

KEY

Contextual Information:

- Application site boundary
- 12.5 metres AOD
- 15 metres AOD
- 17.5 metres AOD
- 20 metres AOD
- 22.5 metres AOD
- 25 metres AOD

Contextual Plan 02: Existing Topography

All information other than that identified as being for approval is shown for contextual purposes only.

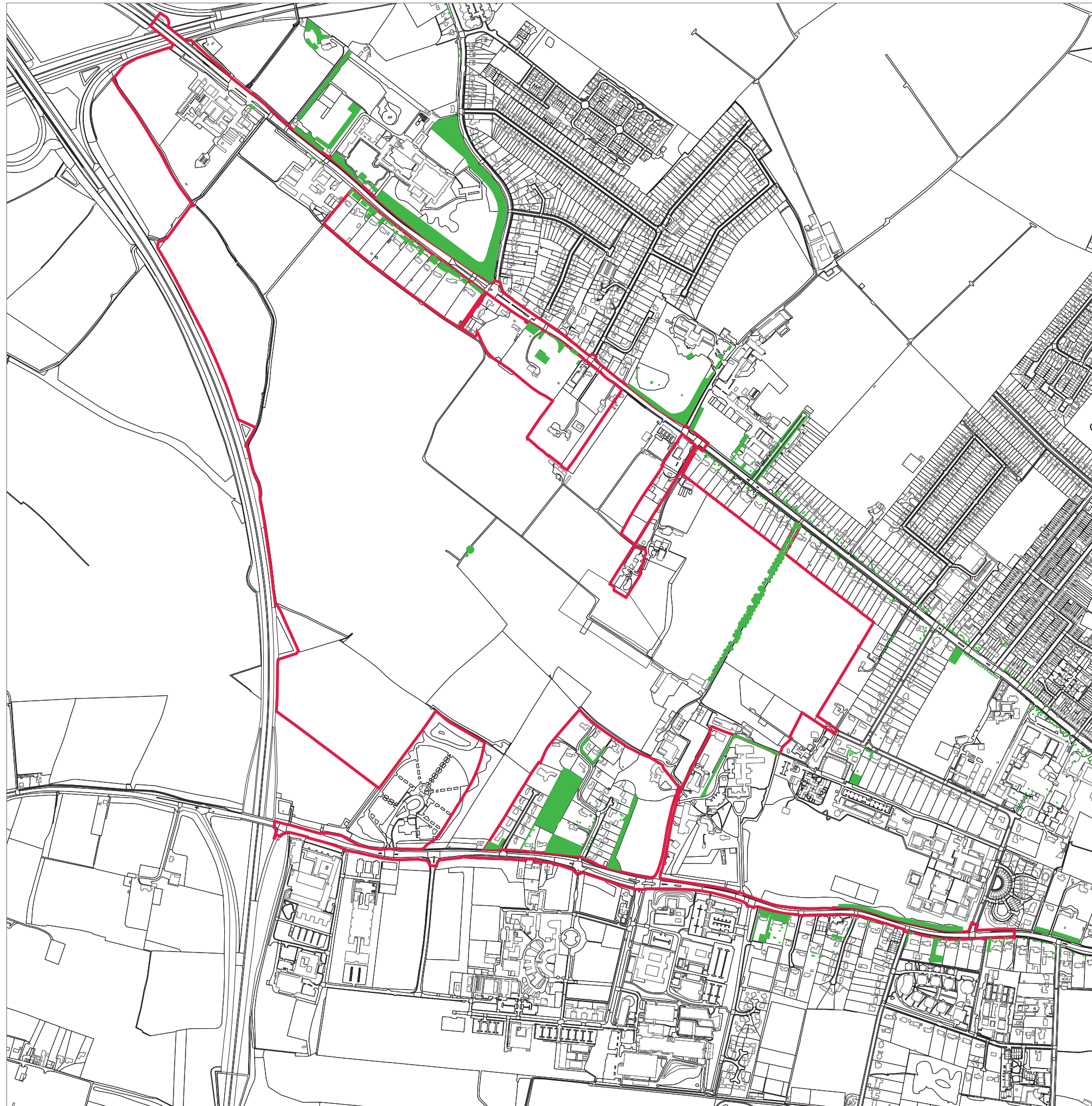
North West Cambridge NWC/OPA/CON/02 - Contextual Drawing: Existing Topography

September 2011



0 10 50 100m
Scale 1:5000@A1





KEY

Contextual Information:

- Application site boundary
- Trees with Tree Preservation Order to be retained
- Trees with Tree Preservation Order to be removed

Contextual Plan 03: Tree Preservation Orders

All information other than that identified as being for approval is shown for contextual purposes only.

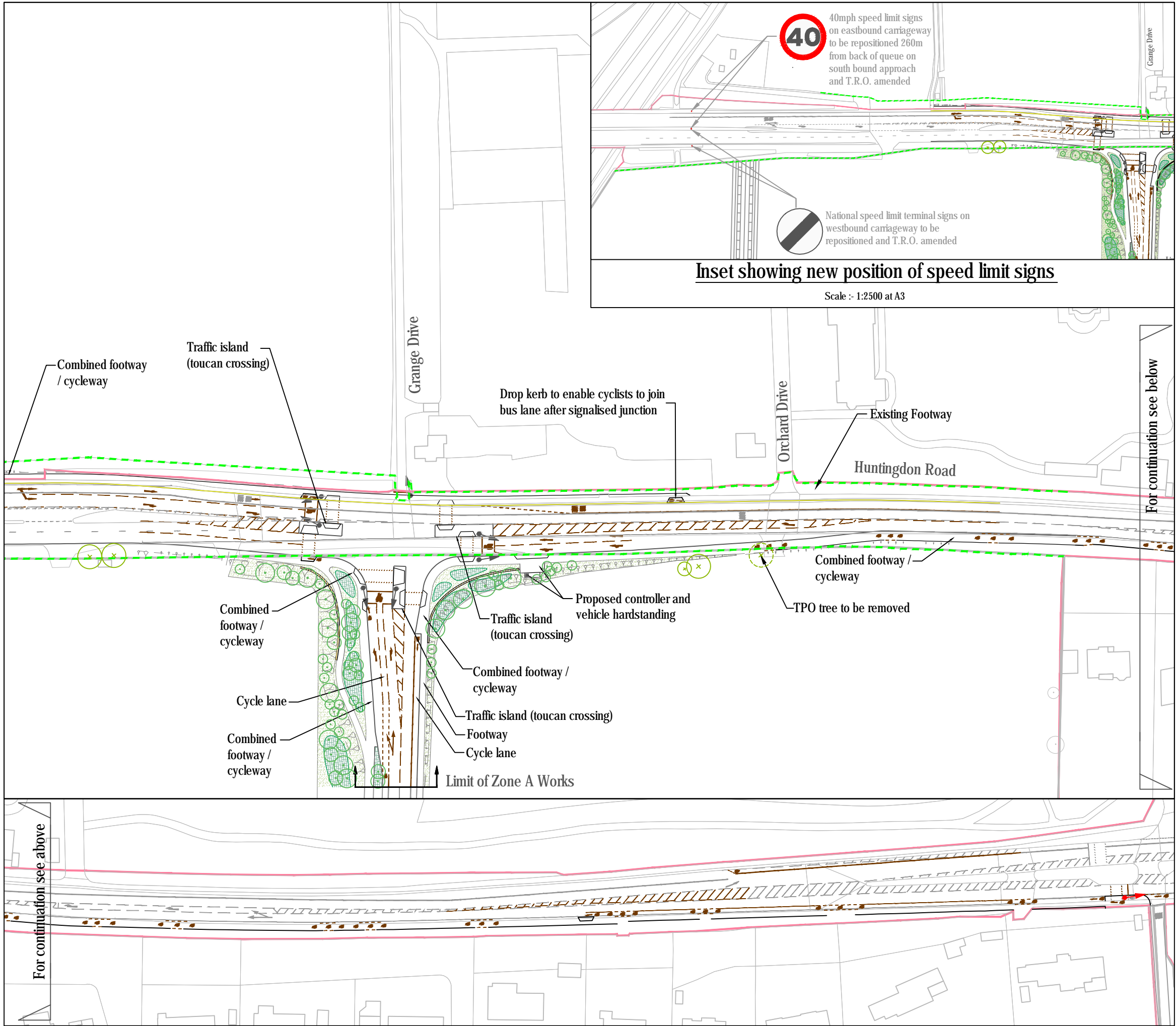
North West Cambridge NWC/OPA/CON/03/A - Contextual Plan: Tree Preservation Orders

February 2012



0 10 50 100m
Scale 1:5000@A1





KEY

Contextual Information :

- Roadmarkings
- Highway land boundary
- Signal heads
- Dropped kerbs

Landscape Contextual Information:

- Existing Tree Retained
- Existing Tree Removed
- Existing Vegetation to be retained
- Proposed Tree
- Proposed Lawn / Meadow
- Proposed Planting Area
- Proposed SUDS
- Proposed Feature Log Wall

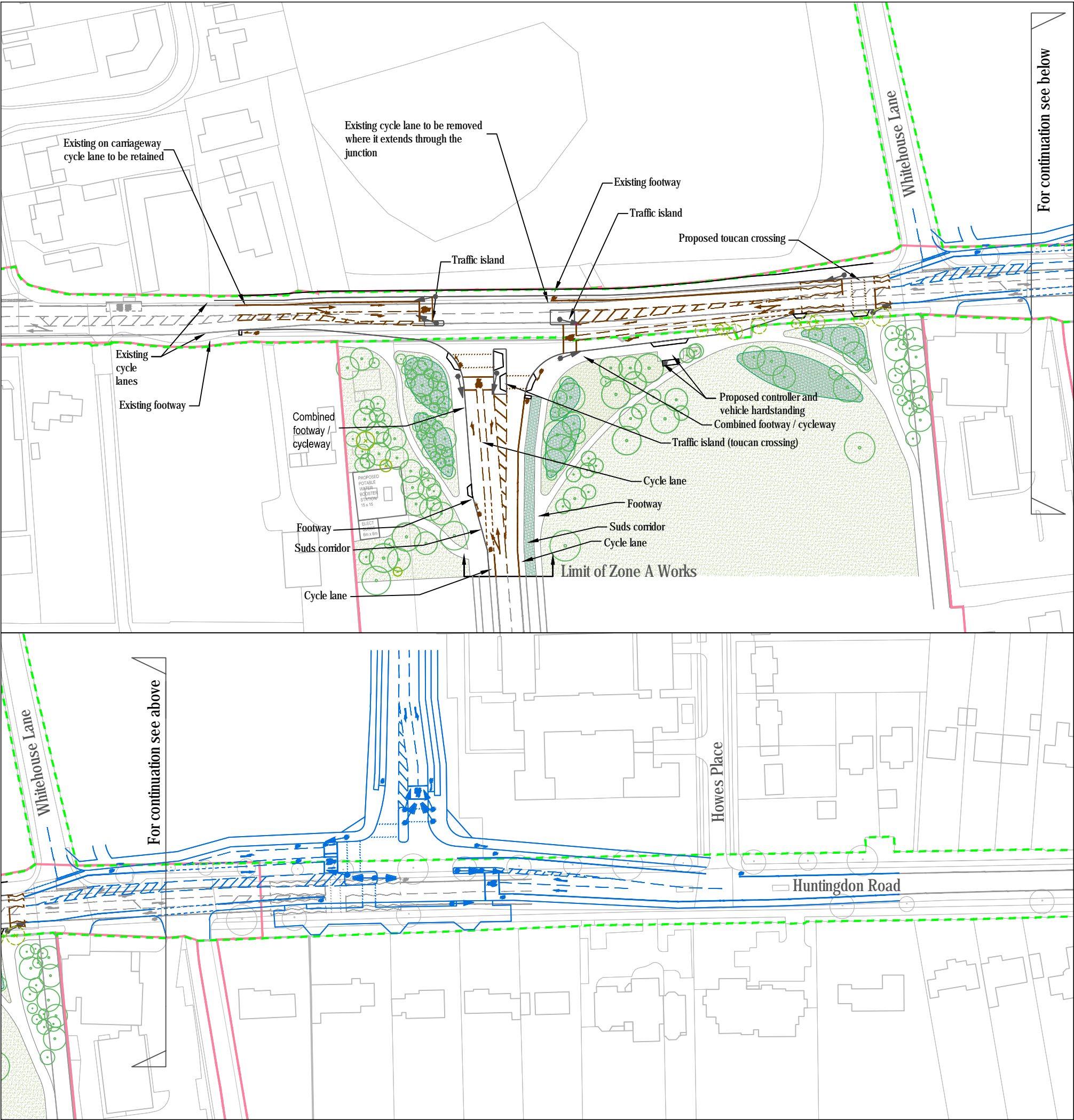
Carriageway works would be undertaken within the application site boundary wherever junction works are proposed and extend beyond the markings for junction works. The exact extent of carriageway works to be the subject of a condition.

For approval :

- Application site boundary
- Junction works

All information other than that identified as being for approval is shown for contextual purposes only.

North West Cambridge
NWC/OPA/CON/04 -
Huntingdon Road Junction West
March 2012



KEY

Contextual Information :

- Roadmarkings
- Highway land boundary
- Signal heads
- Dropped kerbs

Landscape Contextual Information:

- Existing Tree Retained
- Existing Tree Removed
- Existing Vegetation to be retained
- Proposed Tree
- Proposed Lawn / Meadow
- Proposed Planting Area
- Proposed SUDS
- Proposed Feature Log Wall

For approval :

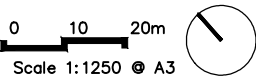
- Application site boundary
- Junction works

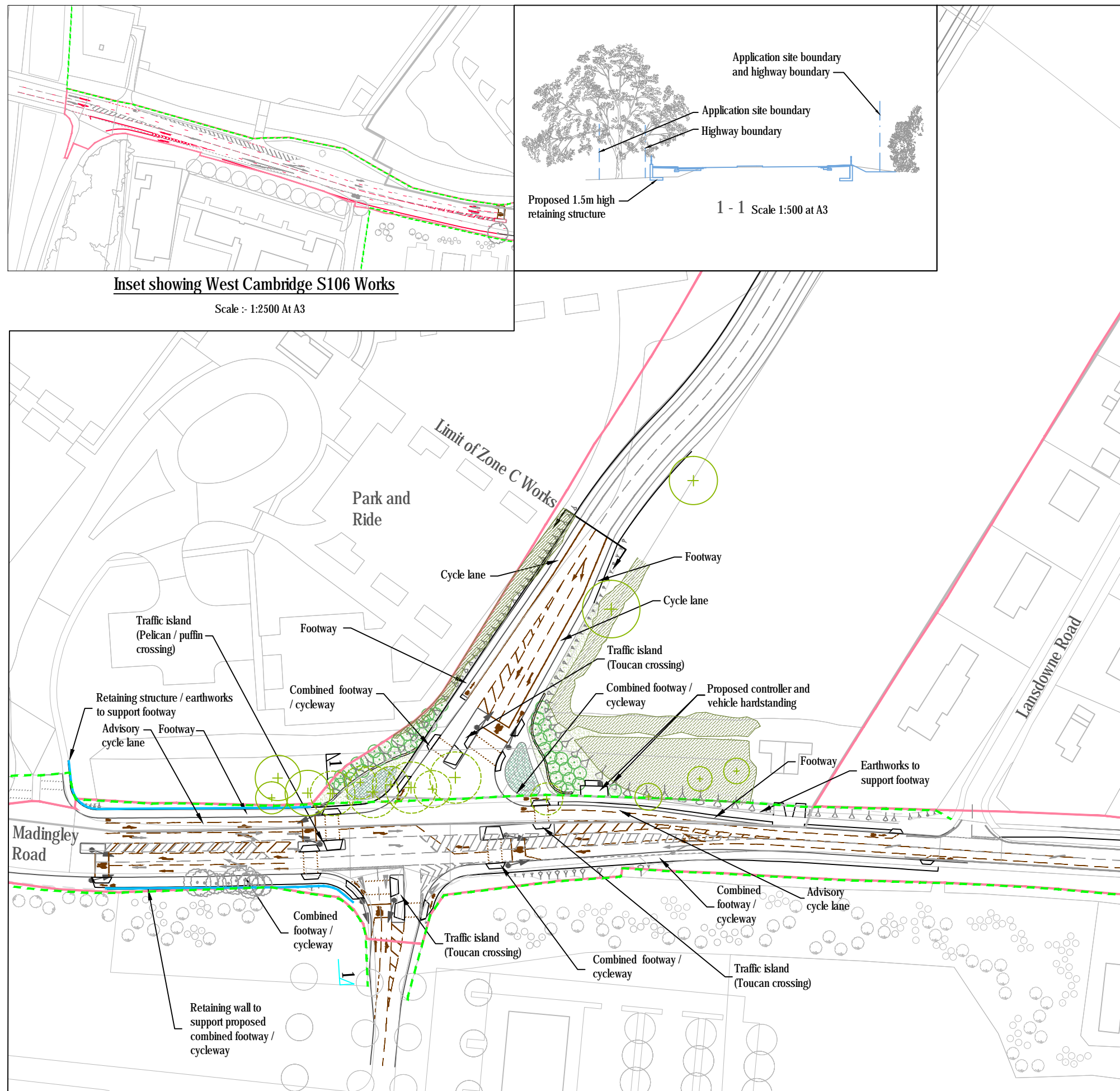
Cariageway works would be undertaken within the application site boundary wherever junction works are proposed and extend beyond the markings for junction works. The exact extent of cariageway works to be the subject of a condition.

All information other than that identified as being for approval is shown for contextual purposes only.

North West Cambridge
NWC/OPA/CON/05 - Huntingdon Road Junction East

March 2012





KEY

Contextual Information :

- Roadmarkings
- - - Highway land boundary
- Signal heads
- ▭ Dropped kerbs

Landscape Contextual Information:

- ⊕ Existing Tree Retained
- ⊕ Existing Tree Removed
- ▨ Existing Vegetation to be retained
- ⊙ Proposed Tree
- ▨ Proposed Lawn / Meadow
- ▨ Proposed Planting Area
- ▨ Proposed SUDS
- ▨ Proposed Feature Log Wall

Carniageway works would be undertaken within the application site boundary wherever junction works are proposed and extend beyond the markings for junction works. The exact extent of carniageway works to be the subject of a condition.

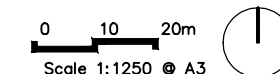
For approval :

- Application site boundary
- Junction works

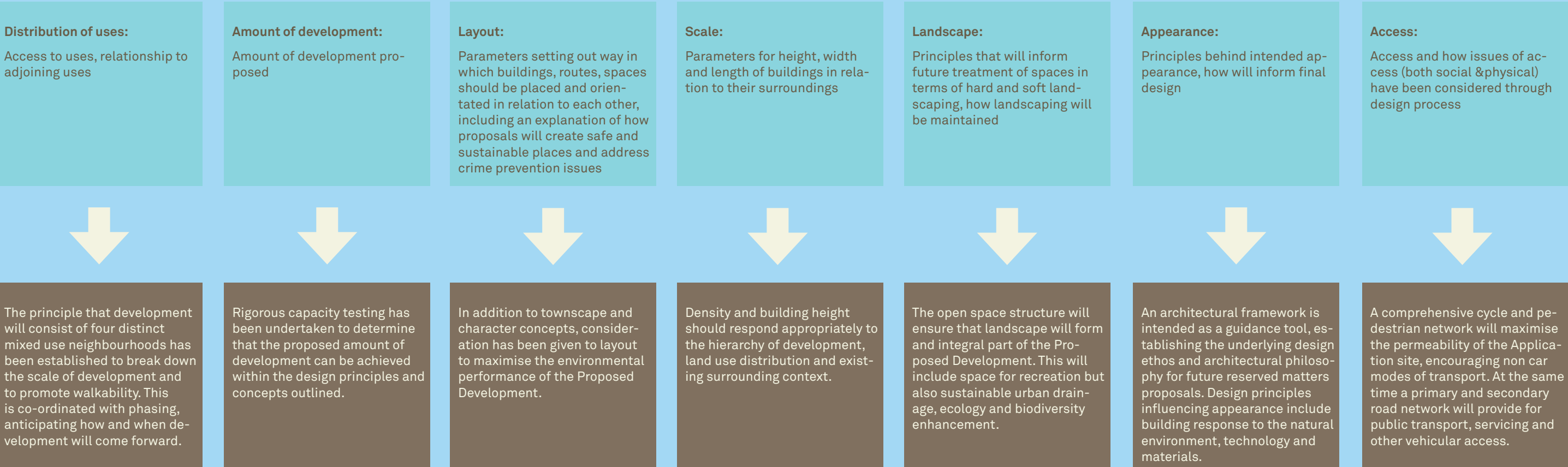
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North West Cambridge NWC/OPA/CON/06 - Madingley Road Junction West

March 2012



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B1

Design Principles and Concepts

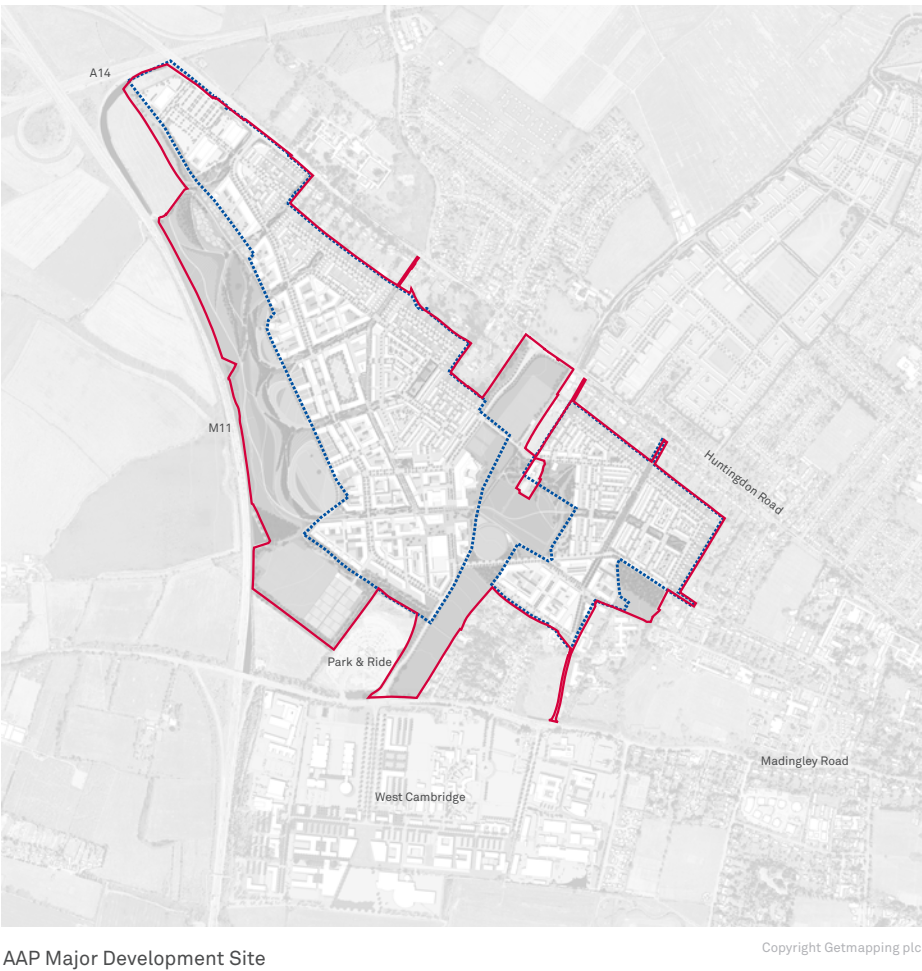
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B1. Design Principles and Concepts

This section builds on the design principles and concepts for the Proposed Development as established in Section A4 and articulated in the Application Drawings in Section A5. These design principles offer a description of the key elements of the Proposed Development and will form the basis of design guidance for future development in due course.

The design principles and concepts have been developed directly from the design influences established through analysis of the strategic context, the character and historic pattern of development in Cambridge itself and appropriate responses to immediate Application Site influences.

The design principles and concepts are presented within the framework of the Cambridgeshire Horizons Quality Charter four ‘Cs’, Connectivity, Character, Community and Climate.



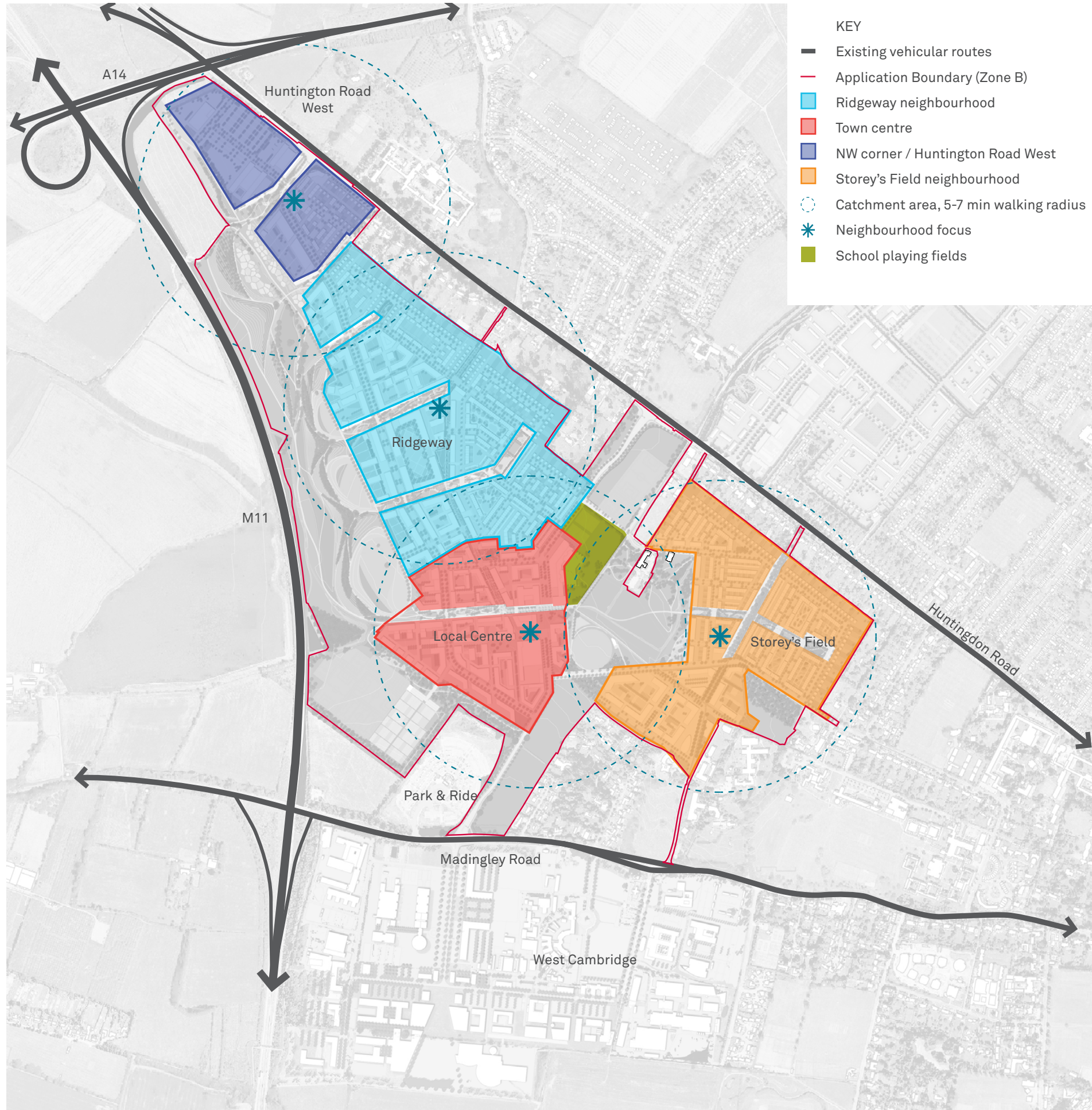
The University is committed to creating a successful, sustainable, mixed-use community at the Proposed Development. The aim is to create a significant addition to the city in terms of housing, employment and research accommodation, alongside local amenities and public open land.

Ensuring that the Proposed Development achieves these aims, while integrating with both the existing city fabric and surrounding community, is a principal objective. The Proposed Development will be unique, differentiated by the integration of the various University uses co-located with residential on the Application Site.

From the outset, residents and those working or visiting the Proposed Development will enjoy a high quality and sustainable way of life. These site-wide structuring principles seek to underpin and enable that ambition.

AAP Major Development Site

This diagram confirms how the principles underpinning the Proposed Development have been developed within both the Application Site Boundary and the AAP Major Development Site. It is important to note that significant areas of the Application Site have been left as public open land for both amenity and to create an appropriate setting for development.



B1.1 Connectivity

B1.1.1. Walkable Neighbourhoods

The Application Site has been structured into four distinct neighbourhoods, each within easy walking distance or a short cycle ride to the local centre, at the heart of the development.

Each neighbourhood will be defined by a mix of uses, existing and proposed landscape features and movement and access provisions. Each will be a distinctive community achieved through co-locating different land uses and densities. This neighbourhood framework provides a logical structure for the phasing of the development.

Two additional local nurseries have been located to create focal points for the residential neighbourhoods outside the local centre. These nurseries are located to ensure a 5-7 minute walking distance to surrounding residential areas.

B1.1.2. Walking and Cycling

A comprehensive cycle and pedestrian network has been created across the Proposed Development to maximise the permeability of the Application Site, establish legible walking and cycling routes and improve connectivity between the Application Site and the surrounding area. The aim is to encourage as many trips as possible to be made by non car modes. These walking and cycling routes provide linkages from the Proposed Development into existing and proposed surrounding areas, connecting to adjacent University and College uses as well as to the city centre.

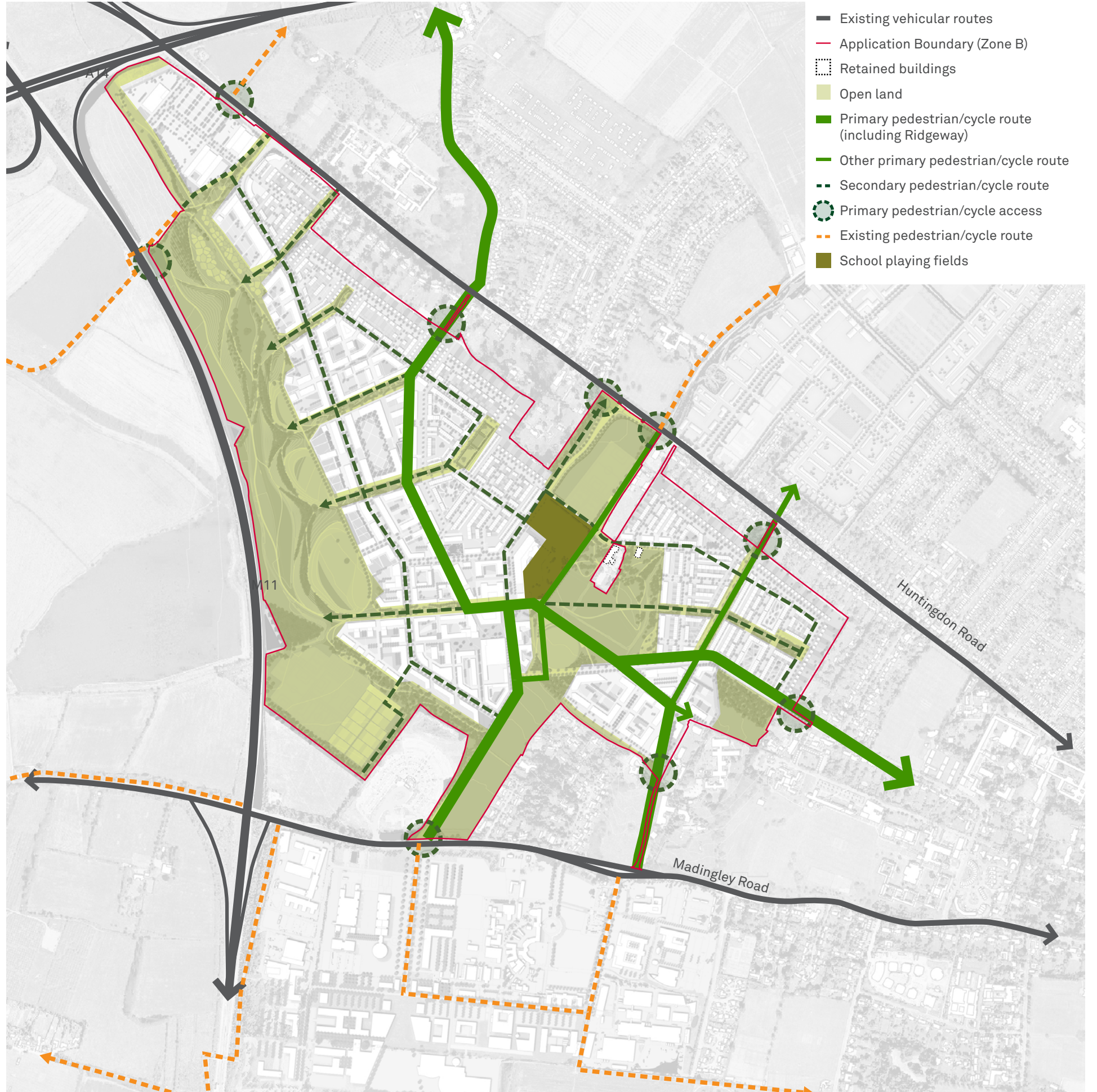
In addition, the opportunity for direct pedestrian routes through to the Park and Ride will facilitate footpath access from the site to the Park and Ride.

To ensure safer routes for pedestrians and cyclists through the site, all roads will have a maximum speed of 20 miles per hour.

A core concept of the Proposed Development is the Ridgeway - a high quality pedestrian and cycle link that will connect Storey's Way directly through the Application Site to Girton, along the ridgeline. The Ridgeway will also facilitate access to the other main cycle access points to the south and east: at the Madingley Road West Junction (adjacent to the Park & Ride), and to Madingley Rise.

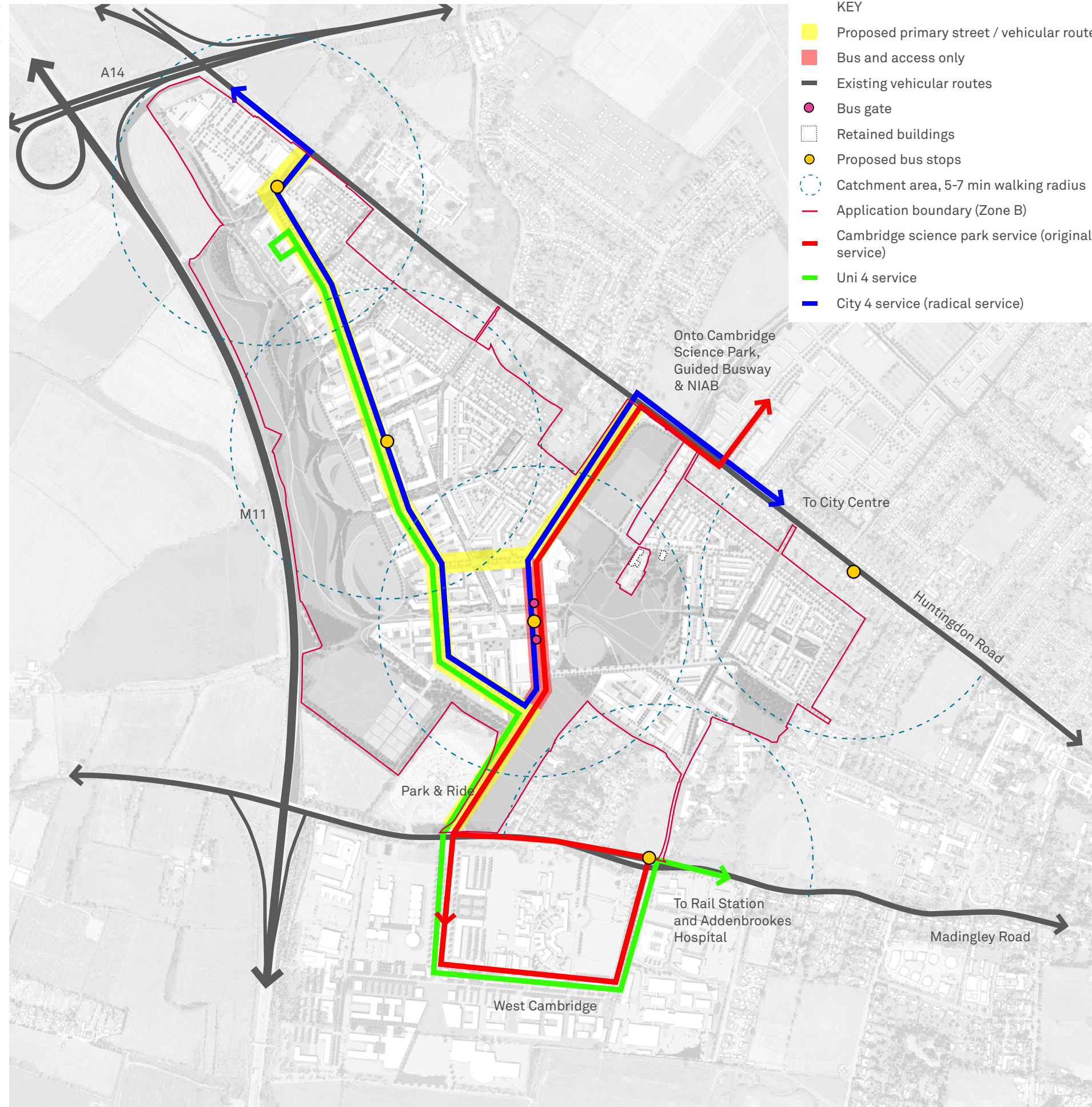
The Ridgeway will access the local centre within the Proposed Development, the key public transport routes and secondary links accessing West Cambridge, NIAB, and all parts of the Proposed Development. Secure, well-located cycle parking will be conveniently located with a provision in line with the cycle parking standards outlined in the Area Action Plan.

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Pedestrian and Cycle Movement

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B1.1.3. Public Transport

The access strategy allows for both orbital and radial public transport priority routes: the former will enhance connections across the outskirts of Cambridge between the Proposed Development, West Cambridge, NIAB Development, the Guided Busway and Cambridge Science Park to the north; the latter will link to areas within Cambridge, such as the City Centre, Addenbrooke's Hospital and the Railway Station.

Public transport services have been carefully routed through the Proposed Development to provide easy public transport access, to encourage residents and employees to use buses to access local facilities. Quality on-site bus stops and shelters will be provided, enabled with real time information displays. The services will be well-advertised, frequent and a sustainable alternative to the private car.

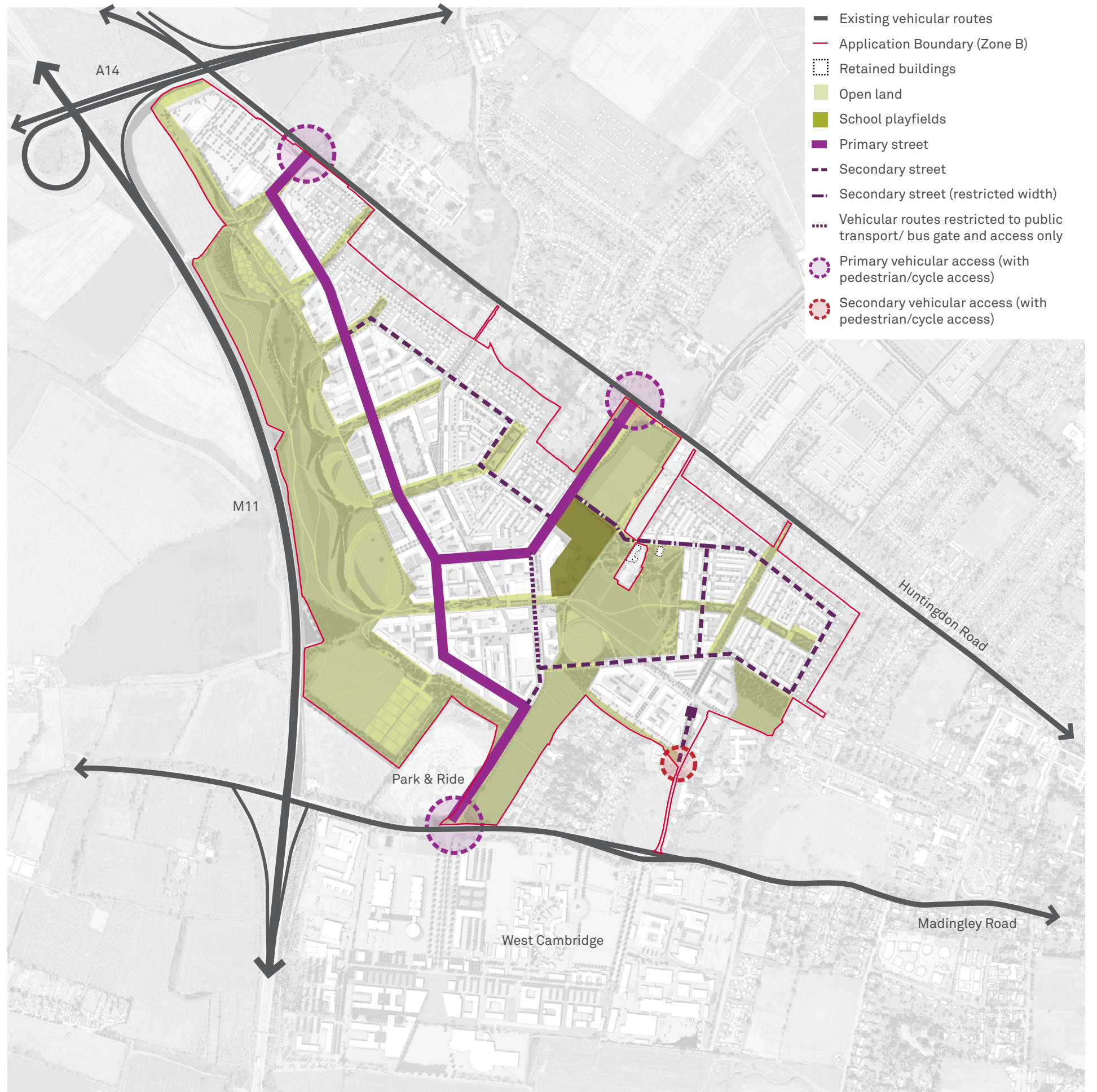
B1.1.4. Vehicular Movement

The two main vehicular access points to the Proposed Development have been located adjacent to the M11/A14, to remove as many vehicular movements as early as possible, and so minimising the impact on Huntingdon Road and Madingley Road. Within the development, a hierarchy of streets has been established to meet the needs of a variety of road-users. The primary street infrastructure enables good public transport accessibility, and is made up of three main components including:

- a radial route running west and south from Huntingdon Road to Madingley Road, around two sides of the local centre;
- an orbital route running from Huntingdon Road around the north side of the Local Centre;
- a short section of public transport and access only around the east side of the Local Centre.
- The secondary vehicular access from Madingley Rise will provide access to the research space in the south east of the Application Site, but will not provide through vehicle access.

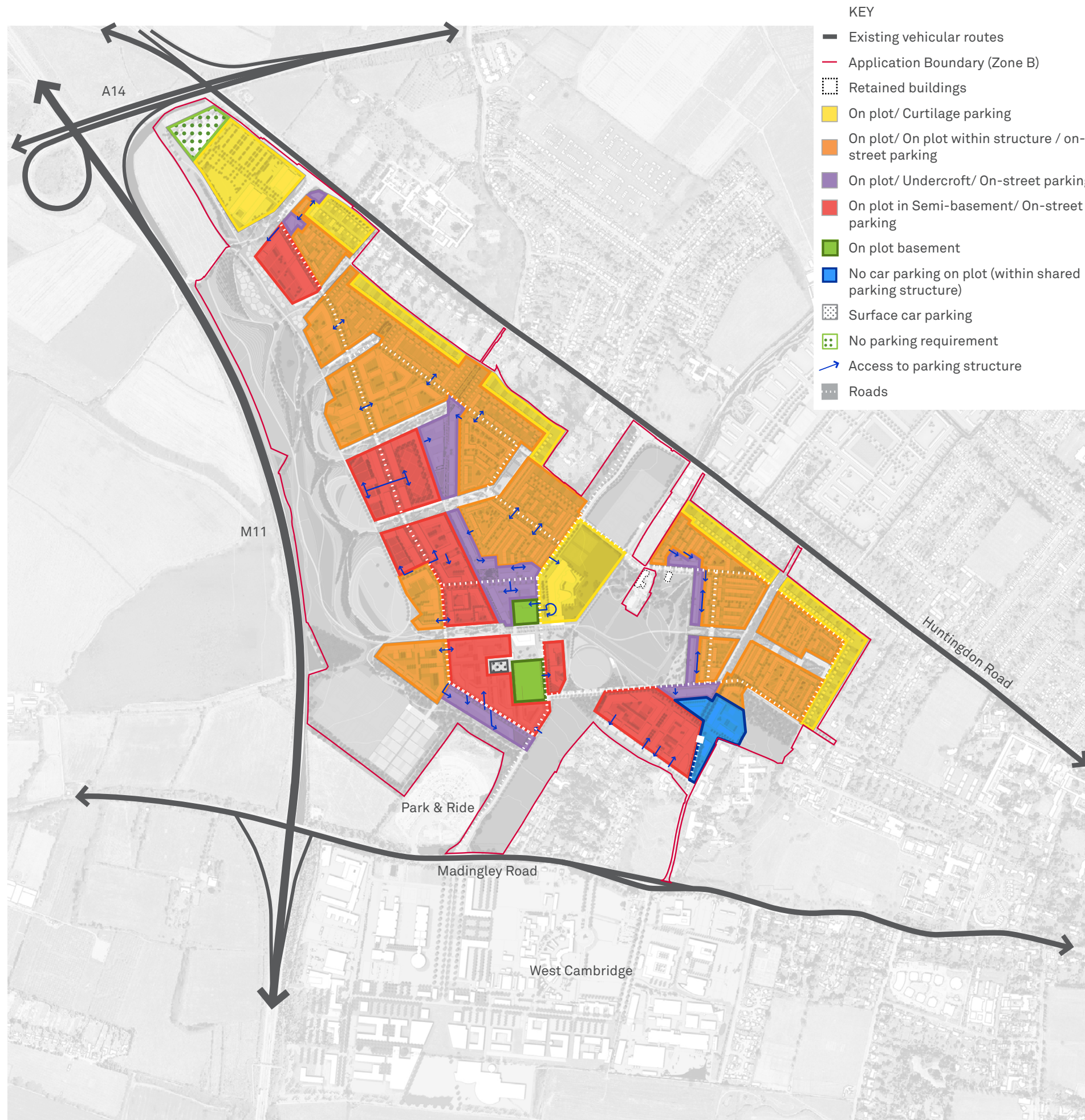
These routes will be designed in accordance with Manual for Streets to restrict vehicle speeds to a maximum of 20 miles per hour, and to minimise rat-running. Pedestrian/cyclist crossing facilities will be provided on key desire lines to deliver priority for non-car modes. The primary street network is supplemented with two secondary loops. Together with the primary network they create smaller parcels which consist mainly of tertiary 'home-zone' routes. These streets have an emphasis on pedestrian movement. In parallel with vehicular and public transport networks a comprehensive cycle and pedestrian network has been created. These routes provide linkages into existing and proposed surrounding developments. These include adjacent University and College uses and the historic core of Cambridge, as well as links within the development. In many instances these are combined with the landscape principles in order to enhance legibility and security.

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Vehicular Movement

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B1.1.5. Car Parking Strategy

The University of Cambridge is committed to the delivery of an effective travel demand management strategy to minimise car impact on the surrounding highway network and maximising non-car modes of travel. The delivery of an appropriate level of car and cycle parking on the development will form part of this strategy, but set firmly within the context of ensuring the delivery of a quality development.

The proposed residential and commercial car parking strategy for the Proposed Development reflects the needs of the future occupiers within the different land uses. The car parking provision has been established with reference to data collected from the surrounding area for similar land uses, and is lower than the car parking provision identified within the Area Action Plan. The parking provision levels have been set sufficiently robustly to ensure the delivery of a quality place, but not so high as to affect the delivery of modal shift sought by the Area Action Plan. The adoption of these car parking standards requires the provision of high quality, effective, non-car based alternative modes of travel, and a strong travel demand management strategy to minimise car use, and to reduce the need to travel by car. How this will be delivered within the development will be stated in the Framework Travel Plan. The University will commit to apply and manage the agreed Parking Strategy on a long-term basis.

B1.2. Character

B1.2.1. Land Use

The land use distribution and approach has been developed in parallel with both open space structure and primary access concepts to work very closely together. In turn, the density and building heights respond appropriately to the hierarchy of development and land use distribution proposed, while considering both the topography and the Application Site’s relation to the surrounding city or major routes.

The land use principles have been coordinated with phasing, anticipating how and when development will come forward over time. The main objective is the incremental creation of complete new places from the outset of development, with phase by phase finished progressively over time.

Through the design process a rigorous capacity study has been undertaken to demonstrate that the amount of development proposed can be achieved across all land uses, within the parameters set. Several options were tested through the process, in order to ensure that the design principles and concepts behind the distribution and concentration of uses may be reasonably accommodated.

Local Centre & School

The Local Centre will provide a focus for the Proposed Development as well as the wider North West Quadrant: providing an amenity and social focus for the growing community. The Local Centre has been located at the convergence of main routes, the orbital public transport route and the Ridgeway cycle & pedestrian way forming the movement spine of the scheme.

A complementary mixed use local centre is located at the heart of development, for ease of walking and cycle access for everyone. The most visible location has been chosen, as close as possible to Madingley Road and the Park & Ride to the south. This will facilitate interconnection with West Cambridge and the main vehicular access route into city centre. The CHP/ Energy Centre is also located here.

The school is located next to and closely connected to the local centre for the same reasons of access and visibility. This location also ensures that the school will connect directly with the open land for safety and to maximise the benefit of the relationship between the school and Storey’s Field.

Residential

The back to back relationship between new and existing residential uses has been incorporated as agreed through thorough consultation with existing residents. After establishing edge conditions to the north and east, residential uses are concentrated into three main neighbourhoods. The aim is to break down the scale of provision into identifiable and distinct communities, minimising through traffic while maximising walking and cycling access to the local centre, school and major open spaces.

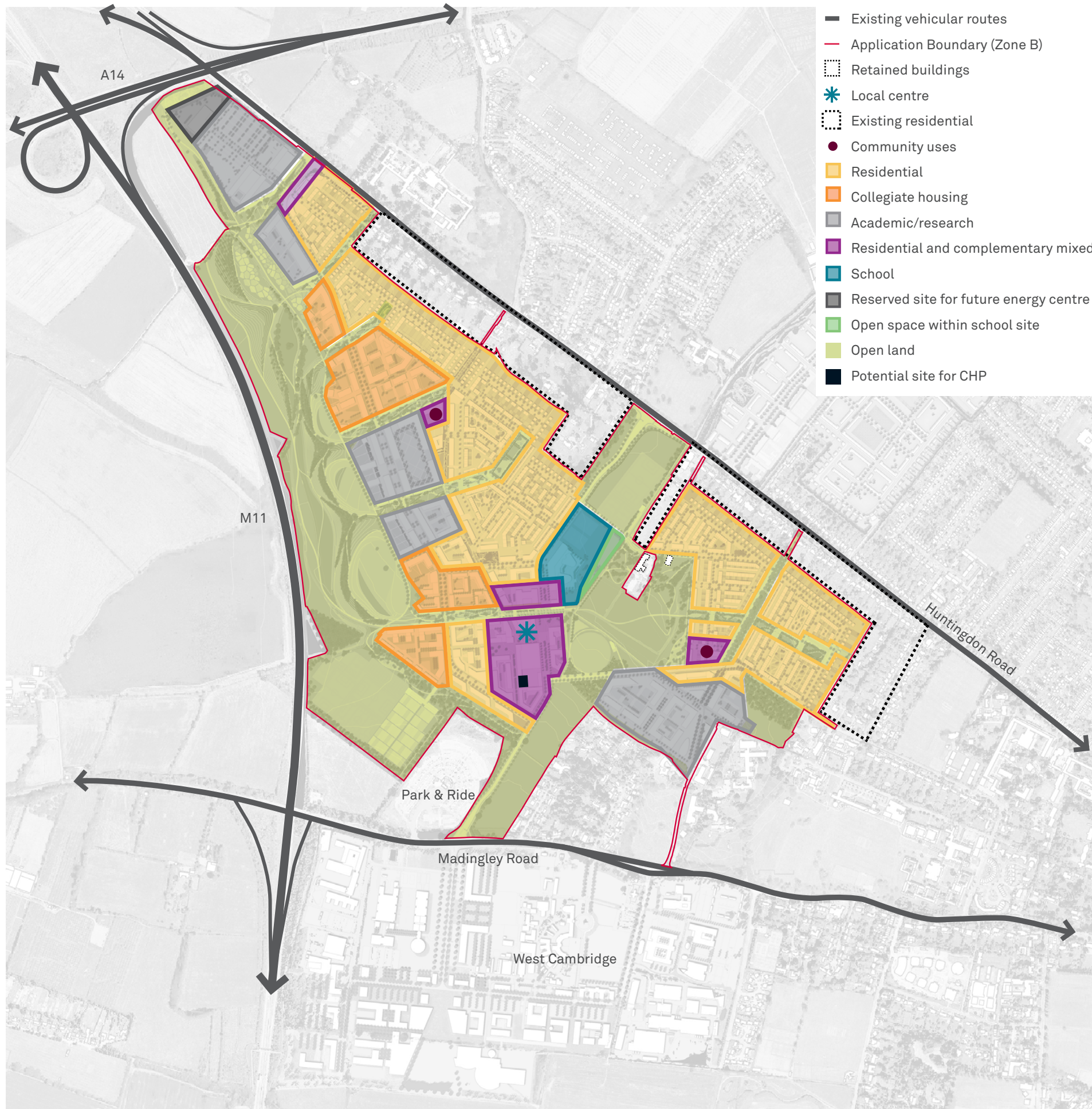
Collegiate Student Housing

Two clusters of collegiate student housing are located in response to likely demand and phasing. The first cluster adjoins the local centre, offering around 50% of total student accommodation provision. This cluster will benefit from adjacency to the open land to the south and west and proximity to West Cambridge and the Ridgeway. The second cluster will be developed in later phases, offering around 50% of total student accommodation provision. Located on the Ridgeway, with good connections to Girton College and Western Edge, this cluster will have a close relationship with the new research & development area to the south.

Research & Development

Three main clusters of research & development space respond to the opportunities of each location in different ways. Locations are considered in parallel with phasing, including the completion of West Cambridge campus. Each cluster is considered as a new academic site, similar in scale to existing central Cambridge sites, where co-location of buildings and facilities support interaction between academic disciplines and work.

The Madingley Rise site accommodates roughly 35% of capacity and reinforces the existing cluster of Environmental Sciences, including Earth Sciences, Astronomy and the BP Institute. The Western Edge site accommodates 50% of capacity, located on the Ridgeway and forming a highly visible University edge. The Huntingdon Road West site accommodates the remaining 15% capacity at lower density, and is envisaged as a specialized production research area, in close proximity to the A14.



- KEY
- Existing vehicular routes
 - Application Boundary (Zone B)
 - ⋮ Retained buildings
 - ✱ Local centre
 - ⋮ Existing residential
 - Community uses
 - Residential
 - Collegiate housing
 - Academic/research
 - Residential and complementary mixed uses
 - School
 - Reserved site for future energy centre
 - Open space within school site
 - Open land
 - Potential site for CHP

B1.2.2. Massing and Landmarks

Generally, the massing within the Proposed Development is between two and five storeys. Taller buildings are proposed in the neighbourhood centre, with residential apartments over mixed use ground floor activities. Higher densities and development massing are concentrated along main vehicular and public transport arteries, to optimise sustainable development opportunities, by reducing the need to travel and private car journeys.

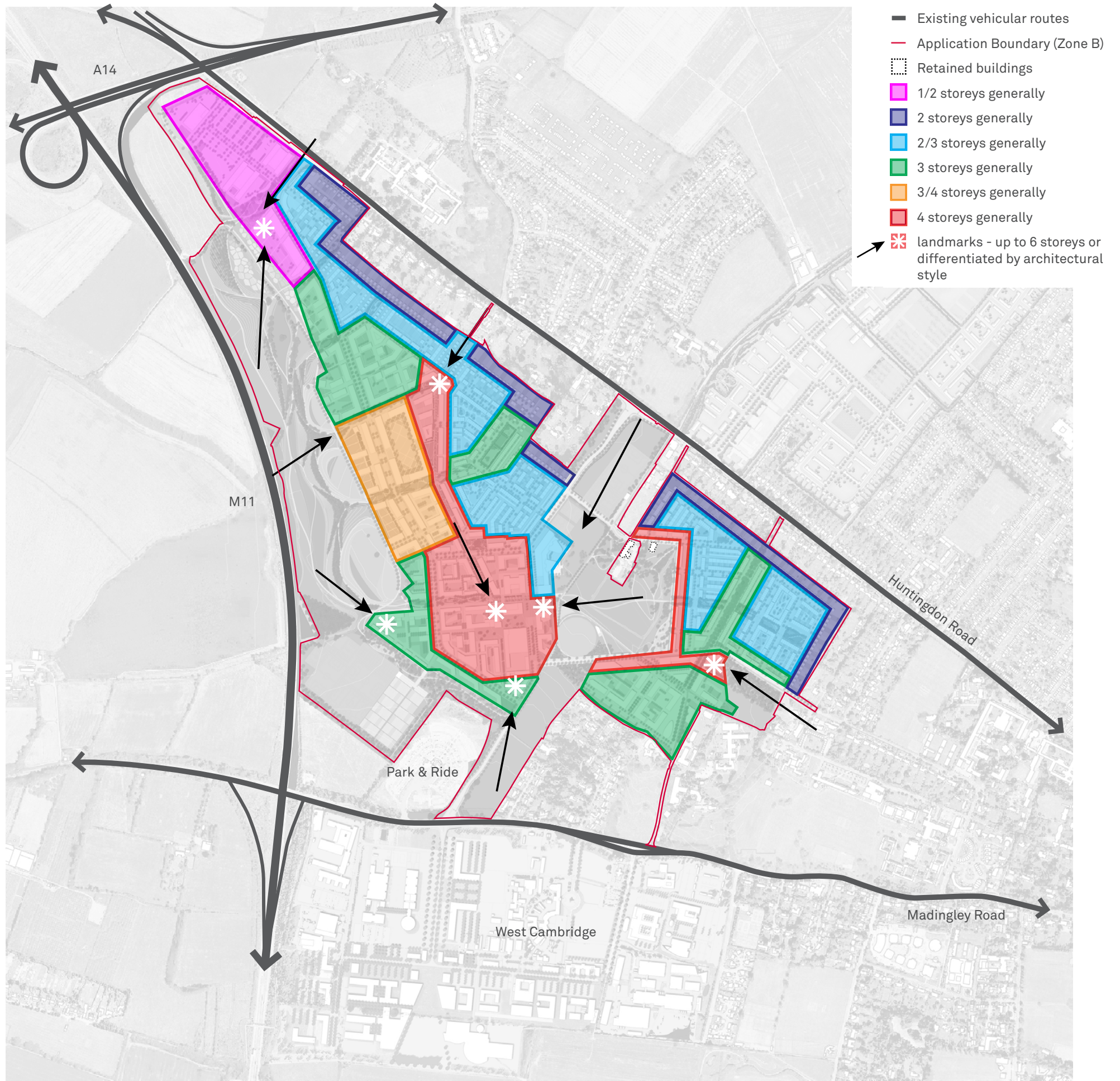
Landmark development opportunities are identified around Application Site approaches, as well as at major activity nodes. This will give the Proposed Development identity and provide legible markers within the development.

The Ridgeway is defined strongly by taller residential frontage (up to 4 storeys) which will provide this key movement corridor with overlooking and natural surveillance, but also a high degree of activity and use. Storey's Field is defined strongly by frontage height of up to 4 storeys.

Lower density development will be located along the northern and eastern boundaries and the gardens of these residential units will back onto the gardens of adjoining existing dwellings. This will ensure that residential amenity and privacy for existing dwellings will be protected.

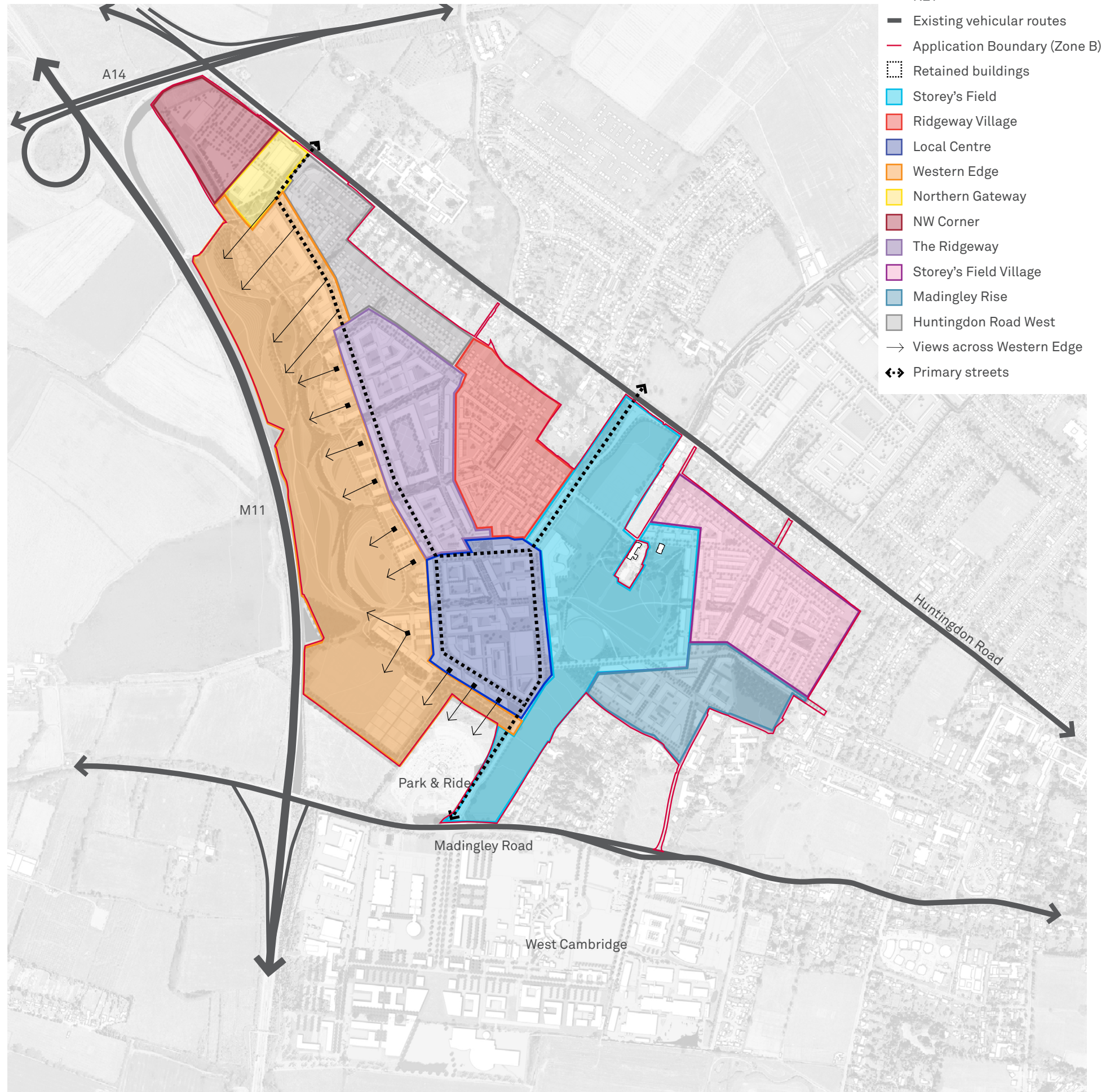
The Western Edge of the development is viewed to varying extents from both approaches along the M11 corridor. In response to this a number of design solutions are employed to the development edge. These include two landmark building opportunities to the north and south, a landscape buffer and landscape to be integrated with buildings.

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Massing and Landmarks

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B1.2.3. Character Areas

Local Centre

The diverse buildings and uses within the local centre are brought together by a unique public realm. This is the most active of the character areas, with ground floor uses concentrated in the key spaces of a main square and the junction of the Ridgeway and the bus route. Taller buildings provide a high degree of enclosure to the public realm as well as indicating that this is the main focus of the development.

Ridgeway

The next most vibrant area after the local centre, where higher density residential combines with the academic quarter on the western side of the Ridgeway. A strong, continuous edge is formed to the east by taller residential buildings, while a more varied edge to the west is formed by academic uses.

Activity is increased by a high number of entrances to buildings and a nursery provides a focus and gateway at its northern extent which is reinforced by landmark development.

Storey's Field and Madingley Rise

This primary open land is highly visible from the main north and south approaches to the development. The open land is defined by three different frontages: to the east a formal residential frontage provides overlooking to the space; to the west the park provides a setting for some of the key community landmark buildings; and to the south, Madingley Rise forms a strong academic frontage. A key space where most of the elements of the Proposed Development are represented.

Western Edge

The western edge parkland of the development forms a strong relationship to the proposed landscape. Landscape courtyards within the development blur the edge of the park space and add to the sense of greenery and openness.

Northern Approach and North West Corner

The gateway forms the only opportunity for views from Huntingdon Road to the landscape of the Western Edge. Along Huntingdon Road buildings set back and landscape dominates. On the park side, development forms a landmark that responds to the key views from along the M11.

Residential Character

There are three distinctive residential character areas - Storey's Field, located behind the park frontage, Ridgeway Village that is located behind the Ridgeway frontage and Huntingdon Road West.

B1.2.4 Architectural Framework

The University of Cambridge has an unparalleled reputation as a professional client and patron of contemporary architecture. As principal developer of the Application Site, the University will lead and govern the process of procuring and realising the highest standards of design, establishing the quality of architecture across the development.

Where the University itself will be the client, quality will be achieved through the careful selection and appointment of architects and design teams and managing the appropriate procurement route. At the same time, the University will select both partner developers and operators, where specific expertise is required to ensure that wider project objectives are met. Once established, it is anticipated that these partnerships will be long-standing, as relationships will be maintained through design, implementation and the ongoing management of the estate.

This architectural framework is intended to begin the process of establishing the architectural character of development. At this early stage, the framework is intended as a guidance tool, establishing the underlying design ethos, an architectural philosophy for the project while setting some broad boundaries within which the design and procurement process will be progressed.

Architecture and design quality is not only about the visual appearance of buildings. Indeed, close attention to functionality, ensuring high standards of building performance and taking care during the construction process will be equally important. Towards these ends, the University is committed to achieve value for money across the project and to achieve the objectives set out within the Sustainability Statement. These include flexibility and adaptability over the long-term life of buildings, to durability of materials, to attentive management during construction, minimising waste and ensuring quality of workmanship.

From this architectural framework, design proposals will be progressed and Reserved Matters Applications submitted in due course. It is envisaged that design proposals developed in detail for Phase 1 will establish the architectural pattern for the Proposed Development, setting the benchmark for the whole project. This will include the specific selection of materials, construction technologies and processes and the standard and quality of detail.

This architectural framework sets out three broad themes or design principles, in order to guide architectural and design development, in due course. These three themes include nature – or buildings’ response to the natural environment, technology and materials. Within the framework, overall visual coherence and sustainability objectives will both be achieved.



Landscape, technology, materials



Contemporary Cambridge



Buildings in landscape



Natural systems



Green screens and walls



Nature

One of the most notable aspects of the Proposed Development will be the range and quality of new landscapes created. Not only will landscape provide the setting for buildings in a natural context but also an opportunity for buildings to respond positively to the natural environment.

It is anticipated that this will be apparent in many different ways. Through orientation, buildings will respond to the sun's path for both daylight and sunlight penetration and to maximise sunlight in the spaces between buildings, through careful massing in detail design. The scale and proportion of windows and glazed openings will be in direct proportion to sunlight and daylight required, in balance with the solid walls needed to achieve demanding standards of energy conservation and building insulation. Given environmental performance criteria in practice, this will mean a higher proportion of solid walls throughout the Proposed Development, more open to the south, more solid to the north.

In response to the prevailing climate, both flat and pitched roofs will be formed, either to shed rain or to collect and attenuate rainfall. Whether flat or pitched, the choice of roof will be determined by functional criteria, particularly solar orientation or whether a roof is used as a terrace or space for photovoltaic arrays. Where practicable, green roofs will be used, for insulation and to assist with the site-wide rainwater management and biodiversity enhancement strategies.

Without imposing a prescriptive pattern language at this stage, architectural details will be developed to respond positively to wind and rain throughout, wherever possible using the prevailing breeze for both the natural ventilation and passive cooling of buildings. Solar shading will be required in some orientations and this should be provided in an integrated way, through deep reveals in the surface of walls and through the use of green screens and walls, where practicable.

Technology

Making the most of the technological context will help achieve the highest standards of contemporary design at the Proposed Development. This will be manifest in the architecture through the integration of buildings’ environmental systems and the construction technologies and processes adopted.

Integral to the sustainable energy strategy, extensive photovoltaic systems will be deployed. This will be apparent to some extent across all building typologies, from lower density housing to larger scale research & development buildings. Photovoltaics will be integrated into both southerly facades and roofs, forming an explicit part of the architecture.

Equally, both passive solar collection and natural and assisted ventilation systems will influence the architecture of buildings. This will be apparent again in south facing flue walls and screens and above the roofscape, where a pattern of exhaust flues and chimneys will present to the prevailing breeze. Again, consistent details will be developed during Phase 1 and applied across the Application Site.

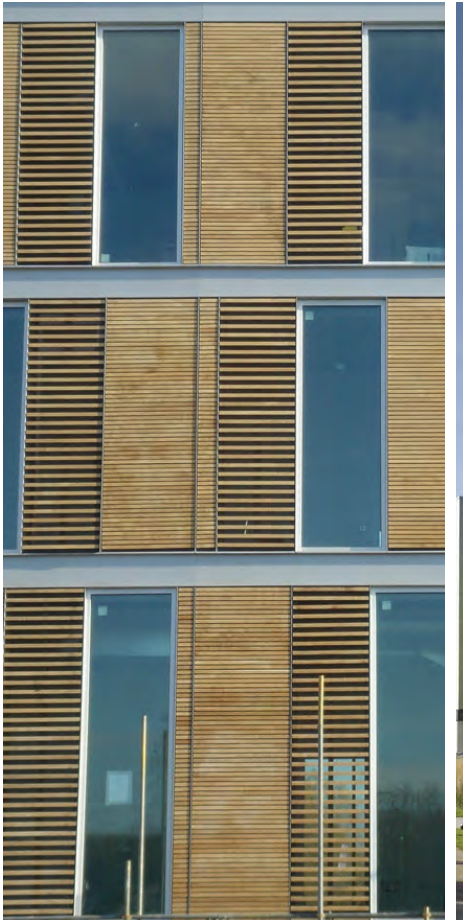
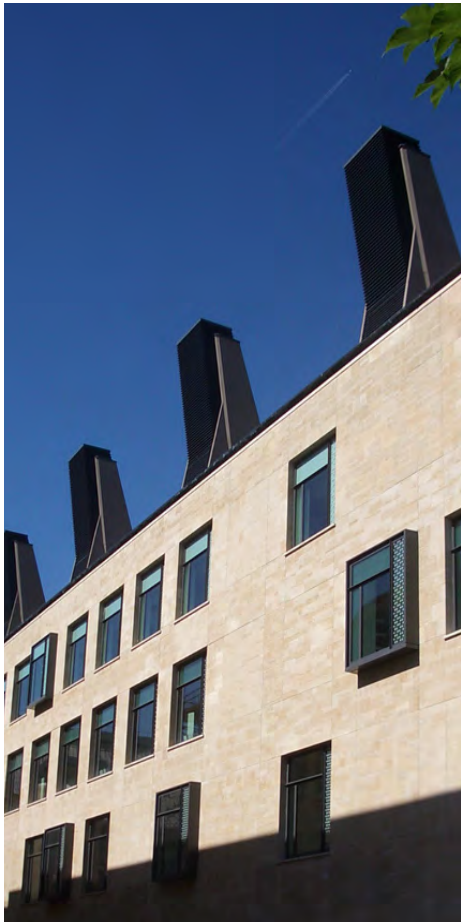
Finally, the drive to minimise waste and deliver efficient, clean construction processes will also influence the architecture. It is expected that off-site manufacturing and prefabrication of building components will be used through all phases, helping to allow people to live work and enjoy life at the Proposed Development from the outset.



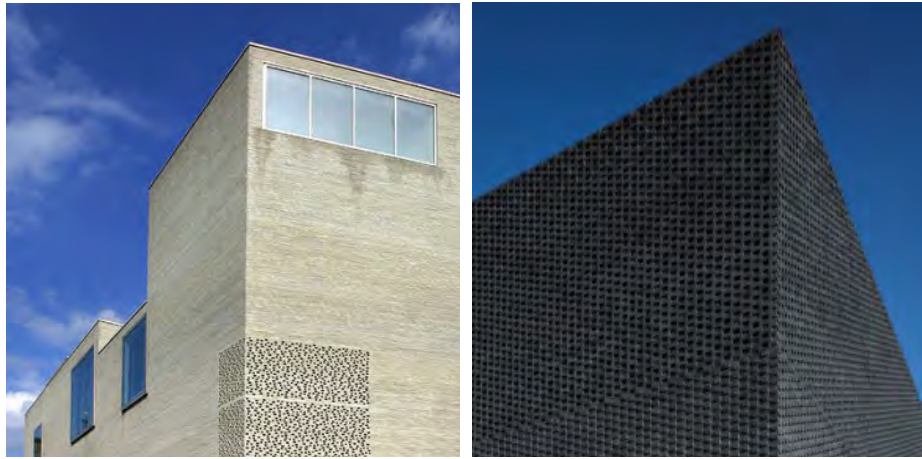
Responding to sun and wind



Passive environmental systems



Prefabrication



Brickwork - colours, texture and form



Natural materials in landscape setting



Timber structure and cladding



Roofscape variety

Materials

In principle, the range of materials used will be as few and as restrained as possible. Given the wide range of building typologies and functional design criteria to be met at the Proposed Development, limiting the palette of materials to a minimum will be essential in achieving overall architectural coherence across the Application Site.

Particular attention will be given to the provenance or source of materials supplied, ideally procured as locally as possible to Cambridge. In every case, materials will be selected from sustainable sources to ensure the minimum environmental impact. Wherever possible, materials should be natural, inert and durable, to ensure the longest possible and lowest maintenance design life.

It is anticipated that brick and masonry will be the predominant material used, establishing the fundamental architectural character of development. In combination with masonry walls, timber will be used extensively, both engineered as primary structural elements and for secondary window framing, infill cladding panels and shading components. Specific tile or self-finished metal sheet will be specified for pitched roofs and where green roofs are proposed, appropriate planting for green roofs, screens and walls specified.

By contrast, steel and synthetic materials and coatings will be avoided. In particular, PVC and other plastic coatings and panelised, aluminium cladding systems will be avoided.

Taken in totality, the underlying objective will be to achieve an authentic contemporary architecture, where visual unity and overall architectural coherence will be achieved across the entire community.

B1.3. Community & Open Land

B1.3.1. Community Facilities

The Proposed Development will establish a community in which ideas and skills are exchanged, both at work, and at home. By providing a range of facilities including shops, work places, homes, nurseries, and a school, different types of people will be drawn together, helping to develop a new community where people will have a strong sense of belonging.

A range of community facilities will be clustered in the local centre to ensure that it establishes the focus of the community. These include a school, nursery, community hall, cafe, pub and restaurants, a University-run but publicly accessible restaurant and housing office, healthcare, a foodstore and complementary shops.

Education

A school and its playing fields will be located adjacent to the Storey's Field central open space placing it at the centre of the development and in close proximity to adjacent residential areas.

Senior Care

A Senior Care facility will be designed to enable seniors to enjoy a lifestyle filled with recreational, educational and social activities. This is located in the local centre so that seniors can contribute to the activity and life of the Proposed Development.

Hotel

A hotel will help establish the local centre by providing quality visitor accommodation as well as conferencing, business and leisure facilities.

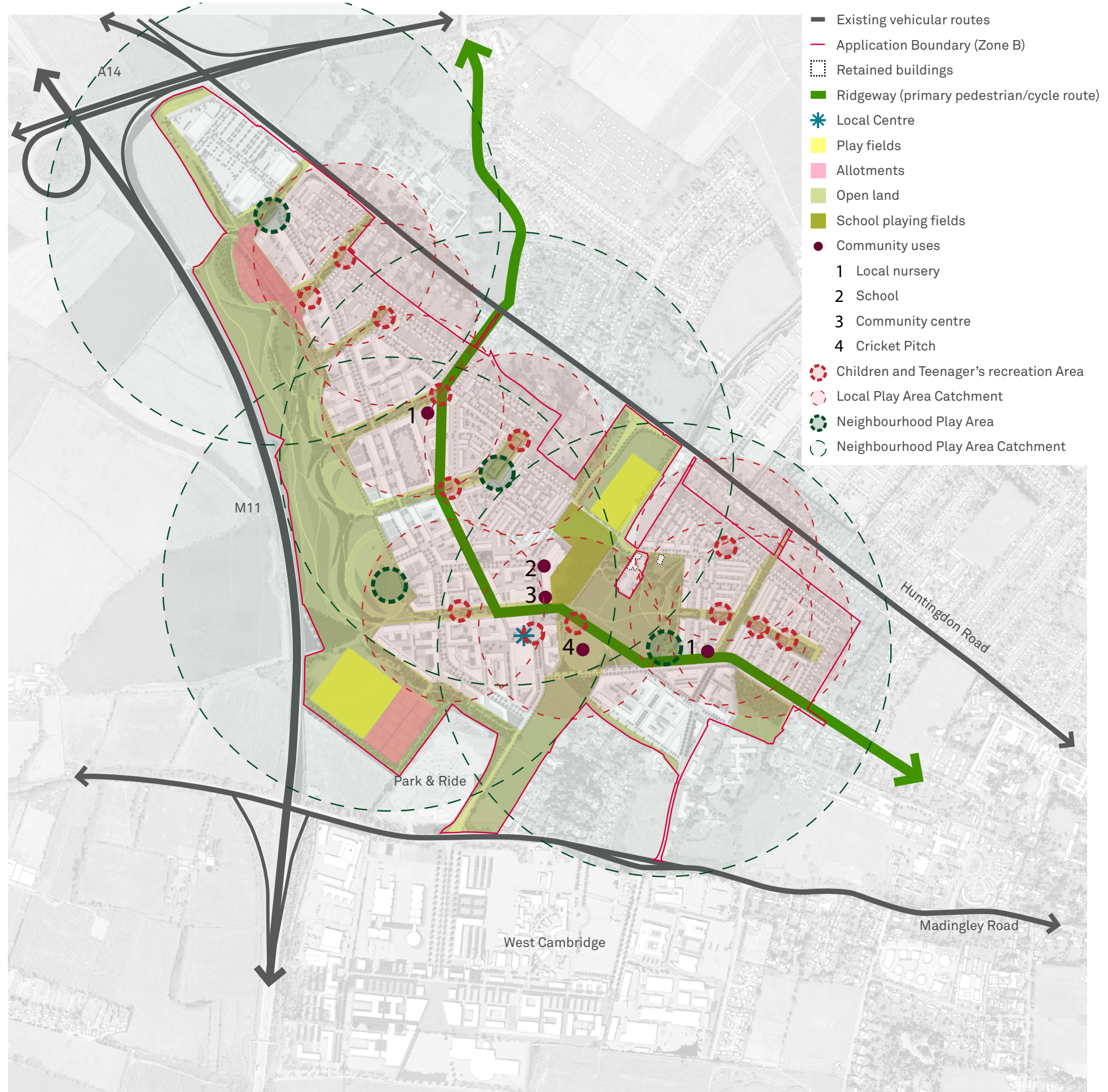
Police Touchdown Facility

A police office will enable local police services to cover the North West Quadrant and ensure a rapid response time in the event of any emergencies.

Play & Recreation

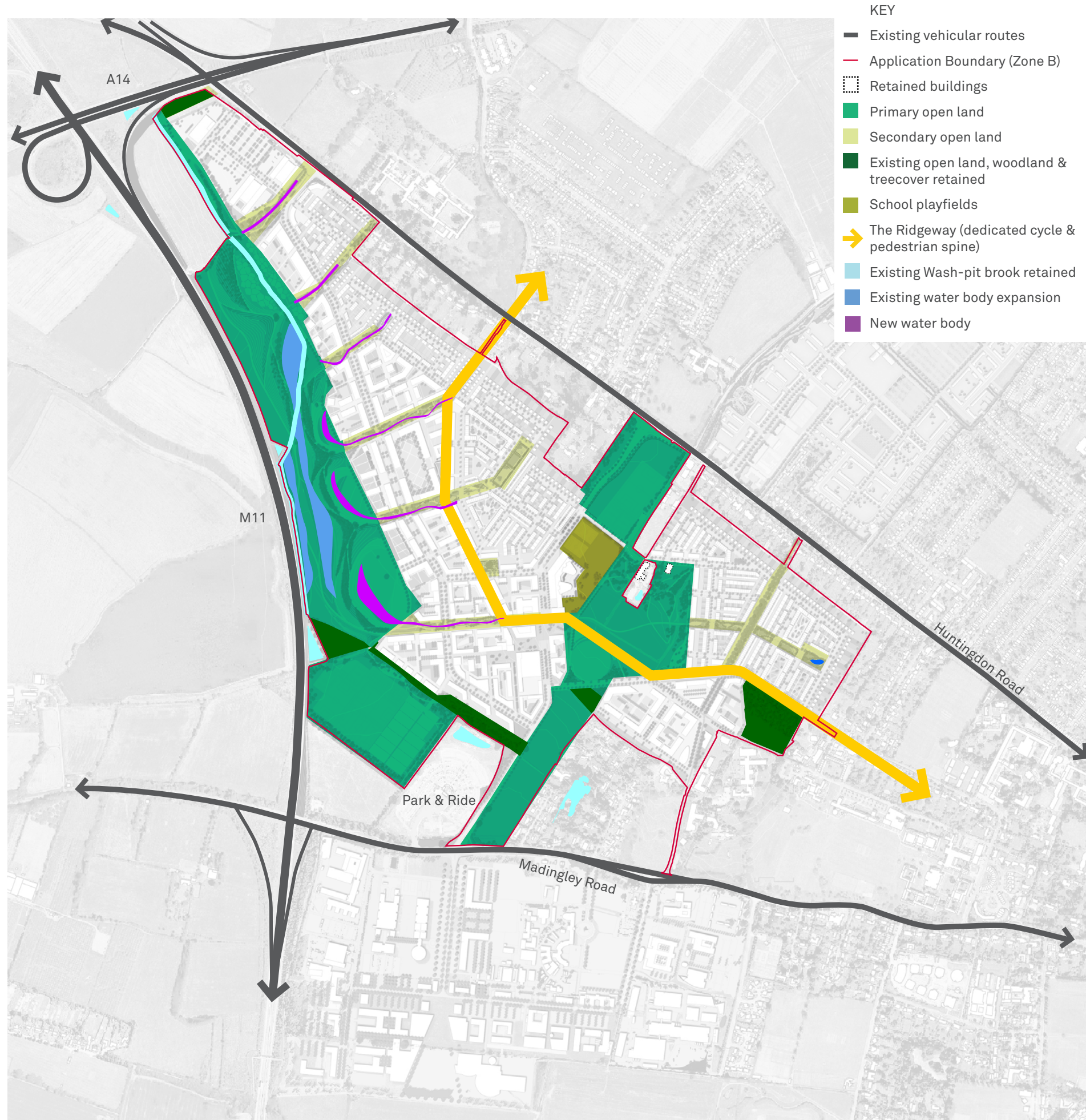
A full range of play and recreational facilities will be provided throughout the Proposed Development to enable healthy lifestyles and outdoor activity.

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Community Infrastructure

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B1.3.2. Open Space Structure

The open space structure will ensure that landscape forms an integral part of the Proposed Development. Traditional landscape elements will be combined with contemporary techniques to give an attractive context for the various new building types.

Ecological Habitats

A variety of habitats exist across the Application Site for badgers, bats, water voles and great crested newts. Where practicable these habitats will be protected or enhanced within the new open space structure.

Central Open Space: Storey's Field

The central open space will be a new urban park for the city of Cambridge, similar in scale to Parker's Piece. The vision for this park includes both formal recreational provision combined with informal open space for picnics and family gatherings. It will also incorporate the Traveller's Rest Pit SSSI. Storey's Field will become one of the parks characteristic of Cambridge, providing space for events, relaxation and an area for wildlife to flourish.

Western Edge - a Working Landscape

The Western Edge provides recreation space for residents and productive landscapes, which include allotments. This landscape incorporates planted trees, native plant species, and open fields. The design of the Western Edge includes land forms and balancing ponds to limit additional surface run-off and alleviate flood risk.

B1.3.3. Landscape Principles

Almost half of the Proposed Development is parkland and public realm, and as such will define the quality and character of this important development. The network of parks, routes, streets and squares outlined in these principles combine to create an important local and city wide resource for residents and visitors.

Central to this development is the relationship between people and nature, ensuring the enhancement of ecology, social infrastructure, sustainability, drainage and SUDS, sports provision and the existing geological SSSI. All are interlinked and layered together, creating a high performance and multi-functional landscape.

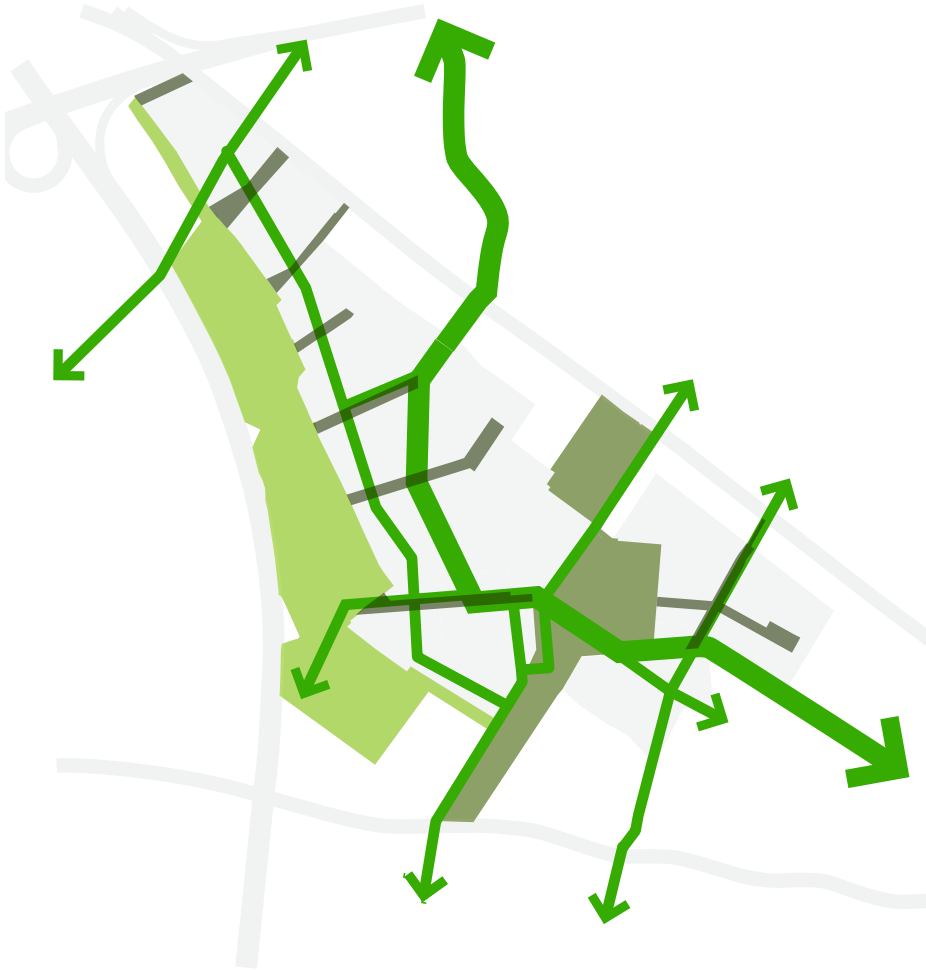
Open land provision will be maximised throughout the Proposed Development. With around 60 hectares of publicly accessible open land, the Proposed Development will include both soft landscape (trees, grass, planting) and hard landscape (high quality paving, furniture and lighting).

A variety of experiences will be provided throughout the Application Site with opportunities for both informal and formal recreation, play and social interaction. Active streetscapes will be formed with careful consideration to the relationship and treatment between the public realm and private boundaries. All aspects of the design will be accessible to all members of society, abilities, disabilities and age groups.

The open land in the Proposed Development maximises connections to the wider context, by providing links between other green areas both within and outside the development.

The design of green spaces will provide legible connections, supported by pedestrian and cycle routes through to both the city centre and the open countryside. Where natural green spaces stop, tree and vegetation planting along with vegetated SUDS features will continue through the urban spaces.

This multi-functional landscape is broken down into 4 key layers. Each layer has a unique character but all combine to create an integrated network. The illustrative concepts for the four layers are described in detail in Section B2.4, these include the Western Edge, Girton Gap, the Ridgeway and the lattice of green fingers through the Proposed Development.

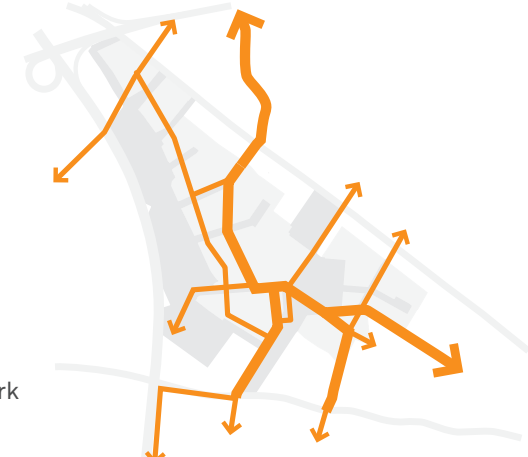


Landscape Principles Diagram

Western Edge



Pedestrian & Cycle Network



Girton Gap, Storey's Field



Green Fingers





B1.3.4. Open Space Typologies

Green Corridors

Green corridors into the built areas provide attractive access routes to the western edge, natural cooling, and routes for sustainable urban drainage systems. Tree planting will also be included along green corridors to emphasise a countryside feel to the corridors.

The Ridgeway

A green and attractive route for cyclists and pedestrians to travel safely through the Application Site linking all parts of the community with Cambridge City and Girton Village.

Productive Landscapes & Pocket Parks

A series of smaller areas of open space will be provided within the development for both play space and productive landscapes, including allotments.

Allotments

Traditional and an innovative styles of allotments are proposed as part of the Western Edge productive landscape. Images on the facing page show indicative allotment layouts of the style proposed to the north western side of the Western edge.

B1.3.5. Activity and use

The open space will be both active, incorporating play and athletic spaces and passive incorporating parklands and water systems, as well as productive green space, in the form of allotments.

A considerable number of allotment gardens will be established to provide fresh produce and recreation for local residents, thereby helping to encourage a healthy way of life.

The Proposed Development will incorporate a range of types of play provision, including doorstep play spaces, local play spaces (in close proximity to buildings), and larger equipped neighbourhood play spaces.

Doorstep play areas are located in safe, overlooked locations. The local and neighbourhood play areas will be within a 5 minute walk of residential areas and will contain play equipment for various ages of children. There will also be a series of areas for teenagers, ranging from seating and gathering spaces to informal kick-about fields.



Open space types and area requirements

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Fields and food production

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B1.3.6. Productive Landscapes

The Proposed Development promotes the opportunity for productive landscapes. This could include fruit trees and fruit and berry shrubs, and the growing of root vegetables within the proposed allotments.

Allotments encourage healthy living and healthy lifestyles within communities. Such areas can provide a focus for community interaction, reduce food miles and are an increasingly in-demand feature across the country. Swales can be designed to feed water into these allotment areas.

These allotments will be located at various suitable locations across the Application Site, providing shared and working green spaces and establishing sustainable food production.

The establishment of a contract for agistment for grazing of sheep, goats & small livestock could also be considered in the Ridge and Furrow field and will be considered during detailed design.



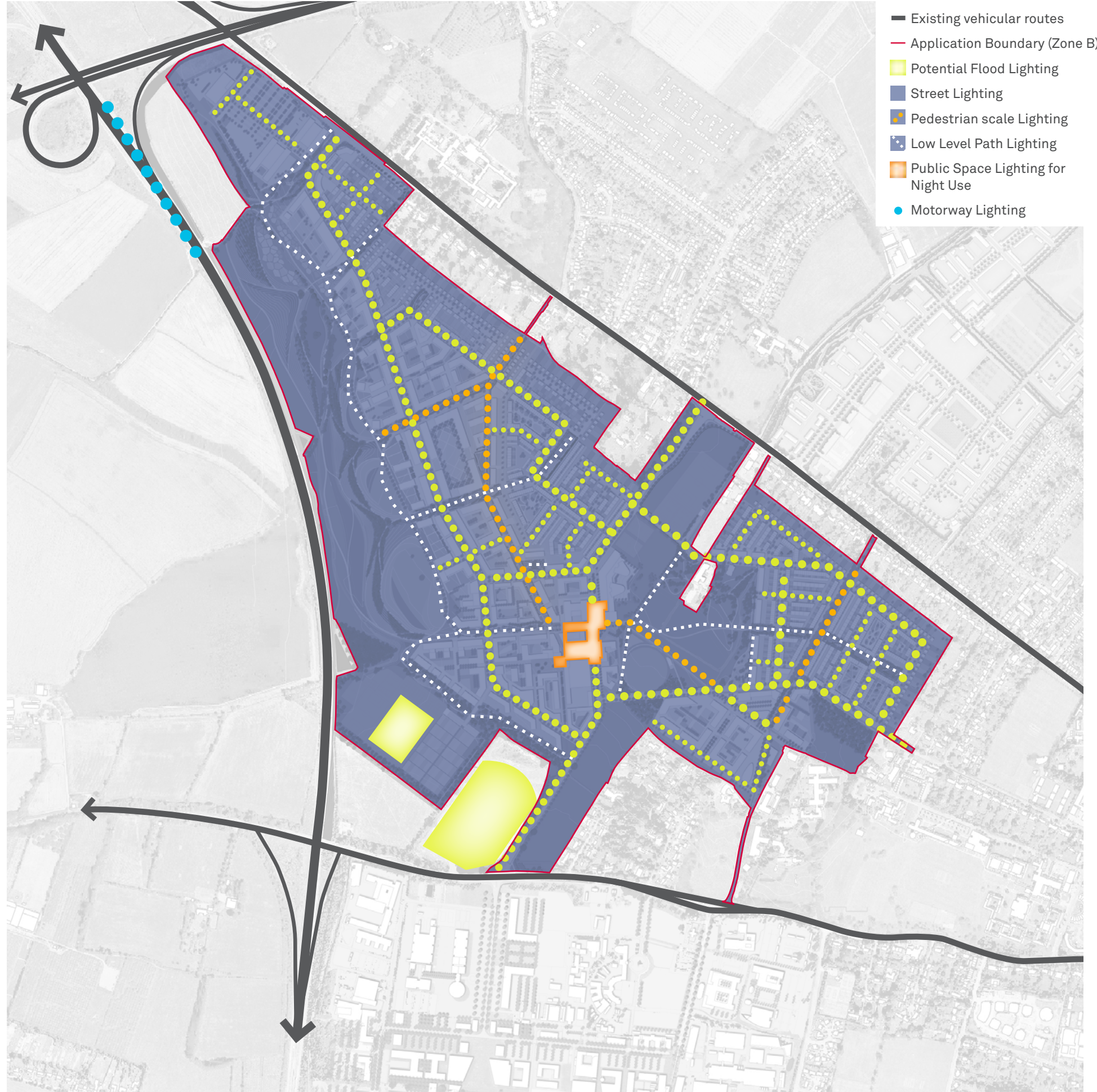
B1.3.7. Lighting Principles

The lighting principles reflect the location of the Proposed Development, as the edge of Cambridge. The Western Edge will remain shrouded mainly in darkness, although the existing Park & Ride, which is illuminated at night, will provide some lighting. An all weather pitch in the field west of the Park & Ride will have floodlighting (the nature of this will be addressed through detailed design).

The central green corridor leading up to Storey's Field and beyond, to Huntingdon Road, will be lit to ensure safe and direct night time routes through the development, in line with secured by design methods. Cycling and walking routes will be lit providing safe and sustainable methods of transport. All lighting will be designed to minimise energy consumption and limit light pollution using high efficiency lighting systems.

Lighting will be selected to minimise its impact on existing and future ecological corridors and habitats.

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Lighting Principles

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Lighting Precedents

B1.4. Climate

B1.4.1. Sustainability Principles

Supporting the University’s ambition to lead and define best practice, a number of sustainable development principles are integrated within the Proposed Development. These sustainability principles also reflect national policy drivers in response to climate change.

The sustainability principles that underpin the Proposed Development include the use of renewable and low carbon energy systems and positive water attenuation, including integrating sustainable drainage systems (SUDs) through the Application Site.

Improving permeability and connectivity to surrounding destinations is a key principle, and will include walkable neighbourhoods with good public transport provision and access.

The layout will aim to maximise environmental performance through an urban structure that orients buildings and building blocks to achieve optimum passive solar performance.

At the building level, the Proposed Development will meet the Building Regulations targets by making all homes zero carbon from the outset, being one step ahead of the national trajectory. This will be achieved using an number of low and zero carbon measures, from highly efficient building design to building scale and community scale renewable and low carbon energy technologies. The relevant Planning Policy statements and Planning Policy guidance, and other related policy documents can be found in the comprehensive sustainability statement that accompanies the planning application.

Sustainability principles have been used to guide the design and development of the sustainability strategy for the Application Site. These are based on the BioRegional “One Planet Living” 10 principles which are internationally recognised as a way of guiding sustainable development.

Principle 1: Energy and CO2 emissions

Minimise the carbon footprint of the Proposed Development through the maximisation of energy efficiency in use (‘be mean’), the supply of energy from highly efficient sources (‘be lean’) and the use of energy from renewable sources (‘be green’).

Principle 2: Water

Ensure that freshwater supplies to North West Cambridge are minimised through water efficiency and the collection and recycling of rain water and waste water.

Principle 3: Food

Reduce the ecological footprint of the consumption of food, and increase local employment and business opportunities for food production

Principle 4: Waste

Maximise opportunities to design out waste and provide new waste infrastructure, to avoid off-site disposal during remediation and construction, through an integrated approach to resource management. Design for recyclability of components arising from the refurbishment, deconstruction and eventual demolition of facilities.



Green swales are part of SUDS



BREEAM excellent-rated development

Principle 5: Materials and construction

Identify, source, and use environmentally and socially responsible materials. Use, where available, certification schemes to guarantee the provenance of environmentally sensitive materials such as timber. Design for and ensure the use of the highest feasible proportion of recycled materials in construction and ensure as far as possible the recyclability of all materials used.

Principle 6: Biodiversity and ecology

Enhance and where feasible protect the biodiversity and ecology of the existing area, produce a natural environment that balances the needs of access with the imperative of assured survival of bio-diverse areas and habitats.

Principle 7: Pollution

Maximise positive and minimise adverse impacts on land, water, and air quality. Restore land to beneficial use and avoid risk of flooding on and off site arising from the developments. Use opportunities afforded by the proposed developments to enhance land, water and air quality.

Principle 8: Global, local and internal environments

Design and build in a sensitive manner for internal and local environments, adaptable to future climates. Actively engage in design that accommodates climate change impacts through adaptation strategies and design so as to mitigate as far as reasonable the potential adverse impacts of the developments on climate change effects.

Principle 9: Culture, heritage, and built form

Develop designs that embrace the culture and heritage of the setting and reflect local values and expectation consistent with the North West Cambridge vision.

Principle 10: Transport and mobility

Create an accessible, pedestrian friendly community, with good connectivity to surrounding areas. Maximise the connection of the Application Site with public transport hubs, direct quality cycleways and footways, to engender mode shift towards public transport, cycling and walking through integration of all aspects including security, journey time, comfort and perception.

Principle 11: Housing, amenity and wellbeing

Create new attractive and appealing, safe, mixed use public space, housing and facilities appropriate to the demographics and character of Cambridge. Seek new ways of delivering more sustainable communities.

Principle 12: Education and employment

Provide new employment and business opportunities locally, regionally and nationally. Integrate the development of skills training and education into the design and development of the facilities engaging all players in becoming part of a process to enhance opportunities for people.

Principle 13: Inclusion

Involve, communicate, and consult effectively with stakeholders and surrounding communities by using a variety of techniques to ensure the greatest level of outreach to all communities.

Develop throughout the design process and implementation, designs and decisions that recognise diversity in all its aspects; diversity of physical ability, diversity of mental ability, diversity of cultural and religious backgrounds, diversity of literacy, language, age and gender.

B1.4.2. Energy Infrastructure

Community Energy Scheme

Combined heat and power and district heating is proposed across the Application Site, with a centralised Energy Centre located prominently in the heart of the development. The infrastructure will have the potential to serve all uses in the local centre, all University uses, including higher density University staff housing. Low density housing may connect to the district heating network or may use individual systems depending on the detailed design. A communal cooling system will also enable maximum efficiency cooling systems to be used with the opportunity for capturing waste heat for use in heating.

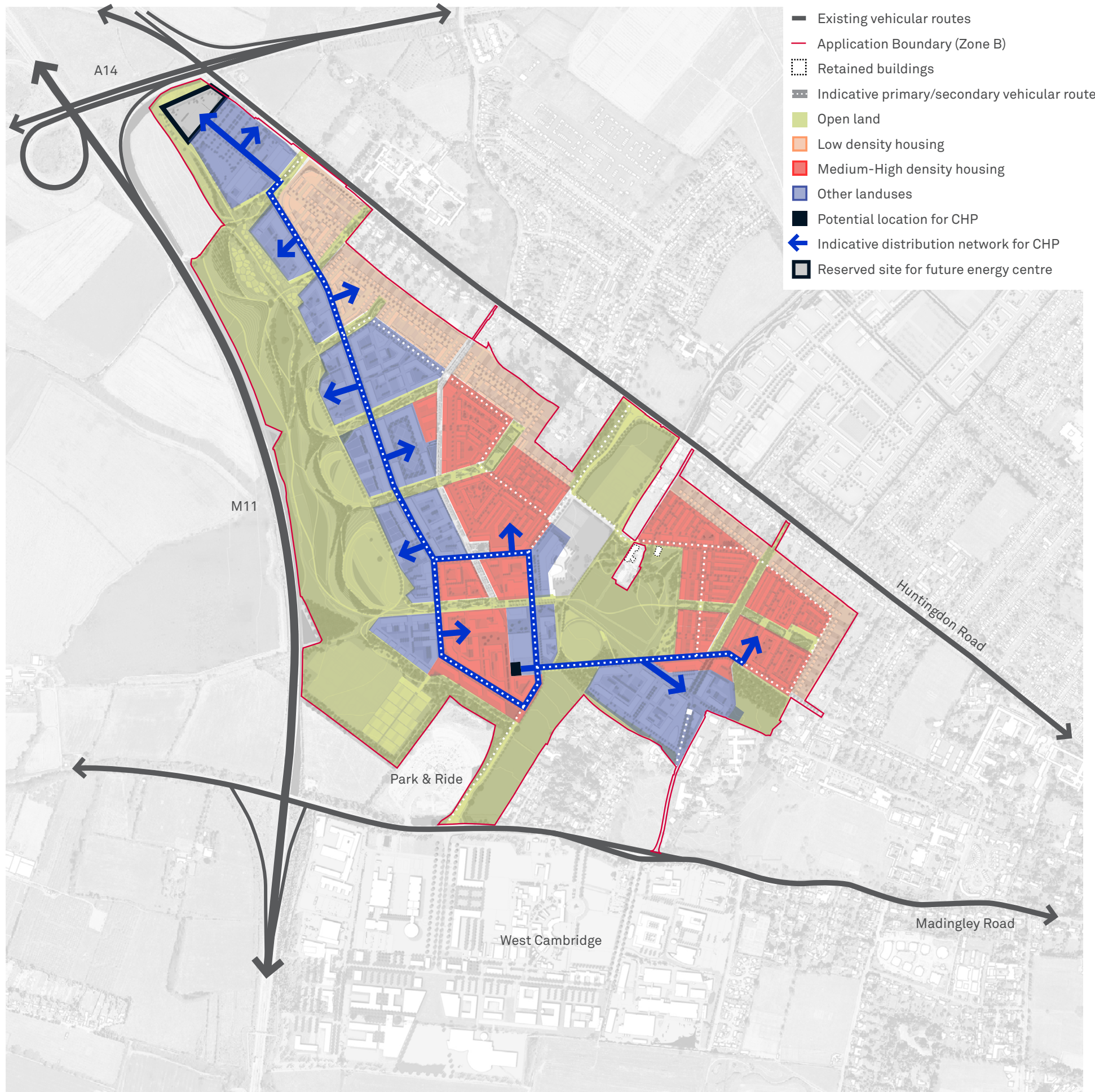
In addition all buildings will be built to high environmental standards, reducing energy demand through efficient design, and making use of low-carbon and renewable sources of energy. After 2016, all dwellings will be zero carbon with all CO2 emissions reduced on site or off-site, followed by non domestic buildings in 2019.

The layout of the Proposed Development aims to maximise the number of buildings that are optimally orientated where possible. Houses and flats will generally have larger areas of south facing windows to increase wintertime sun access. Commercial and academic buildings will have larger areas of north facing windows to minimise summertime overheating. Adequate space is being provided between buildings to allow good levels of daylight to penetrate throughout, minimising the use of electric lighting, and providing a comfortable internal environment for occupants.

Flexibility will be the key to the energy strategy. Although the combined heat and power system will be based on natural gas initially, centralising all the plant in one place means that fuel can be easily substituted as availability and preferences change in the years to come.

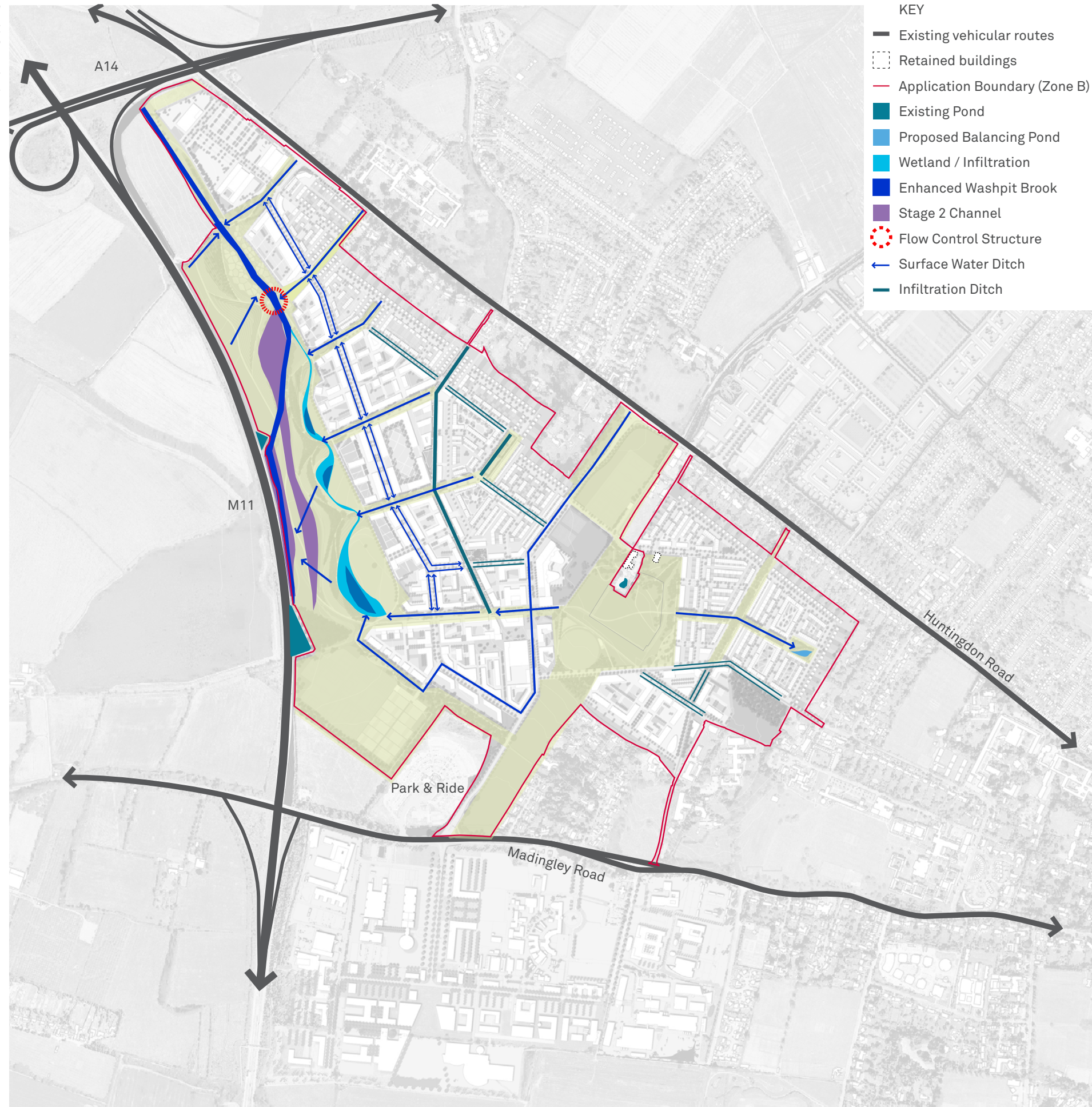
The measurement of energy and CO2 emissions will feature strongly in the ongoing educational and research aspects of the Proposed Development, with extensive monitoring and collection of data. This will be used by the University for future research into sustainable communities and development practices. In addition, it will enable the education of residents through energy displays and smart meters, allowing them to compare their consumption with the average via the community website, and allowing them to see how much less energy they use than “typical” UK households.

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Energy Infrastructure

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Drainage strategy

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B1.4.3. SUDS Infrastructure

Water and flood risk management is key to the long term success of the Proposed Development. A network of Sustainable Urban Drainage systems will be incorporated to provide a responsive and attractive environment. This will be functional whilst also improving the biodiversity and ecological value of the Application Site. It will also support the open space framework for recreational and leisure pursuits. The SUDS will be incorporated into the streetscape, green corridors and public open spaces.

The Application Site is characterised by two geological conditions, leading to the requirement for two SUDS solutions one which allows for infiltration and one which caters for surface water. The need for these two SUDS treatments fits with the transition from more urban environments of the edges of Cambridge and the existing University buildings. The greener edges of the Proposed Development will be echoed in the design of the SUDS features, with a more formal linear character in the urban areas and a more naturalistic informal approach elsewhere, specifically along the Western Edge.

SUDS features must be an integrated piece of design of the Proposed Development, running throughout the Application Site to control runoff flows and provide treatment of storm water. SUDS design needs to be tailored to the specific area of the development to provide a consistency with the character of each area.

Various public realm and open spaces will be highlighted in detailed development proposals to provide some storage capacity. This could be done using a range of SUDS features including hard landscape water features, pond or wetlands, or sub-surface storage. The playing fields will be considered as a sub-surface storage area where a gravel layer could be integrated beneath to store water.

The Western Edge

The landscape principles for the Western Edge are the result of an understanding of the drainage requirements for the Application Site, and will allow for rainwater to be retained in linear ponds throughout the area. The balancing ponds will limit additional surface run-off and alleviate flood risk.

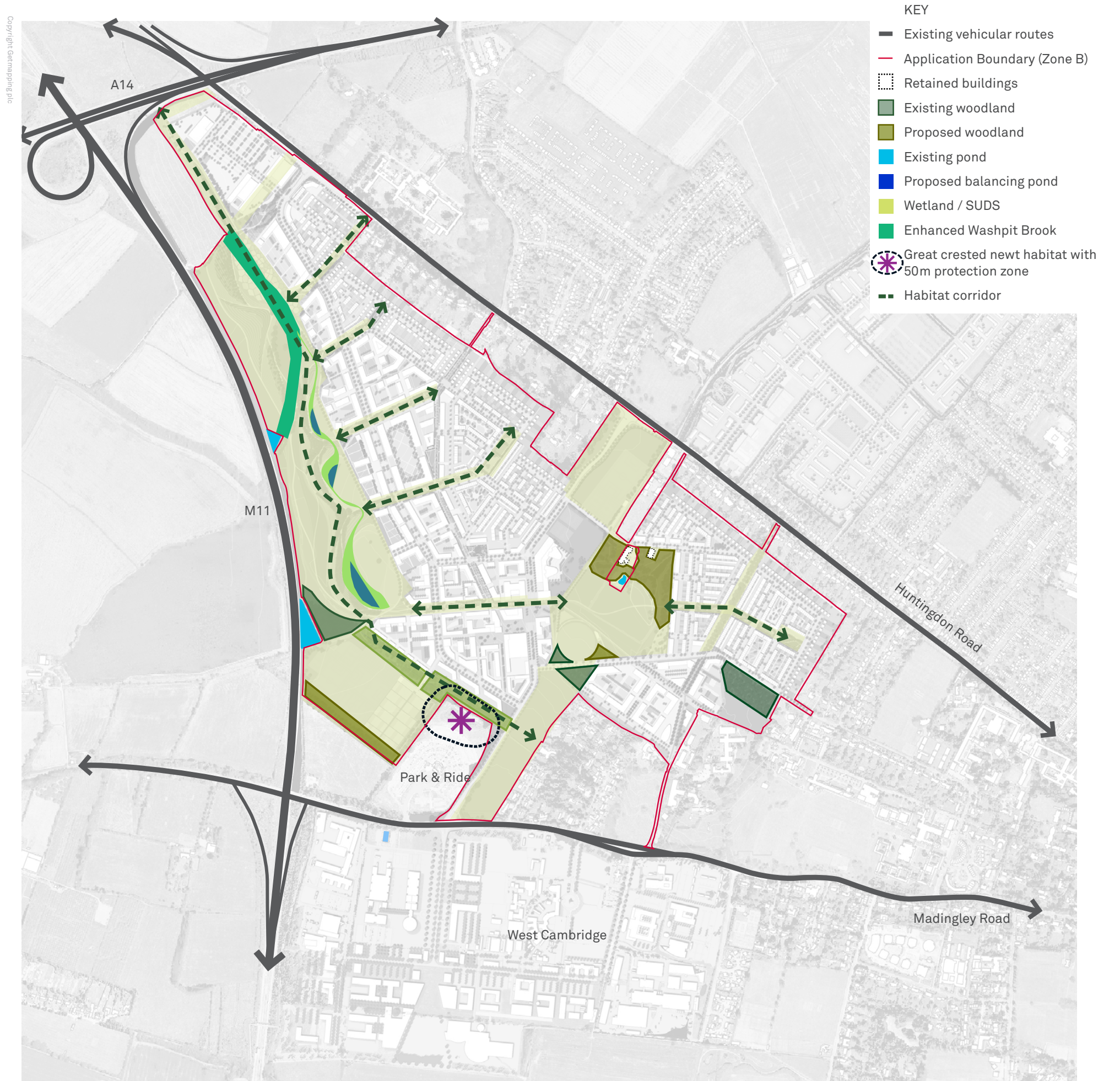
B1.4.4. Ecology and Biodiversity

A number of existing ecological habitats exist within the Application Site and just beyond the Application Site boundary. In the interests of enhancing biodiversity, ecological links will be provided to connect these habitats into a viable network. Hibernaculas for birds and bats will be installed on suitable new buildings and other structures.

A variety of habitats exist across the Application Site, providing homes for badgers, bats, water voles and great crested newts. The habitats of these species will be retained and protected and, where possible, enhanced. Habitats not retained will be re-provided. Protection and promotion of biodiversity is an important consideration for these proposals. The assessment of the ecological impact of the proposals is set out in the accompanying Environmental Statement.

The Proposed Development will include a series of landscape areas which will function as SUDS corridors, areas that will create and integrate a network of habitat and ecological corridors and biodiversity and provide space for informal recreation and play spaces.

The use of native species, which are found within the locality, is essential in the establishment of any new landscape areas. Existing sparse hedgerows will be interspersed with native species to encourage a varied mix of habitat typologies.

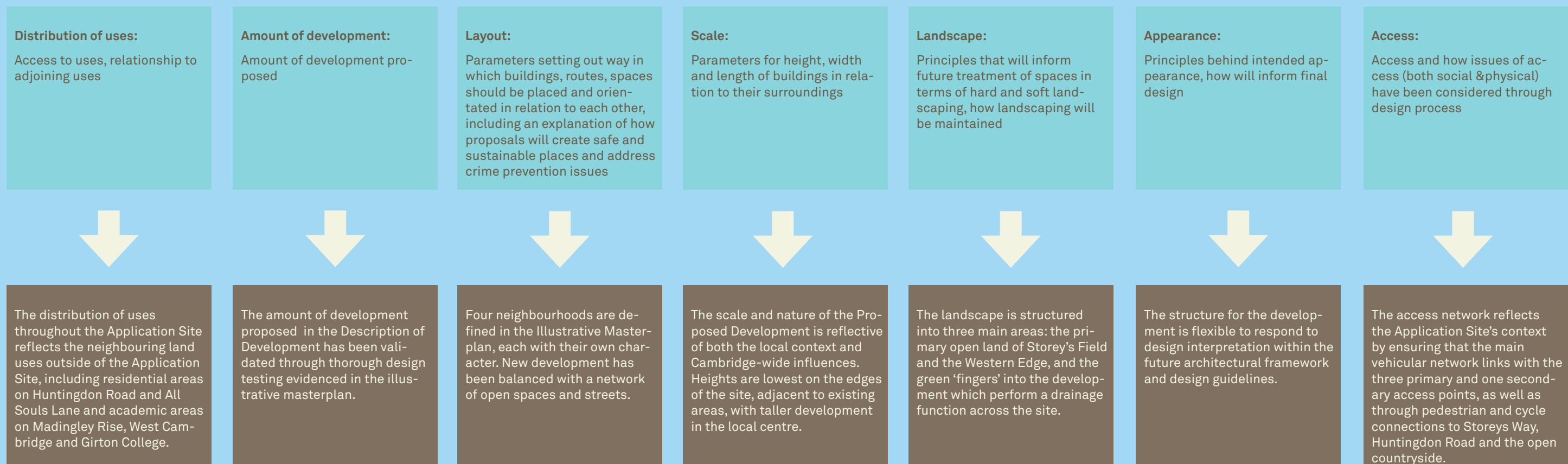


Ecology and bio-diversity

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Precedent Images of SUDS



B2

The Illustrative Masterplan

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B2.1. Illustrative Masterplan

The design influences and evolution and site-wide design principles and concepts set out in the previous sections have informed the development of the illustrative masterplan. The illustrative masterplan demonstrates one way in which the Proposed Development could be brought forward in a parameter compliant form, though the details of the illustrative plan are reserved for later applications.



Illustrative view of the Proposed Development from the east

The University is committed to creating a successful, sustainable, mixed-use community by delivering high quality buildings, landscape and public spaces. The Proposed Development aims to provide a new urban edge to Cambridge, whilst protecting and enhancing existing open land, wildlife habitats and ecology across the Application Site. The Proposed Development will be an attractive, safe and desirable environment which links comfortably and easily to the city centre, West Cambridge, Girton village and the surrounding developments.

The Application Site will be transformed into a vibrant urban community, a destination for working, living and recreation. The focus of the Proposed Development is on high quality place-making and architecture, with a coherent sequence of new streets, public spaces and outstanding landscape.

This sustainable urban extension deserves a landscape setting that is world class and suitably fitting to the historic city of Cambridge. Existing landscape elements will be combined with the contemporary to provide a distinctive context for the various new building types. These spaces will not only provide identity, but will also be purposeful - a network of Sustainable Urban Drainage systems will be incorporated, the biodiversity and ecological value of the site will be improved, and the spaces will also be the framework for recreational and leisure pursuits.

The overall vision for the Proposed Development is to create an enduring residential, research and commercial ‘University Quarter’ complete with self sufficient social and community infrastructure located in a new western focus for the city. The intent is to form a unique and new piece of city and a complete community formed of distinct mixed use neighbourhoods.

The Proposed Development will help to secure the University’s long-term success. It will help to provide the living and research accommodation needed to enable the University to grow its capabilities and to retain its world class position. The Proposed Development will encourage substantial investment in Cambridge and will help to recruit and retain the best staff and students from around the world.





The Illustrative Masterplan - view from south



The Illustrative Masterplan - view from the west



The Illustrative Masterplan - view from east

B2.2. Neighbourhoods

The illustrative masterplan has been structured into four distinct neighbourhoods, each within walking distance or a short cycle ride to the local centre.

Each neighbourhood will be defined by a mix of uses and building types, landscape features and a network of routes. Each will be a distinctive community with its own identity and character.

The illustrative masterplan and neighbourhoods are presented here to set the context for design guidelines (design codes) in due course.

1. The Local Centre, located at the intersection of the orbital route between Huntingdon and Madingley Road and the Ridgeway, forms the heart of the development. Between Storey's Field and the landscape of the Western Edge, a Market Square provides the focus for this mixed use neighbourhood.
2. Storey's Field, a neighbourhood characterised by family residential and an academic cluster, is located at the eastern side of Storey's Field itself and connects through to Madingley Rise and Storey's Way to the south east.
3. Ridgeway Village, a second neighbourhood characterised by family residential and an academic cluster, is located to the north of the local centre, with the Ridgeway and a series of distinctive landscape spaces as its focus.
4. Huntingdon Road West, forming the northern limit of development, this neighbourhood completes the residential frontage to Huntingdon Road and a landmark cluster of low density research and development space and future CHP as its distinguishing feature.



The Neighbourhoods

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B2.2.1. The Local Centre

The local centre will be the primary focus for the community in the Proposed Development. The local centre is formed by a clustering of focal buildings and uses within the central area including the school, the foodstore, local shops, health centre, community centre and neighbourhood police touch down.

In addition to this, the centre will provide a range of residential types, including apartments for sale and University staff accommodation, located in close proximity to the Market Square, around a series of garden courts. A collegial environment is envisaged as part of a mixed and balanced community. The Ridgeway and Storey's Field academic clusters will be located close by, adding to the range of people using the local centre during the day. A new Market Square will provide a visual focus and an identifying public space.

The local centre will be visually distinctive, adjacent to Storey's Field with its unique landscape setting. The school and a community centre will form a distinctive frontage to this space as a series of high quality landmark buildings. A hotel will also form part of the local centre, with a publicly accessible restaurant/pub on the ground floor to utilise the aspect and encourage interaction with other local centre uses.

The three primary movement routes converge at the local centre, the Ridgeway, the public transport route between Huntingdon and Madingley Roads and the radial route.

In addition, the local centre will be a pedestrian and cycle orientated place. The Ridgeway runs through and generous cycle parking spaces will be provided around the Market Square. The Market Square itself will be well scaled to create a vibrant and intimate atmosphere. Both this pedestrianised space and the shared surface bus gate (restricted access zone) will ensure that traffic is clearly separated from pedestrian areas while prioritising public transport through the centre.

The local centre will be highly visible and connected to all other areas of the development. The visibility and footfall generated by the convergence of routes and modes of transport and the distinctive character of the Market Square will be key to achieving a successful, thriving local centre.



Local Centre - Illustrative Masterplan



The Local Centre - Urban Structure

Urban Structure

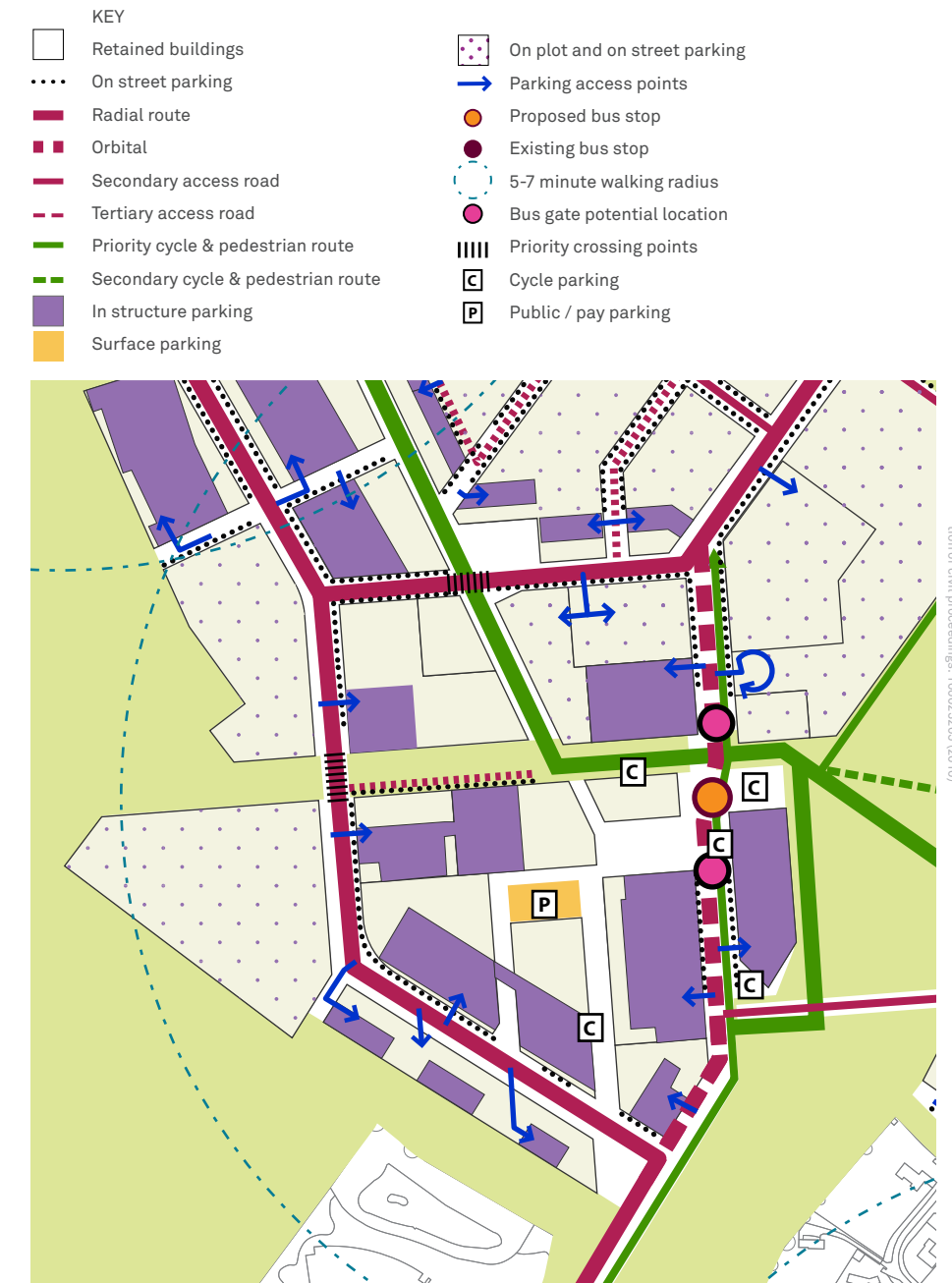
- Active frontage at ground floor to the market square, the Ridgeway and orbital route.
- Primary frontage to the key primary and secondary streets - 4 storeys generally with 5 or 6 storeys at key landmark locations - high degree of overlooking to streets, strong enclosure.
- Key landmarks respond to and terminate primary views and vistas such as views from approaches.
- Other landmarks or 'accents' respond to more local views.
- Frontage to major green spaces - a high degree of communication between inside and outside - balconies and terraces fronting green spaces.
- Storey's Field western frontage - consists of school and community hall - forms distinctive frontage to main space within the development



The Local Centre - Open Space Structure

Open Space Structure

- To the east of the local centre is Storey's Field and to the west is the Western Edge - the local centre has a strong relationship with the two major spaces with the development.
- These two spaces are connected by a centrally located green corridor which incorporates the Ridgeway as it enters the local centre.
- Market Square - distinctive materials and treatment - shared surface to properly define the space.
- Ridgeway - distinctive link through the local centre and extending through whole development.
- Semi-private/communal courtyards within the local centre residential blocks provide greenery and amenity for residents.

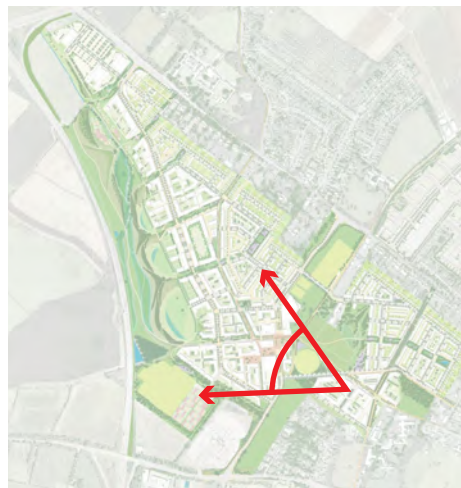


The Local Centre - Access and Movement

Access and Movement

- The Ridgeway passes through the local centre as it travels east to west through the development.
- Cycle parking is provided at key entry locations to the local centre.
- Primary traffic movement diverted to east of the centre.
- Bus gate - allows buses through the centre along the orbital route.
- Bus stops located at the either side of the Ridgeway - at the key crossroads.
- Car parking for residential - uses the slope of the land to provide semi-basement areas under residential courts.
- Service for the foodstore is integrated into an urban block to reduce its impact on the streets and public realm.
- Service for the hotel will minimise impacts on the public realm.

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Local Centre

Key priorities and requirements for the local centre are as follows:

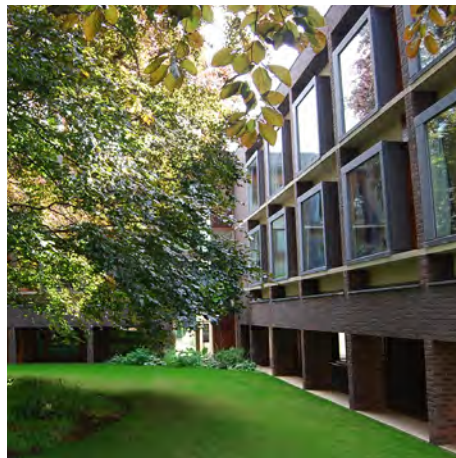
- A highly active and inclusive place, providing amenity and places for a wide range of people to enjoy;
- A compact and walkable place;
- A range of uses, including local shops, a hotel, the school and a foodstore. These uses should be clustered together to promote activity throughout the day;
- Commercial vibrancy which is key for the sustainability and success of the development as a whole. Visibility and access underpin the viability of certain uses, especially the foodstore and the hotel;
- To integrate servicing functionality in such a way as to not detract from the public realm and the pedestrian experience;
- High quality public space, distinctive within the development and the wider Cambridge context.



Illustrative view of the Local centre



A mix of uses



Residential set around courts and gardens



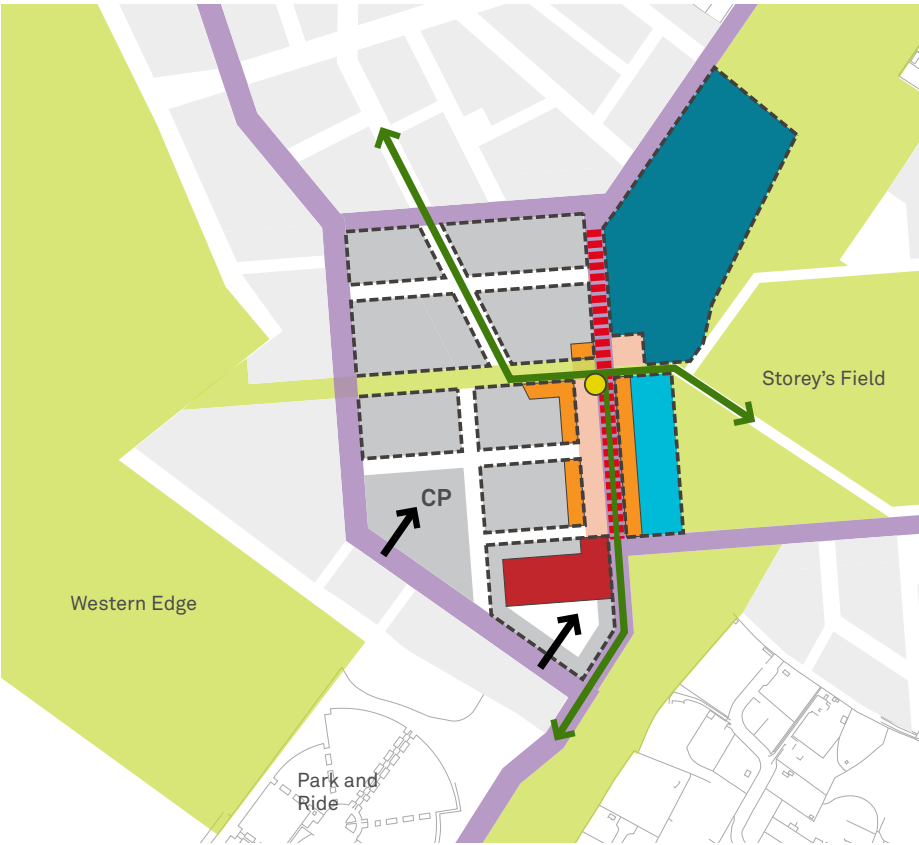
Illustrative view of the local centre

Local Centre Design Development

The layout and functionality of the local centre is critical to the success of the overall development. The local centre will form the heart of the development, both in terms of a focus for everyday activity but also the elements and public realm of the centre will provide the whole development with its visual focus and its identity.

The layout of the centre has to bring together a complex mix of different uses, each with their own requirements and priorities. As such the local centre has been the focus of a number of design iterations throughout the design process. Some of these iterations and thought processes are summarised on these pages.

- KEY
- Square/public space
 - Green space
 - Retail/active frontage
 - Foodstore
 - School
 - Hotel
 - Ridgeway
 - Bus Stop/Bus Gate
 - CP Local Centre Car Park



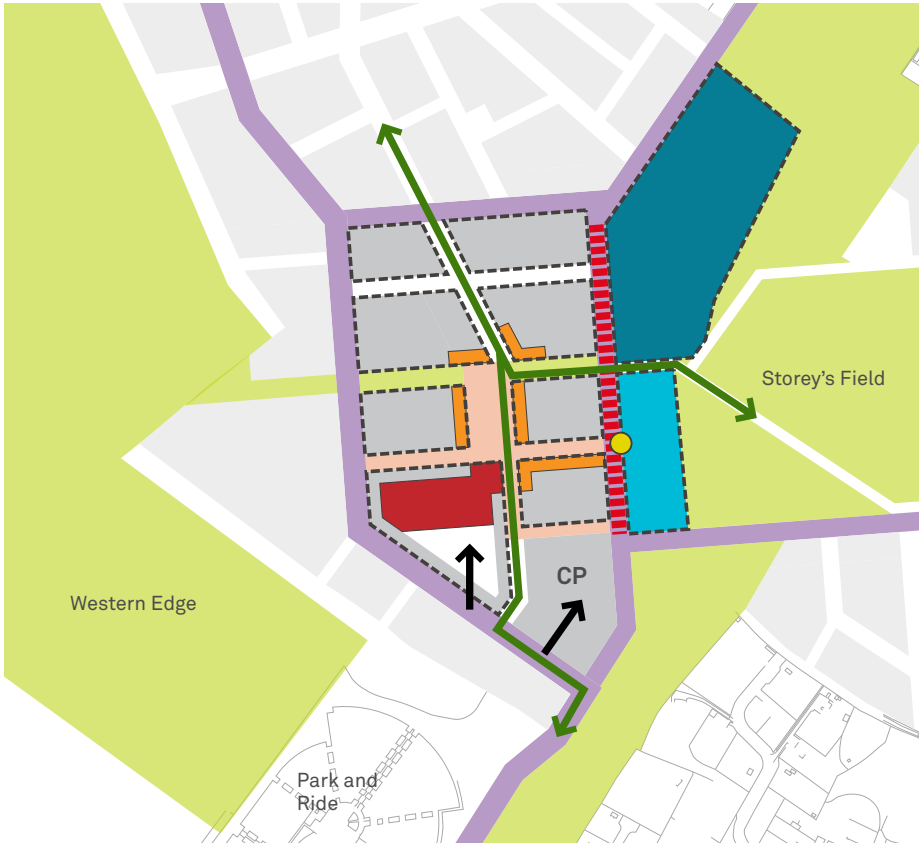
Option 1 - High Street

The focus for the local centre is a widened section of the street along the bus-gate - a High Street. The foodstore is located to the south of the High Street and the school to the north, both acting as anchors to either end of the local centre. The benefits of this layout include:

- the school, hotel and foodstore are well integrated into the local centre and ensure that activity and footfall is high along the length of the High Street;
- the foodstore, the hotel and other retail uses have a high degree of visibility being on the primary bus movement route.

However:

- the foodstore may be too prominent and may dominate the environment. The back of the foodstore will be prominent;
- the linear space would not provide enough space for community events. Linear spaces tend to be spaces for moving through;
- is the space distinctive enough? Can it be made distinct from other primary streets within the development;
- the town centre car park is very prominent, and frontage is lost along the key streets.



Option 2 - Market Square

This option locates a public space, geographically in the heart of the central area. This space can be seen to be an extension of and a focus point along the Ridgeway. The foodstore has frontage onto the square, located to the south. The benefits of this layout include:

- the public space set away from traffic - a thoroughly pedestrian/cycle orientated space;
- space is located along the Ridgeway - well integrated into the pedestrian/cycle movement network.

However, there is:

- lack of visibility for foodstore and the other retail frontages and a lack of visibility for square, which feels removed and hidden;
- a sense that the square is removed from bus stops/the bus gate and the school and hotel are isolated;
- back of house functions and service access for foodstore and other retail will be located along the surrounding primary streets - may be difficult to create high quality frontage;
- the town centre car park is very prominent, and frontage is lost along the key streets and at the gateway location.



Option 3 - Market Square at Crossroads

In this option the square is joined with the Ridgeway. The foodstore is located to south of the square with a small amount of frontage and other sides of the square are lined with retail and active frontages. The benefits of this layout include:

- the layout creates a highly visible space which is well integrated into the movement network;
- the school/community centre forms the north east frontage to the square .

However:

- there is potential for conflict between cyclists travelling along the Ridgeway and the pedestrian use of the square;
- the lack of definition and scale of the Market Square will seriously challenge the commercial viability of retail uses;
- there is lack of visibility for the foodstore in this location;
- the local centre car park is further removed from proximity to the foodstore entrance and other local centre uses, challenging the commercial viability of the foodstore.



Option 4 - Synthesis - Market Square on High Street

In this option the square is scaled appropriately for maximum vibrancy and is separated from the Ridgeway by a mixed use block with active ground floor uses. The square is open to the shared surface bus-gate and active secondary and community frontage will define the orbital High Street. The benefits of this layout include:

- conflicts between pedestrians and cyclists using the Ridgeway are removed;
- the space is highly visible and integrated into the cycle and public transport network;
- the hotel and school are an integral part of the local centre;
- the Market Square is a pedestrianised space, allowing it to be used for gatherings and events;
- the car park is enclosed by good development frontage, allowing for better streets to be created in the local centre;
- extra visibility is provided for the foodstore with views to frontage through the car park.



Option 5 - Synthesis - Preferred Option

From these studies, the following conclusions have been incorporated into further iterations of the local centre illustrative design:

- A well scaled, pedestrian square is most appropriate. This allows for community events and gatherings, a local market and a place to enjoy. A new commercially vibrant square would have more potential to create a distinctive element in the townscape;
- The location and configuration of the Market Square in Option 5 is highly visible in this location and well integrated into the movement network. The southern block on Storey's Field has been moved south to enable visibility from Storey's Field into the market square. This configuration also brings the school and community centre into the local centre mix;
- The arrangement of the foodstore and school in Options 1, 4 and 5 is preferred, acting as northern and southern anchors to the High Street, generating activity and footfall within the local centre;
- The foodstore should have its primary frontage to the Market Square but also visibility from streets and vehicular routes. This enables the car parking for the foodstore to be provided under the store, instead of in a surface car park.
- The back of house and service requirements of the foodstore, CHP, hotel and other retail are discretely integrated into the townscape of the local centre.



B2.2.2. Storey's Field

The character of Storey's Field is defined by both the academic cluster to the south on Madingley Rise and the family neighbourhood adjacent to Storey's Field. In addition, existing and new landscape features are incorporated and a clear hierarchy of streets. These streets slowly reduce in size with building scale reducing in parallel. For example, the main road access to the area is fronted by detached housing while the mews streets are lined with garages and smaller scale courtyard houses.

In this way, a flexible proposal has been developed, responding to specific site features, development constraints and the route network proposed for this area.



Storey's Field - Illustrative Masterplan