

BRILLIANT BUILDINGS

TRANSFORMING OUR UNIVERSITIES



WILLMOTT DIXON

SINCE 1852

Solutions to university challenges

Willmott Dixon is helping to transform the UK's higher education estate as universities compete globally for students and research funding through a period of unprecedented change.



Many of today's university environments are unrecognisable when compared to a generation ago.

Students now expect collaborative and social learning spaces, digital teaching facilities, high-tech labs and international-standard sports facilities. Tuition fees have transformed the university-student relationship to one of service provider and customer, with buildings and the university estate playing a pivotal role in delivering that transformation.

UK universities are investing record amounts into their estates – around £3bn on capital projects each year, and a similar amount on repairs, maintenance, energy, cleaning and security. This is necessary to maintain competitiveness and continue to deliver world-leading academia and research in an increasingly globalised higher education market.

Some of the challenges facing higher education are the same as those faced by society in general: how to improve the health and wellbeing of our young people; how to harness digital technology to enable more diversity and creativity; how to limit our impact on the planet.

Further change is on the horizon with the impact of Brexit on student recruitment and academics' status yet to be revealed, and the Augar review of post-18 education set to bring widespread change to the student finance system.

Despite these uncertainties, universities continue to transform. In this publication, we explore the future, looking at the key trends from the new and repurposed buildings that Willmott Dixon has delivered in recent years.

We look at common threads that run through our projects, revealing how they enhance the student experience and improve outcomes. What is more, the buildings express and communicate the ethos and values of the institutions to which they belong; and they all have one eye on the future, offering flexibility and agility in the face of expected – though sometimes undefined – change.

Richard James, senior sector manager – universities, Willmott Dixon



For further information on university projects and expertise please visit: www.willmott-dixon.co.uk

Building first-class university campuses

UK universities are among the best in the world. We are proud to be working with them to ensure that they continue to lead the way.



University of Warwick Sports and Wellness Hub

After completing the award-winning Oculus Building, we returned to deliver the Sports Hub – part of Warwick's goal of becoming the "most physically active campus in the UK by 2020".



School of Medicine, Anglia Ruskin University

The Chelmsford campus hosts the first school of medicine in Essex, featuring state-of-the-art facilities, specialist teaching space, a lecture theatre, simulation rooms and an anatomy suite.



Dyson Building, Imperial College London

Willmott Dixon Interiors repurposed a former Post Office building to create cutting-edge facilities for the Dyson School of Design Engineering on ICL's South Kensington campus.



Student Life Centre, Teesside University

This student-focused hub continues our strong relationship with Teesside, and combines extensive student services, catering facilities, flexible learning and social spaces.



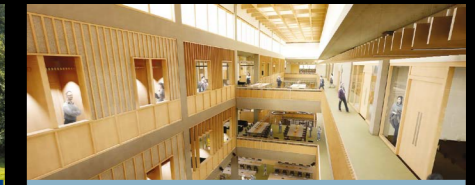
Brunswick Park, University of Manchester

Our team transformed a large area of public realm to create new parkland at the heart of the campus, improving pedestrian access and providing better activity and social space.



Digital Media Building, UWE Bristol

This striking building closely reflects the aspirations of the university, while also carefully considering its semi-rural environment. The digitally connected environment will enable UWE to retain its position as a sector leader.



School of Engineering, University of Birmingham

This specialist research school for digital railway engineering will focus on railway control and simulation, data integration, cyber security, condition monitoring and sensing.



Kingston University Town House

This landmark building is a key feature of the Penrhyn Road campus, acting as a front door for students, staff, alumni and the community alike. It also showcases achievements and supports collaboration with industry.



Sibson Building, University of Kent

This five-storey academic building provides 150 offices, seminar rooms, three lecture theatres and a double-height atrium. It is home to the Kent Business School and the School of Mathematics, Statistics & Actuarial Science.



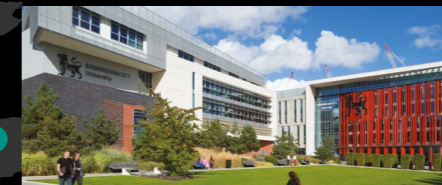
Poole Gateway Building, Bournemouth University

This specialist facility will provide students and researchers with high-quality TV studios, sound editing labs, media production spaces and a green screen with motion capture suite.



Innovation and Enterprise Campus, Aberystwyth University

A major development for Mid Wales, facilities include an analytical science centre, a bio-refining centre, a future food centre, a seed biobank and processing facility.



City Centre Campus, Birmingham City University

The transformation of the city centre campus includes the construction of three key buildings, and forms a major part of the regeneration of Birmingham's Eastside district.



Materials Science and Metallurgy, University of Cambridge

Work on this state-of-the-art research facility included ultra-low vibration construction to house the world-renowned Wolfson electron microscopy suite.

1. Creating an identity

You couldn't imagine three more different buildings. The University of Kent's Sibson Building, blending into the surrounding woodlands with its distinctive cladding; Kingston University's Town House, all interlocking boxes and yet somehow open throughout; and the Fusion Building at Bournemouth, layers of glass and cladding, both modern and organic.

All aesthetically stunning, these buildings embody and communicate the ethos of the organisations they belong to.

"We wanted to create something that provided a lot of value in terms of the build cost, that had a lot of attention to detail and that gave us the 'wow' factor, both internally and externally," says the University of Kent's director of estates Peter Czarnomski. "I think we've achieved that."

"We are presenting their vision, their dream. It is all about quality and no compromises

on design," says Tony Mingoia, Willmott Dixon's senior operations manager responsible for delivering Kingston's Town House.

The Town House, designed by international architectural practice Grafton Architects, is the centrepiece of the university's Penrhyn Road campus, and contains a learning resources centre, a covered courtyard for hosting events, flexible learning spaces and dance areas. The construction team's decision to use precast concrete elements to create the building's distinctive frame delivers two main benefits: first, the quality and appearance of the exposed surfaces is assured; and second, it minimises disruption to neighbours and students.

Bournemouth University's Fusion Building is one of several buildings in a £146m programme of estate developments running between 2013 and 2020. Bournemouth and Willmott Dixon

also worked together on the university's Student Centre and are now delivering the £27m Poole Gateway Building.

As its name suggests, the Fusion Building fuses several departments with teaching space that any university department can book and use, together with a large cafe, research spaces and PC laboratories.

"Fusion is light and airy, it showcases what a 21st-century university building should be," says Stuart Laird, director of estates at Bournemouth of the BDP-designed building. "There's no main entrance, it has an open atrium, surrounded by open balconies."

Bournemouth wanted an energy-efficient and environmentally friendly building, with a BREEAM Excellent rating and an EPC (energy performance certificate) A-rating. "We pride ourselves on being a sustainable university," says Laird.

Right Bournemouth University's Fusion Building "showcases what a 21st-century university building should be".

Below left The Dreadnought Building has been transformed into a new heart for the University of Greenwich.

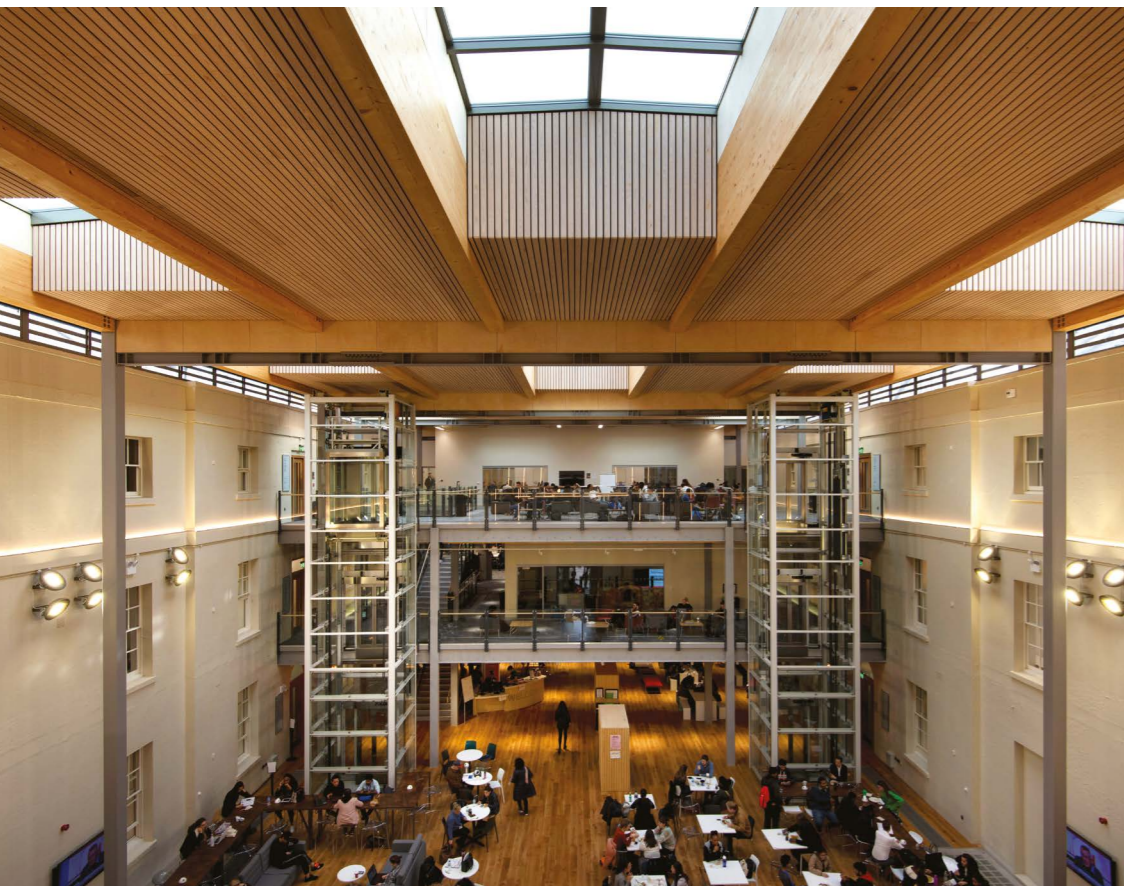
Below The University of Kent's Sibson Building features a shared central atrium, linking two schools to foster collaboration.



Fusion Building, Bournemouth University

Key facts

- Collaborative space to allow fusion between departments.
- A new focal point for the Talbot campus.
- Excellent environmental credentials to reflect the university's ethos.
- £22m new build.



Straight talking

Peter Czarnomski, estates director at the University of Kent, now uses Willmott Dixon's "Principals' Meeting" approach on every project. This involves an informal meeting every few months with directors from the estates department, contractor, project manager and QS.

"It allows us to get on top of issues before they become contractual," says Czarnomski. "It means you can have a frank exchange of views, if you need to, with each other."



2. Strategic needs

The University of Greenwich's imposing Dreadnought Building has been lovingly transformed into a student hub, with a range of services and spaces where people can study, eat, exercise and relax. But head of the university's estate strategy and programme Robert Hartley sees the building as so much more than that.

"Our job and our duty is to help create the global citizens of the future," he says. "When you create spaces that bring students from different courses together, you are helping to make a dynamic mix, getting people together so that they can create wonderful friendships and networks."

Previously home to the university's library, the Grade II-listed Dreadnought Building has created a heart for the campus where previously there wasn't one. Opened in September 2018, its impact has been immediate, says

Hartley, whose ethos on space use is "everything, everywhere". The impact on intake was also instant: there were 10 times more applications for the university's psychology course in 2018.

As Greenwich strengthens its core, Coventry University's approach has been to grow outwards to other parts of the country. Under its "CU" brand, the university offers students more flexible, vocational courses, allowing part-time study around work and other commitments. CU Scarborough, a £14m state-of-the-art campus building, opened in 2016. CU London, in Dagenham, east London, which opened in September 2017, is based in a Grade II-listed art deco building, formerly Dagenham Civic Centre.

Other universities are expanding space to meet growing student demand in particular subjects.

The Universities of Manchester and Bristol have both grown their engineering capacity with extensions to existing buildings.

"We had run out of space," says Mary Millard, the University of Bristol's faculty manager for engineering. "We were looking to expand our student numbers, increase the space for our staff and increase laboratory capacity."

Bristol's extension to the Queen's Building was challenging, not least because the existing facility remained operational throughout. "Teamwork on a project like this is absolutely everything," says Paul Cooper, deputy head of capital projects at the university, who has worked on the estate for 24 years. "It may sound glib, but it does not always happen. Whenever there was a problem, we sat round the table, discussed the issues and together came to a solution."



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MARY MILLARD,
UNIVERSITY OF
BRISTOL

3. Estate efficiencies

Improving efficiencies is a common thread throughout university estate strategies. Estate managers are looking to use the space they have more efficiently and minimise the energy that buildings use in order to reduce operational costs. According to the Association of University Directors of Estates (AUDE), energy accounts for 20 percent of a university's property costs.

The University of Warwick's Oculus, which opened in September 2017, achieves both of these goals. Providing a variety of teaching spaces – from lecture theatres to seminar rooms – alongside social learning areas and a cafe, any university faculty can book space here. This wasn't just about space efficiency however: Warwick believes that valuable cross-fertilisation of knowledge can be achieved by mixing disciplines within the building.

Oculus also has impressive energy efficiency credentials. Extensive use of glulam beams, natural light and ventilation, photovoltaics and the campus-wide combined heat and power

(CHP) district heating and power system give it BREEAM Excellent and EPC A ratings.

The University of Leicester's George Davies Building, its new Centre for Medicine, takes the energy efficiency agenda even further. At just under 13,000m², it is the UK's largest non-domestic building to meet the stringent Passivhaus standard – four times larger than the previous record holder.

"The challenge was scaling up the available technologies – most of which are based around housing – to a commercial building of this size," says James Elliment, senior operations manager at Willmott Dixon. Nevertheless, the team committed fully to complete Passivhaus certification, rather than just following the design ethos, which was the original plan.

The result has been as intended. The previous energy consumption of 500kWh/m² has been reduced to 80kWh/m² and the building received an A-rated DEC (display energy certificate) in its first year of operation.



Above The George Davies Centre for the University of Leicester is the UK's largest non-domestic Passivhaus building.

Right Extensive use of natural light has helped the University of Warwick's Oculus building achieve a BREEAM Excellent rating.

Below The Pavegen walkway at the University of Birmingham's Green Heart.

The Oculus, University of Warwick

Key facts

- Multi-faculty building to encourage collaboration.
- Flagship first step in central campus redevelopment.
- High-tech credentials throughout.
- £19m new build.



Green Heart, University of Birmingham

Key facts

- New 12-acre parkland at heart of campus.
- Pavegen walkway generates electricity from walkers' footfall for USB charging point benches.
- Features native flowers and wild plants, 160 new trees and nesting sites.
- £11.5m project.



4. Health and wellbeing

Successive studies point to the fact that the number of students reporting mental health problems continues to rise. A 2017 report by the Institute for Public Policy Research said 19 percent of 16 to 24-year-olds experience a mental health condition and 2 percent of all first-year students at universities reported a mental health condition in 2015/2016.

To fight these worrying statistics, universities are creating mental health and wellbeing strategies, which rightly extend to the design of the buildings that students and university staff use. AUDE reports that over the last 18 months wellbeing is overtaking sustainability as a priority issue.

Some of our projects illustrate the changes that universities are

making to improve wellbeing. One dramatic example is the University of Birmingham's Green Heart, a 12-acre green space in the centre of the campus.

"Green Heart is a wonderful addition to the campus, not just for university students and staff but for the wider community too," says Willmott Dixon deputy managing director for the West Midlands, Nick Gibb. As well as 160 new trees, nesting sites and dedicated areas for art and sculptures, it includes a Pavegen walkway, the first at a UK university, which generates data and off-grid electricity for USB charging point benches. In a pointer to the future, Green Heart also has comprehensive wifi coverage and digital information totems.



"GREEN HEART IS A WONDERFUL ADDITION TO THE CAMPUS, NOT JUST FOR UNIVERSITY STUDENTS AND STAFF BUT FOR THE WIDER COMMUNITY TOO."
NICK GIBB,
WILLMOTT DIXON

Like Green Heart, Manchester University's Brunswick Park, which opened officially in September 2018, is the largest green space on campus, replacing what was a thoroughfare for vehicles. The £3.1m project is part of a £1bn, 10-year campus masterplan.

The University of Warwick has set itself the target of becoming "the most physically active campus community in the UK by 2020", investing £49m in total – £36m on construction – in a Sports and Wellness Hub which will open in April 2019. The huge sports hall and 12-lane, 25m swimming pool, together with a 230-station gym, studios, climbing walls, squash and netball courts and outdoor 3G pitches will be open to the local community.



Schuster Annexe, University of Manchester

Key facts

- 2,500m² extension to existing Schuster Building.
- Accommodates growing physics and astronomy departments.
- Programme accommodated live experiments.
- £12m new-build extension.

5. Live environments

The challenge for any estates team when delivering campus improvements is preserving a good student experience during building works.

"It's always a concern," says Stuart Laird, director of estates at Bournemouth University. "We stagger our projects. The Student Centre was complete before we started work on the Fusion Building, which meant students who were here while the Fusion works were underway already had a new space."

For the contractor, all the normal rules of good site management apply: cleanliness, segregation, tight logistics. There is also the ongoing activity at the university, which requires

meticulous consideration.

When extending the Schuster Building at the University of Manchester, our team was working alongside existing laboratories which contained ongoing experiments. Noise and vibration were carefully monitored, with piling delayed to allow one experiment to conclude.

The same challenge arose for the extension to the Queen's Building at the University of Bristol. The existing building was too large to close while the works were under way and disruption had to be kept to a minimum. Communication was key, says Mary Millard, faculty manager for engineering at Bristol: "We met every Monday.

We really had a very good relationship. The team was very respectful, they understood."

For some universities – and local schools too – projects on campus can become a useful training ground. "One thing we can bring with us is learning experiences through projects and their activities," explains Nick Gibb, Willmott Dixon's deputy managing director in the Midlands.

"Both the University of Birmingham and Birmingham City University have had student engagement programmes through the pre-construction and construction stages," he adds. These encompassed lectures and workshops off site, as well as tours and visits.

"WE STAGGER OUR PROJECTS, SO STUDENTS WHO WERE HERE WHILE THE FUSION WORKS WERE UNDERWAY ALREADY HAD A NEW SPACE."
STUART LAIRD,
BOURNEMOUTH
UNIVERSITY

Above At the University of Manchester's Schuster Building, work was carried out alongside existing laboratories.

Opposite The Computational Foundry at Swansea University featured the innovative use of precast brick panels.

6. National priorities

Swansea University's Computational Foundry building embodies the university's vision for the future: to build a strong community of digital researchers and businesses that can help tackle the challenges the world is facing. The £32.5m facility at Swansea's Bay campus will provide world-class computer science facilities including offices, laboratories, research and teaching areas.

Its construction attracted attention too, thanks to an innovative application of offsite methods: a series of precast brick panels up to five storeys high. "We had to take multiple factors into consideration when comparing traditional brickwork with the precast solution," explains Willmott Dixon operations manager Simon Williams. "Given the site's exposed nature and the shortage of experienced bricklayers, using precast reduced risks to both the programme and the quality. This is a statement building and it is important that

we deliver both the architectural intent and the quality."

Medicine and biosciences is another priority area for study and research in the UK. The University of Leicester's George Davies Building provides the most advanced environment to study medicine in the UK. Anglia Ruskin University's brand-new School of Medicine in Chelmsford, which opened in 2018, aims to help Essex fill its skills gap in medical roles; the goal is that at least 50 percent of students at the school will come from the East of England.

Engineering and sciences are also high on the agenda, with projects including extensions to the schools at Manchester and Bristol Universities and the new School of Engineering for the University of Birmingham. Due for completion in 2020, Birmingham's new school will be linked to industry through the university's role as the Digital Systems Innovation Centre, which itself is part of the wider UK Rail Research Innovation Network.



"THE COMPUTATIONAL FOUNDRY IS A STATEMENT BUILDING. IT IS IMPORTANT THAT WE DELIVER BOTH THE ARCHITECTURAL INTENT AND THE QUALITY."

SIMON WILLIAMS,
WILLMOTT DIXON



Computational Foundry, Swansea University

Key facts

- Part of new £450m Bay campus development.
- Computational and mathematical sciences to help meet digital challenges.
- Aims to increase industry-academia collaboration.
- £21.4m new build.

7. Repurpose, remodel

The Herman Miller furniture factory, designed by Nicholas Grimshaw, was ahead of its time when built in 1976, with modular cladding panels that could be reconfigured as activities at the factory grew and changed. In 2019, having been unused for five years, the Grade II-listed building will start a new life as home to the Bath School of Art and Design, redesigned by the original Grimshaw practice.

The university took the bold step of acquiring and refurbishing the iconic building because it embodies what the institution is about: "We have taken on a building with a strong identity which has an original design brief very much aligned with our own aspirations," said Professor Anita Taylor, executive dean of Bath School of Art and Design, at the launch of the £20m project.

The decision to repurpose or refurbish an existing building can be driven by several factors. For Bath, it was the brand value of the building itself. This was also the case for the Cockcroft Building on Brighton University's Moulsecoomb campus, a distinctive local landmark.

The refurbishment of the 10-storey block, built in the 1960s, combined significant energy-

efficiency upgrades with extensive remodelling of the interior to create open spaces. Further complexity was added by the need to carry the work out floor by floor to keep the building operational. The award-winning result is a contemporary learning space wrapped in a historic exterior.

For other universities, there is no choice but to refurbish. Imperial College, based in central London, is creating space for its newest engineering department, the Dyson School of Engineering, by repurposing a former Post Office building. The £14m project creates open-plan and flexible space while preserving original features such as the former library and stair cores.

With any refurbishment project, there are surprises along the way, not all of them pleasant. "We do have to make changes and adjustments along the way. Everything has to be done by agreement," says John Boughton, Willmott Dixon managing director for the South West. "If something isn't affordable, we look at other solutions, bearing in mind how important aesthetics are on a job like this. This was an iconic building in its day, it still is, and there will be no other art school anywhere like it."

Right The University of Brighton's Cockcroft Building – a contemporary building wrapped in a historic exterior.

Far right The Bath School of Art and Design, reconfigured from Nicholas Grimshaw's iconic Herman Miller furniture factory.



Cockcroft Building, University of Brighton Key facts

Landmark 10-storey building with repurposed interior.

Remained operational throughout the project.

New windows, thermal energy system and photovoltaic panels cut energy costs by one-third.

£23m retrofit.

"WE HAVE TAKEN ON A BUILDING WITH A STRONG IDENTITY WHICH HAS AN ORIGINAL DESIGN BRIEF VERY MUCH ALIGNED WITH OUR OWN ASPIRATIONS."
PROFESSOR ANITA TAYLOR,
BATH SCHOOL OF ART AND DESIGN



8. Making the grade

Starters for 10 from our university customers on ensuring a successful project

1

Engage, engage, engage

Build trusting relationships through regular communication – formal and informal – so that when challenges arise, they can be tackled together.

2

Get early specialist input

Whether it is state-of-the-art laboratory equipment or acoustics in a media studio, early input from specialist designers will avoid technical problems later in the programme.

3

Make that decision

With multiple stakeholders all with different but valid views, it takes a strong leader to build consensus and take decisions when they are needed.

4

Virtual investment

A good 3D model is invaluable for engaging early with stakeholders and for communicating to existing and would-be students what your new building will feel like.

5

Really inclusive design

Challenge yourself and your designers to think beyond what the regulations require to create spaces that work for as many differently abled people as possible.

6

Wifi everywhere

You don't know how your open, flexible spaces will be used in the coming years so provide power points and wifi everywhere, together with movable furniture.

7

A treat for everyone

Programme your works carefully so that current students have a new facility to enjoy while enduring construction works for the next new or renewed building.

8

Living laboratories

Construction projects offer opportunities for hands-on learning across many disciplines. Think beyond engineering to art, communications and psychology.

9

How deep is the love?

In these uncertain times, some specialist contractors will suffer financially. Only main contractors who treat their supply chain well can bring in other firms to rally round.

10

A tweeting student ...

... can be worth more than a big PR firm. Create publicity for your new facility by inviting members of the student community to tour the site as the project progresses.

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Willmott Dixon is a privately-owned contracting and interior fit-out group. Founded in 1852, we are family-run and dedicated to leaving a positive legacy in our communities and environment. Being a large company means we can create a huge and lasting positive impact on our society. This is not only done through what we build and maintain; it's achieved through the fantastic efforts of our people who make a major contribution to enhancing their local communities.

www.willmottdixon.co.uk
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