhance the Rutgers tradition and atmosphere along the approach to the stadium.

- **Yurcak Field Improvements** – A proposed addition to the existing facility will provide

enhanced locker rooms, a training room, and general office space with meeting and administrative space.

- **Rutgers Golf Training Complex** – Busch is home to the Rutgers University Golf Course, a PGA sanctioned, par 71 course that is the competition and practice facility for the Rutgers University Golf team; it and also serves members of the public for nine months of the year. The master plan proposes a new team training center, additional course practice areas and parking, while minimizing disruption to existing wetlands.
- **Multi-purpose Field House** – the plan calls for a field house for field hockey, soccer, lacrosse, and track and field use, which will include locker rooms and restrooms.
- **Werblin Recreation Center** – The Sonny Werblin Recreation Center is home to the Rutgers Swimming and Diving teams. The master plan proposes an addition and renovation of the recreation center to expand recreational activity; however, the reoriented building entry will improve access to the facility from the north, for both athletics teams and recreational users.



Rutgers Scarlet Knights take on Penn State Nittany Lions at High Point Solutions Stadium, September 13, 2014.
IMAGE COURTESY OF BEN SOLOMON RUTGERS ATHLETICS

- **High Point Solutions Stadium and Practice Field Upgrades** - the west side of the stadium is proposed to be renovated for press boxes. Other enhancements include upgrading existing restroom facilities and fitting out of an elevator tower at the east end of the stadium. Just north of the football stadium, four proposed practice fields will provide additional future practice space for football and lacrosse, as well as other programs. They will be linked and organized by a central pedestrian corridor that connects the athletics precinct to Busch academic core.

While the majority of athletics is located in Busch and Livingston, the rowing program is located at Douglass, at the Rutgers Class of 1914 Boathouse. A potential expansion is an addition to the boathouse that will provide locker rooms, team rooms, administrative office space and support spaces, boat storage, a repair shop and a rowing tank. The expanded boathouse will not only support athletics but allow for recreational use, improving access to the Raritan River.

As Rutgers continues in the Big Ten Conference and

evaluates its needs for athletics, in-depth programming and feasibility studies should be prepared to identify critical needs and maximum efficiencies. This master plan provides an integrated view of athletics within the context of the larger district and campus and offers a framework for implementation as funding becomes available. A separate phasing and implementation strategy has been developed for these athletics projects.

HALE CENTER REIMAGINED

The Hale Center is proposed to be renovated to provide upgraded facilities for student athletes. Its east entry is redefined to create a welcoming entry into a lobby and Hall of Fame, using high-quality building materials and clear glass.



Existing view of Hale Center





Big Time Academics - Big Ten Athletics
RUTGERS is JET-IG

Big Time Academics - Big Ten Athletics
RUTGERS is JET-IG

Big Time Academics - Big Ten Athletics
RUTGERS is JET-IG

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PHASING AND IMPLEMENTATION

5.1 PHASING

Phase 1: 0 to 5 Years

Phase 2: 6 to 10 Years

Phase 3: 11 - 15 Years

Phase 4: 16 Years and Beyond

5.2 NEXT STEPS

5.1 Phasing

Rutgers 2030 builds upon all known initiatives that are currently being planned or are in the design process, introduces new initiatives for enhancing each district according to the five principles described in Chapter 3, and knits these initiatives together into a cohesive long-range vision through a system of strategic development sites, landscape overlays and physical infrastructure for mobility and utilities. The long range plan outlined in Rutgers 2030 requires thoughtful planning and assessment aligned with funding resources in order to ensure the success of the plan to transform the campus. The master plan provides the foundation for growth; each subsequently identified building, landscape and infrastructure initiative will require more in-depth site and feasibility assessment in order to validate initial assumptions made in the master plan.

The proposed phasing and implementation strategy is a guideline and serves to provide a starting point for evaluating each initiative against other priorities. Key capital projects are identified and described here, while other supporting projects are described in Chapter 4 of this document. Adjustments and reprioritizations are expected as the University evolves in the next

15 years and beyond. Effective implementation will depend on a strong integrated planning approach at the University, which may include the formalization of requests for new projects, and the periodic monitoring of campus initiatives against current needs, priorities and resources. Each 5-year period also allows for unanticipated projects and maintenance of existing buildings, landscapes and infrastructure.

A number of proposed initiatives of the master plan consider the opportunities for private - public partnerships. University Facilities and Capital Planning has a strong and successful track record of knitting together diverse funding opportunities including grants, tax credits and economic recovery stimulus offerings. These opportunities should be maximized and creative funding continued to be explored. As Rutgers moves ahead to forge into more collaborative relationships with private entities, these opportunities are critical to the development of Rutgers 2030. Continued conversation with the Cities of New Brunswick and Piscataway, including with public and private organizations with key interests in the Raritan River, is recommended. Work related to existing traffic infrastructure, especially at Route 18 and 27 bridges

could be funded through grant programs from Federal and State entities.

Projects currently under construction are as listed below. Key capital projects of Rutgers 2030 are listed on the following pages.

CURRENTLY UNDER CONSTRUCTION
College Avenue
SAS Academic Building
Honors College
Lot 8 Residential Building
Bishop Quad Residence Upgrades
Cook/Douglass
Institute for Food, Nutrition and Health
Global Village Learning Center at the Jameson Dormitory Complex
Busch
Chemistry and Chemical Biology Building
School of Pharmacy Addition

KEY CAPITAL PROJECTS (2015 - 2019)

College Avenue

George Street Transit Hub and George Street Bridges

Student Center Underground Parking

College Avenue Gymnasium Renovation and Expansion

Central Plant

Pedestrian Bridge

College Avenue Streetscape

RBHS School of Nursing Expansion

New Health Center

Cook/Douglass

Dudley Road Connection

Classroom Building 1

Marine Science Building Addition

Faculty Housing - Phase 1

Busch

Loop Road + Bevier Complete Street

School of Engineering Phase 1

Central Plant Replacement

Hale Center Renovations

Livingston

Multi-Use Facility and Integrated Parking

Research Park Bldg A and Parking

Livingston - Hotel + Conference Center

RAC Renovation

PHASE 1 : 0-5 YEARS

Phase 1 includes projects currently planned, funded or included in the University’s 2015 Capital Projects list. Proposed projects in this period are expected to undergo a feasibility study where appropriate, and to begin their design and planning process which may include space needs assessments and space programming studies, site selection, backfill and reuse studies, parking replacement and transportation impact studies, and preliminary cost estimates in order to adequately plan and allocate funding for these projects. Projects identified for this phase are key priorities for the University and contribute significantly to the campus environment to enhance the student experience. Many of these projects build upon work currently underway, as listed in table at left.

Key capital projects from Rutgers 2030 that may occur during this phase are listed in the table at left. Selected projects are described as follows, organized by the master planning principles. Detailed description of these projects are described in Chapter 4.

Learning at Rutgers

Livingston: Hotel and Conference Center - a feasibility study is currently underway for the hotel and conference center along Avenue E.

Academic and Classroom Buildings - several facilities are planned to occur during this phase, including the School of Engineering Phase 1 building at Busch. Classroom Building 1 and expansion to the Marine Science Building at Cook/Douglass begins a series of facility improvements intended to provide for growth and to replace existing aging classrooms on this district. On College Avenue, the School of Nursing plans for academic expansion at an adjacent site along Paterson Street.

Livingston: Research Park - The first phase of the Research Park project includes a building and a parking garage at the east edge of the Research Park triangle, easily located off Route 18, and providing a counterpoint to the Rutgers Business School at Livingston.

Life at Rutgers

Recreation and New Health Center - a previously executed master plan for recreation facilities at Rutgers calls for the expansion of the College Avenue gymnasium. Work related to this project may include an updated study for recreation services, leading to the improvement of facilities at the College Avenue Gymnasium. Attached to this gymnasium, Rutgers 2030 proposes to relocate Hurtado Health Center

to a new location along Senior Street as part of the goal to enhance health and wellness of the Rutgers community.

Hale Center Renovations - Hale Center renovations will include an enlarged entry and lobby as well as an internal reorganization and upgrades to existing facility to address current deficiencies.

Multi-Use Facility and Integrated Parking - The new Multi-Use Facility will provide enhanced training and support to varsity sports teams including basketball and will include office space for the Athletics department, along with a 550 car parking garage to support the Business School, Athletics, and future hotel uses.

Personalizing Rutgers

Faculty Housing Phase 1 - A feasibility and market research study and may commence in this phase to determine space needs associated with this initiative. Phase 1 is planned for vacant land south of Newell Apartments.

Navigating Rutgers

George Street Transit Hub - The transformative vision for College Avenue begins in this phase with the George Street Transit Hub, with bridges across George Street to improve pedestrian connections across George Street. This transit hub will also be the gateway into Deiner Park, leading to the proposed Pedestrian and Bicycle bridge over the Raritan River.

Pedestrian Bridge over Raritan River - Work related to this bridge begins here with feasibility studies and design work. Actual construction of these elements will follow in this phase or at future phases, pending approvals and available funding.

Streetscape Improvements - the gradual implementation of bicycle lanes and Complete Streets throughout campus begins in this phase with the greening of College Avenue, the extension of Bevier Road east and west to connect to Bartholomew and Hoes Lane West roads and the connection at Dudley Road to Lipman Drive. These improvements facilitate more efficient travel around districts and better wayfinding.

Stewardship at Rutgers

College Avenue and Busch Central Plant - The replacement of the College Avenue and Busch Central

Plants is crucial for improving operational efficiencies and for supporting work in future phases. At College Avenue, the relocation of the plant is also a key element in vacating the site for the future Student Center and quadrangle, while the Busch plant, serving Busch and Livingston will provide upgrades to existing infrastructure and support future work.

Two key initiatives not involving facilities construction will also begin in this phase:

Class Scheduling Software - A task force for this effort has been appointed and charged with completing the assessment and implementation of the use of a robust class scheduling software that is able to align housing and class selection, and provide information on travel requirements related to specific class selections. This is scheduled to be completed by the end of 2015.

Express and Local Bus Network - Working in concert with a class scheduling software, travel across campus could be transformed with the implementation of a Bus Rapid Transit (BRT) system. Planning and implementation of the BRT system begins in this phase. Rutgers 2030 prioritizes the BRT connection between Cook-Douglass and College Avenue.

KEY CAPITAL PROJECTS (2020 - 2024)

College Avenue

College Avenue Dining and Student Organization Wing

College Avenue Student Center Events Wing

Rutgers Cultural Center

High-tech Classroom Building

Cook/Douglass

Classroom Building 2

Undergraduate Housing at George and Nichol

Mason Gross Phase 2 Expansion

Intramural Fields

Student Center Renovation and Expansion

Student Center Underground Parking

Rutgers Gardens

Busch

Busch Student Center Renovation and Expansion + Gateway Road

Allison Road Transit Hub + Landscape Overlay

RBHS Research Complex and School of Public Health Expansion

Soccer, Golf, Tennis Facility Upgrades

Physics Lecture Hall

Graduate Housing - Phase 1

North Garage

School of Engineering Buildings 2 + 3

Busch - Livingston High-speed Connection

Livingston

Livingston Student Center Transit Hub

RAC Renovations

Kilmer Library Renovation

PHASE 2 : 6-10 YEARS

2020 launches a robust implementation phase with projects that build upon the groundwork laid in the previous phase, including the renewal of central plant facilities on College Avenue and Busch. Key capital projects in this phase include work at transit hubs to transform the arrival and wayfinding at each district, and create a sense of place around which classrooms and amenities are clustered. Selected key building projects are described here:

Learning at Rutgers

Academic and Classroom Buildings - the next series of academic and classroom spaces to augment learning at Rutgers is proposed to occur at all districts. Work related to this include new facilities, additions to existing facilities and renovation of existing lecture halls and classrooms. Rutgers 2030 also proposes to renovate Kilmer Library to provide additional study and meeting space for Livingston.

As projects from Phase 1 are completed, existing research, lab and classroom spaces vacated may be renovated and adapted for other uses. There is

consensus that a new physics lecture hall or upgraded facility is needed by 2025.

Life at Rutgers

College Avenue Dining and Events – the opening of Honors College and Lot 8 Residences will increase demand for dining at Brower Commons and the Rutgers Student Center. The imminent demolition of Records Hall provides a readily available building site for a new Student Center, with dining and events space.

Rutgers Cultural Center - Connected to the proposed Dining building, a Cultural Center will serve to bring together the three existing cultural centers at Rutgers to showcase the diversity of Rutgers.

Housing - The housing experience at Rutgers begins its transformation during this phase through the reorganization of existing inventory, especially at Busch and Cook/Douglass. Redefining graduate housing at Busch is the first step to strengthening student communities on campus and locating them in proximity to amenities and classroom spaces.

Undergraduate housing at Nichol and George is planned for this phase in order to begin replacing housing at Newell Apartments.

Cook/Douglass: Intramural Playing Fields - with the relocation of undergraduate housing along Nichol Avenue, the area adjacent to the Cook/Douglass Recreation Center becomes available for intramural playing fields, along with work proposed for a redevelopment of Skelley Field to include a field house and picnic houses.

Navigating Rutgers

Transit Hubs - During this phase, hubs are implemented on all districts, working in concert with the BRT work from Phase 1 and includes the expansion and renovation of student centers. Related to this is also work to redefine gateways, entry roads, pedestrian and bicycle connections to and from these transit hubs.

Parking - As additional buildings on campus increase traffic and need for parking, a parking garage is proposed in this phase and is intended to serve

commuter students as well as faculty and staff, located in proximity to transit hubs and classrooms.

Busch - Livingston high speed bus and bicycle connection - as the Research Park expands and Busch and Livingston districts continue to grow, a high-speed bus and bicycle connection across Route 18 provides an efficient connection between the districts and to the Ecological Preserve.

Stewardship at Rutgers

Cook/Douglass: Rutgers Gardens - Rutgers Gardens is currently completing a feasibility study for a new visitor center and visitor experience. Proposed work is anticipated to occur during this phase.

KEY CAPITAL PROJECTS (2025 - 2029)

Cook/Douglass

- Faculty housing - Phase 2
- Classroom Buildings 3 and 4
- Undergraduate Housing along Nichol Avenue
- Mason Gross Parking Garage

Busch

- RBHS Kessler Teaching Labs Replacement and New Classrooms
- Busch Field House
- Graduate Housing - Phase 2

Livingston

- Academic Building 1 and Landscape
- Research Park Bldg B and Parking Garage A
- Ecological Preserve Landscape and Buildings
- RAC Renovations
- Athletics Complex

PHASE 3: 11-15 YEARS

As transit hubs and major infrastructure projects including streets and loop roads are implemented in Phases 1 and 2, key capital projects supporting Rutgers’ mission continue into Phase 3, and includes academic and housing initiatives. Selected key capital projects are described here:

Learning at Rutgers

Academic and Classroom space - Replacement and renewal of RBHS facilities continues in this phase and includes a replacement for the Kessler teaching labs and new classrooms. Renewal and relocation of Cook/Douglass academic department space and classrooms are planned for this phase in order to complete and infill the campus boundary along Nichol Avenue. At Livingston, a building along Rockefeller Road defines the west edge of the Livingston central quadrangle.

Life at Rutgers

Undergraduate, Graduate and Faculty housing - proposed undergraduate housing along Cook/Douglass’ Nichol Avenue brings the undergraduate community closer to the transit hub implemented in

Phase 2. This also allows for more faculty housing to be implemented at the south side of the Cook/Douglass Recreation Center and Intramural fields. Graduate housing along the north side of Busch is consolidated and renewed as well.

Stewardship at Rutgers

Livingston: Ecological Preserve Programming and Connections - Programming and enhancement of the Preserve serve to activate an area of campus that will be critical to connecting Livingston with Johnson Park and with College Avenue through the proposed pedestrian bridge over the Raritan River. This initiative would include programming, enhancement and expansion of trails through the Eco Preserve, and the erection of several outdoor structures that provide support for events in the Eco Preserve.

PHASE 4: 16 YEARS AND BEYOND

KEY CAPITAL PROJECTS (2030 AND BEYOND)

College Avenue

- Renovate Alexander Library
- Renovation of Scott, Murray and New Jersey Halls
- New Health Center
- North Gateway Building and Parking
- Raritan River Boardwalk

Cook/Douglass

- Rutgers Boathouse Upgrades
- Cook/Douglass Mason Gross Phase 3

Busch

- Renovate Existing Space
- RBHS Commons
- Undergraduate Housing (at North)
- Undergraduate Housing (at East)

Livingston

- Softball Complex
- Academic Building 2
- Tillett Renovation
- Research Park - Phase 3

While it is not possible to know for certain the long term needs and priorities of the University, it is possible to establish a vision and an implementation strategy that will ensure that the master plan will remain relevant for years to come. The first three phases of this master plan, occurring over a period of fifteen years from 2015, endeavours to transform the New Brunswick campus by strengthening the “sense of place” at each campus, through the creation of transit hubs, landscape overlays, academic and residential communities in proximity to amenities, and through a system of pedestrian and bicycle network through campus space in order to reduce reliance on the bus system. This final phase of the master plan begins in 2030. Several key capital projects are described here:

Learning at Rutgers

Academic and Classroom space - the final phase of the Mason Gross master plan is anticipated to occur during this phase and will expand existing jazz and percussion programs, and add practice rooms, faculty and classroom space. At College Avenue, major classroom buildings fronting Voorhees Mall and the Alexander library are proposed to be renovated.

Life at Rutgers

College Avenue North Gateway Building and Parking - the College Avenue North Gateway building provides for mixed-use opportunities, and may include market - rate housing with structured parking serving the north end of College Avenue.

Personalizing Rutgers

RBHS Commons - adjacent to the Library of Science and Medicine, the RBHS Commons provides space for collaboration and acts as a center for the RBHS community.

Stewardship at Rutgers

Raritan River Boardwalk - planning for the Raritan River Boardwalk may begin in earlier phases, leading to its implementation in this phase. The boardwalk serves to improve access to the river, connect riverfront parks and the DNR canal to its north, the Rutgers Boathouse at Boyd Park to the south. The boardwalk is also connected to the proposed Pedestrian and Bicycle Bridge extending across the Raritan River.

5.2 Next Steps

At the conclusion of this master plan effort, several efforts that would inform the master plan were underway but not completed. The conclusion of these studies will affect how the master plan is implemented:

- **School and Department Strategic Plans -** These strategic plans will inform how each School and administrative departments is growing and whether or not there should be stronger adjacencies between departments that would benefit from co-location.
- **Facilities conditions analysis** - the results of this report inform the University how existing facilities will be able to support the strategic plans of the Schools.
- **Housing study** - A study to determine the need for graduate, family and junior faculty housing study for the New Brunswick campus.
- **RBHS Space Utilization Study** - a space utilization study for RBHS will determine both the quality of space and the quantity of space, how existing space is being used and how space can be best used to support RBHS goals identified in

the 2014 strategic plan. Future space needs will also be identified.

In addition to the recommendations of the studies listed above, several areas proposed by the master plan would benefit from deeper analysis in order to confirm assumptions made in this master plan:

- **Space needs analysis for student space and event space** - A preliminary study by WTW Architects identified several areas of space needs but was not conclusive in its recommendation for student space and event space. Further study would identify specific room types and quantities necessary to support the University community, in the creation of a centralized student services department and events venue, or student union.
- **Classroom, Laboratory and Office space need study** - University owned and leased space for departmental and office, classrooms, including small seminar rooms, laboratories, teaching and research use would be quantified and accurately categorized in an inventory assessment in order to determine where surpluses or deficits exist and can be used to its best potential.

- **Recreation master plan** - A reassessment of the 2009 Recreation Master Plan would be important to confirm priorities and provide additional detail for expansion and execution of the desired recreational elements included in this master plan.
- **University Libraries master plan** - a University Libraries master plan would assess library space utilization systemwide across campuses to create strategies for rehabilitation and adaptation of existing library space as well as new capital improvements to make libraries relevant in the 21st century academic environment.
- **Transportation master plan** - an update for the transportation master plan for Rutgers University – New Brunswick and Rutgers University - Newark will align intercampus bus system and parking operations with new campus development patterns outlined in the Physical Master Plan, as well as outline necessary capital improvements to serve the Rutgers community, including the RBHS areas of the campus, and in coordination with local municipal and county transportation plans.
- **Existing Bridges, Proposed Pedestrian Bridge and Raritan River Boardwalk Feasibility Study** - Extensive involvement will be necessary for the building of a structure in the Raritan River. Existing conditions of the soil at the river banks and in the river, as well as structural integrity of the existing bridges need to be assessed and will require participation from key stakeholders including the Coast Guard, SHPO, and Raritan River communities in order to properly assess the probability of constructing in the river.

Based on the understanding that a campus is always evolving, this master plan was developed as a living plan, able to adjust to strategic priorities, physical and budgetary requirements. As the University embarks on the next phase of development, a periodic assessment of this master plan, as individual projects develop, is recommended in order to ensure priorities are aligned with the larger goals of the institution.

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