

WEST CAMBRIDGE

OUTLINE PLANNING APPLICATION

DESIGN AND ACCESS STATEMENT

Credits:

Masterplanner:
AECOM Design & Planning

with:

AECOM Sustainability
Peter Brett Associates
Gardiner and Theobald
Creative Places

All of the drawings/diagrams in this document are provided for illustrative purposes only. This Design, Access and Landscape Statement is provided to support the planning application for the Proposed Development, and all details of access, appearance, landscaping, layout and scale are reserved within the parameters set out in the Parameter Plans & Statements and Environmental Statement

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INTRODUCTION

Purpose and scope of this document

This Design and Access Statement has been prepared in support of an outline planning application submitted by the University of Cambridge for the comprehensive development of the West Cambridge site.

The aim of The Design and Access Statement is to explain and illustrate the essential place-making principles that will deliver a well-connected, lively, distinctive and attractive environment of West Cambridge.

This document includes an appraisal of the existing site and its context; the University's vision, objectives and drivers for development; the design response and evolution of the Proposed Development which underpin the development parameters. The Illustrative Material describes the Illustrative Masterplan and shows how the development may come forward. These principles for development are supported by the Design Guidelines document.

This document consists of two Volumes, the first of which explains the origins of and describes the Proposed Development. The second volume includes the Illustrative Masterplan as a possible way in which the development may come forward.

This Design and Access Statement has been prepared in accordance with the requirements set out in the The Town and Country Planning (Development Management Procedure) (England) Order 2015. It explains:

- the design principles and concepts that have been applied to the development (sections A5 and B1);
- how issues relating to access to the development have been dealt with (section A4);
- the policy adopted in relation to access and how policies relating to access in local development documents have been taken into account (section A4);
- the steps taken to appraise the context of the development and how the design of the development takes that context into account (section A3);
- the consultation that has been undertaken on issues relating to access to the development and what account has been taken of the outcome on this consultation (section A4); and
- how specific issues which affect access to the development have been addressed (section A5 and B1).

The proposed development and masterplanning process

The Application Site is located to the west of Cambridge City within the administrative area of Cambridge City Council.

Outline planning permission is being sought for up to 383,300m² of additional floorspace at West Cambridge (the Proposed Development), comprising:

- up to 370,000m² of academic floorspace (Class D1), commercial / research institute floorspace (Class B1b and sui generis research uses), of which not more than 170,000m² will be commercial floorspace;
- up to 2,500m² nursery;
- up to 1,000m² of A1-A5 uses;
- up to 4,100m² floorspace for community facilities, and not less than 3,000m²;
- up to 5,700m² of sui generis uses;
- demolition of existing structures; and
- associated infrastructure including roads (including adaptations to Madingley Road), pedestrian, cycle and vehicle routes, parking, drainage, open spaces and earthworks.

A new masterplan for the site has been developed and used as a base for establishing development parameters defining key aspects of development. The masterplan has been developed based on knowledge of the projected needs of existing and known future occupiers. Best practice experience and precedents have informed the elements of the masterplan where specific future occupiers are unknown.

Development parameters and masterplan principles set a robust framework and form part of this Design and Access Statement. A finer grain of definition is provided through the Design Guidelines document.



01. The West Cambridge site shown in relation to North West Cambridge Development and Cambridge city centre

Section A5 clearly sets out what the application is applying for, including the description of development parameter plans and design guidelines. All other information contained within the DAS is illustrative.



02. West Cambridge Illustrative Masterplan within its local context (including the North West Cambridge Development) - view from south-east

The Planning Application

This application seeks planning permission with details of appearance, landscaping, layout and scale reserved within the parameters set out in the accompanying Parameter Plans, Design Guidelines and Statements, the Environmental Statement and the following supporting information:

- 01 Planning Statement
- 02 Statement of Community Involvement
- 03 Transport Assessment
- 04 Travel Plan
- 05 Sustainability Statement
- 06 Energy Statement
- 07 Flood Risk Assessment and Drainage Strategy
- 08 Waste Management Plan
- 09 Utilities Statement
- 10 Construction and Environmental Management Plan
- 11 Environmental Statement

Description of Development

Including Parameter Plans

Parameter Plans:

- 01 Development Building Zones
- 02 Land Use
- 03 Access and Movement
- 04 Landscape and Public Realm
- 05 Maximum Building Heights

In addition:

- Application Boundary
- Demolition Plan

Design and Access Statement

Including Design Principles and Illustrative Material

Volume A:

- 01 University need
- 02 University vision
- 03 Development context
- 04 Masterplan development process
- 05 Proposed Development

Volume B:

- 01 Design Principles
- 02 Illustrative Masterplan
- 03 Key Spaces

Design Guidelines

Introduction

- 01 Site-wide Design Guidelines
- 02 Key places
- 03 Streets and green links
- 04 Site edges

Other Planning documents

- 01 Planning Statement
- 02 Statement of Community Involvement
- 03 Transport Assessment
- 04 Travel Plan
- 05 Sustainability Statement
- 06 Energy Statement
- 07 Flood Risk Assessment and Drainage Strategy
- 08 Waste Management Plan
- 09 Utilities Statement
- 10 Construction and Environmental Management Plan
- 11 Environmental Statement

03. The West Cambridge Planning Application - key documents

Structure of the Design and Access Statement

The Design and Access Statement is structured as two volumes: The Design and Access Statement is Volume A and the supporting Illustrative Material forms Volume B of this document. Volume A is structured as follows:

University Need

Sets out the University's forecast need for development across the proposed land uses.

University Vision

Establishes the University's overall vision and objectives for the Proposed Development at West Cambridge

Development Context

Describes the strategic, wider and local context of the site as well as providing a description of the site as it exists today. In addition this section sets out key benchmarking studies which set precedents (or benchmarks) for quality and character of the place, possible building types and role of open space and public realm within the Proposed Development. This section also provides a description of the existing consented masterplan, as well as transport context and planning policy.

Masterplan Development Process

Sets out the key responses to the site constraints and development context and details the evolution of the masterplan through the design and consultation process.

Proposed Development

The final section presents the application proposals for the Application Site in the form of Parameter Plans.

The illustrative material, Volume B of this document, is structured as follows:

Design Principles

Sets out the site-wide Design Principles for the masterplan developed within the framework of the Cambridgeshire Horizons Quality Charter four 'C's': Connectivity, Character, Community and Climate. Within this framework, the Design Principles describe the proposed distribution of uses, the amount of development, layout, scale, landscape, appearance and access.

Illustrative Masterplan

Provides a description of an illustrative masterplan, including landscape and public realm, character areas and phasing. The illustrative masterplan demonstrates one way in which the Application Proposals could be delivered on the Application site.

Phase 1 - Priority Projects

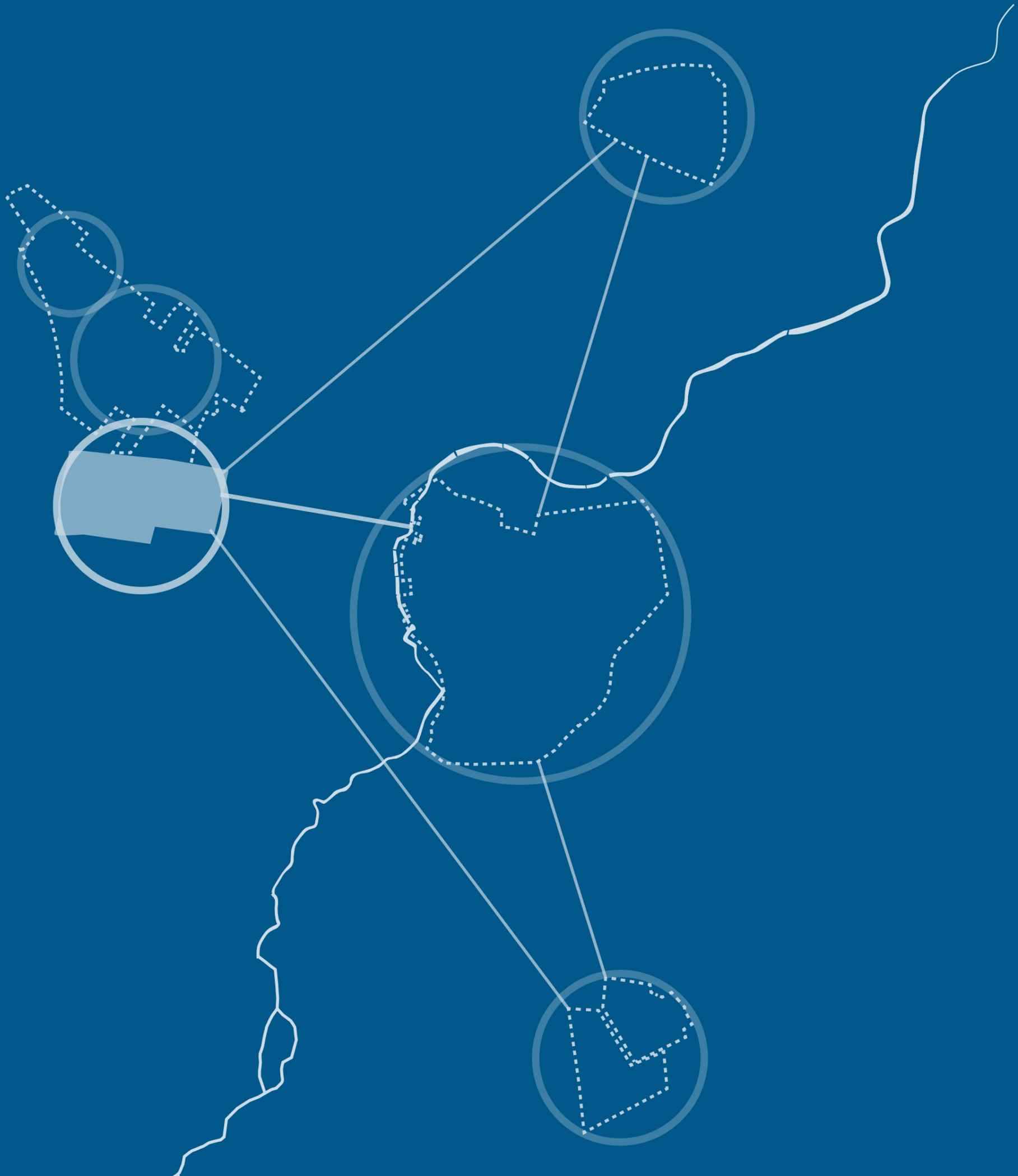
Sets out a description of Phase 1- Priority Projects. Which are the key initial development priorities for the West Cambridge Site.

A - DESIGN AND ACCESS STATEMENT



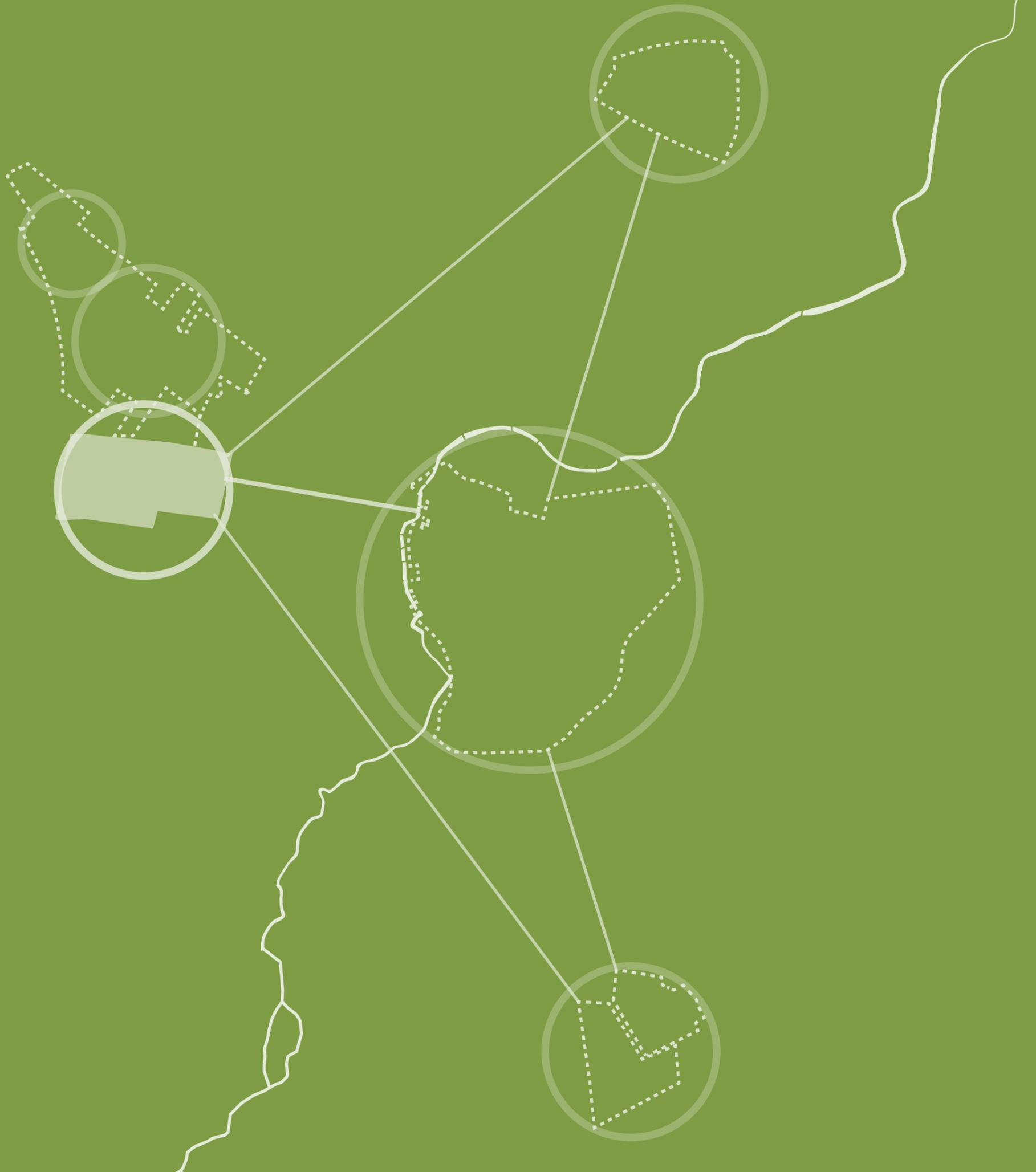
B - ILLUSTRATIVE MATERIAL





**DESIGN AND ACCESS
STATEMENT**

VOLUME A



UNIVERSITY NEED

A1

A1 University Need

West Cambridge 1995 - 2015

Key issues:
Delivery of the 1999 Masterplan
Delivery of commercial uses
On-site amenity and shared facilities
Making best use of the site

A2 University Vision

A3 Development Context

International, Strategic and Local

A4 Masterplan Development Process

A5 Proposed Development

1. UNIVERSITY NEED

1.1. Drivers for development

Cambridge is an acknowledged world leader in higher education, research and knowledge based industries. Through the 'Cambridge Phenomenon' it has a prosperous and dynamic economic base in high technology, research and development and related service sector industries.

The need for a new masterplan and outline planning application at West Cambridge has emerged in response to this strategic need of the City and the University as well as the need to transform and improve the site and to provide high quality research and innovation environment, for both current and possible future occupiers.

1.1.1 Strategic need of the University and the City

In order to maintain global competitiveness, the University needs to secure additional amount of high quality research space and, in parallel, strengthen its reputation in innovation and collaboration with industry.

The projections made in 2011 based on annual increases to the size of the estate for the previous five years estimated that there was a 25 year supply of space for academic development. However, the annual estate increase in the referenced period has not reflected the demand and anticipated research growth which is now 5% per annum, followed by related growth in staff numbers. Together with past under investment in central sites, the success in research growth is creating additional demand at accelerated rate (from University's Estate Strategy, 2012).

Similarly, the demand for commercial property to meet the needs of research and development (R&D) businesses in and around Cambridge is far outstripping the supply of space, particularly within the City boundary, where much of the demand is located.

Most of the University's sites are already intensively developed. The partially developed 66ha West Cambridge site is one of the two main exceptions to this, together with 150ha North West Cambridge site for future development.

For many years The University's strategy for West Cambridge has been to develop the site for research in the Physical Sciences and Technology. That strategy was supported at the time that the original outline planning application was being considered in 1997-99.

The locational strategy for other academic development is to develop the life sciences at and close to Cambridge Biomedical Campus and the Biocentrum (in central Cambridge), and the arts and humanities at the Sidgwick Site and the New Museums Site. The University's land at those locations is already densely developed.

The focus of academic research in the physical sciences at West Cambridge also provides these academic researchers with far greater opportunity to co-locate with commercial operators undertaking research and development activity. This is a key benefit in helping to keep the University's research world-leading, providing access to appropriately diversified sources of funding and promoting the site as a campus for innovation and exchange of ideas.

1.1.2 University's sustainability targets

The University is committed to improve the sustainability performance of its estate. The University's estate-wide targets include:

- optimise sustainable use of resources and resilience to climate change;
- improve transport and local connectivity;
- substantially improve users' health, social and economic wellbeing through improvement of the social realm across the site;
- have a positive impact on ecology, quality of the city and the reputation of the University.

Redevelopment of West Cambridge site will provide the University with an opportunity to achieve significant improvements in a coordinated way. A comprehensive, planned redevelopment which addresses the issues of density and enables sustainable transport will provide long term benefits which exceed plot by plot improvements.

1.1.3 Need to transform and improve the site

Considering the amount of the remaining permitted development and large areas excluded from the original Masterplan, it is becoming clear that the current framework will not make the best use of this site, and will result in a development of uneven and lower densities. This will deprive the University and the City of much needed space for employment growth and will also reduce the efficiency and sustainability of the wider estate and undermine delivery of social spaces and sustainable transport.

Development already existing on the site either pre-dates the mid 1990s (such as the Veterinary School, Cavendish Laboratory or Schlumberger Research) or is based on the West Cambridge Masterplan, prepared in 1997. An outline planning application based on the West Cambridge Masterplan was granted in 1999 (application ref. C/97/0961/OP) and a subsequent review was approved in 2004.

Together with the pre-existing development on the site, the 1999 Masterplan envisaged just under 250,000m² of development on the 66 ha site, approximately 47% of which would be academic, 15% research institute and 22% commercial research. The remaining 16% would consist of shared facilities, sports and residential uses. Importantly, the 1999 Masterplan was not required to address pre-existing areas (the very low density Department of Veterinary Medicine precinct and the architecturally undistinguished Cavendish Laboratory).

The University continues to deliver successful academic and other University related buildings within the framework of the 1999 Masterplan, and has already delivered more than 60% of the permitted academic development. However, less than 12% of the permitted commercial development has been achieved and these uses were originally envisaged to be developed in parallel. On site amenity has generally lagged development and has been delivered within plots. Large surface parking areas in front of buildings have further contributed to lack of interaction and activity in the public realm.

As part of the Masterplan revision, important measures will have to be undertaken to create and maintain a successful commercial research address, fostering interaction but avoiding possible conflicts with the independence of academic research and teaching activity.

1.1.4 User requirements: types of spaces, adjacencies and synergies

Given the limited supply of land available at West Cambridge and other operational sites, the University faces a major challenge in meeting the needs of development in the short, medium and long term.

New development at West Cambridge site will enable the Physical Sciences and Technology to move from cramped and outdated accommodation to buildings that are fit-for-purpose for 21st century science, and which enable the research base to diversify and grow.

In the University's Capital Plan, major new proposals for development at the site include Cavendish Laboratory redevelopment (at a new location on the site); relocation of the remaining four Divisions of the Department of Engineering, currently located at Trumpington Street, to collocate with the two Divisions already established at the West Cambridge Site; relocation of the Vet School from West Cambridge; and provision of a Shared Facility Hub.

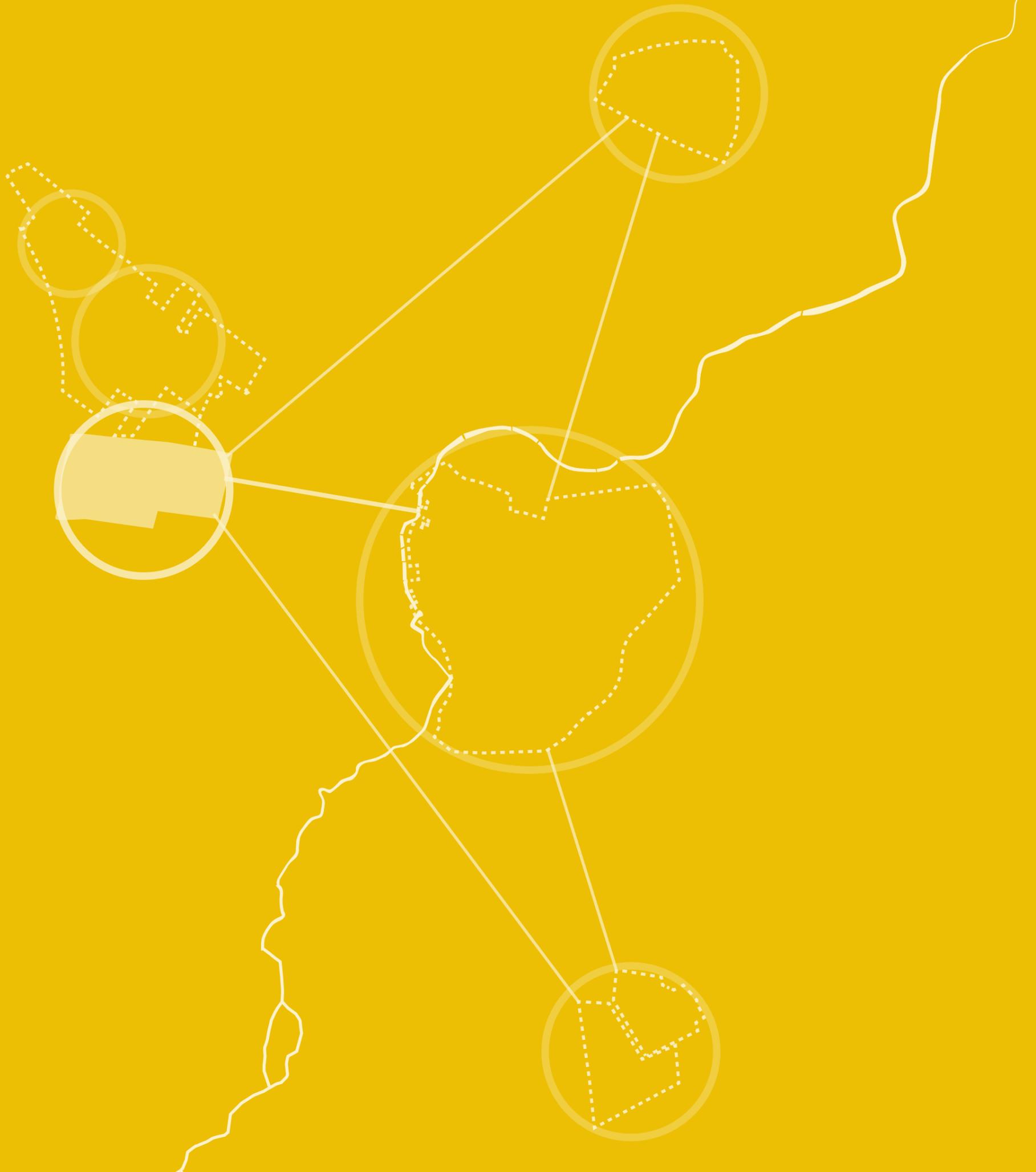
In addition, the site would also support future moves of other University departments/institutes in the Physical Sciences and technology, as well as growth in the established research base at the site. Future opportunities for relocation would be identified through the University's annual cycle of academic planning, then explored through development of an academic business case (including the potential fundraising opportunities), and if agreed by the University, developed through detailed design proposals and the town planning process.

Based on feedback from key current and potential future occupiers, as well as world class benchmarks, the emerging academic and research trends demand flexible and efficient space, which can accommodate changing requirements and also promote collaboration between disciplines and academic and industry entities. The current masterplan, constrained by excluded areas, relatively small plots and large areas of surface car parking, does not support realisation of such environment. There is little interaction between existing buildings and delivery of types and scale of spaces required by the new Cavendish Laboratory is not possible on the currently available plots.

The new masterplan is needed to establish principles for gradual growth which respond to requirements for high quality research space, maintain flexibility for future and ensure pedestrian friendly public realm with active indoor and outdoor spaces for socialisation.



05. West Cambridge Illustrative Masterplan within wider local context (including the North West Cambridge Development) - view from south



UNIVERSITY VISION

A2

A1 University Need



A2 University Vision

West Cambridge - a new trajectory
5 University Objectives

Key issues:
Optimise and enhance the site
Support commercialisation of knowledge
Create and sustain a high quality place
Flexibility and efficiency
Deliver sustainable development

A3 Development Context

International, Strategic and Local



A4 Masterplan Development Process



A5 Proposed Development



2. UNIVERSITY VISION

2.1. West Cambridge: a new trajectory

2.1.1 University objectives

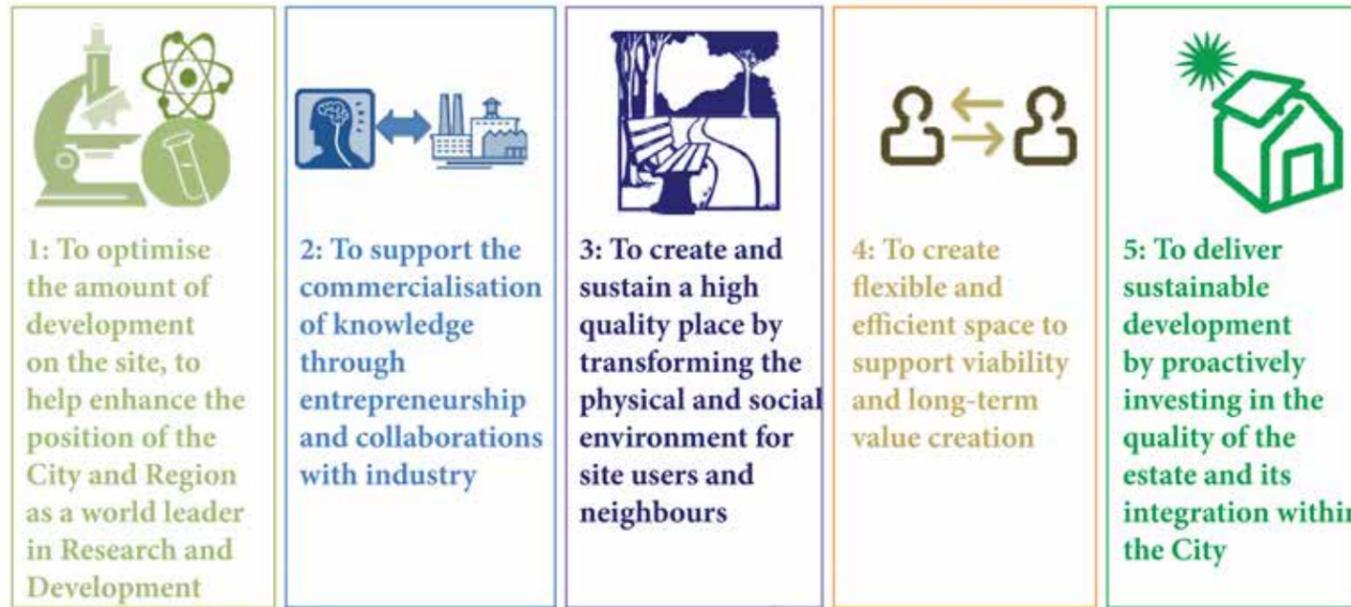
The University of Cambridge has identified West Cambridge as one of its key sites for growth. It is best placed for the clustering of physical sciences and technology and collaboration with industry research.

The current West Cambridge site - somewhat lacking in activity and with a perception of isolation - does not convey the excellence in teaching, research and innovation the University of Cambridge is committed to.

The new Masterplan proposals aim to establish a new trajectory for development and gradually transform West Cambridge into a research campus accessible and integrated with the City, and create an environment which can equally well promote users' wellbeing and interaction as well as accommodate demanding scientific processes. Improved, West Cambridge site could have positive impact on staff retention and recruitment, innovation and future research growth, thus helping to strengthen the University's international reputation.

West Cambridge is an integral part of Cambridge, within 10 minute cycling distance from the City Centre, and 20 minutes from the Railway Station. At the same time, the landscape features dominate this part of Cambridge, creating an edge of a city feel, transitioning between urban and rural. One of the aims of this masterplan is to turn the site from its relative isolation, by gradually enhancing landscape features into a network of usable open spaces - landscape connectors - which strengthen the physical links with both the North West Cambridge Development and the City Centre.

In accordance with University needs, research and teaching will continue to be primary uses on the site. They will be supported by commercial R&D employment space and social amenities, thus promoting knowledge transfer, new opportunities for research and helping to intensify social activities on the site. As a result, the proposed masterplan has been developed to satisfy specific building and operating requirements of academic and commercial research, and balance it with the need to maintain the landscape character of the area while gradually introducing denser built form with intimate, enclosed public spaces with active uses which, being more pedestrian friendly, create more opportunities for social interaction.



06. University objectives

The current piecemeal development on plots with surface car parking will be abandoned in favour of a Character Area based approach - where the site will comprise of a number of walkable and human-scaled areas with distinct characters, structured around and brought together by the strong landscape and open space framework. The size and density of the Character Areas will be such to promote pedestrian movement and integration of the existing buildings.

At grade car parks will be removed and parking relocated to multi storey structures located at the periphery of the site - reducing vehicular movements within the site and promoting walking through the site to destinations.

An important part of the vision is the gradual improvement of the social environment of the site, with an incremental delivery of social amenities. Although most of the amenities are envisaged to cater to the growing working population and the students, it is expected that some of them will also attract other users. Currently, the wider community uses the first phase of Sports Centre and the existing University departments (Cavendish Laboratory in particular) host science festivals which promote science to younger audiences. As further departments move to the site, such activities will intensify, and, West Cambridge will establish itself as a place for promotion of science in the eyes of the wider community.

The University has established five key objectives to deliver the vision and guide the Proposed Development:

- Optimise the amount of development on the site, supporting the City and Region as a world leader in learning, teaching, research and development.
- Support the commercialisation of knowledge through entrepreneurship and collaboration with industry.
- Create and sustain a high quality place by transforming the physical and social environment for site users and neighbours across the City.
- Deliver adaptable and efficient space to support viability and long term value creation.
- Deliver sustainable development, proactively investing in the quality of place and integration within the City.

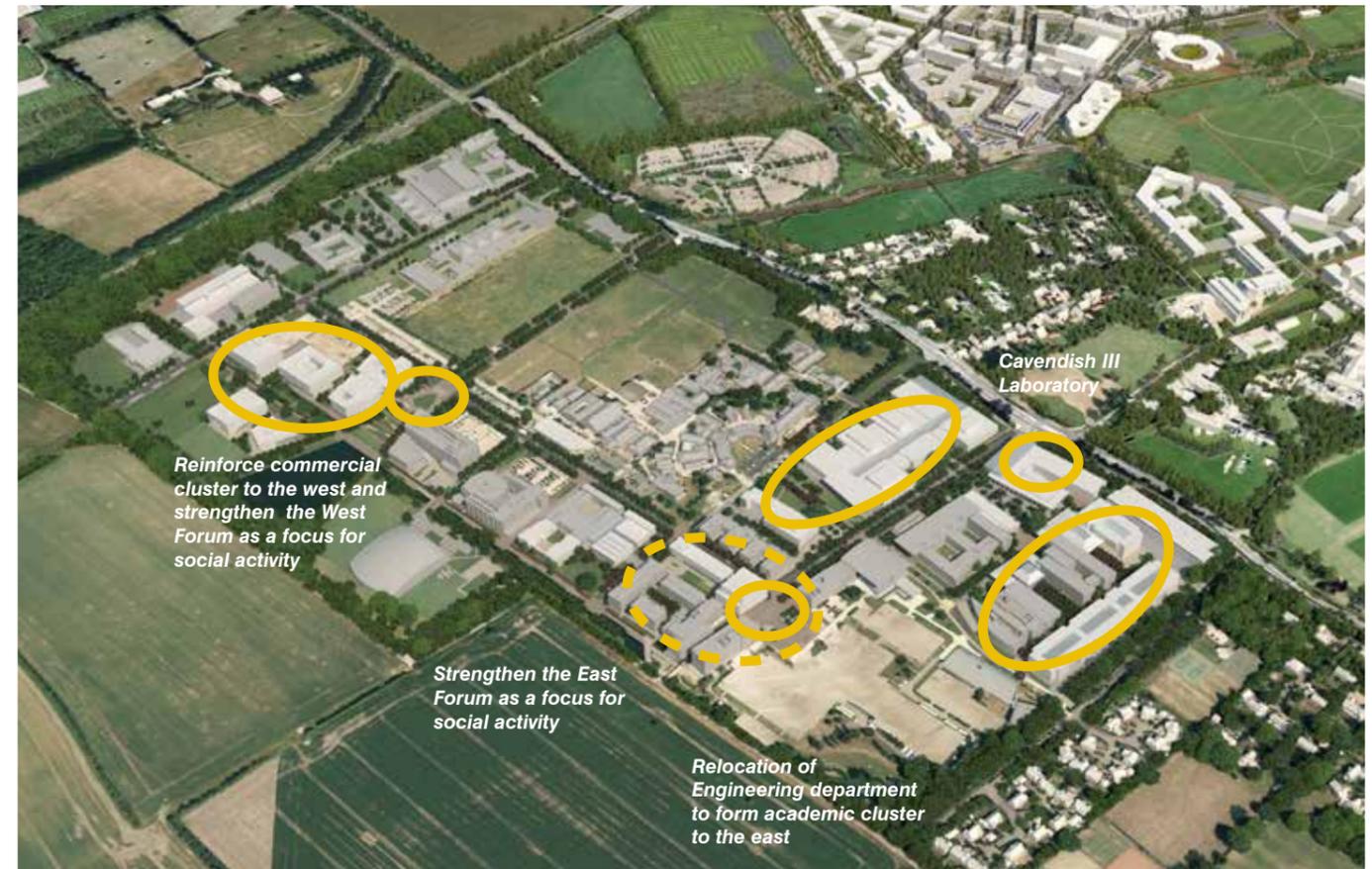
The new Masterplan seeks to transform the site by recognising and building on a number of site-related opportunities, which will contribute wider benefits to the University and the City:

- Promote **sustainability** and improve the University's performance on a site unhindered by historic structures and the dense urban form found in the city centre;
- Sustainable transport strategy**, as the key tool for the transformation of the site, aiming to reduce the reliance on cars and the domination of at grade car parks by improving **public transport**, concentrating car parks along the edges and thus freeing public space for **pedestrians and cyclists**;
- Provide the necessary space for a City-wide step change in **entrepreneurship and employment growth**;
- Cluster the University's Physical sciences and Technology disciplines, paired with their industry partners, which will establish West Cambridge as a place which lives and breathes **science and technology**, generating exciting technological achievements and innovation.
- Opportunities for academic events as well as **popularisation and promotion of science**, through evening lectures, festivals and community projects.
- Public realm with adjacent shared facilities and amenities**, linking into a wider network of open spaces and pedestrian and cycle routes; and
- Community uses**, further capacity in addition to existing sport and nursery provision, helping to promote healthy and balanced lifestyle of site users and wider community.

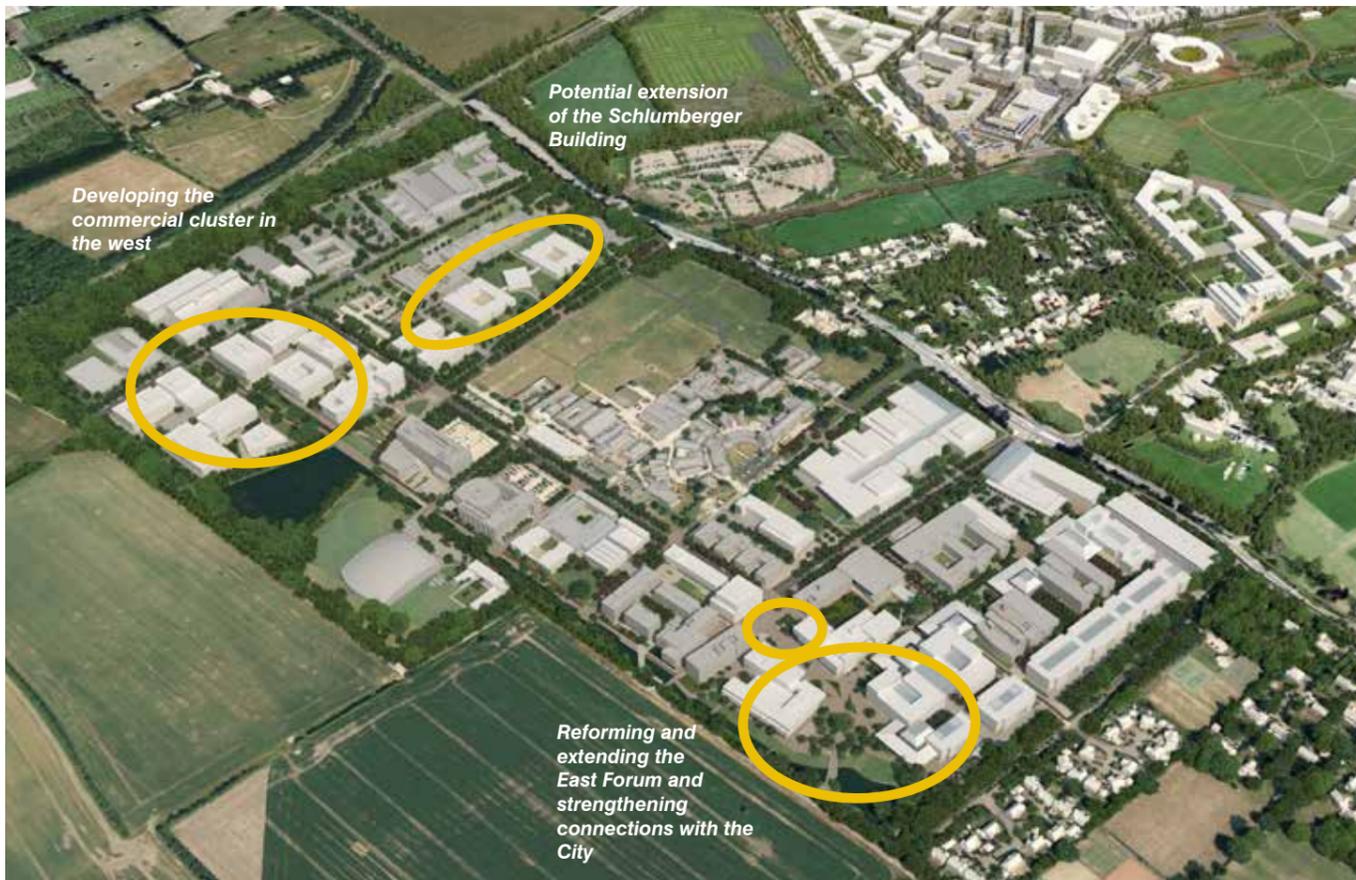
“THE CHANGING CONTEXT AROUND WEST CAMBRIDGE WILL CREATE CONDITIONS FOR A NEW TRAJECTORY FOR THE FUTURE OF THE SITE FROM THE OUTSET. THERE IS POTENTIAL FOR THE WHOLE SITE TO BE TRANSFORMED AND GROW INTO A RENOWNED RESEARCH AND TEACHING ENVIRONMENT”



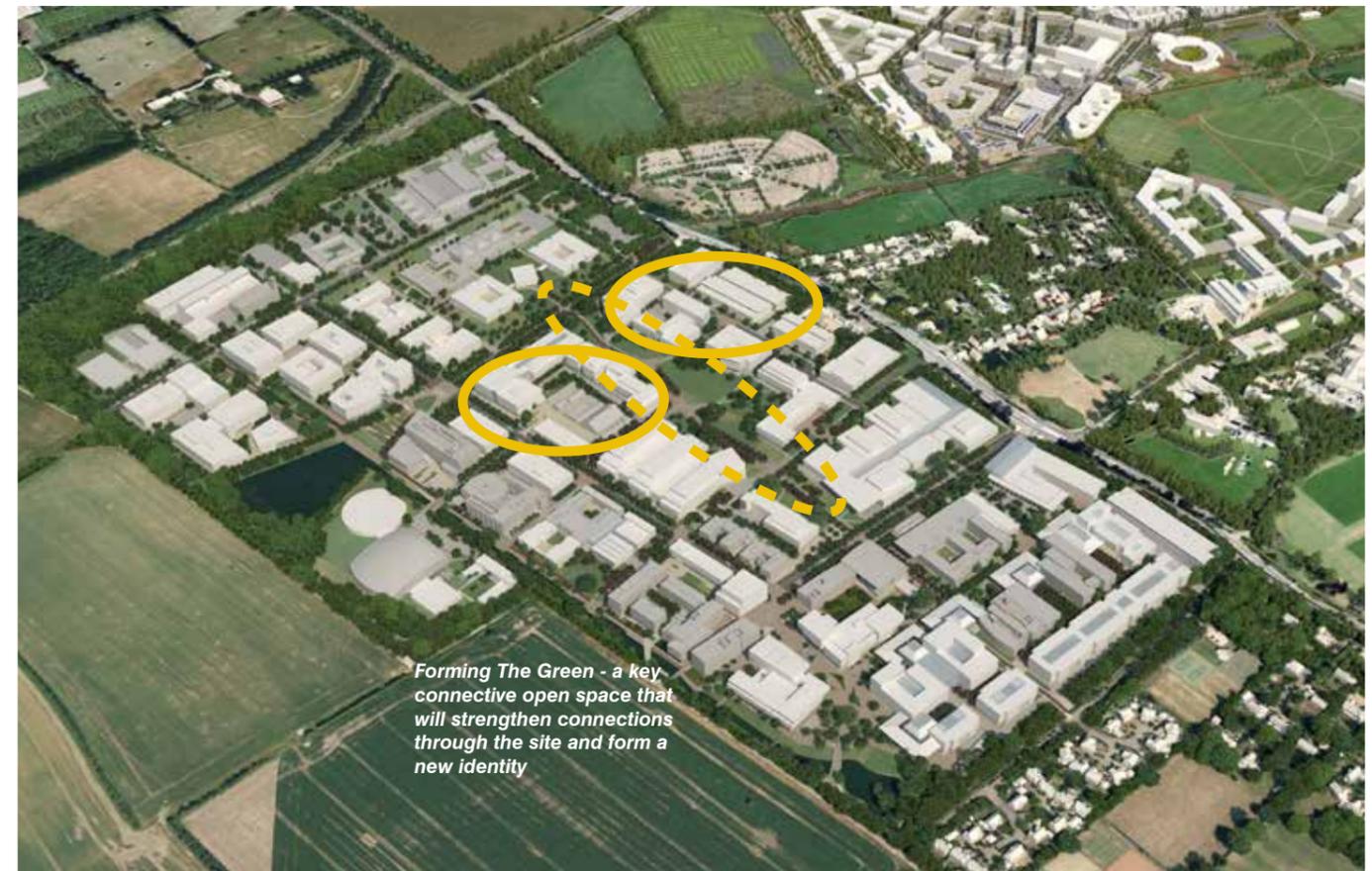
07. West Cambridge site - existing condition



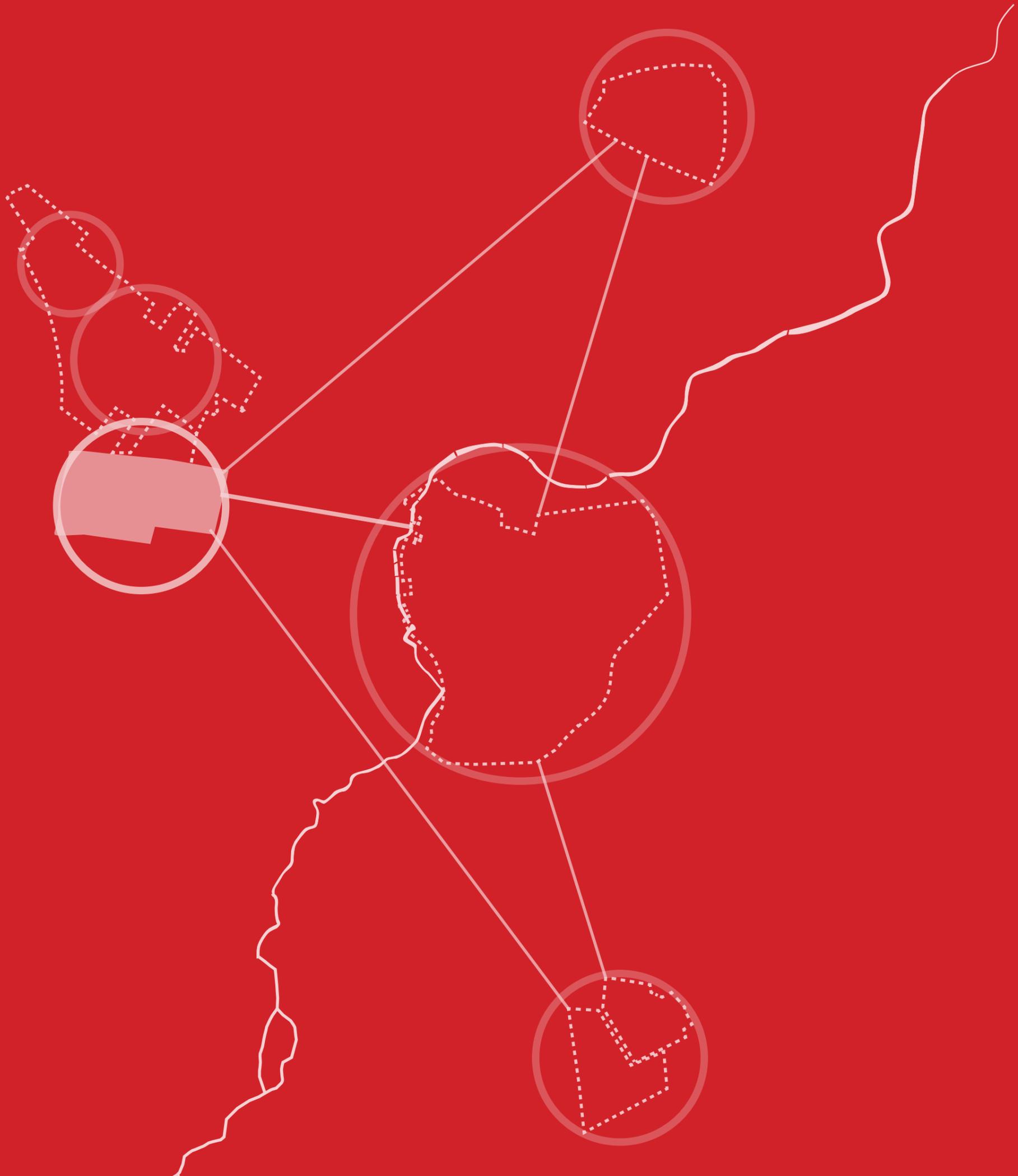
08. West Cambridge site - priority projects



09. West Cambridge site - interim condition



10. West Cambridge site - full development



DEVELOPMENT CONTEXT

A3

A1 University Need



A2 University Vision



A3 Development Context
International, Strategic and Local

Strategic context
Town Planning context
Transport context
Local context
Site description
Existing consented masterplan
Benchmarking analysis

Key issues:
Setting this development proposal within its
local and wider context

A4 Masterplan Development
Process



A5 Proposed Development



3. DEVELOPMENT CONTEXT

3.1. Strategic context

3.1.1 Site location

Cambridge City has seen a significant economic and population growth over the last decades, which is expected to continue.

There are several major areas of change located in the zone immediately outside the city centre, which include both residential and employment growth areas.

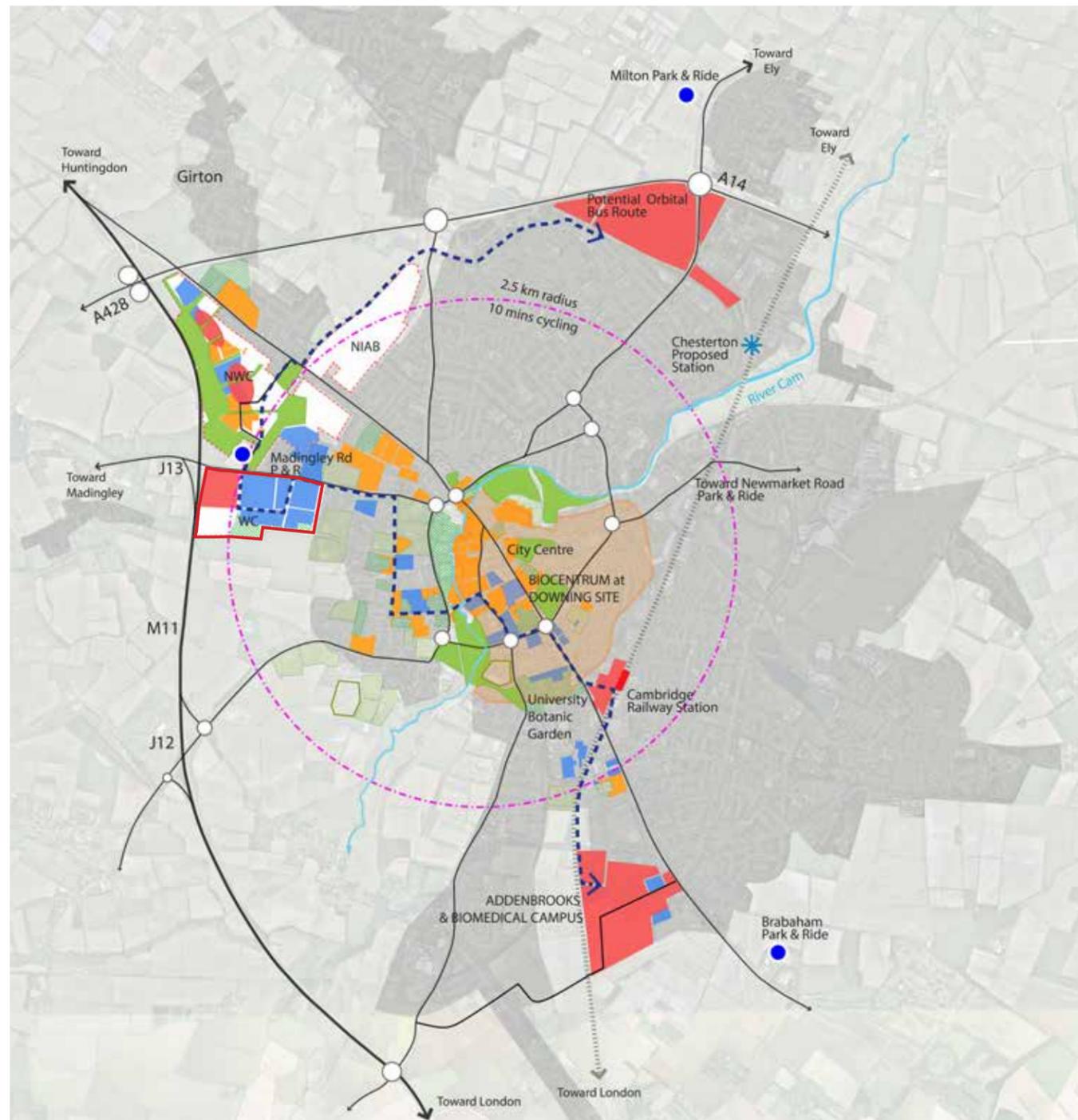
Together with South Cambridge, (where several residential developments and a biomedical campus are planned) and CB1 (higher density mixed used development adjacent to the Railway Station) the north-west part of the city, where the Site is located, is undergoing the most significant level of transformation. Along with West Cambridge, this north western development cluster also incorporates Darwin Green and the University's North West Cambridge Development.

The proposed employment cluster comprising both West and North West Cambridge has the potential to become a greater focus for employment and economic activity, joining the established employment clusters at Addenbrookes and Cambridge Science Park.

Already established as an academic site, West Cambridge is part of the natural expansion of the academic and college sites that occupy the western city centre area.

The location of the site within the City has the following benefits:

- it is a 10 minute cycle distance to the city centre along the Coton Footpath;
- it is within a 20 minute cycle to the station;
- the site is closer to the city centre than both Addenbrookes and Cambridge Science Park;
- the site is adjacent to the M11 and also has good access to the A428; and
- a Park and Ride site is located immediately to the north of the West Cambridge site.



11. Strategic Context

KEY

- ① West Cambridge
- ② The North West Cambridge Development
- ③ Addenbrookes
- ④ Cambridge Science Park
- ⑤ Cambridge CB1
- Existing roads
- ⋯⋯⋯ Railway line
- Railway station
- * Chesterton - proposed station
- ⋯⋯⋯ Orbital bus route
- ⋯⋯⋯ Cycling distance - 10 min. radius
- Park & Ride
- Cambridge city centre
- Employment clusters
- Academic & Research clusters
- Colleges
- ⋯⋯⋯ Under construction
- ▨ University & Colleges' green spaces
- ▨ University & Colleges' Sports grounds
- Public green space
- ▨ Cambridge sports facilities

3.1.2 An emerging context in the west

The West Cambridge site is part of an emerging development cluster to the west of the city which includes the University's mixed use North West Cambridge Development (NWCD) site, and residential development at Darwin Green, both located to the north of the site.

Both developments will fundamentally transform this part of the City. The former green belt farmland area at NWCD will accommodate a new local centre with community facilities, shops and a hotel, with over 3,000 residential units, 2,000 student rooms and academic and employment areas to follow by 2030. As former green belt land and an area of some ecological importance, the NWCD development includes significant areas of landscaped open spaces, such as the large landscape buffer of the Western Edge, the community heart of Storey's Field, part of the Girton Gap landscapes that extend from north to south through the site, and an extensive network of green corridors and landscaped pedestrian and cycle paths weaving through the built areas.

It was part of NWCD vision from the outset to provide these amenities for the wider community beyond the limits of the development site. By means of increased density of both population and amenities, the development aimed to provide a focus for the west of the City, transforming the character and role of the area from suburban to urban.

From the completion of the first phase, NWCD will introduce transport improvements, including an additional public transport service between the local centre and the city centre and station (via West Cambridge), and a new vehicular link between Huntington and Madingley Roads. This link will provide conditions for a future bus Orbital Route to reach West Cambridge linking through NWCD and the Darwin Green site to the Science Park and then east to the proposed station at Chesterton.

The road and cycle network of NWCD will link to the existing High Cross and JJ Thomson Avenue junctions on Madingley Road and thus enable easy access between the two University developments, for vehicles, cycles and pedestrians.

NWCD will bring a new, greater residential in close proximity to the proposed employment and research uses on West Cambridge site:

- A new local centre providing a focus for the west of the city including local shops, a food store, health centre and hotel;
- University Housing for staff and post graduate students;
- Sale housing;
- A 3-form entry University primary school;
- A nursery and Community Hall;
- Major public open spaces (including Storey's Field and the Western Edge);
- Sports pitches and playing fields (including cricket and football) and children's playgrounds;
- Additional academic and commercial space; and
- Connecting cycle routes and significant transport improvements.

KEY

- 1 Local Centre (Market Square)
- 2 Foodstore
- 3 Primary School
- 4 University Nursery & Community Hall
- 5 Hotel
- 6 University Housing
- 7 Ridgeway Village - mixed housing
- 8 Storey's Field public open space
- 9 Western Edge public open space
- 10 Sports Fields
- 11 Academic cluster - Madingley Rise
- 12 Academic and commercial clusters
- 13 Storey's Field Village - mixed housing
- 14 Girton Gap landscapes



12. West Cambridge Site within the wider local context (including the emerging North West Cambridge Development)

3.1.3 Existing landscape context

Cambridge has a distinct character and landscape setting: the diversity of historic buildings and conservation areas, the colleges, the river, the commons, open spaces, natural features and habitats all contribute to the distinctiveness and uniqueness of the City's landscape.

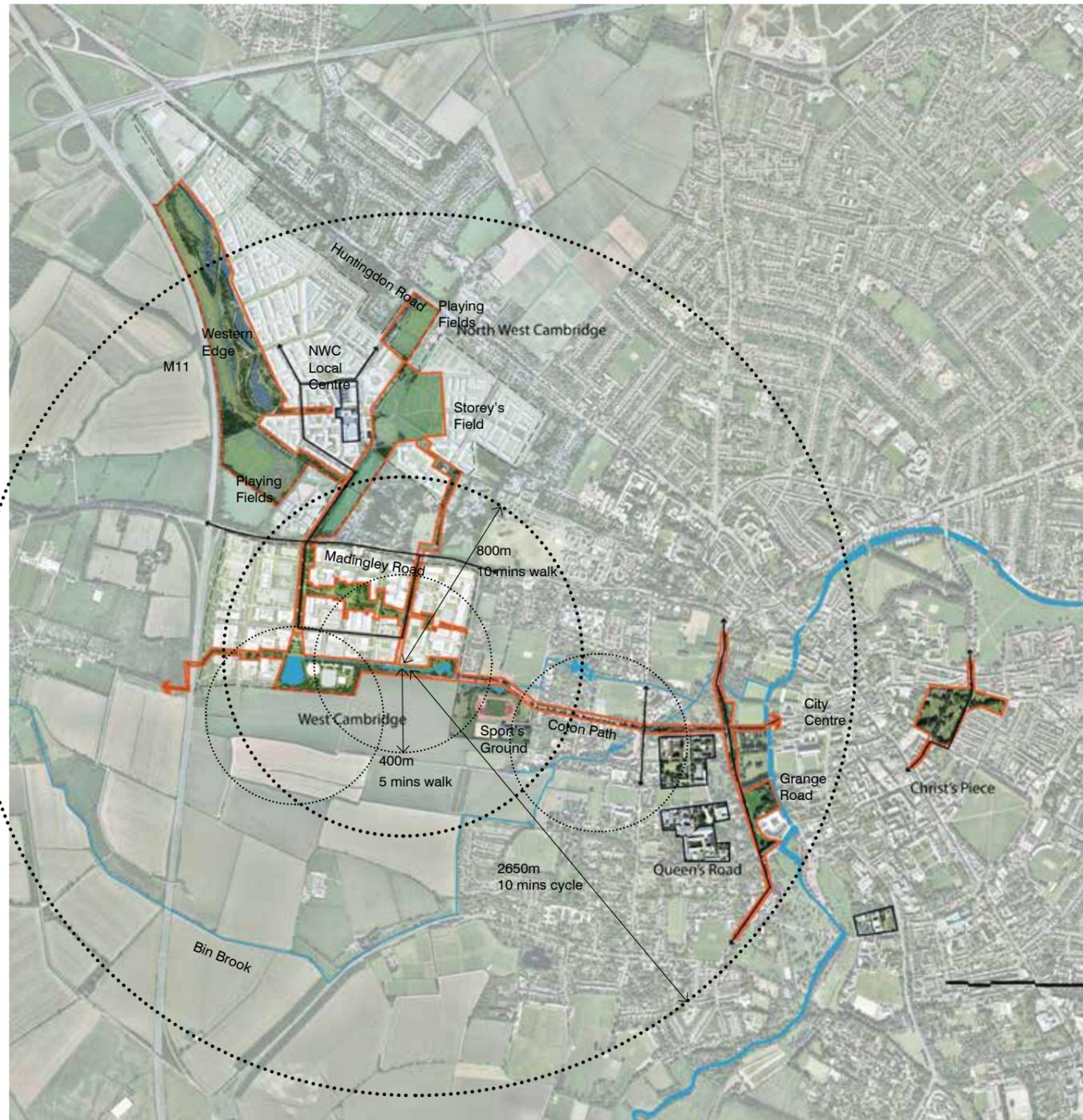
The rural landscape of Cambridgeshire is particularly close to the west of the city, and is defined by large arable field parcels with an open aspect. Remnants of this agricultural landscape can be seen throughout the city, found in boundaries, markers such as trees, hedges and ditches that define the network of open spaces and routes that have shaped the urban grain. However, there is limited visual connection to the city from this rural landscape.

The association between public open space, private space and the density/scale of the built environment are particularly marked within the city centre, and the connections that form the network between these spaces are typically reinforced with mature avenues or lines of trees, formal boundaries, with a clear distinction between private and public functions.

The site at West Cambridge offers and contains many of the features that are seen throughout the city and this green infrastructure includes native hedgerows with drainage ditches, mature avenues of native trees, woodland boundaries and green buffers and areas of naturalised open water with marginal planting.

The new masterplan now borrows from Cambridge city centre and brings west a set of the city's other green elements to the site. These new spaces, which include pedestrian lanes, ecological/wetland landscapes, landscaped gardens, public commons or greens and enclosed courts are weaved through and between the existing landscape features to form a new green framework.

The overall landscape concept is to create series of elements and spaces that are cohesively joined to form an overall site strategy that responds to place, character and the masterplan reinforcing a legible hierarchy of space.



13. West Cambridge strategic context - connective landscapes

3.1.4 Existing landscape types

Key to the transformation of West Cambridge will be the creation of a strong landscape and open space character, with visual connection to the city centre. This will include of a series of well-defined new urban spaces, reinforced landscape connections and upgrading the existing internal and surrounding street network. The development strategy seeks to create a new hierarchy of spaces through the site that will aid legibility, create a strong visual identity and form the setting for new events and recreation that will become integral to the life of West Cambridge.

To create a unified but distinct landscape that's relevant to Cambridge, we have selected a series of attributes from three identified character zones which been reinterpreted and used within the Green Infrastructure design

Agrarian

Precedent: Coton Countryside Reserve

Defined by: Informal mixed species rich hedgerows; specimen trees within Hedgerows; biodiverse open grasslands and Species rich meadows.

Transitional

Precedent: King's Back, Cambridge

Defined by: Integrated Landscape – hard and soft, meandering paths with ornamental tree and shrub planting; informal tree planting along flood plains; drainage ditches and canals.

Structured

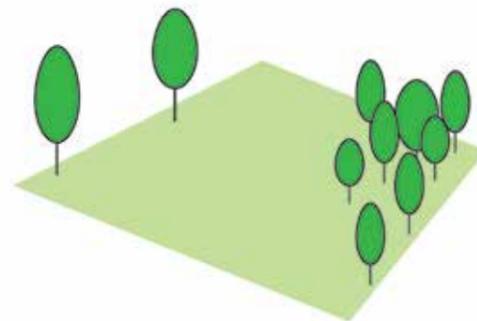
Precedent: landscapes in the City

Defined by: Geometrical planting & avenue tree planting; formal hedgerow planting; managed lawns with mature trees, clear boundary treatments.

Agrarian landscapes



14. Coton Countryside

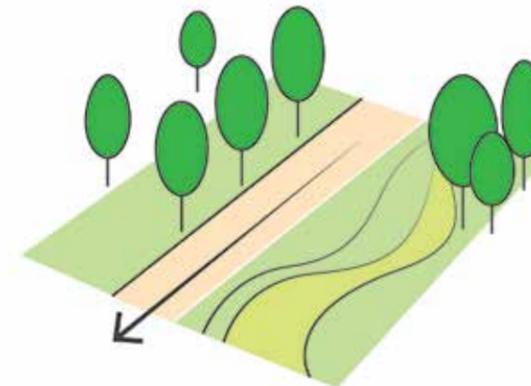


- Informal mixed species rich hedgerows
- Specimen trees within Hedgerows
- Biodiverse open grasslands
- Species rich meadows

Transitional landscapes



15. The Backs

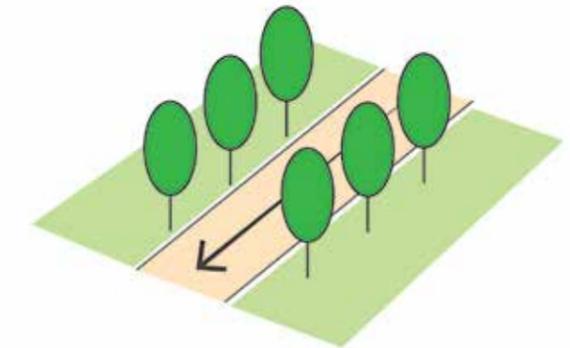


- Integrated Landscape – hard and soft
- Meandering paths with ornamental tree and shrub planting
- Informal tree planting along flood plains
- Drainage ditches and canals

Structured landscapes



16. Garrett Hostel Lane



- Geometrical Planting & avenue tree planting
- Formal Hedgerow Planting
- Managed lawns with mature trees
- Clear boundary treatments

17. Landscape characters and elements

3.2. Town Planning context

3.2.1 Cambridge Local Plan 2006

West Cambridge is designated as an Area of Major Change (AOMC) and is recognised as a major allocation for University faculty development, research institutes, commercial research and development, a sports complex, residential and associated uses.

3.2.2 Cambridge Local Plan 2014: Proposed submission

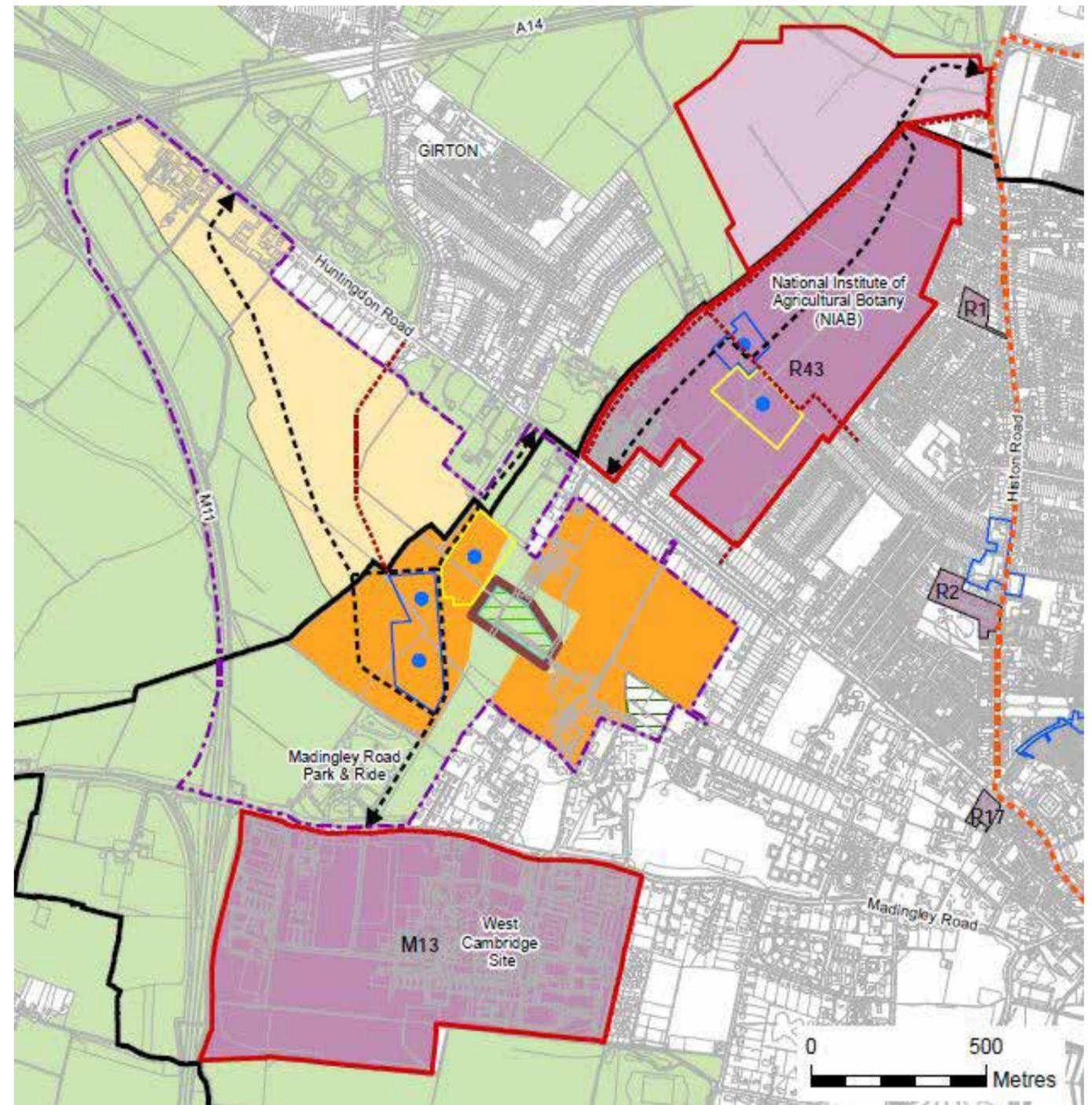
The West Cambridge Site continues to be designated an AOMC in the Cambridge Local Plan 2014: Proposed Submission. Policy 18: *West Cambridge Area of Major Change* sets out the overarching principles for further development of the site.

The University of Cambridge and Cambridge City Council have agreed amendments to the proposed wording of Policy 18 as part of the Examination of the Local Plan through a Statement of Common Ground (SoCG). The revised wording of Policy 18, as set out in the SoCG, is as follows:

1. Development of this area will be permitted in line with the existing planning permissions.
2. For new development, the principal land uses will be:
 - D1 educational uses, associated sui generis research establishments and academic research institutes; and
 - Commercial research and development of products or processes within use class B1(b) that will support knowledge transfer and/or open innovation in respect of D1 higher educational uses, associated sui generis research establishments, academic research institutes, and/or other Class B1(b) uses already authorised or granted permission pursuant to this policy.
3. Any densification of development on the site that results in a significant increase in floorspace, over that already approved, will be supported providing that:
 - A revised masterplan supporting an outline planning application (OPA) has been proposed that takes an integrated and comprehensive approach to the provision and distribution of the uses, and supporting facilities and amenities;

- Phasing of the development will be determined through the outline planning permission (OPP) and as the need is proven;
 - The approach to appropriate development heights will be determined through the OPP giving consideration to the sensitivity of the Green Belt to the south and west;
 - Proposals respect the important adjacent Green Belt setting to the south and west, and other neighbouring residential uses and views of the city from the west;
 - It includes a comprehensive transport strategy for the site, incorporating a sustainable transport plan to minimise reliance on private cars. This should include assessing the level, form and type of car parking on the site;
 - That walking, cycling and public transport links (including access for all) to the city centre, railway station(s), other principal educational and employment sites, and other key locations within the city are enhanced to support sustainable development; and
 - That proposals provide appropriate green infrastructure which is well integrated with the existing and new development and with the surrounding area.
4. The development will also include further phases of the sports centre.
 5. Small-scale community facilities, amenities, and A1 (local shop), A3 (café), A4 (public house), D1 (crèche) type uses and student accommodation will be acceptable, if they support existing occupants on the site and add to the social spaces and vibrancy of the area, essential to its continued success.
 6. The council will be supportive of a site-wide approach to renewable or low carbon energy generation or the future proofing of buildings to allow for connections to energy networks.
 7. The precise quantum of new floorspace will be subject to testing and demonstration through the development of a revised OPA for the site.

The Proposed Development will make a key contribution to delivering the objectives of Policy 18.



18. Local Plan Policy 18: West Cambridge AOMC

3.3. Transport context

3.3.1 Transport constraints

West Cambridge is well located with respect to reasonable existing pedestrian and cycle infrastructure to accommodate local non-motorised movement, and the existing bus services already connect to a series of popular destinations.

West Cambridge is being brought forward within the context of wide-ranging uncertainty, including:

- the additional trips from the development included in the Local Plan, still completing its inquiry;
- the deliberations of the Greater Cambridge City Deal;
- the need for enhancement measures along the M11.

The local highway network along the Madingley Road Corridor is characterised by heavy, tidal, peak hour movements into (AM peak) and out (PM peak) of Cambridge. On the strategic highway network, the congestion on the A14 to the north-west has resulted in the Government progressing the A14 Huntingdon to Cambridge Enhancement Scheme following the cancellation of an earlier project in 2010.

Existing journey to work trips by Cambridge residents - including University employees- involve a much lower car driver mode share than the United Kingdom average. Notwithstanding this, there is currently limited constraint to journeys to West Cambridge being made by car, especially to the commercial occupier. Indeed, to date, no occupier at West Cambridge has prepared or agreed an Individual Travel Plan as travel demand management techniques had not started until well after the original development was consented.

3.3.2 Transport opportunities for improvements

Whilst the existing transport infrastructure appears to accommodate the existing requirement, enhancement would be sought to accommodate significant additional development in the area, with further capacity being provided for all modes of transport, especially non-car modes. This is being provided by a wide-ranging, balanced, sustainable transport strategy that includes the following measures:

- the delivery of a strong, quality, development-wide, travel demand management strategy to both the existing and future users of the Site;
- provision of quality pedestrian and cyclist infrastructure both to, and across the Site, reducing existing severance. Of particular interest is the provision of improved cycle connectivity into the City, with additional priority measures across busy roads;
- delivery of quality, regular and accessible bus services to popular destinations, including new link to the Cambridge Rail Station;
- appropriately sized site access junctions to maintain the existing highway capacity and provide priority for pedestrians, cyclists and buses; and
- provision of sufficient car parking places around the periphery of West Cambridge site to minimise car movement within the development, and the implementation of a car parking management strategy.

These measures will both manage the impact of the proposed Development on the surrounding transport network, and protect the quality and amenity of West Cambridge for all occupiers.

In addition to these measures proposed by the University, a range of further strategic measures are being promoted within the Greater Cambridge City Deal to mitigate existing issues, and provide capacity for further development by others across Cambridge.

City Deal aims to enable a new wave of innovation-led growth by investing in the infrastructure, housing and skills that will facilitate the continued growth of the Cambridge Phenomenon. Whilst West Cambridge is excellently located to benefit from these City Deal transport proposals, West Cambridge is not dependent upon its delivery - nor will West Cambridge prejudice the delivery of the City Deal proposals.

3.4. Local context

3.4.1 Surrounding context

The Site is located on the western edge of Cambridge, bound to the west by the M11 Motorway, the north by the A1303 Madingley Road, the east by Clerk Maxwell Road, and to the south by open countryside.

Surrounding the site there is to the north, the Park and Ride facility at Madingley Road and the emerging NWCD development. In addition there is a cluster of existing academic uses along Madingley Rise.

To the east is a mixture of residential and sports playing fields while to the south is open countryside, designated at Green Belt. Also to the south, the existing watercourse of Bins Brook runs east to west, forming ponds at the University Sports Ground to the south east of the site.

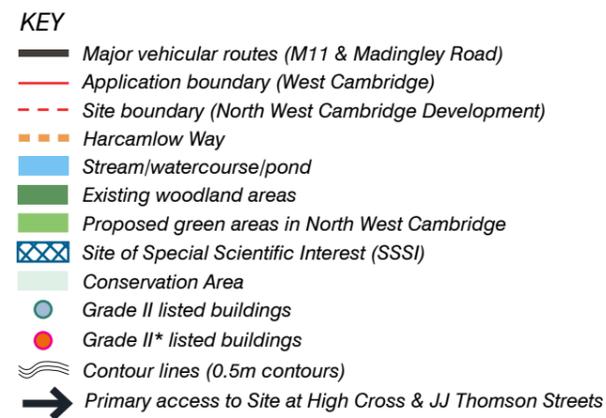
To the west of the site is the M11 motorway, which forms a strong limit to city growth. Orchards and fields used for agriculture and grazing are located to the west of the M11 and further west of these is the village of Coton. The fields and orchards between Coton and the Site are relatively small and bound by hedgerows and trees. Fields beyond Coton and to the south are larger and more open. Many are still lined by hedgerows but there are far fewer trees. This field pattern of large open fields is also present to the south, between the Site and Barton Road.

To the north and east of the site there are two Conservation Areas each containing a number of listed buildings: The Conduit Head Conservation Area consists of 1930's modernist housing and the West Cambridge Conservation Area, contains an eclectic mix of neo-Georgian and modernist houses.

A long distance recreational route; the Harcamlow Way, passes along a public footpath along the southern boundary of the Site. Another public footpath branches off the Harcamlow Way further south of the Site. Further south still is another public footpath travelling from Coton to Barton Road.

The Site is located within the impact zone of Madingley Wood Site of Special Scientific Interest (SSSI). Madingley Wood is a small area of ash-maple ancient woodland and is located approximately 1.8km west of the Site. The Site is also located within the impact zones of two geological SSSIs; Histon Road SSSI located approximately 2.5km north east of the Site, and Traveller's Rest Pit SSSI located approximately 500m north of the Site.

Along the boundaries of the site there is mature woodland buffers, which to the north, lend an agrarian/bucolic character to Madingley Road, a key approach road to the city.



20. Site context

21. Green Belt farmland to the south



22. Madingley Road to the north



23. M11 to the west



24. Madingley Park and Ride to the north-west



3.4.2 Surrounding land uses

The West Cambridge site is 66ha in area and comprises a mix of land uses including academic, commercial, sports, and residential. Large parts of the Site area comprise a mixture of roads and footpaths, car parks, unmanaged plots awaiting development, formal landscaped public realm areas, and large paddocks used by the Veterinary School. There are numerous avenues and individual trees of varying ages across the Site.

The Site is divided up and accessed by roads which form a rough grid pattern. There are three main roads crossing the Site in a north-south direction: JJ Thomson Avenue, High Cross Road and Western Access/Ada Lovelace Road.

JJ Thompson Avenue and High Cross Road, both provide access to the Site from the A1303 Maddingley Road. A single road, Charles Babbage Road, crosses the Site in an east-west direction between JJ Thomson Avenue and Western Access Road. In addition there are numerous smaller access roads which service individual buildings and plots.

There are three main clusters of buildings on the Site. The largest cluster of buildings occupies the eastern area, with a mixture of older buildings constructed in the 1970's along with newer buildings in more recent years. The second cluster of buildings is located centrally on the Site and comprises the buildings and paddocks used by the Department of Veterinary Medicine. The third cluster of buildings is located in the north western corner of the Site which are occupied by commercial research tenants; the British Antarctic Survey, Schlumberger, and Aveva. The University Sports Centre is located on the southern edge of the site, well connected to the Coton Footpath.

The Maddingley Road Park and Ride is located just north of the Site and beyond this is the location of the NWCD development, which will provide a new Local Centre, new

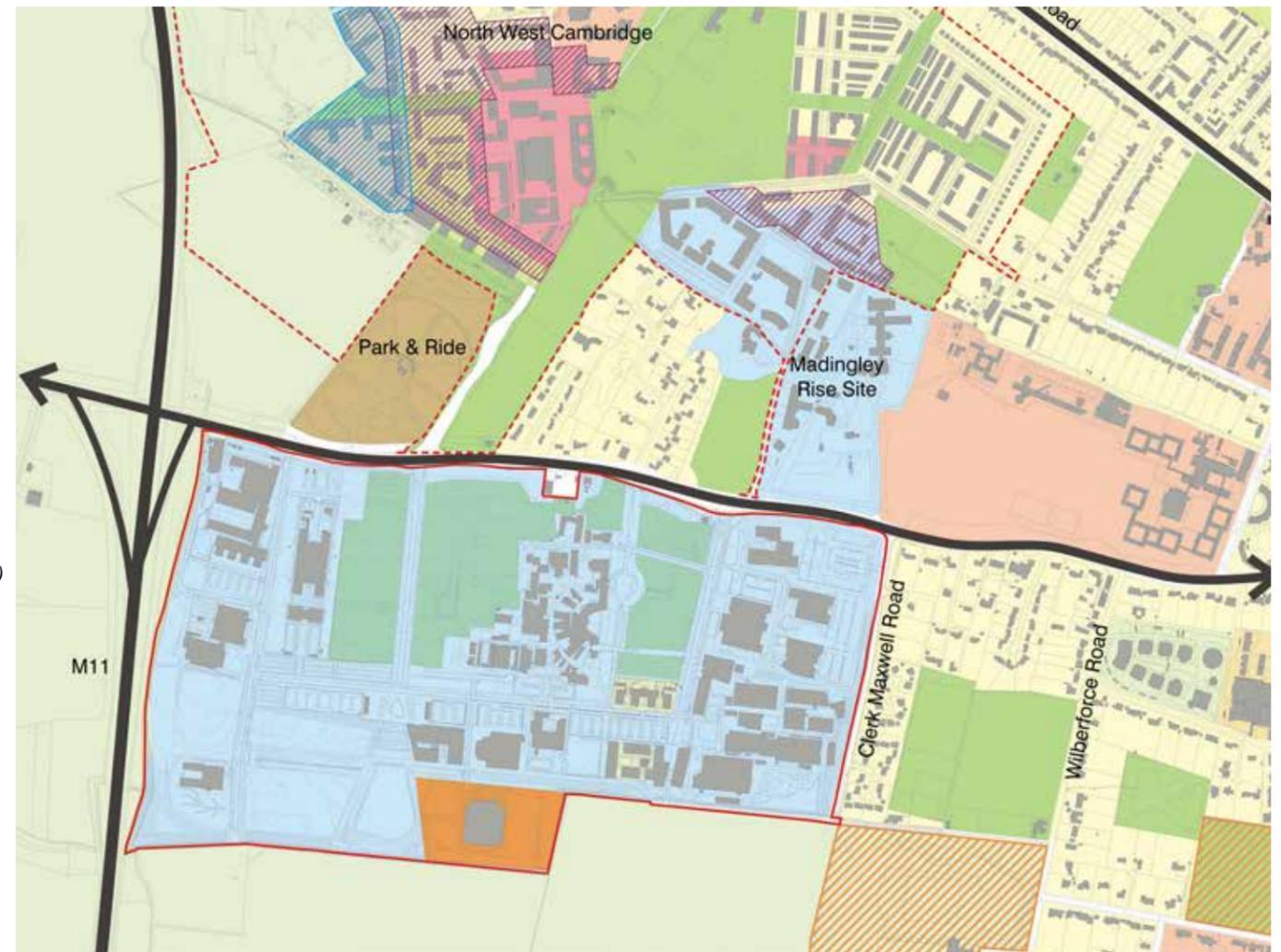
community uses and residential uses.

Existing academic uses are located to the north of Maddingley Road along Maddingley Rise - this academic cluster will be reinforced by new academic uses located just to the north within the NWCD site. Churchill College is located adjacent to this.

Residential uses are located close by at The Lawns and Perry Court off Clerk Maxwell Road to the east, and Conduit Head Road and Lansdowne Road off the A1303 Maddingley Road to the north.

To the east of the Site and beyond the residential properties at The Lawns and Perry Court, are the Emmanuel College Recreation Grounds and University Sports Grounds. Beyond these, the western suburbs of Cambridge comprise a mixture of residential properties, sports pitches and university buildings.

- KEY**
- Major vehicular routes (M11 & Maddingley road)
 - Application boundary (West Cambridge)
 - Site boundary (NWCD)
 - College/Schools
 - Residential areas
 - Open space
 - Research and academic
 - Mix uses
 - University Sports Centre
 - Paddocks
 - Park and Ride
 - Green Belt
 - University & Colleges' Sports ground
 - Land use flexibility zone
 - Western edge land use flexibility zone



29. Surrounding land uses

25. Academic Uses at Maddingley Rise



26. Housing off Clerk Maxwell Road



27. Housing to north of Maddingley Road



28. University Sports Ground to the southeast



3.4.3 Site access, movement and parking

1 Madingley Road creates the northern boundary and provides two vehicular access points to the Site: one at High Cross to the west, and another at JJ Thomson Avenue. Both access points also provide access to NWCD to the north (vehicular, cycle and pedestrian).

With completion of the northward link as part of the NWCD works, High Cross junction will become an important access point to the Site, with expected increase in utilisation.

2 Clerk Maxwell Road at the eastern boundary provides vehicular access to the Park and Cycle facility in the north east of the site and cycle access to the site. To the east, this road also provides access to two clusters of residential development and the University's sports facilities. It is a wide road, with on-street parking and generous landscaping.

3 Coton Path to the south provides direct links to the city centre and other academic sites such as University Library, Sedgwick and Mathematics. This path is particularly well used by cyclists as a main route to and from the city centre. It also provides access to the University Sports Ground and Sports Centre within the West Cambridge site.

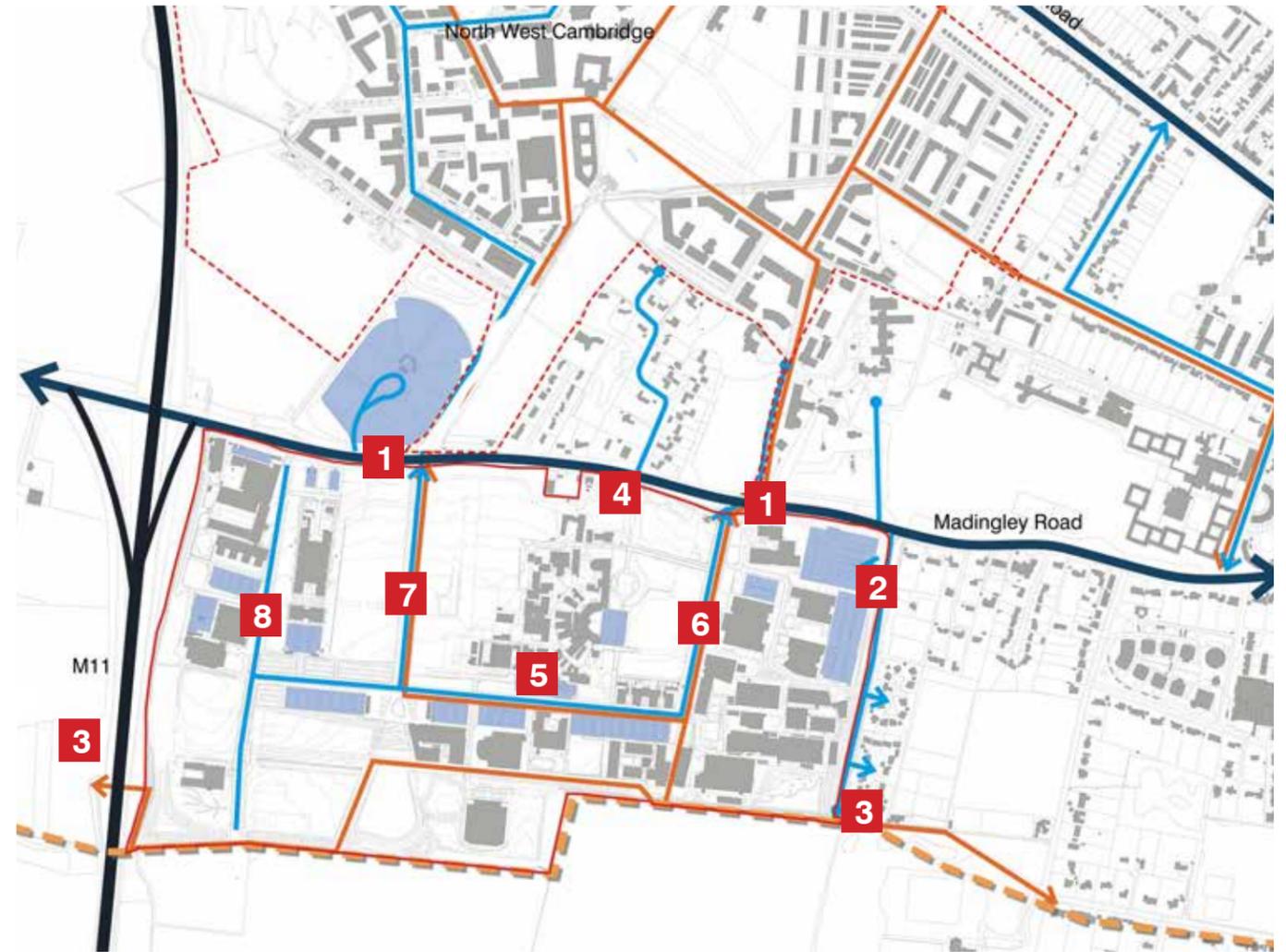
4 The original entrance to the Department of Veterinary Medicine (the 'Vet School') has been closed to vehicles, but the original road layout was retained. The grand oak tree and tree-lined street are assets that should be celebrated. There is an opportunity to reopen this entrance to create an additional access point along Madingley Road.

Internal circulation: three streets provide an internal access loop within the site, these comprise Charles Babbage Road (5), JJ Thomson Avenue (6) and High Cross (7). High Cross has recently been completed with landscaping and avenues of trees. The Western Access Road and Ada Lovelace Road (8) are located to the west of the site and provide access to Schlumberger and other buildings in the western area.

Other service roads provide access to car parking and academic buildings/service areas of the Vet School and Cavendish.

Car Parking Large surface car parking areas occupy areas along the eastern boundary, areas to the south of Charles Babbage Road and areas along the western boundary. These areas minimise connections between buildings and have large impacts on enclosure and definition of public realm.

The entrance to the Schlumberger Cambridge Research building is set back from the main street, therefore pedestrians and cyclists arrive through a car park.



30. Site Access and Movement

31. JJ Thomson access



32. High Cross access



33. Coton Path



34. Surface level car parking



3.4.4 Existing public transport

West Cambridge is well-located, being adjacent to well-frequented existing bus routes connecting to a range of destinations through the City:

- the Uni4 service runs at a frequency of 20 minutes on weekdays from the Madingley Road Park and Ride through West Cambridge, connecting the University facilities around Newnham then on to Addenbrooke's Hospital. When Phase 1 of the NWCD is occupied, the service will start from the new Local Centre instead of the Park and Ride site, collecting P+R passengers from the NWCD Site;
- Citi4 runs every 20 minutes along Madingley Road from Cambourne, passing West Cambridge and continuing along to Chesterton Road, Victoria Road to the Emmanuel Street stop in the city centre; and
- the Madingley Road Park and Ride site, a 10 minute walk from the Hauser Forum, is served every 10 minutes from the City Centre.

Whilst these services are regular there is a perception that the site is poorly serviced by public transport. This may be due to a number of factors such as:

- there is no direct bus to West Cambridge from Cambridge Rail Station, hence a further bus service is required to bring rail passengers into the city, before changing to a bus service serving West Cambridge;
- only Uni 4 bus stops are located within the site and these are not located close to the Development focus points at the West and East Forums;
- buses serving West Cambridge are frequently delayed exiting the site as no bus priority is provided on the Site Access Junctions with Madingley Road; and

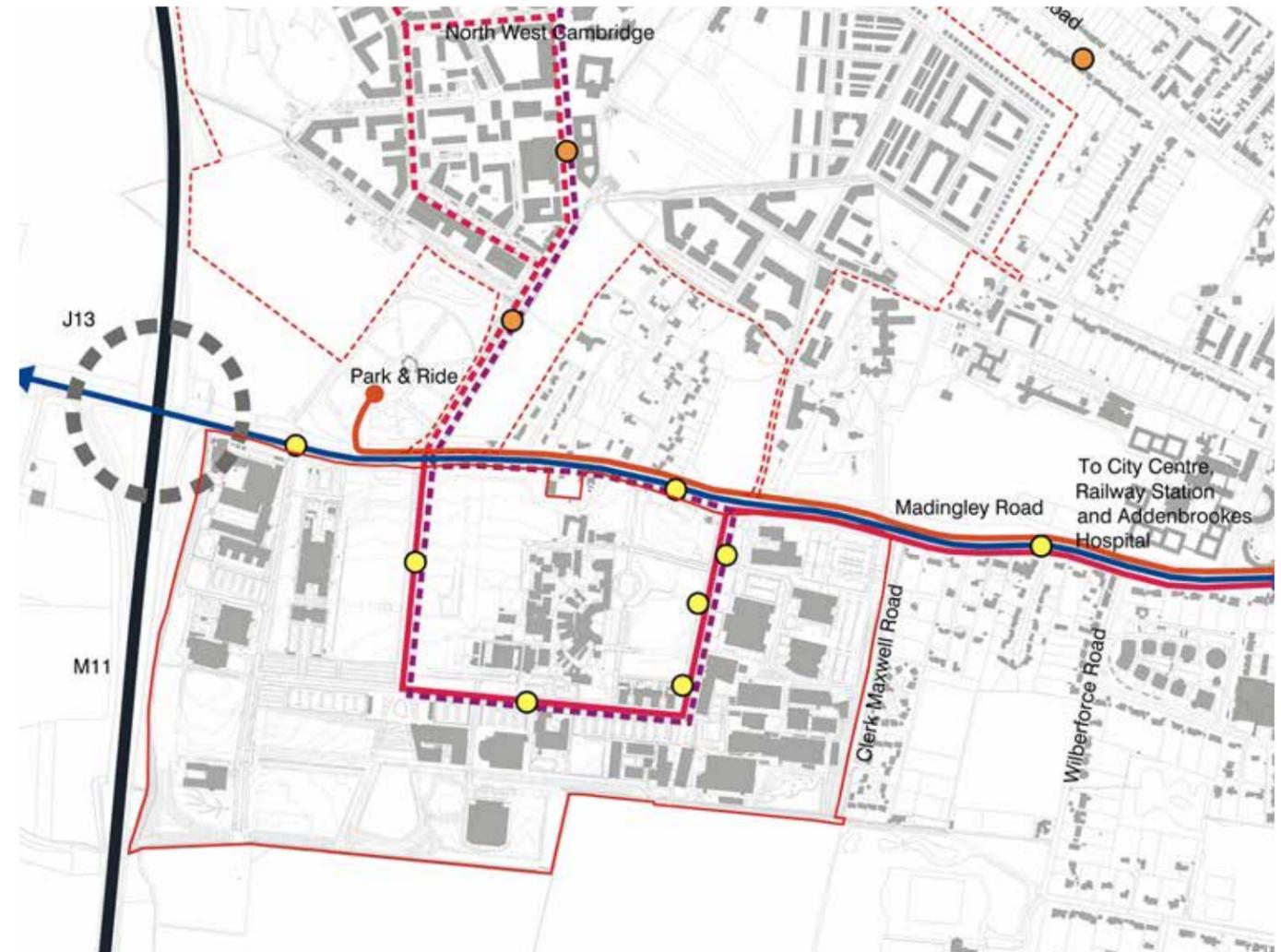
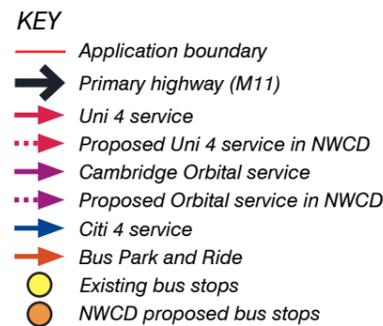
- access to other services requires passengers having to walk to, and cross, Madingley Road.

NWCD will provide improved bus connectivity that will also improve access to the West Cambridge site. This includes a more frequent Uni 4 service linking to the other University facilities, and (later in the NWCD delivery) an Orbital bus service linking from West Cambridge around the periphery of Cambridge towards Chesterton Rail Station.

In addition, there are two additional bus services being considered as part of City Deal proposals which could enhance bus accessibility to West Cambridge.

They include:

- a Radial route extension towards Cambourne and the west; and
- an Orbital route, extending and intensifying the initial NWCD Orbital proposals.



35. Existing Public Transport

36. Madingley Road Park and Ride



37. Madingley Road Park and cycle



38. Bus stops within the Site



39. Bus services



3.4.5 Key views

Key views to site:

The Schlumberger building forms a highly distinctive, key landmark building which is visible from the M11, from parts of the NWCD site and occasionally from within the site and from Madingley Road.

Views into the Site along the northern and western boundaries are generally limited due to thick and dense bands of woodland buffer except where the Site access roads join the A1303 Madingley Road.

Views into the Site from the east along Clerk Maxwell Road are also extremely limited due to a dense band of screening vegetation. However, buildings within the site are visible from further east, from within the sports fields.

Approaching along Coton Footpath from the city centre, Hauser Forum is the first highly visible building; the Cavendish Labs being largely hidden by woodland planting and only its roofline visible.

Buildings are not visible from and do not address Madingley Road which creates an environment that suggests the route is for access to Cambridge only.

Key Views from site:

Higher ground at East and West Forums, provide dramatic views towards the open, agricultural countryside to the south. Other streets between Charles Babbage Road and the south of the site also provide glimpses of this aspect.

Views from upper floors of the Maxwell Centre towards the city centre reveal how clearly one can see city landmarks such as King's College Chapel, St John's College Chapel and University Library. From ground level King's College Chapel is visible from the car park in front of Veterinary School.

KEY

-  Major vehicular routes (M11 and Madingley Road)
-  Application boundary
-  View to the King's College Chapel
-  Views to the Schlumberger
-  Views from site
-  LVIA viewpoints
-  Existing woodland areas



40. Key views from and into the site

41. Views from Madingley Road



42. Views to Schlumberger from the site



43. Views from East Forums



44. Views from West Forum



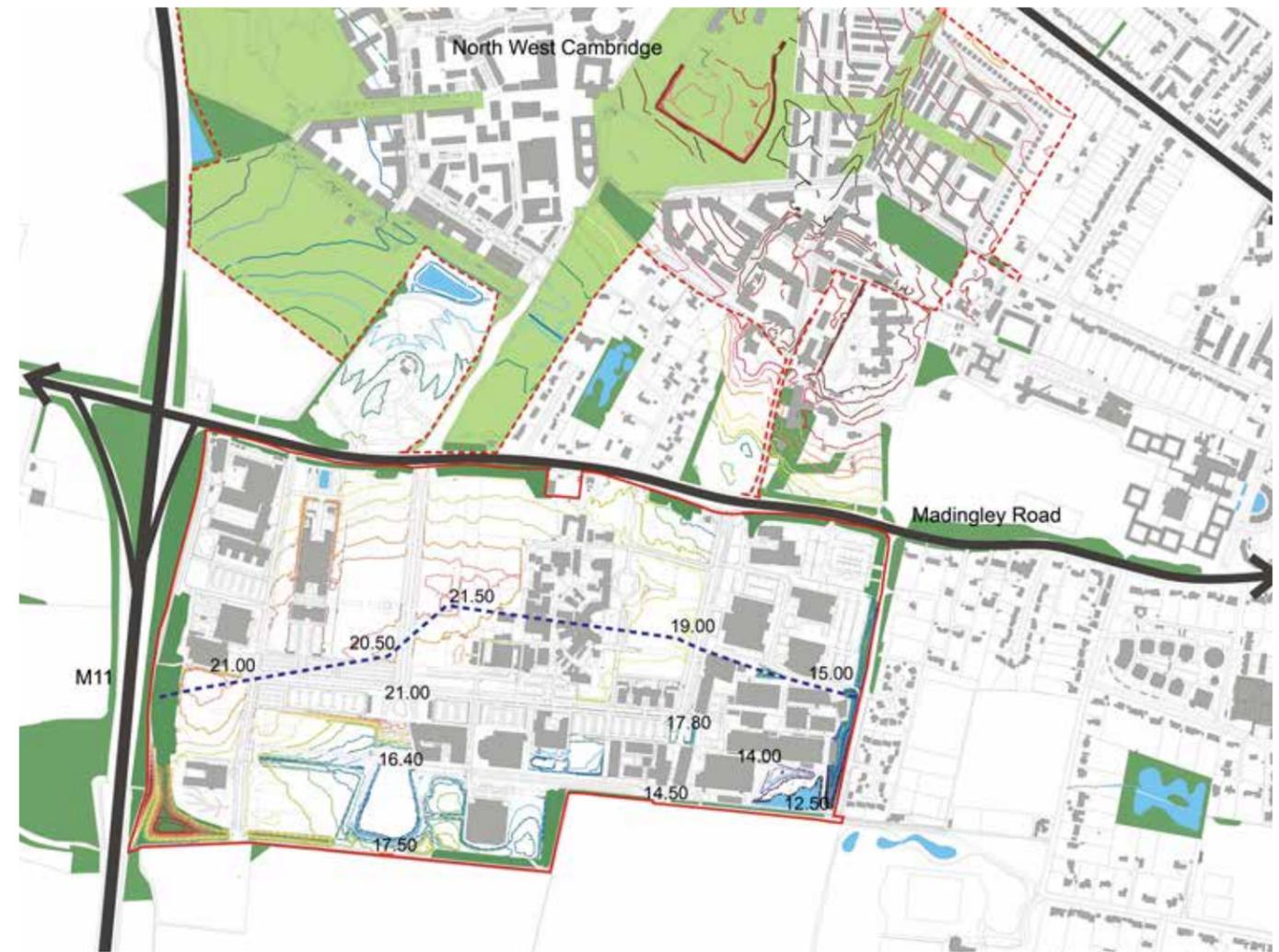
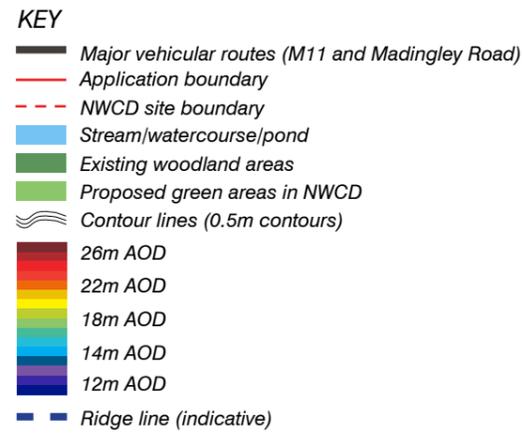
3.4.6 Topography

Within the Site area the topography is generally flat. However there is, broadly through the middle to upper third of the site, a west-east running ridgeline that also falls in elevation from west to east from about 19.70 to 14.70m. This natural water shed directs surface water to the north of the ridge line to Madingley Road and south of the ridge line to the ponds & drainage corridor.

Along the southern boundary the site falls from approximately 17.50m to 12.70m west to east forming a ridge and high plain overlooking the open countryside to the south.

The height difference between Charles Babbage Road and Coton Footpath is approximately 3 to 4m, equivalent to one storey of commercial development.

Charles Babbage Road, the West Forum and the East Forum occupy this higher level which provides them with views over the open countryside to the south. At West Forum, the existing landscape design incorporates ramps and stairs to manage the level difference.



45. Topography of the site

46. Paddocks



47. Height difference between Charles Babbage Rd and Coton Footpath



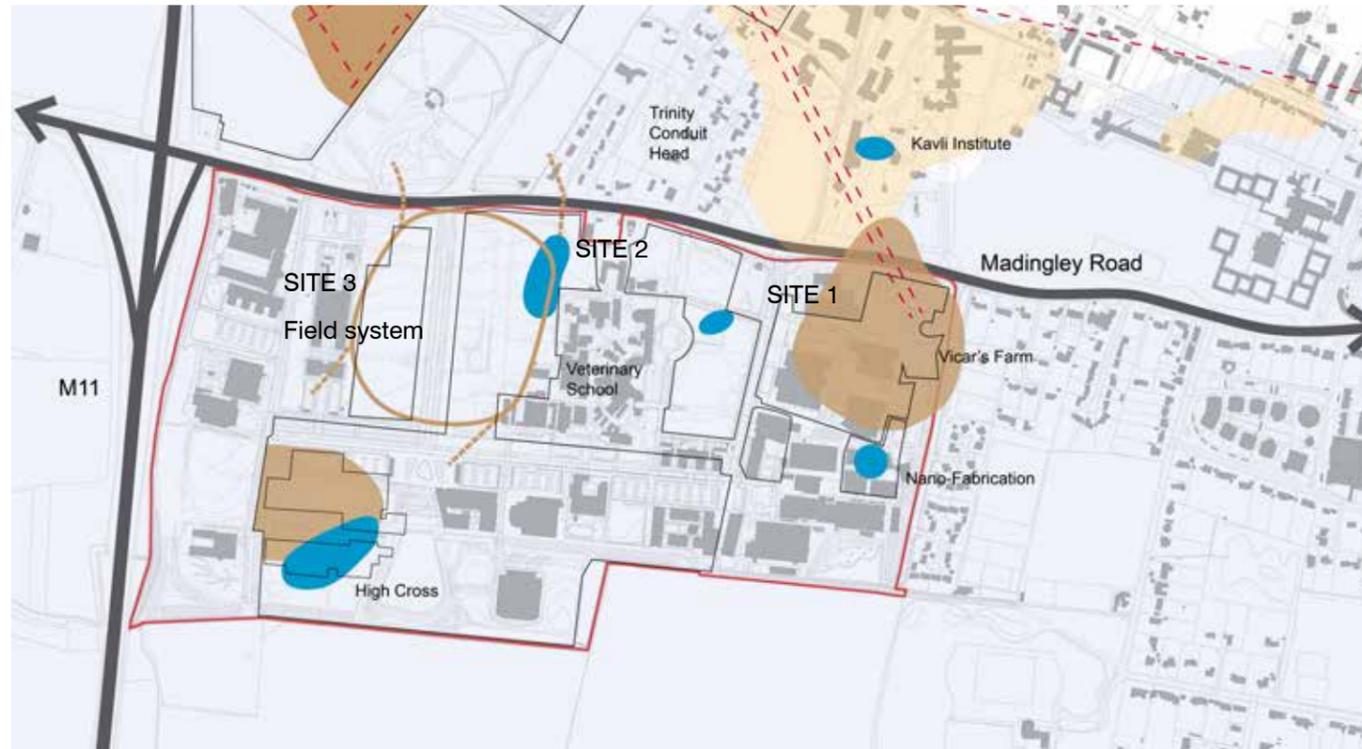
48. South-West lake



49. South-East corner



3.4.7 Archaeology



51. Archaeology

The site's archaeological potential has been fully appraised by a desktop study. Since then - at various times approximately half of the Proposed Development area has been subject to evaluation fieldwork. While these investigations have been of varying intensity, generally it has been of a low sampling density. Of those portions that have been formally evaluated, all of the known sites therein have now been excavated and there have been two major excavations.

Excavations at Vicars Farm (to the north east of the site), revealed evidence of quite significant activity from the Mesolithic to Romano-British periods, with a substantial Romano-British settlement covering the entire excavation area. In addition, the latest phase of excavations on the site has revealed an Early to Middle Iron Age settlement (site 2), overlaid with an extensive Romano-British field system and possible trackway (site 3), and an additional Iron Age site of lesser significance has also been identified (site 1).

KEY

- Major vehicular routes (M11 and Madingley Road)
- Application boundary
- Roman road/routeway
- Solid geology and drift deposits**
- 3rd-4th terrace/head gravels
- Boulder clay
- Archaeological sites**
- Roman
- Iron Age

The findings suggests a relatively intense use of the site, with site 2 suggesting a more sustained usage.

Site 2 will require full open-area excavation should development proceed there.

3.4.8 Noise

The dominant noise sources across the site are the M11 motorway to the west and the A1303 Madingley Road to the north. The noise levels across the site vary considerably due to the large distances between these road traffic sources and the eastern and southern boundaries as well as the distances between developed areas of the Site.

In addition, plant noise from some existing buildings on Site contribute to the sound climate in developed areas of the Site.

Vibration sources include road traffic on the M11 motorway and A1303 Madingley Road as well as traffic on roads within the Site boundary where traffic calming measures such as speed bumps have been installed.

Potential off-site noise sensitive receptors include local residents to the east of Clerk Maxwell Road and to the north of Madingley Road. Potential noise sensitive receivers on site include tenants of the North and South Residences and users of academic facilities.

3.4.9 Utilities



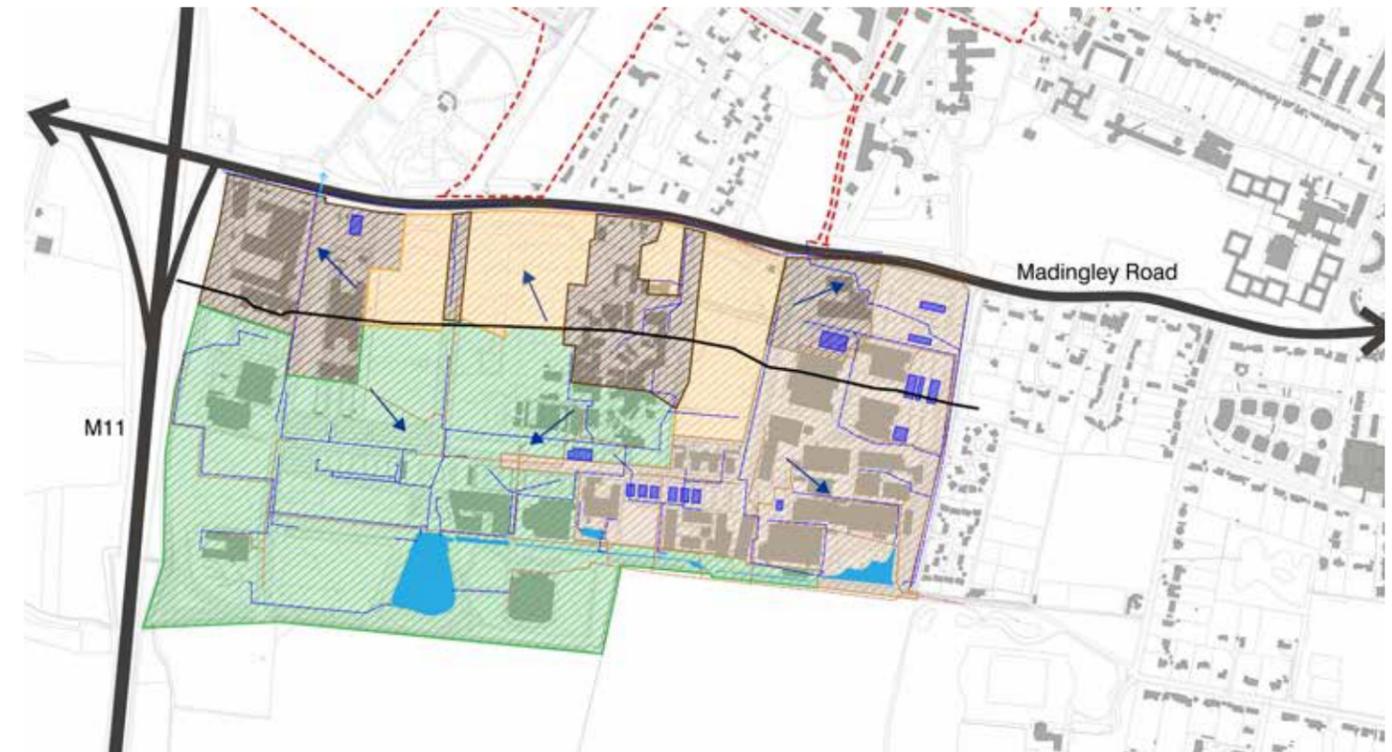
52. Existing utilities

Water, sewer, gas, electricity and telecommunications services are all presently buried beneath the Site servicing the existing buildings.

The Proposed Development will make use of the existing services and any spare capacity, but will supplement supply by upgrading off-site infrastructure where necessary and by constructing a site wide heat and power network supplied by the proposed energy centre.

- KEY**
- Major vehicular routes (M11 and Madingley Road)
 - Underground Electricity cables
 - Gas supply
 - Fibre optic cables/BT cables/communications cable

3.4.10 Site drainage and water



53. Existing site drainage and water

The existing development is well serviced with primary drainage infrastructure located within all access roads. There is a natural water shed within the Site with approximately 23% of the site draining northwards to Wash Pit Brook, and 77%, draining to Coton Brook, located to the southeast. Flow controls and attenuation features are present to restrict site discharges to Greenfield runoff rates.

The main surface water body within the Site is the engineered lake south of West Forum which provides attenuation of existing surface water flows from the existing built development. Flows from the lake discharge at Greenfield rates via a water course known as the Canal, into Coton Brook, located south east of the Site.

The pond located in the south east corner of the Site provides attenuation for the eastern area of the Site and discharges at a restricted rate into the Coton Brook.

Ditches located around the Site, notably adjacent to the northern boundary, perform a limited drainage function as many are heavily vegetated.

Underground geo-cellular surface water storage tanks are located in car parks located to the east and south of Charles Babbage Road.

- KEY**
- Major vehicular routes (M11 and Madingley Road)
 - Existing storage tank
 - Existing drainage outfall
 - Existing SW pipes
 - Existing FW pipes
 - Existing flow direction
 - Existing watershed line
 - Catchment area draining directly to South-West lake
 - Catchment area undeveloped
 - Catchment area draining to Washpit brook
 - Catchment area draining to Coton Brook Pond via geo-cellular storage structures canal and SE pond

3.5. Site description

3.5.1 On site landscape and ecology

Cambridge has a distinct character and landscape setting. The diversity of historic buildings and conservation areas, the colleges, the river, the commons, open spaces, natural features and habitats all contribute to the distinctiveness and uniqueness of the City's landscape.

The rural hinterland of Cambridgeshire is particularly close to the west of the City. Defined by large arable field parcels with an open aspect but with limited visual connections to the city. The remnants of the agricultural landscape can be seen throughout the City where they help to define the network of open spaces and routes that shape the urban grain.

The association between public open space, private intimate space and the density and scale of the built form are particularly marked in Cambridge. The connection between these spaces is typically reinforced with mature avenues, lines of trees or formal boundaries all forming a clear distinction between private and public functions.

The site at West Cambridge offers and contains many of the features seen throughout the city and rural fringe:

- Hedgerows with mature trees and drainage ditches;
- Legible routes with avenues of trees;
- Cycle and pedestrian routes;
- Mature woodland copses;
- Woodland boundaries and shelter belts;
- Areas of open water; and
- A range of naturalised shrub and grassland habitats.

There is potential for improved ecological potential of the Site through ecologically considerate landscape design and specification

By enhancing and augmenting the underlying natural features in the West Cambridge site a narrative can be developed that is relevant to the surrounding landscape, Cambridge City Centre and the functions of the University.

KEY

	Major vehicular routes (M11 and Madingley Road)
	Application boundary
	NWCD site boundary
	Broadleaved woodland
	Plantation mixed woodland
	Species-poor semi-improved grassland
	Pond
	Hardstanding
	Amenity
	Building
	Bare ground
	Wet ditch
	Dry ditch
	Scattered trees



54. Landscape and Ecology

55. West Lake amenity space



56. Tree lined Streets (JJ Thomson Avenue)



57. Veterinary School Paddocks



58. Canals and Ponds



59. The Canals



The canal is part of the site wide drainage system and is located between the Lake and Southern Residences. It is not linked to the pond in front of Broers building or the pond in the south east corner. Currently the water flow in the canal and the pond is not optimal and there are opportunities to connect them into a joint system and improve the flows and health of the canal.

60. The West Forum and West Lake



The West Lake is envisaged as a secure destination and a relaxing place, offering views over extensive Green Belt countryside. The West Forum, however, has the potential to feel barren and under-used unless closer and more active building frontages are encouraged and planting enhanced.

The lake has average suitability for great crested newts and the area immediately surrounding the ponds provide some good terrestrial habitat. This site presents the possibility of augmenting and enhancing the ecology of the Site.

61. The east Forum



The East Forum is well defined between Hauser Forum and Broers building and West cafe is well located to add vibrancy to it. However, the space towards JJ Thomson Avenue is fronted only by at grade car parks and lacks definition. There are opportunities for additional built form and amenity in this area.

The view of the countryside captured between the two buildings is captivating and is one of the defining places of the 1997 masterplan and the site.

62. Pond at Cavendish



The pond and south-facing park adjacent to the Cavendish Laboratory is high quality, but it does not address the Coton footpath. Visitors can pass this green space without realising. Opportunities to create views to and from the site have not been taken to date and are a missed opportunity for the wider site connected with it's context.

This pond provides attenuation for the eastern area of the Site and which also discharges at a restricted rate into the Coton Brook. This pond and the surrounding area has good suitability to enhance the ecology of the Site.

63. The Veterinary School Paddocks



The paddocks take up a significant portion of the central part of the site, contributing to a rural feel and setting for the buildings. Ecologically they are a species poor semi-improved grassland environment.

The restrictions of their use as grazing fields (for animals used for teaching at the Veterinary School) means that they are not, nor can they be, usable/accessible open space. Thus, they do not provide usable open space, but do provide visual amenity.

64. Trees



There are individual and groups of mature trees located within the Site forming distinct lines of trees or prominent standard specimens in formal and informal areas. The mature trees of note are the English Oaks, Silver Maples, Limes, Horse Chestnut and Willow specimens.

Existing street trees that form distinct avenues or formal lines are predominantly young specimens planted within the past 10 years with species such as Common Ash, Lime and English Oak. The limited age of these trees reduces their arboricultural value at present however, over time this will increase with their maturity.

65. Woodland Edge



The site is framed by a woodland edge of mature tall trees and thick shrubs in places that provide full or partial screening restricting the views to and from the site. This is a valuable feature characteristic of many roads in Cambridge which provides amenity and means of spatial definition when buildings are sparse or set back.

Scrub East of M11 Verge Country Wildlife Site is located along the western boundary of the Site and supports scrub with four or more woody species, plus a hedgerow more than 100m long and 2m wide at widest point with four or more woody species.

66. Southern Edge



The landscape and ecology to the south the Site are dominated by arable fields with small woodland blocks and hedgerows. This edge is more open and allows clear views from the site, though some screening vegetation is still present along the southern boundary.

Coton Path Hedgerow Country Wildlife Site supports populations of two Nationally Scarce vascular plant species and is located along the southern site boundary. The presence of these species will need verification.

3.5.2 Existing buildings and major occupiers

- The largest occupiers on site are Department of Veterinary Medicine (**A**) and The Cavendish Laboratory (**B**)
- Department of Engineering is present on the site in 5 separate buildings: Schofield Centre (**H**), Institute of Manufacturing (**R**), CAPE Building (**K**), Nanotechnology Centre (**L**) and Whittle Laboratory (**G**)
- Several academic departments occupy stand alone buildings (**T**), (**S**), (**I**)
- Commercial research partners (**C**), (**E**) and research institutes (**D**) are located in the Western part of the site
- Hauser Forum and Broers Building (**P**) form a nucleus of entrepreneurial activity, with flexible spaces and support for start-ups (Cambridge enterprise and ideaSpace) and smaller suites occupied by commercial research tenants
- Sports Centre (**U**) is a destination of city-wide importance
- Roger Needham building (**J**) is currently occupied by University Information Services
- Residential blocks (**O**), (**Q**) together have 204 units, and Northern block (**O**) also includes a nursery with 100 spaces
- University wide support facilities such as Data Centre (**V**) and University Stores (**F**) are located at the Western end of the site



67.3D model aerial view

- A** Veterinary School
- B** Cavendish Laboratory
- C** Schlumberger Research
- D** British Antarctic Survey
- E** Aveva
- F** University Stores
- G** Whittle Laboratory
- H** Schofield Centre
- I** Computer Science (William Gates)
- J** Roger Needham (ex Microsoft)
- K** Electrical Engineering
- L** Nanotechnology Centre
- M** MRI
- N** Physics of Medicine & Maxwell Centre
- O** North Residences
- P** Hauser Forum & Broers Building
- Q** South Residences
- R** Institute for Manufacturing
- S** Chemical Engineering and Biotechnology
- T** Material Science and Metallurgy
- U** Sports Centre Phase 1
- V** Data Centre



68. Shared facilities: catering

● Shared facilities within buildings

The site at present has a relatively large number of catering facilities. The diagram above the right shows their distribution across the site. Amongst them, there are areas within departments, (both those run by departments and out sourced to others) areas run by the University centrally, areas run by commercial and institute occupiers, plus vans.

Currently, the Cavendish canteen and the West Cafe provide hot food on site and are open to others on the campus. While the West Cafe is relatively visible and animates East Forum, the Cavendish canteen and other catering facilities on site are inward looking, and thus fail to fully realise opportunities to contribute activity to the public realm.

69. Schlumberger Building



The Schlumberger Research Centre, designed by Hopkins Architects in 1992, forms a key landmark building for the West Cambridge Site.

Schlumberger intend to remain on site and continue their strong association with West Cambridge. They have plans to extend at some point in the future and are considering interaction within the site by inclusion of amenity space to contributing to a new vitality.

70. School of Veterinary Medicine



The Veterinary School was built in the 1950s with many subsequent additions, and has disparate buildings and lacks coherence. It occupies the centre of the site and is surrounded by paddocks for animal grazing and are part of the teaching component of the complex.

In accordance with the need to cluster physical science and technology disciplines on the West Cambridge site, it is expected that the Veterinary School will vacate its site within the next 10-15 years.

71. Cavendish Laboratory



The Cavendish II Laboratory was built in the 1970s and forms a complex of buildings and is strongly associated with West Cambridge.

Cavendish Laboratory will remain within the West Cambridge site and intends to re-build and update their laboratory on another part of the site. Their vacated site to the south east of the site provides a key opportunity to provide a new gateway to the site from the Coton Footpath.

72. British Antarctic Survey (BAS) and Aveva



Located to the north west of the site along Western Access Road these are low density buildings accommodating key commercial and research institute partners.

BAS occupies one and two storey buildings and have plans for a new entrance and a social/meeting space annex.

Aveva (pictured above) is in a two storey building with a courtyard.

73. Hauser Forum and Broers Building



The Hauser Forum and Broers Buildings are two new buildings forming a gateway and public space to east area of the site and addressing views and outlook to the southern frontage. Hauser Forum accommodates the West Cafe, a key social space.

The current occupiers include Cambridge Enterprise and ideaSpace (two University affiliated organisations promoting entrepreneurship and supporting small businesses) and commercial research occupiers.

74. University Sports Centre (Phase 1)



The University Sports Centre is located to the southern area of the Site adjacent to the West Lake. It is a key destination for the site and wider city. It draws visitors in evening hours and weekends as well.

At present Phase 1 of the building is complete and provides a sports hall and gym facilities. Later phases of development, not yet been scheduled for construction, will provide further indoor sports facilities.

75. North Block Housing



Two residential blocks in the south east area of the Site provide just over 200 units of University affiliated rental accommodation and bring limited activity to the site.

The north block located along Charles Babbage Road forms good frontage and enclosure to the street which makes it feel more intimate and urban. This is a good precedent in terms of form, height and appearance of development that adds to a sense of character. The ground floor accommodates a nursery.

76. South Block Housing



Southern residential block encloses a courtyard with Hauser Forum. Along Coton footpath, the block includes commercial units, one of which currently accommodates community space. The remaining units are empty.

Residential units in this block are predominantly one bedroom units.

3.6. Existing consented masterplan

3.6.1 Description of existing consent

The West Cambridge Masterplan was prepared for the University in 1997 by MacCormac Jamieson Pritchard. The masterplan was submitted with an outline planning application for the site, and was approved in 1999 (application ref. C/97/0961/OP). A review of the masterplan was carried out and subsequently approved in 2004.

Three major pre-existing developments were to be retained on the site and the masterplan had to be developed around them. These include the Veterinary School, Cavendish Laboratories and developments in the north west part of the site. In the description of the 1999 Masterplan, it was noted that the pre-existing developments had a significant effect on the visual coherence and overall density of the site.

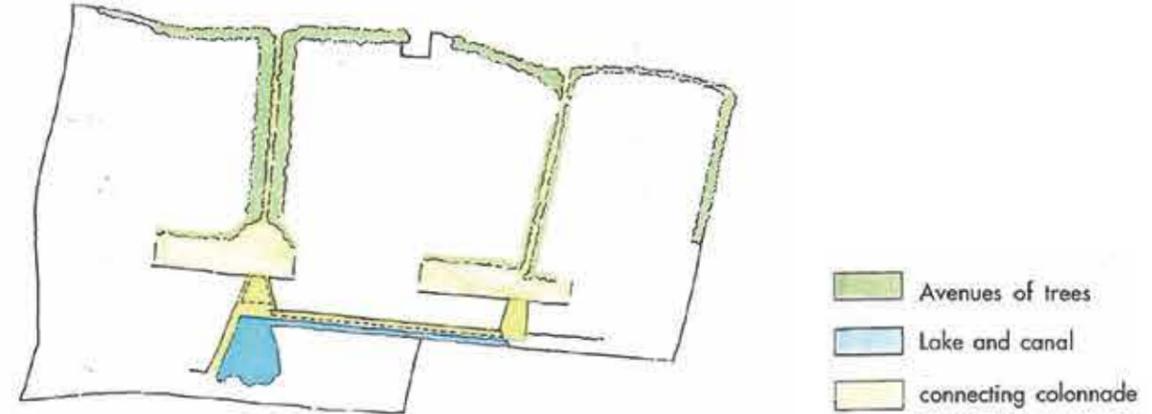
The masterplan responded to this lack of visual coherence and low density by concentrating new 4-5 storey development in the 'academic core area' along the southern area of the Site; and establishing a new site structure based on public realm elements, with squares, routes and landscape. The intention was for the public realm to knit the plot developments together and form a social focus for the West Cambridge research community.

Coton footpath was recognised as the main arrival route from the City Centre. Key spaces were the West and East Forums and the Colonnade to the southern edge of the site. These elements emphasised the southern approach from Coton Footpath and views from and across the open agricultural land.

The Masterplan and Planning Application contained a set of design guidelines, which sought to promote a particular visual and social character for the site as a whole. These were intended to be flexible rather than prescriptive in order not to restrict the design of individual buildings. The guidelines included matters relating to land use, plot ratios, ground and water levels, building heights, massing, enclosure, permeability, focal points and key sites, but not detailed design codes for buildings. This approach was chosen deliberately to enable individual departments and design teams the necessary freedom and flexibility to design buildings to meet specific Department needs and identity, within an overall Masterplan framework.

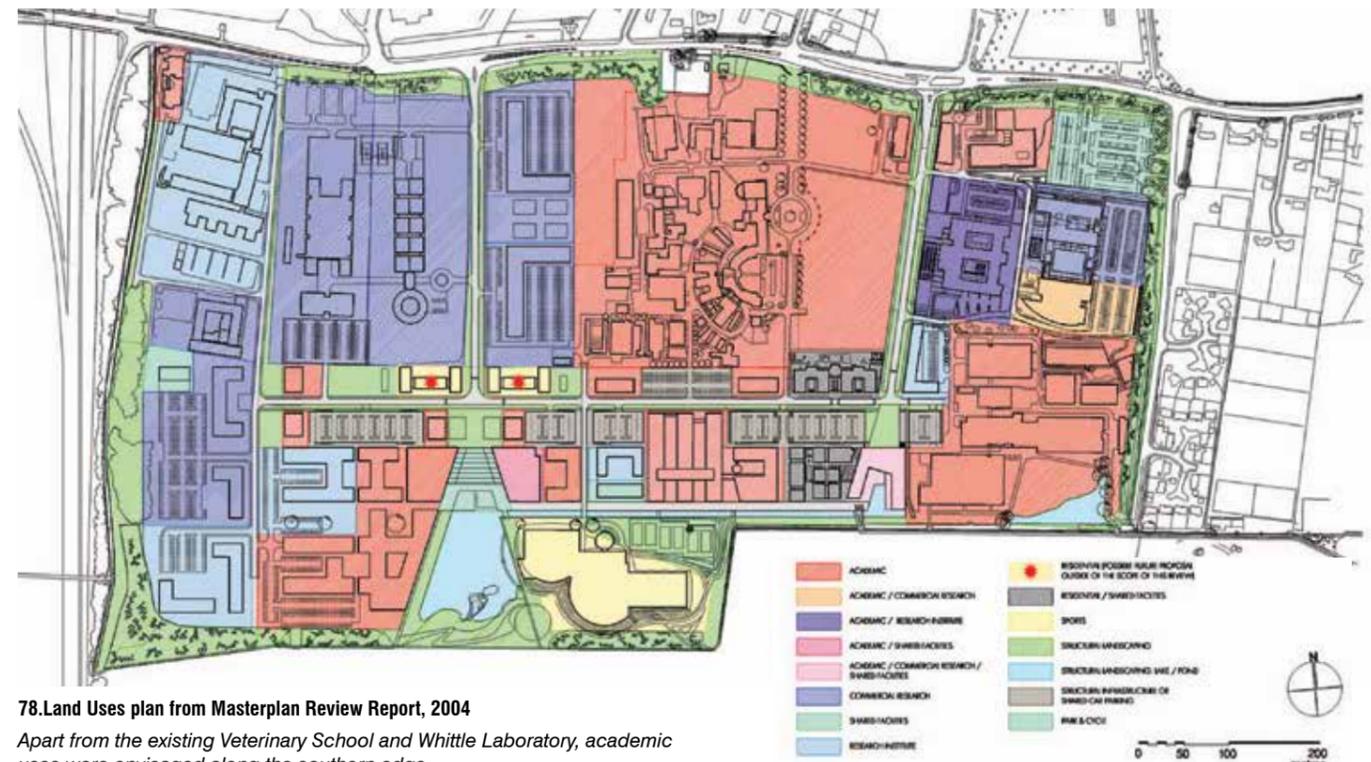
The original masterplan set out a number of over arching guidelines:

- Create an academic and research core to the south of the site and concentrate these uses to encourage formal and informal interaction. New public spaces and shared facilities encourage this interaction in the form of two Forums to the southeast and southwest of the site;
- The academic uses being located to the south of the site, relating strongly to the Coton footpath which links the development back to the city centre and other academic clusters. The Coton footpath was to form a key entrance to the site in the south;
- Social spaces and shared facilities were to be located around the East and West Forums as well as the southern Colonnade to ensure that these spaces were enlivened and active;
- Commercial research development was to be located close to transport infrastructure in the north of the site to reduce vehicle movement through and across the site;
- Mixed land uses through the site to encourage interaction between different site users;
- Design hard and soft landscaping to address the green belt boundary, with a transition formed by a south facing Colonnade and new Canalside public realm;
- Locate entrances to buildings on the southern Colonnade and Forums;
- Locate access to the site via two vehicular junctions on Madingley Road, the primary entrance at High Cross, and the secondary at J.J.Thomson Avenue;
- Wherever possible, segregate pedestrians and cyclists from car traffic, and service vehicles from general vehicular access;
- Promote formation of routes linking the East and West Forum and routes running north/south through the academic core area; and
- Locate car parking in at-grade and landscaped car parks along Charles Babbage Road.



77. Key masterplan elements, original drawing, 1997

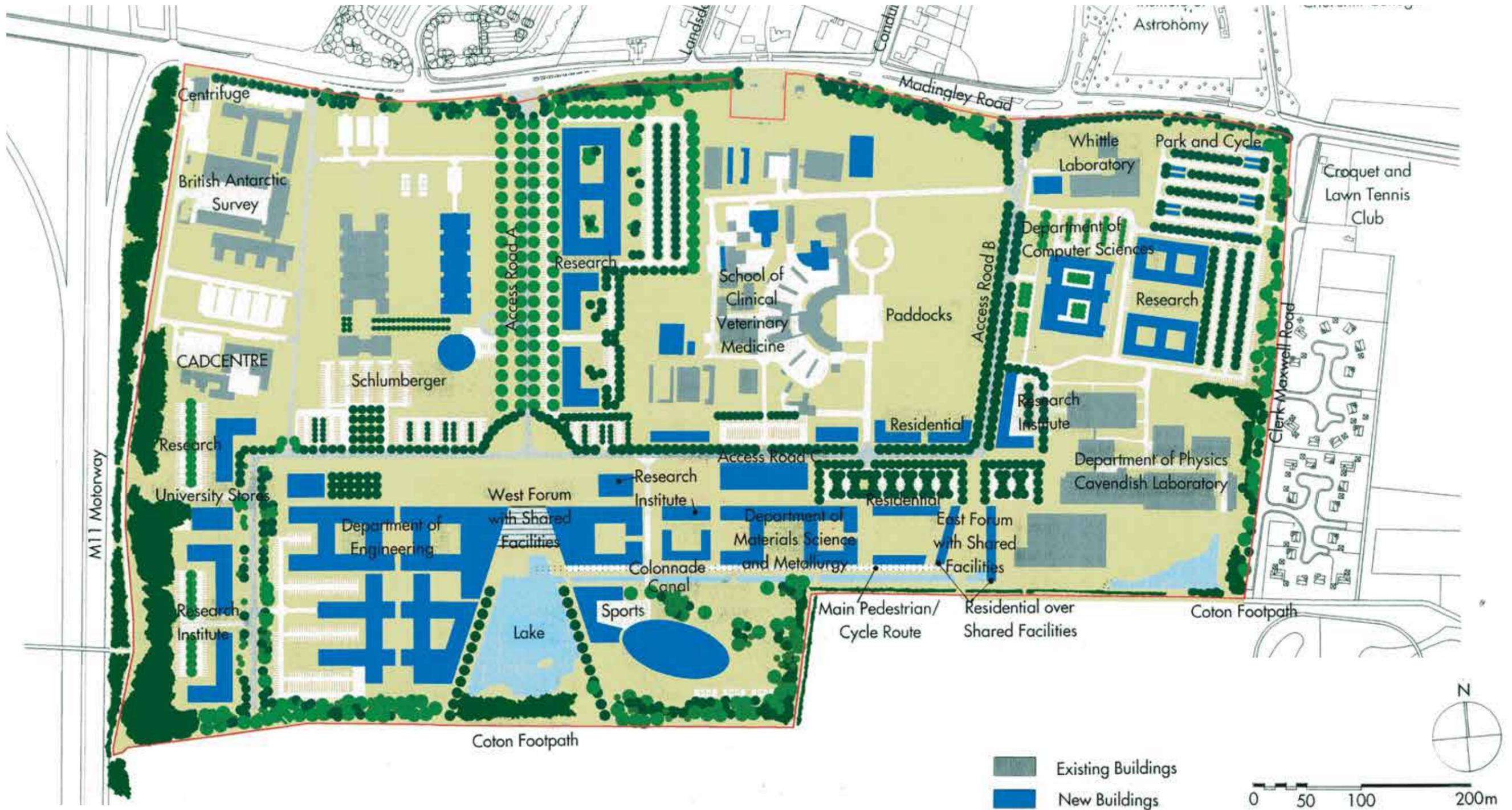
Key masterplan elements provide a spatial structure around the existing large occupiers: two Forums as focal points; two tree lined avenues which provide the main access to the site; a lake and canal along the southern edge to the existing Coton Footpath.



78. Land Uses plan from Masterplan Review Report, 2004

Apart from the existing Veterinary School and Whittle Laboratory, academic uses were envisaged along the southern edge

3.6.2 The 1997 masterplan



79. Original masterplan drawing from Masterplan and Environmental Statement, 1997

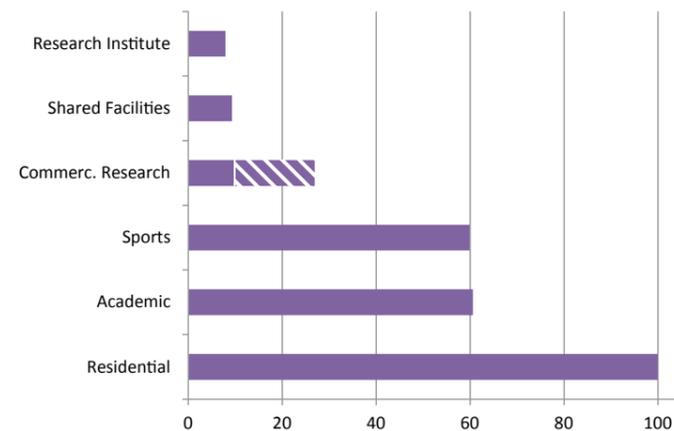
3.6.3 Delivery of the 1997/2004 masterplan

The University continues to deliver successful academic and other University related buildings on the site within the framework of the 1999 Masterplan. Recent Hauser Forum and Broers building have, with the exceptional progress of Cambridge Enterprise, established the commercialisation of research and innovation related to the University as a key differentiator for the site.

While the delivery of the southern academic core area has been consistent and nearly 60% of the permitted academic development has been delivered, implementation overall has been slow, with infrastructure provision only realised in parallel with plot by plot development. Of the permitted commercial development, less than 12% has been achieved which is a significant lag compared to more than 60% of academic development (these uses were originally envisaged to be developed in parallel at West Cambridge).

On site amenity has generally lagged development and the planned relocation of the Department of Engineering as a major western anchor for the whole site has not been found suitable by the Department, since their two divisions are already established in the Eastern part of the site.

81. Chart showing completed development at West Cambridge as a percentage of development permitted within the 1999 masterplan. It shows the delivered areas, by use, as a portion of the overall capacity permitted within the 1999 masterplan. While the academic development reaches the set target, and the residential is entirely completed, there is a significant lag in the delivery of commercial research and shared facilities.



3.6.4 Existing Developments on Site

A significant part of West Cambridge site had been developed before the 1999 Masterplan. This includes:

- Department of Veterinary Medicine, situated on a large central part of the site, comprising approximately 14ha of land. It has approximately 17,000m² gross area in an incrementally developed complex with the oldest buildings dating from 1950s. Most of the outdoor spaces are used as paddocks, occupying approximately 2 ha in the east and 3.5ha in the west part of the site.
- Cavendish Laboratory, which dominates the south-east corner of the site in an incrementally built complex of inter-connected buildings and service yards dating from 1970s. The current configuration encloses a gross area of about 24,000 m².
- The Whittle Laboratory in the north east part of the site, part of the Engineering Department.
- Commercial tenants Schlumberger Research and Aveva, and British Antarctic Survey, a research institute, located in the north west part of the site.

The developments built between 1999 and 2015 were completed following the 1997 masterplan and outline consent granted in 1999, and its revision in 2004. The majority of this development is located in the east part of the site. The development is predominantly academic, with additions to Cavendish Laboratory, and new buildings for the Departments of Engineering and Computer Science.

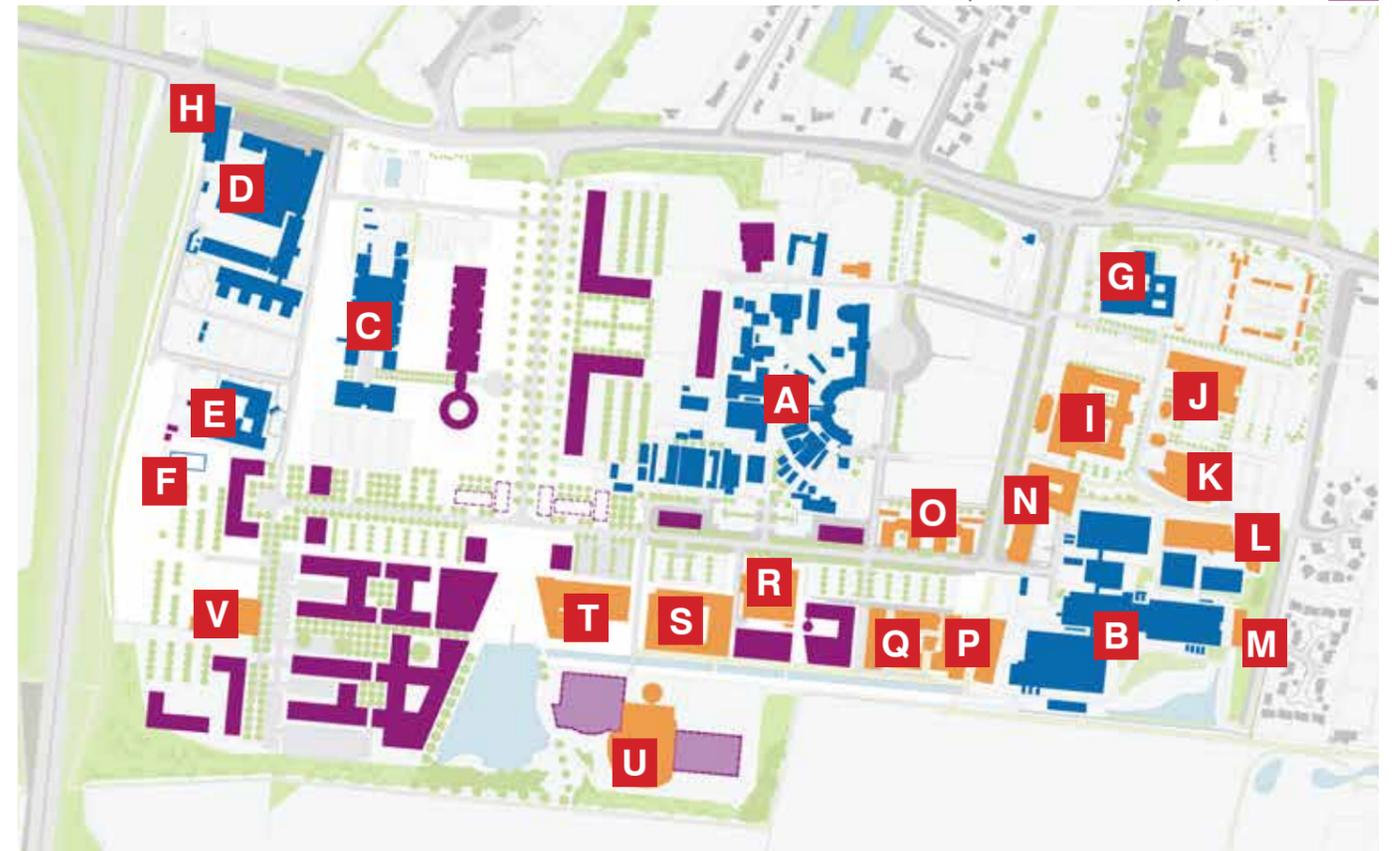
Other more recent development includes commercial (leased to Microsoft and now occupied by The University's Information Services), residential (204 units) and a park and cycle facility, followed by two new academic buildings (for Material Science and Metallurgy and Chemical Engineering and Biotechnology), the first phase of University Sports Centre, University Data Centre and The Maxwell Centre (a new research building for Cavendish Laboratory).

The last phase of infrastructure works (Old Cross and Charles Babbage Roads) and open spaces (West Forum and the Lake) were completed in 2014.

The empty plots for the remaining consented developments are mostly located in the west part of the site and include the large academic plot west of the Lake. There are also a few smaller buildings along Charles Babbage Road but otherwise this street is mostly complete, with at grade car parks lined almost entirely along its length.

Apart from this, the consented masterplan allows for additional capacity for Schlumberger Research and development on the west paddocks of the Veterinary School. In the illustrative masterplan and Design Guidelines from the 1999 outline consent, these buildings are proposed to be set back from High Cross Avenue, with at grade car parking in front of the buildings on east side of the street.

80. Delivery of the 1997 Masterplan



- Buildings pre-dating 1997 masterplan:*
- A Veterinary School
 - B Cavendish Laboratory
 - C Schlumberger Research
 - D British Antarctic Survey
 - E Aveva
 - F University Stores
 - G Whittle Laboratory
 - H Schofield Centre
- Buildings built following 1997 masterplan:*
- I Computer Science (William Gates)
 - J Roger Needham (ex Microsoft)
 - K Electrical Engineering
 - L Nanotechnology Centre
 - M MRI
 - N Physics of Medicine & Maxwell Centre
 - O North Residences
 - P Hauser Forum & Broers Building
 - Q South Residences
 - R Institute for Manufacturing
 - S Chemical Engineering and Biotechnology
 - T Material Science and Metallurgy
 - U Sports Centre Phase 1
 - V Data Centre

- Buildings pre-dating 1997 masterplan
- Buildings built following 1997 masterplan
- Footprints from 1997 masterplan, unrealized

3.6.5 Existing Urban form and development density

The current urban form at West Cambridge varies greatly across the site. The grain along the eastern and southern edges of the site as proposed in the 1999 Masterplan is more ordered than across the rest of the site. However, even this arrangement results in relatively low density as large areas of land are occupied by surface car parks. Thus, the layout promoted by the current masterplan does not generate significant activity in the public realm because, although continuous, the building lines are predominantly set behind parking.

In order to establish benchmarks for initial density testing at West Cambridge, the design team looked at several well known University and business sites in Cambridge. The densities of the sites are measured by comparing the Gross External Floor Area (GEA) with the size of the plot in question.

The examples vary in density and provide good guidance on relationship between density and identity or character of environment. However, it is important to recognise that there is no correct answer in terms of the 'right density', as it is only one of the factors at play, others being its design and social facilities.

Somewhat inevitably for a site with dispersed and low density pre-masterplan development, the densities across West Cambridge are not consistent. They range from 0 - 0.2 to 0.7, which results in a mix of urban and rural characters.

By comparison, density within Cambridge Science Park is uniformly low, which contributes towards its business park character, with an average plot ratio of 0.24.

The urban form of Cambridge Science Park is the result of a deliberate move to create a park-like setting across a dispersed space. This allows individual businesses to operate within relative seclusion of generous landscaping, but is substantially dependant on car access. The result is that Science Park may not feel welcoming on its approach and along perimeter roads, but a coherent business park identity has been achieved.

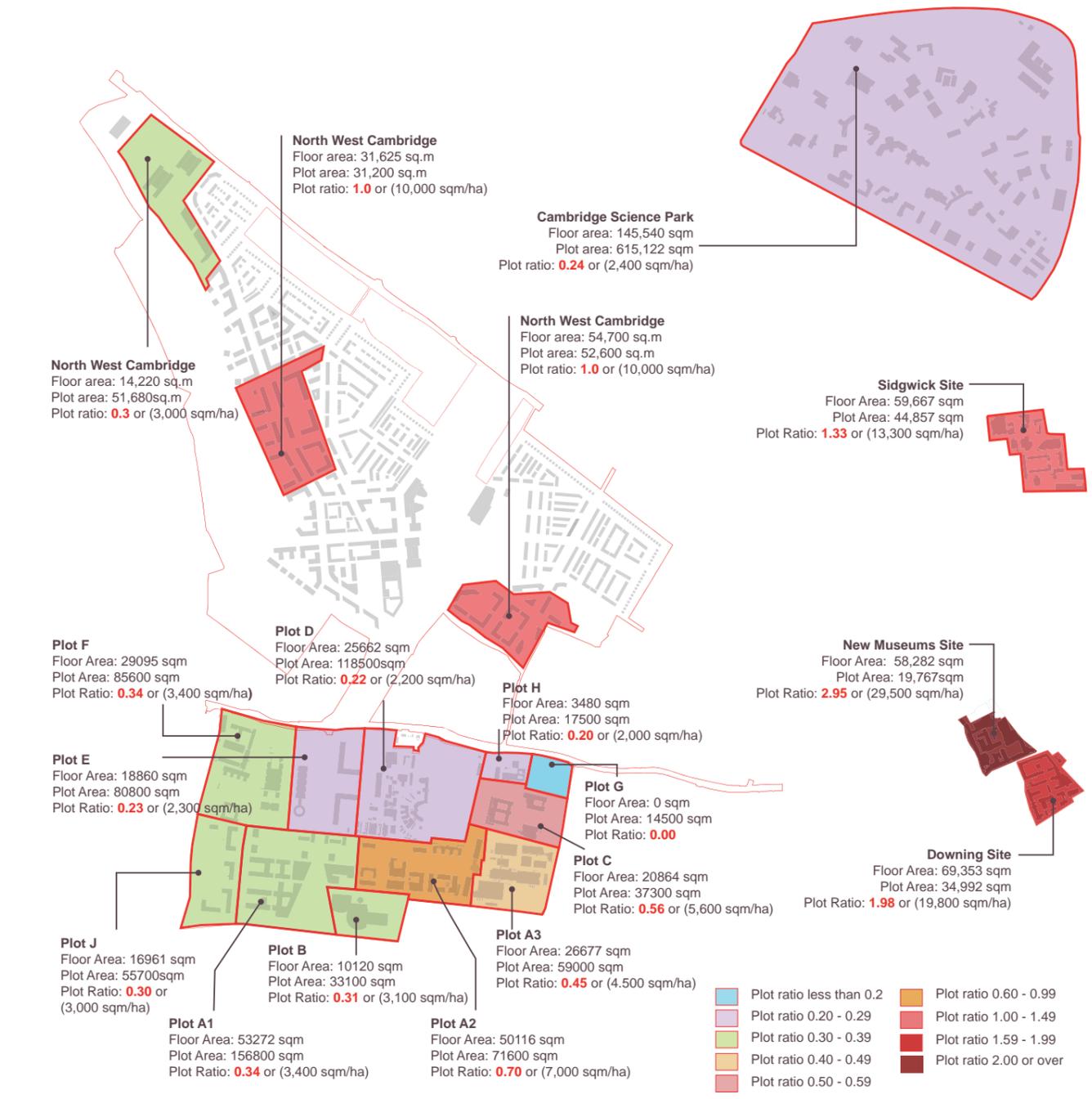
The New Museums and Downing sites are located in central Cambridge and have an average plot ratio of 2.75 and 1.98 respectively. Each site has a higher density and stronger urban form. Both the New Museums and Downing sites have been developed at very high density where open space is largely dominated by parking (both car and cycle) and servicing requirements.

The Sidgwick site is located in western Cambridge. It is coherent and welcoming to pedestrians with a central courtyard and clear linkages between buildings. The integration of cycle and car parking remains a perennial challenge. It has a plot ratio of 1.33.

NWC is designed with a higher density ratio of 1.0, which is consistent with the planned urban nature of the site, and which allows buildings to neither dominate the landscape nor become lost within it.

Compact development at the New Museums site has resulted in a density of 2.95. Again, in the right context and with the right design, this density would be entirely appropriate in central London.

The density of the Downing site is 1.98, but again it is Sidgwick (FAR 1.33) that reaches an optimum balance of built form to open space, due to a good design and layout. As a more central site than NWC, it is also appropriate that its density is slightly higher.



82. Comparative Analysis of Densities

83. Cambridge Science Park, aerial view



84. Sidgwick Site, Cambridge, aerial view



85. New Museums Site, Cambridge, aerial view



86. Downing Site, Cambridge, aerial view



3.6.6 Existing buildings: massing and setting



Building Height

Newer development has a predominant consistent building height of 3- 4 storeys.

The development that pre-dates the 1997 masterplan is of relatively lower height and density, which results in an inconsistent and detached feel on the site.



Set Back

The current setback of the Whittle Laboratory (pictured) from JJ Thomson Avenue detracts from the arrival to West Cambridge. As a result, the buildings are more distant and the environment disparate and incoherent.

Also, buildings servicing access faces JJ Thomson Avenue. There is an opportunity to add landmark buildings to enliven the streetscape.



Car Parks

In some instances, buildings are set back behind car parking. This reduces connections and interactions between occupiers and takes activity away from public realm and key spaces without a sense of definition and enclosure.

The entrance to the Schlumberger Cambridge Research building is set back from the main street, therefore pedestrians and cyclists arrive through a car park.



Plant Height

While most of the buildings have relatively small rooftop plants set back from edge of the building, some buildings have plant requirements occupying significant portions of roofs. The Materials Science building has a 4m high plant set back from the edge and screened; Chemical Engineering building (pictured) has a 5m high plant as an extra storey over one portion of the building, also screened. This kind of solution adds to building mass and should be carefully considered.



Consistent Building line

IfM building is set back from Coton Footpath at present - however there is potential to extend this building to address the space. IfM is significantly lower than its new neighbour, the Chemical Engineering building (CEB), which results in an unusual contrast and an inconsistent building line.

CEB has strong massing and re-establishes the building line and height set by Hauser Forum on the East side. Its southern frontage is not active apart from cycle access and parking on the south west corner, which will provide a lively point.



Active Frontage

Materials Science building faces the Southern frontage with controlled research spaces which don't interact with the surroundings. Similarly to CEB, it has a cycle access and parking located on this side, and also a secondary entrance forecourt which provides a more intimate open space but is currently not well utilised.

The building has a strong composition which succeeds to spatially define the East edge of the West Forum but is contrasted with its relative isolation and volumetric treatment of materials.



Arrival

The back-of-house space of Cavendish Laboratory and Broers building (pictured) are visible from East Forum approach to Cavendish Laboratory. This creates a confused and not well presented arrival experience for Cavendish Laboratory.



Ecology

There is potential for improved ecological potential of the Site through ecologically considerate landscape design and specification.

By enhancing and augmenting the underlying natural features in the West Cambridge site a narrative can be developed that is relevant to the ecology of the Site and the surrounding landscape.

3.6.7 Existing buildings: architectural character

The buildings on site have a range of architectural characters and some of them are excellent examples of academic and research buildings.

The most distinguished building on site is Schlumberger Research. Its ground-breaking roof structure and distinctive roofline which refers back to the intricacies of the skyline of the city, has become a key landmark for the West Cambridge site.

The building is visible from outside the site with views from the M11, from parts of Madingley Road and from long distance views from North West Cambridge Development and from the south.

An eclectic set

There are a number of existing buildings on the site at present and, although together they form a relatively eclectic picture, there are a few common threads (many of which have been previously established by Schlumberger Research Building):

- An efficiency of means, examples of clear spatial arrangement with successful connective social spaces: Institute for Manufacturing Building and Computer Laboratory;
- Emphasised roof structures (an exploration of and celebration of structure and skyline): Physics in Medicine, Computer Laboratory and Roger Needham Building;
- Tectonics: exposed structures
- Volumetric: Materials Science and Metallurgy, Institute for Manufacturing Building, North Residences
- Innovative and/or natural materials: Materials Science and Metallurgy, Institute for Manufacturing Building, North Residences, Maxwell Centre.
- Environmental response to climate - Hauser Forum and Broers Building, Computer Laboratory and Maxwell Centre.



88. West Cambridge Landmark - the Schlumberger Building



Hauser Forum and Broers Building



Computer Laboratory



Roger Needham Building



Institute for Manufacturing



Chemical Engineering and Biotechnology



North Residences

3.6.8 Development height guidelines

Design Guidelines which were part of 1999 masterplan provided guidance in relation to height of buildings.

The masterplan area was split into development plots and each plot had a baseline height limitation set, as a relative height in relation to the finished ground level (rather than absolute AOD heights). The document provided height guidelines only for the 1999 masterplan development area and not for the areas with existing development - such as the Schlumberger Building, Aveva and British Antarctic Survey (plot F), the Vet School (plot D) and the Cavendish Laboratory (plot F).

In addition to baseline height, the guidelines included areas with additional height allowed - as 'landmark buildings' and 'towers'. However, there was no numerical value associated with these additional allowances.

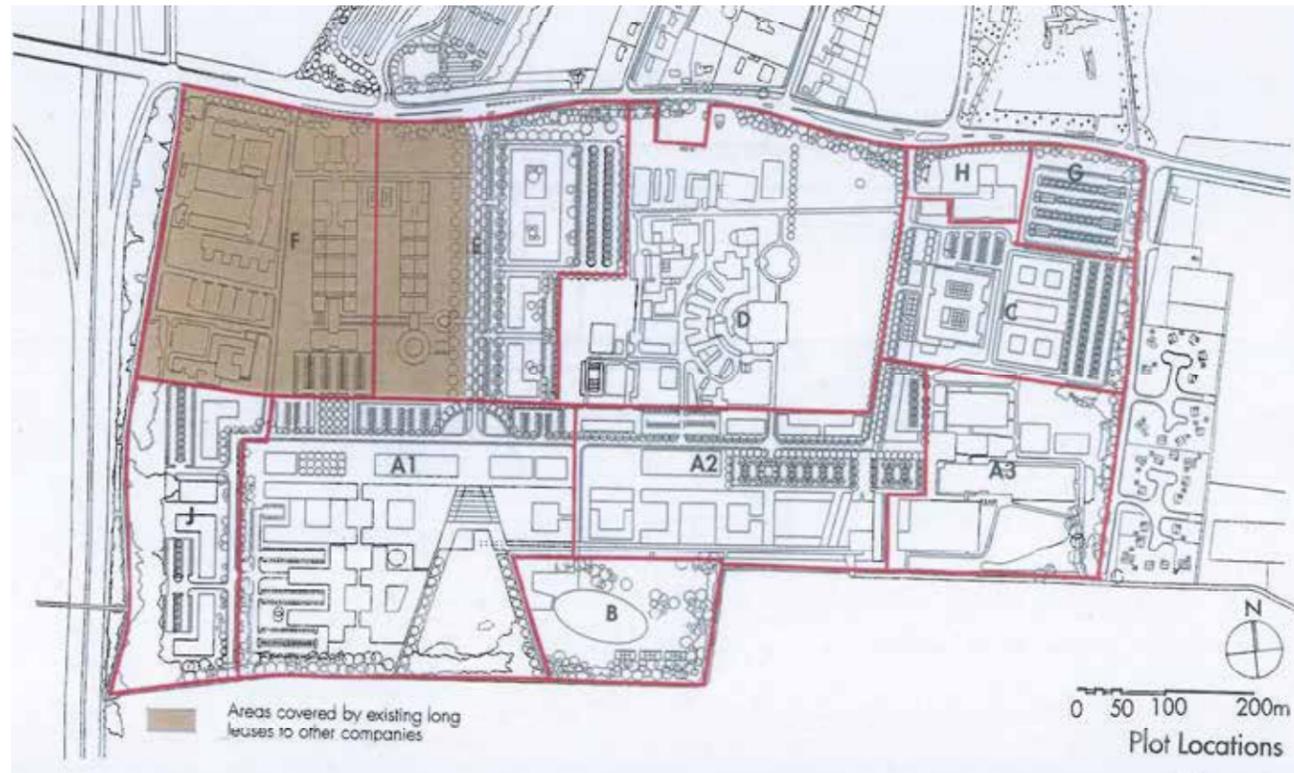
Both baseline height and these additional allowances referred only to usable building heights: rooftop plant and flues were excluded and were allowed to exceed these heights.

From the diagrams below, it appears that the 1999 masterplan intended to create a development of 3 storeys in height generally, with taller areas of up to 4 storeys in key locations: marking the East and West Forums; providing frontage along the southern edge, terminating views along key streets and forming a gateway at the High Cross junction with Madingley Road. Higher development (15.5m base height) was located to the south and the centre of the site, with lower development (12m base height) located at the eastern, northern and western boundaries.

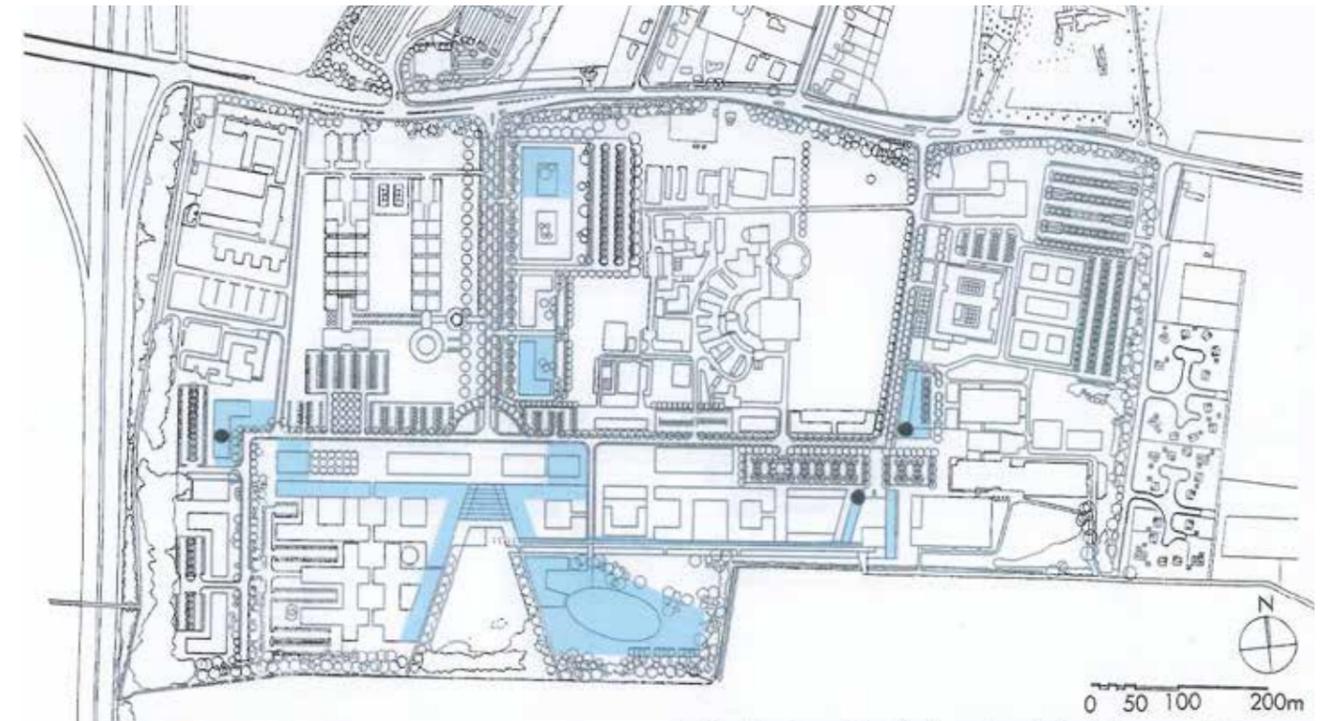
This height information contained within the 1999 Design Guidelines has been interpreted into a 3D model as illustrated on the following page.

As the heights provided did not allow for roof-top plant or provided values for taller features, a series of assumptions had to be made to allow these to be modelled in a comparable way. Additional height of 4m was allowed for plant and another 4m for taller elements.

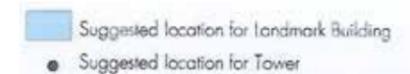
The model enabled an assessment of currently allowed heights. Because the height allowances were not entirely numerical, existing buildings were also included in the model, to compare their compliance and thus validate the assumptions on non-numerical allowances. This model was subsequently used to compare the allowances from the 1999 Masterplan with the massing in the emerging proposals.

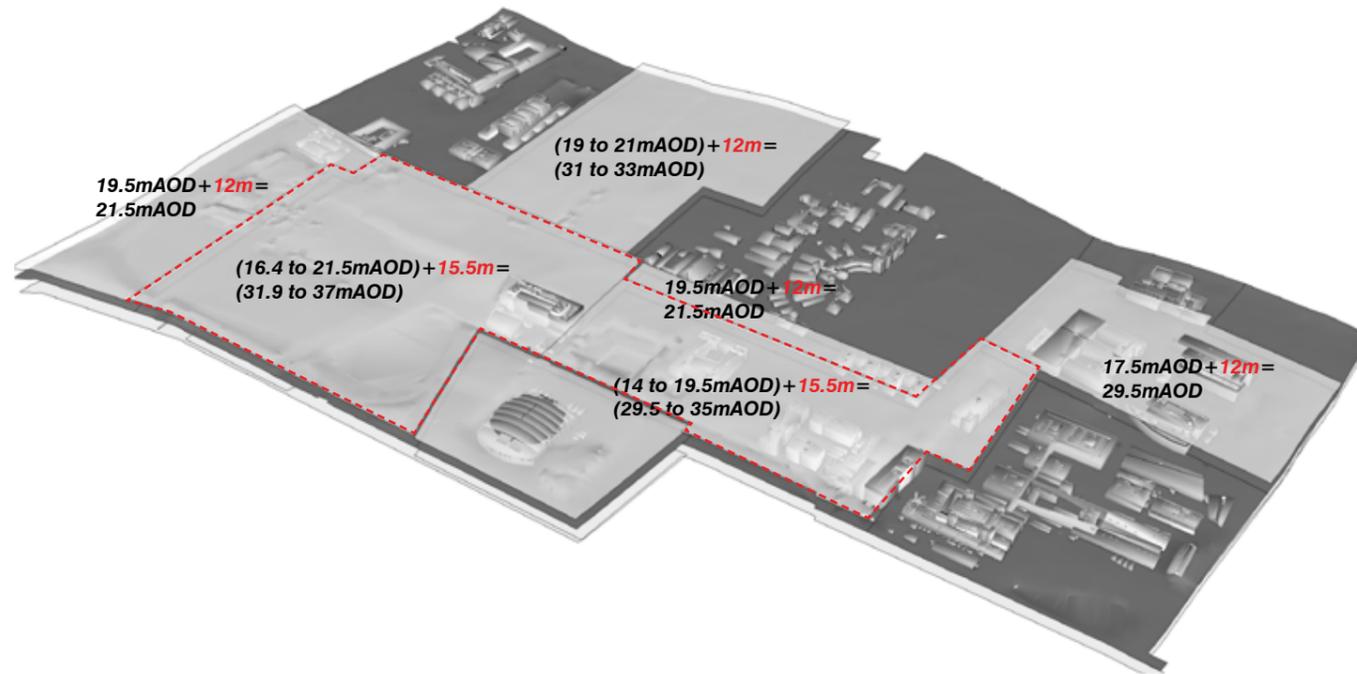


89. Original 1999 masterplan drawing - plots



90. Original 1999 masterplan drawing - Indicative location for Landmark Buildings and towers





91. Representation of the 1999 Development Guidelines for heights

In the model shown in figure 92, development zones of the 1999 masterplan have been extruded to either 12m or 15.5m above the finished ground level, according to the 1999 Design Guidelines for the site. These heights do not include any additional rooftop plant. In this model the ground plane is simply extruded to the required height.

These baseline height guidelines allow buildings to reach up to 37m AOD in the western part of Charles Babbage Road area. Along the southern frontage, the buildings could reach 29.5 to 32m AOD. The area around Schlumberger building, which had a more moderate allowance, could also reach up to 33m AOD, due to higher terrain levels. East and west edges are kept lower, at approximately 21.5m AOD in the West and under 30m AOD in the East. Any rooftop plant would be added to these heights.

Existing buildings are shown within the model and the instances where they extend beyond the height limitation are shown.

In the diagram in figure 92 an additional assumed 4m of height has been extruded above the 12m and 15.5m parameters to allow for rooftop plant.

With this allowance (which captures only a more conservative allowance of rooftop plant - on research buildings they could exceed 5 or 6m), there are zones where building + plant heights could reach 41m AOD.

--- Higher development zone
(15.5m from finished ground level, up to 37m AOD)

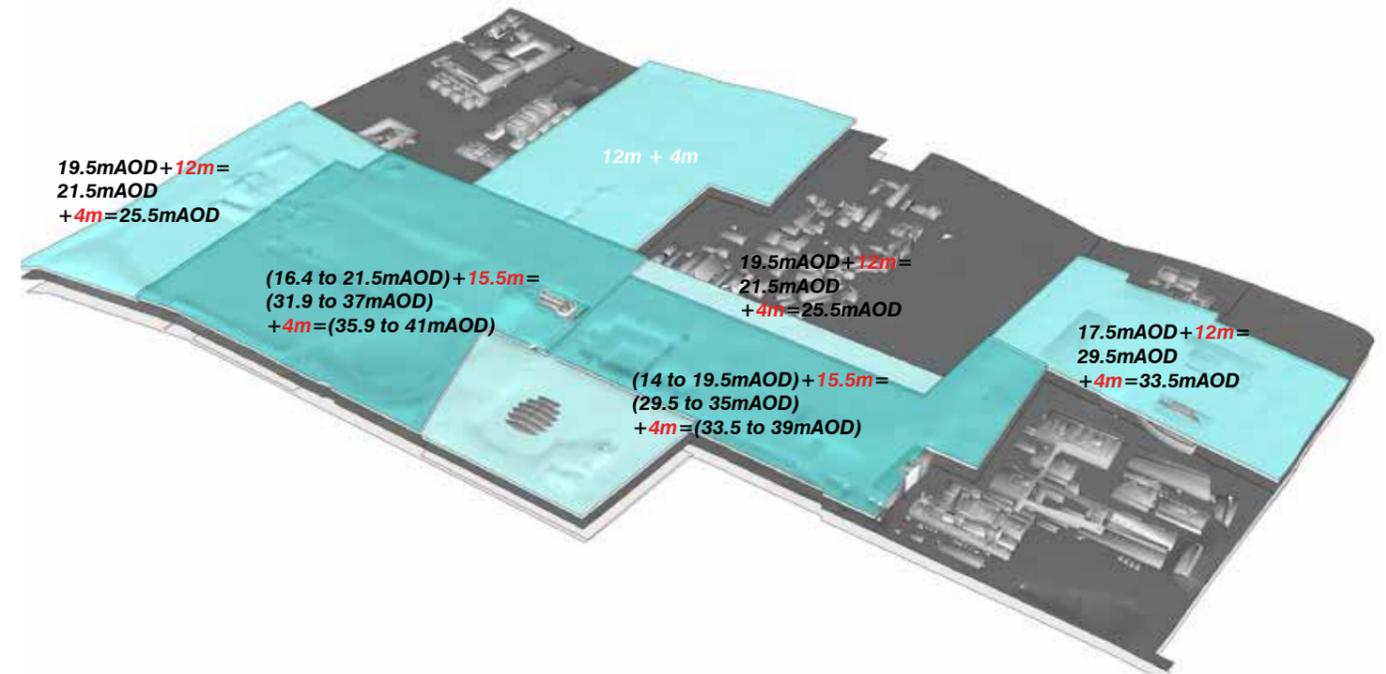
Heights along the southern frontage could be expected in range of 33 to 36m AOD.

In this diagram, the rooftops of Sports Centre, Materials Science and Metallurgy building and the CAPE are still visible and extend beyond the height limitation.

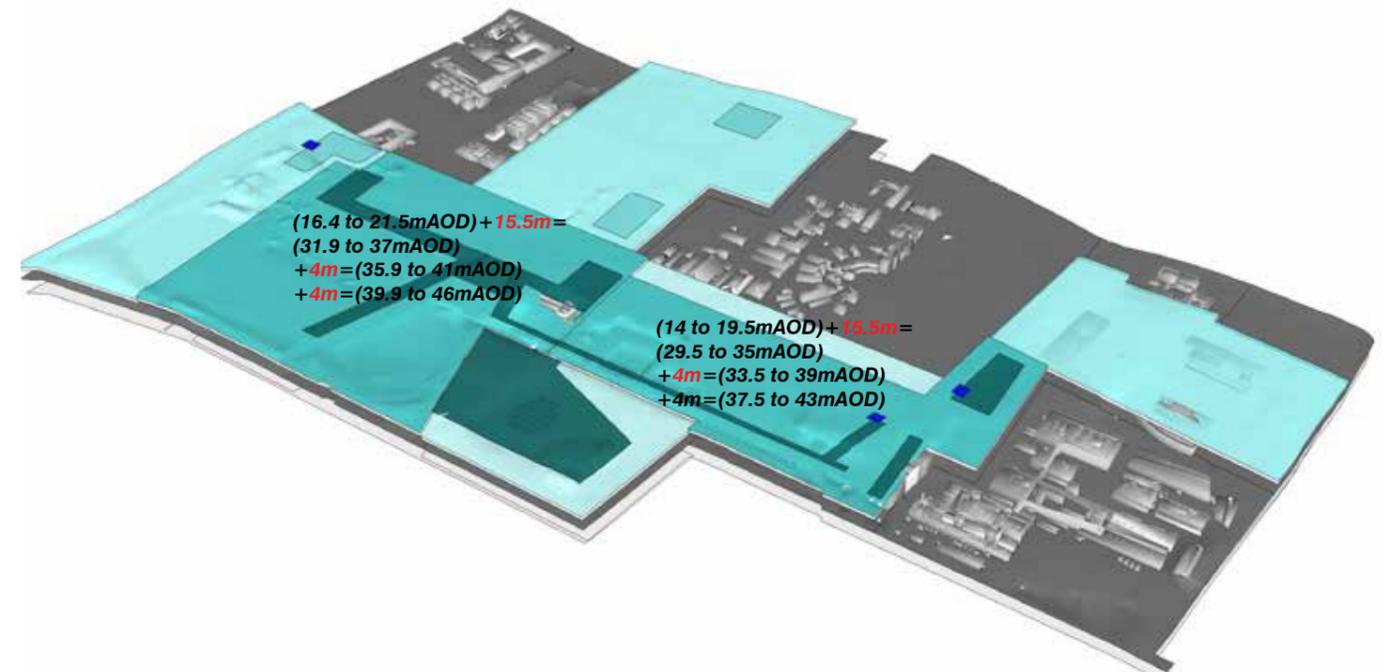
Figure 93 shows the taller building zones described in the Design Guidelines (landmarks and towers). To illustrate this allowance, an additional 4m has been modelled to represent possible taller elements associated with landmarks while a further 4m has been allowed for locations marked as towers.

In some instances the taller buildings could exceed 45m AOD, with towers potentially reaching 50m AOD.

In this diagram, the rooftops of Materials Science and Metallurgy building and the CAPE are still visible and extend beyond the height limitation.



92. Representation of the 1999 Development Guidelines for heights - allowing for rooftop plant (additional 4m)



93. Representation of the 1999 Development Guidelines for heights - allowing for rooftop plant (additional 4m), for taller buildings zones (4m) and landmark locations (4m)

3.7. Benchmarking Analysis

3.7.1 Case studies - masterplanning

The six case studies were selected as successful examples and comprehensive precedents which can strongly relate to and inform development at West Cambridge. They also serve to describe the aspirations of similar institutions and to promote an ambitious, but deliverable vision at West Cambridge. They provide relevant precedents on the basis of their scale, mix of uses (academic and/or commercial research), and design, delivery and management considerations. None of the selected examples was an exact match to West Cambridge in terms of (sub)urban context, size and/or maturity but together they provided important lessons. In addition to the 6 comprehensive studies, some specific topics such as open spaces, were covered with additional research.

The gathered information includes:

- development plan -shown in a scale comparative to West Cambridge;
- location in city and connectivity to surroundings;
- land use mix and areas;
- massing, urban grain and density information;
- urban character: building types, landscaping, open spaces;
- social facilities and supporting uses; and
- access, car parking and servicing.

Stanford Research Park and MIT University Park were selected as examples of highly successful research parks which have achieved significant reputational benefits and contributed to links with businesses to their respective Universities. ETH Honggerberg and Technical University Delft provide strong comparable cases of 1960s campuses transformed by integration within their cities at all levels, through greater public transport accessibility, improvements to public realm, open space and social amenity and to the engagement with business and the wider urban community. In London, both Imperial West and Chiswick Park show how scale, density and active management can make all the difference to a high density University mixed use annex - or a high value business address, with a distinctive culture of open space and shared activity.

Each case study shows how many of the questions raised between academic and commercial research at both West and North West Cambridge have been tackled successfully elsewhere, whether in relation to the approach to knowledge transfer or to providing high quality public transport linkages, delivered jointly with their city authorities.

Technical University Delft

Rotterdam, Delft and Leiden have the ambition to be in the top 3 of knowledge and innovation regions in Europe by 2025.

In line with this goal, the University of Delft has focused on linking businesses into the University and students to entrepreneurship, developing accommodation for businesses and research institutes alongside the academic campus.

In addition, significant transport improvements have been introduced, including bus links and planned tram line linking to the central station, enabling transformation of former car park and roadways into green pedestrian and cycle friendly space (Mekel Park) located at the centre of the University campus and connecting University buildings that were formerly separated by cars and roads.

Immediately to the south of the University campus is Technopolis - a new science park. Over the next 25 years it is expected to become home to scientific institutes, technology start-ups and international companies. The park-like campus is to be a meeting place for researchers and entrepreneurs, where they share their knowledge and work together on innovations in medical technology and industrial biotechnology.

ETH Honggerberg

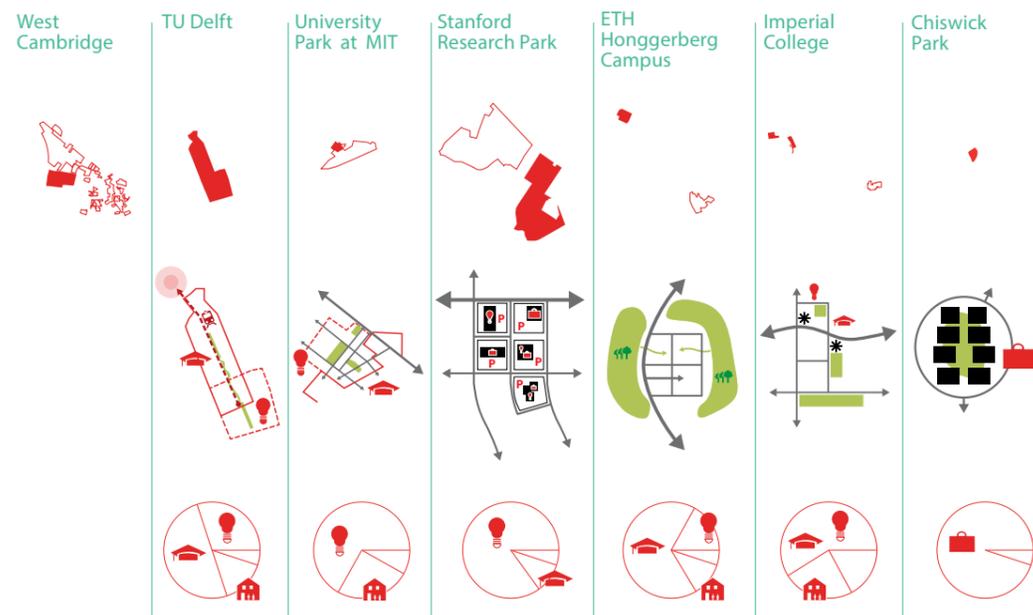
This edge of city University campus has developed out since the 1960s, operating as a satellite to the main Zurich city centre site and focusing on sciences and architecture.

Historically principally academic in nature and campus style, the University now has an objective of transforming the location into an urban quarter that acts as an interface between academia, industry and the general public.

The new master plan aims at moving towards accommodating entrepreneurial and business collaboration activity with a 'Science City' agenda. It consists of estimated 345,000m² of development based on a flexible framework that can adapt to the constantly changing demands of science, the economy and society without destroying coherence – with minimal design rules.

The University also plans development of over 1,000 student housing units on a nearby site.

The University has set up Division for Events and Location Development to help to organise events and enliven Honggerberg Campus. The events include food markets and music events, student-run solar cinema in summer, Scientifica science days and various cultural activities, events and workshops integrating science, art, technology and design. One of the events is "Treffpunkt Science City", a popular science series that conveys science to wider community and attracts numerous visitors.



MIT University Park

University Park is an urban address at the University's doorstep, focusing on commercial floor space and high quality residential units. The Park provides an option for companies growing out of MIT's incubators.

Property developers Forest City started developing the site in the 1980's, as a relatively dense yet campus style development, operating immediately alongside and indeed mostly surrounded by MIT's principal campus.

MIT University works hard to create an entrepreneurial culture and collaborate with business on its own campus, but for those businesses wanting to lease dedicated floor space they are encouraged to look at University Park and the other commercial offerings in the vicinity – delivered by MIT's own investment arm and a number of other landlords.

The Forest City master plan includes limited refurbishment of old buildings but is principally a modern environment that includes 210,000m² of development and approximately 12,000m² of open space that is intensively used by the community at the location. There are no known plans for further intensification of use or expansion by Forest City.



Chiswick Park

This example is included as a high quality and highly successful commercial environment, promoting an 'enjoy work' approach with extensive on-site social activities.

The site is highly accessible (M4 / bus / train / air) and 75% of staff arrive by public transport.

The site is masterplanned around well designed and utilised central pedestrian public space or 'inner garden'. This is a car free environment, with vehicle access and servicing restricted to site perimeter with discreet undercroft car parking. The total built area is approximately 180,000m².

The site is characterised by very active on site management and maintenance teams, which organise extensive occupier events programme – seasonal, educational and leisure activities.

The estimated population of the site is 12,000 and the site provides extensive on site leisure and catering facilities but also incentivises them to use local off site amenities.



Interim Uses and Soft Infrastructure

Examples for interim uses and soft infrastructure (i.e. active management of open space and shared facilities) have been drawn from the six case studies and Harvard University open space study.

In a number of examples, universities or developers support campus life through the work of dedicated teams.

MIT's Centre for Art, Science & Technology (CAST) intends to promote within MIT a culture where the arts, science and technology interrelate, mutually informing modes of exploration and knowledge. CAST promotes and supports artists' residencies, public performances, exhibitions, installations and a biennial symposium, using the spaces and facilities within the Campus. One of their most popular events is FAST, a Festival of Art, Science & Technology which includes a variety of performances, debates and installations which appear throughout the MIT campus, adding playfulness and animation to the different open spaces.

Chiswick Park owes part of its success to active on-site management and maintenance teams. Their programme includes a range of seasonal educational and leisure activities which bring activity to the excellent public realm and outdoor spaces and promote social mixing between companies.

Offices from across Harvard University contribute to the collaborative programming and successful implementation of events and activities. One of the key common spaces in focus is the Plaza, a recently renovated large open space with programme of activities including:

- markets such as: weekly food market, open market, "Harvard Stuff Sale": beginning of the year sale of used items donated at the end of the year, sponsored by Harvard Recycling and Harvard Habitat for Humanity, daily food trucks;
- performances: the Office is looking for talented actors, musicians, singers, poets, dancers, jugglers, magicians, performance artists or entertainers (students, faculty or staff) to perform for the community.
- sports activities: ice rink in winter season, oversized chess set, table tennis, work out stations.
- self service cycle repair station.

Key lessons from case study masterplans which have informed strategy for development at West Cambridge include:

- **Relationship between Academic and Commercial** has significant impact on character and culture of a campus - appropriate proximity and sharing of facilities provides benefits to both communities and helps viability
- **Knowledge transfer (exchange of knowledge between organisations):** beyond planning for businesses to be located on the site it is important that facilities and support are delivered to encourage research and R&D growth through collaboration
- **Scale** of commercial space points to importance of critical mass to grow a reputation of a knowledge cluster
- **Connectivity** is important both to attract businesses and to reinforce unity between the academic sites
- **Evolution from car based environment** is required to create conditions for collaboration
- **Open space:** quality and success rely on activities that happen on and around them
- **Shared social spaces** are necessary to provide necessary gathering space and space for interaction
- **Soft infrastructure:** a number of sites have dedicated teams in charge of management and events



3.7.2 Case studies - buildings for academic or commercial research

The team has analysed a range of academic and commercial developments, varying in size and complexity to illustrate challenges and opportunities brought by specific aspects of research buildings into their context, as well as to illustrate some exemplary organisational responses.

The current and future users' requirements for the site demand top quality academic and commercial research spaces which need to:

- be efficient and flexible for future change;
- provide spaces to facilitate interaction and exchange of ideas;
- provide spaces suitable for a range of research specific activities, many with onerous technical and health and safety requirements;
- be diverse to provide an 'ecosystem' of work spaces and respond to different types of demand

Precedents for buildings which have informed the masterplan include:

- different types of academic buildings - related to size and complexity, they vary from small and compact to extra large complexes with internalised connective elements;
- types of commercial research buildings and districts - related to building floorplates and sizes and arrangements of buildings and open spaces;
- systems of connecting/circulation spaces within the buildings;
- social facilities, including catering facilities, teaching and meeting spaces, libraries and other emerging spaces for collaboration and learning;
- predominant types of spaces and their implications on the masterplan - floorplate size and height, daylight, safety, technical and servicing requirements etc.;



New Street Square Chiswick Park Novartis Campus Regents Place Paddington Central

Configuration and Relationship to Open Space

Science Faculty Building in Amsterdam Science Park is an ensemble of three buildings with area of approximately 65,000m². The buildings are joined by a circulation loop and in places raised on pilotis, forming two semi enclosed yards with entrance and key social spaces in between. Such arrangement creates protected and well scaled open spaces while providing dry and warm connections within the building.

Campus for pharmaceutical company Novartis, in Basel, is developed on a former factory site and keeps its main urban structure in the new development. The company has opted for a masterplan of separate buildings in which different units are located, utilising network of open spaces and buildings with social amenities to connect the campus. Open spaces consist of pedestrian streets and squares, creating a tight, intimate environment easy to navigate.

98. Science Faculty Building, Amsterdam



99. Novartis Campus Basel: well proportioned open spaces



Main Connecting Spaces

Concepts of transparency and connectivity are key for the new MIT Media Lab building in Cambridge, MA. The working spaces are arranged around two connected atriums leading to rooftop conference suite with a terrace and views of Boston. This arrangement provides passing insight into research and brings ample daylight into the working spaces. Stairs are visible and clearly located to encourage movement.

Science Faculty Building at Amsterdam uses difference in floor to ceiling height between laboratories and write-up office spaces to create split level corridors with excellent visual connections across.

100.MIT Media Lab



101.Science Faculty Building, Amsterdam



Predominant Types of Working Spaces

Buildings for research in physical sciences and technology consist of several predominant types of working spaces: workshops (large or medium floorplate with extra floor to ceiling height), dry or wet laboratories and clean rooms, offices and write up spaces for individual work, and meeting and informal spaces for collaborative work.

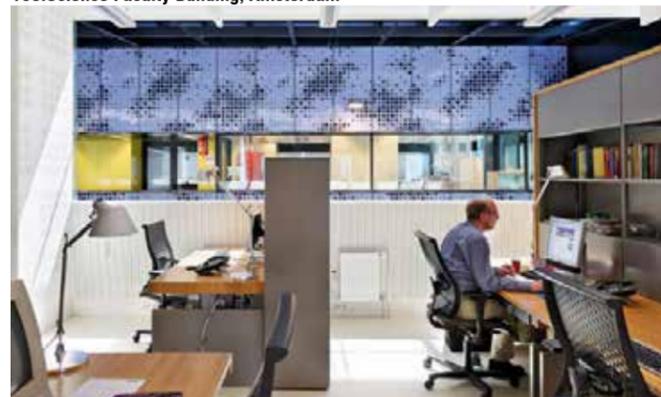
Large clear span space of IMC Engineering workshop at the University of Warwick allows for easy and safe movement of people and equipment and is flexible to accommodate layout changes which various projects require. Large space lit from above can also be subdivided for better containment of noise and dust.

Small office spaces at Science Faculty Building in Amsterdam are laid out for individual to groups of 3 to 6, and intended for concentrated work. Glass partitions create a sense of openness and communication while reducing noise from circulation spaces.

102.Engineering Workshop, University of Warwick



103.Science Faculty Building, Amsterdam



Meeting and Social Spaces

In all of the precedents, social spaces are usually provided immediately alongside connecting spaces, creating an exaggerated circulation network tying the various programmes together.

Science Faculty building in Amsterdam has catering facilities addressing the main loop. The seating areas are designed in ways that can also accommodate small meetings and group work.

It is also ensured that social facilities can spill out into open space, animate it and create inviting environments for external users. Such aspects are important for collaboration and sense of community.

104.Science Faculty Building, Amsterdam



105.Science Faculty Building, Amsterdam



Key lessons which have informed the masterplan:

- Accommodating uses within large buildings or in closely arranged buildings promotes **interaction between users**;
- Open spaces should be well defined by buildings and animated by active uses where possible;
- Internal circulation system of large buildings is best arranged as **highly active network of connecting spaces**, animated by locating catering and other shared spaces alongside;
- The mix and relationship between **key types of spaces** have a strong impact on building typology (size, floorplates, height);
- Relationship between **different types of working spaces** (offices, labs etc.) has significant impact on users experience and ease of daily use of the building;
- **Servicing access requirements and outdoor service yards** can limit activity along some parts of the building/block perimeter, for reasons of safety and access restrictions;
- It is necessary to create a spectrum of 'quiet to noisy' spaces for varieties of learning environments, from individual focused to group collaborative work;
- There needs to be a **hierarchy of social and shared spaces**, varying in size and catchment; from central canteens to small tea rooms nested within work spaces

3.7.3 Case studies - Cambridge landscapes and spaces

The selected precedents for scale and character of open spaces are taken from Cambridge sites. These examples are indicative of public realm environments that draw inspiration from the local context and create links back to the city.

The following precedents are selected and inform the masterplan in terms of character, design attributes, connectivity, scale and amount of open space required to support different activities.

To create a unified but distinct landscape that's relevant to Cambridge, a series of attributes have been identified from these precedents, related to landscape types identified in the existing wider context: agrarian, transitional and structured.

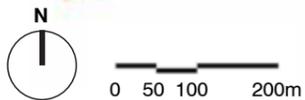
Coton footpath & Adams Road, Cambridge



This is an example of agrarian landscape. It includes some remnants of agricultural landscape such as boundaries, markers such as trees, hedges and ditches that define the network of open spaces and routes.

Attributes:

- Informal mixed species rich hedgerows and specimen trees within Hedgerows
- expanse of biodiverse open grasslands and species rich meadows



Queen's Road, Cambridge



Transitional landscape

- Connecting space accommodates pedestrian and cycle routes within a landscaped area, as an alternative to being next to the road
- curved paths with ornamental tree and shrub planting widen and narrow with usable and 'borrowed' (visible but inaccessible) landscape
- open expanses of lawn for informal activities, rest and socialising
- punctuated by large tree planting

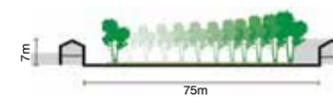
Christ's Pieces, Cambridge



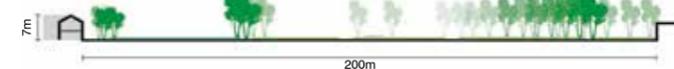
Structured landscape

- criss-crossed paths, form multiple open lawn areas and nodes for encounters
- In the large area, the buildings do not communicate across - they are distant and detached
- in the smaller area, the space feels more enclosed and neighbourly relationship between buildings is maintained
- Large trees additionally subdivide the space and create smaller, more defined areas
- Sports pitches are provided in the corner with least people movement
- Desire lines are uninterrupted and areas to stop and rest are established at nodes
- open areas are provided at different sizes to facility moderately large as well as small, intimate activities.

Section A-A'



Section B-B'



3.7.4 Case studies - An academic public realm

The selected precedents for scale and type of open spaces originate from the masterplanning case studies and from additional relevant examples of public realm. In the main these examples speak of a particular type of public realm that serves to support academic activity, an environment that helps to attract students and staff and creates links back to the city spaces and streets - an academic public realm.

The examples were selected for their relevance to the use of open spaces and public realm to draw a campus together and promote activity and interaction. Other precedents are informative by showing the potential for high quality open space to transform the identity of an area.

The selected precedents inform the masterplan in terms of character and content, amount of open space required to support activity and serve also support decisions on the scale and density of development, amount of enclosure, range of activities located within the public realm.



Exeter University, Exeter



The Forum open space at Exeter University connects key social facilities of the University: Main Library, Theatre, Great Hall and the recently completed multi purpose Forum building. The Forum steps fall following the natural hill terrain of the campus and leads to the wooded park area.

The Forum building joined previously detached/unrelated buildings to provide a defining south edge to the Forum. The Forum now balances a sense of enclosure and a sense of openness, with consistent 2-3 storey frontages and 4-5 storey accent buildings.



Chiswick Park, London

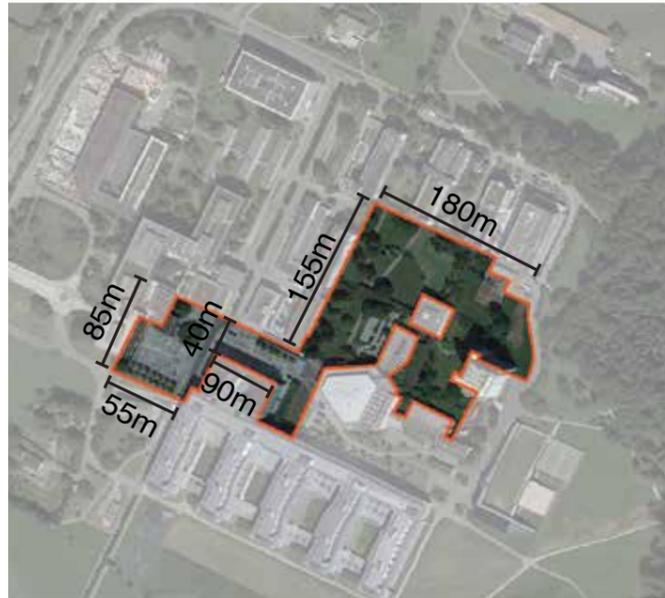


The central space at Chiswick Park is a generously landscaped area with a Lake and a multi-purpose outdoor events space.

It is useful to look at this space as a successful precedent for a system of linked spaces that might be possible at the West and East Forums. The space at Chiswick park is larger in size but enclosed, overlooked and defined from all sides by development. The space is the central visual and active focus for the buildings and their occupants. The Lake, although not a usable space, provides a relaxing setting and spatial focus. The space provides the development with a unique, enjoyable identity.



ETH Zurich, Honggerberg



Plaza at ETH Honggerberg is constituted as a sequence of connected spaces which traverse a significant difference in levels. Two of the spaces are hardscapes, leading to an upper level and a soft, leafy lawn space.

The Plaza is the 'heart' of the site, with old and more recent social buildings such as teaching/conference facilities and catering. The Plaza is also home for various temporary uses; including markets, science and art showcases, events, exhibitions etc.



Sidgwick Site, Cambridge

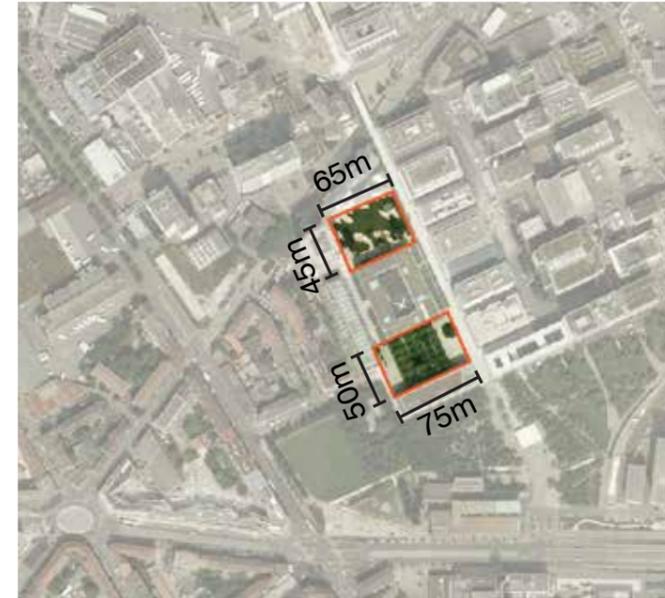


Sidgwick Site at Cambridge is one of the sites included in the Cambridge density comparison study (Section 3.6.5). With a pleasant density and balance of built form and open space, the development informs both development and public realm at West Cambridge. The buildings range from 3 to 5 storeys and are often raised on pilotis, letting open spaces flow between buildings.

The site contains a few linked open spaces varying from busy tighter hardscape in the centre to softer, calming courtyards.



Novartis Campus, Basel



Novartis Campus is arranged on a grid and the open spaces are streets and voids/squares within it.

The campus is arranged in multiple buildings, linked by the open space network. Because of this, squares and streets are car free and in intimate scale.



Mekel Park, Delft



Mekel Park is a former car parking and servicing area which has been transformed into a park and a connecting spine for the campus.

The Park accommodates cycle routes and paths zig-zaging and linking the buildings, as well as a space for a tram line. This geometry creates lawns where people can meet and relax.



3.8. Conclusions

3.8.1 Opportunities for a change in approach

West Cambridge is well located in comparison to other economic clusters in Cambridge, being close to the city centre and other University sites. In addition it has an advantage in terms of evolving in conjunction with NWCD, located immediately to the north. As NWCD is developed, the residential and University population in the area will increase and will support additional local facilities and social activity.

The changing context in the west of the city provides an opportunity to change the general perception of West Cambridge as an uneventful and remote site, to intensify the use and transform the site into an integral part of the City with a stronger sense of place. However, this will require a step change in approach to development and management of the site, including access, quality of environment and social facilities.

Connectivity

The site is well located in strategic terms for cars/vehicular movements but there is a lack of sustainable transport options. The North West Cambridge Development will have an impact on this, creating an improved public transport service, an extended pedestrian and cycle network, new highway connections and local junction enhancements.

By offering new quality facilities – community, shops, leisure, primary education and hotel - locally, the uses at NWCD will encourage connections across Madingley Road, to the new local centre and create potential for relating these uses to academic uses at Madingley Rise.

In future, signalled junctions and pedestrian and cycle friendly access points will change the character of Madingley Road, by reducing the speed of traffic and increasing numbers of pedestrians and cyclists.

The Coton Footpath is an important and strong link to the City Centre. However, the West Cambridge site does not have an adequate relationship with the Footpath: the arrival points are convoluted, hidden, and in many places along the southern frontage there are no immediate overlooking uses. Furthermore, the microclimate at the exposed southern edge can be inhospitable, with frequent strong winds.

The new approach to access at West Cambridge will need to address these opportunities and challenges by adopting public transport and green travel plan initiatives, extending the public transport, cycle and pedestrian networks into the site, and by providing a more pleasant walking and cycling environment.

In addition to public transport improvements which are part of NWCD, the new West Cambridge transport strategy will also need to look into accommodating public transport routes which are part of City Deal, key programme for strategic city wide transport improvements.

As populations of both North West and West Cambridge developments grow, it is expected that public transport will develop a better user base and become economically more sustainable, thus allowing for a long term high quality of service and a gradual reduction in car dependence.

Character and Built Form

The site is characterised by a piecemeal, building-by-building development, and many of the original masterplan ideas which were aimed at creating overall coherence, have over the course of development been substituted by on-plot solutions. Much of this is due to car-dependence: individual buildings and clusters of buildings are fronted and surrounded by car parking leaving little or no opportunity for interaction and activity in the public realm. Apart from resulting in poor overall character, such piecemeal development with abundant surface parking does not make the best use of the land and may lead the University to run out of capacity.

Although there are large areas of undeveloped open land currently on site, these are not accessible spaces and neither staff, students nor the surrounding community use them. The existing accessible open spaces are either insufficiently defined by built form (e.g. East and West Forums and the Lake) or overlooked by backs and servicing areas (the Pond). As a result, even these (accessible) open spaces are not activated by any social facilities and are only sporadically used.

Unfortunately, some of the 1999 masterplan guidelines, such as separation of car and pedestrian traffic and car oriented commercial research development, are not supportive of pedestrian environment and will need to be

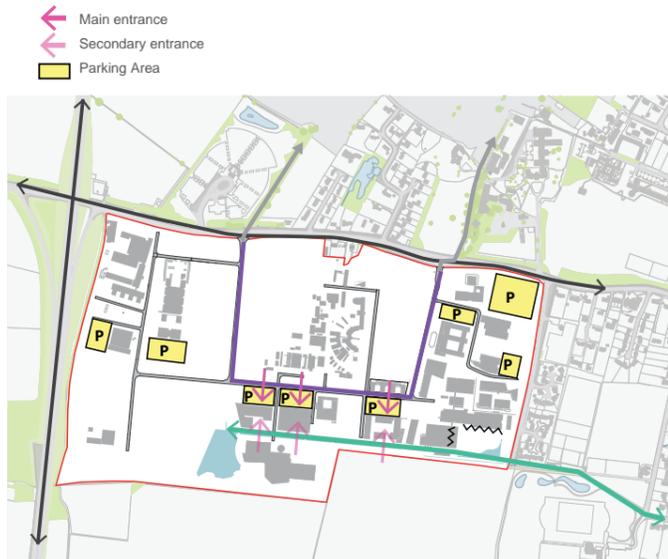


109. West Cambridge site: existing and buildings under construction, 2015



110. West Cambridge site: existing landscape features

- Usable Open Spaces**
- Existing open space accessible to all site users
 - Landscape amenity space for specific site users
 - Private sports/recreation
- Other Spaces**
- Paddocks (Inaccessible, vet school open space)
 - Foreground landscape space (Inaccessible or offering visual amenity only)
 - Empty development plot
 - Car parks
 - Woodland buffer
 - Water bodies
 - Surrounding sports & recreation amenity space



112. Current surface car parking

revised. This is most evident in the southern academic core area, where prioritisation of landscape facing south frontage for entrances has led to lack of definition to the main vehicular loop in the north. The buildings are set back from the main roads and accessed via parking lots.

The views out of the site are strong. The existing masterplan already celebrates views to the south and emphasises the southern frontage to the open agricultural land. With the new masterplan, there will be an opportunity to give due importance to the views back to city from within the site, which are more sparse and subtle but which could have a positive impact on identity and a sense of proximity/unity with the City.

Public transport and green travel plan initiatives, together with the proposed additional development and inclusion of the entire site into the new masterplan could help reverse this tendency of piecemeal character and create conditions for delivery of the pedestrian environment originally envisaged. It will be possible to address the issue of uneven density and lack of coherence by identifying a series of walkable and pedestrian scale character areas, unified by a site-wide public realm network. Such approach will also provide an opportunity for landscape and public realm to get a more prominent role in the perception of the site: as a series of identifiable open spaces users can relate to.

Like NWCD, the West Cambridge site has the potential to form a robust and defined edge to the city towards the M11 motorway and the countryside beyond.

Community

The site currently provides a workplace to academic and commercial staff, students and also a home for residents in just over 200 units. Also, there is a nursery and University Spots Centre which are used by wider community. Nearby uses include residential developments, academic uses and, in future, the new retail and community uses at NWCD. Currently, the site does not provide retail and other community uses, and, although there are catering facilities, they are hidden within buildings.

Although the site at present has a relatively large number of catering facilities, the lack of social facilities (including catering) is often identified as the most negative element in perception of the West Cambridge site. The reason is that the investment in shared facilities, social amenity space and the public realm has so far mostly taken place to serve individual plots and the needs of each development, rather than the needs of the site as a whole.

The academic buildings in the east and south of the site are high quality research facilities, built to high standards, well utilised and well reviewed by their occupiers. This is particularly the case with Computer Laboratory (William Gates building) and Institute for Manufacturing. In the East, Schlumberger Research is also an exemplary workspace which brings together workshop, labs, offices and social spaces under one iconic roof, a city-scale landmark. The occupiers are satisfied and proud of their buildings.

However, the challenge these and other buildings face is how to integrate with other buildings. In an environment which lacks critical mass and footfall, they fail to meet and together define a shared open space. They are mostly separated by parking lots and the large impermeable paddocks of the Veterinary School.

The commercial partners have been isolated on the far west side of the site, beyond the paddocks, the undeveloped plots and car parking areas. There has been little interaction with the academic side of the site.

As the NWCD progresses, it is expected that the new residential, retail and community uses will generate synergies between West Cambridge and NWCD, as well as offer amenities to the wider area.

The combination of development proposals within the west of the City will offer the existing residents benefits of improved transport and amenities. However, the quality of current residential areas must be considered and protected.



111. Large existing occupiers

It is now understood that the delivery of shared facilities and public realm open space will be necessary for success of any future commercial development and the site as a whole in order to improve the amenity for users, and promote interaction and collaboration between different site users.

With the completion of road infrastructure and the public realm at West Forum, the west side of the site will be fully serviced, allowing the immediate creation of a western activity node, which could help bridge the distance between the commercial research partners and the academic cluster. At this point Schlumberger can fully realize its role of a site-wide landmark. This can be a beginning of a new skyline, with new accents distributed at key open spaces.

Climate

The already mentioned car dependency and lack of critical mass to support sustainable transport are key challenges in making the site more sustainable.

At the moment the share of cycling as a mode of transport is satisfactory amongst academic staff and for trips to the City centre but more needs to be done to provide an alternative sustainable solution to car users commuting from more distant locations.

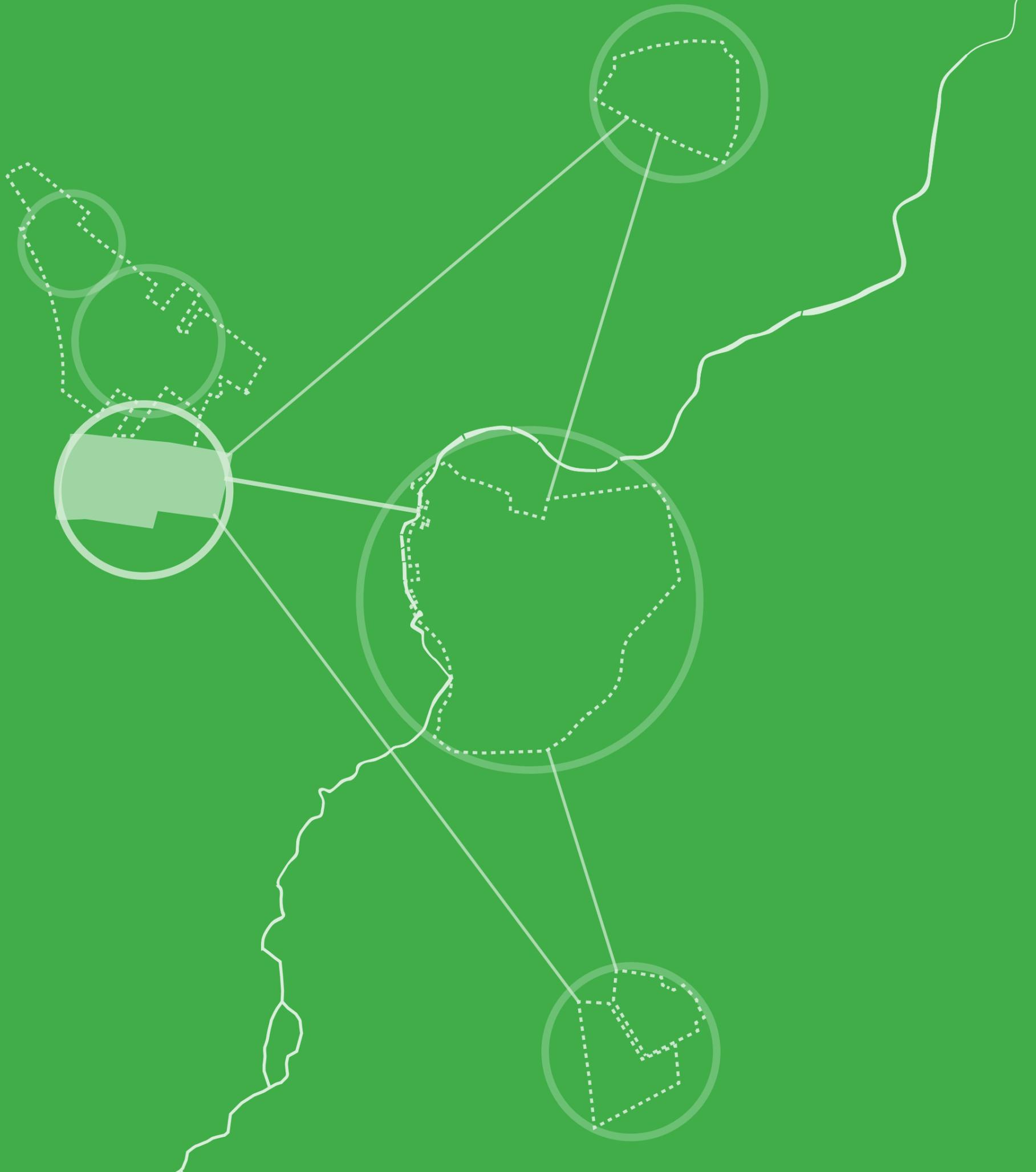
The existing blue infrastructure – Canal side and the Western Lake – forms a good drainage system which can be reinforced to suit the needs of the new developments.

The site has a high degree of open and undeveloped areas but the quality of landscape varies. The majority (almost the whole central area of the site) is not accessible and is fenced off for the use of Veterinary School. The best quality pocket landscapes are private or used by a limited number of occupiers and are often in an awkward relationship with the surrounding built form: the south-eastern pond and Veterinary School inner area with tall trees are both faced by service yards and interrupted by service access. Schlumberger has a courtyard which is beyond their security line and British Antarctic Survey has a landscaped area in the back of their plot.

There are opportunities to transform the site into a more sustainable place in line with the University's aspirations. With increased density and intensity of development, site wide strategies such as energy, servicing, recycling etc. could be developed in a deliverable and economically sustainable ways.

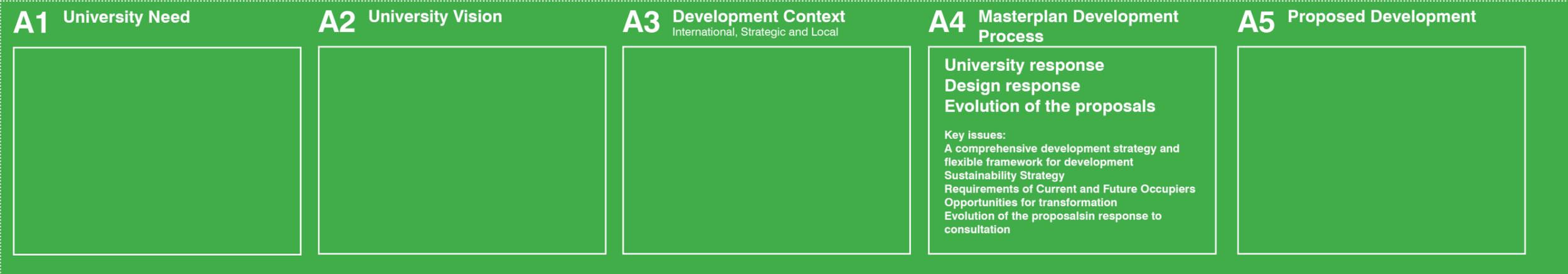
Relocation of the Veterinary School to a location off-site and redevelopment of the Cavendish Laboratories will allow for a new public realm and better connectivity across the site.

Increased density will lead to greater population numbers, activity and greater interactions between different types of site users. It will support provision of public realm and social spaces and lead to a better sense of place on the site.



MASTERPLAN DEVELOPMENT PROCESS

A4



4. MASTERPLAN DEVELOPMENT PROCESS

4.1. University response

4.1.1 Development Strategy

The requirement for a comprehensive, site-wide development strategy at West Cambridge has emerged in response to the need to establish a more flexible framework for delivery of priority capital plan projects and to find more effective and sustainable ways of improving conditions for both existing and future academic research and partner commercial research communities. The work to establish University need and inform the development of the proposals has considered:

- **University strategic brief:** based on University's strategic objectives and estate-wide strategy and the role West Cambridge, clustered with North West Cambridge, is best suited to take;
- **University's sustainability commitments** and opportunities that West Cambridge brings in achieving the estate wide targets;
- Needs of **current and known future occupiers:** particularly requirements of the priority project Cavendish Laboratory, Department of Engineering and generic academic and commercial occupiers; as well as requirements for supporting and social facilities;
- **Benchmarking:** to consider opportunities against relevant precedents, including MIT and Stanford, ETH Zurich and TU Delft, Imperial West and Chiswick Park in London, reflecting on what others are achieving and planning for. Benchmarking considers types of commercial research demand, knowledge transfer initiatives and how these are brought together successfully with academic research and teaching space; critical mass and the influence of scale of populations on transport, social infrastructure and place-making practices, relative to locations;
- **Background analysis and site context:** (in Section A2 of this document) to collect information about the current state of the site, strengths and weaknesses, including spatial analysis and a detailed review of the Town Planning and Transport contexts;
- **Market demand** for commercial research and financial and reputational benefits of collaboration;
- **Opportunities** to help establish the **long term vision for transformation** and development of the site, based on an understanding of the whole site potential.
- **Capacity and constraints on development:** to better understand limitations to the current transport network and possible transport improvements and so inform consideration of options, on a phase by phase basis.

West Cambridge responds to the University's needs by providing opportunities to:

- Create a high quality, well connected built environment, helping to attract and retain the very best research and teaching teams
- Provide more flexible, efficient space for University use
- Enhance connectivity both within and outwards from the University
- Support the commercialisation of knowledge through entrepreneurship and through collaboration with industry
- Maintain the University's globally competitive position, as its peers deliver high quality environments for research and collaboration on a similar basis.
- Improve financial returns on investment
- Deliver shared facilities and spaces and places for social interaction in an economically sustainable manner.

On a corollary basis, there are significant risks associated with further piecemeal development at West Cambridge. Without a comprehensive development strategy and flowing from that, a new master plan to make the most of the potential for the whole 66 ha site, there are risks that include running out of capacity for academic faculty growth; losing the opportunity for co-location with industry; failure to secure social amenity space on a cost efficient basis; and fewer opportunities for the University to compete in accommodating research institutes and to secure grants for research, in future.

However, considering the potential at West Cambridge in combination with the land available for academic and commercial research floor space at North West Cambridge, there is now the opportunity to plan for the future with the benefit of a substantial supply of available land, perhaps for the first time in the University's history.



113. West Cambridge Illustrative Masterplan within wider local context (including the North West Cambridge Development) - view from north

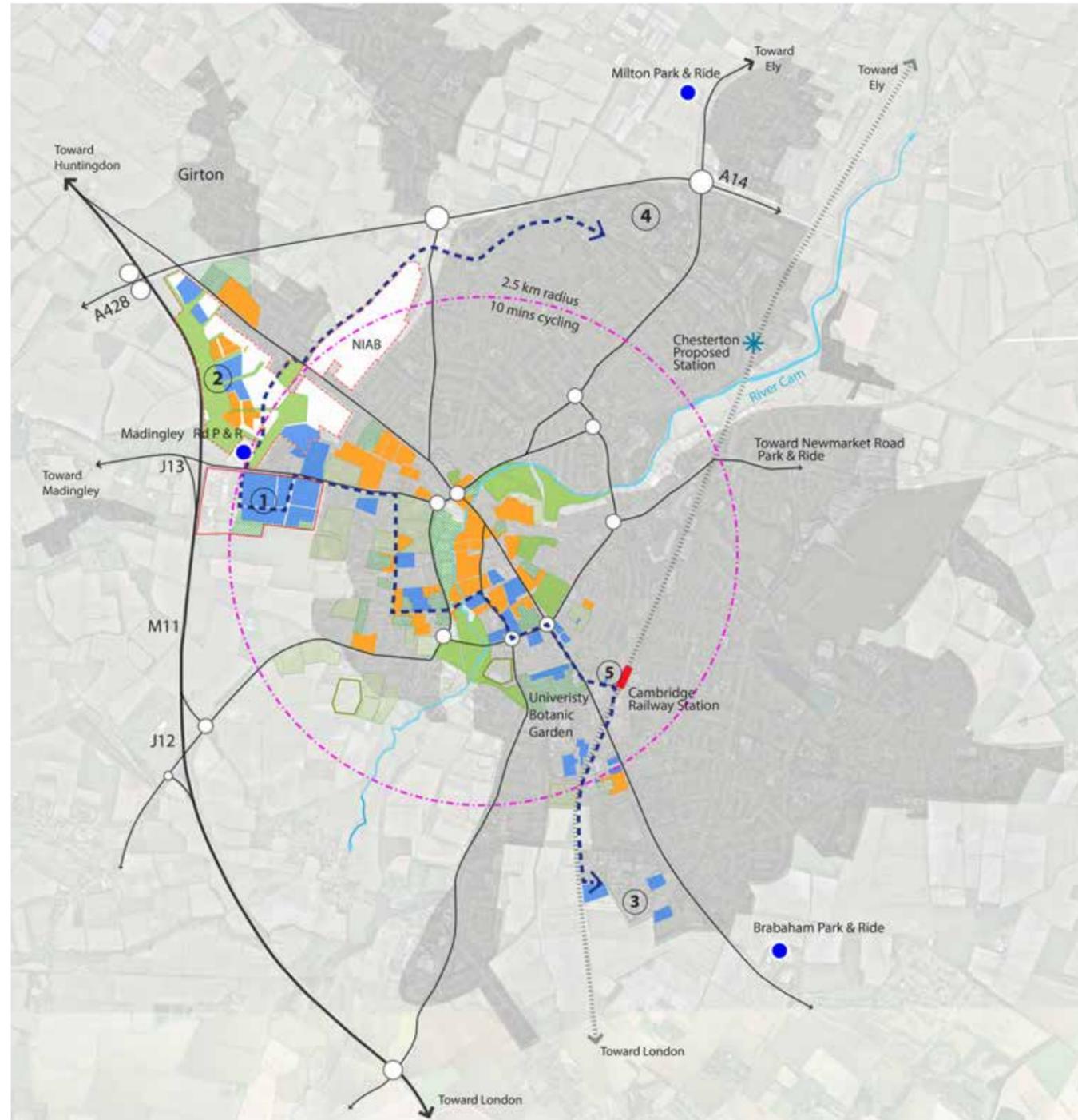
4.1.2 The University's Strategic Brief

In order to maintain global competitiveness, the University needs to secure additional amount of high quality research space and, in parallel, strengthen its reputation in innovation and collaboration with industry.

Most of the University's sites are already intensively developed. The partially developed 66ha West Cambridge site is one of the two main exceptions to this, together with 150ha North West Cambridge site for future development.

The current presence of occupiers related to physical science and technology and further capacity on West and North West site provide the University with a opportunity to gradually accommodate other related disciplines and establish West Cambridge campus as a strong academic cluster for physical sciences and technology.

Additional capacity of commercial research space (catering both to start ups and major industry occupiers) is needed to transform West Cambridge into a commercial cluster of significant scale. Here the University has a unique opportunity to bring the academic and industry research clusters together and promote the site as a campus for exchange of ideas, innovation and collaboration with industry research partners. As comparison with world competitors indicates, such collocation provides Universities with reputational and financial benefits while creating a resilient employment base for cities.



114. Academic Sites in city context

The two sites provide the University with an opportunity to deliver new development in line with the aims and objectives identified in the Estate Strategy:

- to maintain a locational strategy that is consistent with approved Reports and Operating Statements; which includes clustering of associated University disciplines
- to provide buildings and spaces with high levels of sustainability
- to provide building and spaces with high levels of design quality
- to deliver optimum space efficiency in existing and new space, including efficiency in sharing of lecture spaces and catering facilities
- explore options to accommodate a critical mass of commercial development at the site

KEY

- ① West Cambridge
- ② The North West Cambridge Development
- ③ Addenbrookes
- ④ Cambridge Science Park
- ⑤ Cambridge CB1
- Existing roads
- Railway line
- Railway station
- * Chesterton - proposed station
- Orbital bus route
- Cycling distance - 10 min. radius
- Park & Ride
- Academic & Research clusters
- Colleges
- Under construction
- University & Colleges' green spaces
- University & Colleges' Sports grounds
- Public green space
- Cambridge sports facilities

4.1.3 Sustainability strategy

The University has an aspiration to make West Cambridge a genuinely sustainable academic and commercial research community. Two of the key drivers for the masterplanning of West Cambridge are major sustainability themes:

- to substantially improve the social realm across West Cambridge and hence increase the well-being of those working on the site
- to improve pedestrian and cycle access to the site and to radically improve public transport provision so as to be able to build on the existing car-parks, densifying the site and making it more attractive to cyclists and pedestrians

The development of the proposals has been informed by a Sustainability Assessment Matrix (SAM). This provides a bespoke sustainability assessment method as encouraged in the Cambridge City Council Draft Local Plan 2014. This SAM has helped to achieve optimal designs, within an overarching framework for the entire site.

The key drivers for the sustainability framework at West Cambridge, as reflected in the use of the SAM, are:

- To enable sustainability considerations to inform the development of the Masterplan and the selection of a preferred option.
- To ensure sustainability is taken into account early on so that opportunities are not missed.
- To address issues which the project team feel are of most relevance to the development of the site.
- To build on the innovative sustainability approach adopted for other University Estate's Masterplans and developments.
- To develop a mechanism which provides a greater incentive for action than existing schemes such as BREEAM (Building Research Establishment Environmental Assessment Method), recognising and valuing action, rather than promoting a criteria-driven approach.
- To demonstrate to the City Council planners that sustainability has been taken into account in a transparent way in compliance with the Draft Local Plan.

The SAM framework has been created taking the best features from existing rating schemes such as BREEAM Communities, BREEAM New Buildings, and CEEQUAL, as well as in response to local and national policies such as the National Planning Policy Framework (NPPF), the GLA's Supplementary Planning Guide regarding Sustainable Design and Construction, the Cambridge Local Plan 2006, the Cambridge draft Local Plan 2014, the Cambridge Sustainable Development Supplementary Planning Guide, and the University of Cambridge's policies.

The framework includes 12 Sustainability Principles, grouped under four categories:

1. Resources and Climate Change:

- Energy and Climate Change: including an innovative low carbon energy supply strategy, minimising future energy demand, addressing greenhouses gases and adopting a climate change adaptation strategy;
- Water: related to flood risk, surface water management, and overall water use
- Materials and Waste: promoting reuse of buildings and materials, responsible materials sourcing, minimising use of materials and waste generation, and reduction of operational waste

2. Transport and Local Connectivity

- Transport and Mobility: developing a Sustainable Transport Strategy and promoting access to public transport modes, maximising uptake of walking and cycling, and reducing car use;

3. People's Health, Social and Economic Wellbeing

- Health and Wellbeing: related to high quality internal environment, facilities and amenities and a secure, pleasant and attractive external spaces for both occupants and visitors;
- Collaboration and Inclusion: including consultation during design and post construction stages, designs which encourage collaboration through shared facilities and design for inclusion of all specialist needs.
- Education and Knowledge Transfer: incorporating innovative practices within the redevelopment, making use of University experience and research skills, supporting continual learning through monitoring and engagement with site users.
- Employment Opportunities, such as supporting the development of new skills, jobs, and local employment during the construction phases and promotion of local employment and training arrangements

4. Land Use, Ecology and Local Impact

- Biodiversity and Ecology: maintaining features of importance and enhancing levels of biodiversity and ecology.
- Pollution and Local Environment: mitigating all potential sources of pollution, limiting local environmental impact from construction and establishing operational procedures to prevent future pollution and adverse local impacts.
- Reputation, Heritage and the City: including delivery of Signature Sustainable buildings as part of the redevelopment and celebration/promotion of innovative measures and sustainable infrastructure for occupants and visitors to see and explore.

Sustainable Transport Strategy

The University is promoting a wide-ranging, balanced, sustainable transport strategy that includes the following measures:

- the delivery of a strong, quality, development-wide, travel demand management strategy to the existing and future users of the Development;
- provision of quality pedestrian and cyclist infrastructure both to, and across the Development, reducing existing severance. Of particular interest is the provision of improved cycle routes into the City, with additional priority measures across busy roads;
- delivery of a quality, regular and accessible bus service to popular destinations, including new links to the rail station;
- new and enhanced, appropriately sized, site access signal controlled junctions fitted with selected vehicle detection to maintain the existing highway capacity and provide priority for pedestrians, cyclists and buses; and
- provision of sufficient car parking places around the periphery of West Cambridge to minimise car movement within the development, and the implementation of a car parking management strategy.

These measures will both manage the car-borne impact of the Development on the surrounding transport network, and protect the quality and amenity of West Cambridge for all occupiers.

4.1.4 Requirements of current and known future occupiers

The team has drawn from stakeholder engagement, previous experience and selected case studies, to establish understanding of functional requirements of current and future occupiers, both on a occupier by occupier basis and collectively.

The principles set out at the earliest stages of the process were refined against the high level needs and requirements of key occupiers.

Important lessons have been absorbed in relation to what is required to create and maintain a thriving research environment and how to establish a commercial address, while avoiding perceived conflicts with the independence of academic research and teaching activity.

Stakeholder engagement

Stakeholder engagement included gathering feedback through analysis and interviews with the existing occupiers and prospective future occupiers: These included but were not limited to:

- Cavendish Laboratory (Department leadership and appointed space consultants and the design team). Detailed building brief prepared by the consultants has directly informed the strategic masterplan brief. The masterplanning team has continued to liaise with the recently appointed architect to ensure the Department's needs are best accommodated within the proposed masterplanning framework;
- Department of Engineering (Department leadership and subsequently appointed design team). The masterplanning team has provided an initial assessment of the Department's spatial needs and has provided a design response, which was included in the first version of the Illustrative masterplan (February 2015). With the appointment of Grimshaw Architects to produce inset masterplan and architectural design for its first phase (Civil Engineering building), the design has been further refined and informed by closer collaboration of the Grimshaw team with the Department. The current design, included in the updated version of the Illustrative masterplan which is the basis of this planning application, responds to spatial and typological needs of the Department;
- Computer Laboratory (Departmental briefings);
- School of Veterinary Medicine (Department leadership);
- Drop-in sessions for all academic users;
- Entrepreneurship hub (Cambridge Enterprise and ideaSpace, currently located at Hauser Forum);
- Existing commercial and research institutes on site (including Schlumberger Research and British Antarctic Survey)

In consulting the stakeholders, the team has analysed relevant best practice case studies to facilitate the discussion and explore alternative solutions to functional requirements.

Market Assessment

An assessment of the market for commercial R&D floorspace at West Cambridge has identified the potential for significant demand and pace of market absorption, anticipating a 15-25 (tbc) year build out period for the commercial R&D floorspace on the site. The assessment has emphasised the benefits for research activity related to physical sciences and technology and a need to provide a range of work spaces, varying in size and support services.

The recommended range includes:

- embedded industry collaboration teams within faculty;
- small scale entrepreneurship space;
- innovation and incubator space;
- grow on space to enables SME's and others to develop from other space or secure a presence on site;
- major industry research and technology occupiers, looking for buildings or space within flexible, high standard buildings, typically between 3,000 and 10,000m²

Market assessment and industry research benchmarking have also provided input about requirements related to the overall research environment such as overall size (critical mass), transport infrastructure, desired amenities and open space qualities.

Community and Placemaking Requirements

To adequately respond to this aspect of the masterplan, the team has consulted users on site-wide related issues such as promotion of interaction and collaboration, attitudes to sharing of facilities, open space preferences, cycling and cycle parking etc. These and individual users' requirements were collated to assess opportunities for site-wide strategies. Together with best practice case studies, these insights were used to establish principles for site-wide community and placemaking.

In summary the proposals for West Cambridge need to:

- Accommodate a new **Cavendish Laboratory** – this is a priority project which demonstrates future needs and issues and has potential to act as a catalyst for change. The building brief for the new Cavendish includes significant area requirements (to replace the existing provision in adequate accommodation and allow for growth), adjacencies and onerous technical requirements, including servicing and access;
- Accommodate buildings for a move and integration of **Department of Engineering**, in a phased manner;
- Accommodate space requirements for growth and for location of the **Physical Sciences and Technology Campus** (in general);
- Establish an **innovation and collaboration ecosystem** - need to introduce commercial spaces at different scales alongside the academic uses – blended together and with blurred edges. The aim of this range is to cater not only for established businesses but also supporting entrepreneurship by providing smaller units on shorter leases and business support;
- Facilitate **formal and informal interaction** – between users and establish a West Cambridge community – need for a transformation of the quality of place for users through new public realm, social spaces and shared facilities;
- **Plan for flexibility** to accommodate future changes in University and commercial research and collaboration requirements;
- Ensure **servicing and other technical requirements** are met in a safe and efficient way

4.2. Design Response

4.2.1 Strategic response

Given the changing context around Cambridge, the future City Deal and growing success at Addenbrookes and elsewhere, the potential exists to transform West Cambridge from a relatively isolated, edge of city campus, into an integrated part of the city, with a stronger character and better strategic transport connections.

High Level Distribution of Uses

As a new vision is considered, the academic and commercial research clusters at West and North West Cambridge have the potential, over time, to grow and develop into a major academic research and teaching environment. From internal consultation it is clear that many wish to preserve an academic character and limit the scale of commercial activity within it. This objective can be met in a plan that seeks to develop an academic led environment at the east, with commercial research concentrated at the west. In neither cluster will the use be purely for one activity but differentiation of each cluster will be important.

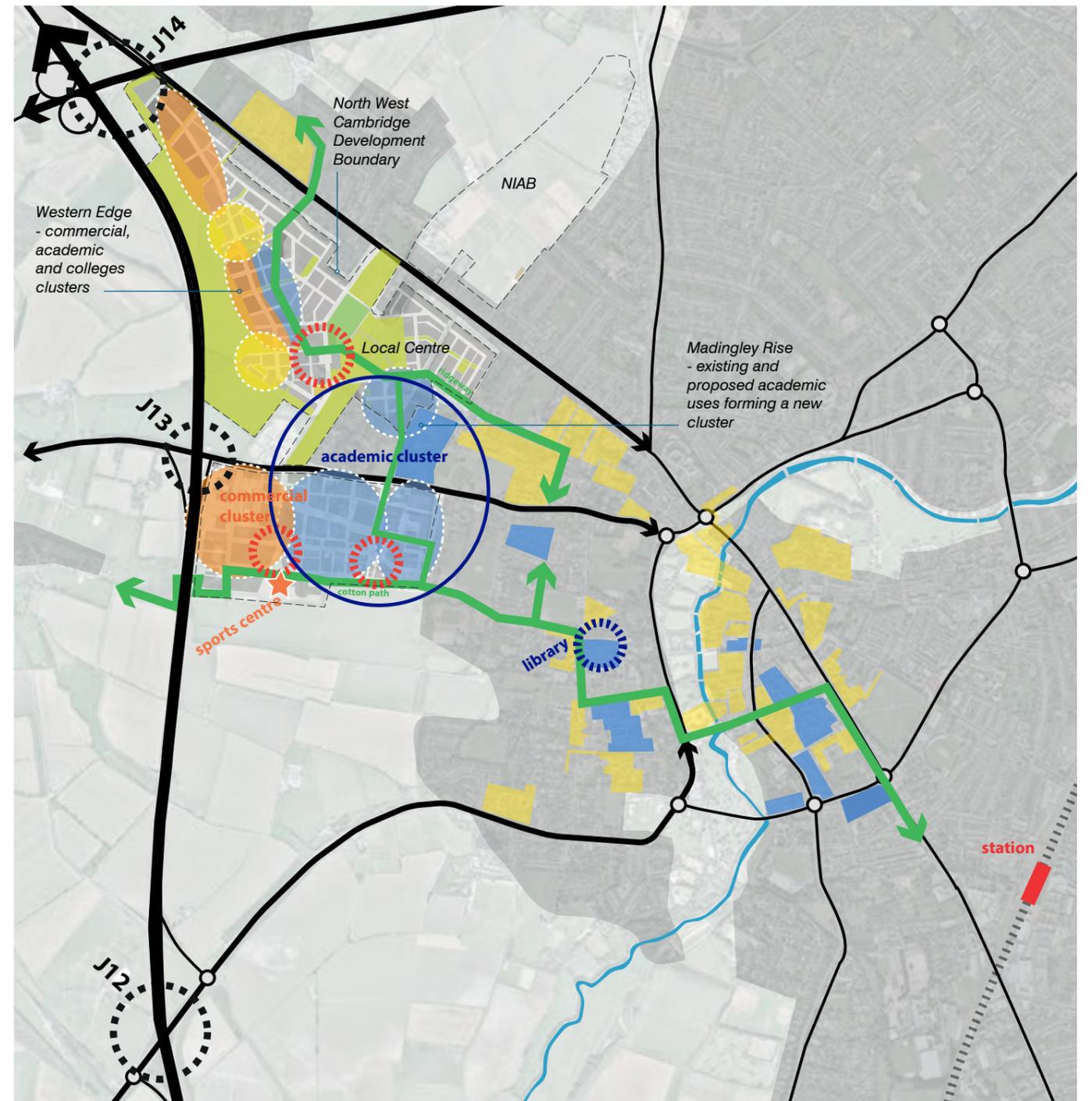
Locating additional academic uses at West Cambridge reinforces existing uses north and south of Madingley Road and forms opportunity for greater University quarter. A new academic-led cluster will link with existing academic uses at Madingley Rise (Astrophysics, Earth Sciences) and establish a concentration of physical sciences and technology, answering the University's needs.

In the west, a Commercial-led cluster can be formed, continuing the commercial clusters along the proposed Western Edge within NWCD. These uses will be highly accessible from the M11. Proposed commercial development within West Cambridge will reinforce the existing forming a concentration that can constitute a commercial address of scale.

The co-location of academic and commercial research provides an opportunity to foster stronger links between the two and establish the base for University's closer collaboration with industry. The experience from world leading research Universities such as Stanford and MIT, testifies to the economic and reputational benefits that such arrangement can bring to both universities and cities.

Beyond planning for businesses to be accommodated on the site, the University understands it is important that facilities and 'soft infrastructure' (management) can be delivered in a way that encourages research and commercial R&D growth through collaboration.

As seen in cases of TU Delft and MIT, arrangements of co-located but distinct clusters are the preferred relationship: identity is maintained and interaction is facilitated through free and easy movement of staff and sharing of facilities. Such proximity brings considerable benefit to both communities.



115. Strategic land use - creating academic and commercial clusters in the west of the city



Improving connections and a step change in access

To achieve potential, improved connectivity and a step change in sustainable transport accessibility will be essential for transformation of the site. This will encourage the gradual reduction in the proportion of people accessing the site and city centre by car, encouraging a modal shift and the transition from a car-oriented environment to public transport, cycle and pedestrian prioritisation. Crossing points on Madingley Road will enable closer interaction between the two University sites. West Cambridge is within 10-15min cycling distance from the City Centre, 25 minutes from Addenbrooke's. The proposed transport strategy aims to make the most of this proximity and also of wider transport improvement plans considered for this compact, evolving city.

Section 4 of the Transport Assessment summarises existing national and local policy, guidance and emerging strategies and provides an assessment of the performance of the proposed development against these policies. A detailed summary is included in Appendix 4.1 of the TA.

The following documents were reviewed:

- National Policy Guidance
- National Planning Policy Framework (NPPF);
- Planning Practice Guidance;
- Circular 02/2013 'Strategic Road Network and the Delivery of Sustainable Transport';

Local Policy and Guidance

- Cambridge Local Plan 2014;
- Greater Cambridge City Deal;

Local Transport Policy and Guidance

- Cambridgeshire Local Transport Plan 2011-2026; and
- Transport Strategy for Cambridge / South Cambridgeshire

It is concluded that the Development accords well with national transport policy and guidance to deliver sustainable development:

- its sustainable location within Cambridge, and the incorporation of employment well located adjacent to residential land-uses reducing the need to travel - supporting the stated aspirations and objectives of paragraph 34 of the National Planning Policy Framework;

and

- by promoting ways to reduce the traffic impact of this development and the University's other activities within Cambridge, and by "managing down" traffic generation, the Development supports the policy of the Department for Transport's Circular 02/2013.

The development also accords with important local transport and planning policy requirements:

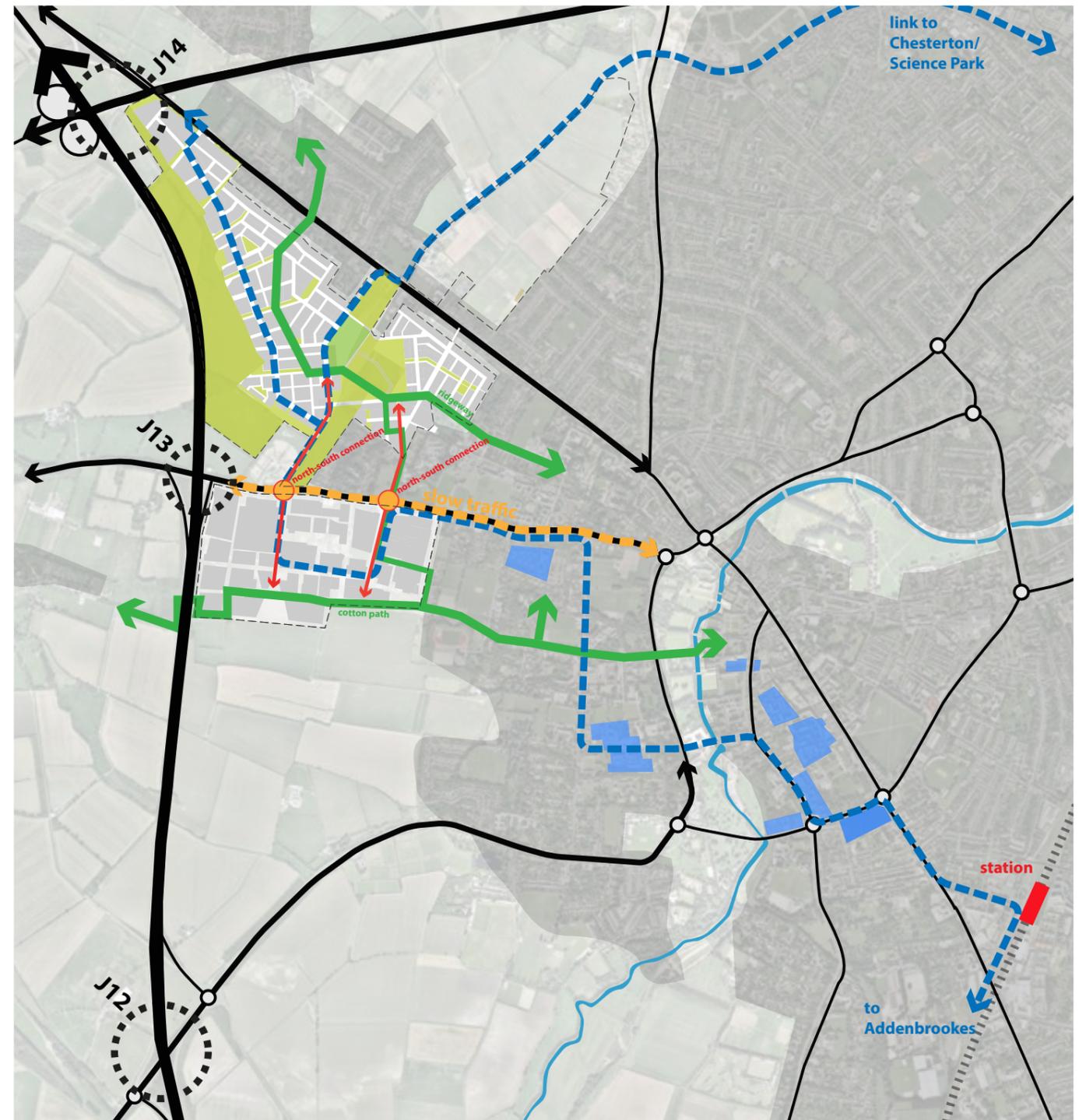
- of Policy 18 of the Cambridge Local Plan - by including a comprehensive transport strategy for the site, incorporating a sustainable transport plan to minimise reliance on private cars – including an assessment of the level, form and type of car parking on the site, as well as enhancing links for walking, cycling and public transport links (including access for all) to the city centre, railway station(s), other principal educational and employment sites, and other key locations within the city to support sustainable development;
- by improving the local footpath and cycleway network as an integral part of a wider transport system – thus improving access to the surrounding countryside – according with the Cambridgeshire Rights of Way Improvement Plan; and
- of the measures identified within the Cambridge Long-Term Transport Strategy, the public transport strategy would deliver enhanced public transport services.

This identifies that the Development accords well with national and regional transport policy and guidance to deliver sustainable development, as well as with the key local transport and planning policy objectives. It shows that, overall, the proposals for the Development, and the transport strategy evolving to support it, will make a substantial and significant contribution to sustainable development objectives and policies for the Cambridge area.

This Transport Assessment identifies the transport strategy and travel demand management measures to ensure that the Site will be developed in accordance with national and local policy, as well as the broad long-term strategy for the development of Cambridge as set out in the local planning documentation

Overall, the proposals for the Development, and the transport strategy evolving to support it, will make a substantial and significant contribution to the achievement of sustainable development objectives and policies for the Cambridge area

- KEY**
- Main roads
 - Madingley Road
 - Public transport
 - North-south connections
 - Strategic cycle network



116. Strategic connections

The overall transport strategy for the Development responds to a number of important national regional and local objectives, which may be summarised as follows:

- providing development components, development layout and disposition of uses designed from the outset to be inherently sustainable, pedestrian and cyclist friendly, being based upon the provision of an integrated transport system as well as minimising the distance to travel overall;
- encouraging the use of sustainable forms of transport such as walking, cycling, and public transport, thus reducing the dependency on the motor vehicle;
- minimising the traffic impact of the development;
- assisting in reducing the number and severity of personal injury collisions on the local roads;
- integrating the development proposals with the wider existing and proposed transport network;
- reducing “greenhouse gas “ vehicle emissions; and
- implementing a Travel Plan / Travel Demand Management strategy for the development.

The specific elements of this Development Access and Movement Strategy are considered individually in the following sections of the TA:

- Section 6 – Pedestrian and Cycle Strategy;
- Section 7 – Public Transport Strategy;
- Section 9 – Travel Demand Management Strategy;
- Section 10 – Construction Access Strategy.

Cycling

The Cycling Strategy was derived following:

- a series of workshops with the West and North West Cambridge Cycling Group, a community group set up to seek local information relating to existing operational issues;
- an initial response from the Cambridge Cycling Campaign;
- a review of existing Cycle movement data – including the Strava Heatmap, and an analysis of home postcode information for existing occupants of West Cambridge, as provided by the University; and
- further meetings with the Highway and Cycling Officers of Cambridge City and Cambridgeshire County Councils.

The Cycling Strategy proposes changes to the wider network of routes to:

- ensure good permeability through West Cambridge;
- strengthen links between West Cambridge and the adjacent North West Cambridge;
- improve access to the surrounding area, including to the City Centre.

The Cycling infrastructure proposals for West Cambridge would:

- deliver quality Cycle and Pedestrian connectivity throughout the Development;
- enhance Pedestrian and Cyclist safety off-site for both users of West Cambridge, and for all other Walkers and Cyclists;
- deliver improved strategic connections to key local destinations - such as the residential, employment and retail offer at North West Cambridge, and the residential development at Girton and at NIAB, as well as towards the facilities within the City;
- significantly enhance the existing Pedestrian and Cycle provision to the surrounding area by providing and improving direct routes across the Development; and
- overall, preserve and enhance the attraction of Pedestrian and Cyclist modes of travel

Public Transport

Initial discussions have also been held with various stakeholders to agree the potential public transport strategy for the Site, including with

- the Traffic Managers of both of the main local bus operators – Stagecoach Cambridge and Go Whippet; and
- the County Council's Public Transport officers.

The scale of the proposed Development means that there will be both a high quantum of demand for public transport, and a number of locations that will need to be connected to West Cambridge. New and enhanced bus services will be phased in to align with the development quantum and consequent growth in demand. The links are derived with reference to the Travel Habit Survey undertaken in May 2015 by the University and are summarised below:

- to the local Rail Stations – to both the existing Cambridge and future Cambridge North (Chesterton) Stations;
- to the City Centre;
- to the University / NHS sites in South Cambridge - including Addenbrooke's Hospital and the Cambridge Biomedical Campus;
- to various residential and employment / research sites around northern Cambridge - including North West Cambridge, the NIAB site and the Cambridge Science Park;
- residential areas along the A14 corridor - including St Ives and Huntingdon; and
- residential areas on the A428 corridor - including St Neots and the proposed Bourn Airfield proposals and Cambourne fringe developments.

As such, West Cambridge Development would contribute towards additional bus services further to:

- enhance existing services to increase bus usage;
- provide quality infrastructure through the Development; and
- assist in the delivery of the Greater Cambridge City Deal aspirations.

Travel Demand Management

The overall broad objectives of the travel demand management strategy for the Development are:

- to reduce reliance on the private car with a long-term strategy of mode shift away from single occupancy car use;
- to build upon good urban design principles that improve the permeability of the development for promoting walking, cycling and public transport use;
- to provide more appropriate levels of parking;
- to promote the use of car sharing where appropriate;
- to minimise costly road traffic congestion and further damage to the environment in the context of sustainable development which is consistent with Government policy; and
- to encourage a high level of community involvement in travel behaviour change initiatives.

Construction Access

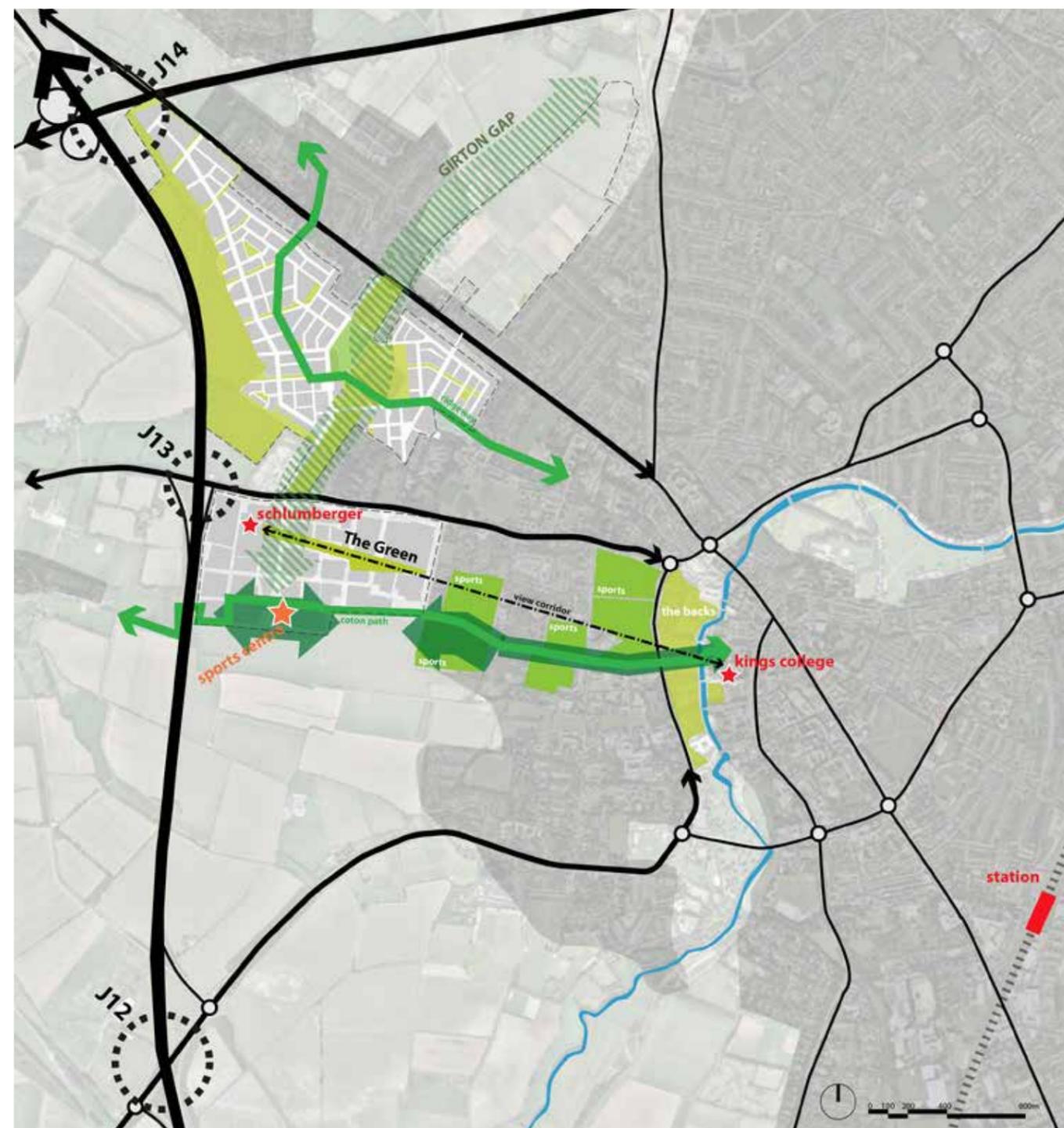
The Construction Access strategy consists of the following main elements:

- design:
 - minimising the requirement for material to be imported or exported. For example, the movement of earthworks material off-site will be reduced to a minimum by maximising the use of raised material into the landscaping;
 - specifying materials and construction techniques that are resource-friendly;
- using locally sourced materials where possible, to reducing haulage lengths;
- managing effectively the supply of goods to construction sites - this can significantly reduce both road vehicle mileage and construction costs and wastage;
- encouraging the development of sustainable supply chains for construction materials; and
- managing the movement of workers into the development
 - all construction sites within the Development will have comprehensive Construction Travel Plans, detailing how their workforce will travel to the Site.

Open Space network, spatial and visual integration

Key to the transformation of West Cambridge will be the creation of a strong landscape and open space character, with visual connections to the city centre. This must include a series of well defined new urban spaces, reinforced landscape connections and the upgrading of the existing internal street network.

Transformation proposals seek to create a new hierarchy of spaces through the site that will aid legibility, create a strong visual identity and form the setting for new social events and recreation that will become integral to the life of West Cambridge.



117. Strategic open space network and visual integration

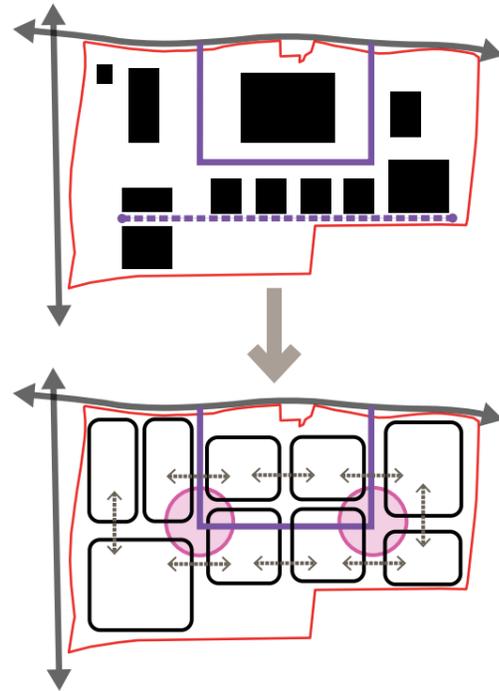
4.2.2 Site-wide strategies

Acknowledging the qualities and opportunities brought by the original masterplan and current developments, the masterplan aims to provide a framework for a gradual transformation and densification of the site. The key design concepts to guide this process are explained on the following pages and relate to a new urban and landscape integration, the creation of clusters of uses and the reinforcement of links with the surrounding areas and with the City Centre.

The full potential of academic and industry research communities on the site will depend on quality of place and the management ability to truly bring them together. The transformation of the current environment requires a step change in the way the site operates, particularly in relation to car parking and amenity such as catering and usable open space. To this goal, the masterplan includes several site-wide strategies which aim to address:

- creation of walkable character areas and a new density of development and working population;
- concentration of car parking along the edges to create pedestrian friendly public realm within the heart of the site;
- provision of public transport, and user friendly cycle network and cycle parking;
- quantity and location of social facilities, ensuring they are accessible and activate open spaces;
- typology of research workspaces, ensuring that a range of sizes, lease arrangements and support services is available for a broad spectrum of commercial research activity;
- a new academic public realm that can connect the site together and integrate it into its surrounding urban and landscape context.

Creating character

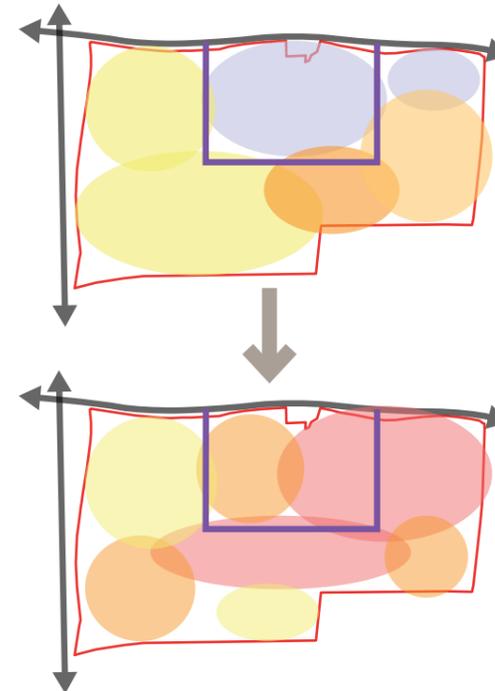


118. Site transformation: From plot by plot development to well scaled, pedestrian oriented character areas.

While many of the existing buildings at West Cambridge provide quality research space, the piecemeal development, on plot by plot basis, has in many cases resulted in detached buildings with little or no interaction in the public realm. On plot at grade car parking further exaggerates this condition.

The new strategy is to develop the site on basis of character areas - well scaled, pedestrian oriented complexes of buildings and open spaces. This approach will allow for gradual delivery of the masterplan in a way that delivers visible benefits (buildings, open spaces and other amenities) at any stage of the process.

Density and achieving critical mass

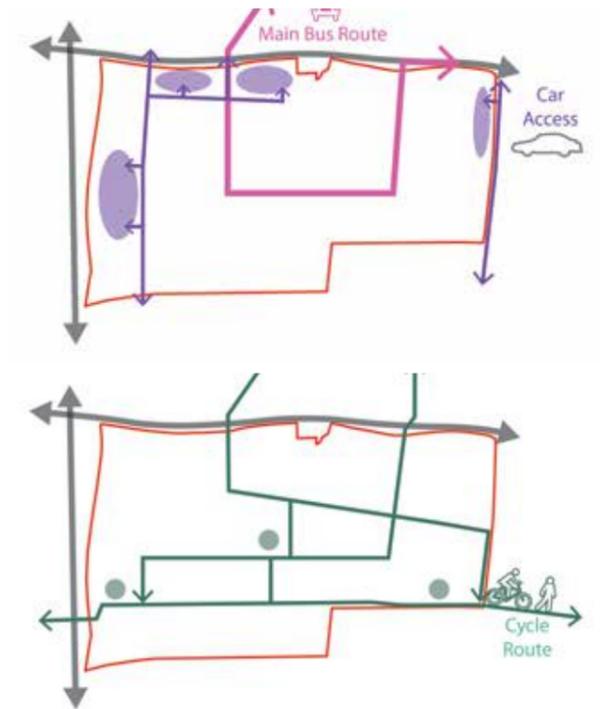


119. Site transformation: A new density and critical mass.

The existing consented masterplan did not achieve higher densities in part because of the remaining existing uses such as the Vet School and Cavendish Labs remaining on site and partly to do with the strategy of plot by plot surface car parking. With the decision to relocate the Vet School off-site and rebuild Cavendish on-site there is an opportunity now to achieve a more coherent strategy for density across the whole site.

This refresh of the masterplan takes this opportunity to increase the density of the site and create critical mass in key locations, which will promote new levels of activity on-site, support social facilities and public transport and activate key public realm. A density profile has been carefully controlled to respond to the locations of key spaces within the masterplan and to respond to sensitive edges around the site.

Reducing car dependency: Public transport, cycling and car parking strategy

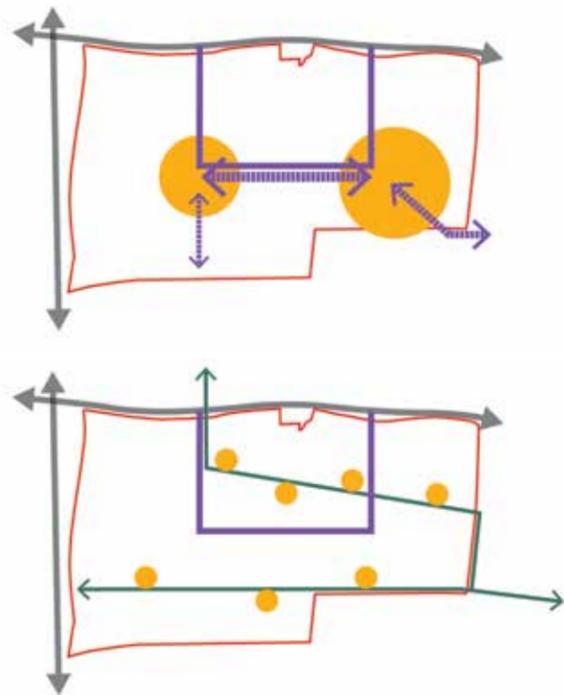


120. Site transformation: From vehicular orientated environment to promotion of public transport and cycling. Car parking concentrated and located to edge of site.

The character area approach will be made possible through elimination of at grade car parks by step change in transport strategy: the new travel plan will include measures for gradual reduction in car use, friendlier cycling, walkability and distribution of car parking.

Key to realising the full value of the land available at West Cambridge will be the rationalisation of surface car parks into multi-storey, centrally managed facilities under University control. This will allow for increased parking capacity at key locations within the site and a shift from a 'drive to building' mentality to 'park & walk' through attractive well defined pedestrian-orientated environments. The University will be able to manage down the proportion of car users carefully between academic and commercial users as public transport access is improved and population and density increases.

Innovation and Collaboration: Shared facilities

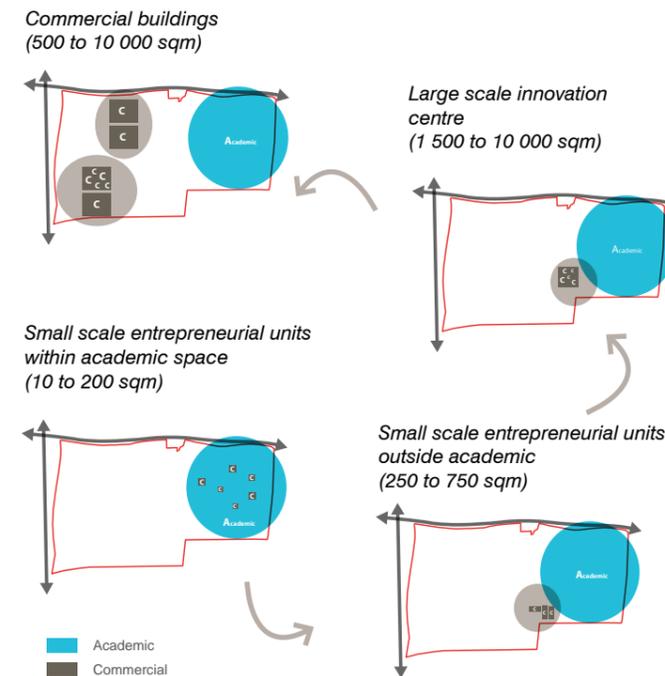


121. Site transformation: Reinforce the Forums by locating larger social facilities here. Additional smaller facilities located to provide activity within other spaces.

Part of the efforts to promote Innovation and Collaboration are mixing and blending of various uses and provision of open spaces with adjacent social facilities.

On one level, reinforcement of two Forums will include location of larger facilities around them and increase in footfall by densification and establishment of new links. A secondary level of social spaces will support the open space network ensuring that open spaces are animated by activity.

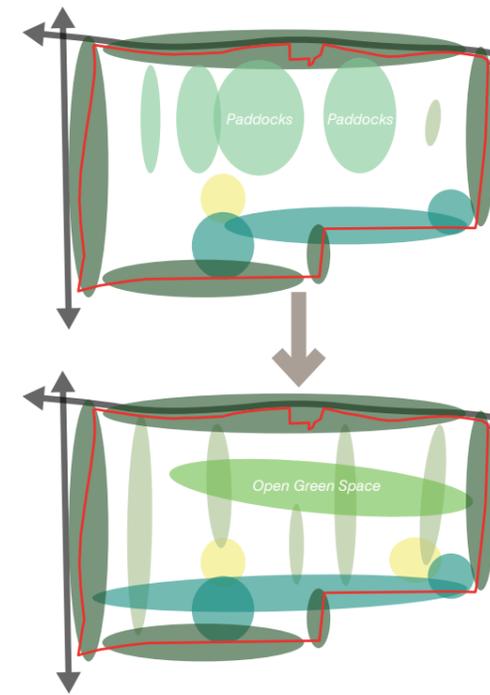
Innovation and Collaboration: Ecosystem of workspaces



122. Site transformation: Creating and Eco-system of Workspaces

Innovation and Collaboration is also to be supported by a range of commercial research spaces, varying from small start ups to established businesses. Such mix will support entrepreneurial activities and commercialisation of knowledge: providing space for companies collaborating on research projects, flexible space and business and legal advice for start ups and larger space for businesses.

A new public open space network - an Academic Public Realm



123. Site transformation: From private, grazing paddocks to a new public open space network - an Academic Public Realm

The overall open space concept is a series of elements that are cohesively joined to form a landscape strategy that responds to place, character and the evolving masterplan.

At present the site is dominated by the existing Veterinary School paddocks. Although these lend a tranquil character to the site they are not publicly accessible. In addition new streets and spaces have been now formed in accordance with the existing consented masterplan such as the East and West Forums.

The strategy is to transform the landscape character of the site through enhancing existing spaces and streets, forming clear North South Green links and creating a new setting for development. These are woven together to form a continuous network of spaces that both connects the site to its surroundings and firmly knits the site together. In order to enhance the existing landscape and create a strong network the paddocks will be removed in favour of introducing new, publicly accessible green spaces.

The Southern Ecological corridor is extended to the West, forming a substantial link in the overall network of landscape connecting back to the city and promotes diversity and species rich habitats.

These spaces will be activated by a new density of working population and careful management and design.

4.2.3 Key opportunities for transformation

West Cambridge is a site with established elements of spatial structure and a large number of buildings, mostly developed based on an existing masterplan.

The requirement to develop a new design framework for the site has emerged in response to the need to improve site conditions for existing and future occupiers as well as in response to the opportunities brought by the changed circumstances in both the wider context and on the site itself.

On the site, the need for a new Cavendish Laboratory building and release of its current site, together with the University's decision to explore relocation of the Veterinary School have created an opportunity to develop a comprehensive site plan, after both of these sites have been excluded from the previous masterplan and its revisions.

The comprehensive design will create an opportunity for the University to secure much needed space for further academic growth and make the most of the potential of the 66 ha site. With better public transport links, more efficient site layout and appropriate density, the overall amount of development can be significantly increased. The intensified use and population on the site can in turn support public transport and much needed social facilities on the site.

As one of University's key development sites free from the spatial constraints of the historic core, West Cambridge can provide plots of size and flexibility suitable for high quality research buildings. It can now provide the amount of development required for large academic occupiers and a critical mass of floor space to establish a commercial research address of national importance.

Unlocking the potential for east-west integration



124. Relocation of Veterinary School

Currently, the Veterinary School buildings and its large, fenced off paddocks, form an impermeable centre of the site, limiting the links across the site. The relocation creates an opportunity to redevelop the core of the site and establish an open space which can visually unify the site and add another East-West connection.



125. Large Serviced Plots to the west of the site

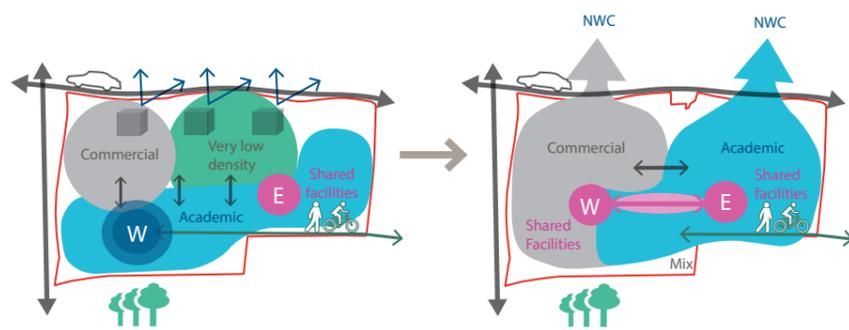
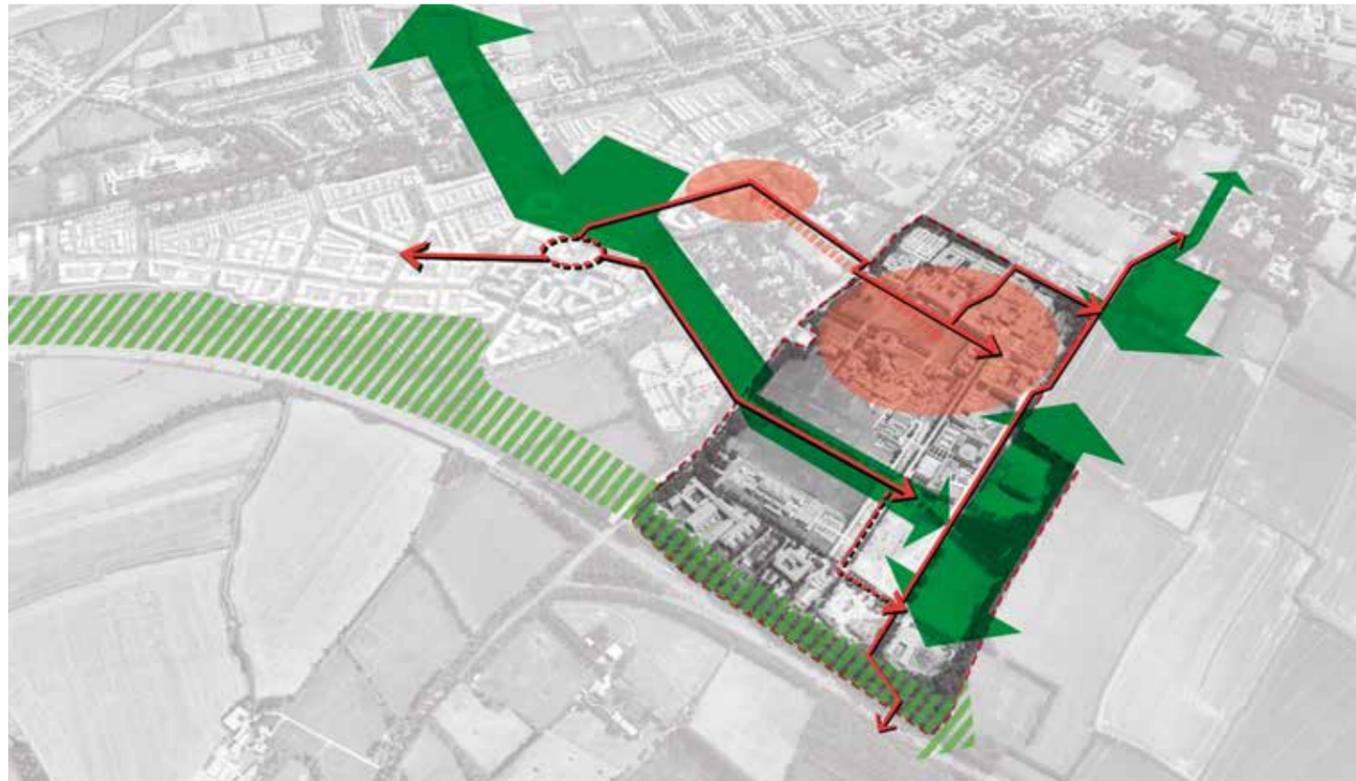
The existing masterplan earmarked this area for a large academic occupier. However, the considered Departments had concerns about its remoteness and isolation and sought other options. Currently, these large plots are empty but serviced and ready to be developed. There is an opportunity to locate commercial research space here and, together with Schlumberger, BAS and Aveva, grow a cluster of industry partner research with West Forum and lakeside address.



126. Redevelopment of the Cavendish site to the east

The relocation of Cavendish Laboratory will free the existing Cavendish site to create new arrival spaces adjacent to the Coton Footpath - a key link to the city centre. The large plots thus formed will be well suited to accommodate significant provision of shared facilities to draw users and generate activity around East Forum.

Urban integration and clusters of uses

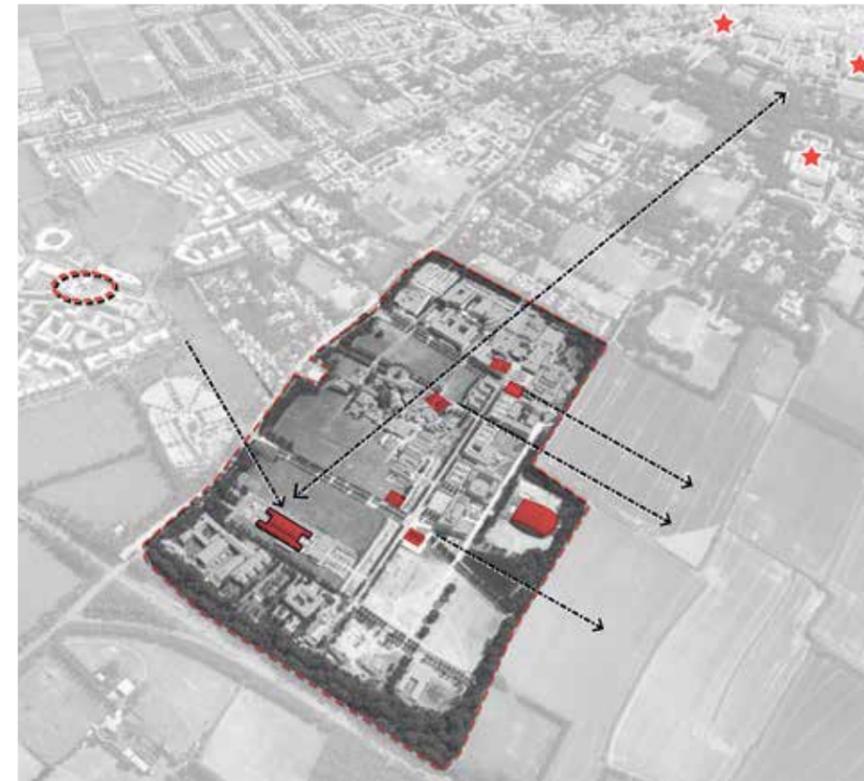


127. Site transformation: From east-west distribution to north-south interaction
West Cambridge and the North West Cambridge Development together can be considered as a whole new urban district for Cambridge, complementing each other in uses and types of spaces. A new distribution of uses will seek to ensure that the two sites will complement and sustain each other. By focusing academic uses to the east, a new larger cluster can be formed around the East Forum, while allowing sites to the west to form a new commercial focus around West Forum.

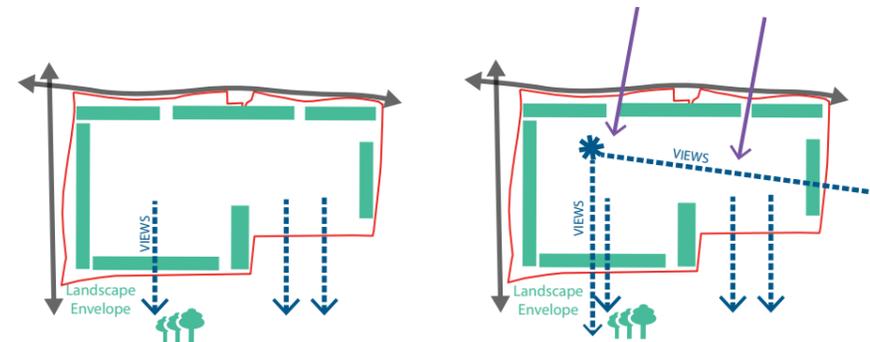
Strong links can be formed to ensure connections between West Forum and the local centre in North West Cambridge and providing links between university work places and university housing.

North south spaces within the North West Cambridge Development can be visually drawn through the site to provide a new seamless development structure covering both sites.

Skyline: Key views and accents



KEY
■ Accents in West Cambridge
★ City landmarks
⊙ North West Cambridge centre



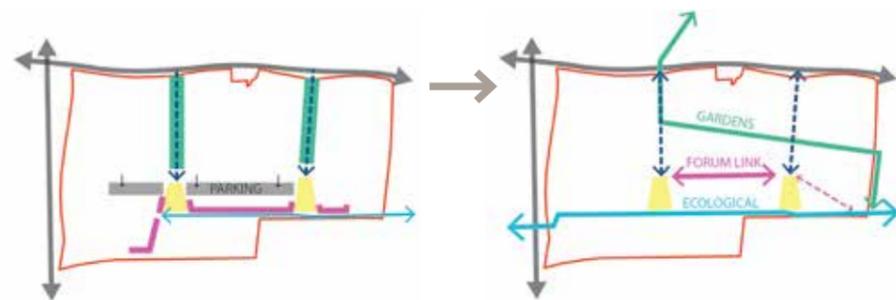
128. Site Transformation: From relative isolation to urban and spatial integration
As part of the strategy to integrate West Cambridge with the city, the proposals include concepts that emphasise and celebrate key views to the city centre skyline: Kings College Chapel and the University Library. Views from within the site to the open countryside to the south are equally retained and emphasised to ensure that the site recognises its setting at the edge of the city.

The Schlumberger Building is the key city landmark for the site, forms the visual termination for a new key view axis and is joined by new landmarks and accent buildings to create new West Cambridge skyline. This approach seeks to create visible identity but also to aid legibility to the open space network.

Building on the existing consented masterplan



- KEY**
- █ Key open space network
 - - - East - West link
 - █ East and West forum
 - █ Forum link
 - █ Schlumberger
 - ★ City landmarks
 - - - - - Visual link



129. Site transformation: From reliance on southern Colonnade to integration across the site

The new masterplan aims to build on the existing elements of the site, strengthening their role while gradually complementing them with new elements.

In the existing plan, the East and West Forums are the key focal points, connected by the Coton Footpath/southern Colonnade. As a result, although it is one of primary access routes through the site, Charles Babbage Road is lined with at grade car parks with building frontages set back from the road.

The new proposal retains the two Forums as the focal points, but transforms them by creating better definition, plus a moderation of their scale and exposure. Charles Babbage Road will become a new 'Forum Link', providing an additional east-west connection through the site.

In later stages, the central part of the site will be connected by a chain of connected gardens, focused on the Schlumberger building, adding a new element to urban structure. The site will ultimately have three east-west landscapes, within a strong connective network of public space.

Landscape opportunities



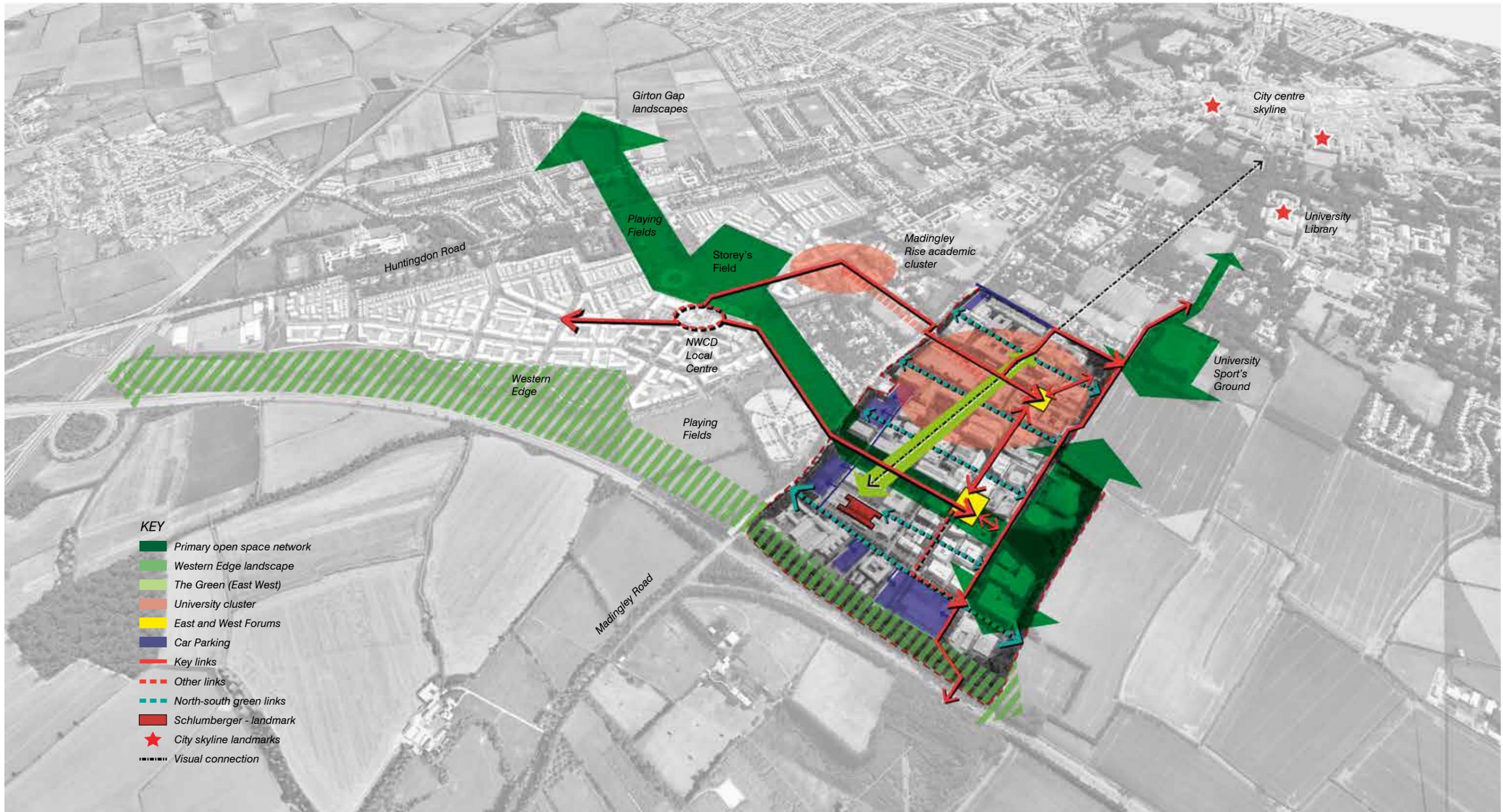
130. Site transformation: From reliance on southern link to integration across and through the site

The overall landscape concept is a 'Weave' - a series of north-south and east-west landscape and connecting elements, which strongly connect the site from east to west and north to south. Each key landscape element will have its own character and identity related to use, location within the site and existing landscape features.

Connections from the east, from Cambridge city centre, should reflect the essence of the existing network of routes and open spaces ensuring that West Cambridge is relevant to the evolving story of the city.

The rural landscape of Cambridgeshire is particularly close to the west of the city, and is defined by large arable field parcels with an open aspect. Remnants of this agricultural landscape can be seen throughout the city, found in boundaries, markers such as trees, hedges and ditches that define the network of open spaces and routes that have shaped the urban grain.

To the north, the North West Cambridge Development provides pedestrian and cycle links into the West Cambridge site. The design and form of these networks needs to provide continuity between the sites, through the scale, materials and way finding approaches.



- KEY**
- Primary open space network
 - Western Edge landscape
 - The Green (East West)
 - University cluster
 - East and West Forums
 - Car Parking
 - Key links
 - Other links
 - North-south green links
 - Schlumberger - landmark
 - City skyline landmarks
 - Visual connection

131. Site transformation: Development structure and concepts

4.3. Evolution of the proposals

4.3.1 Four key stages of work

The proposals have developed and evolved as a best practice response to the need to transform the existing site and respond to the requirements of existing and potential future occupiers.

- The initial work commenced in 2012 with **Issues and Options Study**, a thorough analysis of the site and its deliverable potential. This study has identified key issues and outlined broad strategies for transformation of the site, based on existing analysis and comparison with relevant precedents, thus setting a framework for future reviews and analysis.
- In the next stage of work, **Development Strategy (2013)**, the issues of development potential and optimal density were further tested with respect to capacity of the surrounding network and University's Estate Strategy.
- The aim of the **Illustrative Masterplan (2014-15)** was to respond to the requirements by providing a flexible framework for a gradual transformation of the site, ensuring unhindered delivery of University's Priority projects in early stages and a flexible framework for further development and full build out. The masterplan dealt with uncertainty of long term plans and delivery by establishing preferred urban structure based on optimal density (relative to requirements of research buildings and appropriate sense of enclosure and proximity) and a growing network of open spaces.
- The **Illustrative Masterplan 2016**, maintains the key principles of the previous masterplan, but key variations have been made in response to external consultation and further consideration in terms of scale and layout. In addition, the masterplan now incorporates an 'inset masterplan' for the eastern part of the site, a representation of the now more detailed requirements and aspirations of a key site occupier.

The evolution of proposals can be traced through development of key considerations, related to:

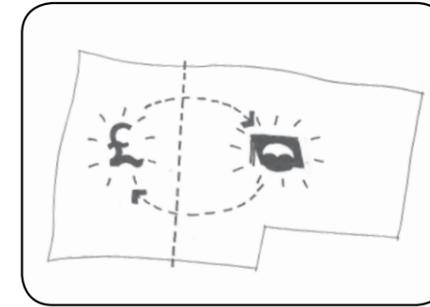
- overarching strategies for transformation;
- options for distribution of key occupiers;
- key elements of open space structure, including transformation of the existing open spaces and addition of new landscape and public realm elements;
- optimal development density to achieve critical mass.

4.3.2 Issues and Options Study (2012)

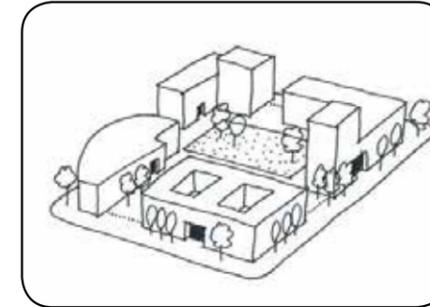
The **Issues and Options Study, 2012**, included a thorough analysis of the site, set a framework for future reviews and provided an analysis into the deliverable potential of the site.

Design strategy recommendations addressed the key site issues and has so formed the basis for further work on the transformation of the site. The Issues and Options Study:

- established clearer zones of development which distinguished between flexible, long term academic use areas and commercial research areas, where land and buildings may be returned to the University on a shorter term cycle;
- defined identifiable, smaller scaled 'precincts' within the site, in order to create clusters of academic or commercial uses, each with a distinct character and identity: existing academic core areas should be enhanced to enable the future interaction with other academic and commercial research clusters at the North West Cambridge Development and beyond;
- envisaged the transformation of Charles Babbage Road into an active pedestrian friendly central street, in order to reinforce the academic core area, while accommodating a mix of uses, public frontage and access to public transport;
- provided support for high quality social activity nodes, within easy walking distance of each cluster/precinct;
- encouraged a finer urban grain to development, to improve the pedestrian experience, including forming some pedestrian only precincts with connected shared landscaped spaces;
- reinforced the need for public transport and cycle corridors: to improve access and car parking while reducing vehicle movement within each cluster/precinct;
- envisaged that the site required useable, public open space and landscape, to be well-maintained by the University;
- created an intensified urban character, through the definition of accent buildings, gateways and visual landmarks and by encouraging variety in height, legible public frontage to buildings and entrances;
- defined and reinforced strategic view corridors;
- defined the need to respond to microclimate.



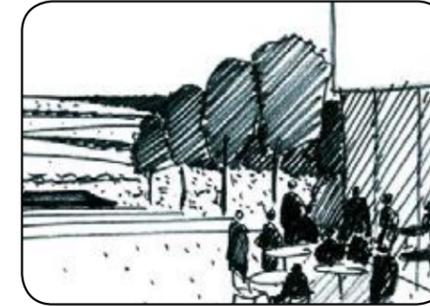
1. Establish clearer zones of development.



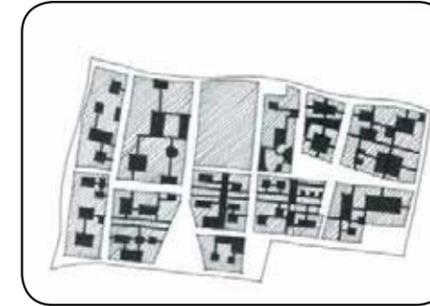
2. Define identifiable, smaller scaled sites and precincts.



3. Create an active pedestrian friendly central street.



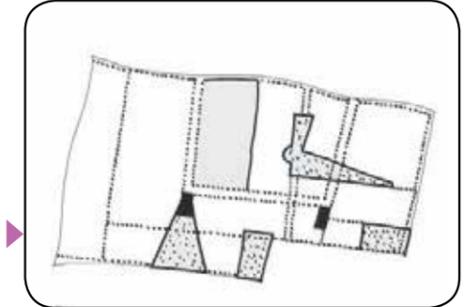
4. Provide and support high quality social activity nodes.



5. Encourage a finer urban grain to development.



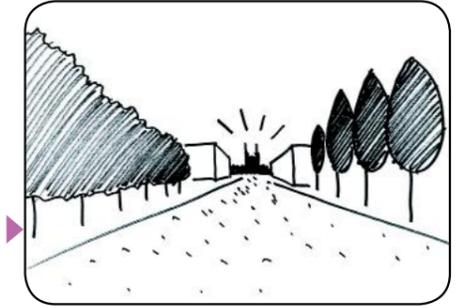
6. Reinforce public transport and cycle corridors.



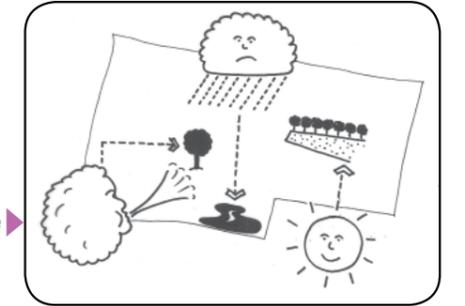
7. Provide access to usable open space.



8. Create an intensified urban character.



9. Reinforce strategic viewing corridors.



10. Respond to microclimate.

4.3.3 Development Strategy (2013)

The masterplan, throughout its design development, has been significantly informed by the needs of the major current and potential future occupiers and the expected timelines of the associated University capital projects. The team sought to respond to the various requirements but remain consistent with the main design strategies.

This document set out a strategy for the whole site, without the Vet School (a key existing occupier). This key decision by the University enabled the strategy for a comprehensive development of the site for the first time. The considerations of other existing and future occupiers are set out on this page.



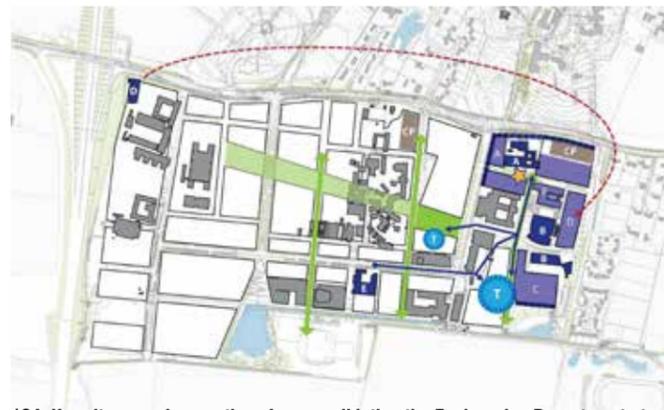
133. Key site occupiers: a new Cavendish III Laboratories

Cavendish III Laboratories

The Cavendish Laboratory currently occupies a complex of inadequate buildings at the south east corner of the site. A new facility for this world class research institution is a high priority capital plan project for the University.

The eastern paddocks provides an available and suitable site for Cavendish III, and the immediate impetus for change at West Cambridge.

While the original masterplan retained the East Paddocks for use by the Veterinary School and instead proposed development on west paddocks, this location is more beneficial for the transformation of the site and integration with the wider context: Cavendish III at this location represents a major catalyst for integrating West Cambridge to the academic uses north of Madingley Road (particularly to Astrophysics), and is sited at the heart of the proposed new eastern academic research cluster. Cavendish III on East Paddocks will signal a major shift in direction for the site.



134. Key site occupiers: options for consolidating the Engineering Department at West Cambridge

Department of Engineering

Two potential sites were considered for the additional accommodation for the Department of Engineering, which would enable the Department to gradually move to and consolidate on the West Cambridge site.

The Department already occupies five buildings on the site and their location has played a significant role in deciding the future site - on the eastern side of the West Cambridge site.



135. Site Transformation: From reliance on southern link

Commercial Research Occupiers

Development of the large scale serviced plots fronting the Western lake for new commercial research occupiers could be combined with the next phase of the Schlumberger Research Building, so enhancing their long term position on the site and their contribution to the University achieving a major new commercial research address.



136. Site Transformation: From reliance on southern link

Veterinary School

This study was the first to consider West Cambridge without the Vet School. The Vet School at present occupies the key central area of the site.

The lowest density and largest site occupier by footprint, in the short term, the Vet School will be able to consolidate its operation in a secure, reduced precinct to allow for the development of Cavendish III on the eastern paddocks. Over the long term, it remains to be established whether this will be the best option for the ongoing teaching, research and clinical activities of the Vet School in Cambridge.

This enables a substantial land parcel to become available, offering a very significant long term development opportunity, as well as an opportunity to provide a substantial new public open space within the site.

4.3.4 Consultation and feedback

Engagement and Consultation

Significant engagement and consultation during the period 2014-2016 has included:

- Four meetings with the West Cambridge Community Group;
- Four meetings with the West and North West Consultative Cycling Group;
- A public exhibition through the North West Community Forum held on three separate dates;
- Nine pre-application meetings with Cambridge City Council. These meetings covered a variety of aspects of the proposals including planning, urban design, transport, open space and sustainability. Discussions also involved County Council officers;
- Technical meetings with Cambridgeshire County Council Highways officers;
- A Cambridgeshire Quality Panel Review;
- Two briefings to the Cambridge City Council Planning Committee;
- Meeting with Cambridge Past, Present and Future.

West Cambridge Community Group

The University formed a Community Group for the development at West Cambridge. This group is comprised of representative local stakeholders, who meet on a regular basis to contribute their views and ideas on behalf of the communities they represent. The meetings have provided a useful forum for the exchange of information, views and ideas about the proposals.

Community Group meetings were held in December 2014, February and May 2015, and March 2016 with focussed discussions on different aspects of the scheme including transport and accessibility, sustainability, design and social/community infrastructure. Key points raised by members included:

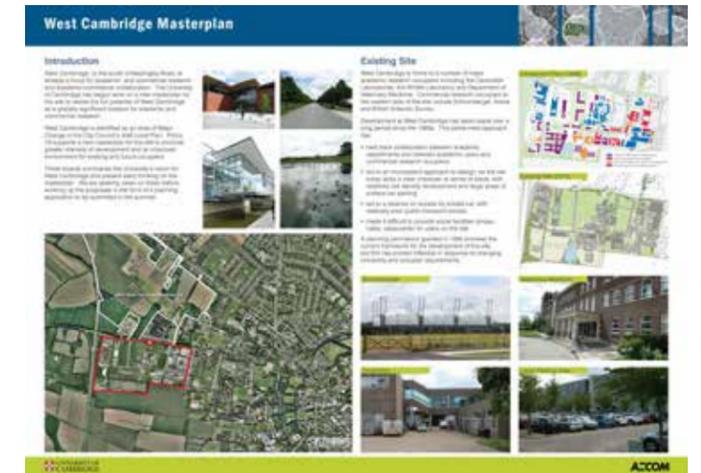
- the need to improve cycle routes between the area and the city centre;
- the need to form improved north-south links to offset east-west movements;
- the need to improve and ensure better separation between pedestrian and cycle routes;
- the need to minimise further vehicle congestion along Madingley Road through improvements to public and sustainable transport modes;
- the need to reduce noise impacts from the M11 in the area;
- the need to improve and supplement the Uni 4 bus service;
- the need to increase housing provision on the site;
- the need to establish activity on the site during the evening;
- the need to ensure quality in design of new buildings, giving due regard to appropriate heights and sensitive location of taller buildings;
- the need to improve pedestrian permeability and conditions to create better micro-climates on site;
- the need to improve public open space provision on the site;

- the need to create a public face to the local area;
- the need to conserve the heritage and environmental aspects of the site;
- the need to manage car parking arrangements;
- the need to ensure sufficient infrastructure capacity to support development;
- the need to respond to future City Deal proposals.

West and North West Consultative Cycling Group

A consultative cycling group was established by the University as part of the West Cambridge and NWCD Developments. This group is comprised of interested cycling stakeholders and local representatives who contribute to developing and improving the cycling experience around the North West and West Cambridge sites, as well as considering the connectivity for all users around, through and between the two sites.

Through this group, the University has shared and explored thoughts and opinions from the local community on cycling and connectivity and how the cycling experience can be enhanced through the Proposed Development at West Cambridge. Regular meetings have been held with the Cycling Group through the development of the proposals and feedback has been taken into consideration.



137. Community Forum Consultation Boards

North West Community Forum

The North West Community Forum is organised by Cambridge City Council and South Cambridgeshire District Council to provide an opportunity for individuals to find out more about planning and development in the North West and West of Cambridge. Emerging proposals for West Cambridge were presented at the Community Forum in March 2015. A further presentation was given in October 2015 in order to provide an update to members.

Pre-Application Meetings with Cambridge City Council

The University has worked in close collaboration with Cambridge City Council on the evolution of the Proposed Development at West Cambridge.

Nine pre-application meetings were held with Cambridge City Council throughout the design development period. The first meeting was introductory in nature and provided an opportunity for the University to present the vision and aspirations for the Proposed Development, and to establish the principle of revisiting the existing consented masterplan to enable delivery of an uplift in academic and commercial floorspace. Subsequent meetings covered a number of different aspects of the scheme proposals such as:

- Proposed land uses and distribution;
- Design and layout, including building heights and plot development;
- Social/amenity facilities;
- Green infrastructure and open space;
- Phasing of development and public realm;
- Access, movement and transport;
- Sustainability.

Guidance and comments from Cambridge City Council have been taken on board and have informed the evolution of the Proposed Development.

Councillor Briefing Sessions

Briefing sessions have been held with Cambridge City Council and Cambridgeshire County Council members in November 2014, September 2015 and March 2016. These discussion-based engagement sessions were facilitated by City Council Officers and members of the project team.

Discussions were based around the following key themes:

- Strategy and Development
- Transport and Connectivity
- Housing
- Open Space
- Amenities
- Phasing and Communications

Cambridgeshire Quality Panel Review

Emerging design proposals for West Cambridge were presented to the Cambridgeshire Quality Panel in April 2015. The Panel were supportive of the proposal and encouraged by the University's approach to sustainability and landscape, and considered the anticipated improvements in the public transport provision and enhanced cycling and walking routes back into the city as essential for the development of the site. The Panel made the following recommendations:

- give due consideration to the integration of academic and commercial properties and how they will relate to each other on the site;
- ensure that the open spaces will work for the benefit of the site, the occupiers and users and for the city;
- endeavour to reduce the amount of car parking provided;
- provide high quality landscape and planting;
- consider the appropriate mix of land uses;
- draw on precedents and examples of joint academic/commercial partner campuses or developments.

A second Cambridgeshire Quality Review Panel was held in March 2016. The Panel remained supportive of the proposals and appreciated the level of constraints the masterplan has to consider over the whole site. The Panel made the following recommendations:

- provide a plan showing proposed private and public spaces.
- provide a phasing strategy and impacts on the overall design.
- ensure landscape and public realm strategy interacts with shared amenities and the phasing of the development.
- What makes this a special place? This has to be a location that attracts the brightest and the best.
- if this site is designed to complement the North West Cambridge development, sufficient priority should be given to connections between the two sites.

The Panel noted that a comprehensive planning application is being prepared which will answer some of these questions, and would like to review and comment on the underlying strategy and parameter plans.

138. Quality Panel Review: Presentation Front Cover



4.3.5 Response to consultation - evolution of the masterplan



139. Illustrative Masterplan - Version 1 for consultation, February 2015

West Cambridge Illustrative Masterplan - Version 1 for Consultation (February 2015)

The above plan shows the initial version of the masterplan, which was developed from internal and external consultation through the 2014-2015 period.

This version of the masterplan has been used in consultation throughout the rest of 2015 and into 2016.

The following pages set out the key issues raised and the responses made in relation to the masterplan and Development Proposals.

The consultation raised various key issues to be addressed:

- **Open space:** the development was perceived to be dense and possibly over-developed. There was a concern about a lack of a single large open space where people could gather in larger numbers and about open spaces overall not adding to area substantial enough to support the amount of development and working population.
- **Building heights:** as proposed by the accompanying draft Parameter Plans raised fears of possible unbalanced development and there was concern over daylighting and shading of new and exiting open spaces.



140. Key issues raised through consultation

- **Energy Centre:** this facility, in the 2015 masterplan was shown to the northern edge of the development, adjacent to Madingley Road, and both this and a location in the western part of the site were allowed for in the parameter plans. This location was felt to be too close to existing residential uses and may have detrimental visual impacts on Madingley Road and adjacent Conservation Areas.
- **Social amenities:** there was uncertainty as to whether the social amenities strategy was robust, would produce a good amount of activity throughout the site and would be delivered in time to serve other (academic and commercial research) developments.
- **Residential development:** there was a concern about the lack of additional residential uses within the site, the impacts on existing residential of additional non-residential uses and the formation of activity into the evening and through the weekend.
- **Cycle/Walking/Buses/Transport:** throughout the consultation, site occupiers and neighbouring residents were concerned about additional car traffic. At the same time, many site users have advocated for additional car parking spaces.
- **Views from South** - these views were considered to be highly sensitive and that development, in form and height, must respond and reduce any impacts of the development on the open countryside and Green Belt. In particular, there was a request to avoid long continuous frontages along the southern edge and ensure generous landscaped breaks are secured.



141. Illustrative Masterplan: Initial Response to Consultation (October 2015).

Version 1: Initial response (October 2015) - Character: Open space and heights

In response to this initial round of consultation the proposed open space structure was reconsidered. The result was The Green, centrally located enlarged section of the east west green space, taking advantage of the existing mature trees in the Vet School compound. This space was included to ensure that there is one larger space which can serve the whole of West Cambridge community.

Further definition was given to this open space by establishing minimum width dimensions and maximum frontage heights to ensure an open, more informal aspect which relates well to types of spaces found within Cambridge city centre.



142. Illustrative Masterplan - key integration areas

Version 1: Key integration areas - Character & Community

Further consultation with design teams of departments of Engineering and Physics key enabled more detailed requirements to be integrated within the Illustrative Masterplan. Around this time, the University had also completed a study which provided the brief and timing for the first shared facility.

4.3.6 The Illustrative Materplan 2016 - a comprehensive response



143. Illustrative Masterplan - a comprehensive response (March 2016)

West Cambridge Illustrative Masterplan - a comprehensive response (March 2016)

The above masterplan and extracts following on these pages, represent a comprehensive review of the previous 2015 masterplan through internal and external consultation.

The following images highlight the key changes.



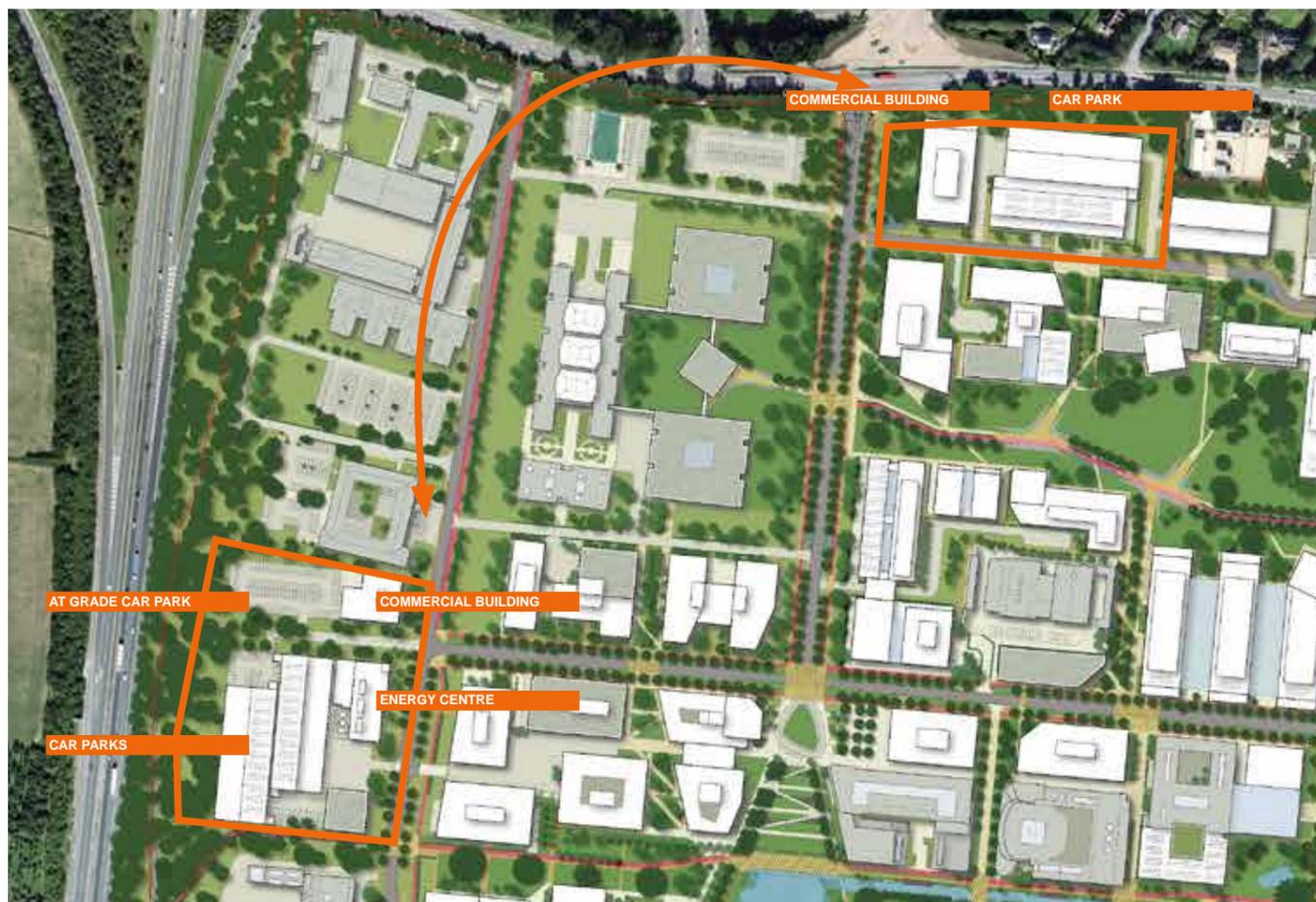
144. Community Forum Consultation Boards

Integration with Department of Engineering & Cavendish III

The needs and requirements of the Department of Engineering, as represented through their 'inset masterplan' by Grimshaw Architects, have been integrated into the 2016 Illustrative Masterplan. Collaborative work with the Department's design team ensured that key principles of the masterplan are maintained. Key elements were considered:

- Extent and definition of the **East Pond open space**, ensuring that a good sized space was formed allowing for the increase in area of the pond for drainage purposes as well as adequate space for activity and spill out from buildings;

- **Heights** - ensuring that the proposed heights sit well within the Heights Parameter Plan and that location of accent buildings is in accordance with both site and inset masterplan principles;
- **Shared facilities building** - exploring location, form and extent while ensuring strong relationship and pedestrian links to the East Forum spaces to south of 'inset masterplan';
- **New car park location** - ensuring that the car park can be accommodated within height parameters and
- **Green link** to east of IfM Building - ensuring that new frontage is set back to provide a more generous width for the north-south Green Link and also additional landscape along the southern frontage - large enough for forest size tree planting.



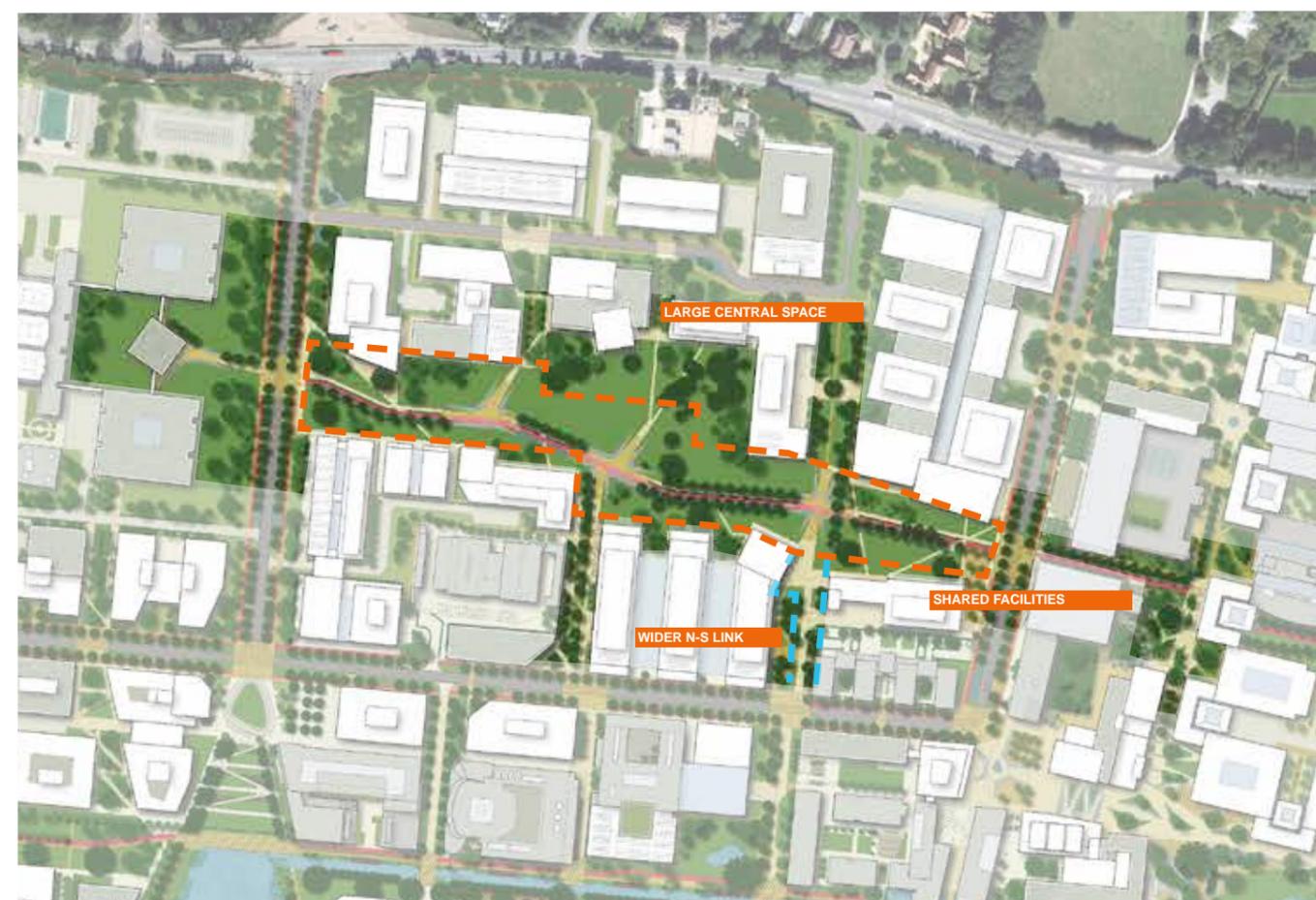
145. Community Forum Consultation Boards

New location for Energy Centre and related changes

The original location for the Energy Centre, on the northern edge of the site was considered to be too close to existing residential and too sensitive in terms of visual impact on Madingley Road and the conservation areas to the north.

The Energy Centre has been re-located to the western edge of the site and co-located with car parking structures and storage facilities. The Energy Centre has been located to provide a feature that terminates views from along Charles Babbage Road.

On the former Energy Centre site at Madingley Road there is now potential for a commercial building that could help form a gateway event at the junction of High Cross and Madingley Road.



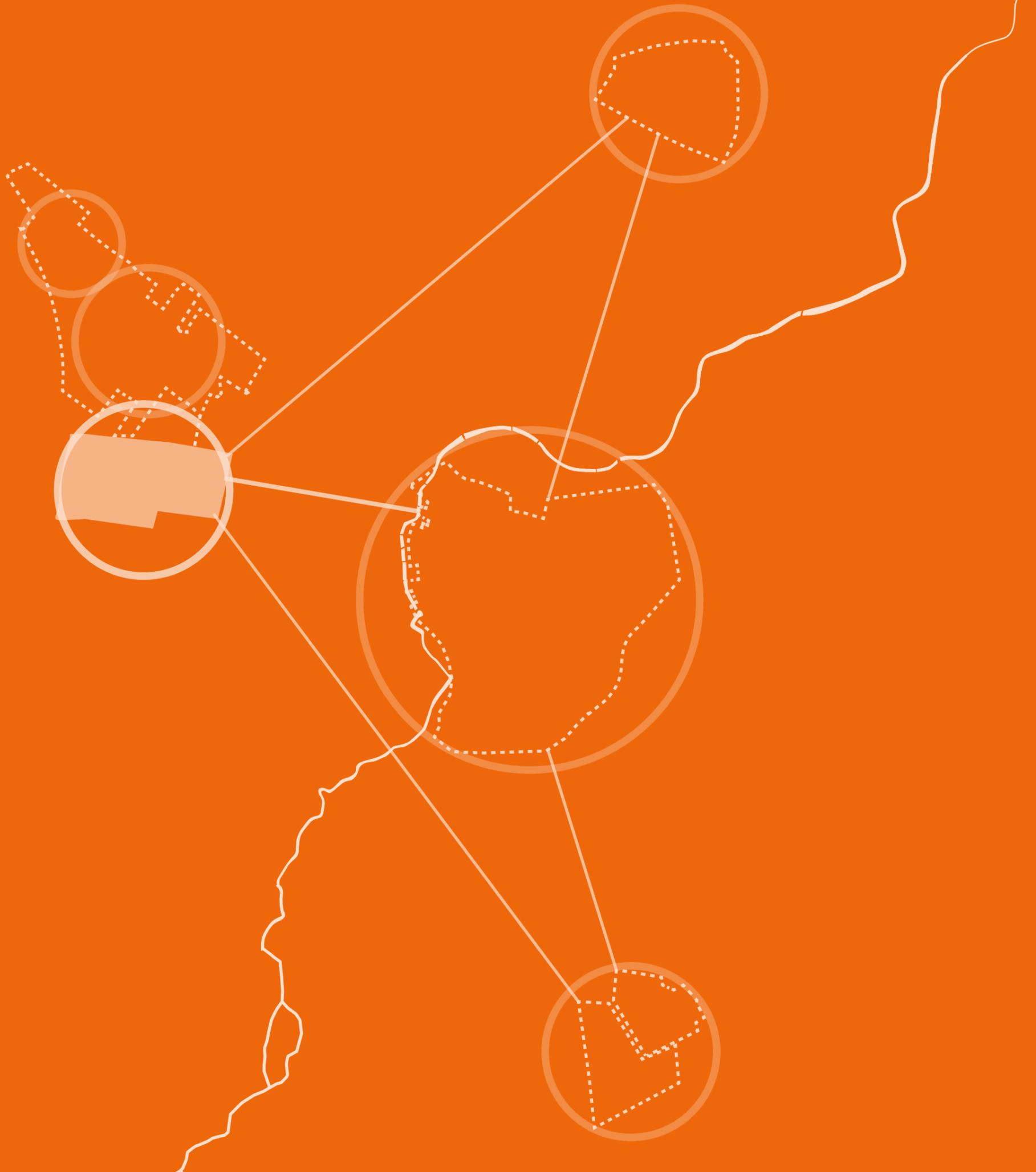
146. Community Forum Consultation Boards

Activity Focus - The Green, a new open space at full capacity

A more extensive space has been formed in the centre of the east-west greenspace and at the centre of the site. This space provides for relaxation, reflection and informal activities, within a predominantly green open space. The careful location of this space allows for a group of large mature 'A' Class trees to be retained and incorporated within the new space.

The updated illustrative design also shows moderation of cycle and pedestrian lanes to allow for greater dominance of soft over hard surfaces. Inspired by other Cambridge spaces such as Queen's Road and Christ's Pieces, the plan shows how the key paths could be lined by trees and building frontages partially hidden behind generous trees and undergrowth.

Together with enlargement of the central open space, the north-south links have also been widened.



PROPOSED DEVELOPMENT

A5

A1 University Need



A2 University Vision



A3 Development Context
International, Strategic and Local



A4 Masterplan Development
Process



A5 Proposed Development

Parameter Plans

Key issues:

- Amount of Development
- Land Use
- Access and Movement
- Landscape and Public Realm
- Maximum Building Heights



147. View of Development from the South

5. PROPOSED DEVELOPMENT

5.1. Parameter Plans

5.1.1 Amount of Development

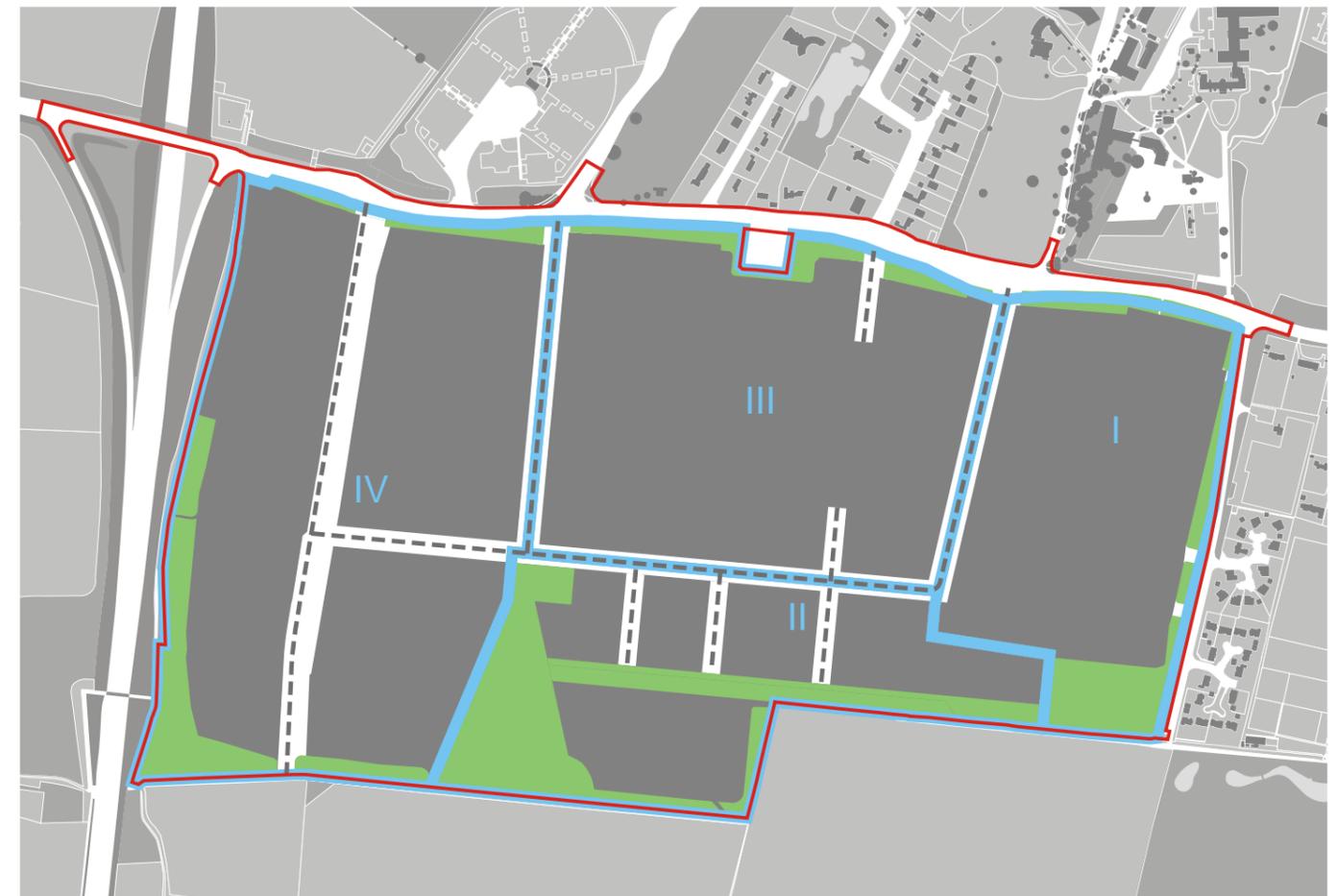
The Outline Planning Application seeks permission for up to 383,300 m² (GEA) of additional floorspace. The breakdown of this floorspace by the class is shown in the table. The distribution of floorspace across the site will be governed by the Building Development Zones parameter plan.

Land Use	Academic research	Nursery	Commercial research / research institutes*	Shop, cafe, restaurant, public house	Assembly & leisure (sports)	Ancillary infrastructure (data centre, energy centre)	Total proposed floorspace
Use Class	D1	D1	B1b / sui generis	A1-A5	D2	Sui generis	
Building Zone I	Up to 73,000	Up to 1,500	Up to 21,900	Up to 500	0	0	Up to 75,000
Building Zone II	Up to 38,600	Up to 1,500	Up to 38,600	Up to 300	Up to 4,100	0	Up to 44,500
Building Zone III	Up to 178,400	Up to 1,500	Up to 51,700	Up to 200	0	Up to 2,000	Up to 182,100
Building Zone IV	Up to 104,000	Up to 1,500	Up to 104,000	Up to 500	0	Up to 4,500	Up to 110,500
Total Proposed floorspace	Up to 370,000	Up to 2,500	Up to 170,000	Up to 1,000	Up to 4,100	Up to 5,700	Up to 383,300

148. Schedule of Land Use and Amount of Development

All figures quoted are Gross Floor Area, m²

*Research Institutes are taken to mean sui generis uses affiliated with the University, Research Companies or other research organisations



149. Parameter Plan 1: Development Zones

5.1.2 Land use

The disposition of land uses within the development is set out in Parameter Plan 2.

The parameter allows for flexibility and blending of academic research and commercial research/research institutes uses across the site.

The majority of social amenities will be associated with academic or commercial research development and covered under those categories (Classes D1 and B1b). The main hubs for social amenities will be East and West Forum but smaller scale social spaces are to be provided in locations related to key open spaces as shown in the land use strategy diagram.

In addition to these social amenities there will also be a provision for cafés, restaurants and pubs which will be categorised as A1 to A5 uses and not directly associated with academic or commercial development. The location for these uses is envisaged predominantly in West and East Forum areas and also possible in the areas between them: along Charles Babbage Road and Southern Ecological Corridor.



151. Land use strategy - one possible distribution



150. Parameter Plan 2: Land Uses

KEY

Contextual Information:
 - - - Existing street
 Existing open land

For Approval:
 Application site boundary
 Academic & Commercial Mix: D1, B1b, sui generis
 Mixed Use Zone: A1-A5, B1b, D1
 Community Uses: D1, D2

5.1.3 Access and Movement

The access and movement are set out in Parameter Plan 3, and reflect the movement principles diagrams on the right. The movement principles start from the existing conditions, which they seek to respond to and improve.

The primary vehicular movement network is associated with the existing primary streets: High Cross, JJ Thomson Avenue and Charles Babbage Road. These streets can also incorporate bus routes.

Primary cycle network is provided through key east-west open spaces in which vehicular movement is restricted. In addition, separate cycle routes are provided along primary streets. Secondary cycle routes are envisaged for localised distribution and are accommodated in north-south links, alongside pedestrian routes and, in places, service access.

New or improved site accesses for vehicles and/or pedestrians and cyclists are proposed within the limits of deviation shown on Parameter Plan 3.



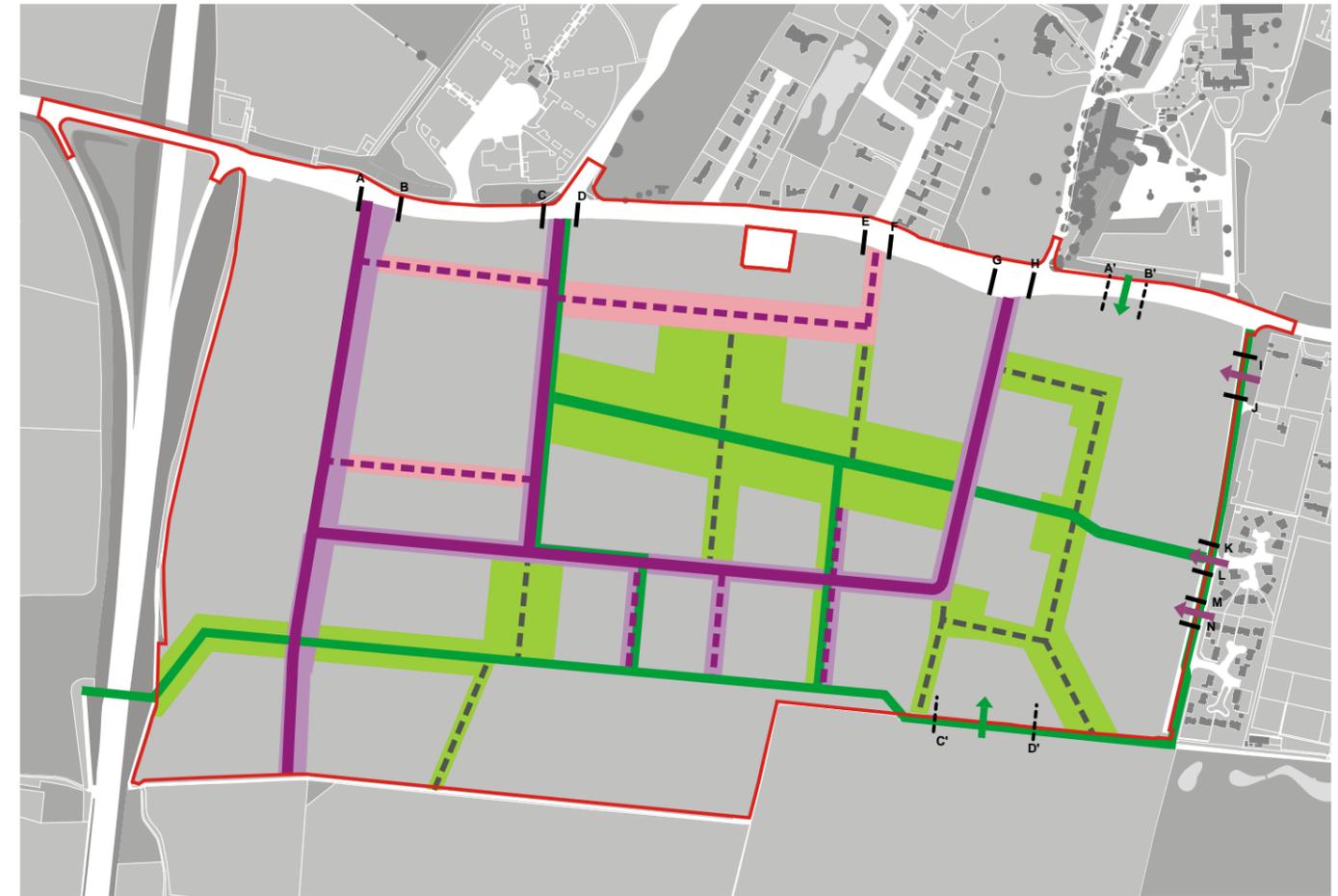
153. Design Principles: Pedestrian and Cycle network



154. Design Principles: Public Transport



155. Design Principles: Vehicular Movement



152. Parameter Plan 3: Access and Movement

KEY

Contextual Information:

- Primary street
- Secondary street
- Primary pedestrian/cycle route
- Secondary pedestrian/cycle route

For Approval:

- Application site boundary
- Intervention zone for street
- Flexible zone for street
- Flexible zone for pedestrian and cycle
- Servicing and car parking access
- Pedestrian and cycle access
- Pedestrian and cycle access point
- Zones of access points

5.1.4 Landscape and Public Realm

The Landscape and Public Realm proposals are set out in Parameter Plan 4. The existing spaces are to be incorporated and new spaces added, with a goal to create a clear hierarchy and variety of usable and accessible open spaces; as well as overall greener setting for the site.

A new open space will be created across the central part of the site. The parameters allow a level of flexibility for the layout of this space, but its overall size and a provision of a large centrally located space is committed, as well as visual links to Schlumberger building and the City Centre landmarks.

Other important elements of the proposals include greening of the existing southern corridor and north-south links.



157. Design Principles: Open space network



158. Design Principles: Ecology and bio-diversity



159. Design Principles: Open space - activities



156. Parameter Plan 4: Landscape and Public Realm

KEY

- Contextual Information:**
- Existing street/ Pedestrian link
 - Existing open land
 - Retention & Reinforcement of existing woodland edge
 - Water Bodies
 - Canal / swale

- For Approval:**
- Application site boundary
 - Primary public realm:**
 - East Forum (Indicative boundary)
 - West Forum (Indicative boundary)
 - The Green (Indicative boundary)
 - Secondary landscape and public realm (Indicative boundary)
 - Tertiary landscape and public realm (Indicative boundary)
 - The area within proposed landscape and Public realm with trees to be retained
 - Existing street trees to be retained wherever possible
 - Additional landscaping corridor
 - Flexible zone for landscape and public realm

5.1.5 Maximum Building Heights

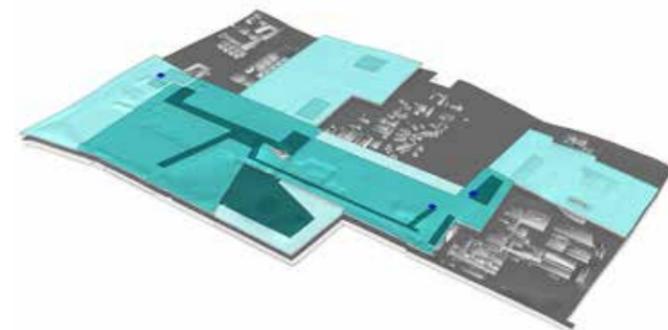
Parameter Plan 5 defines the maximum heights of buildings as measured to the maximum height of any rooftop plant (excluding any lightning conductors, weather vanes, chimneys/exhaust flues, telecommunications equipment and aerials).

In overall scale and predominant heights, the new parameter heights are consistent with the rules set out in the 1999 masterplan, which were the basis for many of the existing developments implemented since 1999.

The strategy for landmark elements shares some concepts with the 1999 guidelines (taller element around East and West Forum) and has been expanded to include new areas and relate to the proposed open spaces. In the proposed strategy, the central part of the site has relatively higher building heights and a group of taller elements.



162. Design Principles - Massing, views and landmarks



160. Existing consented masterplan - heights

KEY

Contextual Information:

- Existing street
- Existing open land
- +18 Sample ground level spot height AOD

For Approval:

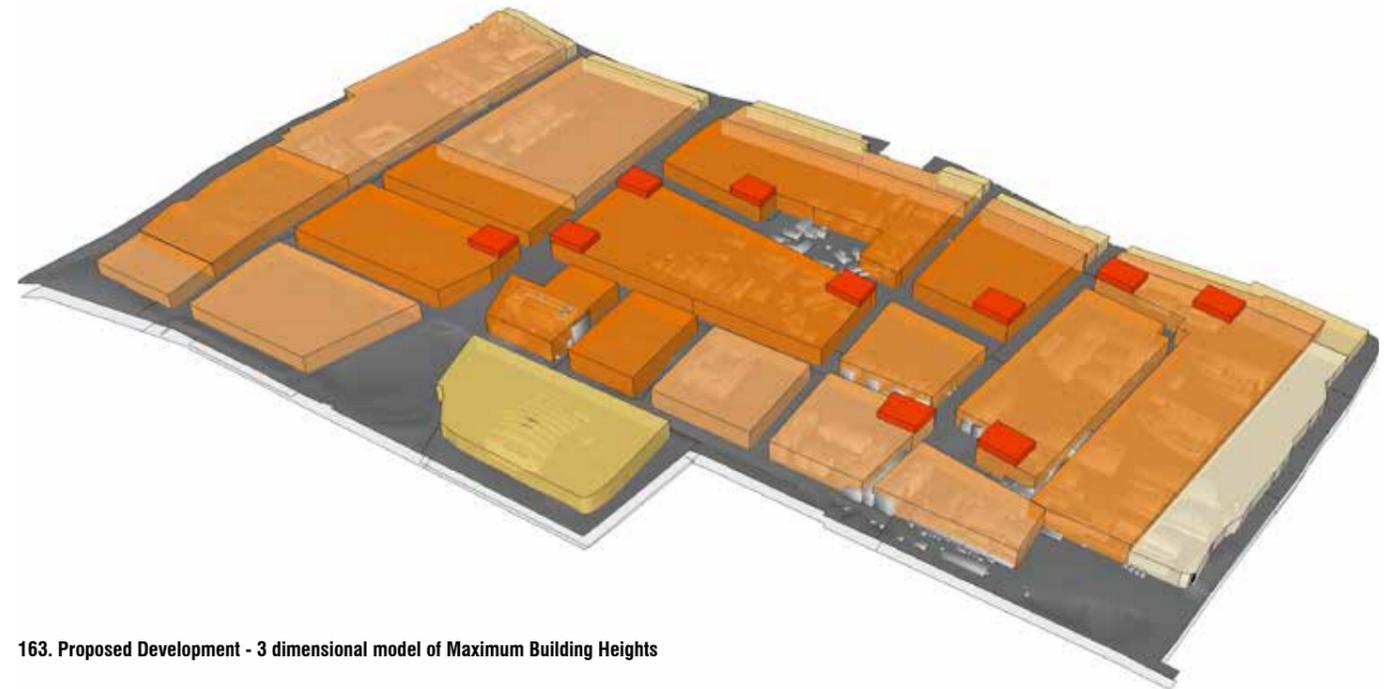
- Application site boundary

Maximum building heights

- 31.0 metres AOD
- 32.0 metres AOD
- 36.0 metres AOD
- 37.0 metres AOD
- 38.0 metres AOD
- 41.0 metres AOD

- Stated AOD + 8m for a footprint of up to 1,200m²
- zone for location of energy centre flue

Building heights include roof plant rooms but exclude exhaust flues.
Maximum height of flues to be no more than 8m above maximum building heights.



163. Proposed Development - 3 dimensional model of Maximum Building Heights



161. Parameter Plan 5: Maximum Building Heights

5.1.6 Height Parameters - views assessment

Maximum Building Heights has been thoroughly tested through the Landscape and Visual Impact Assessment process reported in the environmental Statement submitted in support of the planning application.

The three views on this page were also used to provide a comparison between the existing consented 1999 masterplan heights and the Maximum Building Heights of the proposed development.

The envelopes of the existing consented masterplan are consistent with the massing developed for the study explained in section 3.6.8 of this document.

Each pair of views (key views 01, 07 and 06 from the LVIA) shows the 1999 consented parameters followed by the maximum height parameters for the proposed development derived from Parameter Plan 05.

The comparison of the following images shows that the proposed heights parameters do not greatly differ from the existing consented heights.

It should be noted that the visualisations generated from the maximum heights parameters generate an impossible worst case, as the amount of development for which permission is sought is not sufficient to completely fill the parameter envelopes as illustrated here. A more accurate representation of visual impact, based on the illustrative masterplan, which reflects the total floorspaces for which permission is sought, is provided in Volume B of this Design and Access Statement.



164. Existing consented masterplan - key view 01



165. Maximum Proposed Building Heights - key view 01



166. Existing consented masterplan - key view 07



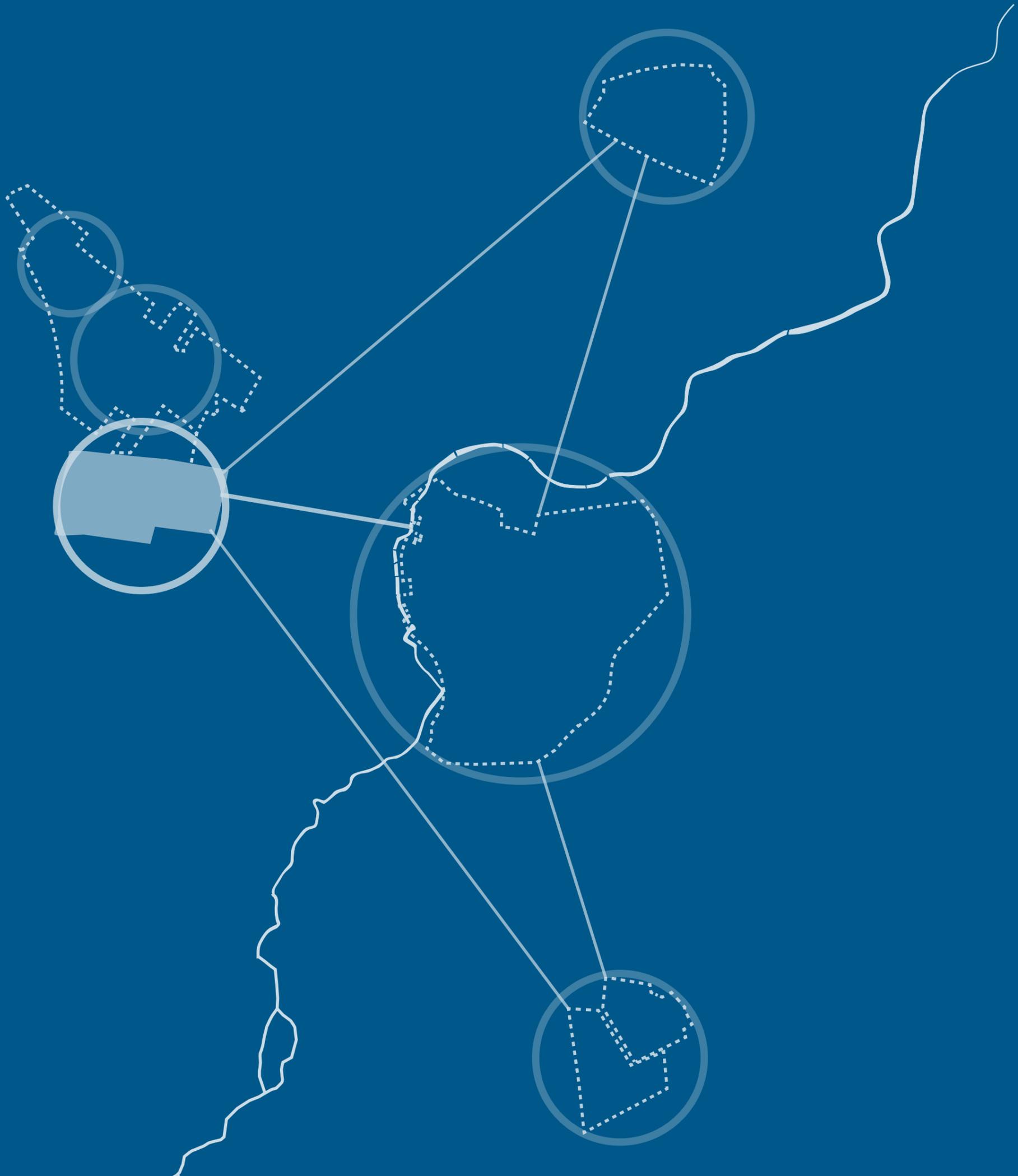
168. Existing consented masterplan - key view 06



167. Maximum Proposed Building Heights - key view 07

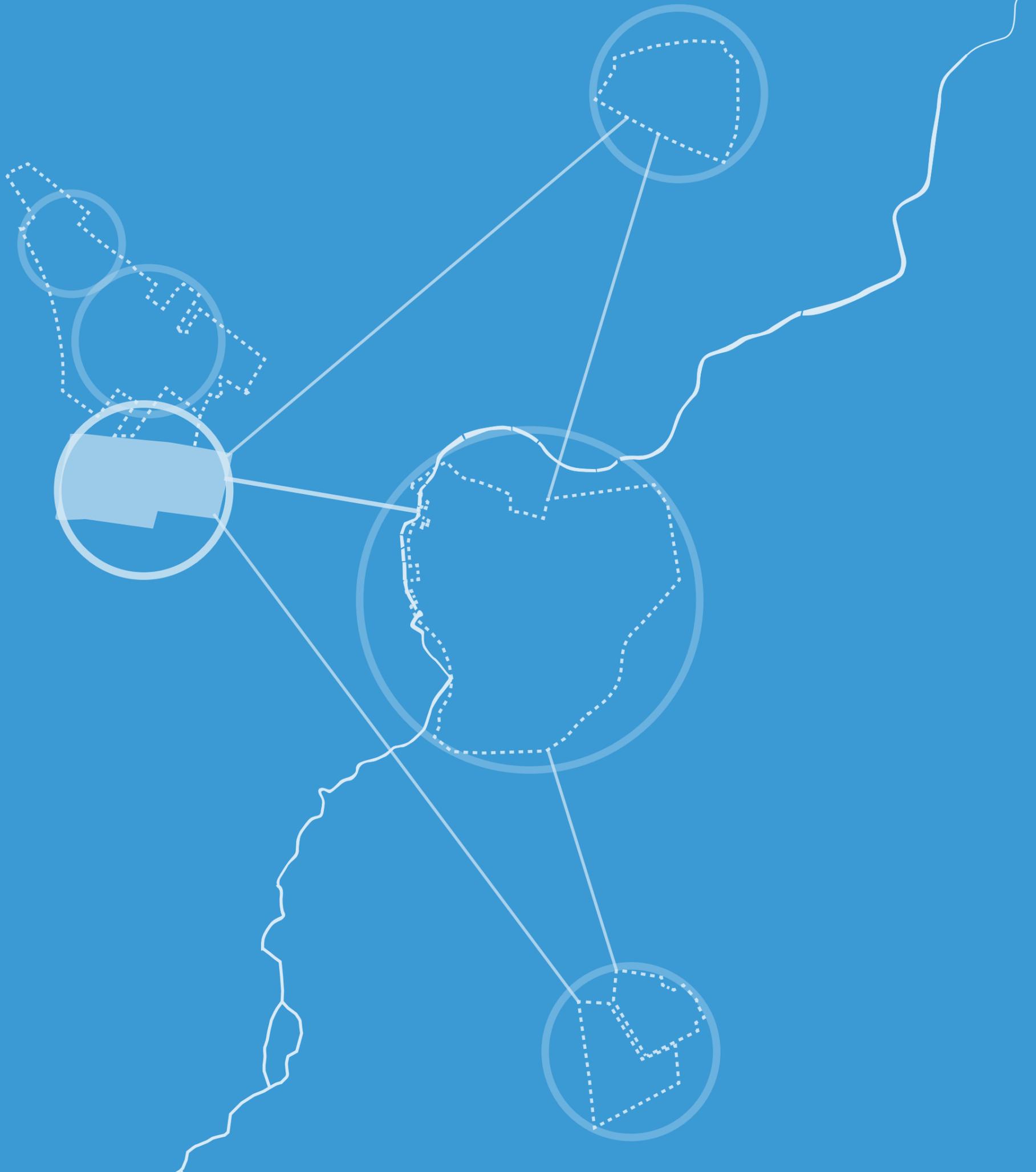


169. Maximum Proposed Building Heights - key view 06



**ILLUSTRATIVE
MATERIAL**

VOLUME B



ILLUSTRATIVE DESIGN PRINCIPLES

B1

B1 Illustrative Design Principles	B2 Illustrative Masterplan	B3 Transformation of Key Spaces
Connectivity Character Community and Open Space Climate Key issues: Distribution of Land uses Amount of Development Layout and Scale Landscape Appearance Access		

6. ILLUSTRATIVE DESIGN PRINCIPLES

6.1. Connectivity

6.1.1 Layout and urban structure

Key to the new masterplan is the need to transform the existing character and identity of West Cambridge and to introduce a new legibility throughout the site. A new urban structure has been overlaid on existing elements:

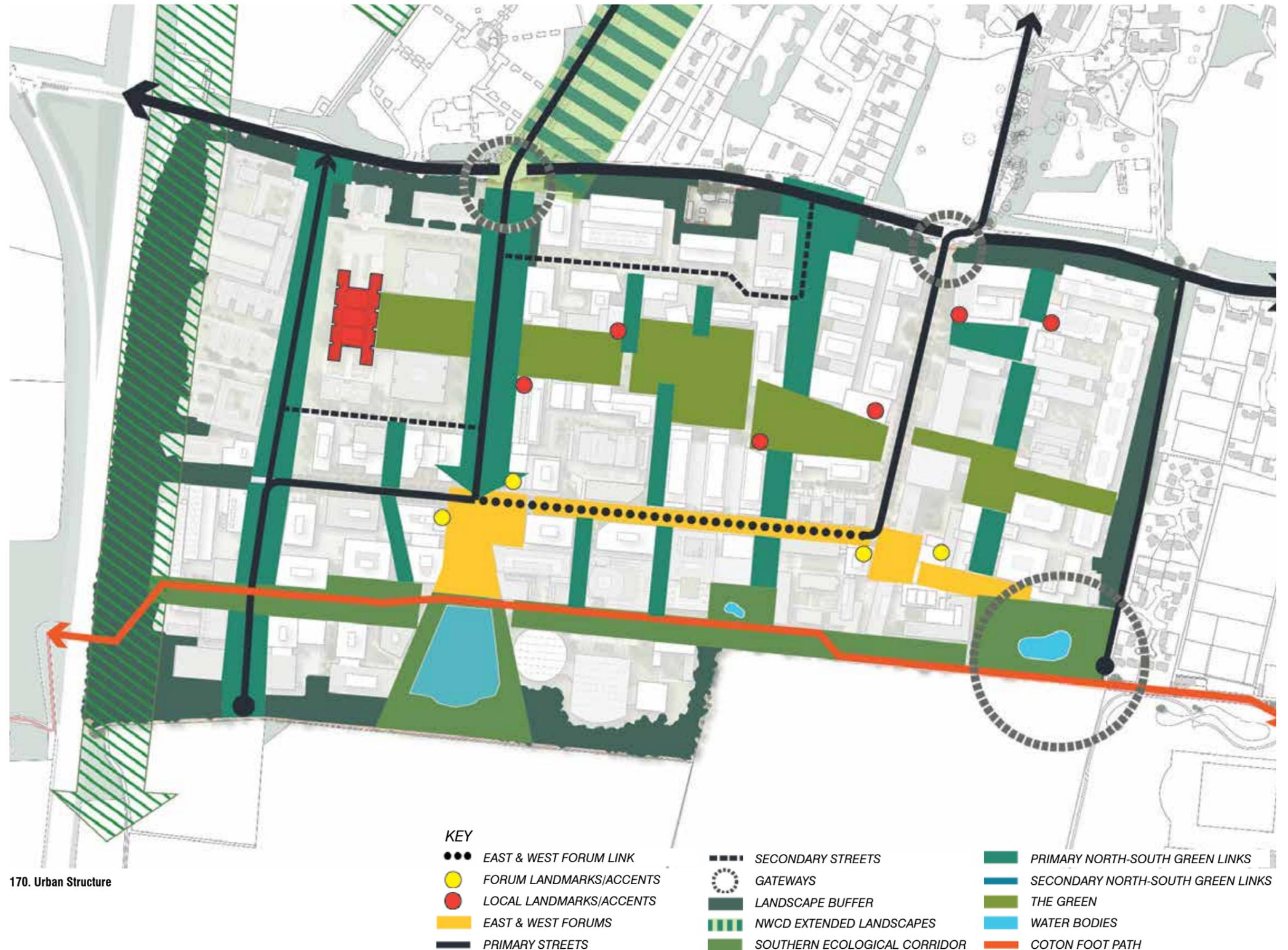
- The masterplan retains existing roads and green infrastructure and continues themes from the consented masterplan such as the concepts of the East and West Forum spaces. These two spaces remain the primary public spaces within the masterplan but they are now connected with a better defined, more intensified Charles Babbage Road;
- Charles Babbage Road - the Forum Link - together with the reinforced Southern Ecological Corridor and a new east-west connecting space (The Green) form an east-west running open space structure that ties together both sides of the site and allows views to be opened up through the site to the Schlumberger Building;
- North-south Green Links and a series of transformed streets in the south of the site, weave through these east-west landscapes, forming a coherent and legible landscape grid for the site;
- New development forms enclosure and overlooking to all key open spaces, providing a more coherent urban realm;
- New built form and landmarks create a new skyline that can be read from within the site and from a distance, and describes this new urban framework.

Transformation of existing elements

Existing elements are incorporated into the new framework. These include the three primary streets, Charles Babbage Road, JJ Thomson Avenue and High Cross; and Western Access/Ada Lovelace Road. While they retain their function in the hierarchy, their characters will be transformed.

The East and West Forums are retained and reinforced – allowing them to become a series of spaces with differing roles and characters. Along the Coton Footpath and existing Southern Ecological Corridor, water and wetland habitats are increased and the East Pond is incorporated into this publicly accessible spatial system.

The existing woodland buffer which frames the site along majority of its edges will be protected and enhanced. From Madingley Road, views into the site will be limited to gateways at key access points.



6.1.2 Key Places

Transformed East and West Forums and Southern Ecological Corridor, together with the new east-west series of gardens, The Green, are four key open spaces of the new masterplan. They are the key elements of the open space structure and, with their diverse characters, contribute to a variety of environments and experiences in different areas of the site.

West and East Forums are social focal points of the site. The Green and the Southern Ecological Corridor are landscaped and provide usable green open spaces for the site as well as important east-west pedestrian and cycle connections.

More detail about these spaces is provided in the third section of this Volume.



171. Key Places

6.1.3 Green Links

The diagram shows four primary north-south Green Links.

The Links are formed through transformation of existing spaces, including two streets (Western Access / Ada Lovelace Road and High Cross Avenue); and transformation and integration of existing and new spaces (Central and East Green Link).

A few of these spaces are already landscaped: plots along Western Access Road have hedges and/or trees; High Cross Avenue is tree-lined and the existing Vet School approach has mature lime trees. In contrast, the southern part of the Central Link is a narrow service lane and current arrangement of Cavendish Laboratory prevents the East Link from connecting to the East Pond area.

The new masterplan connects these spaces to form uninterrupted and coherent Green Links. Such arrangement is important for the masterplan because it:

- Provides landscape connections between the agricultural land in the south and the open spaces north of the site; and
- Together with east-west key spaces, ensures that landscaped open spaces are distributed throughout the site, helping to form areas of different characters.

More detail about streets and Green Links is provided in the third section of this Volume.



172. Green Links

6.1.4 Walkable character areas

The arrangement of primary streets and the open space structure (key places and Green Links) help to form a series of identifiable, pedestrian friendly Areas each with their own urban character. The site has seven of these Character Areas, defined by existing streets and spaces and incorporating a key public, pedestrian space. Each of these spaces is connected to and forms part of the wider network of space and movement that weaves through the site. The seven Character Areas are:

- Eastern: Its central space is a primary Green Link running from north-south from the East Forum to an Arrival Square in the north. This Green Link is an existing service road, transformed to become a pedestrian only space, which now brings together and connects the new and existing buildings within this area;
- JJ Thomson Avenue: This smaller area contains a new building for the Physics Department – or Cavendish III Laboratory – and a shared facilities building to the south. The area is formed around the first part of The Green open space, which will run east-west across the site once complete;
- Southern: This area contains a high proportion of existing buildings, including academic and residential buildings, including the Sports Centre. These will be supplemented by new shared facilities buildings and the Entrepreneurship Hub and will form new frontage and contain the Southern Ecological Corridor and provide new enclosure to Charles Babbage Road;
- Central: This Area will contain a mixture of academic and commercial uses. The key space for this area is The Green open space that will visually and physically connects across the site;
- Western: This Area provides the main commercial focus of the development and contains the majority of proposed new commercial space. The Character Area forms frontage to the West Forum spaces;
- High Cross: This area incorporates the Schlumberger building and allows for any future intensification or extension. This area is very prominent with frontage to High Cross and is visible from along The Green and from the approach from the North West Cambridge Development. It also forms new frontage to the West Forum;
- Woodland: This is a lower density character area that incorporates existing buildings into woodland landscape.



173. Walkable Character Areas

6.1.5 Walking and cycling

Key to the masterplan is the encouragement of walking and cycling to, from and within the West Cambridge site. The masterplan strengthens the existing network by extending the NWCD Ridgeway pedestrian and cycle network into the site and connecting it to the Coton Footpath, which provides strong cycle links to the city centre. Within the site there is a network of dedicated cycle routes that bring cyclists through the site to all destinations. The proposed cycling strategy consists of:

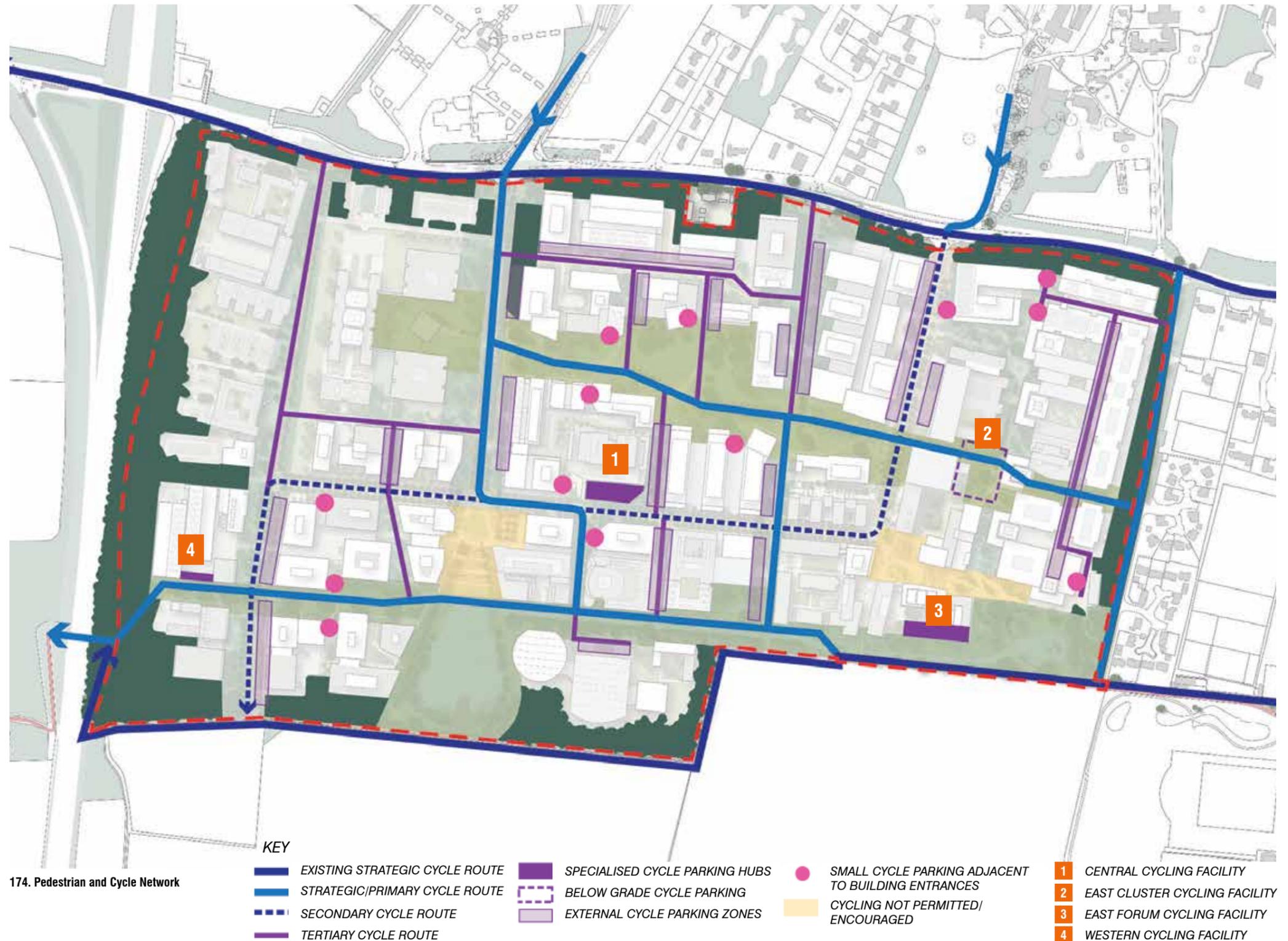
- Primary routes: these connect to the existing strategic cycle network and are expected to be primary routes for arrival to the site but also used for transit through the site;
- Secondary route: along the existing street network and reconnecting with the Coton Footpath;
- Tertiary routes: which provide a finer grain of connections through the site and allow cycle access adjacent to most buildings.

The cycle parking strategy consists of three types of parking facilities. Within the site, there are three Cycle Hubs which provide fully enclosed, secure parking, as well as facilities such as showers, changing rooms, storage lockers and potentially cycle repair, coffee points and delivery services. These would contain 500-1000 spaces and have been located along primary cycle routes. A free standing facility on Charles Babbage Road is potentially deliverable from the outset, with potential for other large facilities to follow as part of Department of Engineering cluster in the East and part of shared facilities provision at East Forum in second phase. The Western Facility is envisaged to serve the commercial research areas in the west.

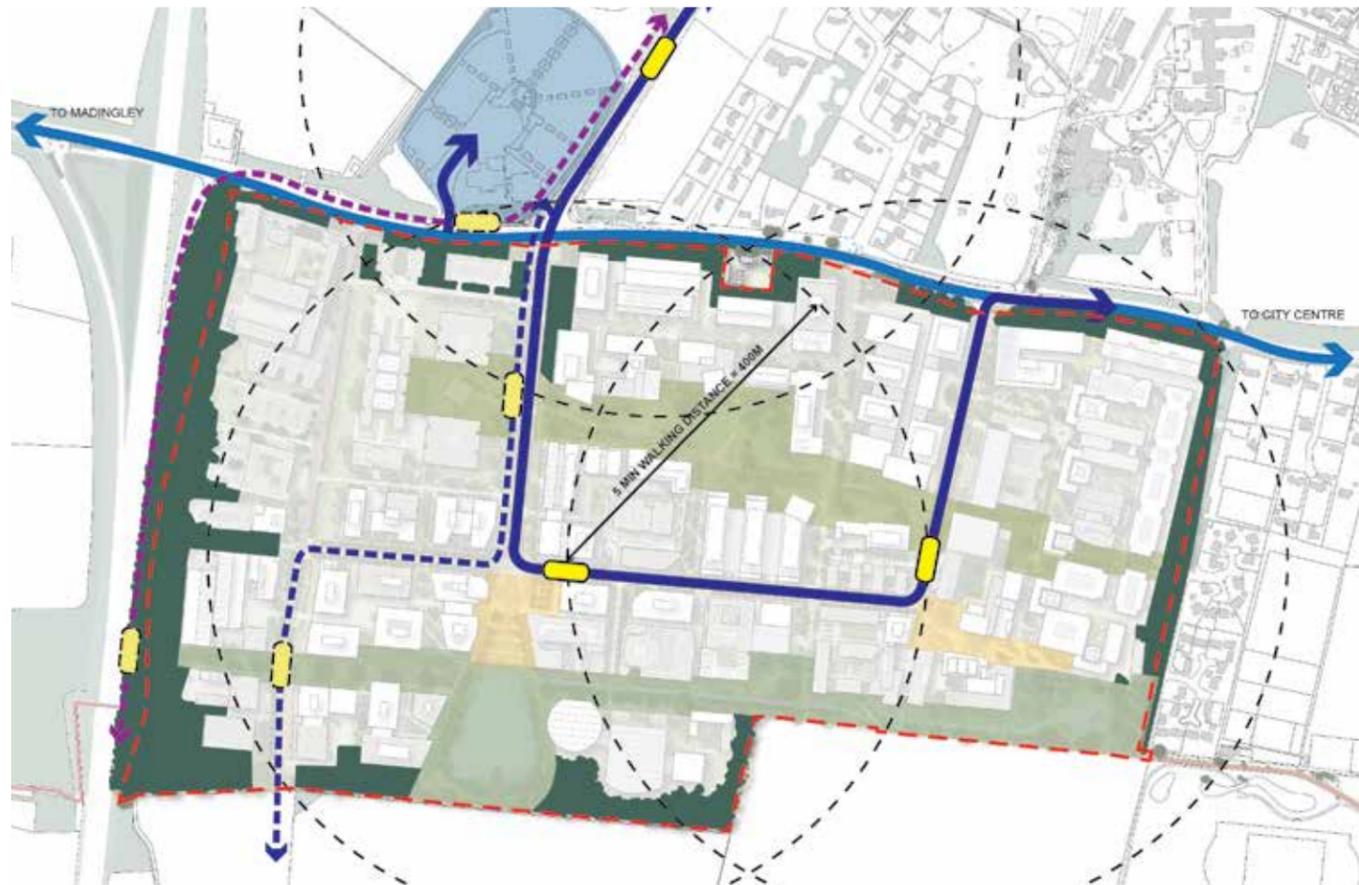
Enclosed, secure parking will also be provided on plots, as part of individual developments.

For short-stay cyclists, covered cycle parking areas have been distributed within the public realm close to points of arrival and key buildings. Each containing 50 -200 spaces, these have been located just off the primary cycle routes.

The estimated amount of cycle parking within the illustrative masterplan has been based on a generic ratio of 1 cycle parking space per 30sqm of commercial research and 0.7 parking spaces per student (of total student population) and 0.5 parking space per University staff member. The assumptions used match standards for the North West Cambridge Development and exceed local Cambridge City guidelines.



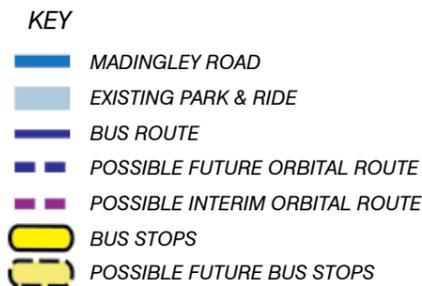
6.1.6 Public transport



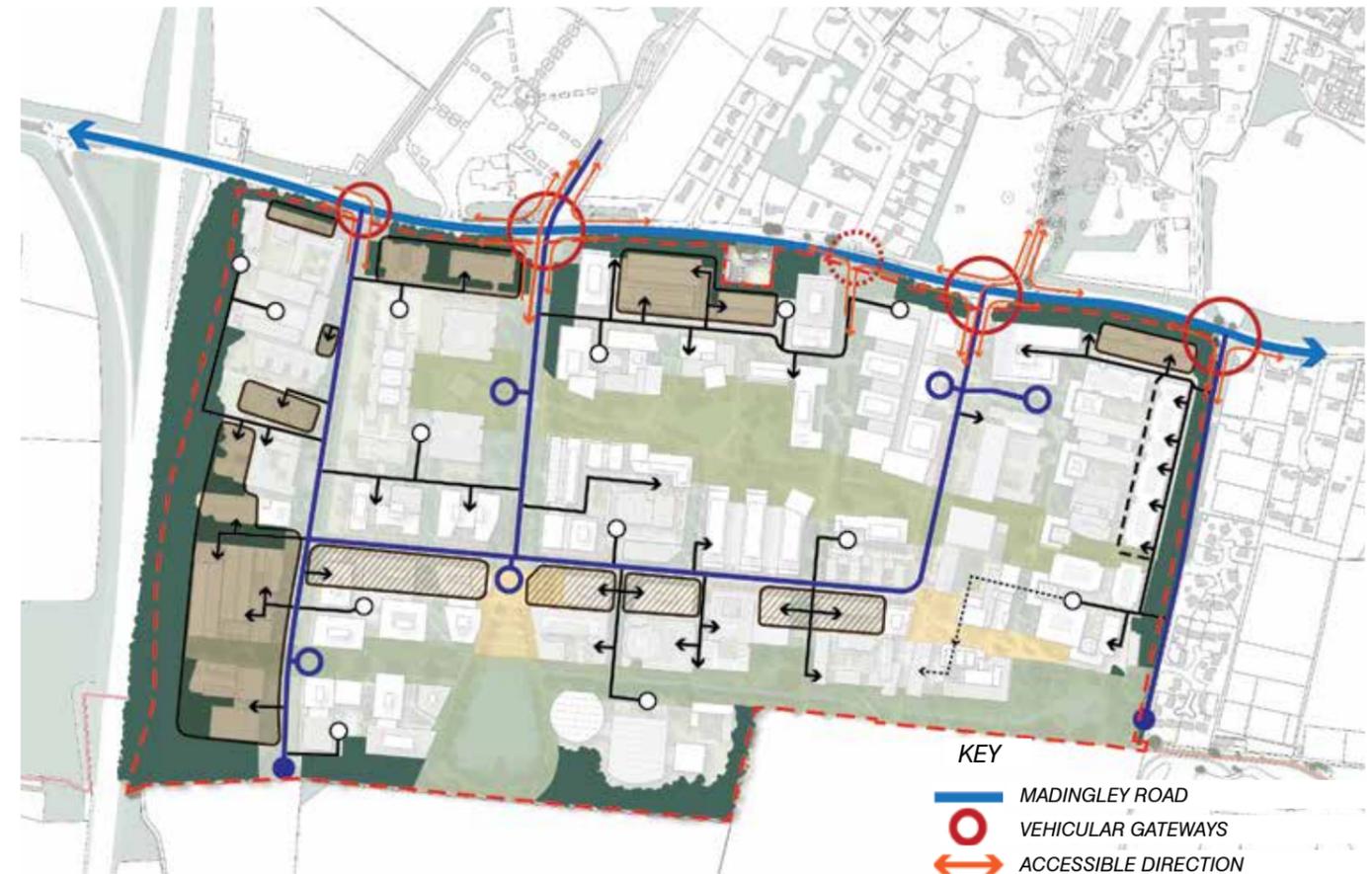
175. Public Transport

The main public transport improvements include:

- Increased frequency of Uni 4 service to every 10 minutes and revised route to include a direct service to Cambridge Rail Station, at least every 20 minutes, as well as to Addenbrooke's Hospital;
- Enhancement of Citi 4 services to every 10 minutes, with route revision to serve West Cambridge, at least every 20 minutes;
- A significant enhancement of the Orbital Service proposed for North West Cambridge - with increased frequency and higher quality vehicles, the service being extended from West Cambridge, via the M11 motorway to Trumpington Meadows, the Biomedical Campus and Addenbrooke's Hospital. Will provide links from West Cambridge to Chesterton Rail Station, North Cambridge, and South Cambridge;



6.1.7 Vehicular movement and car parking



176. Vehicular Movement

High Cross and JJ Thomson Avenue are retained, with junction improvements, if required, as the primary access points to West Cambridge. Key junction improvements would be established as part of the 'Adaptive Phased Approach' and could include:

- A signal controlled 'Right In-Left Out' junction at the Western Access Road to intercept strategic movements immediately, and provide direct access to the car parking in the western part of the site;
- Provision of increased flare lengths on the North West Cambridge and West Cambridge approaches of High Cross; and potentially
- Traffic signal enhancement to the existing junctions at Clerk Maxwell Road and JJ Thomson Avenue.

Tertiary site access points are located along Clerk Maxwell Road to allow direct access to service areas and



car parking. Within the site existing streets retain their primary role. From this network car drop-off areas, parking structures and service/tertiary streets are accessed.

Car parking would be concentrated into multi-storey parking structures located at the periphery of the site, thus helping to reduce traffic movements within the site. Smaller car parking areas in semi-basements would be possible along Charles Babbage Road.

6.2. Character

The Character of the site - distribution of land uses, scale, density and appearance - is informed by the wider context and character of this part of Cambridge; Cambridge and world-wide best practice precedents and needs of current and potential future occupiers; and is further supported by market assessment.

The key objective of the masterplan was to create an urban campus, a place where landscape and built form are balanced to create an optimal physical and social environment for interaction.

6.2.1 Land use

The masterplan contains a mixture of academic and commercial research floorspace. While these uses are blended throughout the site, an academic-led focus is created to the east (and around the East Forum) and a more commercial focus is located to the west. The central area in particular, is a zone for future mix and flexibility between academic and commercial research uses.

As seen in the precedents presented in Volume A, such distribution of uses supports interaction between occupiers while maintaining a sense of identity and potential for growth for each of the clusters.

In order to promote innovation and interchange, small entrepreneurship hubs could be distributed across the site with the main entrepreneurship centre located at East Forum, reinforcing and expanding the existing uses within the Hauser Forum and Broers Building.

To enable informal interactions and further integrations, and also to enhance the focal role of East and West Forums, major shared/social facilities and active uses are located at the Forums ensuring that these spaces are vibrant. A further provision of smaller social hubs is distributed throughout the site, incorporating existing social spaces, and closely associated with and addressing key public spaces.

To the south along the Southern Ecological Corridor is an area for sports and recreation, community facilities and outdoor amenity.

The diagram shows one possible configuration of the distribution of uses.



6.2.2 Amount of development

Underpinning the masterplan is the need to increase density to create critical mass and optimise development capacity at the West Cambridge site.

Taking into account the land currently occupied by buildings which are to be demolished, over 380,000m² of additional development capacity has been identified through the masterplanning process.

This amount follows from the premise of creating an urban campus. The optimal density for such environment has been identified at the Sidgwick site in Cambridge: three to four storey buildings with well defined but airy and sunlit open spaces in between.

The scale and overall amount of commercial research development accords with best practice models: both University Part at MIT and Chiswick Park in London show that a scale of around 200,000m² of commercial floorspace corresponds with a population which can form a community: support social facilities and bring activity to the public realm. The amount of academic development is proportionally higher to achieve an overall ratio of three to two, a balance which is seen to ensure that the overall character is set by the academic uses and not dominated by commercial research. The overall amount of commercial space is supported by market assessment and estimated to be absorbed within a 15-25 year span.

In addition, the amount of development on the site is also dependent on the capacity of the surrounding transport network and will increase incrementally, following gradual improvement in public transport and the introduction of a Green Travel Plan. These measures will be designed to achieve gradual decrease in car dependency.

Out of the overall 380,000m², academic research, teaching and shared facilities and commercial and/or research institute will comprise 370,000m². Within this capacity, commercial/research institute space will be limited to no more than 170,000m². Together with more than 100,000m² of academic and 40,000m² of existing commercial space, the overall balance of approximately 300,000 of academic space and up to 210,000m² commercial space provides a good balance between the two major uses: a balance which allows for a significant commercial address but with a predominant feel of an academic research and teaching campus.

The Illustrative masterplan shows a number and size of car parking structures sufficient to accommodate numbers of car parking spaces used for testing of the surrounding transport network.



179. Land-use Strategy - an indication of how the development could be accommodated on the site.

Proposed development at West Cambridge of up to 383,300m² comprising:

- up to 370,000m² of academic floorspace (Class D1), commercial / research institute floorspace (Class B1b and sui generis research uses), of which not more than 170,000m² will be commercial floorspace;
- up to 2,500m² nursery;
- up to 1,000m² of A1-A5 uses;
- up to 4,100m² floorspace for community facilities, and not less than 3,000m²;
- up to 5,700m² of sui generis uses;
- demolition of existing structures; and
- associated infrastructure including roads (including adaptations to Madingley Road), pedestrian, cycle and vehicle routes, parking, drainage, open spaces and earthworks.

KEY

- ACADEMIC LED USE (D1)
- ACADEMIC TEACHING AND SOCIAL SPACES (D1) (SHARED FACILITIES)
- COMMERCIAL RESEARCH AND RESEARCH INSTITUTE USE
- COMMUNITY USES
- SUPPORTING / ANCILLARY USES
- CAR PARKING STRUCTURES
- RESIDENTIAL

6.2.3 Density and critical mass

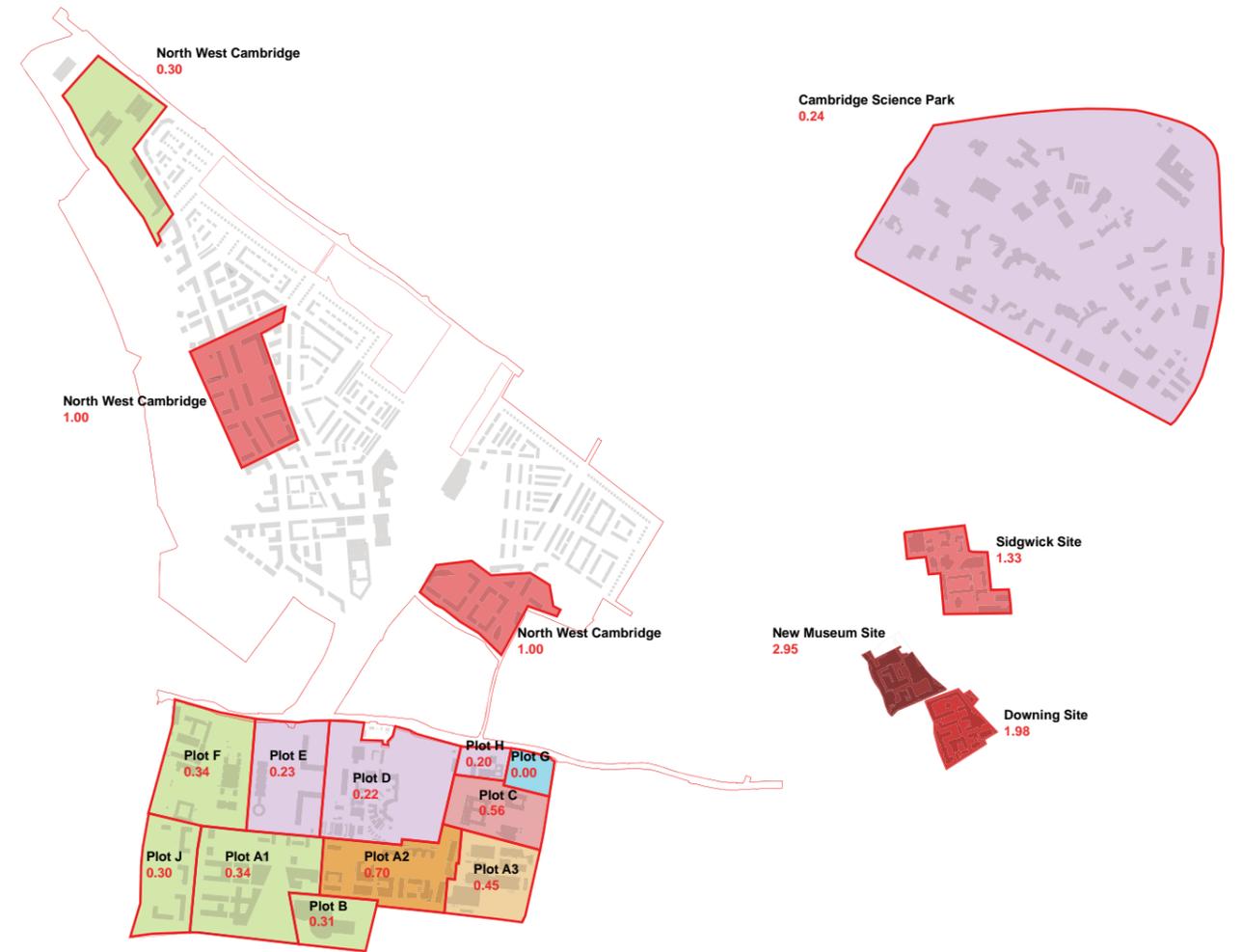
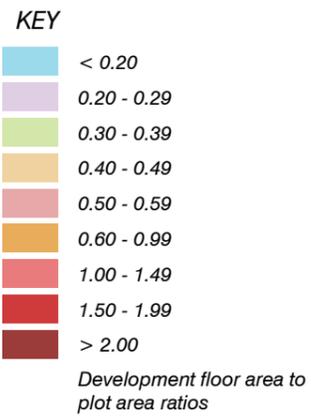


181. Design Principles - Density distribution

The density, expressed as floor area ratios, as indicated by the diagram above is based on the amount of development demonstrated within the Illustrative Masterplan. The existing density of the site is shown on the diagram on the right.

Generally, these diagrams show the proposed general increase in density across the site and also indicate that density is to be increased in a controlled way: with higher density located around the West and East Forums and lower density around the edges of the site. The density also shows a falling off of density towards the western edge of the site - the edge of the city.

The floor area ratios shown, ranging from 0.40 to 1.49, compares well to the densities of sites such as the Sidgwick site, judged to be a good precedent for an urban academic campus outside of a city centre.



180. Existing density distribution - for comparison

6.2.4 Scale, massing and landmarks

Building Heights

General building heights across the masterplan are set at three to four storeys. This allows for a backdrop or baseline height to be established and provides a consistency through the masterplan. This baseline height then allows the taller building landmarks and accent elements to stand above and form a new skyline for West Cambridge.

Lower development is located on the edges of the site where there are sensitive adjacent land uses. This will enable the existing woodland buffer at this boundary to continue to dominate and screen development.

Such heights allow for a good balance between the built form and landscape, with some mature trees exceeding the height of the buildings and open spaces having good daylight qualities with a good sense of enclosure.

Such heights also allow for good agility and interaction between users: three storey buildings support use of stairs and maintain a sense of connectedness with ground levels, both indoor and outdoor.

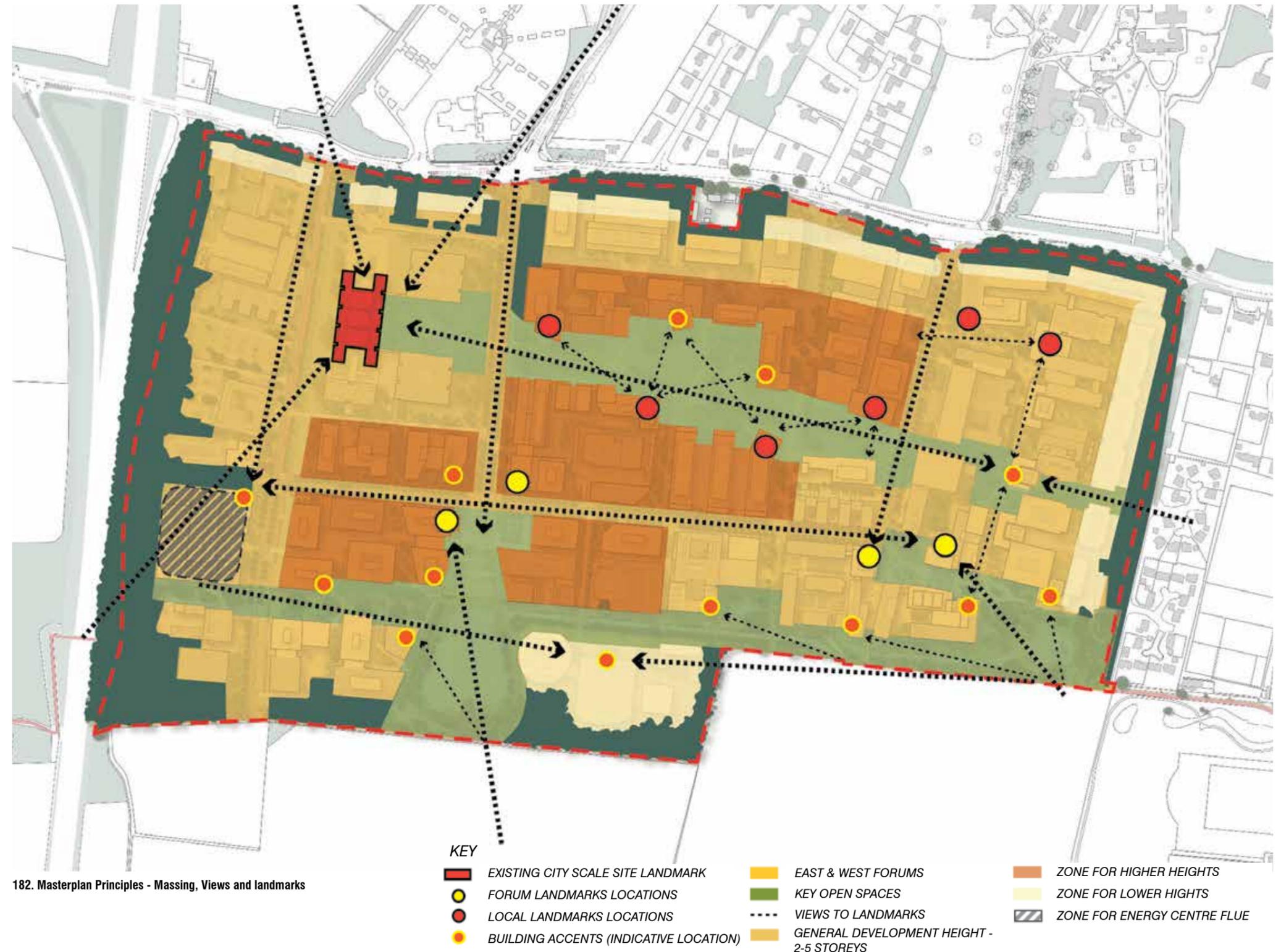
Views and accents

Key to the masterplan is the establishment of a new skyline and roof-scape for West Cambridge, with the role to reveal a new identity for the site, while adding variety and interest. Also, variations in heights will create opportunities for additional outdoor spaces such as rooftop terraces, promoting integration of landscape and architecture. This new urban framework will also be an aid to legibility and pedestrian movement through the site.

The primary West Cambridge landmark – the Schlumberger Building is given increased prominence by the opening up of long views across the site, from JJ Thomson Avenue along The Green. In addition, views to Schlumberger from the High Cross gateway and from North West Cambridge are reinforced and framed through landscape and planting.

To aid legibility a second tier of landmarks are located within the centre of the site: around the Forum spaces, near JJ Thomson Avenue gateway, and along The Green open space. These landmarks ensure that these key spaces are identifiable within the urban structure.

A series of more local building accents are distributed around the site to terminate views and enclose and identify secondary public spaces. These local landmarks are along The Green, the Southern Ecological Corridor and Charles Babbage Road, and serve to lead pedestrians through these spaces and provide a visual unfolding and termination of views.



182. Masterplan Principles - Massing, Views and landmarks

6.2.5 Appearance: Architectural Framework

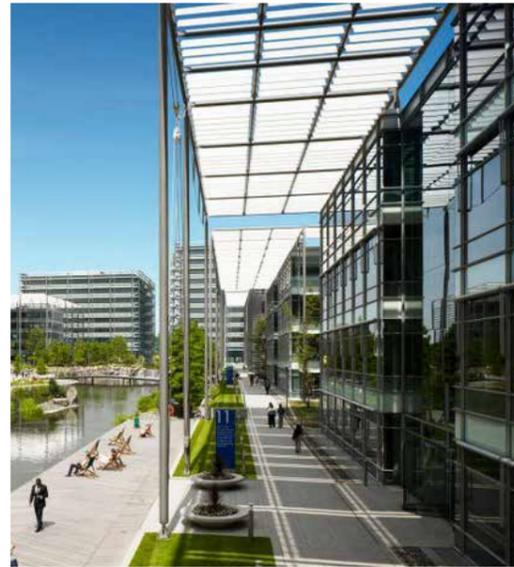
The transformation of the West Cambridge site provides an opportunity for a new, more cohesive architectural character. The key character issue of the site is the in-coherence of the disparate and disconnected developments. An additional set of characteristic elements and themes, applied thoughtfully, can address and amend this. While this new character must build on and strengthen the best of the existing character, new overarching themes and attitudes could be explored:

- **Materials:** Use of natural materials such as: timber, brick, masonry, terracotta. Particular interest should be given to exploring these materials used in innovative ways or new innovative materials, as a response to brief or a response to climate.
- **Technology:** Technology could be celebrated through visible, clear and logical structures and tectonic facade treatments. There are good precedents already on the site where the building structure itself provides key architectural interest: such as Schlumberger Research and Computer Science buildings.
- **Roofs and soffits:** A celebration of skyline. Roofs used to provide shade, define and provide shelter for exterior, active spaces and provide a response to climate.
- **An environmental response to climate:** applied to facade design and roofscape - layered facades, prefabricated components, brise soleils, shading structures, wind cowls, etc.

The University will aim to achieve BREEAM Excellent as a minimum.

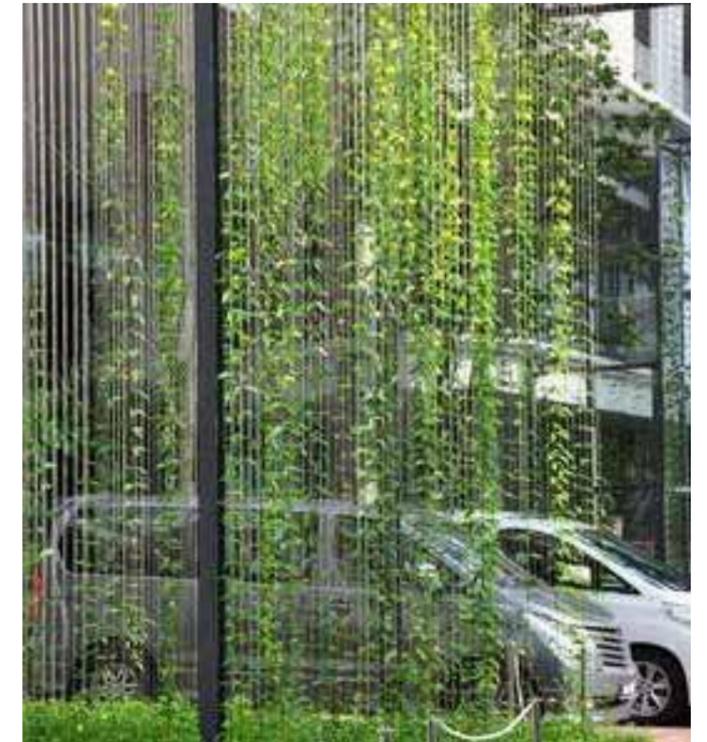


Pre-fabricated components, natural materials



A response to climate

A celebration of skyline and response to climate



183. West Cambridge - architectural framework

184. Woodland edge - utility/ancillary buildings

Woodland Edge - Utility Buildings

Within the masterplan there is a special condition - mainly utility buildings or car parking structures - that need to be set within the woodland landscape of the western, northern and eastern site boundaries. These buildings also must be responsive to sensitive conditions such as adjacencies to Conservations Areas and residential areas. These buildings could be characterised by:

- **Use of planting:** on trellis structures, on roofs, around structures to form buildings that are part of the landscape.
- **Materials:** Use of natural materials, materials that blend with the woodland landscape or combination of materials to control scale and rhythm of the façades



The Green

The buildings facing The Green need to address this open space with their primary frontages, entrance lobbies and social spaces (which can also spill out). Façades need to be carefully composed, exploring rhythm and horizontal differentiation between base, middle and roof elements; layering and transparency. Social parts in particular could be transparent to provide a view into the interior of the building. Also, planting of hedges and trees should be explored to achieve a balance of built form and landscape elements along the edges of The Green.



Southern edge

Some of the existing buildings along the southern frontage already provide good precedents of use of natural materials and shading devices. These themes could be further reinforced by use of timber and particularly timber as a structural element (this could be applied around East Forum for instance, to provide warmth and natural references in areas where users will socialise), and also through use of shading devices and brise soleils as architectural themes.



6.3. Community and open space

6.3.1 Landscape vision

The City of Cambridge has a distinctive character and landscape setting. The diversity of historic buildings and conservation areas, the colleges, the river, the commons, open spaces, natural features and habitats all contribute to the distinctiveness and uniqueness of the City's landscape.

The rural hinterland of Cambridgeshire is particularly close to the west of the City, defined by large arable field parcels with an open aspect but with limited visual connections to the city. The remnants of the agricultural landscape can be seen throughout the City and define the network of open spaces and routes that shape the urban grain.

The association between public open space, private intimate space and the density and scale of the built form are particularly marked in Cambridge. The connection between these spaces is typically reinforced with mature avenues or lines of trees, formal boundaries, with a clear distinction between private and public functions.

The site at West Cambridge offers and contains many of the features seen through out the city and rural fringe:

- Hedgerows with mature trees and drainage ditches;
- Legible routes with avenues of trees;
- Network of cycle and pedestrian routes;
- Mature woodland copses;
- Woodland boundaries and shelterbelts;
- Areas of open water;
- A range of naturalised shrub and grassland habitats.

The Landscape 'Weave'

The aim is to create a hierarchy of public spaces and a range of landscapes through the site of distinct character. These will draw influence from the surrounding areas of city, countryside reserve, agricultural landscapes and the emerging new landscapes of the North West Cambridge Development. The purpose of the new public realm and landscape at West Cambridge is to:

- promote and improve pedestrian and cycle legibility, while minimising conflicts with vehicular movement;
- provide spaces that allow creativity, expression, inspiration and delight;
- integrate the natural network, promoting diversity and species rich habitats.

To create a unified but distinct landscape that's relevant to the city of Cambridge, we have selected a series of attributes from three identified character zones which have been reinterpreted and used within the Green Infrastructure design and woven into the existing urban structure of West Cambridge.

A structured landscape

Creating strong Landscape Network is important in delivering a masterplan which meets high sustainability targets.

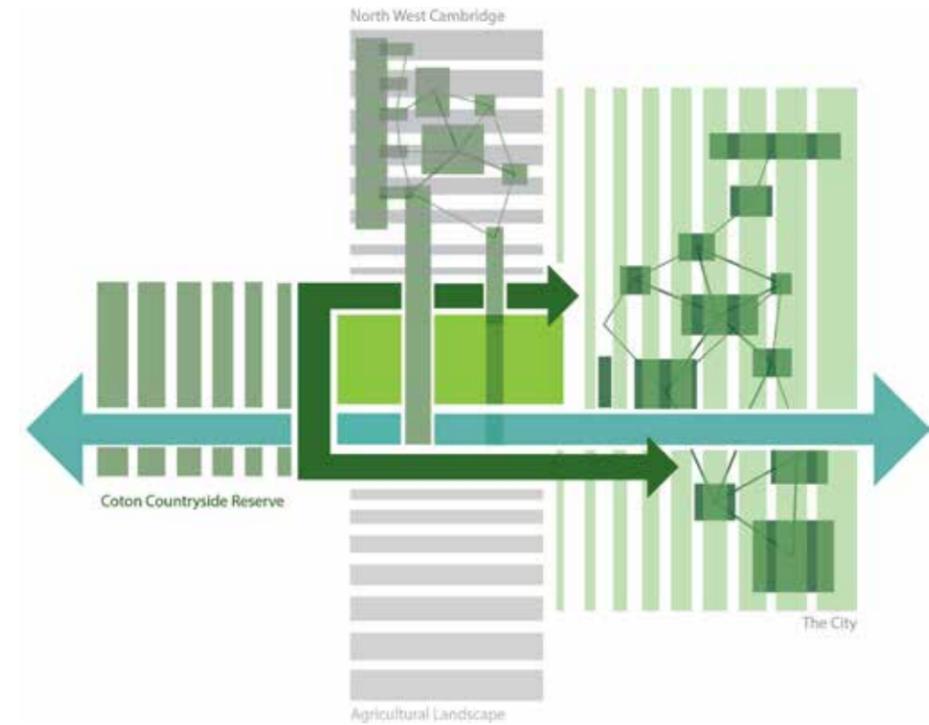
Strong networks of Landscape are important for species migration including insects, mammals and plants. Species Migration helps maintain and develop more robust communities of different species.

The Agrarian Framework brings the field pattern character of the surrounding area into the site.

A continuous network of water bodies and green spaces link together to create an 'Ecological Corridor' of rich habitats for wildlife, where people can walk and cycle and enjoy recreation.

Open Landscape to the north of the site are connected to the Southern Ecological Corridor' and the agricultural fields in the south through green corridors.

The Green creates a substantial central link in the overall network of Landscape ensuring strong ecological links through the centre of the site.



185. Landscape Concept Diagram - The West Cambridge 'Weave'



186. Landscape Concept Diagram - The West Cambridge 'Weave'

6.3.2 Landscape illustrative masterplan

The overall open space concept is a series of elements that are cohesively joined to form a landscape strategy that responds to place, character and the evolving masterplan.

In order to enhance the existing landscape and create a strong network, five main groups open spaces are created or enhanced:

- **West and East Forums:** Design guidelines for the East & West Forums are described in the following pages of this section.
- **The Green:** Design guidelines for The Green are described in the following pages of this section.
- **Southern Ecological Corridor:** Design guidelines for the Southern Ecological Corridor are described in the following pages of this section.
- **Green Links:** The design guidelines for the Green Links are described in the character areas section B1 of this document. In the case of Green Links that are associated with streets such as Ada Lovelace Lane and High Cross these are described in Streets & Links section A3.
- **The Woodland Edge:** The design guidelines for the Woodland Edge is described in section A2 Site Edges.



187. West Cambridge - Landscape illustrative masterplan

6.3.3 Landscape framework

Underpinning the open space design approach are five themes. These have been determined to guide design considerations, opportunities and outcomes for West Cambridge. The landscape framework should:

1. Character and Legibility

- Establish a site-wide open space structure that promotes good legibility and way finding through the enhancement of vistas and sight-lines;
- Draw upon embedded existing site qualities to inform the future character of open space;
- Retain and enhance the context of existing mature trees and maintain West Cambridge as an aesthetically 'green' masterplan relevant to its rural fringe location;
- Ensure all public space has a well-defined role and character and ensure building interfaces contribute to the use and definition of public space; and
- Ensure that the character and design of streetscape should respond in an integrated way with hierarchy, scale, adjacent built form, functional movement, WSUD requirements, entry locations, points of intersections, views and destinations

2. Community and culture

- Provide a mix of public space to support a diversity of social uses;
- Design the public realm to maximise community and university/occupier engagement; and
- Provide event/meeting places and facilities for multi-functional and adaptable use.

3. Connectivity and access

- Strengthen existing campus structure by forming strategic external links;
- Create a pedestrian and cycle network that promotes and encourages active transport through ease of mobility within the site and external networks; and
- Ensure strong visual connections and way finding in each precinct.

4. Safety and security

- Create safe public open spaces, with appropriate levels of passive surveillance provided as a result of the strong relationship between space and built form;
- Ensure adequate provision of lighting to all public realm areas and in particular the major pedestrian and



189. West Cambridge - Landscape characters

- footpath network;
- Ensure all paths are universally accessible.

5. Environment and Sustainability

- Ensure protection and enhancement of existing areas of environmental importance and strengthen physical links to establish 'Biodiversity Corridors' that connect into a wider landscape;
- Design open space and streetscapes to integrate water sensitive urban design (WSUD) initiatives;

- Retain existing trees where ever possible and select native species where appropriate to encourage bio-diverse bird, water life and insect habitats; and
- Use materials that feature low embodied energy, effective whole-of-life costs, low ongoing maintenance and are sustainably produced.

KEY

- West and East Forums
- The Green
- Southern Ecological corridor
- Green links
- Woodland edge

6.3.4 Amount of public open space

Scale and amount of open space has been informed by Cambridge and world-wide precedents. The areas of the main open spaces highlighted in the Illustrative masterplan diagram on the right add to 12,8 ha. Majority of the area can be accessible to site users and general public, with some areas forming on-plot landscaping (such as the part of The Green which is Schlumberger Research on plot amenity space).

The largest open space is located close to the geometrical centre of the site. This is a garden-like space, with soft landscaping and lawn areas for informal sports and relaxation. Some of the activities could include frisbee, informal 5-a-sides or volleyball, yoga etc.

Other larger spaces, the Pond and the Lake include water bodies and are more suitable for relaxing breaks rather than group activities.

East and West Forums are the main meeting and interaction areas and, as such, are of relatively smaller and contained scale.

The main open spaces highlighted here are linked together into a network of connective spaces which ensures all parts of the site have a good access to them. An important part of this network and north south green corridors which themselves are not of significant width to be used for informal sports but provide pleasant pedestrian links and spread the green, soft feel throughout the site.

Some of the open spaces are transformed from existing spaces and their location and size are impacted by existing buildings. For instance the service road between the CAPE and William Gates buildings will become a fully pedestrian space, forming a key link to the East Forum and a space that can provide consistency enabling existing and new to contribute to creating a coherent space.

Along the Southern frontage, the existing canal and Coton Footpath is shown with additional landscaping and in places widened with addition of new pocket spaces. Thus softened and enlarged in overall area, this space provides a transition from the urban area to the open countryside and incorporates water and diverse habitats.



190. Areas of Open Spaces

- KEY OPEN SPACES**
- West and East Forums
 - The Green
 - Southern Ecological corridor
 - Green links (subtotal 7,36 ha)

Please note: these spaces and areas are based on the Illustrative Masterplan.

6.3.5 Incorporating existing trees



191. West Cambridge_Trees to be retained

- KEY**
- Tree that must be retained
 - Tree recommended to be retained

Existing mature trees

Located within the site are individual and groups of mature trees forming distinct lines of trees or prominent standard specimens in formal and informal areas. The trees of note are prominent specimens given their age, size and maturity. Their vitality and structural conditions were varied, however, the majority were in good vitality. The diagram above shows trees in dark green that must be retained and in light green that are recommended to be retained. These trees are all Category A (high quality) & B (moderate quality) specimens.

Existing street trees

are predominantly young specimens that form distinct avenues or formal lines of trees. The limited age of these trees reduces their arboricultural value at present however,

over time this will increase with their maturity and it is the preferred approach to keep these trees where ever possible and infill where needed with appropriate species of like size.

Edges

These boundaries sustain linear belts of mature trees and shrubs that provide full or partial screening into the site and it is the preferred approach to keep these trees where ever possible and infill where needed with appropriate species.

6.3.6 Opportunity for new tree planting



192. West Cambridge_Proposed tree planting

- KEY**
- New standard tree planting
 - Opportunity for large feature tree planting
 - West and East Forums
 - The Green
 - Southern Ecological corridor
 - Green links
 - Woodland edge

Opportunities for new tree planting

Large trees are a prominent feature in Cambridge and many mature specimens exist on site. In addition to the retention of these large trees, where possible, it is proposed to enhance the number of large specimen tree planting.

These would be located in green spaces that have less restricted conditions to support the health of a large root system and enable these trees to reach their full potential in the future. These landscape areas are identified at the Green, the Ecological Corridor, East and West Ponds and key nodes.

Standard tree planting is proposed throughout the site to create avenues, provide interest where people gather and infill the Woodland Edge.

6.3.7 Activity and social spaces

At the key intersections between roads, footpaths, cycle routes and at certain building entrances there are places of intensity that are foci for community, educational, commercial ecological activities.

These spaces have been designated as social hubs and provide a variety of spaces from urban plazas, to play zones, urban orchards, outdoor labs or external meeting spaces. The intent is for the underlying layers in the masterplan to be expressed at these points of exchange and innovation. They will be designed to accommodate people coming together.

Leisure and recreation is predominantly accommodated within informal open space. The Green, East and West Forum spaces are conducive to passive recreation that is not prescriptive or defined but instead provide flexible and active spaces in a wider landscape setting.

More structured sports activity is located in proximity to the Sports Centre and West Lake and includes walking trails, cycling and possible open water swimming.

Woodland walking trails are provided along the western and southern edge of the site creating opportunities for leisure activity. Recreational based cycling & pedestrian activity is part of a greater cycling and pedestrian network linking to Coton Footpath and connecting to the Coton reserve.

- KEY**
- Programmed space
 - Planting
 - Key node
 - Primary pedestrian / Cycle route
 - Secondary pedestrian route
 - Green Links
 - Woodland edge
 - Outdoor sports activities
 - Amenities
 - Woodland Trail



193.West Cambridge_Activities and Social spaces

6.3.8 Social Amenity

Three Tiers of Amenity Spaces

The West Cambridge site at present offers a series of amenity facilities such as the Cavendish Canteen, the West Cafe at Hauser Forum, and smaller cafes such as that within the CAPE Building, providing hot and cold drinks, sandwiches and snacks. Many of these smaller facilities are embedded within buildings and while providing a vital function for the staff that work there, do little to invigorate public space or to promote gathering, exchange and interaction beyond the building they are located in. Within the new masterplan, many of these facilities will be retained while a few will be removed as redevelopment/relocation takes place. However, the aim of the masterplan is to improve and then supplement the existing offer with a fuller range of new and modern facilities.

With the proposed increase in density on the site, there will be a necessity to increase the amount of the amenity facilities offered. This importantly also provides the opportunity to increase the range and variety of types of facilities throughout the site - to provide a variety of styles, experiences and prices.

The strategy for these spaces is to form clusters of activity that are capable of becoming attractors or destinations within the site, and then to associate these activity clusters with key public spaces so as to invigorate locations such as the East and West Forums and through the Central Gardens.

There are proposed three tiers of spaces as illustrated by the photos on this page:

- Tier 1: Foodcourt. These are the largest types of spaces between 800 - 1500 sqm in area (or 350 - 450 seats). The size of these spaces mean that they bring people from across the site for meeting, gathering and create hustle and bustle. It is predicted that the West Cambridge site, at full capacity could accommodate up to two of these and they would be located within shared facilities buildings;
- Tier 2: Hot Food Cafe. These are medium size spaces, with a varied offer or experience, such as a Cafe or a fine dining room, and sized between 400 - 700 sqm (or 150 - 300 seats); and,
- Tier 3: Cafe/deli space. These are the smallest sized spaces, between 150 - 300 sqm (or 50 - 150 seats).

Tier 1: Food Court (800 - 1500 sq m)



196. EYE Film Museum, Amsterdam



197. Macquarie University, Sydney



198. Google Office in London

Tier 2: Hot Food (400 - 700 sq m)



195. Existing catering area in Hauser



199. Google Headquarters California



200. Queen Mary University of London

Tier 3: Cafe/Deli (200 - 300 sq m)



194. Existing cafe in William Gate Building



201. Existing cafe in Sports



202. Existing cafe in CAPE

Amenity Spaces

The highest concentrations of catering facilities are located around East and West Forum. Due to concentration of academic staff and students, two large food courts could be in the East Forum area.

The first to be delivered is the replacement for the Cavendish Canteen, located on the first of the spaces that form The Green, adjacent to the new Cavendish Laboratory. This is in the form of a food court which can be positioned to overlook and invigorate the new green space. This location is also visible from JJ Thompson Avenue forming an event along this approach road. Its gravity pull will aid connections between the East Forum spaces and the The Green.

East Forum cluster of shared facilities can be established following the relocation of the existing Cavendish Laboratory. New facilities will frame and extend along the Stairs connecting Upper Square of East Forum, Lower Square and the Pond area. Another larger food court could be located here.

To the west of the site a further cluster can be established using the ground floors of new buildings overlooking the West Forum terraces and the new extension to the southern corridor. These facilities are smaller but will have the potential to provide a variety of offer including, deli/cafe, hot food, fine dining, etc. These facilities will be located so as to provide an active frontage to the West Forum spaces.

Along The Green, additional facilities on the ground floors of new buildings can extend activity through the space from east to west, with the potential for a facility to be visible from High Cross approach road.

In addition a small facility on the corner of High Cross and Charles Babbage Road can be developed - visible from and reinforcing the West Forum cluster of activity.



- ① FOOD COURT (800 - 1500 sq m)
- ② HOT FOOD (400 - 700 sq m)
- ③ CAFE / DELI (200 - 300 sq m)
- NEW CATERING FACILITIES
- EXISTING CATERING FACILITIES

203. West Cambridge Amenity Spaces

6.4. Climate

6.4.1 Introduction

The public realm and open space network which is an important part of the new spatial structure and the identity of the site, also has a key role in sustainability strategy for the site.

It aims to:

- Improve ecology, by increasing connectivity and variety of habitats;
- Utilise the existing features and elements on the site, in order to minimise waste;
- Facilitate sustainable drainage;
- Promote walking, leisure and enjoyment of nature, through improvement of quality of open spaces and addition of amenity.

Ecology The site has existing habitats that attract wildlife. These areas will be retained and enhanced where possible to support the exiting wildlife and attract new diverse wildlife.

The west lake, the pond and canal water bodies could potentially support great crested newts and a small number of water voles.

The Coton footpath hedgerow, woodland edge and existing trees are likely to attract small birds which utilize them for nesting and feeding.

The habitats to the south west of the site are dominated by arable fields with small woodland blocks and hedgerows. These play an important role in connectivity to the wider habitats.

Infrastructure The site has an existing framework of roads, drainage and utilities infrastructure that is proposed to remain in place. Waste will be reduced by reusing these networks where possible.

There is an extensive surface water drainage network that utilizes underground conveyance and storage cells ultimately discharging to Madingley Road to the north and to the lake and pond to the south. Expansion of these southern water bodies will provide additional capacity.

Sustainable Drainage: More than two thirds of the site is drained into the existing water bodies on the site: the West Lake, East Pond and the Canal.

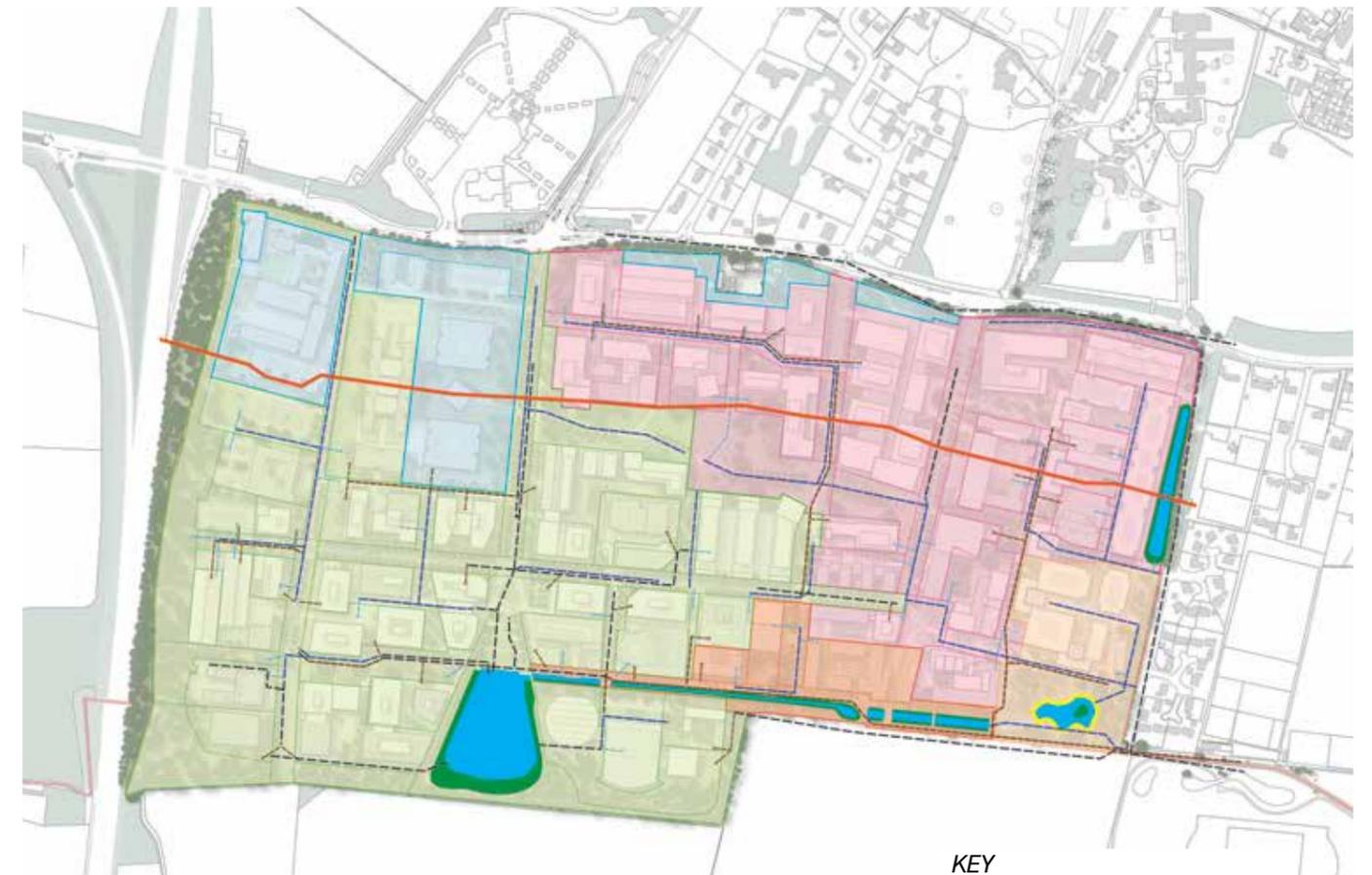
The opportunities to build sustainable drainage methods in to this network, such as roadside swales and retention ponds, with are in development.

Leisure activity: Leisure, recreation and enjoyment of nature is predominantly accommodated within informal open space that provides flexible active spaces in a wider landscape setting.

West Lake and Coton Footpath include cycling & pedestrian activity and is part of a greater cycling and pedestrian network linking to the Coton reserve to the east and to the city centre to the west.

West lake, East Pond and the Woodland Edge provide opportunities for the enjoyment of nature and quiet leisure activity.

6.4.2 Drainage Strategy



204. Sustainable Drainage Strategy

KEY

- CATCHMENT AREAS DRAINING DIRECTLY TO SOUTH-WEST LAKE
- CATCHMENT AREAS DRAINING DIRECTLY TO CANAL
- CATCHMENT AREAS UTILISING ON-SITE STORAGE
- CATCHMENT AREAS DRAINING TO PUBLIC SEWER ON MADINGLEY RD
- CATCHMENT AREAS DRAINING TO COTON BROOK POND
- RETAINED PIPES
- PROPOSED SW PIPES
- PROPOSED PW PIPES
- EXISTING WATERSHED LINE

The topography of the site falls from the existing watershed line that runs east/west through the centre of the site. Surface water to the north of the watershed line is directed to Madingley Road and south of the line it is directed to the Canal to the ecological corridor.

Key drainage principles include:

- Opportunity for road side swales along Charles Babbage Road
- Opportunity for conveyance rills along the north-south green links.
- Expansion of the existing lake, pond & canal to provide additional capacity.
- Permeable paving to be used for surface water collection.
- Opportunity for ponds to the Green to create a landscape feature.

6.4.4 Ecology and bio-diversity



206. Ecology and biodiversity network

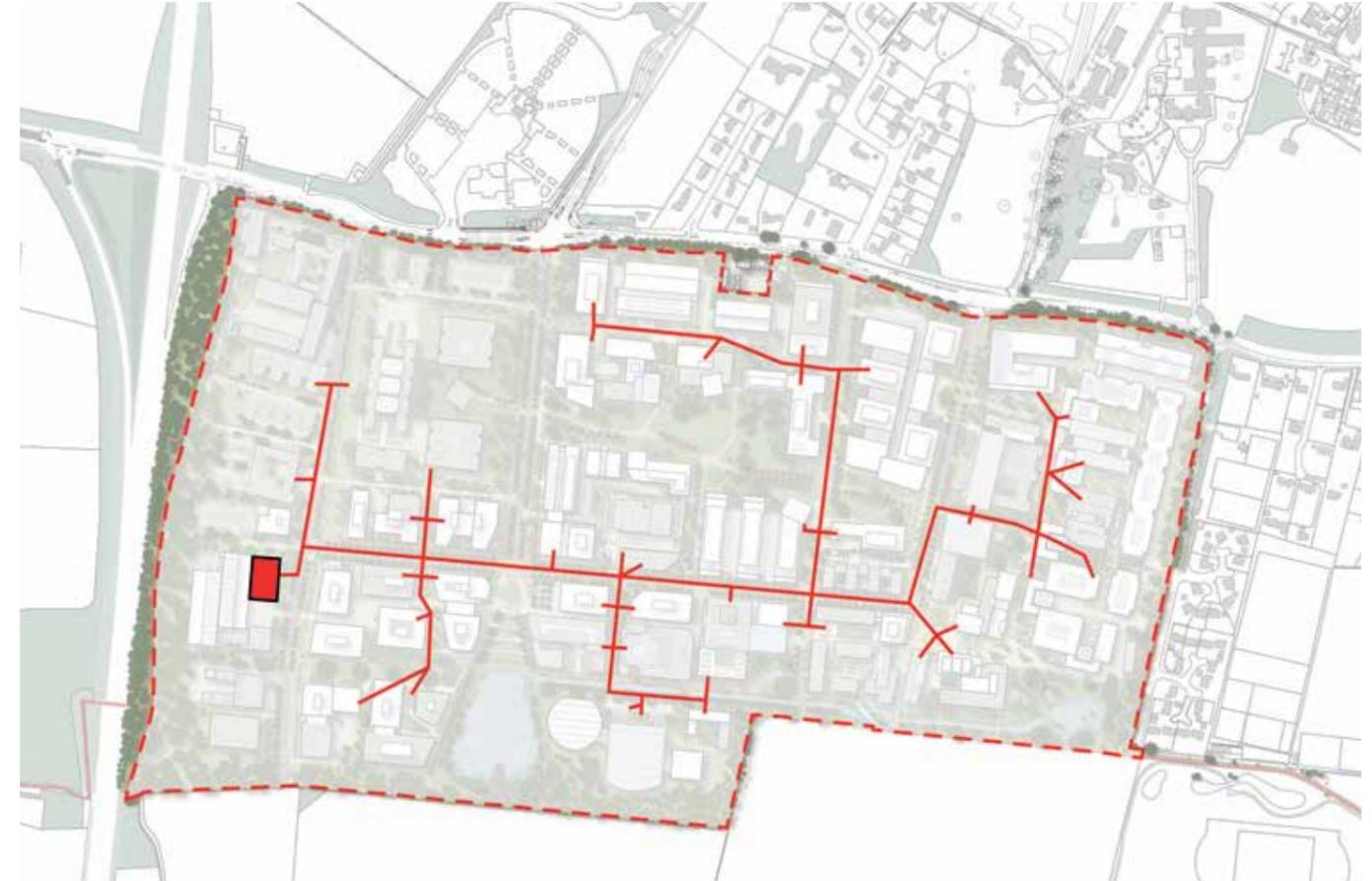
KEY

- Existing Ponds & canal
- Proposed Ponds & canal
- Ponds opportunity area
- SUDS opportunities
- Swales opportunities to Roads
- Existing Woodland edge
- Proposed Woodland edge extension

Key principles include:

- Protection and enhancement of existing areas of environmental importance and strengthen physical links to establish 'Biodiversity Corridors' that connect into a wider landscape;
- Respond to topographic and pre-development drainage patterns on the site;
- Open space and streetscape to integrate water sensitive urban design (WSUD) initiatives;
- Adopt a sensitive and strategic response to constructed micro-climates through both location of facilities and plant species;
- Select native species where possible to encourage bio-diverse bird and insect habitats;
- Use materials that feature low embodied energy, effective whole-of-life costs, low ongoing maintenance and are sustainably produced; and
- Retain existing trees where ever possible.

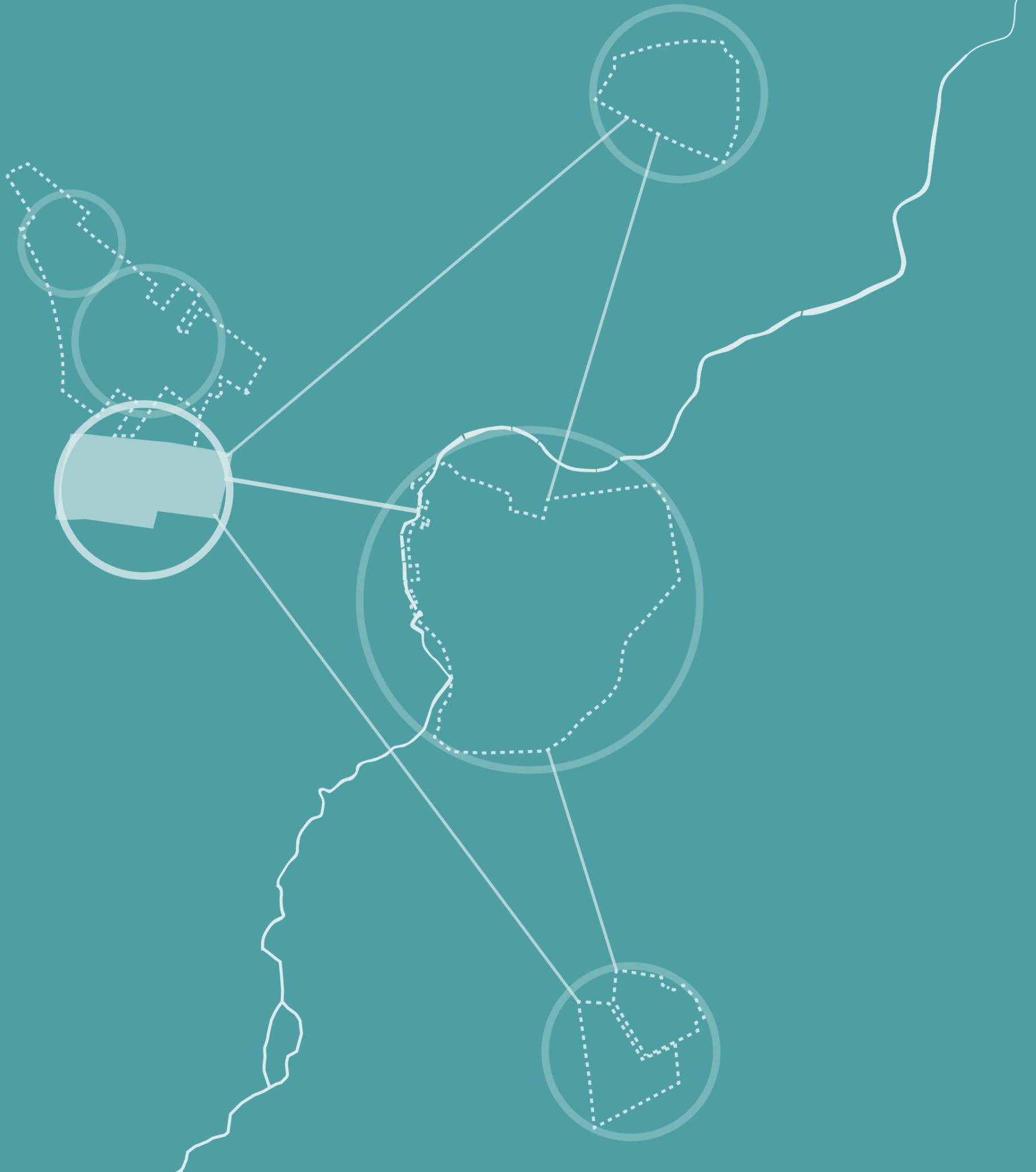
6.4.3 Energy Strategy



205. District Heating Network

KEY

- DISTRICT HEATING NETWORK
- ENERGY CENTRE



ILLUSTRATIVE MASTERPLAN

B2

B1 Illustrative Design Principles	B2 Illustrative Masterplan Illustrative Masterplan Illustrative Phasing	B3 Transformation of Key Spaces
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7. ILLUSTRATIVE MASTERPLAN

7.1. Illustrative Masterplan

6.4.5 The potential of West Cambridge

The Illustrative Masterplan provides a clear indication of the potential at West Cambridge. This indication of a different future for West Cambridge describes a gradually evolving new place, which builds on the ethos and intention of the existing consented masterplan, incorporates existing elements and buildings and forms a coherent urban structure connected and integrated into its existing and emerging context. The previously described approach to land use distribution, density, movement, public space, landscape and distribution of amenities has been developed to form a new site character to change current perceptions of the site, as well as to enable increased activity, encourage interaction between users, so developing routes to knowledge transfer and eventual commercialisation of knowledge.

Responsive to University Need

This increased interaction between commercial research and academic uses is key to the University's development strategy and the West Cambridge site provides the singular opportunity to bring benefits by securing the existing research institutes at West Cambridge; providing for the University's spin-out businesses and those businesses that it wishes to work with and support; and increasing mobility and interaction across the University and the city.

A high quality environment of buildings, landscapes and public spaces, as indicated in the Illustrative Masterplan, will support the requirements of West Cambridge community well into the future. The more intensive use of the site will increase interaction, improve the viability of amenity spaces and sustainable transport provision, so making the site more attractive to potential users and occupiers.

The development at North West Cambridge provides a new context for West Cambridge and offers synergies between the two sites. Strong physical and visual connections have been formed between the two developments with the intention that together, these two sites will form a greater University orientated urban quarter for the city, which not only provides homes for staff and students, but provides wider and more diverse local working, learning and employment opportunities.

Responsive to Context

The Illustrative Masterplan demonstrates how the new character and density of the site can be integrated sensitively with its surrounding context. Massing has been carefully moderated at all the edges of the site and strategies have been employed to promote variation and interest in the skyline, within the central, taller areas. Landscape planting has been employed to soften development, such as the retention and reinforcement of the woodland buffer, introduction of green/blue roof. The architecture framework sets out a character for the site which both builds on existing development and indicates a softer architectural character. There is a strong emphasis on greener, more informal spaces within the masterplan, and both new and existing spaces have been developed to incorporate existing mature trees and other landscape elements, space for new trees to grow to maturity and greater biodiversity and visual interest.

Gradual Transformation

Although low in density and with dispersed amenities, the existing site already has a significant amount of development. The key open spaces and infrastructure are already in place, establishing the urban structure as defined in the 1999 masterplan. Many of the buildings are of exceptional quality, loved by their users and are well functioning spaces for learning and research. However, the lack of overall critical mass and footfall, low and uneven density and consequent lack of shared amenities have resulted in a poor perception of the site.

The intention of this Illustrative Masterplan is to show how these issues could be addressed from the outset and to propose an illustrative scenario for gradual improvement of conditions on the site.

The Illustrative Masterplan provides one scenario for gradual growth and intensification of academic and commercial uses, population and amenities. The aim of this sequence is to show the opportunities for site improvements that are deliverable in early stages, and to follow with further interventions which are dependent on larger relocations, such as the Cavendish Laboratory or the Veterinary School.

The early stage developments demonstrate that the masterplan can accommodate the University's most immediately needed developments (Priority Projects), while also illustrating through the later stages of development, the ultimate potential of the site.

KEY

	NEW DEVELOPMENT
	EXISTING BUILDINGS RETAINED
	EAST FORUM SPACES
	EAST POND (RESHAPED)
	WEST FORUM SPACES
	WEST LAKE (RETAINED)
	THE GREEN
	SOUTHERN ECOLOGICAL CORRIDOR
	SHARED FACILITIES BUILDINGS
	ENGINEERING DEPARTMENT
	CAVENDISH III LABORATORY
	ACADEMIC DEPARTMENT
	COMMERCIAL LED DEVELOPMENT
	SCHLUMBERGER BUILDING
	BRITISH ANTARCTIC SURVEY
	SPORTS CENTRE
	DATA CENTRE
	PARKING STRUCTURES
	ENERGY CENTRE



207. West Cambridge - Illustrative Masterplan 2016

7.2. Illustrative Phasing

7.2.1 Incremental development of West Cambridge



208. Aerial view of Existing Site Condition

Existing Site

The site already has a number of high quality buildings in place, as well as roads and key open spaces, East (A) and West Forum (B).

Higher density academic developments are located along southern edge (C). Low density Veterinary School (D) occupies the central part, and old Cavendish Laboratory complex south eastern corner (E), marking the site entrance from the Coton Footpath.



209. Aerial view of Phase 1: Priority Projects

Priority Projects

The University aims to deliver noticeable improvements from the early stage of development. The key capital project at this stage is the new Cavendish Laboratory, the development of which will be joined by delivery of shared teaching and catering facilities and will be used as a catalyst for improvement of existing and formation of new open spaces.

This stage of development is envisaged to include:

- Over 85,000m² of departmental academic space, including Cavendish Laboratory III (A) and Department of Engineering initial phases (B);

- First phase of shared facilities (C);
- Reinforcement of opportunities for an Entrepreneurship Hub at the East Forum, with innovation and scale-up centres (D);
- Approximately 50,000m² of commercial research development at the Western Cluster (E);
- Two multi-storey car parking structures (F)



210. Aerial view of Interim Condition

Interim Condition

This interim condition follows after completion of priority projects and clearance of the current Cavendish site. It shows developments not dependant on relocation of Veterinary School.

- Completion of East Forum, with shared facilities and public realm (A);
- 18,000m2 of departmental academic space, with expansion for Department of Engineering (B), as well as possible expansion for Material Science and Metallurgy (C) and Chemical Engineering and Biotechnology (D);

- Further 38,000m2 of commercial research development and near-completion of the Western Cluster, with possible Innovation Centre at West Forum (E);
- Nursery (F);
- Additional multi storey car parking structure (G)



211. Aerial view of at Full Capacity

Full Capacity

Relocation of Veterinary School would allow for further:

- Over 60,000m2 of departmental academic space, with more academic space (H) and possible expansion space for Cavendish Laboratory III (I);
- Extended Gardens and complete central cycling and pedestrian route linking site East-West (J);
- Additional multi storey car parking structure (K)

The final stage could include:

- Over 80,000m2 of academic and commercial development in the former paddocks area (A) and in the Western commercial cluster (B);
- Completion of sports centre (C);
- This would be supported by an additional car parking structure (D)



212. Existing Site Condition



213. Phase 1: Priority Projects



214. Interim Condition



215. Full Capacity

7.3.1 Interim Activities and Programme Testing

The transitional plots (for example, the areas vacated by the Veterinary School once it moves elsewhere) could be used for interim activities and also as means to determine what kind of programmes are successful and should be permanently provided in some of the open spaces which are due to be delivered in subsequent phases.

The interim activities could introduce vibrancy and serve as vehicles for socialisation from the early stages of the project.

The activities listed below are based on ideas from benchmarked studies but could also be informed by community participation and/or local idea contests. Also, activities of wider appeal could be considered, that would bring people outside the area to the site and help bring the site from its relative isolation.

The proposed activities could include:

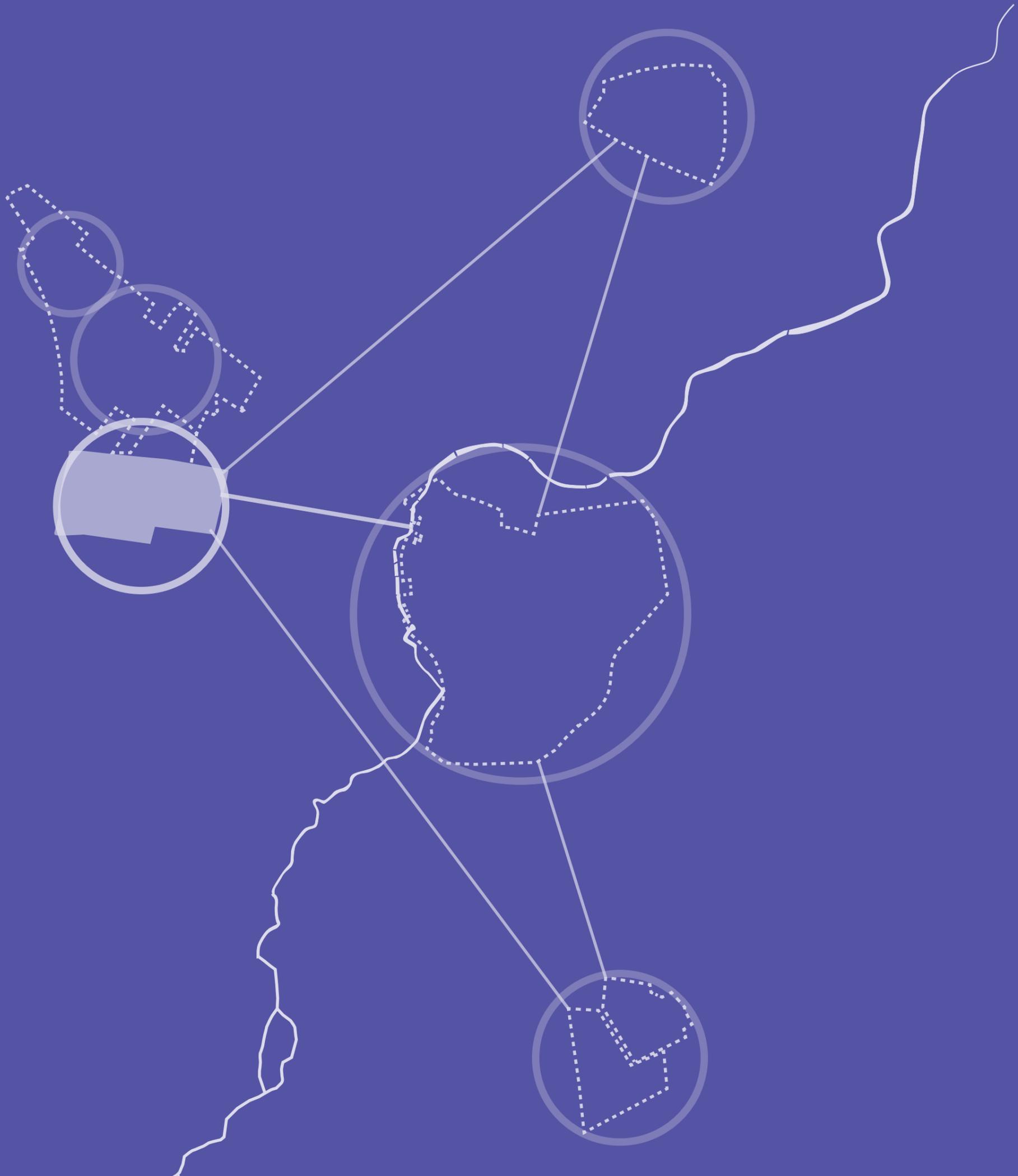
- Family programme: science fairs and workshops for adults and children
- Recreation: informal kick about areas, table tennis or petanque (boules), giant chess, workout stations;
- Services: bike servicing or Dr Bike;
- Food and beverage: food vans, pop up stalls and coffee points.

Interim activities could serve as a testing ground for public realm uses which could continue in future on a temporary or periodical basis, such as street fairs, festivals and markets. Together with innovation spaces (such as ideaSpace) and prototype workshops, these informal but knowledge and science oriented activities could help develop identity complementary to the historic centre, less precious, but experimental and informal.





216. The West Cambridge Illustrative Masterplan and North West Cambridge Development, viewed from the south



TRANSFORMATION OF KEY SPACES

B3

B1 Illustrative Design
Principles



B2 Illustrative Masterplan



B3 Transformation of
Key Spaces

Key Places
Streets and Green Links
Masterplan Setting



8. TRANSFORMATION OF KEY SPACES

8.1. Key Places

8.3.1 West Forum

The West Forum is a primary public space and forms a focus for activity to the west of the West Cambridge site. This space is a key element retained and brought through from previous masterplan.

Role in the Masterplan

- Transformed to become the focus of the Commercial Research cluster to the west of the West Cambridge site;
- Arrival space for West Cambridge - forms termination of High Cross and links directly to North West Cambridge Development - specifically the Local Centre.

Surrounding uses

- Focus for commercial research, community and social spaces - located directly on or adjacent to the squares are the sports centre, active uses such as cafés and canteens, entrances to commercial buildings and a proposed Innovation Centre;
- Existing academic buildings form the eastern frontage to the space;
- Key gateway to the large part of the commercial research cluster located west and north of the Forum;
- Consisting almost entirely of new build floorspace, the commercial research buildings will form a new western frontage to the West Forum spaces;
- Service and car parking structures will be located away from West Forum spaces, west of Ada Lovelace Road, and embedded within the reinforced woodland buffer;

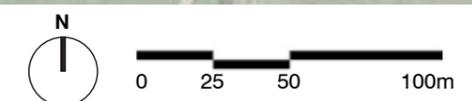
Movement

- Pedestrian space only to the north and around the lake;
- Bus routes and stops are adjacent to the space - potential for orbital route bus stop to be located here;
- Car drop off for visitors is located to the north of the space;
- Key cycle route runs through the space - to the north of the lake.

- A West Lake
- B Western Forum Terraces
- C West Forum - Upper Square
- D West Green Link
- E Southern Ecological Corridor
- F Material Science and Metallurgy Building
- G Chemical Engineering and Biotechnology
- H Industry Partner Developments
- I Innovation Centre
- J Sports Centre
- K Service Court
- L Schlumberger Area



219. The West Forum



Scale of Spaces

The scale of West Forum is influenced by the existing spaces, including the West Lake and the terraced landscape. The terraced landscape will maintain its dimensions (about 50x50m) and the lake area will be slightly enlarged, to about 170x155m.

New development to the west will provide frontage and enclosure as well as a new activity to the square and arrival point, which is now approximately 40x90m in size. Care is taken to maintain views to the south while providing shelter from wind and noise.

Description of West Forum spaces

- The West Forum is a sequence of spaces, negotiating the topography with the 3 spaces on different levels stepping down towards the Coton Footpath and the lake;

- Landscaped stepped space - The West Forum Terraces - connects the two main public spaces - the Upper and Lower Squares;
- The northern space and Terraces develop a foreground for the lakeside in the form of informal meeting areas and drop off square;
- The third space is a revitalised green space around the existing lake - pedestrian access is allowed to the edges of the lake and active uses front onto the lake on the west frontage;
- Sports and water activities are encouraged within and around the lake;
- Sports centre can potentially open up and address the lakeside space, providing more activity and animation to the east.



221. Queen Elizabeth London Olympic Park
Steps and terraces work as informal gathering spaces in London Olympic Park to negotiate the level difference as the land slopes towards the canal



222. Queen Elizabeth London Olympic Park

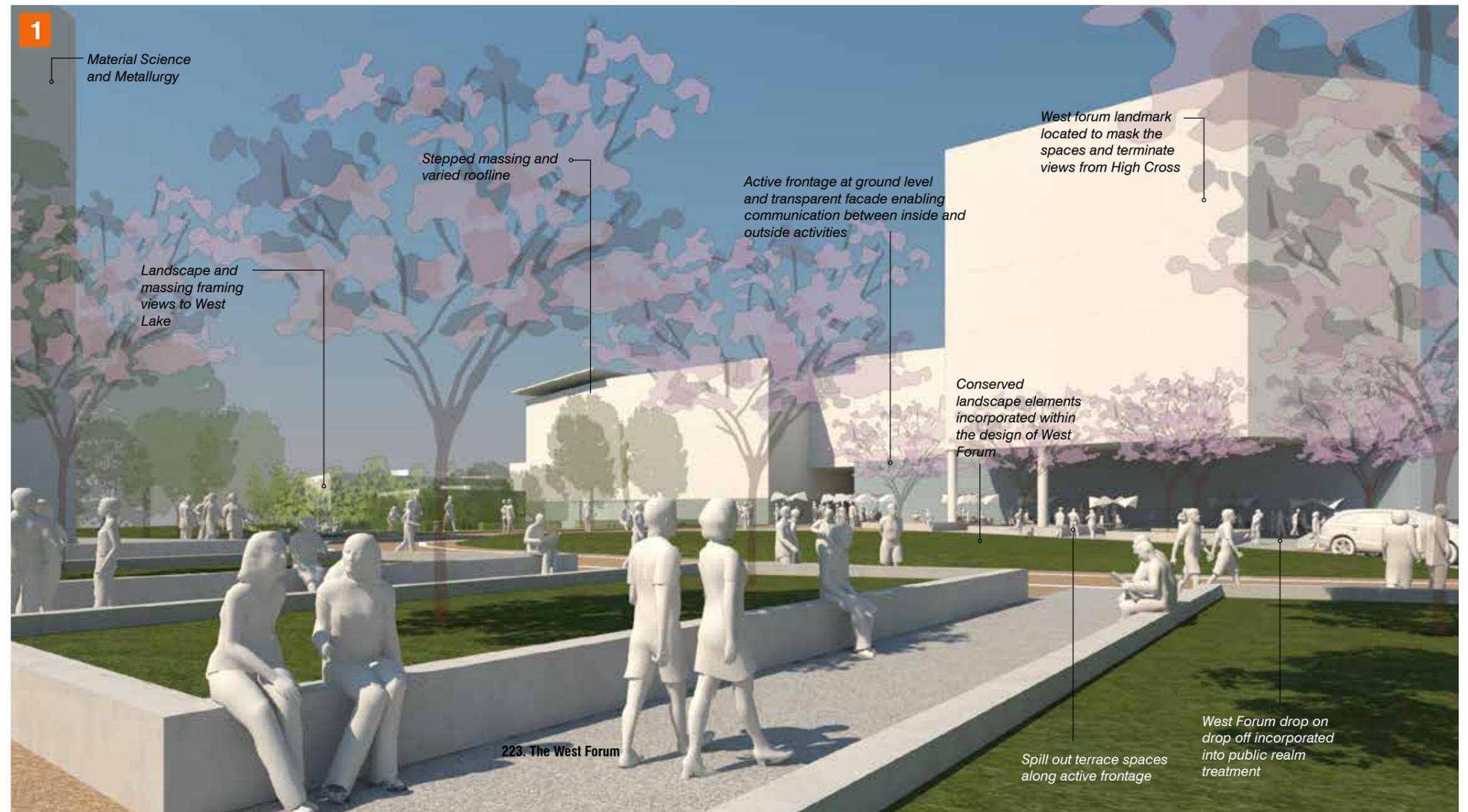


220. The West Forum - section



KEY PLAN FOR VIEWS

- West Forum landmark stands out in the west of the site and is located where the Girton Gap and Charles Babbage Road meet. This landmark overlooks and is located on the Upper Square;
- New development introduces enclosure and active frontages to the western side of the space;
- Distant views over the southern countryside are provided from the Upper Square and the Terraces;

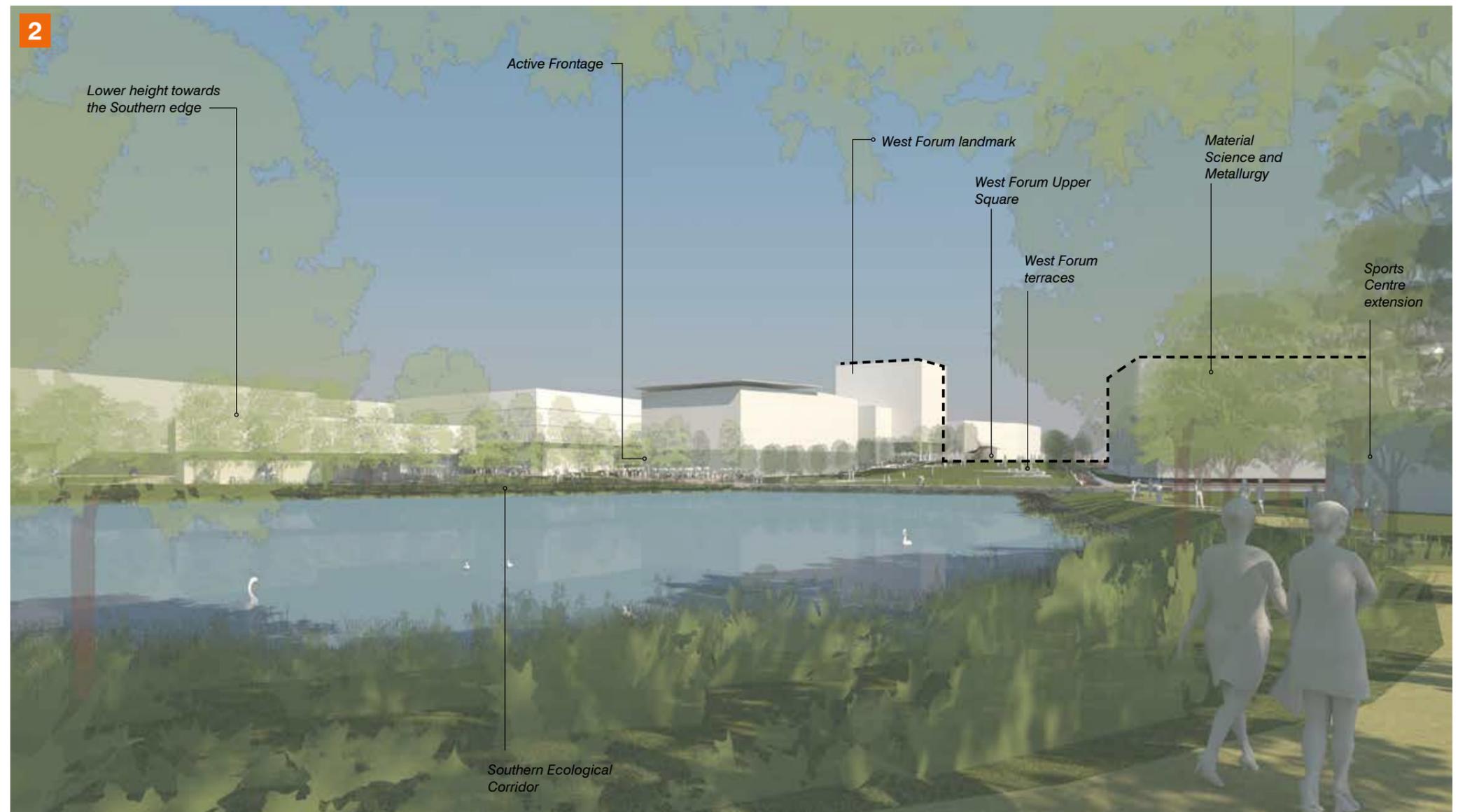


224. The West Forum spaces: West Forum Upper Square as viewed from Charles Babbage Road

Active uses and social spaces on the ground floor of commercial buildings facing West Forum ensure necessary active frontage and vibrancy to the open space. It also forms an important arrival experience.

225. Precedents for West Forum spaces

- The existing woodland needs to be kept and reinforced to create a sense of enclosure to West Forum and provide a backdrop for West Lake;
- Around the lakeside a SUDS system is developed with reed and grass growth to encourage local flora-fauna and create a space for connecting with nature.



226. The West Forum spaces: view from south of the West Lake to other Forum spaces

The Southernmost part of West Forum will be developed as a dense woodland area accessible via a jogging / walking path that provides a vantage point to enjoy the natural setting and view the active area of West Terraces and new development frontage from across the lake.

227. Precedents for West Forum spaces

8.1.1 East Forum

The East Forum is a primary public space to the East of the West Cambridge site and forms part of the Primary open space network within the masterplan. The East Forum is one of key elements retained from previous consented masterplan.

Role in the Masterplan

- Transformed to become the focus of the Academic cluster to the east of the West Cambridge site
- Arrival space for West Cambridge - new route from the south-eastern corner of the site connects the East Forum to the Coton Footpath and Cambridge City Centre
- Arrival space from the north - JJ Thomson provides a key north-south link between academic clusters of West and North West Cambridge and terminates within the East Forum
- Three distinct spaces are created: Upper Square (vehicular arrival drop off), Lower Square (student circulation) and East Pond (pedestrian cyclist arrival from city centre)

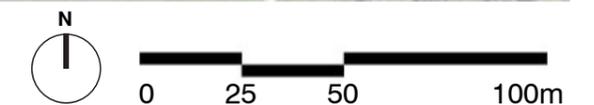
Surrounding land uses

- Focus for shared facilities - located directly on the squares are canteen, shared lecture theatre (up to 500 seat, subject to further studies), other smaller lecture theatres, library, other cafés shops are potential
- Key shared uses are located within two new buildings the Northern and Southern Forum Building
- Innovation Centre is located on the Upper Square and forms key site-wide landmark - visible from the north
- Key gateway to the academic areas that lie to the north and west
- An important visual link is established from the Upper Square towards The green and the new Cavendish Laboratory and Shared Facilities on The Green
- Expansion spaces for the Department of Engineering provide new frontage and activity to The East Pond.



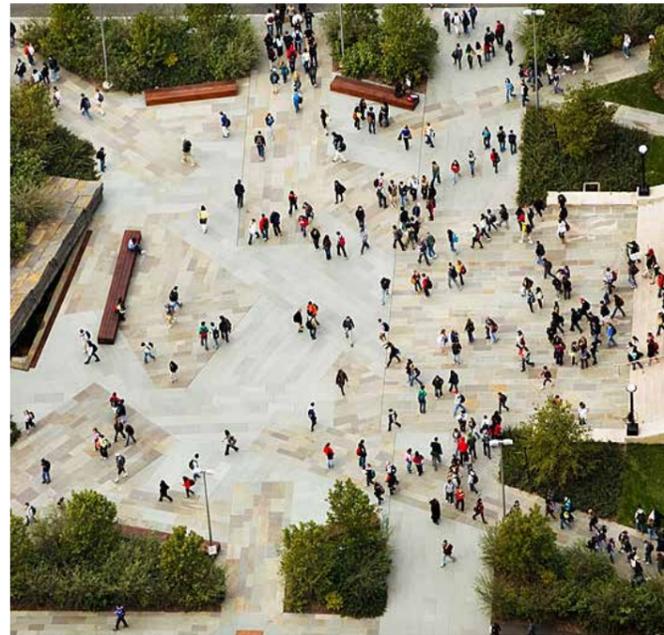
- A** East Forum Upper Square
- B** East Forum Lower Square
- C** East Pond and Pedestrian Bridge
- D** Shared Facilities - Canteen and Lecture hall
- E** Shared Facilities - Teaching Spaces and Learning Resources
- F** Shared Facilities - Canteen (Phase 1) and Teaching Spaces
- G** The Green
- H** East Garden
- I** East Green Link
- J** Canal side + Coton Path
- K** Dept. of Engineering Expansion
- L** Innovation Centre
- M** Cycle Hub
- N** Maxwell Centre and Physics of Medicine
- O** MRI Research Centre - Chemical Engineering and Biotechnology

228. The East Forum



Movement

- Pedestrian priority space, envisioned as a series of connected spaces that link the Coton Footpath, East Pond and Charles Babbage Road.
- Cyclists and traffic are restricted/not permitted but the East Forum is very close to key routes and bus routes
- Key cycle hub to south of space just off the Coton Footpath - one of the places within the masterplan where cyclists can dismount, safely store their bicycles and continue into the site as pedestrians



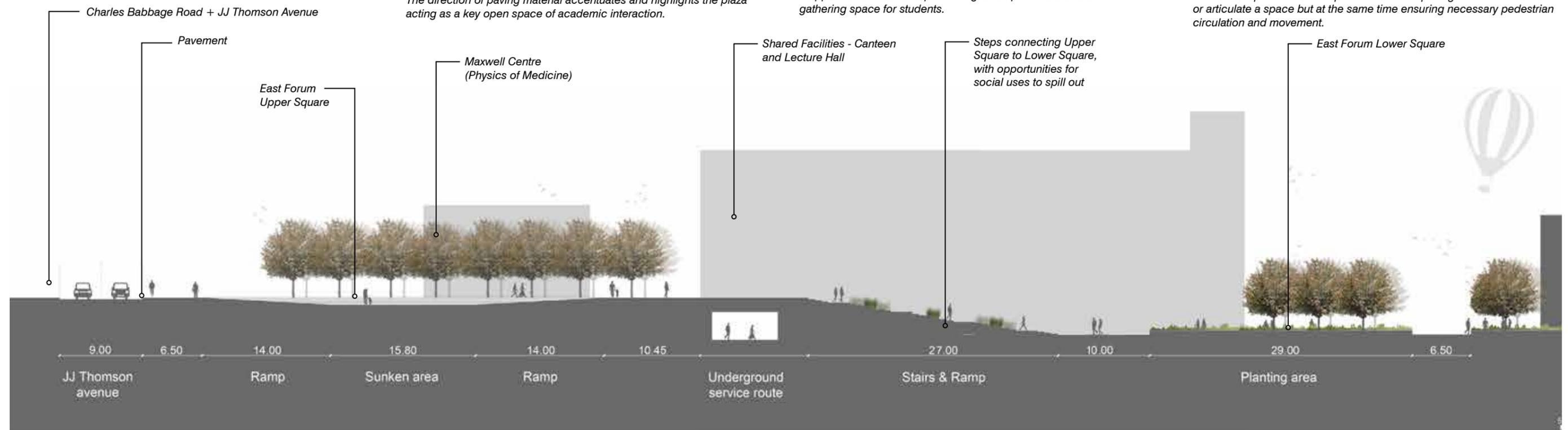
230. Bailey Plaza of Cornell University by Michael Van Valkenburgh Associates
Open space being scaled by landscaped green islands, slopes and steps. The direction of paving material accentuates and highlights the plaza acting as a key open space of academic interaction.



231. Steps and Terraces of Kyusgu Shango University by Fukuoka-based landscaping company Design Network
Stepped terraces and steps forming an amphitheatre and outdoor gathering space for students.



232. Erie Street Plaza in Wisconsin, USA by StossLU architects illustrating interspersed soft landscape and tree planting zones within paved circulation
Soft landscape can be interspersed with hard paving so as to scale down or articulate a space but at the same time ensuring necessary pedestrian circulation and movement.



229. The East Forum - section



KEY PLAN FOR VIEWS

Description of East Forum spaces

- Like the West Forum, East Forum is a sequence of three spaces, which negotiate the topography with each of the spaces on different levels stepping down towards the Coton Footpath
- Landscaped stepped space - The East Forum Steps - connects the two main public spaces of the East Forum - the Upper and Lower Squares.
- The third space is the revitalised green space that incorporates the existing East Pond and connects the Forum spaces directly to the Coton Footpath.

Scale of Spaces

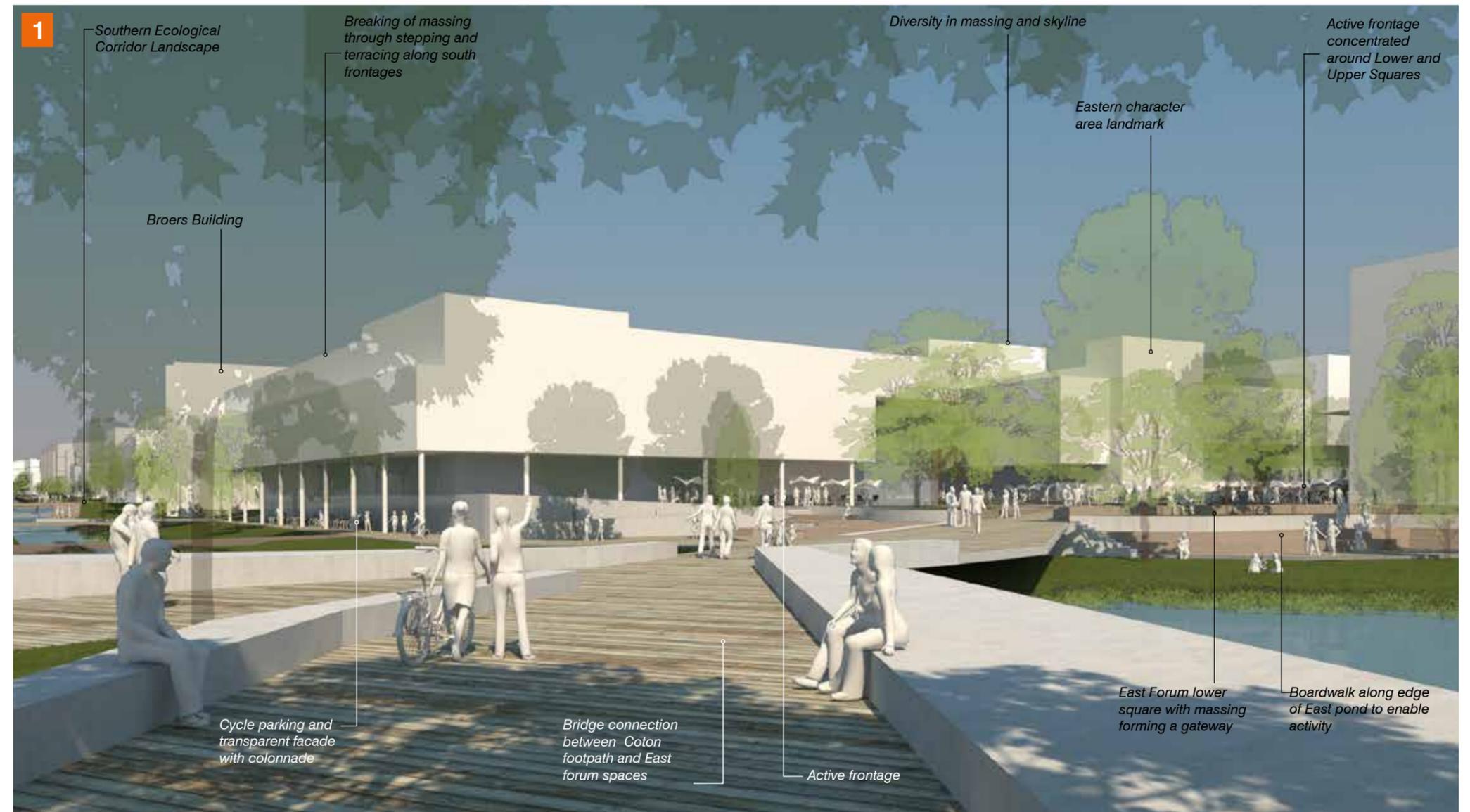
Each in the sequence of spaces forming East Forum has been scaled in accordance with envisaged character and purpose, and tested against relevant precedents.

The Pond area is approximately 130x80m, providing space for a Pond and area for relaxation. This space is open towards the south so it borrows open views from the agricultural lands.

The length of the Stairs and Upper Square combined is around 120m, with Upper Square being around 60x60m. Such a size provides a more protected, defined space which is suitable for interaction and gatherings.

Precedents:

The Sidgwick site provides an example of academic buildings clustering around a series of walkable spaces



233. East Forum spaces: East Pond and Southern gateway - view towards the East Forum from the Coton Footpath

The natural setting forms a serene arrival space for cyclists and pedestrians from the city centre. The views across the East Pond to academic life and are framed by built form and landscape. The view shows how landscape elements could frame pedestrian circulation and guide it towards the East Forum.





2

Transparent corner to enable showcasing of internal activity

East Forum steps

East Forum Upper Square

East Forum landmark

Stepped massing reflecting the changes in levels of the surrounding open spaces

Changing palette of materials used to convey spatial changes

Accessible spaces allowing easy movement across levels

Informal congregation and meeting spaces

Active frontage with spill out

Spill out at south end of Central Green Link

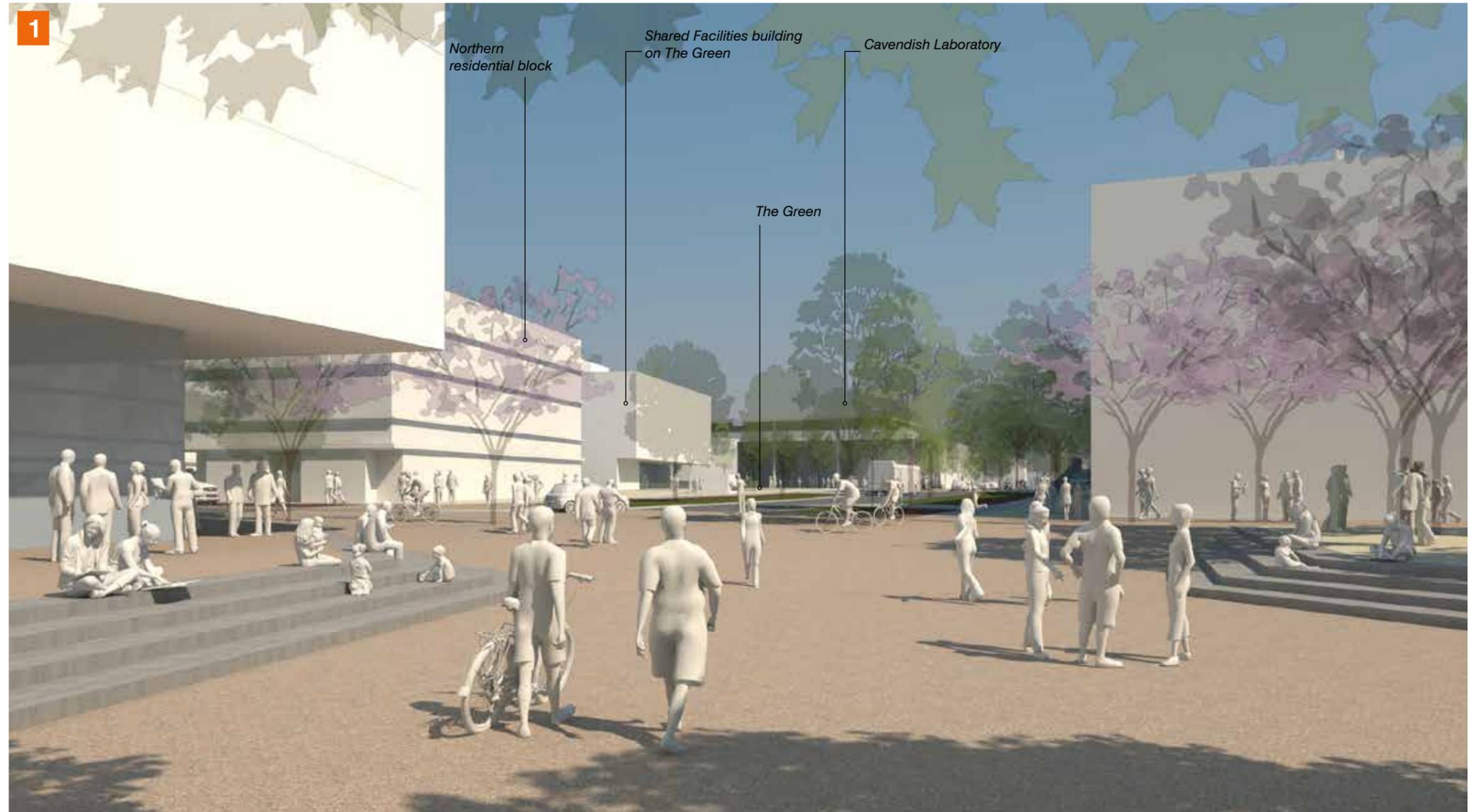
234. East Forum spaces - East Forum Lower Square



KEY PLAN FOR VIEWS

Spatial sequence

- Existing East Pond is opened up and views allowed from Coton Footpath into revitalised green space and Forum spaces;
- Key buildings form highly visible frontage that faces south over green space and East Pond;
- Key uses provide active frontage and footfall through the space;
- New bridge over East Pond provides pedestrian only link between the Coton Footpath and the East Forum spaces.
- Steps connect the two main East Forum spaces, using the existing level change to provide interest and identity in this space
- Lower Square highly active frontage and entrances to key uses such as the canteen
- Pedestrian only spaces



235. East Forum spaces: Upper Square, view towards the new Cavendish Laboratory

This view shows that The Green open space and a prominent corner of the JJ Thomson Avenue Character Area are visible from The East Forum, enabling these spaces to communicate and strongly link the site together.

8.1.2 The Green

Intent

The Green will provide much of the open space for informal recreation and are one of the primary cycle and pedestrian linkages across the site. The gardens form a visual corridor within the central core of the masterplan linking East and West across the site and capturing the views towards City Centre landmarks. In the west, the view rests on Schlumberger Research Centre and its characteristic roof line.

Character

The Green forms a strong east/west alignment of open space edged by development. The positive visual and physical relationship between the built edges and gardens enables higher levels of natural surveillance. The east west pedestrian and cycle links are aligned to either to the edge of the Green or run centrally on strong desire lines and generating activity and animation along these shared movement corridors.

A series of 'social hubs' are created at the intersections with the north-south routes, raised in level to slow down cyclists' movement and create a series of gardens associated to the built form to the north and south.

Swales will be introduced along the central pedestrian/cycle link, accentuating/emphasising the directional accent of the design within the landscape. Swales will collect runoff from foot and cycle paths, add interest and improve the bio-diversity of The Green with species rich planting.

Materials

As the Green occupies an area of existing open meadow, the intent is to maintain a similar visual experience but to add variation and visual variance to the ground plane with native planting suitable to create enclosure and controlling the micro climate. Existing trees will be maintained where possible and new tree planting will be added to reinforce movement corridors, vistas and focal points.

The Green will be predominately soft with a ratio split of 70% soft to 30% hard. Permeable paving will be used to minimise run off and where run off does occur it will be collected within bio-retention areas for distribution to the wider surface water network.

The Green intersects and overlays with the boulevards. This inspires a change and the boulevard becomes influenced by the character of Charles Babbage / Forum link and moves to a more pedestrian orientated environment. From the junctions the tree lined boulevards provide a formal entry.



236.The Green section



237.The Green aerial view



238. The Green detail plan



239. Landscape Reference



240. Social Hub aerial View

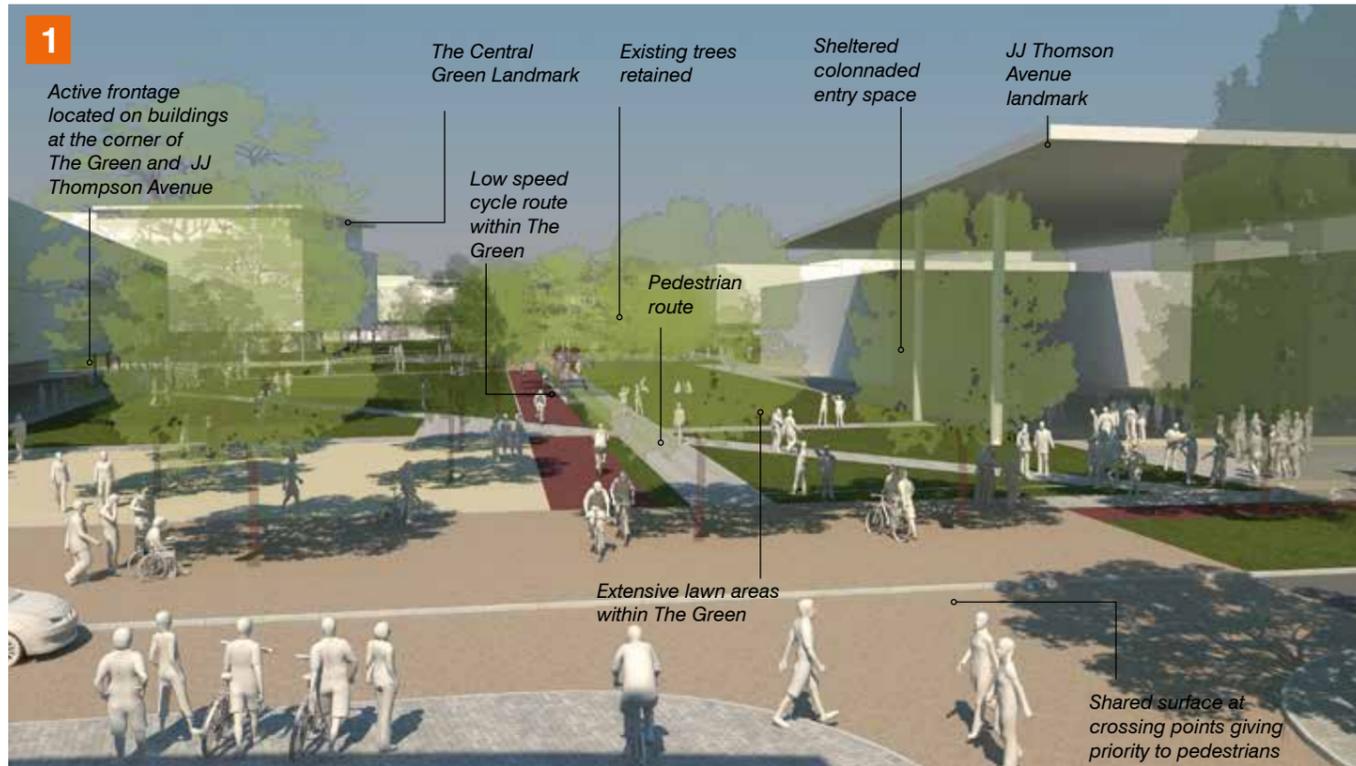
- A** Gateway
- B** Social Hub
- C** Green Links
- D** Open Lawn
- E** Shared Facilities/Social Spaces
- F** Cycle Route
- G** Service courtyards
- H** Covered Cycle Parking
- I** Block Paving to Crossings
- J** Swales



Key plan



KEY PLAN FOR VIEWS



242. JJ Thomson Avenue Character Area: View from JJ Thomson Avenue, looking towards the Schlumberger building, through The Green public open space.

The Green forms a series of connected spaces that are shared by the campus. This green space forms a key east west pedestrian and cycle link. The presence of a cycle path and social spaces ensure that it will be a vibrant space, along its length, to be used by various academic departments and commercial occupiers alike.



241. Central Character Area: The Green viewed from High Cross, looking east

The Green forms a central open space providing a space for relaxation, reflection, informal interaction, spill-out and event space

Key Elements

- The key space is The Green - part of the east-west running open space that traverses the site. This space provides a gateway and identifying space for the Character Area and for the Department of Physics.
- New frontage is formed along JJ Thomson Avenue. Visible from Madingley Road and the gateway, this frontage is highly prominent.
- The new building for the Department of Physics - the Cavendish III Laboratories is the principal building in the Character Area. This forms a key frontage facing the The Green and is also visible from the East Forum, visually connecting these spaces together.

- A cluster of taller landmark elements are located along the frontages of The green, serving to aid legibility through this space as well as creating a new skyline for West Cambridge.

Surrounding Uses

- Development surrounding The Green forms frontage and provides overlooking to The Green. Smaller social spaces and building entrances are located along this space at ground floor, to ensure animation;
- A mixture of academic and commercial floorspace: this is one of the key areas of interchange and collaboration between the two uses;
- A new, early phase key Shared Facilities Building - providing activity onto The Green;

- Additional academic uses to the east of the site, reinforcing the academic cluster, and provides a new home for the Physics Department - the Cavendish III Laboratories;
- Cavendish III Laboratories is a Priority Project for the University and this development, being located along JJ Thomson Avenue and visible from the Madingley Road junction, will have a transformative effect on the image and identity of the West Cambridge site;
- This Character Area incorporates existing buildings within new development. The retained academic buildings will be well screened by new development of more appropriate scale and outward looking; and the northern residential block with the nursery space on the ground floor will be integrated to contribute to a more cohesive environment;

- The Schlumberger Building is at the western end of The Green. Set within a green landscape, the building can be joined by potential future Schlumberger expansion which will form the new frontage to The Green. In the illustrative masterplan the expansion is arranged to provide and frame a new forecourt with a new address and drop off at High Cross. This new space can potentially be an extension of The Green open space further west - allowing strong integration with the rest of the masterplan. New development is located north and south of this new space.
- Car parking and servicing is located away from The Green, to the north. These car parking areas are accessed directly from High Cross and serve to reduce car movements within the heart of the masterplan.

8.1.3 Southern Ecological Corridor

Intent

The Southern Ecological Corridor will be established in the southern part of the site, as part of a wider link between the City and the countryside. It will incorporate the existing Coton Footpath, the canal and existing landscape features to maintain and enrich the biodiversity which has been established.

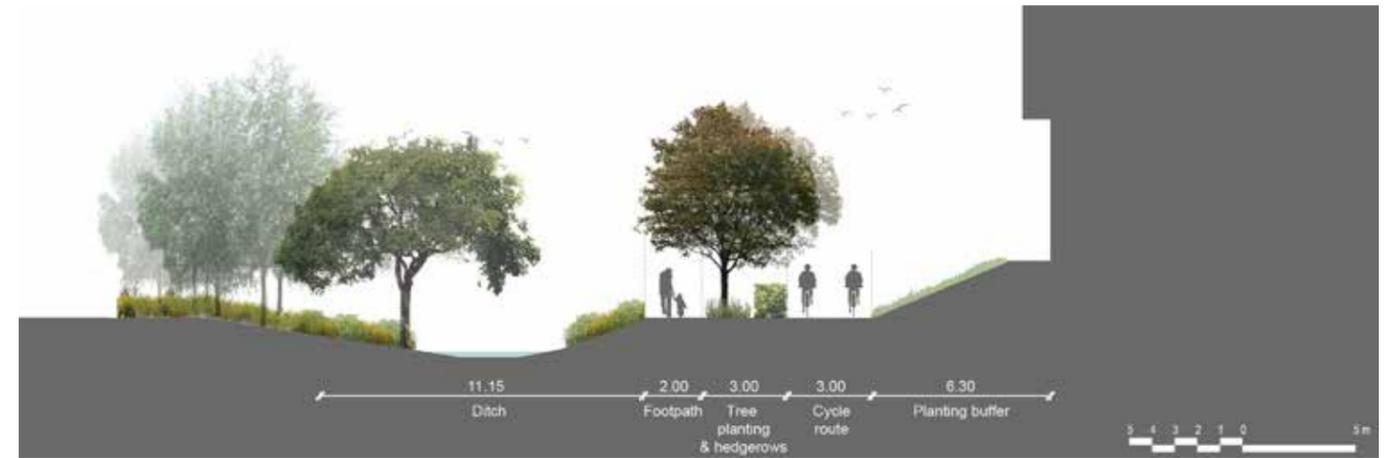
The Canal will be enhanced and connected to the East Pond and west lake, providing a sustainable drainage system along the southern edge. West of the Lake, the corridor will incorporate the existing mature Oak trees and new wetland and water elements.

Character

Additional planting is proposed within the corridor to establish a protected microclimate. The existing water courses will need some minor modification to take additional surface water from the wider surface network proposed within the masterplan.

Materials

Existing trees will be maintained and augmented where possible. A coordinated street furniture palette will be developed that is visually relevant to the wider public realm setting whilst also takes design cues from the naturalistic setting of the waterside character.



244. Ecological Corridor section



243. Ecological Corridor plan

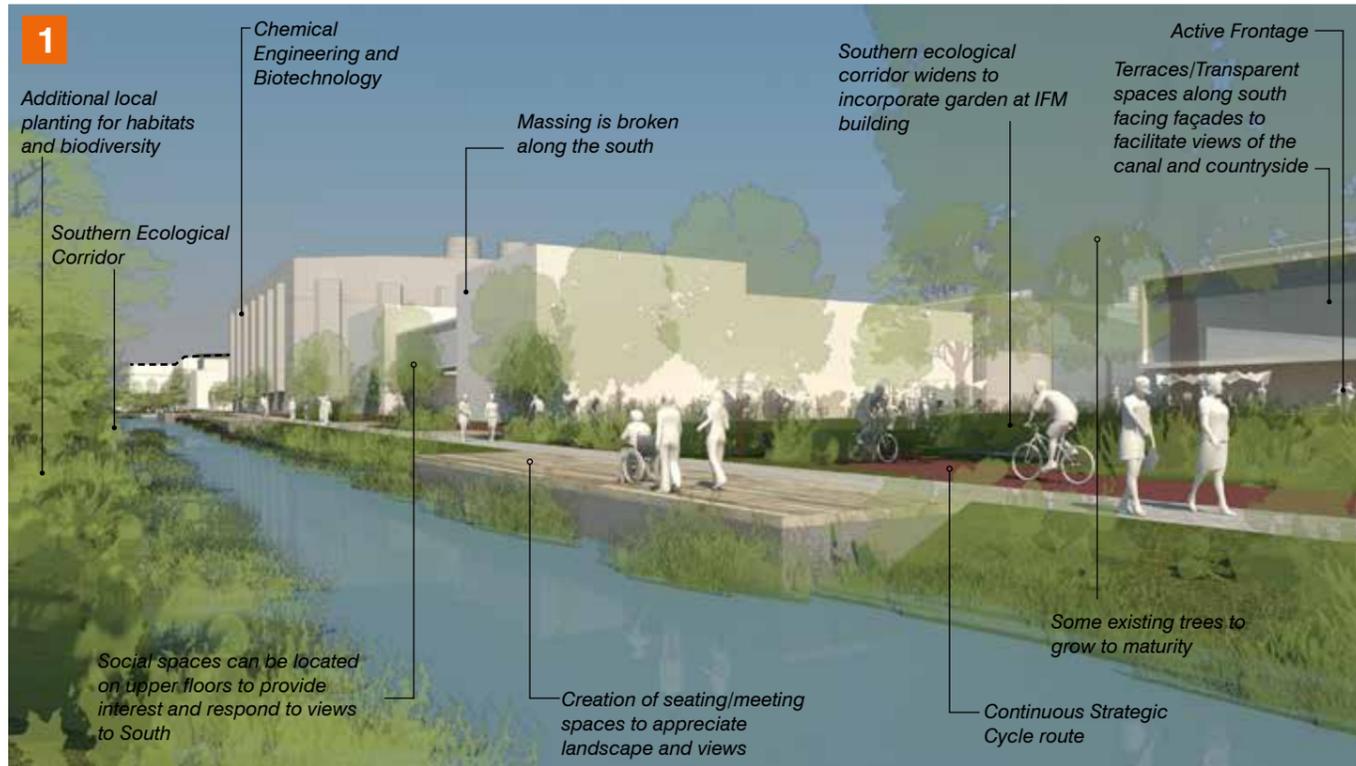
- A East Pond
- B West Lake
- C Cycle & Footpath
- D Canal
- E Existing Trees & Swale
- F Link to Coton path
- G West Forum Terraces
- H Sports Centre



Key plan

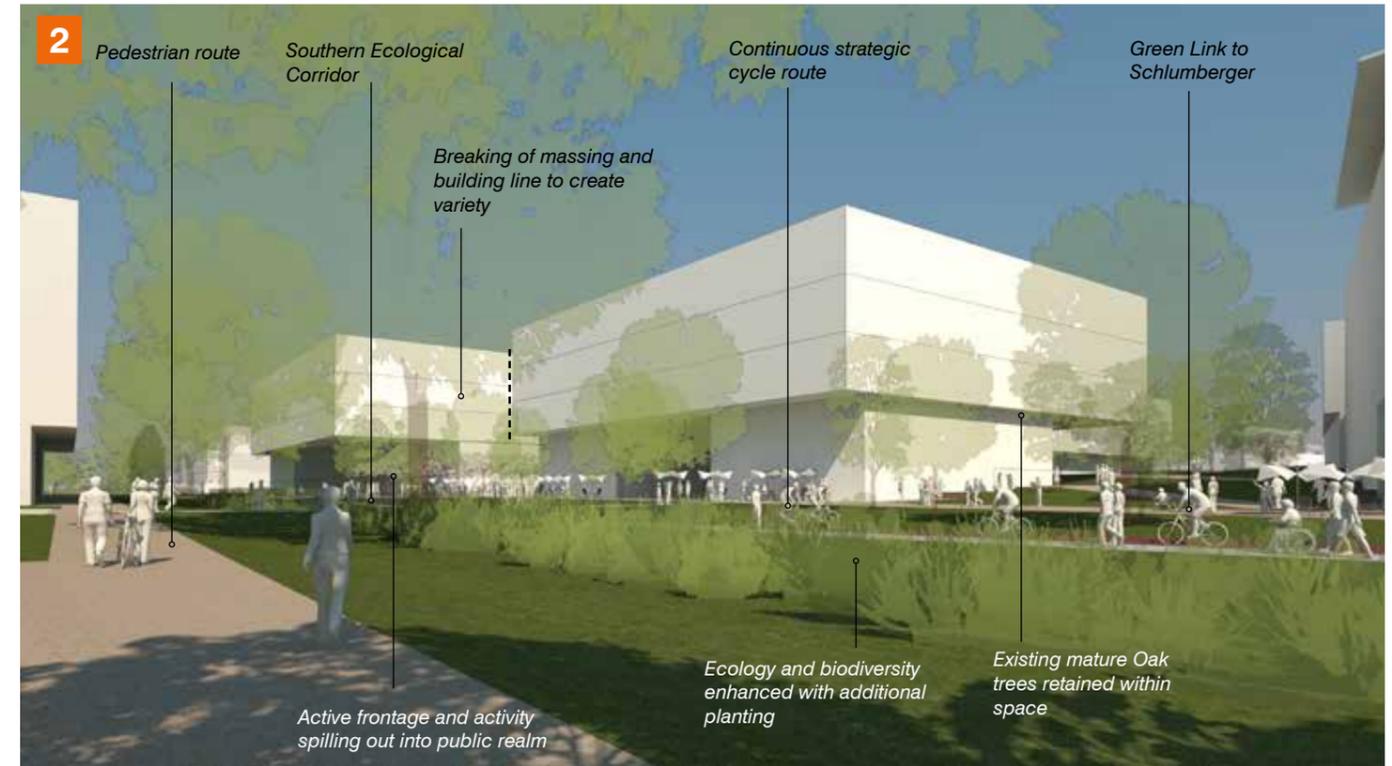


KEY PLAN FOR VIEWS



245. The Southern Character Area: Frontage to the Southern Ecological Corridor looking towards the West Forum

Canal side ecological corridor used as a key cycle and pedestrian cycle path in the form of Coton Footpath. The Ecological corridor is also designed to have quiet nature.



246. Western Character Area: Southern Ecological Corridor

The Southern Ecological Corridor at this point forms a focus for activity within this Character Area. A highly green space, this incorporates existing mature trees, with additional planting. Buildings form and informal frontae to the space but ensure overlooking.

Surrounding Uses

- Existing buildings and new infill (academic and commercial) developments;
- A large cluster of commercial research space at the western end of the Ecological Corridor, providing a frontage with entrances and points of activities;
- The existing Sports Centre and its future expansion, which is a key destination within the masterplan, drawing visitors throughout the week and in the evenings;
- New frontage with additional activity along the Southern Ecological Corridor ensures overlooking; this is a sensitive frontage overlooking the open countryside;
- New frontage also forms a new urban character for Charles Babbage Road which will incorporate new active frontage, building entrances along its length;
- Landmark development contributes to the formation of a new southern gateway along the Coton Foorpath at the East Pond;

8.2. Key Streets and Green Links

8.2.1 High Cross Avenue

Intent

High Cross is the main entry road to the site, it is the main link from Madingley Road to West Forum and Charles Babbage Road. The intent is to create a main gateway and tree lined boulevard that welcomes visitors into the site.

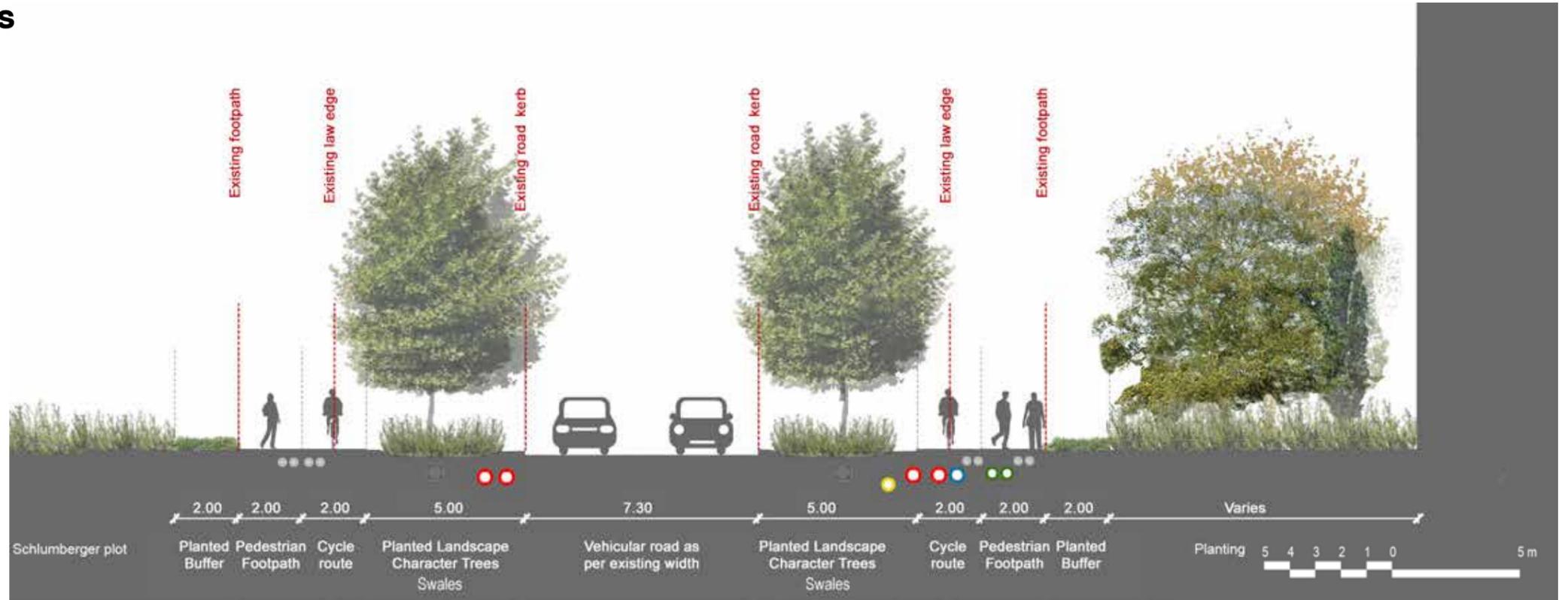
Character

The Road will have one character all along its length however this character will change in two areas; when the road intersects to the Green it narrows and takes on the character of the Green; and when the road reaches the West Forum and becomes a shared surface. The road will be characterized by the existing row of trees and under storey of planting. Additional trees are introduced to breakup the ridged tree planting and bring the continuation of the fields in North West Cambridge through the West Cambridge site.

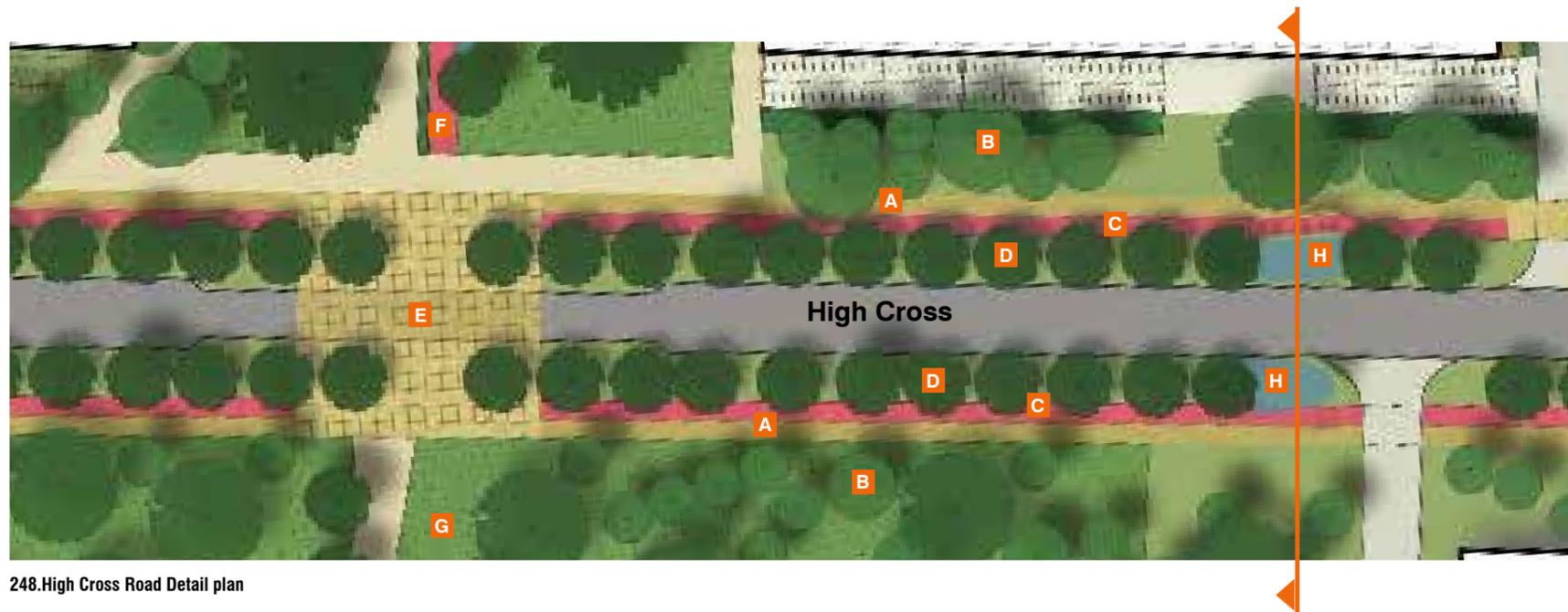
The width of the road will remain same except at the primary crossing at the Green the kerb line will 'bulb out' to create a crossing and slow traffic. No bus stops nor street parking spaces are proposed along High Cross. A series of planted swales will be applied where possible in response to the limited space left by the existing trees and underground services. Swales will collect carriageway water runoff and act as points of interest and reduce the visual dominance of the road.

Materials

A foundation palette of street furniture, light and paving elements is defined to deliver unity along the road and where possible existing lighting and street furniture will be retained or reused in new locations. Existing trees will be retained where ever possible.



247. High Cross Section



248. High Cross Road Detail plan



Key plan

8.2.2 JJ Thomson Avenue

Intent

JJ Thomson is the second entry road to the site, it is the main link from Madingley Road to East Forum. The intent is to create a tree lined boulevard with a gateway into the site.

Character

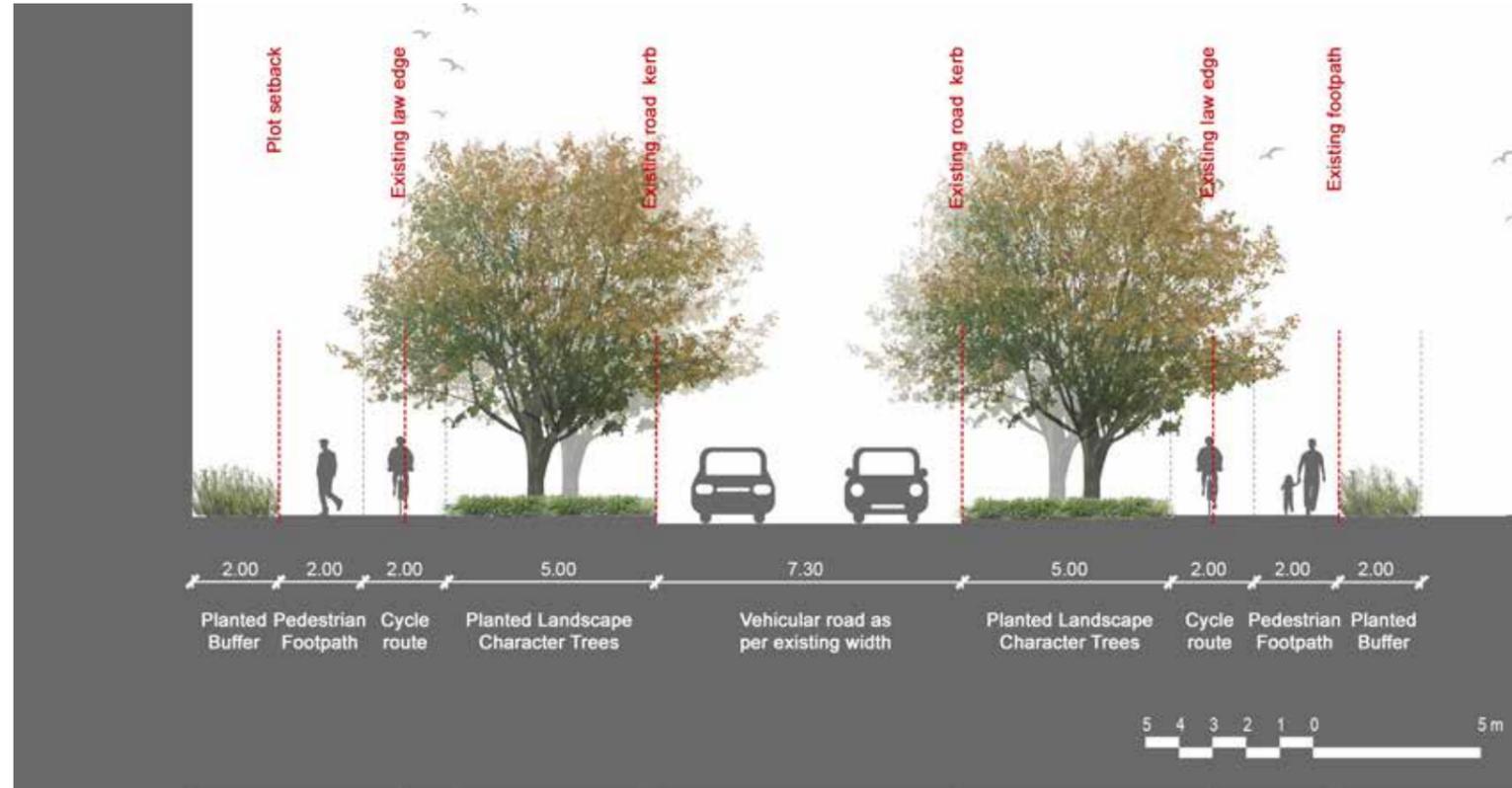
JJ Thomson Avenue will be characterized by the existing row of trees and under storey wide strip of planting. The crossings are marked with block paving and a reduced width of the road to facilitate pedestrian crossings.

The avenue will have one character all along its length however this character will change in two areas when the avenue intersects with the Green and when it intersects with the East Forum. In the two instances where JJ Thomson intersects with the Green and the East Forum the avenue will adapt to the character of these open spaces by becoming a gateway shared surface that is cut by hedgerows in the case of the Green and a shared surface link for the East Forum in the second intersection.

The width of the avenue will remain same and will have bus stops on-street to pick and drop off passengers and few on street parking spaces. A series of planted swales will be applied where possible in response to the limited space left by the existing trees and underground services. Swales will collect carriageway water runoff and act as points of interest and reduce the visual dominance of the road.

Materials

A foundation palette of street furniture, light and paving elements is defined to deliver unity along the avenue and where possible existing lighting and street furniture will be retained or reused in new locations. Existing trees will be retained where ever possible.



249.JJ Thomson Avenue Section



250.JJ Thomson Avenue Detail plan



Key plan

- A Footpath
- B Covered Cycle Parking
- C Cycle Route
- D Existing Trees
- E Block paving to crossing
- F The Green Gateway
- G Parking bay

8.2.3 Charles Babbage Road

Intent

Charles Babbage Road connects the two key points for arrival and activity within the site, East and West Forum, and forms a central East-West link for West Cambridge. The current form of the Road is a formal grand avenue with a single species of tree, the intent is to introduce a playful and informal structure reducing the scale of the road to reflect the range of uses and crossovers on the road.

Character

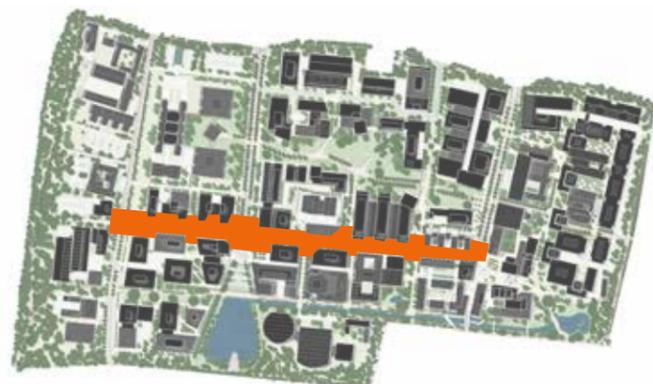
The Road has been divided into distinct areas of character relating to the associated land use, reflecting where arrival points occur, where activated frontage are located, the location of bus stops and on street car park/drop off points.

The principal initiative of the design strategy defines character zones by varying tree species and planting which will augment the existing grand boulevard tree design. The public realm will also be fragmented with the introduction of WSUD bio-retention areas.

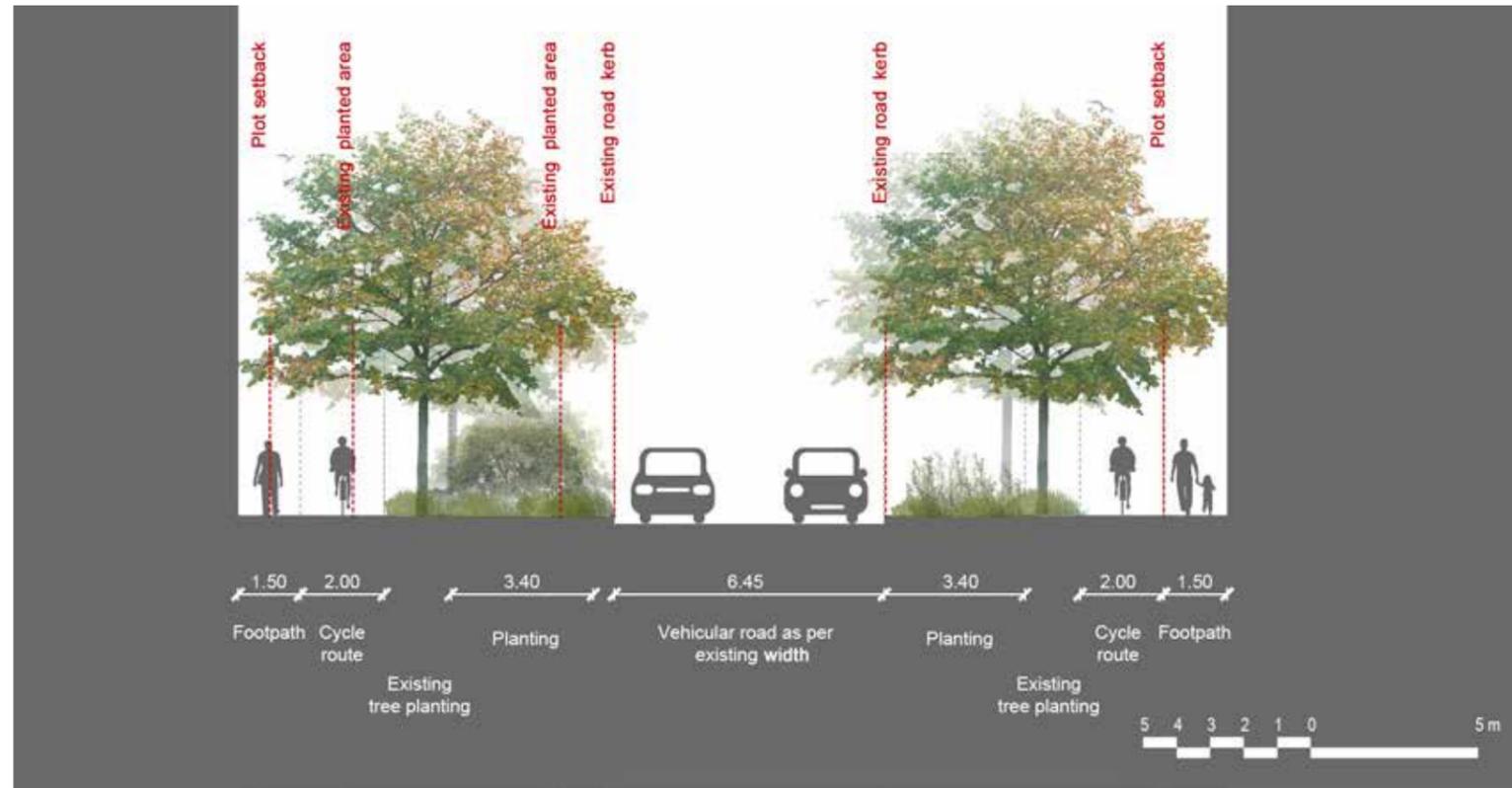
Materials

A foundation palette of street furniture, light and paving elements is defined to deliver unity along the road and where possible existing lighting and street furniture will be retained or reused in new locations. Existing trees will be retained wherever possible.

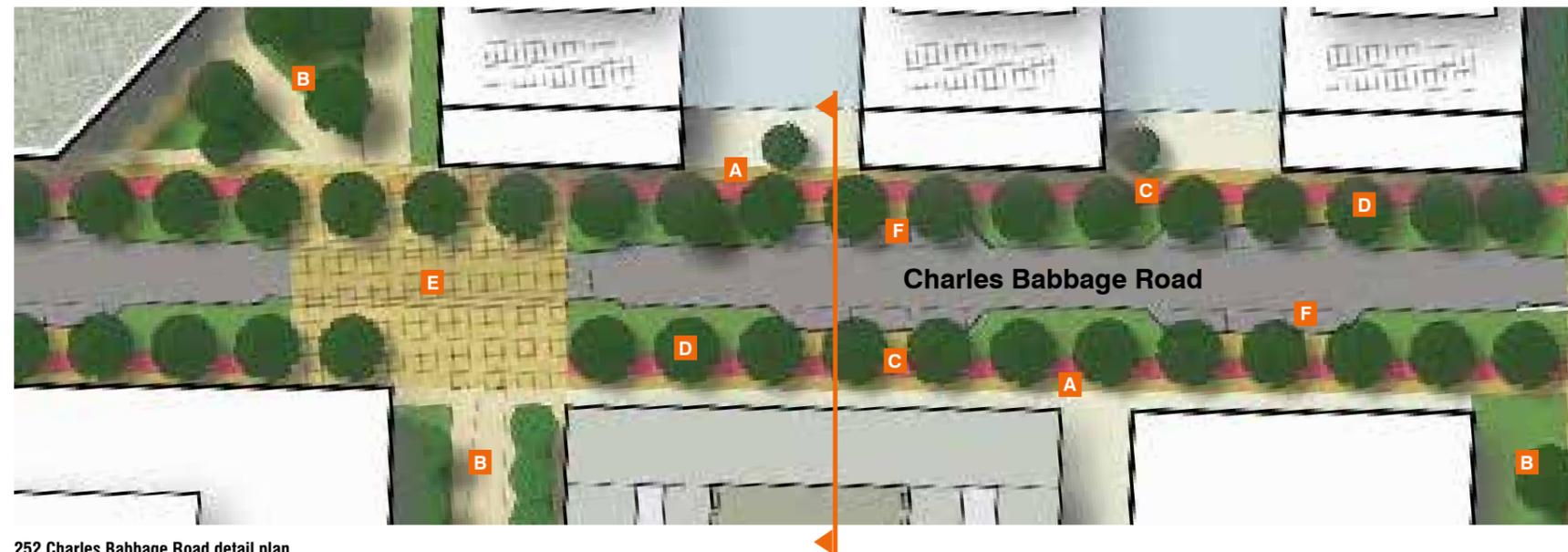
With the inclusion of WSUD areas the kerb levels will need to be reduced which will also promote the road as a pedestrian/cycle friendly environment. Crossovers will be at grade, but will be noted with a change of material such as block paving.



Key plan



251. Charles Babbage Road Section

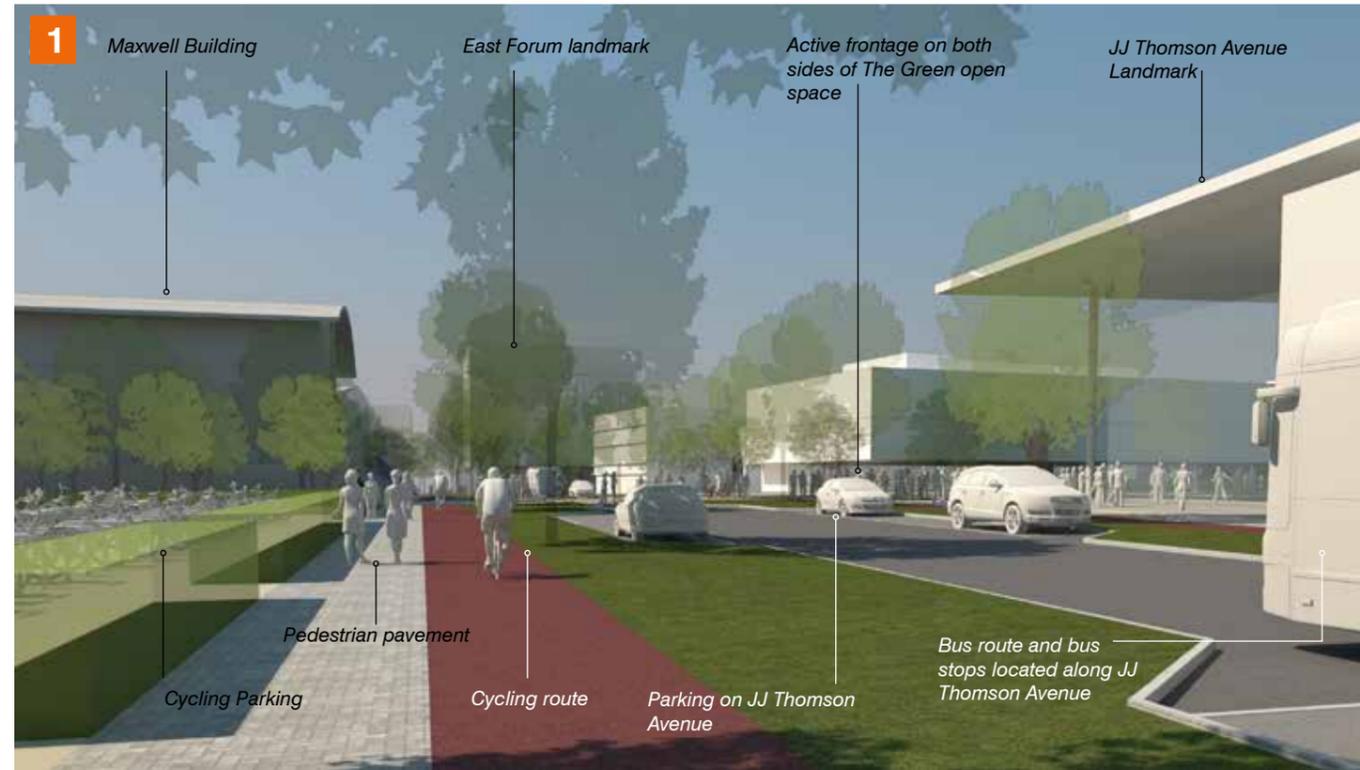


252. Charles Babbage Road detail plan

- A Footpath
- B Green links
- C Cycle Route
- D Existing Trees
- E Block paving to crossing
- F Parking bay

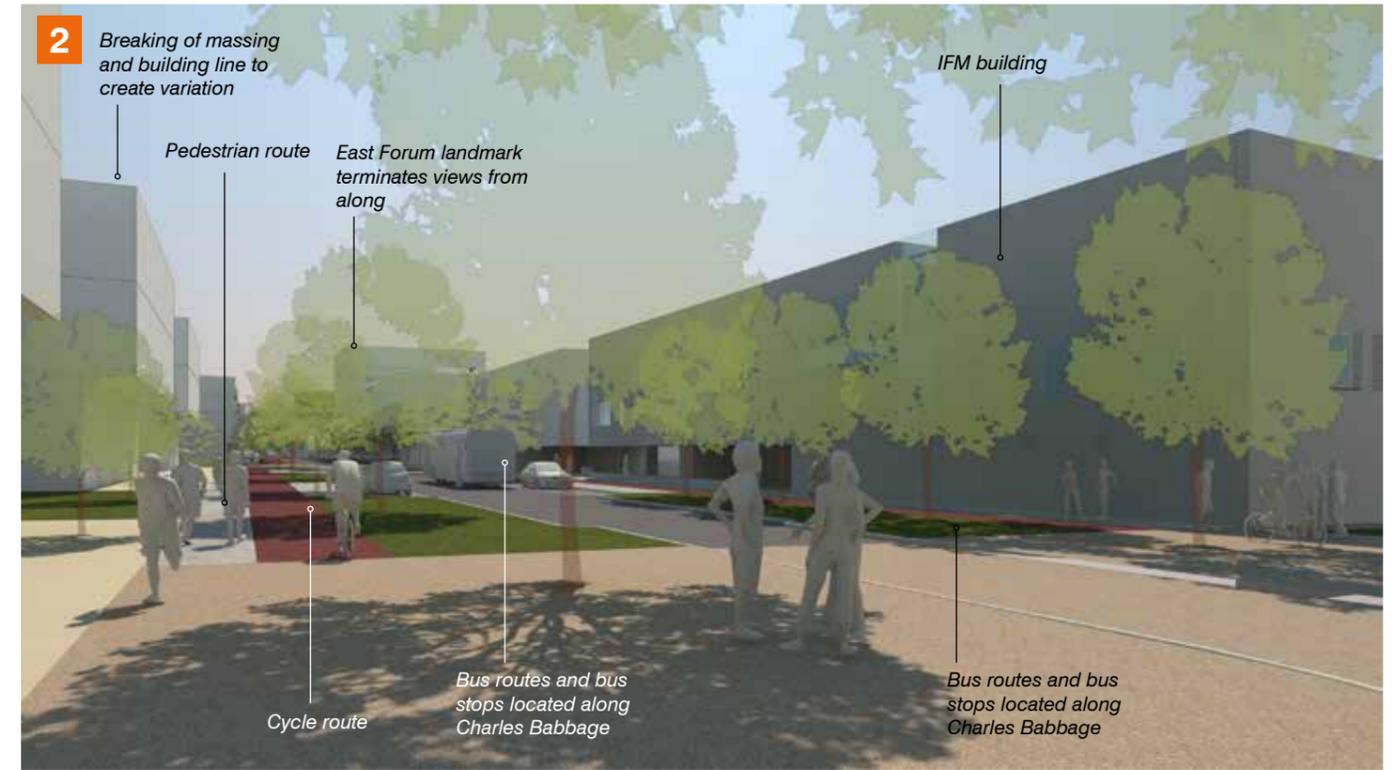


KEY PLAN FOR VIEWS



253. JJ Thomson Avenue Character Area - view along JJ Thomson Avenue, looking south to the East Forum spaces

The Green open space is prominent from JJ Thomson Avenue. The Cavendish III Laboratories form a strong frontage to the street and a prominent corner visible from The East Forum, enabling these spaces to communicate and strongly link the site together.



254. Southern Character Area: Frontage to Charles Babbage Road - view towards the East Forum

The view shows how landmark elements can highlight key pedestrian spaces and provide new enclosure to Charles Babbage Road, transforming it into a street with a more urban feel.

8.2.4 Western Access / Ada Lovelace Road

Intent

Western Access Road is the second link to the commercial cluster. The intent is to open this road at Madingley Road to vehicular, cycle & foot traffic. This road will provide access to the western side of the site and ease traffic volume to High Cross and JJ Thomson.

Character

The street will be characterised by low dense shrub planting as there is an existing underground gas main line limiting tree planing. However, the existing row of trees towards the south of the street will be maintained where possible.

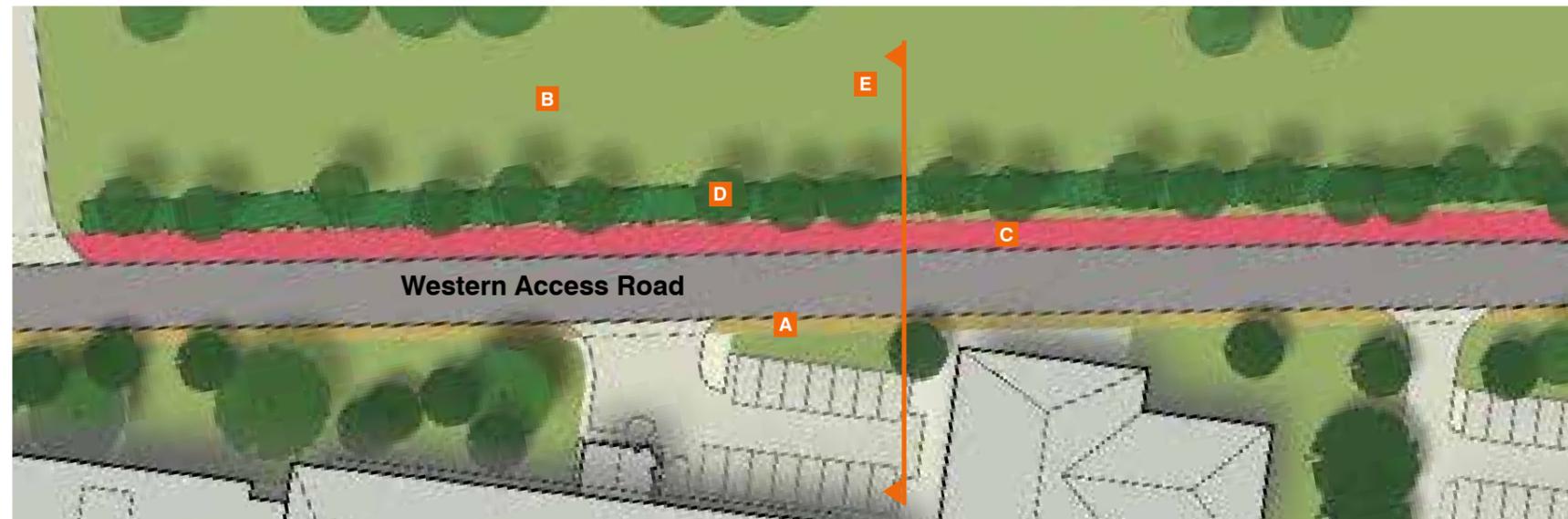
The northern section of the street will be widened by approximately 500mm to match the 6m width at the southern section. The street will also have some on-street parking spaces.

Materials

A foundation palette to match the other roads unifying the road network whilst providing individual character.



255. Western Access / Ada Lovelace Road Section



256. Western Access Road Detail plan



Key plan

8.2.5 East Green Link

The Link has origin in an existing space which served for both pedestrian and vehicular access. It is located between a series of existing academic buildings. Development of new academic and shared facilities buildings will transform this space into a cohesive, more urban environment.

The East Green Link will be one of primary Green Links within the proposed masterplan. This pedestrian only space will form the main public realm element within the eastern, predominantly academic cluster where it is expected to draw a significant footfall.

In the southern part, the Link connects to South Forum spaces and, from there, to the key pedestrian gateway in the south eastern corner of the site.

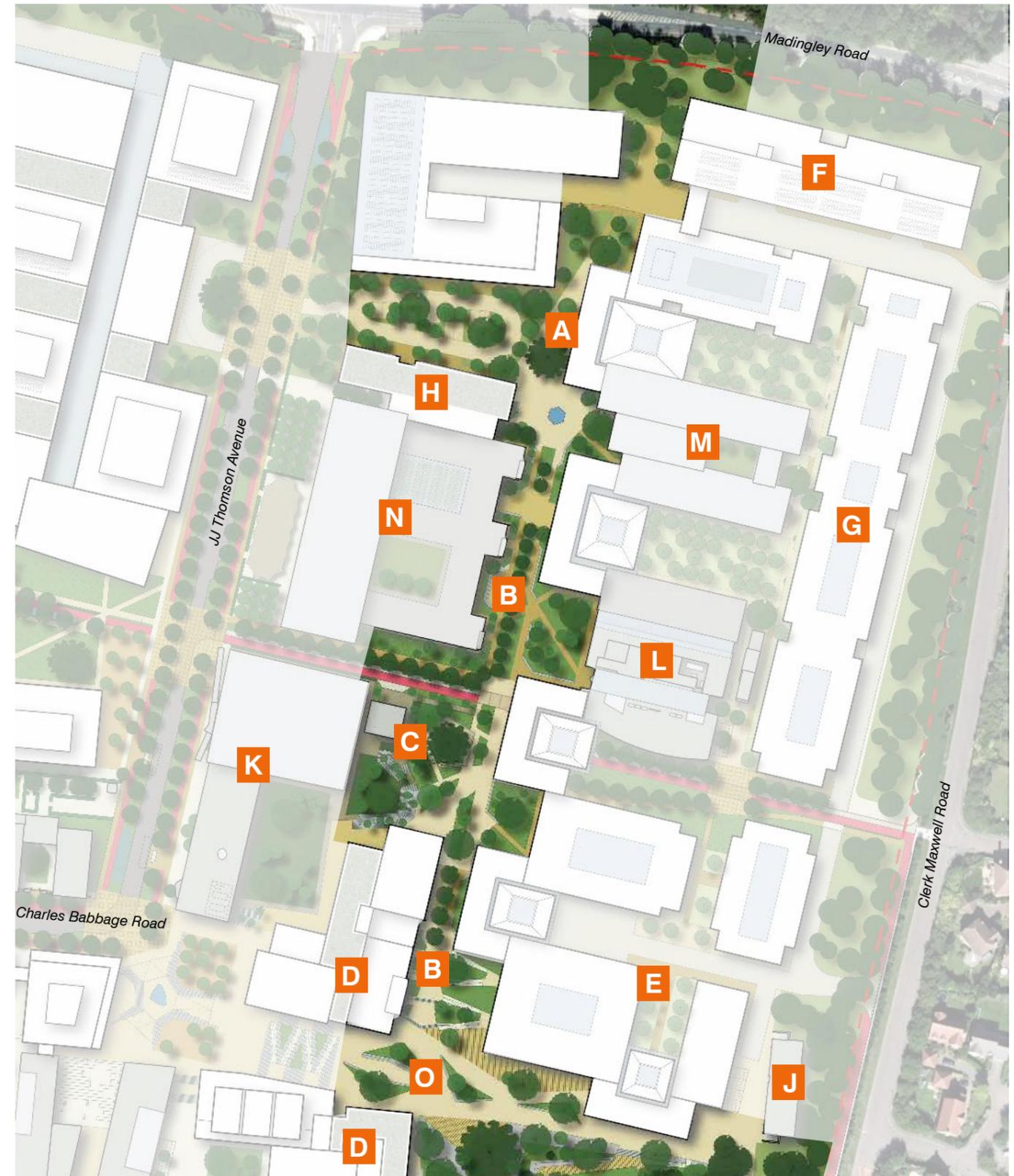
In the northern part, the Link joins with Arrival Square, a public space which links to JJ Thomson Avenue and the vehicular gateway at the Madingley Road.

Role in the Masterplan

- A large part of the new academic space to be provided in West Cambridge is organised along this Link. At present this includes space for the consolidation of the Engineering Department at West Cambridge as well as retained related academic facilities such as the Computer Laboratory within the William Gates Building and the Maxwell Centre (Physics);
- This Link will be the key connective space for the Eastern Cluster. Existing buildings, new academic uses and activities (such as waiting areas and informal space for interaction between students and faculties of various disciplines), can spill out into it;
- To the north of the character area a landmark reception building is located. This will be visible from JJ Thomson Avenue and will form frontage to the Arrival Square with drop on/drop off for visitors and taxi's.

- At the point where the Central Green Link meets the east-west Green, East Garden, a primary focal space for the Area, will be formed. From this space there will be pedestrian and cycle connection to the other spaces of the Green to the west and to Clerk Maxwell Road in the east;
- The East Garden is located centrally within the Cluster and forms the first in the series of gardens and spaces that form The Green public open space that traverses the site from east to west;
- This framework allows for the incorporation of existing buildings, which can form frontage to this space, and potentially add entrances and/or active uses, either through reconfiguration of existing buildings or addition of elements;

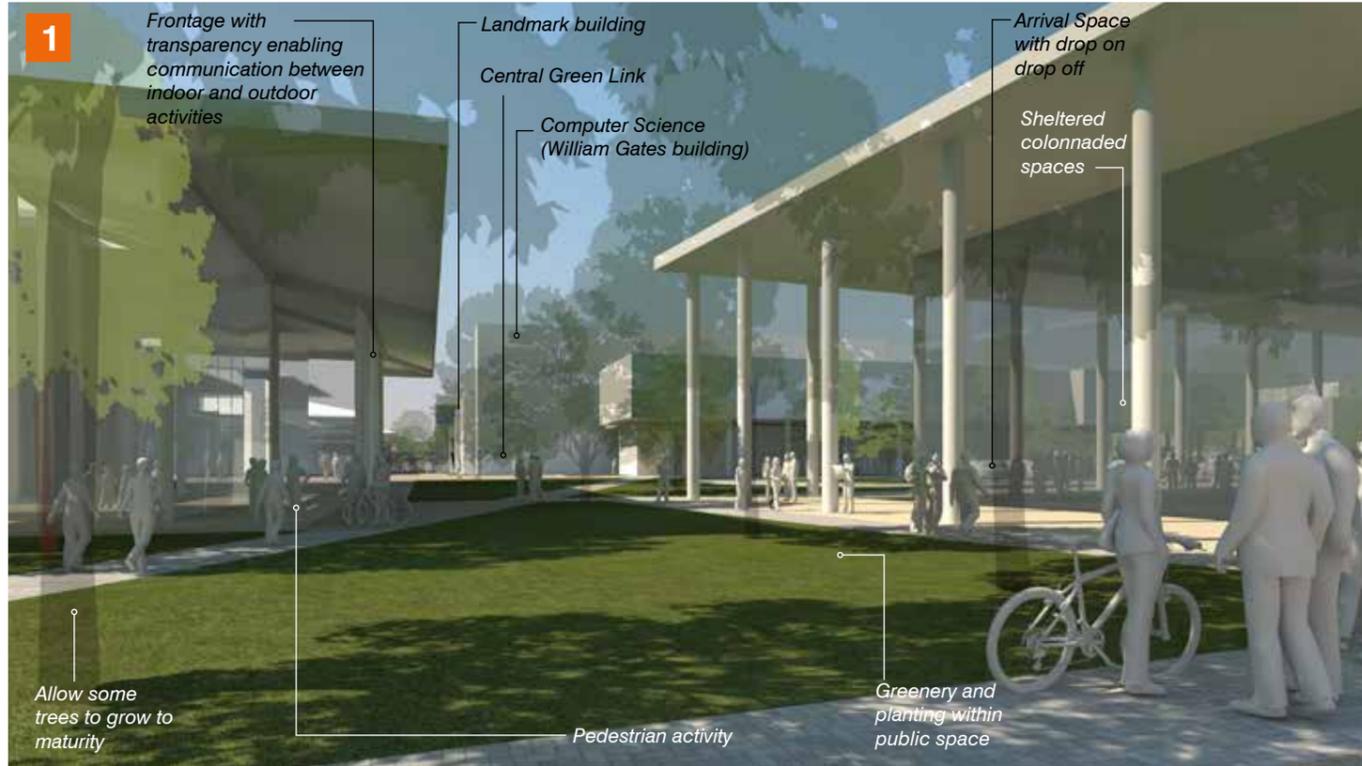
- A** Arrival Square and Reception Building
- B** Central Green Link
- C** East Garden (part of The Green)
- D** Shared Facilities Building
- E** Later phase academic development
- F** Multi storey car park
- G** New development
- H** Computer Science extension
- I** Whittle Laboratory retained and extended
- J** MRI Research Centre - retained
- K** Maxwell Centre and Physics of Medicine
- L** CAPE Building - retained
- M** Roger Needham Building - retained
- N** William Gates Building - retained
- O** East Forum - Lower Square



257. Eastern character area

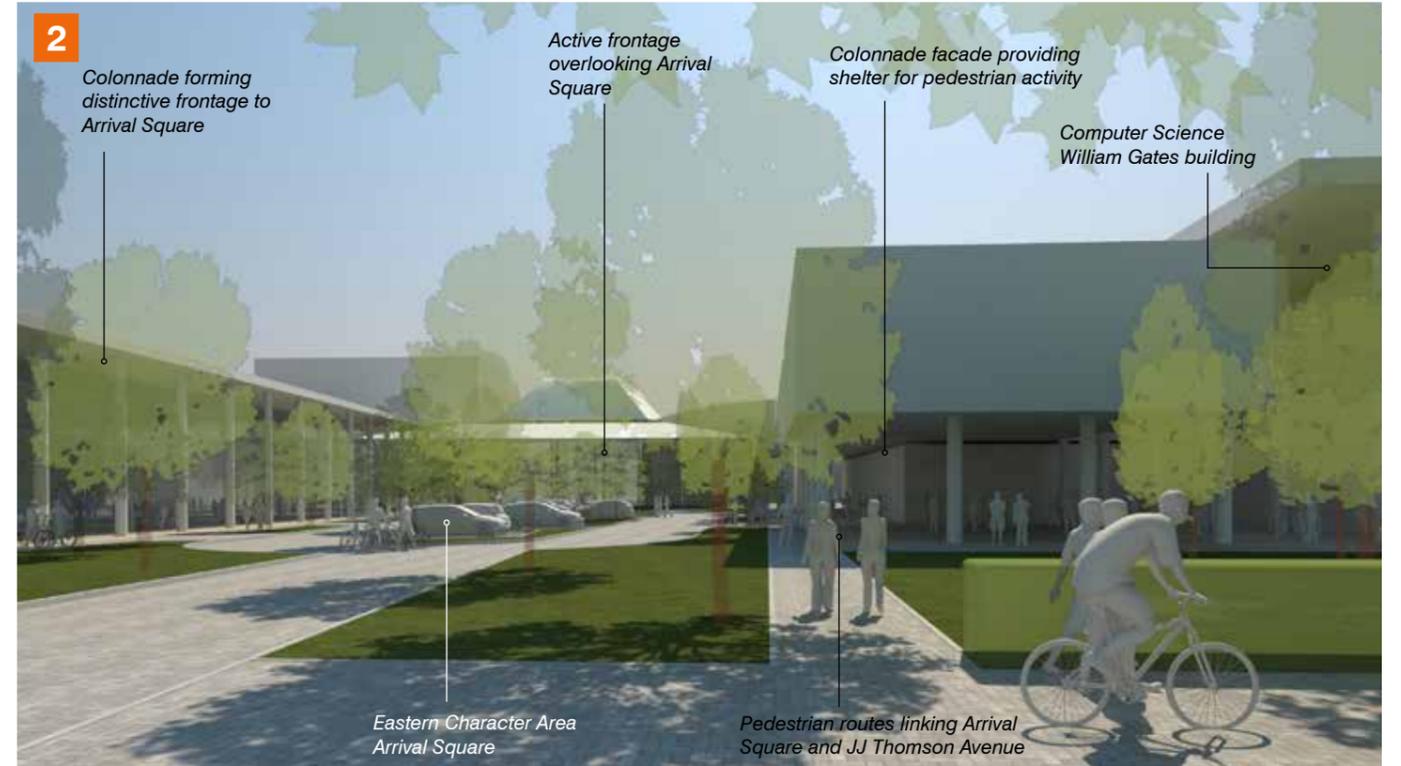


KEY PLAN FOR VIEWS



258. The East Green Link - looking south towards the Arrival Square and the East Forum in the distance.

The Central Green Link creates a sheltered, pedestrian environment for academic buildings spill out into, for social interaction and most importantly circulation between the Arrival Square, the Green and East Forum spaces.



259. The Arrival Square as viewed from JJ Thomson Avenue.

Arrival Square and landmark reception building, act as a key arrival experience for visitors coming to the area.

8.2.6 Central Green Link

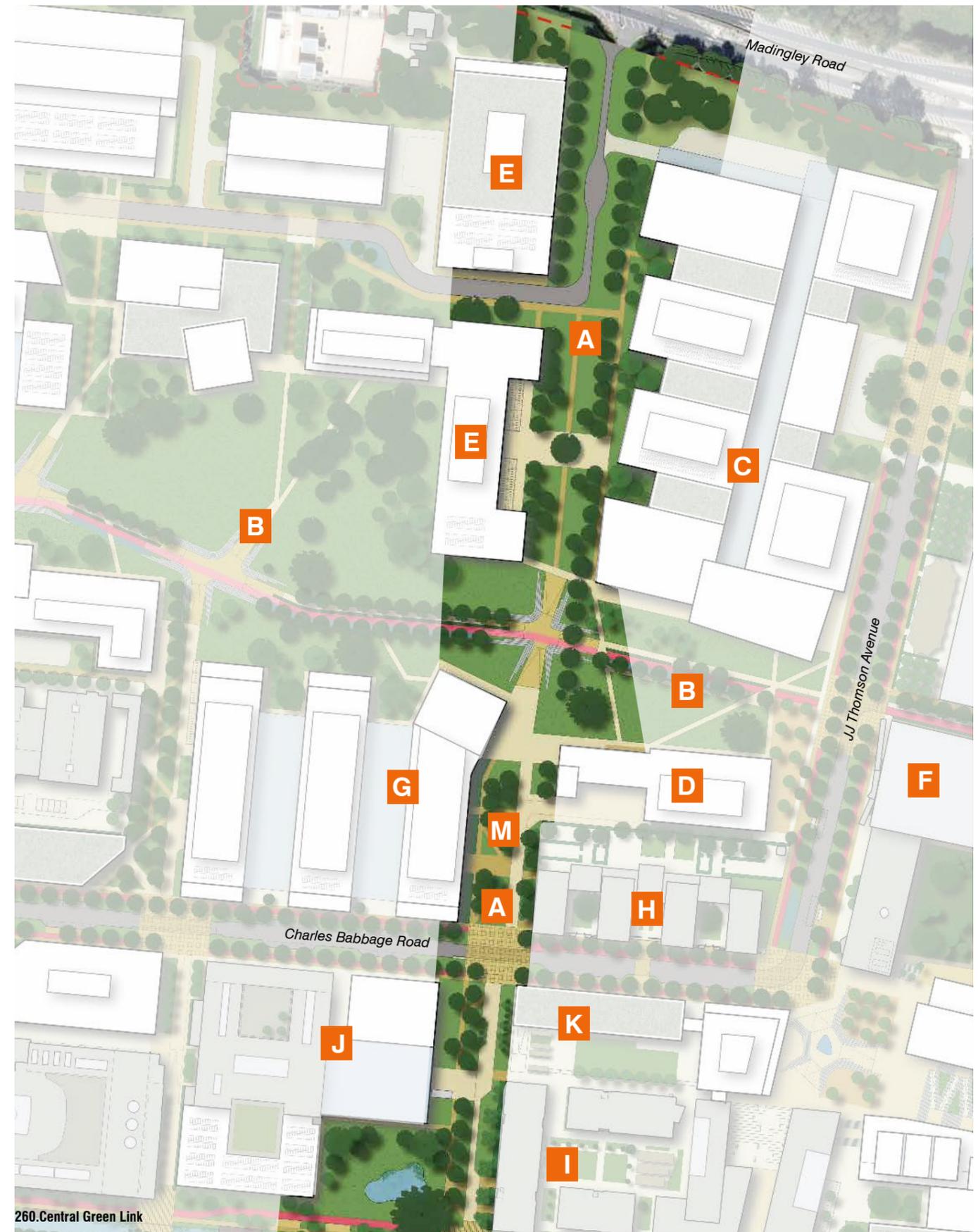
The Link is comprised of several existing spaces which the masterplan proposes to join and transform with landscaping.

In the north, the Link is in place of the former Vet School approach, where it incorporates mature lime trees. In the southern part, it includes a current service lane which will be widened to allow for a landscaped corridor.

Role in the Masterplan

- This Link provides a site-wide north-south space, between the Ecological Corridor in the south to Madingley Road in the north, in a pedestrian friendly and landscaped environment;
- At the southern end, where the link meets Ecological corridor, a widened area will be provided, suitable for sustainable drainage and/or trees to grow to maturity;
- In the north and the south, vehicular access will be allowed in parts of the Link to provide servicing, but there will be no vehicular traffic along its length;

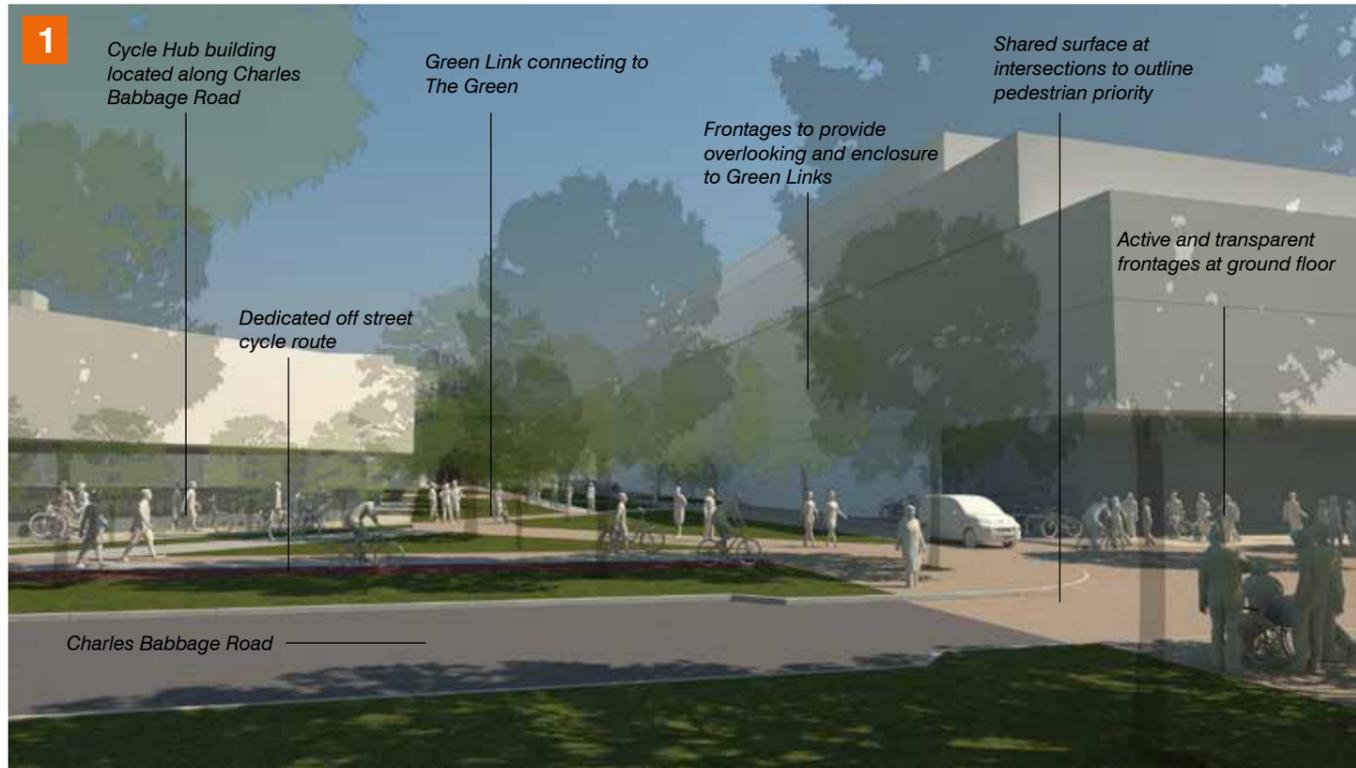
- A** Central Green Link
- B** The Green
- C** Cavendish III Laboratory
- D** Shared Facilities Building
- E** Potential Future Cavendish Expansion
- F** Maxwell Centre - Physics of Medicine
- G** New academic uses
- H** Residential North Block
- I** Residential South Block
- J** Department of Engineering buildings
- K** Innovation Centre



260. Central Green Link

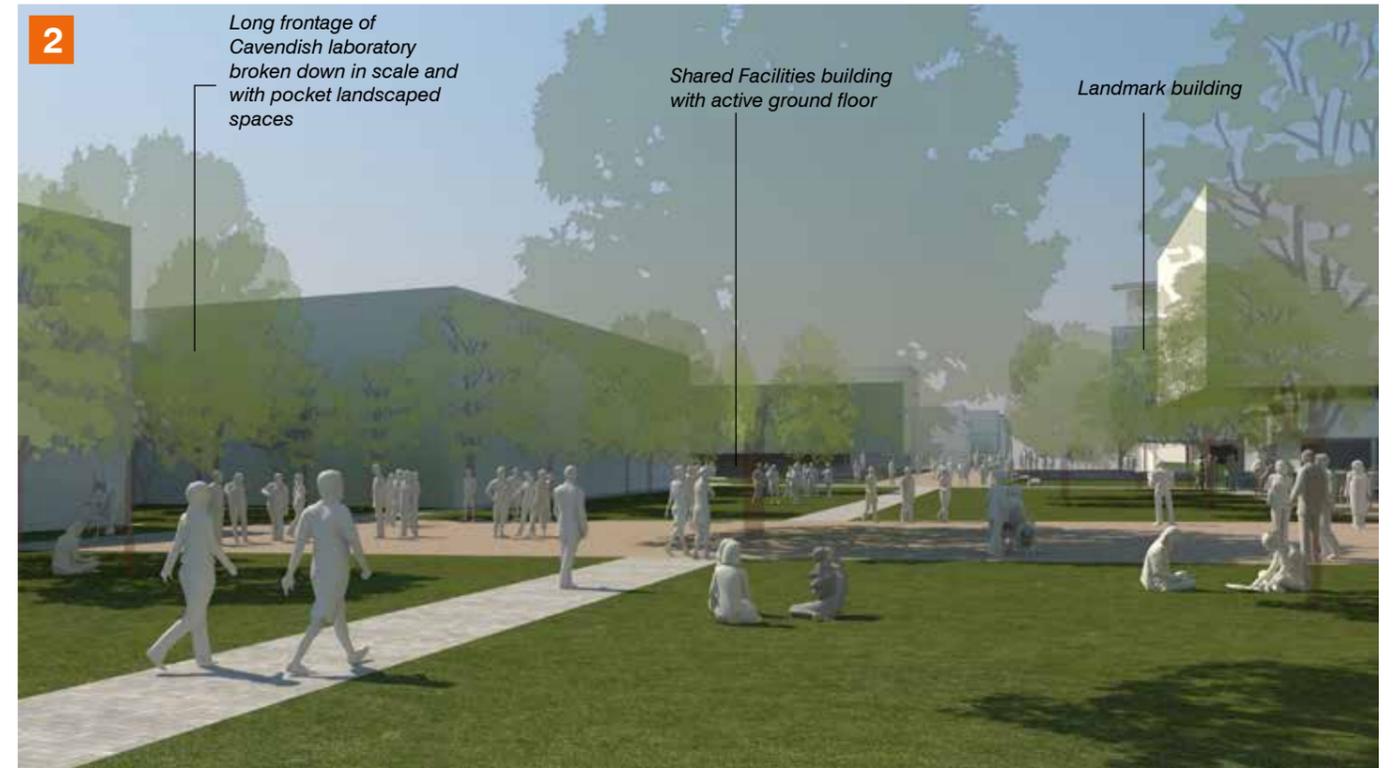


KEY PLAN FOR VIEWS



261. Secondary Green Links - view from Charles Babbage looking north along a secondary Green Link

View shows how development and landscape elements could frame key links and guide pedestrians towards The Green open space to the north. Links provide additional greenery along Charles Babbage Road.



262. Central Green Link - view looking south across The Green and Charles Babbage Road

Intent

The intent is to create friendly alleyways which connect between the key open spaces (The Green, social hubs, forums) and the roads facilitating the movement of the visitors and enhancing their experience in the open spaces.

Character

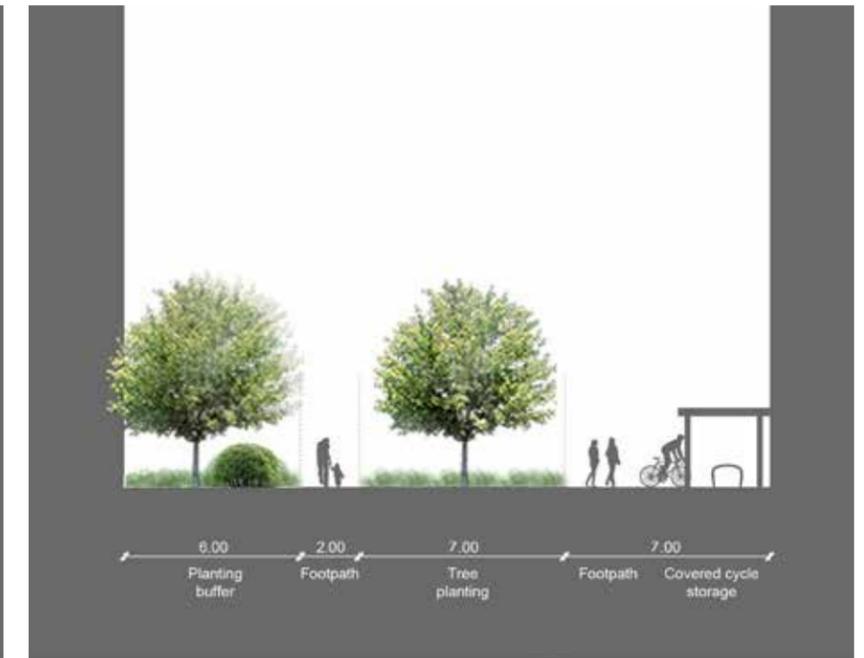
The Green Links will have a distinct character from other connecting routes, highlighted by parkland trees that relate to trees in some of the Central Gardens, water conveyance rills and under storey flower beds.

Materials

Existing trees in Green Links will be maintained and additional ones will be planted to enhance the linearity of these links. A comprehensive palette for the street furniture, light and paving elements is defined to deliver unity along these links and respond to the site wide context.



263.Primary Green Link section A



264.Secondary Green Link section B



Key plan

8.3. Masterplan Setting

8.3.1 Illustrative Masterplan - relationship to its setting

The three views on this and the following page are from a group of views analysed through in the Landscape and Visual Impact Assessment process.

Views 1 and 7 show the impact of development on the views from the agricultural land in the south, while the View 6 shows the impact on the views from the nearby sports grounds in the East.

In the Volume A, these three views were used to show possible extent of visual impact of the parameter applied heights and the currently consented heights.

In the following images, the views are as current (with the existing heights) and as they would be if the Illustrative Masterplan was developed.

While the Views of the proposed parameter heights capture the maximum possible envelope within which the buildings will be allowed to be developed, they cannot show the proposed density of development as the proposed amount of development would not in any possible case fill the entire maximum proposed envelope of parameter heights.

Because of that, the following testing of the Illustrative Masterplan is done, aiming to show possible extent of impact of the proposed amount of development on the selected views. Although the Illustrative Masterplan is showing only one possible outcome of the application, it illustrates parameters, design guidelines and key masterplan principles.

View 1: In the existing view, Sports Centre and Materials Science, Chemical Engineering and Broers buildings stand out. In the Illustrative view, development is extended to the West of the site. While accent buildings reach the height of Materials Science building, majority of development is lower. The buildings along the southern frontage are below the height of the first phase of the University Sports Centre.

View 2: In this view, development is seen above the existing hedge and trees. In the existing view, Broers Building and Maxwell Centre are the most prominent, while the existing Cavendish Laboratory is low, with flues visible above the vegetation. In the Illustrative view, the heights similar to Broers building appear in the West and two accent buildings pop above the skyline.

View 3: In the existing view, Physics of Medicine, Maxwell Centre, CAPE and Roger Needham buildings rise above the existing hedges and trees. In the Illustrative masterplan view, development of similar height extends towards the south. A few accent buildings are visible in the background.



267. Location of key views



265. Existing condition - key view 1



266. Illustrative Masterplan 2016 - key view 1



268. Existing condition - key view 7



270. Existing condition - key view 6



269. Illustrative Masterplan 2016 - key view 7



271. Illustrative Masterplan 2016 - key view 6

