UNIVERSITY OF CAMBRIDGE

Strategic Framework for the Development of the Estate

October 2016

Strategic Framework for the Development of the Estate 2016

The mission of the University of Cambridge is to contribute to society through the pursuit of education, learning, and research at the highest international levels of excellence. This Strategic Framework for the Estate supports the mission by seeking to ensure that the estate adds value to the performance of Cambridge as a world class teaching and research University. By providing the right environment, built space and facilities, we can help the University to continue to attract and retain the best staff and brightest students, deliver positive experiences as members of University and civic communities, and achieve the institution's goals for knowledge and learning.

In pursuing its mission, the University directly makes major contributions to the economy, social fabric, environment and culture of the Greater Cambridge area. In addition its presence at the heart of the Cambridge Cluster attracts spin-out and partner companies that together create a uniquely vibrant local environment and economy. As a leading employer and presence in the Greater Cambridge region, the University recognises its responsibility to the community as well as its own staff and students. It is therefore a key partner with local authorities in the City Deal that will deliver improvements in transport infrastructure and housing.

From the Senate House and Fitzwilliam Museum that help frame the Classical core of the city, to the developing bio-medical campus to the south, and the thousands of homes springing up in North West Cambridge, the University is a major contributor to the City's history, culture and landscape.

Professor Sir Leszek Borysiewicz, Vice-Chancellor

Part one
A new vision for the estate

Introduction

1.1 This Strategic Framework considers the future development and management of the estate in the context of the University as groups of communities, whose collective mission is to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence.

1.2 It has a different scope to the previous Estate Strategy, which focused on the physical estate at the operational level – current and future building projects, building condition, space needs – and with relatively short-term horizons.

Maintaining the University's Leading Position

1.3 The very best researchers, students and staff are at the heart of a world class University. To achieve its mission Cambridge University needs to continue to attract researchers, students and academics who are the very best in the world. And when they come to Cambridge, the University needs to provide them with the environment that will enable them to prosper and encourage their ideas to formulate and flourish.

1.4 Although placed in the top four of the world's universities in most rankings, Cambridge faces increasing competition both from traditional rivals in North America and Europe and from the many new universities emerging in Asia. The quality and form of the University's estate plays a major role in that competition. To maintain its world ranking Cambridge University needs to ensure that the environment in which people live and work is recognised as a positive asset by those choosing where in the world to locate. This means providing an estate, in all its forms, that is fit for purpose. It also means having an estate that positively enhances the unique social structure of the University and colleges which creates the setting for world class study and discovery. It means providing access to decent quality living accommodation that is appealing, affordable and well connected to people's place of work.

1.5 It is vital for the University, the city of Cambridge and the wider UK economy that Cambridge retains its position amongst the world's pre-eminent Universities. For the University, this alone will enable it to realise its mission. For the city of Cambridge this will allow the continual local, national and international investment in the city's economy and infrastructure that benefits the people of Cambridge and its sub region. A world class University in the heart of Cambridge enhances the quality of life of Cambridge residents, not just economically but also culturally, socially and environmentally. And for the UK, discovery and investment enhances the national economy and Britain's standing in the world.

Creating Communities

1.6 A major part of the success of Cambridge University is due to its collegiate structure which encourages the academic and social interaction necessary to generate world class ideas. While technology will change physical requirements, the strength of Cambridge University over hundreds of years has been this model of social interaction created by the relationship between the colleges and the University and the opportunities for researchers, students and staff to mix both at work and socially.

1.7 At the heart of the Estates Strategy is the principle of creating environments that maintain and enhance this successful model. The University plans to build more complete communities where people can work and interact nearby so that they develop a true sense of belonging and have every opportunity to meet and exchange ideas. These will be built on a human scale to encourage human interaction so that great people and great ideas can collide.

1.8 The University proposes to create, as much as possible, a series of shared facility hubs for students and researchers (e.g. lecture theatres, catering, shared offices, library) around which will be their places of study and work. Within the city centre this will involve making better use of the University's built heritage to provide this mix around a hub. Outside the city centre the University will aim to provide shared facility hubs next to major research facilities.

1.9 Cambridge will remain a collegiate University and will therefore continue to have a residential focus. The University will continue to work with colleges to provide post-graduate student housing. The high demand for housing in and around Cambridge means that the University must also seek more quality, affordable homes for staff, either within Cambridge or further afield at locations where good public transport access exists or is planned.

1.10 An important element of creating quality places to support world class teaching and research will be work to improve the public realm on University land. This, together with better connectivity between sites will help to ensure a higher quality environment not just for the University but for Cambridge more widely.

1.11 Strategic investment in the University's estate will provide both direct and indirect benefits for everyone in the University and in Cambridge. Researchers, students, staff and the people of Cambridge will all benefit from better facilities, greater housing provision, better working and living environments, improved public realm and enhanced transport links.

Adding Value to University Performance

1.12 The Strategic Framework is based on a model for university estate management developed by den Heijer (2011), which includes the premise that inputs from the estate add value – positively or negatively - to the University's overall performance (*Figure 1)*.

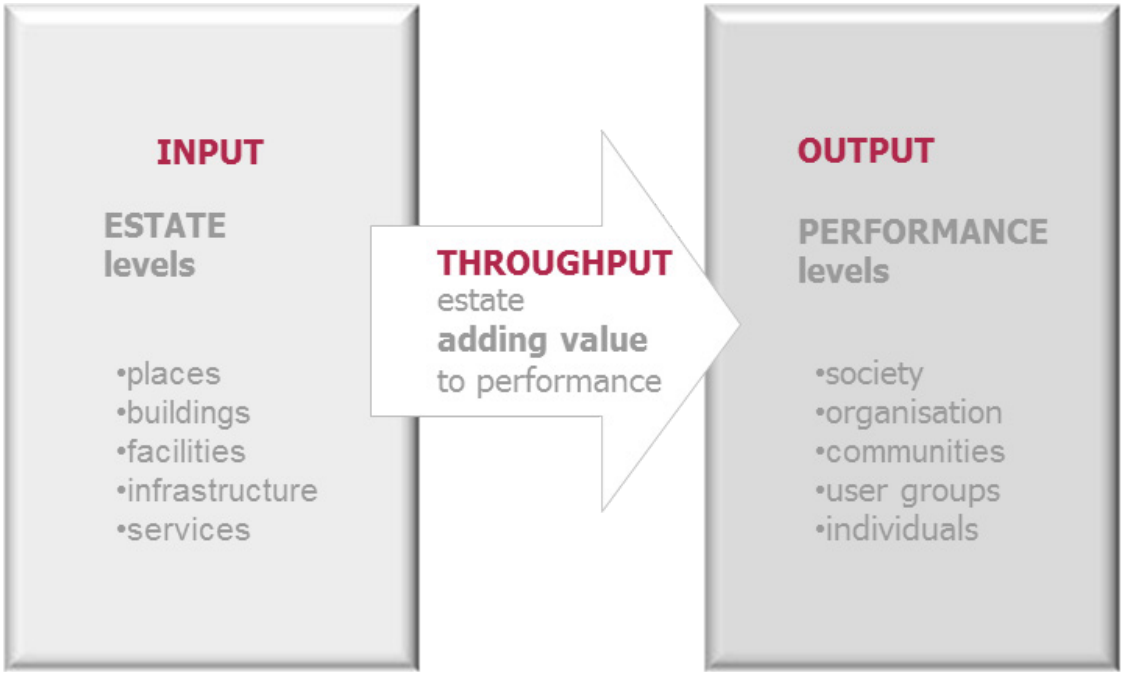
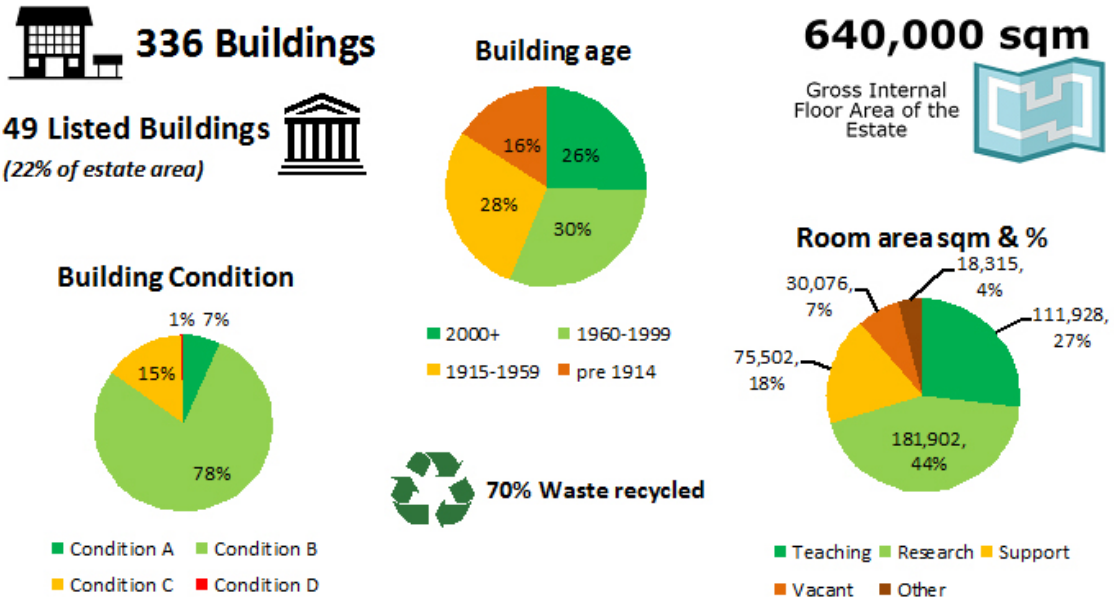
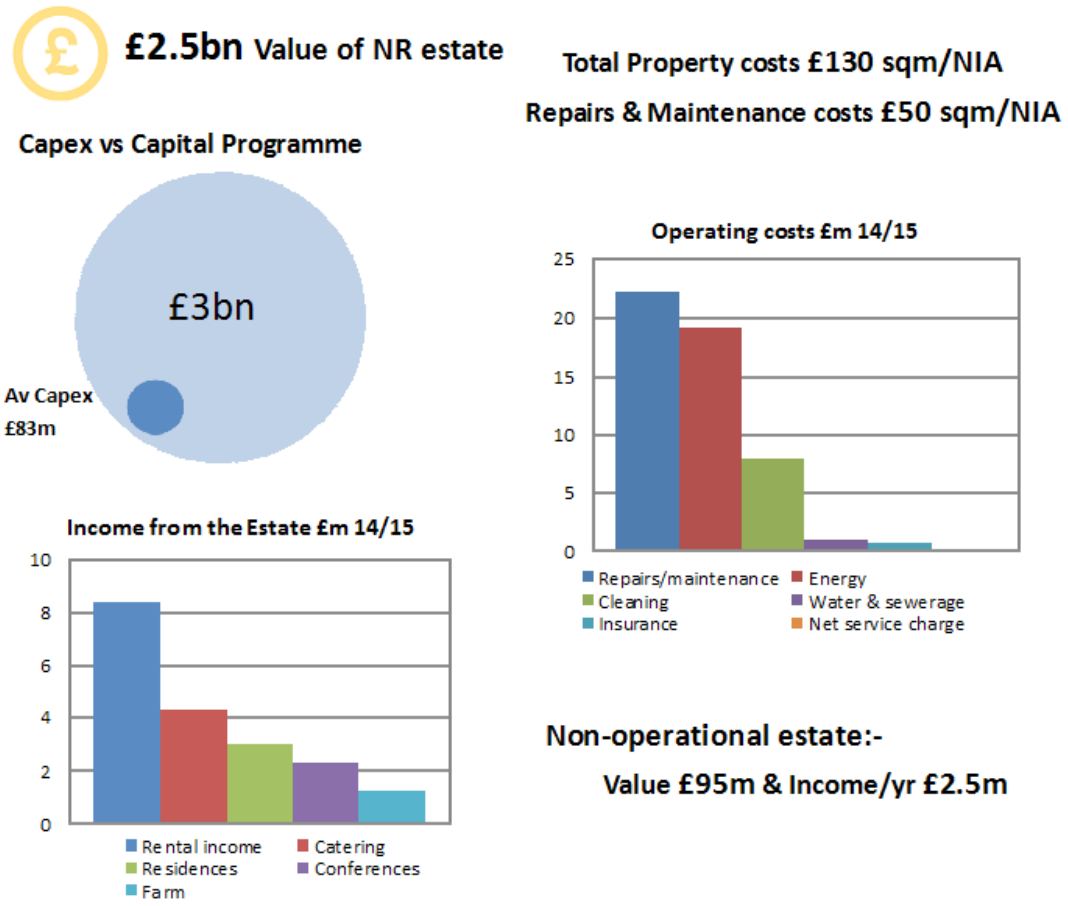


Figure 1: Estate Adding Value to Performance
Image adapted from den Heijer (2011)

1.13 The size of the estate and the scale of inputs across a range of services are very significant:





1.14 Inputs from the estate affect University performance in four key performance areas:

University Performance Area	Focus
Competitive Advantage	Quality, ambition and the University's position at the highest levels of international excellence.
Productivity	Users, communities.
Sustainable Development	Physical development and management of land, buildings, resources and the environment.
Financial Efficiency	Funding, budgets and costs.

Vision for the Estate

1.15 Our Vision for the Estate therefore relates to the defined performance areas:

The Estate will:

- be an expression of the University's academic excellence, with high quality places and services, in order to contribute to the University's and the City's competitive advantage

- support productivity by delivering a positive experience for users , in particular students and staff

- be developed sustainably

- deliver value for money, and drive out additional income, to improve the University's financial position

Part two
Estate goals

2.1 A number of specific estate goals are identified for the four performance areas[1]:

University Performance Area	Estate Goals
Competitive Advantage	1. Stimulate collaboration 2. Improve the quality of place 3. Promote our built and cultural heritage 4. Future proofing development 5. Develop residential communities
Productivity	6. Deliver a positive student & staff experience 7. Deliver flexible and adaptable space 8. Improve sustainable travel options
Sustainable Development	9. Meet the University's Development Needs 10. Reduce carbon emissions 11. Conserve natural resources and enhance biodiversity
Financial Efficiency	12. Improve space efficiency 13. Develop the non-operational estate to increase commercial value 14. Increase value for money from the estate

[1] The Goals result from a workshop attended by the University's Pro-Vice-Chancellors, Heads of the Academic Schools, and senior officers (November 2015) at which the following key principles for the strategic framework were identified: creating places to support University communities; building flexibility and efficiency; preserving and enhancing the heritage of the University and the city; achieving high levels of environmental sustainability; enhancing connectivity; creating value from the estate.

2.2 The performance areas and goals are shown in the context of a model to assess estate decisions (*Figure 2*).

2.3 The remainder of this Strategic Framework sets out strategies to achieve each goal, with an assessment of the current position (the baseline) and changing demands/context, and proposals for where we want to get to (targets), how we will get there (actions) and, where appropriate, how we will monitor success through key performance indicators (KPIs). A summary of actions relative to each performance area and goal is provided at Annex A.

Figure 2: Model to Assess Estate Decisions

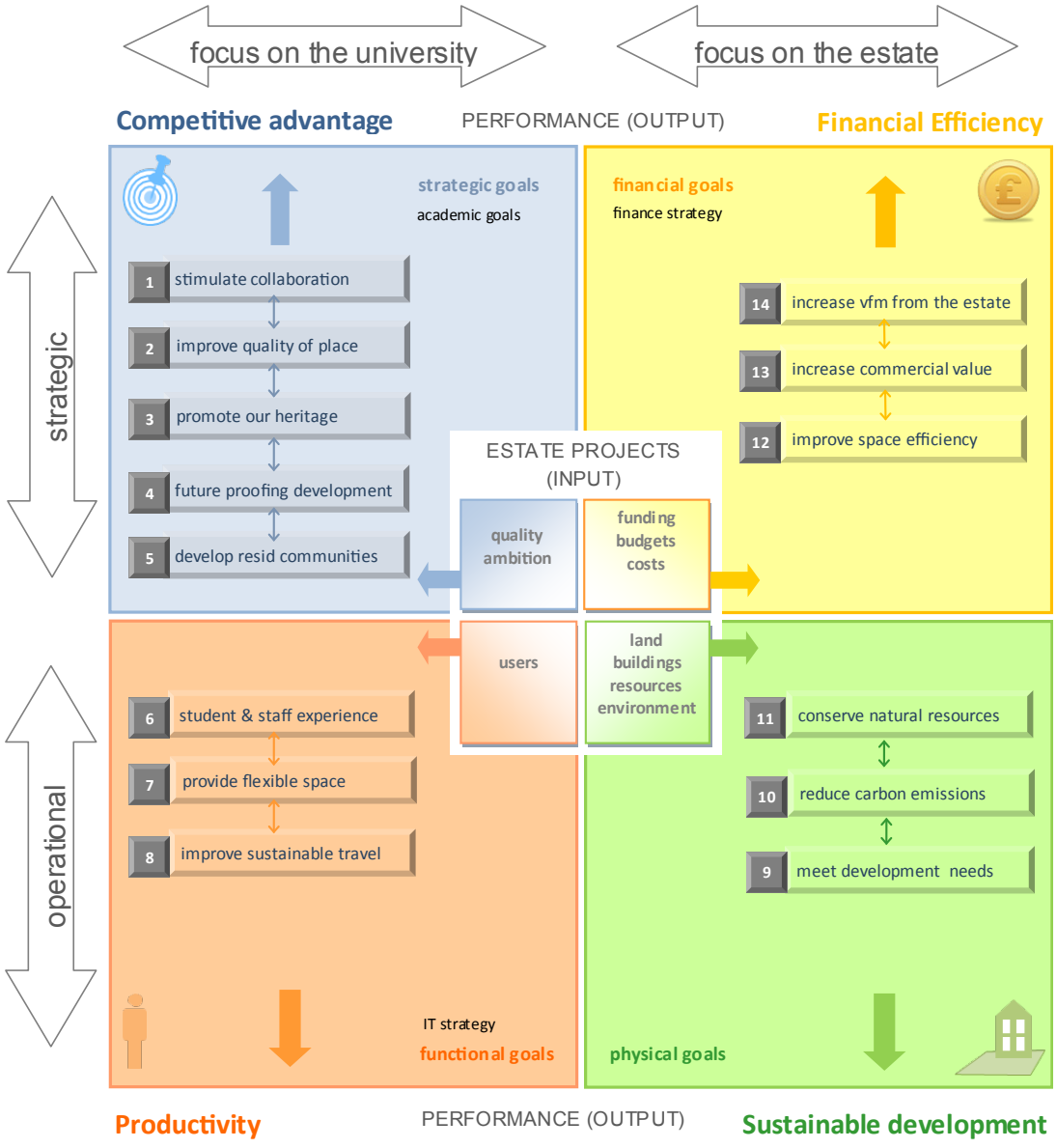


Image adapted from den Heijer (2011)

Part three
Strategies to support the University's competitive advantage

Goal One
Stimulate Collaboration

G1.1 At an estate-wide level, the University has had a long-standing locational strategy to stimulate collaboration amongst its academic uses, its administrative uses, and with industry, by reorganising the estate through the colocation of related uses:

Locational Strategy	
Academic	Principal locations for the Academic Schools: - most of the Arts and Humanities on the Sidgwick Site - the Humanities and Social Sciences primarily on the Sidgwick and New Museums sites (with space in the latter focused at Free School Lane) - the Biological Sciences on the Downing/Old Addenbrooke's/New Museums Site (the Cambridge Biocentrum) and to relocate the Vet School from West Cambridge - the Physical Sciences and Technology at the West Cambridge Site - Medical research facilities at the Cambridge Biomedical Campus
Administrative	The UAS will be located at three main hubs: - HQ functions at The Old Schools - Integrated Services Centre at Greenwich House - Student Services Centre at the New Museums Site
Entrepreneurship	Entrepreneurship hubs at three principal locations: - The West Cambridge Site - Cambridge Biomedical Campus - City Centre (site to be determined)
Commercial Research	- Research collaboration is planned on the University's sites at West Cambridge and North West Cambridge - In addition, commercial research development at the Cambridge Biomedical Campus offers the potential for collaboration in the life sciences
In addition, Cambridge Assessment is to relocate its activities on the former Cambridge University Press site at Shaftesbury Road.	

G1.2 The estate supports collaboration through shared facilities on some sites, but these tend to be poorly served in relation to break-out space within buildings and onto quality public realm.

G1.3 Collaboration on the estate still takes places predominantly within departmental buildings. Some progress has been made in organising teaching, meeting and social spaces around building entrances so that they are accessible, but for many years these spaces were typically embedded within Departmental buildings. That approach was inward looking, and a barrier to effective collaboration beyond departmental boundaries.

G1.4 It is essential therefore that we move towards a new model for the estate, which enables collaboration to take place beyond current departmental structures amongst a variety of University communities (Figure 3).

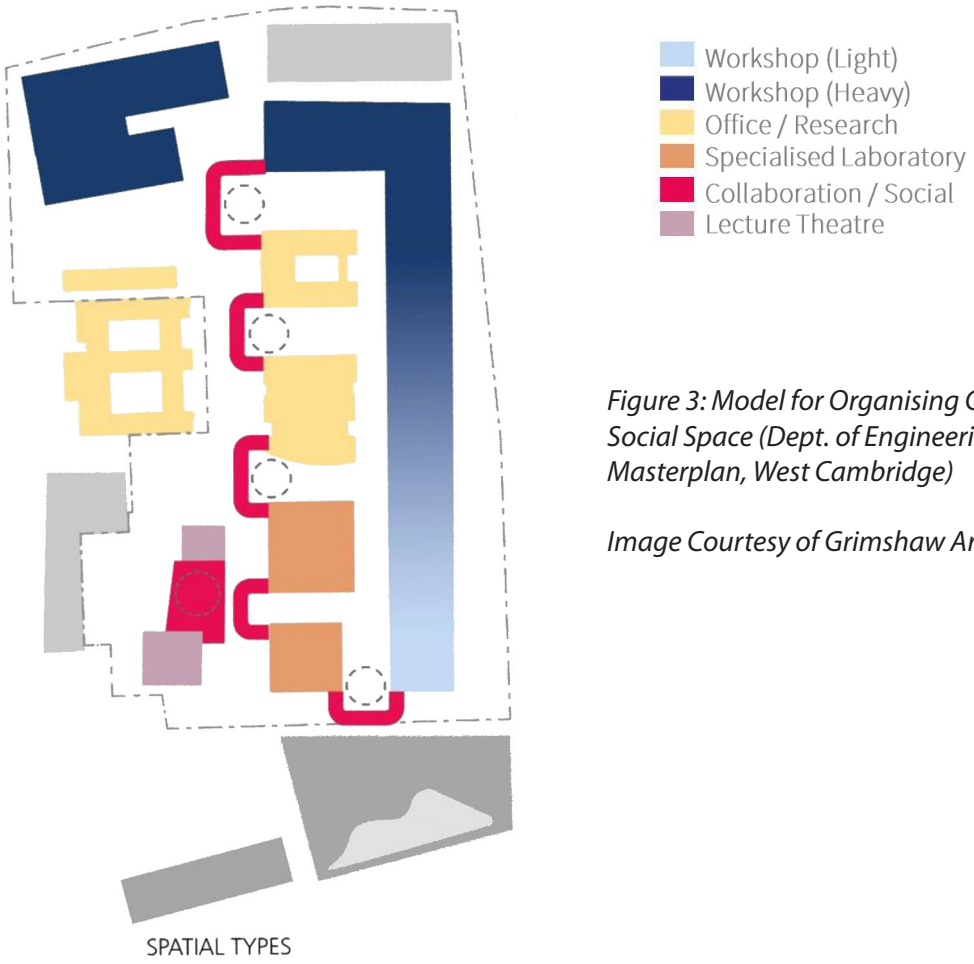


Figure 3: Model for Organising Collaboration/ Social Space (Dept. of Engineering Inset Masterplan, West Cambridge)

Image Courtesy of Grimshaw Architects

ACTIONS

We will continue to reorganise the estate by co-locating University and related uses, through the capital planning process.

We will establish a hierarchy of collaboration and social spaces through site masterplans and building projects:

- small meeting and seminar rooms, tea rooms – distributed within buildings, for use by the building occupants

- medium sized teaching and meeting rooms, cafes – located around building entrances, available for shared use (including public outreach events), and easily accessible

- large lecture theatres, meeting rooms, conference rooms, main catering outlets – provided in shared facility hubs that are organized around good quality public realm, with space for people to break-out onto open spaces

- public realm will be designed for use at different times of the day for both organised and informal events

Goal Two
Improve the Quality of Place

G2.1 The quality of place of our sites represents the physical aspects of our communities, and should be an expression of the University's academic excellence, with high quality places and services, in order to contribute to the University's and the City's competitive advantage. A number of our sites provide a poor quality of place, however, particularly in relation to urban realm.

G2.2 In a period of increased global competition to attract the brightest students and world class staff, the quality of the learning and working environment will be a key factor in the quality of offer made by our competitors.

G2.3 Research undertaken by the Higher Education Design Quality Forum (HEDQF, 2013) considered the importance of various factors to students when selecting a university, including the quality of the buildings and estate. The highest ranked factor was the academic course, followed by location, university reputation and then campus facilities. Overall, 76% of students thought campus facilities as either quite or very important when deciding where to study, while only 8% thought it was not very or not at all important.

Site	Quality of Place Issues
The New Museums Site	The site has a rich history of scientific discovery that, currently, is not celebrated through its quality of place. It has been described as 'crowded and muddled conglomeration' (Pevsner) an as 'extraordinary slums' (Booth and Taylor, 1970). Rapid ad hoc expansion in the first half of the 20th century resulted in an urban environment of poor quality, with high density development of inappropriate scale and urban realm used for vehicular parking and waste storage. Post war attempts to improve the situation whilst providing still more usable space, through a comprehensive redevelopment plan, were not continued after the completion of the Arup (now the David Attenborough) Building in the early 1970s and have left their own legacy in terms of further disjunctions of public space and scale.
The Downing Site	The Downing Site suffers from a similar legacy, particularly in relation to the poor quality of public realm for the southern part of the site. The open space of Colleges on two sides contrasts to the compact nature of the Downing site. The lack of permeability and open space in particular is the result of a century of incremental densification, which has gradually built over all parts of the site. The historic accretion of similarly-scaled Victorian and Edwardian buildings have resulted in a confused maze of alleys and dead-ends, which have become filled with parking and external plant areas.
West Cambridge	West Cambridge also suffers from poor quality of place, for different reasons. Prior to the 1990s the site was developed in a piecemeal way and in bringing forward a masterplan for the site for the first time in the 1990s it was recognized that 'The site lacks visual coherence as each of the three main existing developments – High Cross, the area of the Veterinary School and the Cavendish Laboratories – has been developed in a piecemeal manner. The style and appearance of each group are quite different. The intervening land is open and exposed…The site has a partially developed appearance' (Masterplan and Environmental Statement, MJP, 1997). Subsequent development has delivered a number of buildings of good quality design but research has found that some site users still find the environment of West Cambridge 'poor and rather bleak, with relatively empty streets and a feeling of sterility' (Creative Places, 2011). There is a lack of publically accessible social facilities, an over-dominance of surface car parking, and a poor sense of arrival and interaction with Madingley Road.

G2.4 Cambridge continues to perform amongst the global academic elite, but it cannot afford for the University's academic and research excellence to be undermined by a negative estate impact on recruitment and retention.

G2.5 In developing the estate, our aim is therefore to provide well designed buildings and urban realm at the University's operational sites, by focusing in particular on:

- The function of external spaces - the extent to which they support a variety of uses, and whether they are designed to be inspirational or merely functional

- Design - for local identity and character, at appropriate scale, and with places of activity at the edges

- User needs – in relation to University communities, Cambridge communities, maintenance access and deliveries, at different times of the day

G2.6 We are addressing these issues through the preparation of site masterplans (see Goal Nine – Meet the Demand for Development - for summaries).

G2.7 Our major building projects and site masterplans are subject to design review through the town planning process, prior to the submission of planning applications. We propose to establish our own Design and Sustainability Panel to review key design stages, to test and improve design quality from an early stage in the process, and to measure successful outcomes.

ACTIONS

Masterplans for the development of University sites will be prepared and kept up-to-date, and will set out proposals to improve the quality of place.

We will establish a University Design and Sustainability Review Panel to review proposals for capital building projects and site masterplans at key design stages.

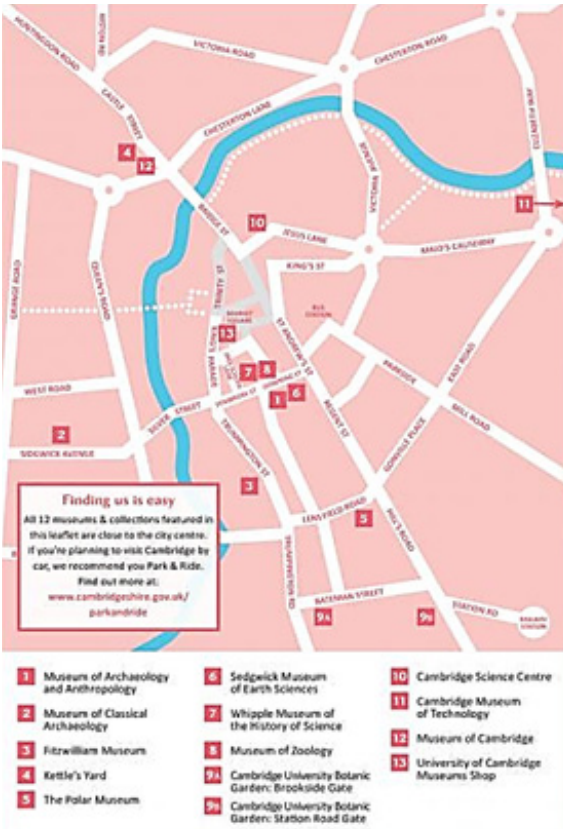
We will work constructively with the local authorities to help shape proposals for city centre access and public realm improvements in the location of our key central operational sites.

Goal Three
Promote Our Built and Cultural Heritage

G3.1 Cambridge is noted for its rich built and cultural heritage, to which the University and its colleges are the prime contributors. That heritage is a key part of the University's identity. Cambridge is still identifiably a University City, and its historic environment provides an aesthetic quality that few other Universities, if any, can match. That aesthetic quality combined with over 800 years of academic excellence and world leading scientific and medical discovery provides a unique environment.

G3.2 The University recognises that this environment adds significant value to the University's competitive advantage in the UK and globally, as an attractive place to work, study and invest.

G3.3 The University's museum collections are a world-class resource for researchers, students and members of the public. Cambridge has the country's highest concentration of internationally important collections outside London



G3.4 Our historic sites have hosted decades of scientific discovery. In particular, 23 Cavendish researchers received Nobel prizes for their work at the Old Cavendish Laboratory on the New Museums Site, including the discoveries of the electron by J.J. Thomson (1897) and the neutron by James Chadwick (1932), splitting the atom by Cockcroft and Walton (1932), and the structure of DNA by Crick and Watson (1953).

G3.5 A considerable part of our estate has built heritage significance, with the central sites located in conservation areas, and around 50 listed buildings in operational use, including the Grade I listed Old Schools (originating from the 1360s), Senate House (1720s), Fitzwilliam Museum (1830s) and Madingley Hall (1540s). A number of buildings are also designated by the City Council as Buildings of Local Interest (BLIs).

G3.6 The University is therefore guardian to some of the most significant built heritage in and around Cambridge. We take that responsibility seriously, and work constructively with the local planning authorities and Historic England in managing change to that built heritage.

G3.7 For many years, the University has been relocating laboratory based scientific research from historic buildings and sites where built space no longer meets the requirements for modern science, and where the sites are too constrained to deliver growth in research activity. Many uses in the physical sciences and technology have been relocated in recent years to purpose built space at West Cambridge and, consequently, practically all lab-based work has been relocated from our listed buildings.

G3.8 The relocations have enabled the New Museums Site to be re-purposed for alternative uses in conservation biology, the humanities and student services, whilst continuing to support teaching activities.

G3.9 Our capital programme includes development in the historic core of Cambridge. The New Museums Site is subject to phased redevelopment in accordance with the site masterplan and the site development framework (approved as a supplementary planning document), the preparation of which were informed by a historic environment assessment of the site. The Old Press Mill Lane Site and the Downing Site are also subject to change.

G3.10 In bringing proposals to change in the physical environment, a key aim is to promote our built and cultural heritage:

Measures to Promote Built and Cultural Heritage	
Creative use of heritage buildings and places	We will continue to match the right uses to our historic buildings, to achieve appropriate functional suitability. In particular, the future use of the History Faculty Building (Sidgwick Site), the Free School Lane Range of Buildings (New Museums Site) and the Bunker (Brooklands Avenue) must be determined.
Improvements to the setting of listed buildings	There are significant opportunities to improve the setting of listed buildings on the New Museums Site and the Mill Lane Old Press Site, through the selective demolition of buildings, the careful siting of new buildings, and the provision of public realm and landscaping improvements.
Understanding the significance our heritage assets	In making proposals that affect the fabric and/or the setting of our heritage buildings, we will carry out assessments of their heritage significance.
Celebrating past scientific discoveries	The heritage of scientific discovery should be celebrated through signage, public art and public realm design.
Improve the presence of our museums	Opportunities to improve the presence of museums from Pembroke Street and Downing Street should be taken in developing the New Museums Site and in bringing forward future plans for the Downing Site.

ACTIONS

We will bring forward proposals for the creative re-use of heritage buildings, in particular the History Faculty Building (Sidgwick Site) and the Free School Lane range of buildings (New Museums Site).

We will commission assessments of heritage significance in bringing forward proposals for change to our heritage sites and buildings.

A decision will be made on the future use or disposal of the bunker (Brooklands Avenue).

Goal Four
Future Proofing Development

G4.1 The land currently being utilised for development of the West Cambridge site south of Madingley Road and the farmland to the north, now being developed as the North West Cambridge development were acquired by the University many years ago, long before development was contemplated by either the local authorities or the University. The proximity of both sites to central Cambridge and in current terms the relative ease of access by bicycle, on foot and by public transport, has facilitated the development of major new science buildings on the West Cambridge site to replace the centrally located early 20th century buildings that could not provide the physical environment for continued expansion of high quality scientific research and teaching. The sites of the former Gravel Hill and Howes farms are now facilitating the development of a major new mixed-use community that will help address the chronic housing shortages of both the city generally, but crucially also those of the University and colleges in terms of qualifying staff, particularly newly arrived researchers and technical staff.

G4.2 In addition to the 3000 housing units at North West Cambridge, 2000 student units and supporting infrastructure, approval was given for 100,000m^2 research floorspace, up to 40% of which may be used for private research facilities with links to the University. This is in addition to the remaining development capacity through the existing planning consent on the West Cambridge site under which a further 27,000m^2 of academic space and 52,000m^2 of non-academic space can be built.

G4.3 A new outline planning application and illustrative masterplan for future development at West Cambridge development will replace the extant permission and is expected to deliver the capacity for 200,000m^2 academic space and 170,000m^2 of commercial research space. These substantial increases in capacity need to be viewed however against the agreed strategies of relocating both the Engineering and Chemistry Departments from their current sites in the city centre, as well as building a new Cavendish Laboratory. In the instances

of Engineering and the Cavendish Laboratory, the new facilities will involve both significant expansion of buildings and site areas.

G4.4 In addition to West and North West Cambridge, the University has 40,000m^2 space with planning permission/under construction, and pipeline planning application proposals for 37,000m^2 space.

G4.5 We have an estimated 10 years supply of space[2] for University academic development as at mid-2016, which is predicted to rise to 24 years supply by mid-2017 on achievement of the new outline planning permission for West Cambridge and other pipeline applications.

G4.6 The future supply of space at Academic School level is varied. West Cambridge will provide capacity for development in the physical sciences and technology for a number of years, through a new outline planning permission. There is potential to achieve space efficiencies and to deliver some additional development capacity through a revision to the masterplan for the Sidgwick Site, through master-planning, for the Schools of Arts and Humanities and Humanities and Social Sciences. Biological Sciences and Clinical Medicine face significant constraints to the future supply of space, however, which will be largely limited to redevelopment of existing land within the current estate.

G4.7 The University must therefore give serious consideration to options to increase the supply of space beyond the current estate for future operational / non-operational purposes, in both Cambridge and the sub-region, for the short, medium and long-term. In addition, the University will continue to expand overseas in countries that are important to the future growth and success of the University.

G4.8 To date, the University's strategy for operational capital development has been characterised by 100% ownership, 100% equity, solely developed, and exclusively for operational use. This has served the University well historically, but is not necessarily the most appropriate strategy for future development beyond the current estate due to the increasing demands on capital funds, high land costs in and around Cambridge, and the length of time needed to secure development allocations through local plan reviews.

G4.9 The University will therefore consider a range of investment options in future-proofing the supply of space for operational development:

Current Strategy	Alternative investment vehicles
100% owned by the University	The University as a majority/ minority shareholder
100% University equity	A mixture of debt financing and equity with investment from UK and/or overseas investors
Solely developed	Joint Ventures/development agreements
Operational use only	Mixed operational/non-operational uses (e.g. with ground floor commercial uses delivering annuities)

G4.10 Alternative investment options would require new funding strategies and business models to be developed (with a focus on appropriate annuity income for non-operational developments) as well as capital investment, for which joint-working will be required between Estate Management, the Finance Division, the Academic Division and CUDAR.

ACTIONS

We will prepare strategies for the development of operational and non-operational property beyond the current estate.

We will work with expert local agents, and the local authorities, with a view to locating opportunities local to Cambridge and within the region.

[2] A function of the amount of space (m^2) available from unimplemented planning permissions and buildings under construction, the average project cost/m^2 of current capital building projects, and the average total annual capital project spend. The years supply of space would decrease with an increase in total capital project spend, and vice-versa, reflecting elasticity in the supply of land.

Goal Five
Develop Residential Communities

G5.1 The University owns 370 dwellings that are let to staff, distributed across Cambridge, with significant concentrations at the West Cambridge Site (206 units), Fen Causewayside (44 units) and George Nuttall Close (60 units).

G5.2 In addition, the North West Cambridge development will eventually provide 1500 affordable 'key worker' housing units for the University[2], which will be rental properties available to qualifying University and college staff, on annual tenancy agreements for a maximum total period of 3 years. The reason for this is to maintain an accessible residential resource to meet the needs of staff new to Cambridge and for hard to fill posts, given the annual turnover of over 2000 researchers who are typically employed on 1 – 3 year contracts. This accommodation has therefore never been intended to meet the needs of University / college staff on a long term rental basis or to provide special access to housing for purchase, other than by assisted purchase through the University's 'shared equity' scheme.

G5.3 Shared equity schemes in general do not appear to have found favour with a large number of potential purchasers, possible difficulties including a reluctance to move on due to the problem of affording increased equity share and also the legal and associated costs even if it is possible to 'staircase' equity.

G5.4 The market housing at North West Cambridge, brought forward by residential developers, will be in a prime location and therefore likely to be at such prices as to be inaccessible to the majority of University / college staff.

G5.5 The University in common with both its UK and international competitors recognises that lack of affordable, decent quality accommodation is becoming an increasingly challenging issue, particularly for staff with young families.

G5.6 For later phases of development at North West Cambridge the University will consider the mix of rented key worker housing, informed by outcomes from a new housing needs survey, and whether there are there other tenures of accommodation that could be provided to satisfy some of the unmet need for staff who don't qualify for key worker housing but can't afford the market sale housing.

G5.7 In addition, we will explore opportunities for the development of affordable housing for staff as part of residential communities beyond Cambridge, in locations with access to good quality sustainable travel.

ACTIONS

We explore opportunities to develop affordable key worker housing as part of residential communities beyond Cambridge.

We will explore whether alternative rental and ownership models can be brought forward that will give wider, more affordable access to housing than is currently the case.

[3] The North West Cambridge Phase 1 development will deliver 700 homes (688 x 1 and 2 bedroom properties, 12 x 3 bedroom houses) for occupation between January-December 2017

Part four
Strategies to improve University productivity

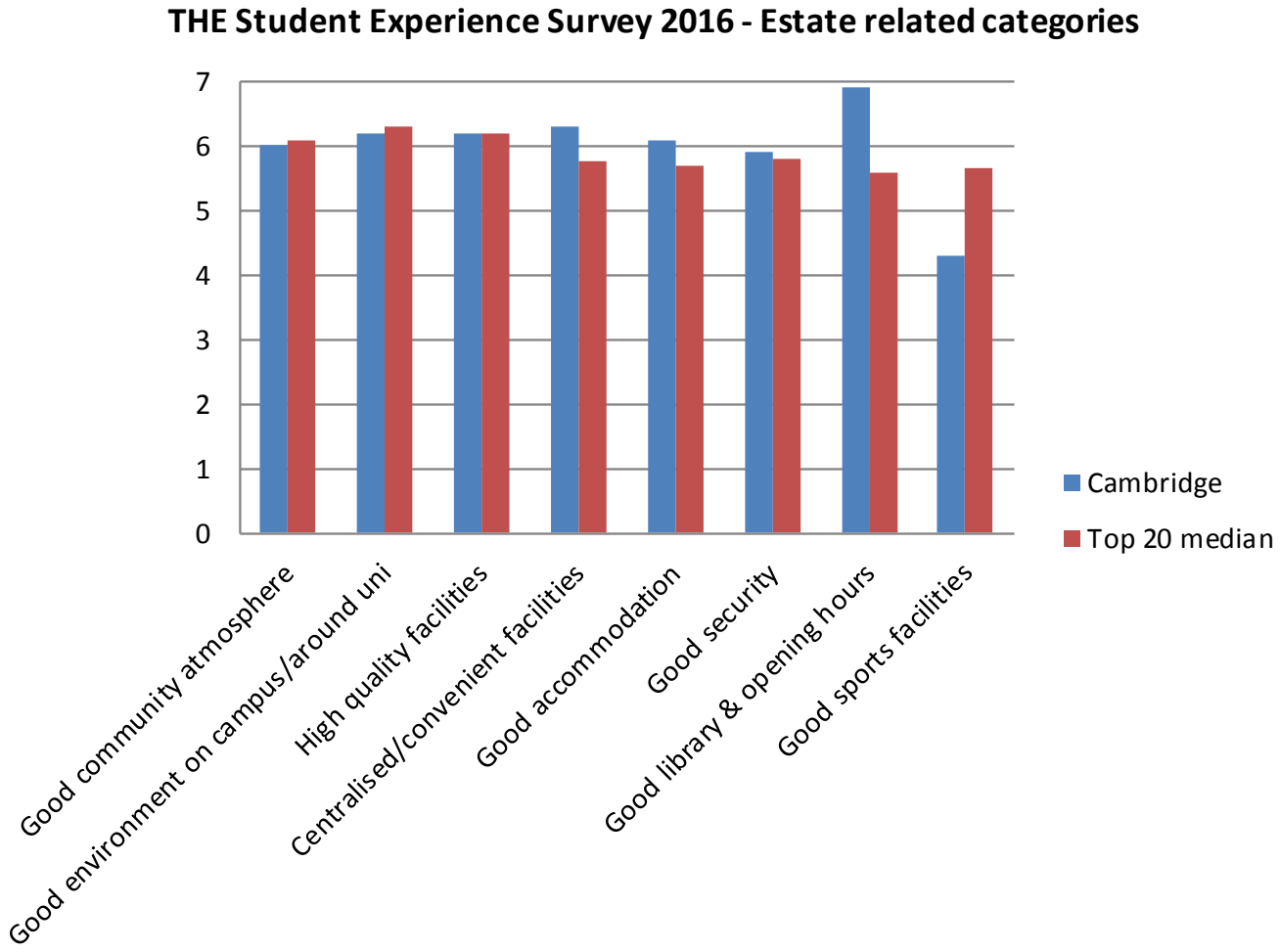
Goal Six
Deliver a Positive Student and Staff Experience

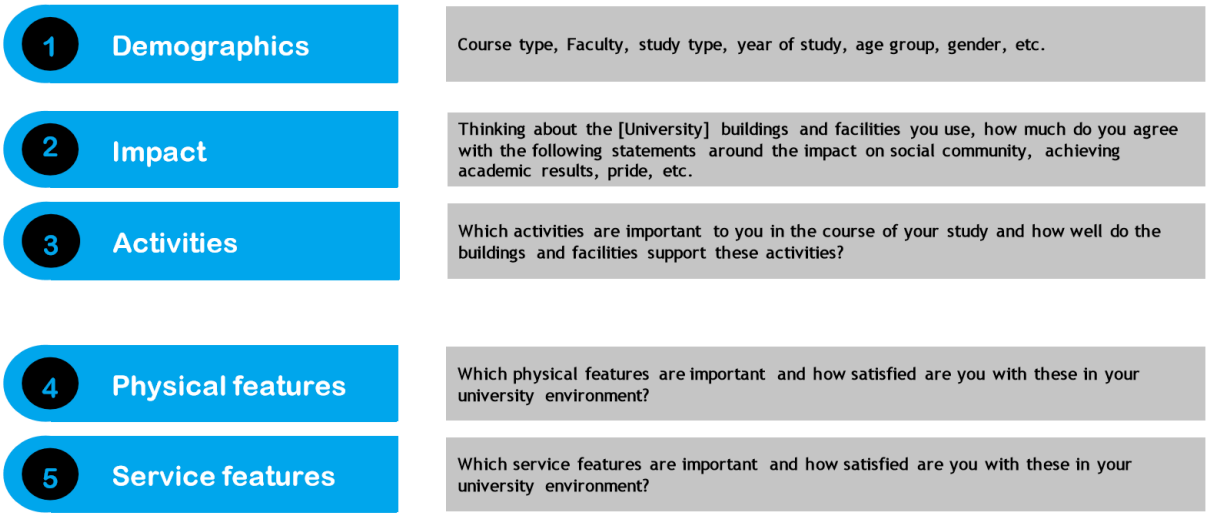
G6.1 There is only limited information on the student experience of the estate. The main student surveys (NSS, PRES, PTES) touch only briefly on estates issues. The Times Higher Education Student Experience Survey 2016 provides useful data on a number of estate-related attributes, and Cambridge performs reasonably well when benchmarked against the median score for the top twenty ranked Universities overall.

G6.2 The survey results are from only 208 Cambridge students, however, and will be affected by experience of both university and college estates.

G6.3 To help ensure that the estate supports productivity in teaching, research and administration, we need to ensure a positive experience of the estate for staff and students, for example through the provision of disabled access to both new and (where possible) old buildings. We will therefore conduct a comprehensive, online survey amongst all staff and students to identify the activities they undertake at the University, their importance and how well they are supported by the estate. The survey will consist of a standardised core of fixed questions for benchmarking, which will necessarily differ between the two groups surveyed. The survey has the capability to include extra questions to address specific, local conditions.

G6.4 The results will identify the satisfaction levels across all aspects: workplace activities, design, services and physical features and allow detailed





Source: leesmanindex.com

analysis at a site and building level and across respondent types. It will be possible to establish the best and worst performing sites/buildings and those workplace services, such as catering or cleaning, that may require further investigation using service specific questionnaire to develop further information that would inform improvement plans.

G6.5 Importantly, the results should also identify those areas where a disinvestment strategy may not adversely affect satisfaction.

G6.6 The survey results will be reviewed, published and redone every three years to reflect the student experience.

G6.7 Targets will be established following the results from the first survey. These will focus on sites/buildings under development to ensure that resources already committed are used effectively to improve areas identified as under supported and of importance.

G6.8 Benchmarking with Universities and comparable organisations will assist in goal setting and decisions regarding the uses of service providers.

G6.9 Monitoring progress will be via local, thematic surveys, such as catering questionnaires, and targeted revisions for when a site is under development.

ACTIONS

We will conduct surveys of students and staff to measure their experience of accessing and using the estate.

We will use the survey results to inform plans to improve the student and staff experience.

Goal Seven
Deliver Flexible and Adaptable Space

G7.1 Significant areas of built space on our estate should be capable of being used flexibly to support different activities, both now and in the future.

G7.2 We cannot be sure how teaching and research will be carried out in decades to come, during the lifetime of our buildings. The University therefore has an aspiration to provide flexible space in generically designed buildings that can be easily adapted to meet the current and future needs of our communities. New university buildings should be innovatively designed to allow for change in terms of the function they house and the capacity to achieve the performance required for the population they hold. Therefore, new buildings must be resilient to accommodate consequential changes.

G7.2 Current projects are generally defined largely by the Department that will initially be using the space. As a result the project brief is Department specific and can focus on a relatively short term need. Over time this means that the newly created space is not as adaptable or flexible as it could be, largely due to the increase in the capital cost that is often required to achieve fully adaptable space.

G7.3 As the University develops its academic and research strategy it is important that building assets are capable of adaption to meet new or emerging needs. Currently this is an expensive and relatively long process that often fails to achieve optimum results. A level of change is inevitable due to the scale of the University's interests, with the development of the masterplans for the key locations it is important that the need and potential scale for adaptability is fully understood and this is then factored into the strategic brief for each project.

G7.4 We therefore propose to develop a Design Guide for flexible space and adaptable buildings that focusses on design parameters and typologies, to ensure that a level of flexibility is designed into all new and refurbished space. Design parameters will include: storey height; building proximity, form and plot density; plan depth; structural design; vertical circulation, servicing and core design; fire safety design; and cladding design. Adaptable buildings may be achieved by designing buildings that incorporate different design strategies which provide, for example:

- Good volumes, such as clear headroom
- A regular structural grid, which should be as large as possible to maximise flexibility
- Versatility, the ability to change the internal space of a building with a strong emphasis on shell and core fit out elements
- Use of modular and standard building compo nents and systems where possible and viable
- Whole life costs – understand the impact of differ ent choices on the whole life cost and the business case and reflect this in the funding model for the project

G7.5 We therefore intend to move towards the approach where the University is responsible for a more standardised design for shell and core, with the fit out being more reflective of departmental needs. Academic Schools will have an important role to play in balancing the standardised approach with user requirements.

ACTIONS

We will development design guidance for flexible space and adaptable buildings.

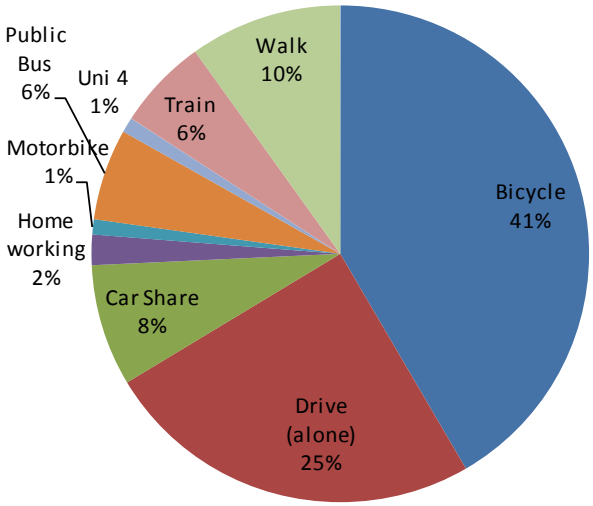
Goal Eight
Improve Sustainable Travel

Current Position

Journeys to work

G8.1 Results from annual travel surveys[4] show that one quarter of staff drive alone to the University to access their main workplace. The University is currently achieving the main target of the 2011 Travel Plan to have less than 25% of staff travelling to work by car alone.

Current staff journey to work modal split



G8.2 Over 75% of staff currently travel to work using sustainable travel modes, with the highest proportion being by bicycle, followed by walking and car sharing. This has remained stable for the last ten years with few changes in travel behaviour.

G8.3 A detailed travel study[5] into current travel trends was carried out in 2015 and found that there is scope to further encourage more staff to travel by sustainable travel modes:

- Sustainable travel choices are more common for the journey to work at the more central sites such as New Museums Site and Downing and less so elsewhere.
- Two thirds of staff are satisfied or very satisfied with their journey to work, with cyclists and pedestrians stating the highest level of satisfaction due to the speed, flexibility and fitness benefits. In contrast, public transport users and car users cited negative reasons for choosing their transport mode, including distance for travel and lack of viable alternatives.
- Long journey times, high cost of fares, low frequency of buses and lack of suitable routes were highlighted as reasons why staff could not travel by bus. For car sharing, staff highlighted the need to get home in an emergency, varied start and finish times and not knowing anyone to share with as key barriers.
- Over 90% of students walk or cycle to access the University and generally cars were used for trips to outlying sites where limited transport is available.

Journeys at work

G8.4 The travel survey also looked at journeys throughout the day and found that more than 50% of staff travel between their base site and the other University sites or other locations in Cambridge for work purposes. Of these trips, 36% are made by cycling, 35% by walking, 12% by bus, 9% by car share, and 9% by staff driving alone. Sustainable travel options for these journeys to other University sites are more common at the more central sites and less common at the peripheral sites where trips by car were as high as 18%.

G8.5 The Uni4 service, primarily designed as a travel at work bus between West Cambridge and the Cambridge Biomedical Campus takes 230,000 passengers per year[6] and is used for 11% of journeys at work. Staff reported an unwillingness to use the service due to poor reliability, preferring instead to walk, cycle or drive.

Changing Demands

Growth in numbers of University staff

G8.6 The number of staff working at the University is likely to increase in the future, potentially increasing the University's impact on congestion and air pollution.

[4] Travel for Cambridgeshire Survey, carried out annually in October
[5] SDG Travel Survey and Segmentation Study, May 2015
[6] Stagecoach patronage data

Coupled with growth in employment in Cambridge, this will lead to increased pressure on the local transport system, increasing delays to journeys to work and at work for University staff, having a negative impact on productivity at the University and the quality of the staff and student experience.

Development at the City Edge

G8.7 Parts of the estate at the City edge have lower levels of public transport accessibility than the City Centre. The travel survey highlights that staff at these sites make a higher proportion of trips by car. Development at these locations is likely to make the current travel target of no more than 25% of staff driving alone harder to achieve.

City Deal investment

G8.8 The University is a partner in the Greater Cambridge City Deal programme planning to invest an initial £100m in sustainable travel improvements in Cambridge before 2020. This has raised the importance of sustainable travel in Cambridge and consequently the need to work closely with the local authorities and other stakeholders. It is likely that policies such as a workplace charging levy will be considered by the City Deal Board in the near future, having a direct impact on staff journeys to work.

G8.9 An important issue for both the West and North West Cambridge sites is the lack of transport connection with the Addenbrooke's Biomedical Campus, which is important for connection between Physical Sciences, Technology and Biomedical research. City Deal proposals for public transport improvements along the M11 corridor could be highly beneficial both in terms of facilitating easier connection for scientific research purposes and well as giving convenient access to the residential facilities of NWC for researchers and technical staff on the Biomedical Campus.

Scrutiny of the University's transport initiatives

G8.10 There is increased scrutiny of the University's transport impacts and proposals through the City Deal programme and the town planning process. The local planning authorities require travel plans to accompany development proposals in order to help manage the demand for travel. The University is required to monitor trips on a section of the M11 and could be liable for a payment of £975,000 if the number of University generated trips grows.

Requirement to influence University residents travel behaviour

G8.11 Through the North West Cambridge Development Framework Travel Plan, the University now also has a requirement to influence and monitor residential travel patterns, which will bring about new challenges for the University.

Our Aims for Sustainable Travel

G8.12 Our key aims are:
- To reduce the need to travel for staff and students;
- To increase the number and range of sustainable travel options open to staff, students and visitors.
- To improve the staff, student and visitor travel experience;
- To support the University's operation and growth;
- To reduce the University's impact on congestion, air pollution and climate change.

Towards a new Transport Strategy

G8.13 A new Transport Strategy will be prepared in 2016. The Transport Strategy will form a daughter document to this Strategic Framework.

G8.14 The Transport Strategy will include detailed proposals for a set of transport initiatives to influence travel behaviour, including:
- University-wide initiatives including car parking initiatives and smarter travel initiatives such as personalised travel planning and a bespoke journey planner.
- Site and building levels initiatives including in novative cycle parking, transhipment, wayfinding, signage, delivery and servicing plans.
- I nitiatives to connect key University sites: such as public transport improvements, demand responsive transport, electric shared taxi procurement and development of walking and cycling routes.

G8.15 The following key implementation areas will be taken forwards over the next five years:

Measure	Strategy
Car Parking	Implementation of new policy, to ensure that: - the demand for travel is managed in favour of sustainable modes, thus improving air quality and wellbeing, and contributing to University/local authority/City Deal plans to reduce congestion - parking is used by those most in need - car parks are used and managed effectively, for those that need to drive and to support the operational needs of the University - SMART technology is used, where possible
Car Club	Increase the number of car club bays on the University's estate and increase uptake from Institutions.
University Bus Service	Work closely with the operator, to develop the service, improve punctuality and increase patronage.
Public Transport	Investigate new options such as shuttle services. Work closely with the local councils and Cambridge University Health Partners to ensure public transport initiatives are developed to benefit University staff, students, visitors and residents.
Electric Vehicles	Installation of charging points across the University.
Cycling	Implementation of cycling initiatives including cycle parking, cycle loan schemes, pool bike schemes.
Promotion & Information	Continued development of University branded promotional and information resources to raise awareness of sustainable travel.
Travel Plans	Continue to implement building Travel Plans (required as part of planning permission and voluntary).

G8.16 A Monitoring Strategy will be developed and will include the following Key Performance Indicators:

ACTIONS

We will prepare a new Transport Strategy.

We will engage with City deal Partners in developing proposals for the development of transport infrastructure and services.

Transport Mode	Key Performance Indicators
Modal split	% Journeys to work. % Journeys at work.
Public Transport	Number of passengers boarding the University subsidised buses. Level of satisfaction with the University bus service. Revenue generated from the service.
Electric Vehicles	Number of staff signed up to use the charging points.
Cycling	Cycle counts on University owned sites (including NWCD Ridgeway, West Cambridge Coton Footpath).
Car sharing	Number of staff registered on the website.
Car Clubs	Utilisation of current car club vehicles on University sites.

Part five
Strategies to deliver sustainable development

Goal Nine
Meet the University's Development Needs

G9.1 The University's building programme is ambitious in scale: the Capital Expenditure Plan (CEP) contains building projects with approximately £3bn of project costs, of which around £750m is currently prioritised. The programme is driven by growth in operational activity, the need to relinquish or redevelop space that is not fit-for-purpose, and to achieve academic/administrative integration and collaboration.

G9.2 Delivery of the CEP, and key individual projects, requires a significant uplift in the development capacity of the estate. As noted in Goal 4, we have an estimated 10 years supply of space for university academic development as at mid-2016. This is low given the scale of ambition for development of the estate, and particularly because 44% of the space supply is at North West Cambridge, for which there is currently no identified strategy for academic development.

G9.3 Our strategy is therefore to optimise the development capacity of the existing estate where major physical change is identified through the preparation of comprehensive site-wide frameworks for development. Where possible, this will be through outline planning permissions where the parameters for development are formally approved, and a site masterplan illustrates how development could come forward.

G9.4 For sites within conservation areas, where the local planning authority will not accept outline planning applications, a site-wide masterplan-led approach will still be followed in order to thoroughly assess development constraints and opportunities and to identify development proposals.

G9.5 It is through this approach – rather than a piecemeal building-by-building approach – that an overall vision for a site can be identified, principles of development can be established, with different layers of physical change (streets, open spaces, buildings, infrastructure), and through which development capacity can be tested and optimised, and future development opportunities defined and safeguarded.

G9.6 This strategy will be applied to the following sites, where major change to the estate is proposed:

Cambridge Biocentrum – a pre-masterplanning Options Appraisal was undertaken in 2014-15 for the those parts of the Downing and Old Addenbrooke's sites occupied by the School of Biological Science, to assess the capacity of the existing sites to deliver growth and transformation. This informed a strategic decision by the School of Biological Sciences to remain in central Cambridge. A masterplan will be prepared in 2016-17.

Cambridge Biomedical Campus (CBC) - the University's ability to meet the needs for development in the life sciences for the Schools of Clinical Medicine and Biological Science is significantly constrained by the limited amount of land under its ownership. Some of that land is not used efficiently, particularly in the context of the CBC Strategic Masterplan and Design Guidelines prepared in 2010, and the opportunity exists for to masterplan a number of sites, including the Island and Forvie Sites, through which under-developed land can be unlocked.

Mill Lane/ Old Press Site - University operational uses are being relocated from the site as part of the locational strategy for academic and administrative uses set out above. This creates the opportunity for disposal to colleges on long leases to deliver student housing and mixed-use development, and lease-back of ground floor commercial space to generate income to the non-operational estate. A SPD was adopted by the City Council in 2010, which requires a site masterplan to be submitted with the planning application for the first significant redevelopment proposal.

New Museums Site - the site is being re-purposed from physical sciences and technology to a combination of conservation biology, social science and student facing organisations. A site masterplan was prepared in 2013-14 in order to provide a framework for development, including the definition and delivery of projects identified in the University's Capital Plan. A Supplementary Planning Document (SPD) for the site has been

prepared, based upon the masterplanning proposals, for formal adoption by the local planning authority and to be used as a material planning consideration in the consideration of planning applications for future development.

North West Cambridge (NWC) (www.nwcambridge.co.uk) - planning permission was granted in February 2013 for housing and mixed-use development, including 100,000m^2 of academic and research and development space, of which at least 60,000m^2 can be delivered for academic use. This is a significant land resource and a strategy for its academic use should be defined.

Sidgwick Site – a site masterplan was published in 2000 and provided the framework for development of the Criminology, Faculty of English and Alison Richard Buildings. A revision to the masterplan is being prepared, to optimize the development and use of space for the Schools of Arts and Humanities and Humanities and Social Sciences.

West Cambridge (www.westcambridge.co.uk) - outline planning permission is being sought for mixed use development including 200,000m^2 academic development. Once approved, this will help to increase the supply of land for academic development to 24 years supply by mid-2017, and will provide capacity for the delivery of a new Cavendish Laboratory, and for the integration of the Department of Engineering through relocation of four Divisions from central Cambridge.

G9.7 The timescales for delivery of development on these sites is long-term and a wide variety of stakeholders will be involved. Accordingly it is likely that successive management decisions at all levels within the University and external organisations will change as development progresses. Maintaining continuity of purpose and upholding key principles may prove challenging as time passes. The University will therefore apply a formal process to review individual projects (whether infrastructure, operational or commercial projects) for compliance with masterplan principles, to help guard against 'mission drift'.

G9.8 In addition, the context and needs for development will evolve over the length of the development programme. Accordingly, masterplans will be reviewed relative to the on-going relevance of the masterplan principles, and to learn from the outcomes of successive projects delivered.

G9.9 In addition to optimizing development capacity, a masterplan-led approach brings other benefits.

Planning certainty and deliverability – it is an advantage to the University to create development opportunities on its sites through masterplans so that development plots and phases can be establish, enabling the University to bring forward development proposals more efficiently as funding opportunities arise.

Academic planning – it is of benefit to schools and departments to understand the potential for development and use of space on the University's estate, to help shape proposals for development through the annual planning round and through the capital planning process.

Sustainability improvements/carbon savings – there is potential for site-wide sustainability improvements to sites, including energy infrastructure, water management, and biodiversity, that can come forward efficiently on a planned basis (See Goals Ten and Eleven).

Improvements to the quality of place (see Goal Two).

G9.10 We will monitor progress by calculating the years supply of space for academic development on an annual basis.

ACTIONS

Masterplans for the development of University sites will be prepared and kept up-to-date, and will set out proposals to optimise development capacity, in order to meet current and future development needs.

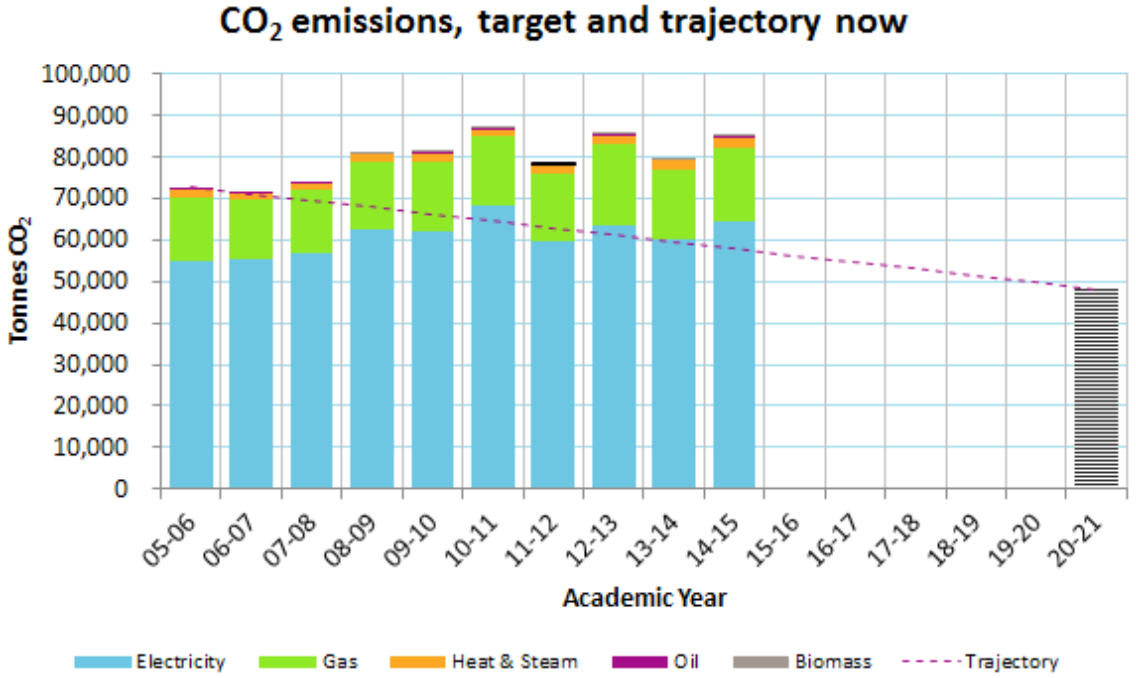
We will prepare a strategy for academic development at North West Cambridge.

Goal Ten
Reduce Carbon Emissions

G10.1 Our Environmental Sustainability Vision is that the University of Cambridge is committed to making a positive impact through outstanding environmental sustainability performance. The University's Environmental Sustainability Vision, Policy and Strategy 2015[7] articulates how we intend to achieve this ambitious vision. It sets out aims, objectives, targets and key implementation measures relating to, amongst others, energy and carbon management.

G10.2 Our Carbon Management Plan 2010-2020 sets out a carbon reduction target of a 34% reduction in energy related carbon emissions by 2020 against a 2005 baseline. The expanding estate and large volume of scientific and medical research makes the achievement of this target particularly challenging, but growth must not be viewed as an excuse or a reason for not reducing our emissions in absolute terms. Other research intensive Universities have been successful in reducing their carbon emissions in absolute terms while increasing the size of their estate. For example, Harvard reduced their carbon emissions from energy-use by 20% while floor area increased by 15% between 2006-2015[8].

G10.3 Our absolute carbon emissions have increased since our baseline year, however, with the key driver to this being the growth of the estate:



(Note: This chart is a draft. It shows historic carbon emissions from buildings, from an initial review of data, and is subject to change. It currently shows information for buildings only (although buildings make up the large majority of Scope 1 & 2 emissions))

[7] www.environment.admin.cam.ac.uk/environmental-sustainability-vision-policy-and-strategy
[8] http://report.green.harvard.edu/

G10.4 The imperative to reduce our carbon emissions in absolute terms is substantial. The scientific community, including academics from our own institution, is in agreement that the evidence is clear and persuasive that warming of the global climate system is unequivocal and that there is human influence on the climate system. At COP21, nearly 200 countries including the UK agreed to keep the global average temperature rise to well below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C. We need a step-change in our approach to reducing our carbon emissions and through the review of our Carbon Management Plan in 2016 we aim to set a target in line with what the science says is necessary to keep global warming below the dangerous threshold of 2°C. Through this review we will assess what contribution we need to make and how we can get there.

G10.5 As part of our Environmental Sustainability Policy and Strategy we aspire to a long-term ambition to be carbon neutral from energy use by 2050. In developing and managing our estate, we will identify measures to reduce our direct environmental impacts through our masterplanning, capital programme and maintenance activities.

G10.6 We need an estate-wide approach to carbon reductions where new developments, such as those at West Cambridge and other City-edge locations, make greater contributions in order to compensate for constraints in the central sites. These constraints include matters such as heritage, space configuration, building lifetime, functional suitability, building orientation and limited opportunities for renewables on land and buildings.

G10.7 A new approach to sustainable construction (currently under development) will embed sustainability into all our capital projects: new build, refurbishment and fit-out. Our priority is to build and operate buildings which demonstrate clear, ongoing value to their users: providing high quality internal and external environments and effective management of environmental impacts. We recognise the clear link between efficiency optimisation and reduced operational costs over the life-time of the building. Our aim is to achieve the best balance between any upfront costs associated with sustainable design measures and clear value benefits across the lifecycle of our buildings. This includes the consideration of health and wellbeing benefits for our building users – providing productive, comfortable working environments to ensure the highest possible levels of occupant satisfaction. Our emerging approach to sustainable construction therefore goes beyond 'ticking the box' and emphasises the need for early commitment and planning to deliver tailored, best practice outcomes.

G10.8 The University's new Carbon Management Plan (due to be completed in 2016) will set out our new approach to carbon reduction across all scopes and incorporate a target based on the contribution that we need to make and the enabling actions that we need to implement to achieve that target. This will represent a step-change in our approach, and we will explore what would be required to achieve our aspiration to be carbon neutral by 2050.

G10.9 Site-specific sustainability frameworks are developed as part of masterplanning work. Frameworks are currently in use or under development for the North-West Cambridge Development, New Museums Site, West Cambridge, Mill Lane/Old Press, Sidgwick and Biocentrum sites. These frameworks put sustainability at the heart of site-development from the initial masterplanning stages, through the design and construction stages, to the operation phase. They set out site-level sustainability aims, targets and actions under several principles and are used to set the sustainability brief for each phase of the development.

G10.10 A Design and Sustainability Review Panel (see Goal Two) will form a key part of the project management process and will advise in relation to the implementation of sustainability measures and achieving the University's environmental objectives. The panel will be involved in value engineering decisions to help ensure that decisions take into account life-time cost and carbon savings.

G10.11 We have committed £2M per annum over 10 years to projects which reduce the University's energy consumption and associated carbon emissions through the Energy and Carbon Reduction Project

(ECRP). This includes building retrofit projects; initiatives to reduce the energy consumption of equipment both in terms of purchasing and using more efficient equipment; and behavioural and cultural change projects.

G10.12 In addition to work to reduce energy demand in our new and existing buildings, we seek to provide zero and low carbon energy generation on our estate to reduce our carbon emissions and increase security of our energy supply. Building-level renewables are incorporated as part of our capital plan or as a retrofit when viable to do so. Site-wide energy strategies are developed as part of our masterplanning work, for example, the New Museums Site energy strategy includes site wide district heating and PV panels. The district heating scheme is designed in a way that it can be connected to other nearby University sites and/or other organisations in the future. At West Cambridge, the emerging energy strategy is exploring the feasibility of a district heating scheme based on an innovative combination of CHP, heat pumps and thermal stores. We are also exploring strategic opportunities for large-scale renewables on University land and will further consider those which are likely to be feasible and financially viable.

G10.13 Through the Soft Landings process, we monitor the energy consumption of new buildings and compare to the design estimates for at least three years after occupation. We aim to investigate any significant differences and implement appropriate mitigation measures.

G10.14 The Living Laboratory for Sustainability is supporting the inclusion of sustainability issues into estate operations. This project provides students with practical experience researching real-life sustainability challenges on the estate, while at the same time helping to improve the sustainability of the estate.

G10.15 We will monitor progress against our carbon reduction target annually and report this publicly via our annual Environmental Sustainability Report. Our Environmental Sustainability Policy includes the following key performance indicators, all of which are monitored at least annually, with most being monitored on a quarterly basis:

KPIs
Carbon emissions from energy use (tonnes)
Carbon emissions from water use (tonnes)
Carbon emissions from energy use per staff and student (tonnes/FTE)
Carbon emissions from water use per staff and student (tonnes/FTE)
Carbon emissions from energy use per total income (tonnes/£)
Carbon emissions from water use per total income (tonnes/£)
Percentage of energy generated from onsite renewable or low carbon sources (%)

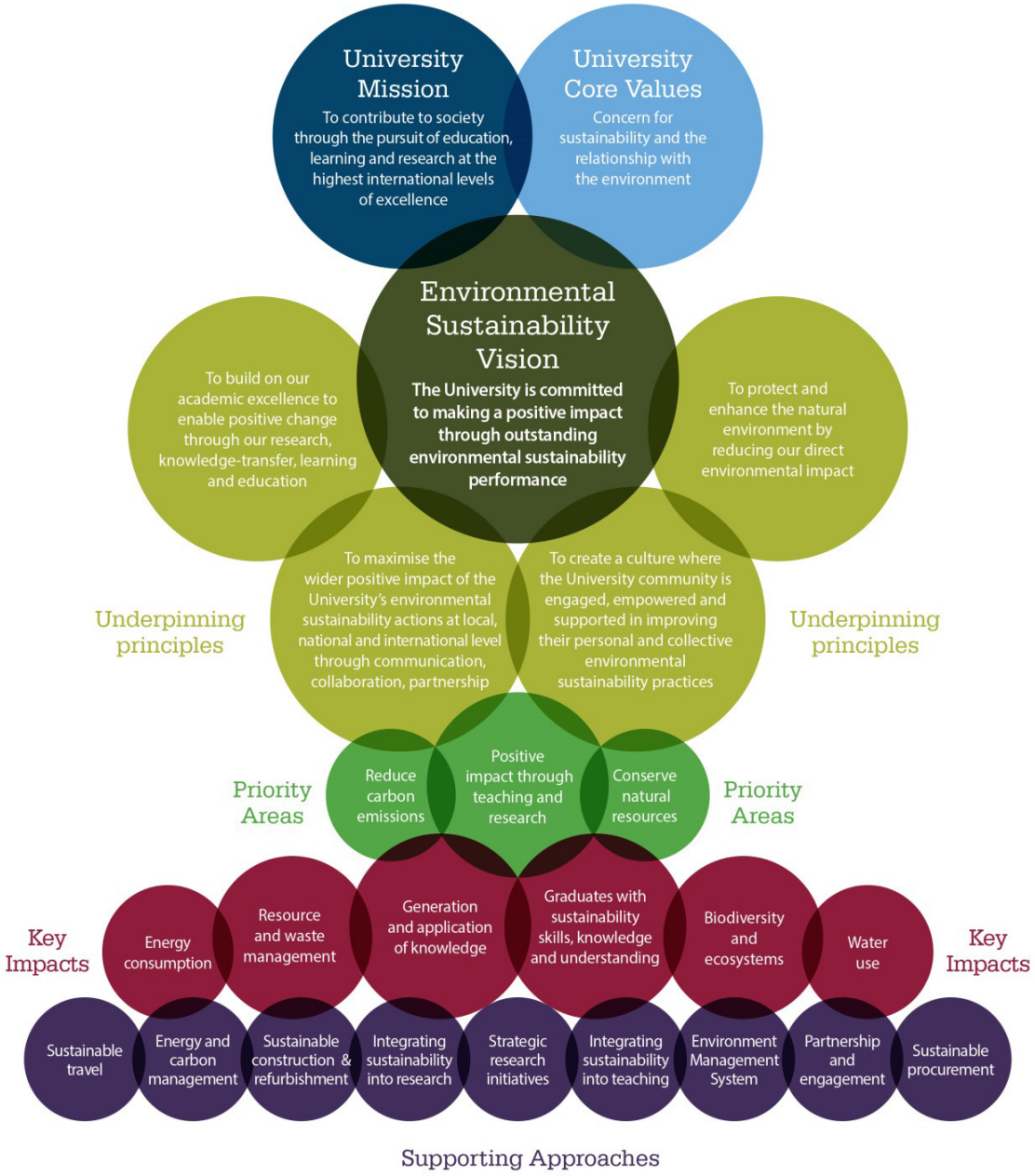
ACTIONS

We will review the Carbon Management Plan.

We will complete the development of our new approach to sustainable construction.

Goal Eleven
Conserve Natural Resources and Enhance Biodiversity

G11.1 The University's Environmental Sustainability Vision, Policy and Strategy 2015 sets out aims, objectives, targets and key implementation measures relating to, amongst others, water management, biodiversity and ecosystems, and waste management and recycling.



Environmental Sustainability Policy Framework

G11.2 Best practice sustainable construction is no longer a 'nice to have' that can be negotiated on the basis that it incurs additional effort and upfront costs. Many aspects of sustainable construction are simply about excellent design and construction management and are being widely adopted by progressive organisations across the UK and beyond.

G11.3 Within our Environmental Sustainability Vision and Strategy we set out the following aims:

- To conserve water through efficient use and management.

- To be a leading organisation within the sector in limiting negative and, where possible, having positive direct and indirect impacts on biodiversity and natural ecosystems so that the University's practical performance in this area matches its aspirations to be a global leader in conservation and food security research.

- To minimise and actively manage waste through elimination, reduction, reuse and recycling.

- To reduce the environmental sustainability impacts of our construction and refurbishment projects.

G11.4 Our approach to sustainable construction contains four key principles:

1. Establish clear leadership on sustainability on a project-by-project basis

Early and decisive planning is essential for sustainable project outcomes. It helps to pin down the most beneficial and cost effective measures and avoids 'additive' costs later on. Implementation and ongoing performance of the teams and delivered projects needs to be carefully monitored and audited to ensure that the benefits of sustainable buildings are optimised.

2. Optimise sustainable building design

Decisions made about building design, particularly during the early briefing and concept stages of projects, have a huge impact on the efficiency and longevity of buildings. Benefits include reduced operation and maintenance costs, as well as improved building user satisfaction.

3. Understand and manage value across the whole life of a building

Planning for sustainable construction projects, particularly where there are increases in capital costs for non-standard equipment, needs to take into account any benefits and the value throughout the life of the building.

4. Create and maintain healthy and productive buildings

Links between the working environment, occupant satisfaction and productivity are clear: adequate provision of outside views can improve mental function by up to 25%, whilst optimising daylight can have a significant impact on learning rates and productivity. The University recognises the need to create and maintain healthy and comfortable new buildings as a central part of our approach to sustainable construction, whilst also addressing these issues within the constraints of the existing estate.

G11.5 The Environmental Sustainability Policy and Strategy includes the following key implementation mechanism in relation to conserving natural resources and enhancing biodiversity:

- Implement a programme of water efficiency projects.
- Seek opportunities for installing water management measures, such as rainwater harvesting and sustainable urban drainage systems.
- Create an Ecological Advisory Panel (with representation from key partners in the Cambridge Conservation Forum) to review and advise on current and planned work on the University's estate that has the potential to have harmful impacts on designated sites or species of conservation concern.
- For the Ecological Advisory Panel to undertake a baseline assessment of existing biodiversity and ecosystems on the University estate and to recommend quick-wins for improving biodiversity (for example, removing invasive plants, incorporating swift nest boxes, reducing frequency of mowing in some areas).

- Development of a Biodiversity Plan by the Ecological Advisory Panel.
- Provision of appropriate recycling infrastructure.
- Use of WARPit, an online system to support reuse of materials and equipment across the University.
- Requirement for Site Waste Management Plans to be developed for all capital projects.

G11.6 We will monitor progress against the targets and key performance indicators contained within our Environmental Sustainability Policy and report this publicly via our annual Environmental Sustainability report.

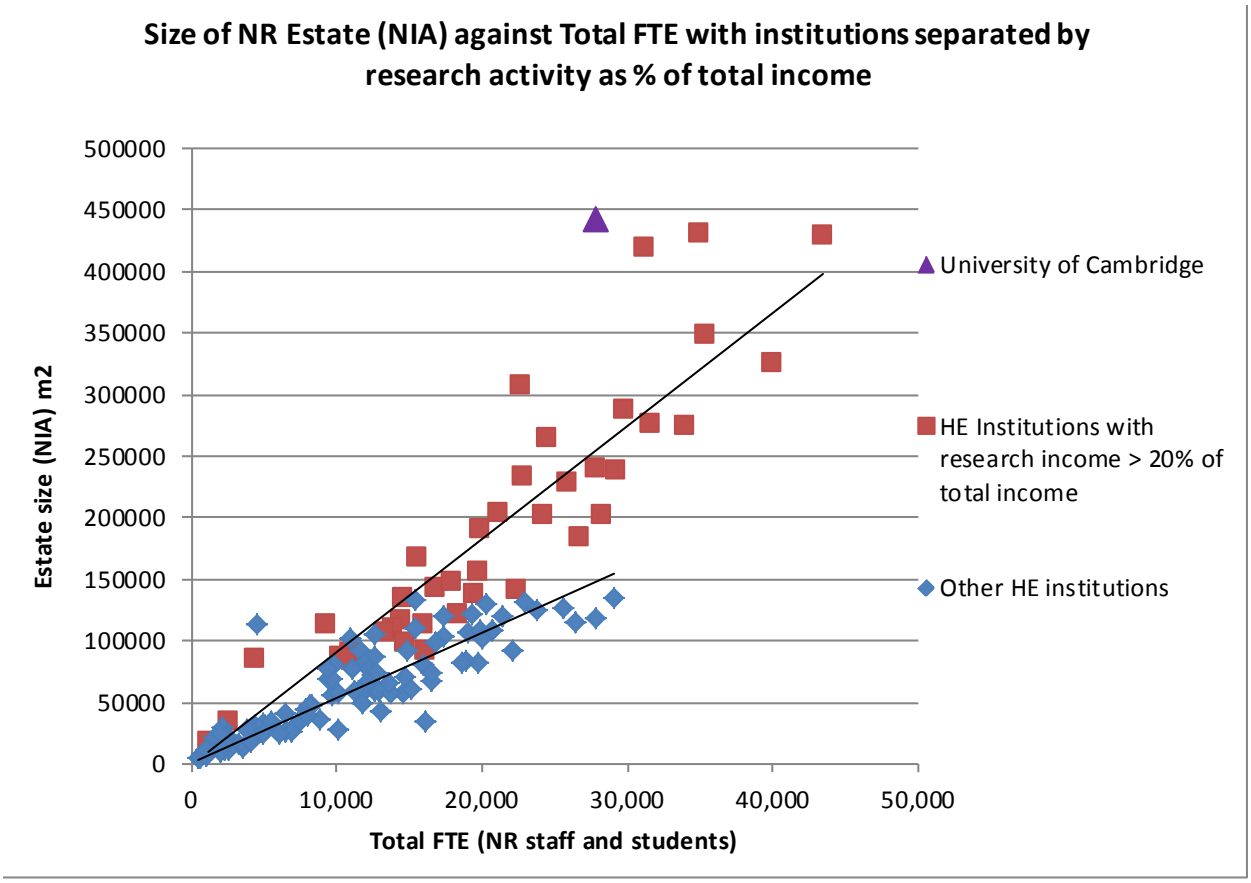
ACTIONS

We will implement our Environmental Sustainability Policy and Strategy and report annually on progress towards our targets.

Goal Twelve
Improve Space Efficiency

G12.1 The University must continue its focus on efficiency in the use of resources, and achieving greater efficiency in the use of space is a priority. Development land is a scarce resource and expensive to purchase, and built space is costly to develop and maintain, yet Cambridge has some of the poorest space efficiency in the HE sector.

G12.2 The size of the non-residential estate, at 442,000m^2 NIA, is around 180,000m^2 larger than the average size for research universities for the same population. The 'performance gap' between average area and actual area is greater for Cambridge than for any other institute in the sector.



Source: HEIDI EMR database (2014/15 data)

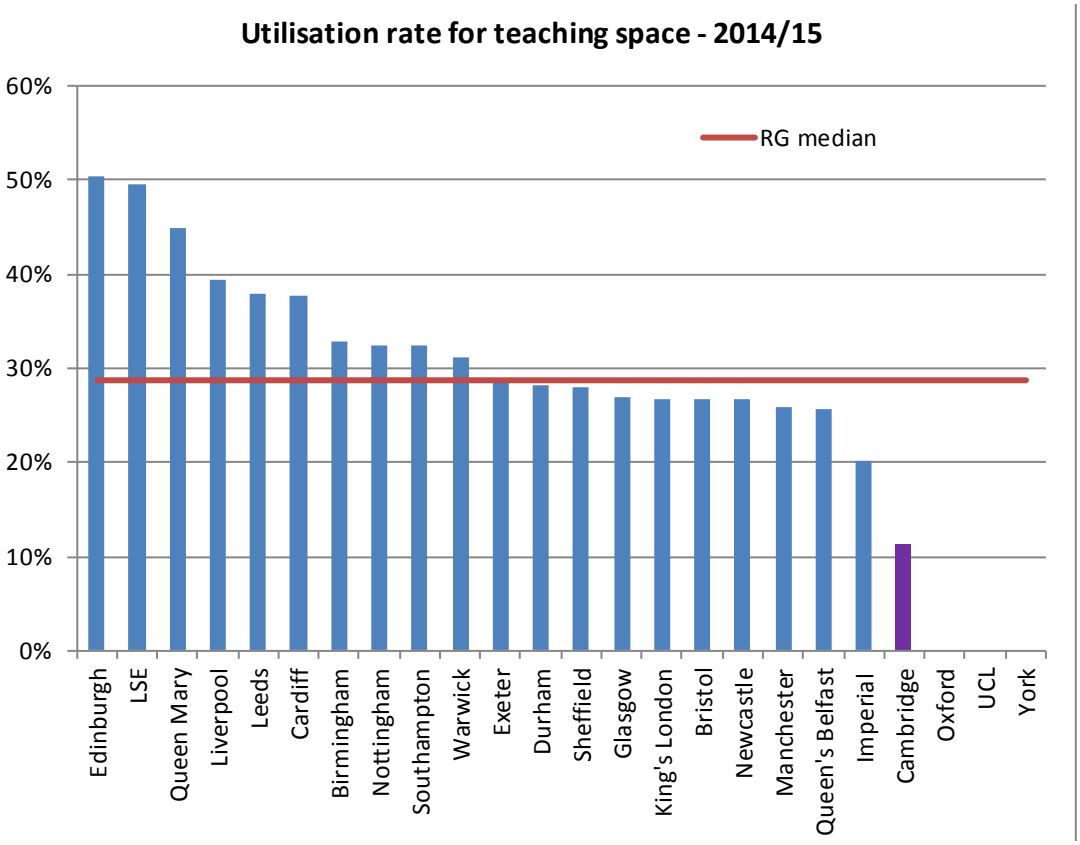


Figure G12.3

G12.3 Inefficient use of space is particularly acute for teaching space[9] (see *Figure G12.3*)

G12.4 The use of larger teaching and meeting rooms was monitored in 2014/15 on the New Museums Site and some spaces on the Downing Site, as well as use of the Mill Lane Lecture Rooms. The common pattern is for rooms to be used infrequently, around 30-40% of the time, and occupied inefficiently when used, at around 30% (see *Figure G12.4*)

G12.5 It is unsustainable for space to be used so inefficiently. The total property cost of space is significant – equivalent to £23.4m p.a. for the 180,000m^2 of NIA space that we have above the average size for research universities with the same staff and student population[10]. In addition, our future supply of land and space is constrained (see Goals Four and Nine), and 'dead space' frustrates our ambition to create active and vital places.

G12.6 Our aim therefore is to significantly improve the use of space on the estate so that:

- The size of the estate relative to the staff and student load reduces
- Some of the demand for new built space is met from more efficient use existing space
- We achieve a 20% improvement to the utilisation rate for teaching and for meeting space by 2021

G12.7 Action is required to improve the use of space within the existing building stock. There are a number of initiatives to achieve this:

[9] Cambridge's data is based on room monitoring data for whole academic year, whereas other universities undertake a 2 week manual survey during the Michaelmas Term. Our utilisation rates during that period range from 15% - 20%.

[10] Based on the EMR total property costs for non-residential space (excluding rateable value) of £130/m2 NIA in 2014/15)

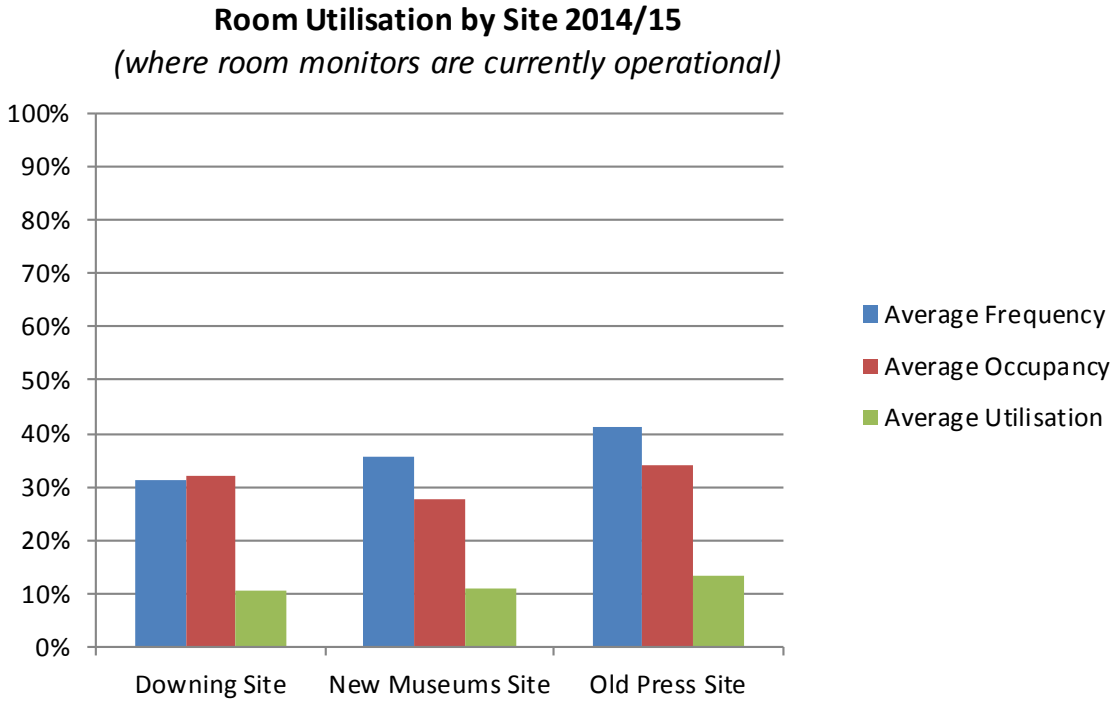
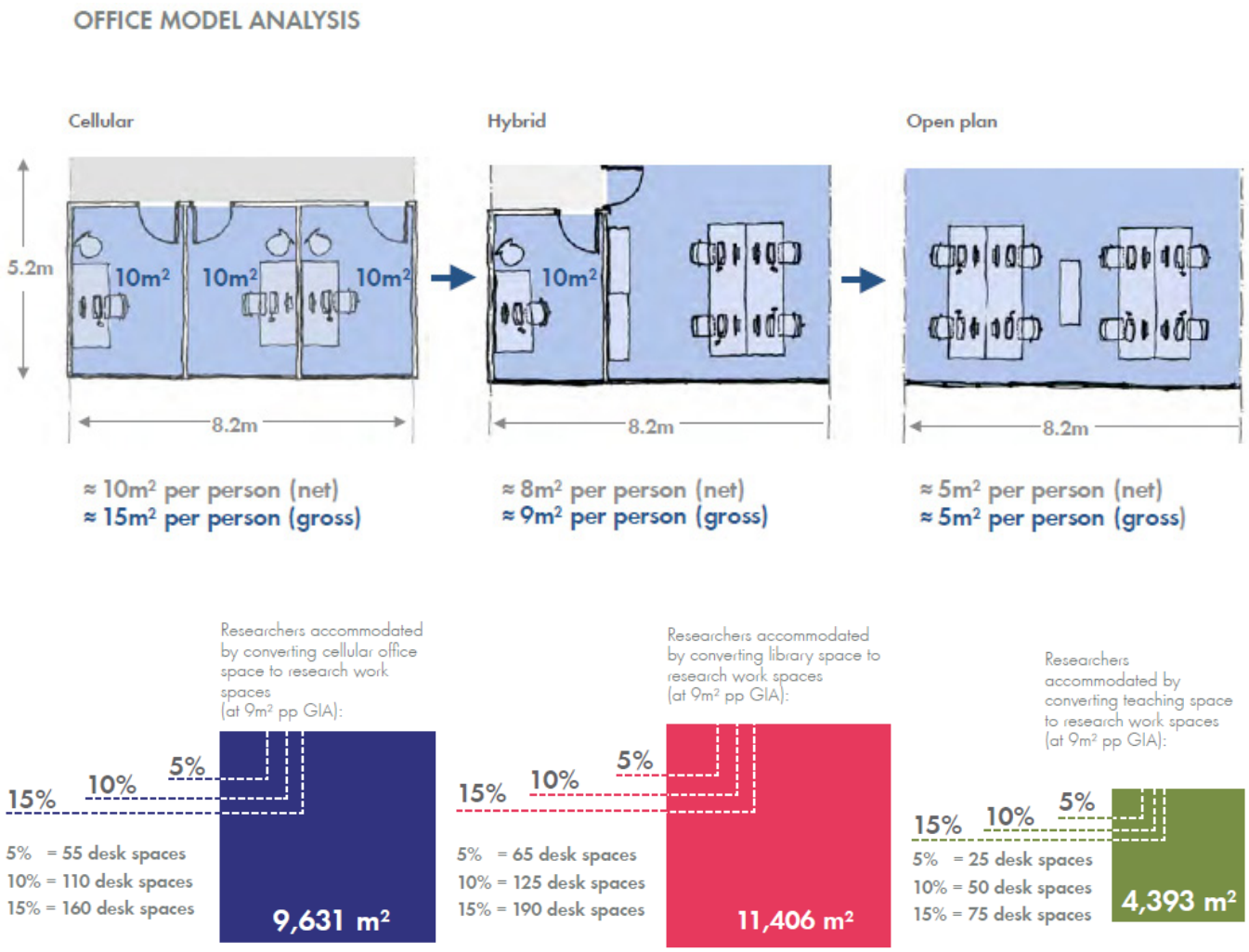


Figure G12.4

- Spaces that are capable of being use on a shared basis are being identified
- A strategy for teaching, learning and examination space is being prepared, in accordance with the following principles:

    - Spaces should be shared, not retained for the exclusive use of particular Departments/ Faculties.
    - Teaching, learning and examination space should be located outside Department/ Faculties' secure lines where possible.

- Collaborative work is taking place between Estate Management and the Schools for Arts & Humanities and Humanities & Social Sciences to explore the use of space on the Sidgwick Site and to identify strategies to achieve greater efficiencies. This includes a model to convert cellular offices into open plan space and to create a significant number of research work spaces through the conversion of cellular office space and library space.



G12.8 The most significant action to improve the use of teaching space, however, would be to change teaching timetables to increase utilisation in the afternoons.

G12.9 Action is also required to deliver the efficient use of space in new development, and the University will apply Space Guidelines for future proposals. Deviations from the Guidelines will be approved only in exceptional circumstances.

G12.10 The demand for cellular office space in new buildings remains high. Other models for the provision of work spaces exist and should be applied where appropriate, to achieve greater levels of space efficiency, including a 'traditional' open place office, flexible office space, and activity based working (ABW).

G12.11 ABW would be a radical new way of working at the University and would involve a transformation in academic and administrative culture. It involves spaces designed for different activities, with no permanently assigned desks or offices, in a paperless environment that is well supported by IT. This approach has the potential to significantly reduce space needs, as well as adding value to productivity through the provision of space designed for different intensities of activity. It should be piloted as an alternative briefing process for a capital building project.

G12.12 We will monitor progress using these key performance indicators:

- Size of estate relative to staff and student numbers (FTE)
- Room utilisation rates

ACTIONS

We will identify teaching and meeting spaces that are capable of being used on a shared basis.

Image Courtesy of Veldhoen & Company

We will work with the Academic School Offices to identify opportunities for improvements to the efficient use of existing built space.

We will seek to pilot activity based working for a building project.

Goal Thirteen
Develop the Non-Operational Estate to Increase Commercial Value

G13.1 The University's current non-operational estate is both modest in scale and consequently in financial significance, producing an annual income of some £2.5m. It is not a planned investment portfolio, rather a by-product arising from meeting academic needs.

G13.2 Delivery of the locational strategy for academic and administrative uses will result in parts of the estate no longer being suitable for operational use, including the Mill Lane/Old Press site, the current Trumpington Street Engineering site, in due course the current Lensfield Road Chemistry site and various other sites to be released following the move by Cambridge Assessment to their new headquarters building currently under construction.

G13.3 The University's Estates Strategy Committee has concluded that these central sites are nevertheless irreplaceable property assets, which if the freehold interests are disposed of, can never be replaced on economic grounds. For that reason, only disposal on long leases should be contemplated, so that the sites can be recovered for possible operational use in the future, or alternatively development of the sites can be undertaken to produce valuable increasing revenue flows for the University, rather than a single premium from disposal.

G13.4 As appropriate therefore, the alternative uses of these sites will be investigated with a view to determining the best development strategy for each, with a view to maintaining control by the University and maximising income flows. The means of achieving this will be considered on a case by case basis in order not to involve the University in development risk. Given that alternative uses for the sites, where not required for academic use, have to be secured through grant of town planning consents, this will involve the University entering into discussions with the City Council with a view to agreeing indicative masterplans and in due course new planning consents being secured.

G13.5 On the West and North West Cambridge sites however, planning consents exist and are being enhanced to provide opportunities for non-academic research development alongside academic research

buildings for the University. As indicated elsewhere, there is potential for the development of up to 40,000m^2 commercial research space at North West Cambridge, and planning permission is being sought for 170,000m^2 space for commercial research development at West Cambridge.

G13.6 At present a strategy for bringing forward commercial research space at either West or North West Cambridge has yet to be developed. The benefits of attracting commercial research and development organisations are considered to be:

- Enabling a closer relationship between academic and commercial research will lead to enhanced outcomes for both parties, as well as providing research funding streams for the University
- Attraction of commercial research organisations will enable costly infrastructure necessary for further development / densification of the overall estate to be spread, thereby reducing the cost burden on the University
- Increased commercial occupation of the site will enable the University to recover a share of the overall Estate Maintenance Charge that will otherwise have to be borne by the University
- The social and economic infrastructure being provided by the University at NWC and those proposed at West Cambridge, will benefit from and be strengthened by the increased working and living populations of the West Cambridge site.
- Development of commercial research space on both sites will provide valuable income streams to the University either through capital receipts, ground rent income or a mixture of both.
- Depending upon the financial / development structures utilised to bring forward commercial research development, if generic forms of scientific research buildings are developed, when the commercial leases come to an end there will be a physical asset that could provide useful research space to meet any additional space requirements of the University at that time.

G13.7 Redevelopment of legacy sites for non-operational uses will entail significant capital outlay, and a key consideration in each business case will be the means of extracting value and the length of pay-back periods. Development of the non-operational estate should be conceived so as not to tie up significant capital that could be allocated for development of the operational estate.

G13.8 As the non-operational estate expands, there will be opportunities arising from the creation of a portfolio. Capital may be re-allocated from stable, mature concerns to expansion and growth opportunities. For example, capital released through debt secured against offices, hotels, and shops (either individually or as portfolios) might be recycled to develop new buildings.

G13.9 The University may also consider on a case by case basis structuring development and funding using private sector developers and investment funds. The University can negotiate arrangements according to its risk appetite and requirements for third-party expertise and financial resource, whilst leveraging its own strengths, which include its relationship with planning authorities and other key city stakeholders. One such model, already successfully employed, was the development of the Hauser Forum, whereby a conditional long leasehold was granted to a developer; the University subsequently took up its pre-emption rights to buy back the leasehold interest at an opportune time.

G13.10 The non-operational estate is not currently an investment portfolio of institutional quality where the assets can be managed and traded solely to meet the capital and income return requirements of that institution. The managers of the University's Endowment Fund portfolio can concentrate on performance delivery and by the analysis of anticipated returns from sectors, locations or individual assets can trade through a process of acquisition and disposal to rebalance the portfolio to maximise returns. This is not possible for the non-operational estate which has to be managed in the context of wider University policies and objectives. The scope for traditional active management, e.g. lease restructuring, covenant improvement and release of development opportunity is therefore constrained by the wider operational objectives.

G13.11 Nevertheless, return on investment, return on capital employed and other financial key

performance indicators for individual sites and projects can be developed in conjunction with the University's Finance Division. More specifically property-related performance indicators relating to building efficiency and rental returns per square foot of built space may also be employed.

G13.12 Less measurable gains, such as enhancements to amenities and public realm on or around the major sites (such as West Cambridge, Mill Lane/Old Press) and complementarity to areas of operational activity and the University's brand may be reviewed through ongoing involvement of masterplanners.

ACTIONS

We will develop business cases for the development of commercial research at West and North West Cambridge.

We will develop business cases for commercial development at University legacy sites.

Goal Fourteen
Increase Value for Money from the Estate

G14.1 The University will continue to invest in the buildings and facilities required to support teaching, research and reputation critical to recruiting the best academic staff. The scale of this investment is considerable with investment through the Capital Expenditure Plan alone predicted to exceed £100m per annum in future years.

G14.2 It is increasingly important that the University achieves value for money through its investments in the estate. Financial pressures on the University Chest are predicted to continue. The total demand for capital investment significantly exceeds funding availability.

G14.3 This presents a significant challenge in that Cambridge is already a construction hotspot within the UK, with tender inflation only just below that of London, and the University's construction activity is a factor: the Capital Expenditure Plan as currently phased creates a peak in demand over the next five years that will drive up prices.

G14.4 Nevertheless, there are measures that the University can apply to achieve better value for money (see *Table: G14.4*).

ACTIONS

We will bring forward detailed proposals for a portfolio approach to cost risk management.

We will develop benchmarking for values and costs.

We will develop the Approved Suppliers List across a full range of services.

In-house services will be regularly benchmarked and market-tested to ensure continued competitiveness, and consider outsourcing where provision can be provided better externally to reduce costs or increase income.

Estate Management and the Academic Division will work together to identify projects for design development for future funding bids.

We will apply whole life cycle costs associated with different options into the business cases for new builds.

Measure	Issue
Risk Management	The current construction model at the University is risk adverse and based on a project-by-project approach. This leads to maximum levels of contingency and project reserve being applied to budgets on individual warrants, which removes funds from other priorities. An alternative approach would be to apply portfolio approach to risk management through central contingency and project reserves. The allocation of risk within the supply chain will increase the understanding of the risks that are driving increased costs and poor predictability in delivery of projects. This would require a clear approach to the risk profile that the University wishes to take on its construction portfolio.
Benchmarking appropriate value & cost	Capital building project costs are internally benchmarked and/or benchmarked against other HE projects. This does not drive innovation in design or delivery. The development of more sophisticated benchmarking tools with comparable clients and/or sectors will inform better understanding of what 'value' means to the University on certain projects, and cost, and help to match appropriate inputs to desired outputs (i.e. University performance). This would enable the University to target the quality/cost ambitions for a project, through which it could differentiate between: - development of the occasional inspirational building and service, benchmarked against competitors with a focus on high quality (for example Harvard) - development of more for basic, functional and efficient buildings and services, benchmarked against the local market
Procurement & performance management	The development of an Approved Supplier List operating as a managed framework will drive collaboration with the supply chain and should be extended to include all estates services over the next five years. This can then be used to lever better value measured by appropriate metrics that could be aligned with strategic objectives. It will also offer opportunities to reduce costs by enabling the bundling of services. More predictable performance in delivering projects and services will avoid over-budgeting or expenditure in areas that do not add value, so funds can be reallocated elsewhere in the University. As part of the extension of the Approved Supplier List, services provided in-house should be regularly benchmarked and market-tested to ensure continued competitiveness. When provision can be provided better externally, outsourcing to reduce costs or, in some cases, increase income should occur.
Preparation for funding bids	Larger capital projects are often linked to funding arrangements with tight delivery time-scales. Condensing all the activity over a relatively short period this increases the cost and increases the risk that the funding timescales will not be met. Forward funding of targeted projects would allow the development of design proposals to a suitable stage i.e. RIBA 2, ready to be submitted quite quickly for larger funding bids.
Whole Life costs	The principle that planning for sustainable construction projects must take into account benefits and value throughout the building life cycle has already been agreed. A whole life cost approach should also be applied to enable adaptable buildings to be developed (see Goal Seven).

Table: G14.4

Summary of University performance areas, estate goals and actions

Strategies to Support the University's Competitive Advantage	
Goal One Stimulate Collaboration	We will continue to reorganise the estate by collocating University and related uses, through the capital planning process.
	We will establish a hierarchy of collaboration and social spaces through site masterplans and building projects.
Goal Two Improve the Quality of Place	Masterplans for the development of University sites will be prepared and kept up-to-date, and will set out proposals to improve the quality of place.
	We will establish a University Design and Sustainability Review Panel to review proposals for capital building projects and site masterplans at key design stages.
	We will work constructively with the local authorities to help shape proposals for city centre access and public realm improvements in the location of our key central operational sites.
Goal Three Promote Our Built and Cultural Heritage	We will bring forward proposals for the creative re-use of heritage buildings, in particular the History Faculty Building (Sidgwick Site) and the Free School Lane range of buildings (New Museums Site).
	We will commission assessments of heritage significance in bringing forward proposals for change to our heritage sites and buildings.
	A decision will be made on the future use or disposal of the bunker (Brooklands Avenue).
Goal Four Future Proof Development	We will prepare strategies for the development of operational and non-operational property beyond the current estate.
	We will work with expert local agents, and the local authorities, with a view to locating opportunities local to Cambridge and within the region.
Goal Five Develop Residential Communities	We explore opportunities to develop affordable key worker housing as part of residential communities beyond Cambridge.
	We will explore whether alternative rental and ownership models can be brought forward that will give wider, more affordable access to housing than is currently the case.

Strategies to Improve University Productivity	
Goal Six Deliver a Positive Student and Staff Experience	We will conduct surveys of students and staff to measure their experience of accessing and using the estate.
	We will use the survey results to inform plans to improve the student and staff experience.
Goal Seven Deliver Flexible and Adaptable Space	We will development design guidance for flexible space and adaptable buildings.
Goal Eight Improve Sustainable Travel	We will prepare a new Transport Strategy.
	We will engage with City deal Partners in developing proposals for the development of transport infrastructure and services.

Strategies to Deliver Sustainable Development	
Goal Nine Meet the University's Development Needs	Masterplans for the development of University sites will be prepared and kept up-to-date, and will set out proposals to optimise development capacity, in order to meet current and future development needs.
	We will prepare a strategy for academic development at North West Cambridge.
Goal Ten Reduce Carbon Emissions	We will review the Carbon Management Plan.
	We will complete the development of our new approach to sustainable construction.
Goal Eleven Conserve Natural Resources and Enhance Biodiversity	We will implement our Environmental Sustainability Policy and Strategy and report annually on progress towards our targets.

Strategies to Improve University Finances	
Goal Twelve Improve Space Efficiency	We will identify teaching and meeting spaces that are capable of being used on a shared basis.
	We will work with the Academic School Offices to identify opportunities for improvements to the efficient use of existing built space.
	We will seek to pilot activity based working for a building project.
Goal Thirteen Develop the Non-Operational Estate to Increase Commercial Value	We will develop business cases for the development of commercial research at West and North West Cambridge.
	We will develop business cases for commercial development at University legacy sites.
Goal Fourteen Increase Value for Money from the Estate	We will bring forward detailed proposals for a portfolio approach to cost risk management.
	We will develop benchmarking for values and costs.
	We will develop the Approved Suppliers List across a full range of services.
	In-house services will be regularly benchmarked and market-tested to ensure continued competitiveness, and consider outsourcing where provision can be provided better externally to reduce costs or increase income.
	Estate Management and the Academic Division will work together to identify projects for design development for future funding bids.
	We will apply whole life cycle costs associated with different options into the business cases for new builds.

Produced by Estate Management, University of Cambridge 2016