

Chapter three

Cranfield history and development

The World War II airfield, RAF Cranfield, was the origin of today's campus. Until then, the area had been largely undeveloped consisting of open arable land until the Cranfield plateau became the airfield during World War II.

Constructed in 1936-37, the original buildings were developed to the standard designs of the Airforce Works directorate. During the post-war period Cranfield became a College of Aeronautics. The College itself was initiated by the post-war Government, recognising the crucial importance of aeronautical engineering to the national economy. A committee convened by the Minister of Aircraft Production, Sir Stafford Cripps, recommended that an Aeronautical Centre of Excellence should be created centrally to Oxford, Cambridge, London and Birmingham and, from this, the College of Aeronautics was established in 1946.

The original buildings have been restructured to varying degrees over the years to meet changing academic requirements. Indeed, the College of Aeronautics rapidly expanded beyond its original disciplines and gave rise to the schools of Engineering, Applied Science, Management and Defence and Security.

Some of Cranfield's campus buildings have been extensively redeveloped while many others have had only limited interventions and are still easily recognisable as former barrack blocks.

In recent years, a number of significant new capital projects have been developed, some by celebrated architects. Such projects include King Norton Library (1993) by Foster + Partners, the Vincent Building (2008) by Sheppard Robson and Stringfellow Hall (2008) and Chilver Hall (2011), both designed by Stanton Williams, and more recently the Aerospace Integration Research Centre by CPMG Architects.

Although not covered by this Masterplan, it is important to note that the University also operates some activity from the Defence Academy of the United Kingdom in Shrivenham. The Shrivenham site is set in and around the landscaped gardens of Beckett House, and is home to Cranfield Defence and Security, providing educational services on contract to the Ministry of Defence.

Over the years, Cranfield University has also occupied two other campuses in Shuttleworth and Silsoe, both of which are located in Bedfordshire. The Shuttleworth College became part of Cranfield University in 1988, and all operations were subsequently merged with Silsoe in 1996. The Silsoe campus was in use until 2007, at which point its academic facilities were relocated to the main Cranfield campus, but the adjacent farm remains in use.



The area prior to 1945
Cranfield village is on the right Source: Google



1946
College of Aeronautics established at RAF Cranfield



1949
RAF aerial photography 11th October 1949
Source: 1st Line Defence Detailed Unexploded Ordnance (UXO) Risk Assessment 2016



1969
Establishment of Cranfield Institute of Technology under Royal Charter



1960s
Planes at Cranfield University.
Source: Cranfield University, Our Heritage: www.cranfield.ac.uk/About/Cranfield/Heritage



1980
Cranfield Management Development Centre opens



1991
Nissan opens at Cranfield Technology Park

Cranfield
UNIVERSITY

1992
Establishment of Cranfield University



1993
New library opens, designed by Sir Norman Foster



2000
New Innovation Centre opens on the Technology Park, a joint venture with Mid Beds District Council



2001
Trafficmaster opens on the Technology Park



2006–2010
Closure of Silsoe campus and relocation of activities to Cranfield



2008
Vincent Building opens



2008
Stringfellow Hall opens



2011
Chilver Hall opens

Cranfield today

The research and academic offering at Cranfield University is delivered across eight sector specialisms:

Aerospace: Cranfield has been at the forefront of aerospace technology for over 70 years, providing postgraduate education and training. The University undertakes world-leading research in collaboration with our strategic partners which directly contributes to the economic growth of the global aerospace sector.

Cranfield Defence and Security provides unique educational opportunities to the defence and security sectors of both public and private sector organisations. Based at the UK Defence Academy at Shrivenham in Oxfordshire, Cranfield is one of the Academic Providers to the UK Ministry of Defence for postgraduate education at the Defence Academy College of Management and Technology and training in engineering, science, acquisition, management and leadership.

Energy and Power. Providing a sustainable, secure and affordable energy supply is fundamentally important to our lives. Cranfield is advancing all the potential solutions in energy and power to ensure future needs are met.

Environment and Agrifood: For 50 years, Cranfield has been contributing to enhancing natural capital and ensuring that global food systems are more resilient for the future. Cranfield is recognised worldwide by industry, government and academe for its research and teaching in plants, soils, water and air.

Cranfield School of Management is one of the oldest and most prestigious business schools in the UK. It's MBA is ranked in the top ten in the UK by the Financial Times. The school has over 50 years' experience of educating business leaders and is triple accredited by EQUIS, AMBA and AACSB. Known for its excellence in leadership development, its deep-rooted relationships with organisations of all kinds, and its focus on transforming learning and research into improved management practice.

Manufacturing: As a driving force in the advancement of manufacturing innovation, Cranfield's expertise in technology and management combined with fundamental materials research enables us the development of novel products and manufacturing processes. The University provides postgraduate education and training to build sustainable manufacturing growth.

Transport Systems: The global market for Transport Systems is estimated to grow to £90 billion by 2025. Cranfield has over 50 years' experience working with transportation clients across sectors including aviation, automotive, motorsport, marine and military. Our education and research activity touches on all modes of vehicle and transport across both technology, engineering and management.

Water: Our lives and livelihoods are dependent on the natural and engineered water cycles. Accordingly, research and skills development in water treatment and management has never been more vital. Cranfield's research in these areas is applied and industry-focused, driving innovation for over 40 years.





The expertise and remit of Cranfield covers eight core themes including:

- Aerospace
- Environment and Agrifood
- Defence and Security
- Energy and Power
- School of Management
- Manufacturing
- Transport Systems
- Water

Although not an exhaustive list, disciplines under these themes cover topics such as aircraft design, aviation safety, driver behaviour, crash impact testing, motorsport, renewable fuels, oil and gas exploration, all aspects of water management, soils, food processing and post-harvest research, biosensors, nanotechnology, materials manufacturing, design, business, economics and finance, defence technologies and regulation and policy development.

These themes will help guide the restructuring of the campus.

Corporate responsibility

Cranfield seeks to unlock the potential of people and organisations by partnering with business and governments to deliver leading research, postgraduate education and professional development.

Corporate responsibility is of utmost importance to the University, with the institution paying close regard to the social, community and environmental consequences of its activities. This philosophy is integrated into the University's regular activity wherever possible and is demonstrated through a variety of initiatives as referenced below:

Supporting business start-ups

Through the University's fully-supported business start-up unit called Cranfield University Business Incubation Centre, it is able to support those businesses in the very early stages of development and once established can offer them a progression pathway on to the Cranfield University Technology Park.

Helping others reduce their carbon emissions

As well as reducing its own carbon emissions, the University's intellectual and technical advances are helping other organisations and individuals reduce their own carbon footprints.

Charities

The University uses its expertise to positively impact the lives of others through charitable work. For more than 25 years, The Cranfield Trust has provided free management support to UK-based non profits. Since 1969, SAFAD (Silsoe Aid for Appropriate Development), has sent more than 340 Cranfield graduate volunteers to over 37 countries in the developing world to work on small-scale development projects run by non-governmental organisations. SAFAD is a registered charity set up by the University on a voluntary basis by its students.

Community

As well as promoting and engendering a strong campus community, the University works with local councils and organisations to encourage business growth and development in its locality.

Biodiversity and sustainability initiatives are also aimed at including and benefiting the local community.

Facilities and services on campus including the sports centre and Cherry Trees Nursery are also open to the wider community and are not restricted to staff and students.

Open Door events on campus, such as the Festival of Flight which marked the 70th anniversary of the University, provide an opportunity for the wider community to visit the campus and enjoy a combination of tours, interactive demonstrations and displays over the course of a day.

Chapter four

Site analysis: issues and opportunities

The University has looked critically at the form and function of the existing estate to inform the Masterplan. As part of this evaluation, consultation with students, staff and other stakeholders has proved invaluable in identifying current challenges and how best to address these challenges, thus shaping the guiding principles of the Masterplan.

1. Arrival experience and legibility

There are three different arrival points to the campus by road:

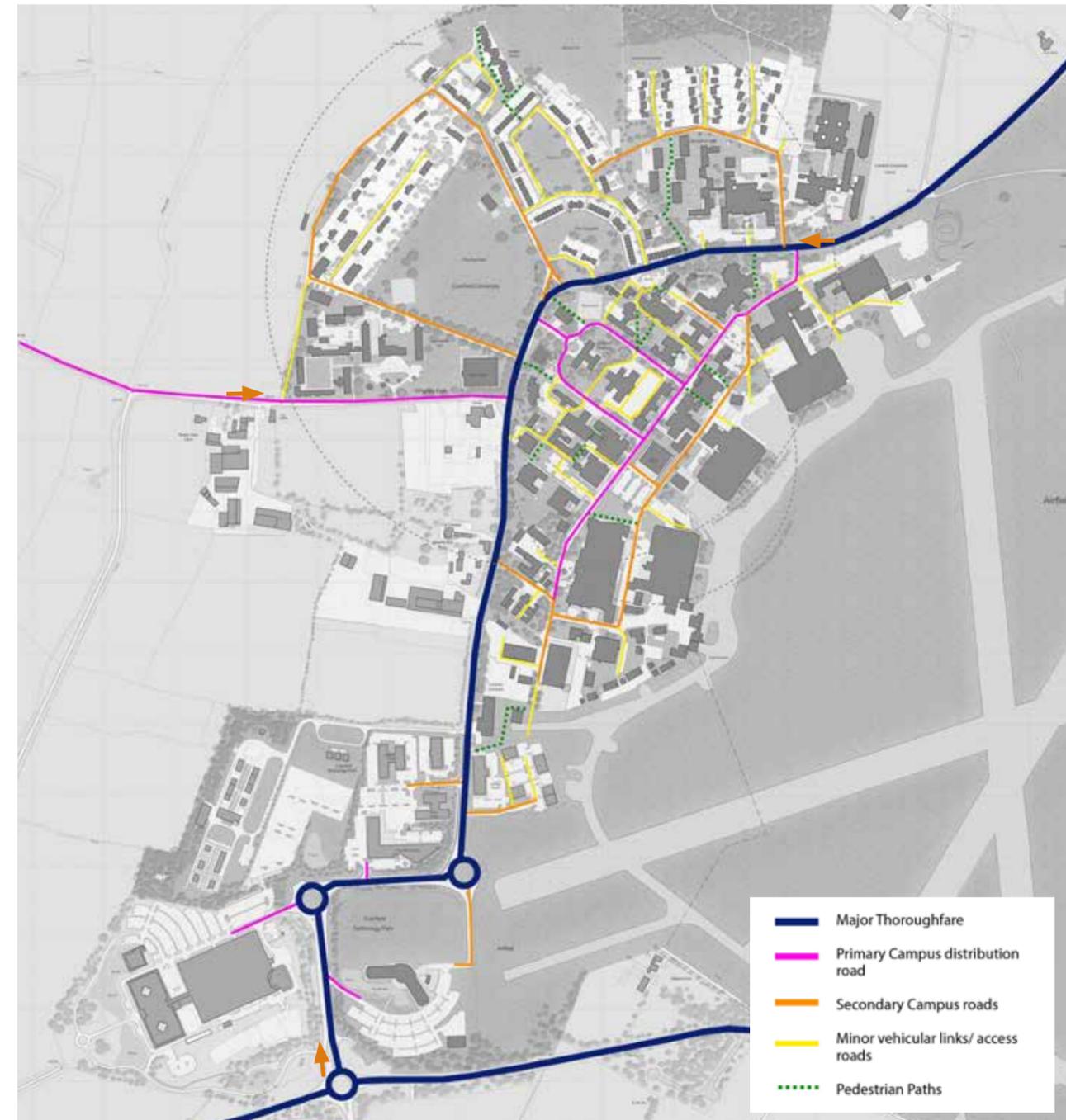
- access to the south of Martell House and the Technology Park taken from the roundabout at Cranfield Road;
- access to the west of the campus leading to University Way south of the sports hall; and
- access from the north taken from the Astwood junction leading to College Road.

The arrival experience is inconsistent and generally poor at all three locations, with little to define or identify the campus as a destination, or highlight a change in environment from countryside to University campus. There is also a lack of clear directional signage at access points to help orientate and direct visitors to their destination.

Poor and confusing signage remains a recurring theme throughout the campus, not only in terms of directional signage but also in terms of building signage. Currently buildings are numbered, however building numbers are not assigned in numerical order depending on their location; for example Buildings 88 and 62 are situated beside each other.

Whilst there is a hierarchy of streets and routes, these are not entirely clear or sufficiently differentiated in appearance or quality. Consequently, many people filter through the campus, passing through secondary and back-of-house environments.

Campus legibility is further confused as there is no clear strategy to differentiate and relate specific buildings and areas of the campus to Schools, teaching themes or social activities.



Existing street hierarchy and connections

The arrival experience



South access



North access



West access



Existing context plan highlighting three access routes

Opportunity

Arrival experience
By enhancing the campus access points to create more formal entrances, the campus will be better defined as a destination and not simply a through route. A combination of features including artwork, signage and landscaping should all be considered to improve campus access points. This will also improve the first impressions of the campus as the home of a successful and leading institution.

Campus navigation
A new hierarchy of routes can be established using consistent design principles allowing primary routes to be easily differentiated between secondary and tertiary routes.

Improving signage throughout the campus will ensure students, staff and visitors are able to navigate their way through the campus with ease and efficiency.

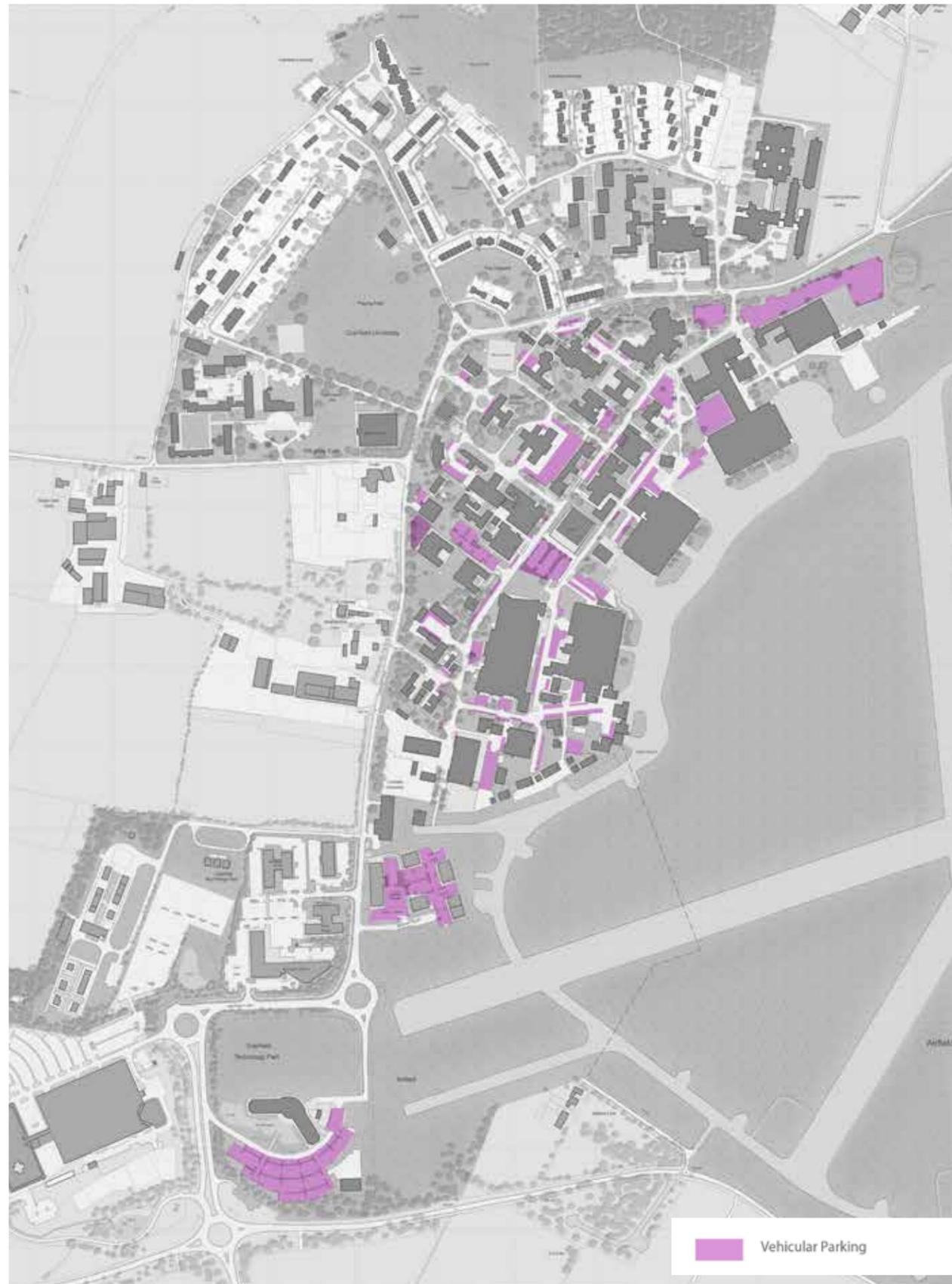
2. Parking and connectivity

College Road is the main vehicular route through the campus and forms the boundary to the west, dividing the academic areas of the campus and Technology Park from the residential area to the north.

The built area of the campus (the academic core, Technology Park and student residential zone) is relatively compact and can be walked from one end to another in approximately 15 minutes. However, the campus suffers from a lack of convenient and direct pedestrian routes, notably between Martell House and the campus core, with the site being largely planned for, and dominated by, the car. Footpaths are cut short, switch road-sides, or in some places simply do not exist. Pedestrians are forced to share routes with cars and often have to mix walking through back of house service areas and along College Road to reach their destination.

A large number of staff and students based outside the campus travel to the site by private car and sufficient parking on site must be maintained. Car parking is currently scattered throughout the campus and dominates many central locations, interrupting pedestrian connectivity. These central parking zones are popular with staff and students given their proximity to buildings and are often full. Parking also occurs in unmarked areas causing congestion particularly in central parts of the campus.

Students based on site are also known to use their car to travel around the campus, trying to park as close as possible to their destination. There is a perceived parking shortage on site however much peripheral parking is underused.



Existing parking distribution

Opportunity

Parking strategy

The Masterplan provides the opportunity to implement a campus-wide parking and management strategy. The parking strategy must ensure there is sufficient parking provision in safe and secure locations that is within a reasonable walking distance to a given location. By relocating parking to peripheral locations, central campus zones have the potential to be repurposed as pedestrian routes and public realm. This strategy, supported by careful management procedures will help over time change parking trends.

New peripheral parking zones should incorporate suitable landscaping where possible, delivering safe and welcoming environments.

Enhancing campus connectivity

As Cranfield expands, improvements to the road and footway network must be considered in conjunction with new buildings and landscape interventions. Attractive pedestrian connections to and from new peripheral car parks must be considered as part of the wider campus redevelopment. Options for alternative modes of transport must also be considered, enhancing connectivity across the University and technology park. Promoting wider links to the surrounding area including enhancing connectivity with strategic infrastructure proposals such as East West Rail and the new Interchange at Ridgmont, and the Oxford-Cambridge Expressway should be supported. This will not only improve the campus experience for staff and students but also articulate Cranfield's role as an industry-facing University in which academic and professional opportunities sit side-by-side.



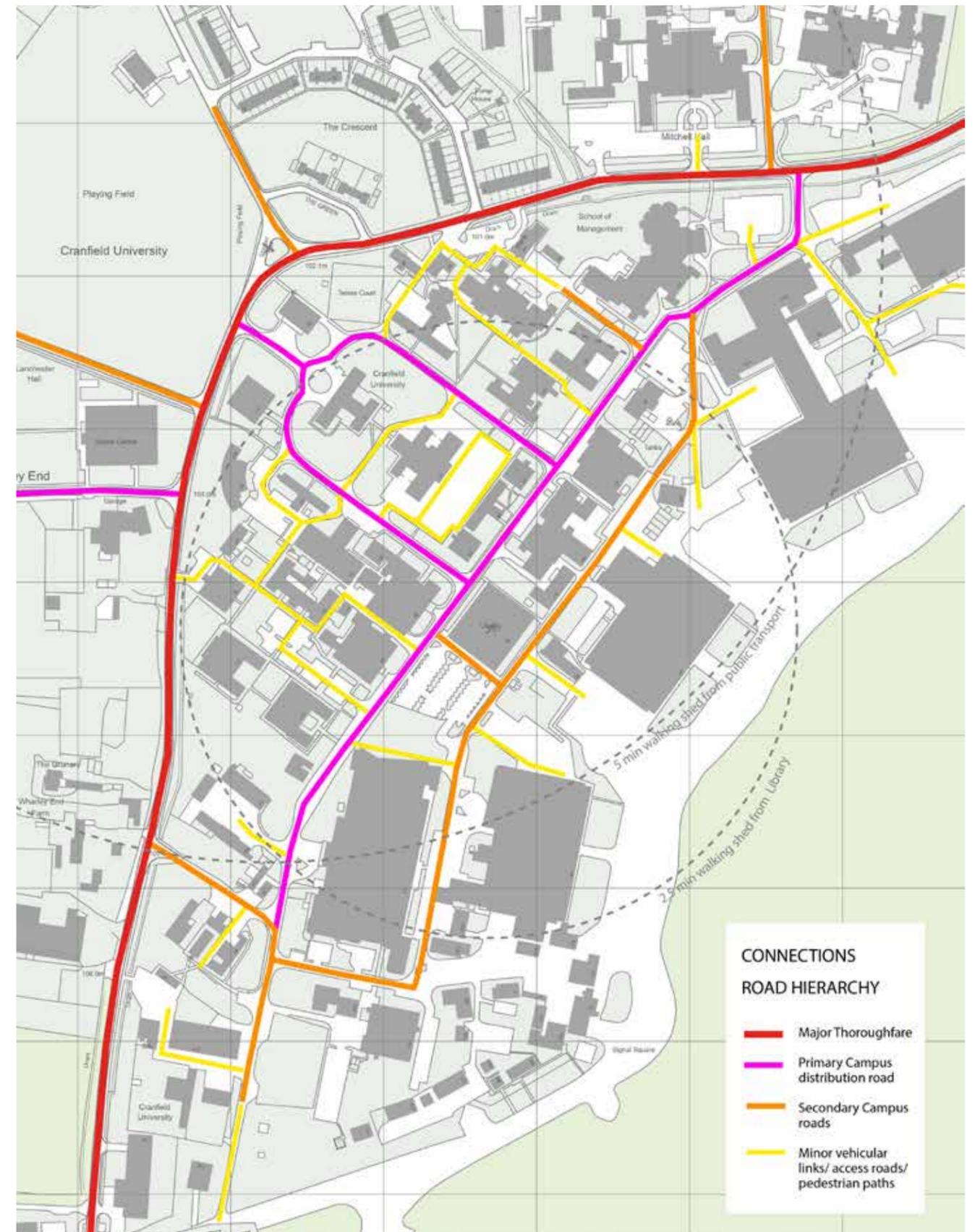
Existing surface parking in central area adjacent to Cranfield Library



Pedestrian route along College Road



Existing surface parking adjacent to Stafford Cripps



Connections hierarchy

3. Campus experience

The campus experience is disjointed across the campus, with certain areas being more successful than others. Newer buildings on campus such as the library and sports hall provide high-quality environments that contribute significantly to the campus experience. However, older buildings and poor external spaces with little activity detract from the campus as a 'place' and reduce the overall campus experience.

Many academic and research buildings are accessed from secondary routes and there is little activity throughout the campus to engender a sense of campus community.

The retail and social provision on site is limited and largely focused in the northern portion of the campus beside the student residences. Additional services are needed to deliver a more rounded and enhanced campus experience.

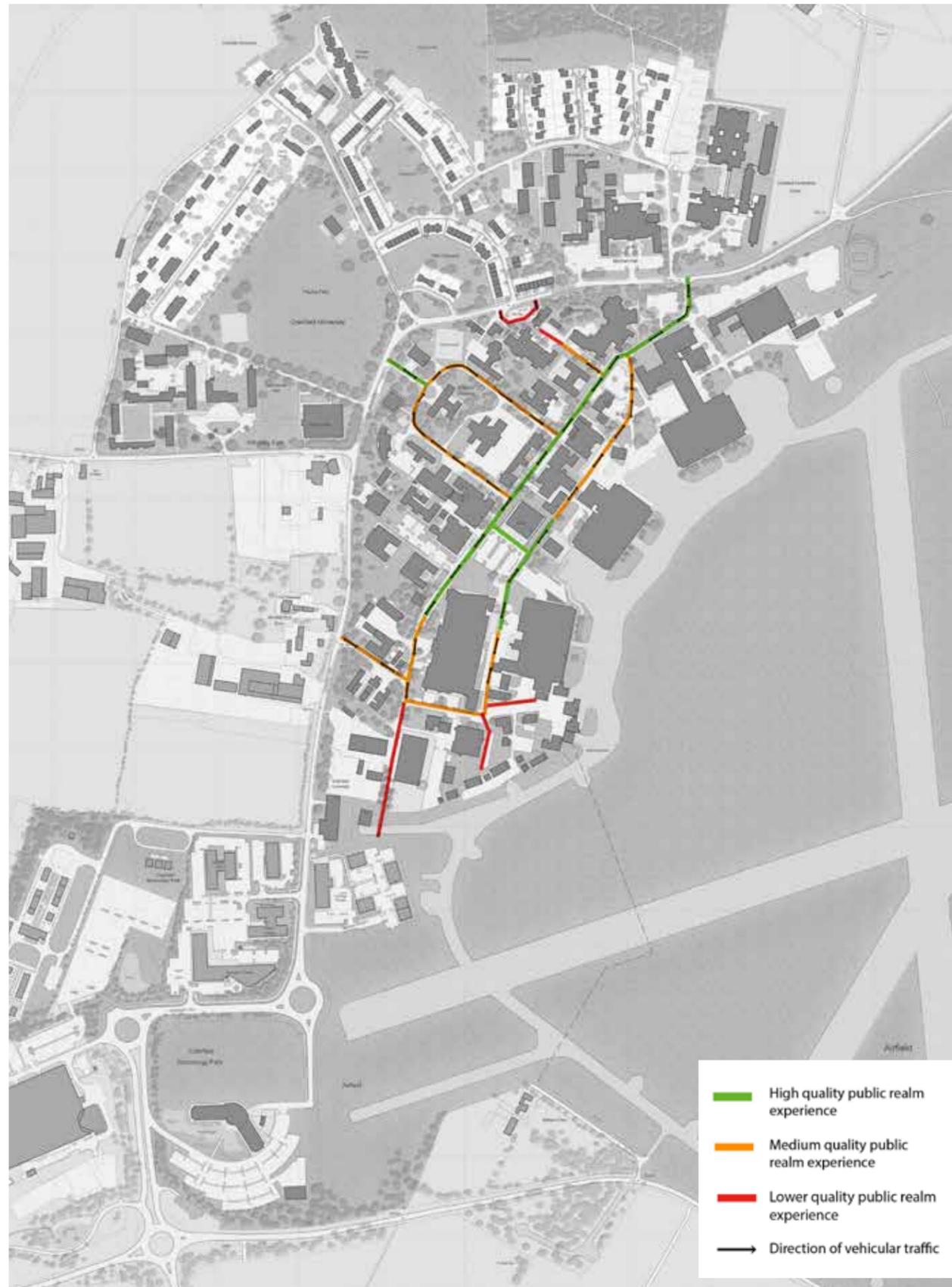
Opportunity

Delivering a safe and secure campus

The Masterplan must ensure the campus provides a welcoming environment where staff, students and visitors feel safe and comfortable. It is vitally important that the masterplan considers the built environment, landscaping and public realm holistically so the campus provides a consistently high standard of 'place' across the site.

Ensuring build quality and legacy

The Masterplan will promote the most efficient use of Cranfield's built assets and the effective redevelopment of existing buildings. However, there are a number of buildings on campus which are beginning to fail in quality and function. The most efficient long-term solutions must be considered, and demolition supported where necessary to ensure the campus environment contributes to a high quality campus environment.



Existing hierarchy of campus movement



Poor buildings

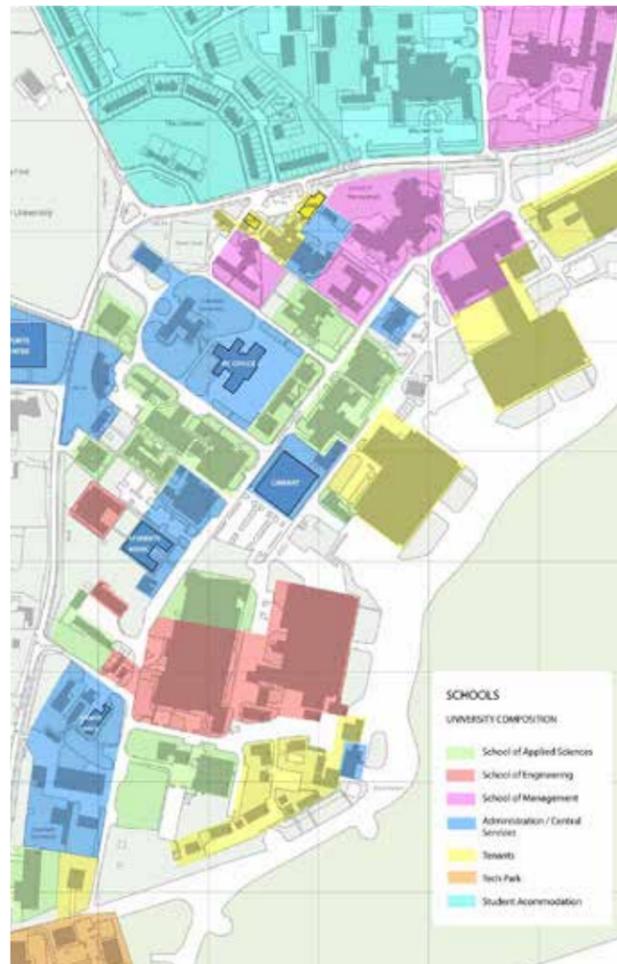
4. Co-location and suitability

Historically, Cranfield Schools have functioned with autonomy, with each carrying out world-leading research in their respective discipline. The schools' relative independence is however not clear on the ground, and due to incremental expansion, the activities of some schools have become dispersed across the campus. This is not an efficient use of resources and presents a lack of cohesion.

The existing building stock ranges in quality and significance from historic and architecturally

impressive to utilitarian and functionally obsolescent. Ownership is largely delineated by School and this has created a 'tenure blind' situation, where areas of the campus have little or no obvious identity or character.

As the academic and research activities of the University continue to grow and evolve, the suitability of the existing building stock changes. This issue has become particularly prevalent for the School of Aerospace, Transport and Manufacturing and the Nano Technology department as the existing buildings are no longer fit for purpose.



Current University Composition

Opportunity

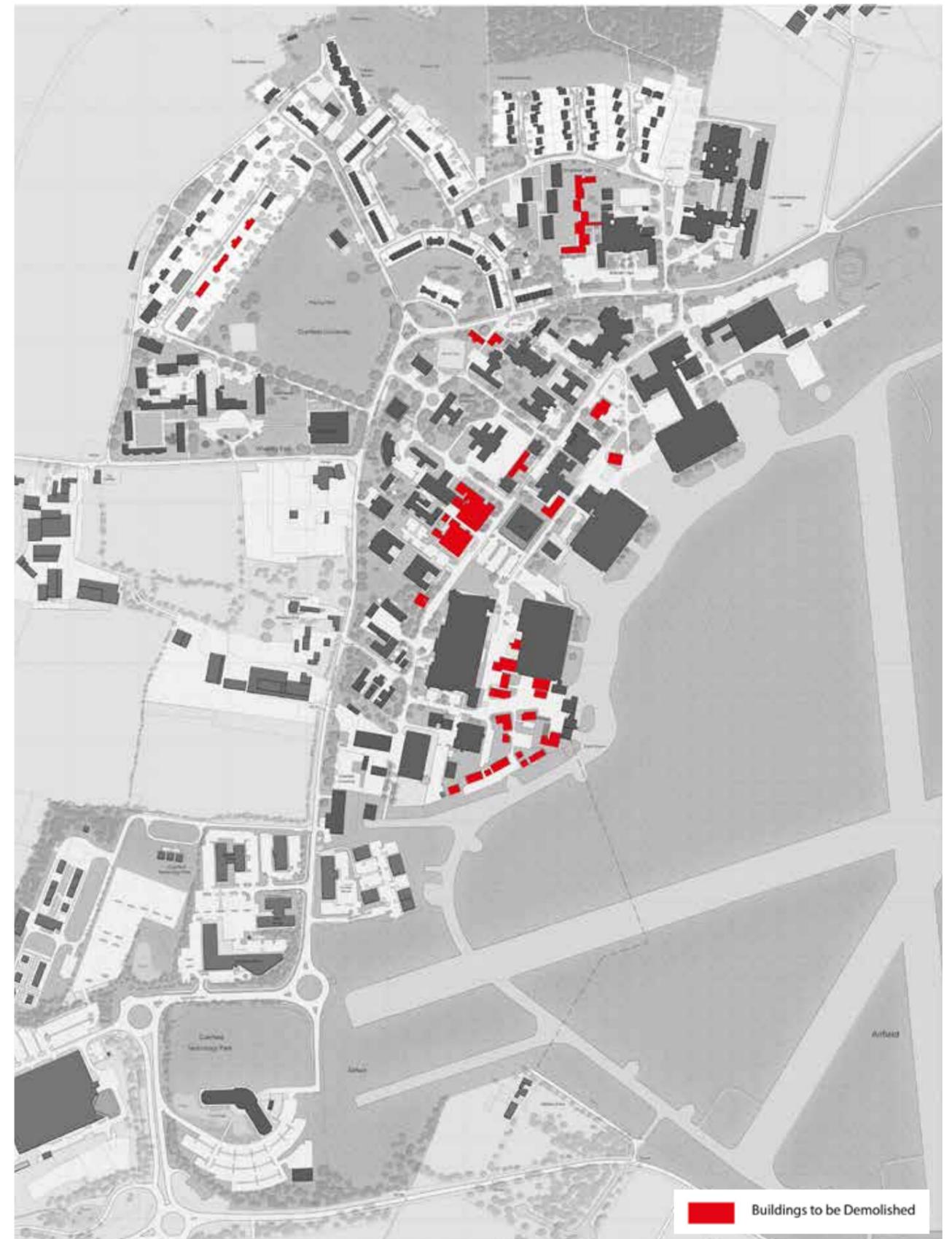
Taking a thematic approach to development

Collaboration between Schools and teaching themes should be supported through development. The opportunity exists to develop the campus in line with the key themes of the University, providing the potential for interdisciplinary working and the sharing of facilities.

Buildings as 'research' opportunities

Through the incorporation of new technologies, new build and redevelopment projects should not only be spaces for teaching, they should contribute physically to the learning and research activity of the University. In particular, carbon reduction measures should be welcomed and will contribute to the University's overall environmental aspirations.

New development should also be digitally equipped with links to superfast broadband.



Indicative demolition plan

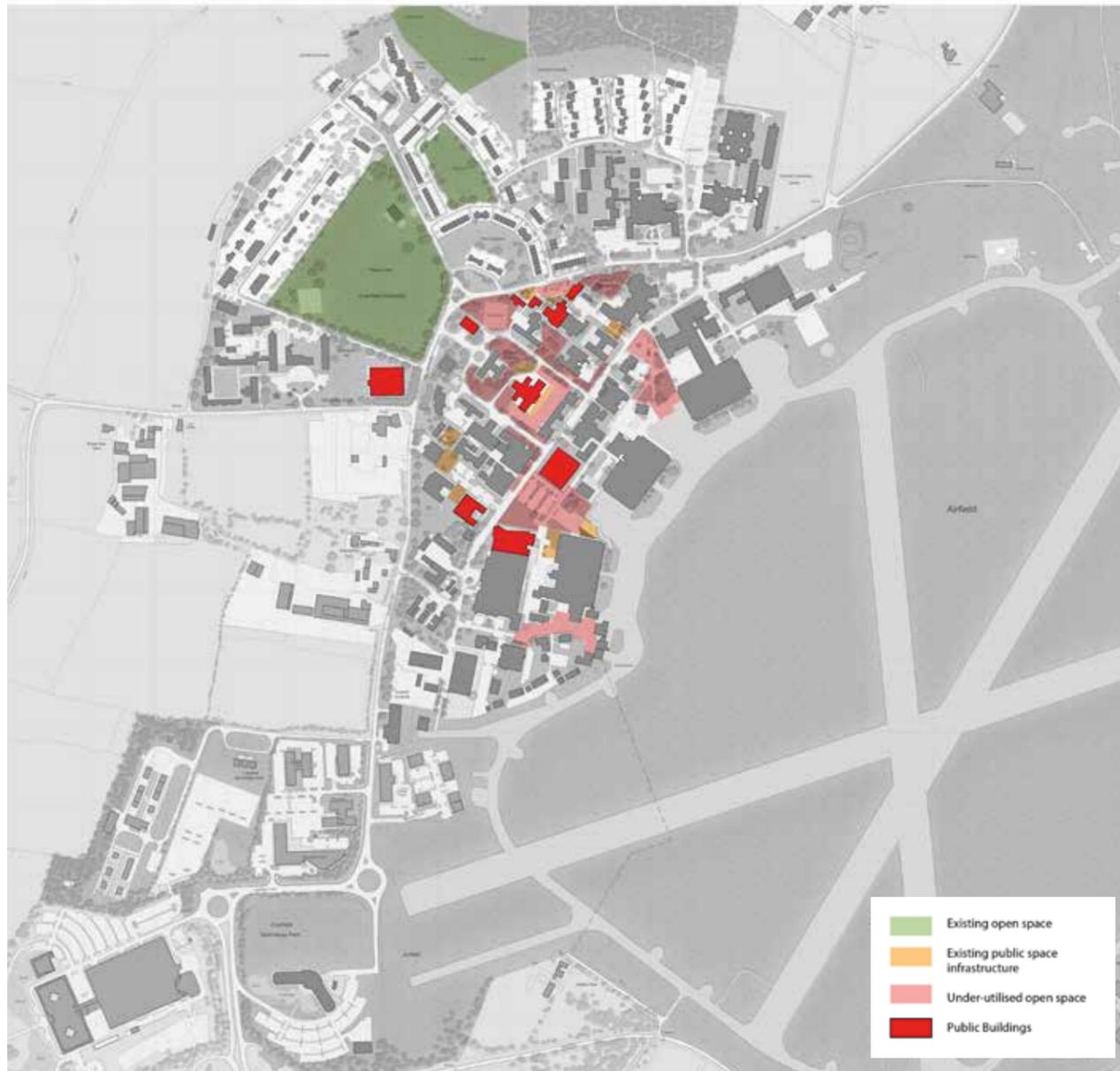
5. Landscape and public realm

The campus has a unique location being adjacent to the operational airfield and set within open countryside. The campus retains a relatively rural landscape quality, with mature trees and hedgerows defining its boundaries.

The soft landscaping within the campus is modest in nature and predominantly maintained as amenity

grassland with limited defining features. However, there are recreational sports pitches and a good variety of tree species across the campus, with a particular focus along College Road and surrounding the residential sports field.

Although the campus benefits from open space between buildings much of these spaces are either dominated by the car or undefined in function and not used to their full potential.



Key public/open spaces



Children's playground within residential area



Sports fields within residential area



The airfield and hangar 2

Opportunity

Landscape connectivity

The approach to hard and soft landscaping should follow a common hierarchical palette while supporting the thematic approach to campus development. The historic landscape layout should be celebrated and links to the surrounding landscape should be supported and enhanced through the Masterplan process.

Functional public realm

A new campus heart should be prioritised as part of the masterplan process through the provision functional and attractive public realm improvements, including the addition of street furniture and play equipment. This should be focused in a central campus location responding to the surrounding built environment.

Building on the innovative strengths of the campus, the public realm should be developed as an external laboratory where new technologies can be showcased and tested. Green elevations/ green walls will be considered in appropriate locations. Wherever possible, priority should be given to the pedestrian in all public realm interventions.

6. Biodiversity

The rural setting of the campus means the site has a high level of biodiversity with a habitat mix of scrub, woodland, wetland and farmland. However, the proximity to the airfield presents certain limitations in terms of compatible forms of biodiversity. The wider area outside of the campus is predominantly farmland habitats comprising arable field margins, hedgerows, ponds, ditches and improved grassland.

The campus has many areas of amenity grassland, including formal areas outside of Martell House, maintained grassland between buildings, sports pitches and informal open space punctuated by trees. Certain areas of grassland have been adopted by the University as key Biodiversity Action Areas, and replaced with test beds for wild-flower outside of buildings. Numerous other grassed areas have been set aside to undergo a process of natural succession from grass to woodland habitat.

The Chicheley Brook runs through the south of the residential area and currently is in a declining ecological condition. Other waterbodies include the Lagoon feature which was originally a Suds feature and smaller water bodies within the technology park, one of which supports Great Crested Newts.

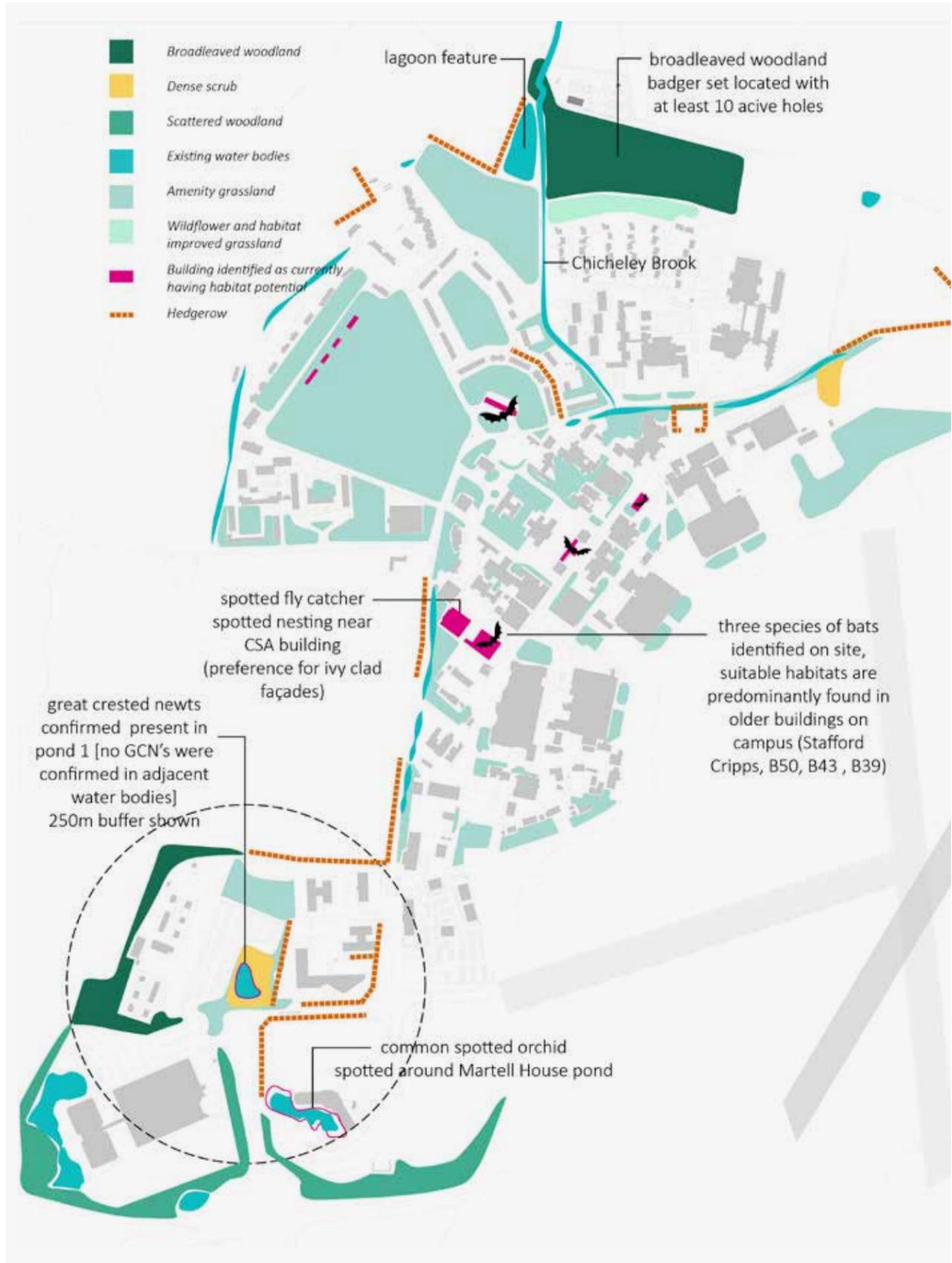


Opportunity

Enhancement of biodiversity action areas
Biodiversity should be considered as part of all development opportunities and incorporated in suitable locations whilst not limiting future development potential. Wherever possible, such enhancements should act as an external living laboratory offering teaching and research benefits to the University.

Enhancing biodiversity links with the surrounding area should be supported where possible.

Biodiversity and landscape management coordination
A landscape management plan should be developed to implement the University's Biodiversity Action Plan, monitor biodiversity and manage habitats within the constraints of the airfield.



Existing biodiversity habitat