University of Nottingham

Teaching and Learning Hub

The Barn

Gateway Building

Sir Colin Campbell Building

Yang Fujia Building

Xu Yafen Building

Aspire

make

Foreword

Make first teamed up with University of Nottingham in 2004, when we were asked to share our perspective on its plans to expand the Jubilee campus. We jumped at the opportunity to work with this prestigious institution, and were delighted when the Estates team adopted our idea for a trio of new buildings that would serve as a dramatic focal point for the site.

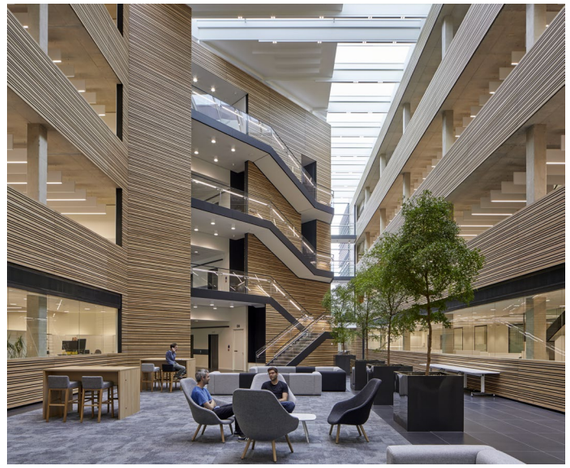
The project was the start of a fruitful 15-year relationship that has resulted in new amenities and teaching and research facilities across all three campuses, along with reworked routes and public spaces. It's been a pleasure working with successive generations of university representatives – from Sir Colin Campbell to Sir David Greenaway to Chris Jagger – and seeing this vibrant university grow in both form and in vision.

This book tells the story of each building we've delivered for Nottingham so far, offering a glimpse of the imagination, detail and diligence that have gone into each. Assembling it has been a rewarding experience – a chance to reflect on the journey of our relationship with the university and anticipate its evolution in the years to come.

Ken Shuttleworth,
Founding Director, Make Architects

Contents

Make Architects



Make is a different kind of architecture practice. Founded by Ken Shuttleworth in 2004, we're an employee-owned firm pursuing a democratic design process that values everyone's input. Today we have more than 150 Makers in London, Hong Kong and Sydney providing architecture, interior and urban design services from concept to completion.

Our education portfolio includes higher education facilities, campus masterplans, research institutions, secondary schools and student residences. We design each scheme to respond to its environment, reflect the associated institution's reputation and goals, and provide an inspiring environment for users – whether they're students, teachers, researchers, academics or staff – to work, learn and study.

We've worked with some of the world's leading institutions to create spaces that stimulate students, advance groundbreaking research and underpin new partnerships. In the past decade we've delivered six high-spec buildings for University of Oxford as part of an ongoing £117 million masterplan at its Old Road campus. For University of Nottingham, Make has completed two masterplans and delivered six buildings across three campuses.

1 (Opposite, clockwise from top left) Big Data Institute, University Square Stratford, Kennedy Institute of Rheumatology, Nuffield Department of Medicine.

Teaching and Learning Hub

CAMPUS
University Park

BUILT
2014

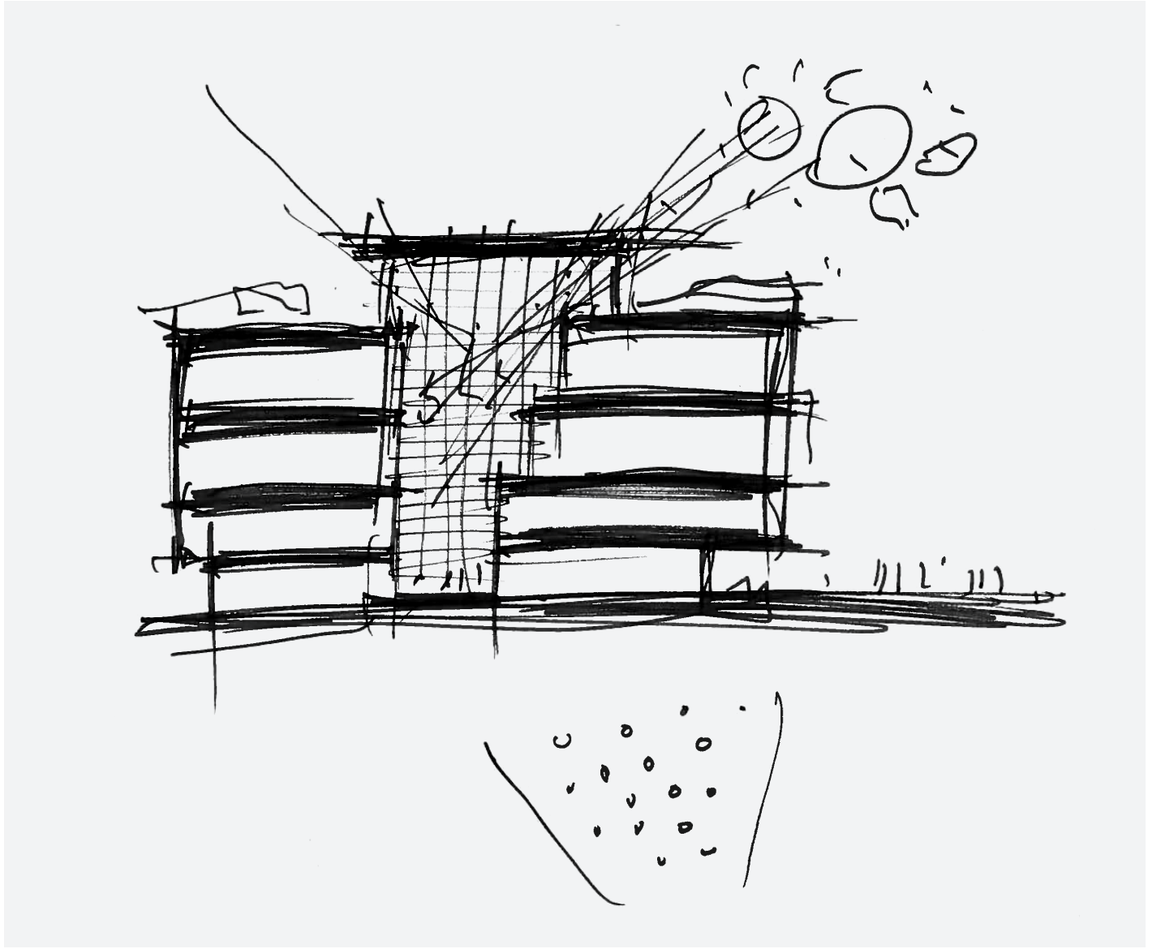
UNIVERSITY REPRESENTATIVE
James Hale

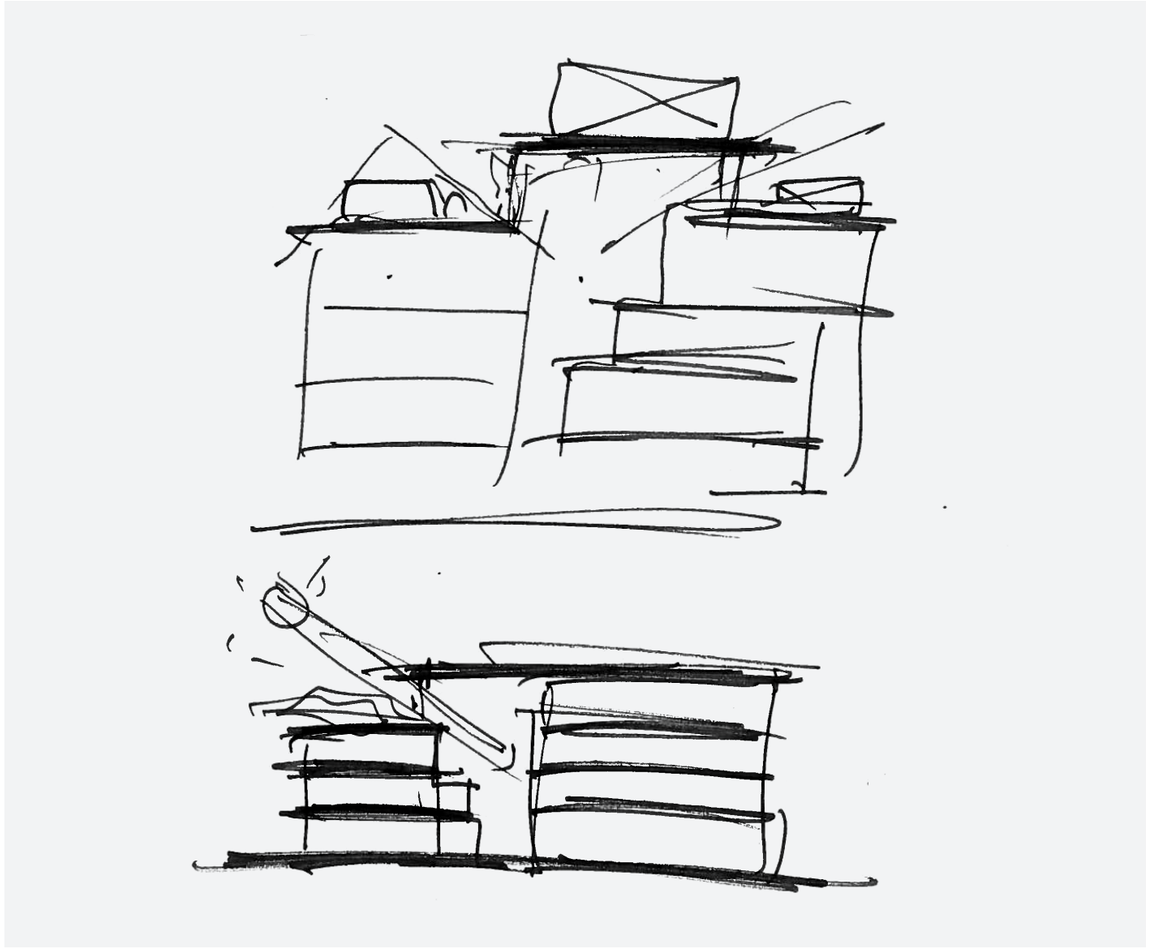
CONTRACTOR
Kier

DESIGN TEAM
Architect: Make
Project manager: Gleeds
Building services: Max Fordham
Structural engineer: AKT II
Cost consultant: AECOM

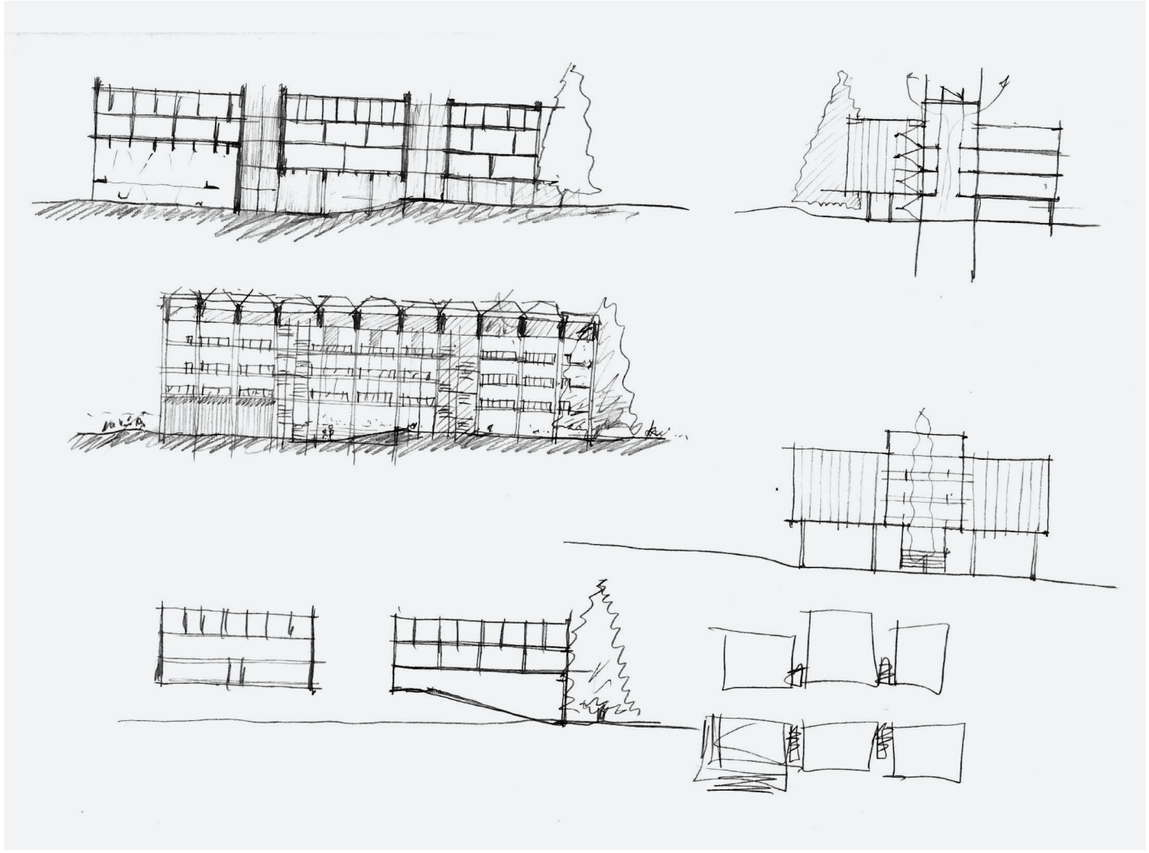
MAKE TEAM
Jacob Alsop, Liam Bonnar, Ilias Chatziionnidis, Chong Chuah, Harry Godfrey, Peter Greaves, Joanna Griffiths, John Man, Paul Miles, David Patterson, John Prevc, Matthew Seabrook, Roman Shumsky, Ken Shuttleworth, Sarah Shuttleworth, Emma Thomas, Ian Wale, William Yam

Our competition-winning design for this state-of-the-art teaching facility centres on student interaction, and establishes a strong relationship between the building and its surrounding landscape. The new building includes ample spaces to socialise, arranged around offices, seminar and study rooms, and a lecture theatre. It's designed to respond efficiently to the changing needs of students and teachers alike, and has become a welcome focal point on the University Park campus.

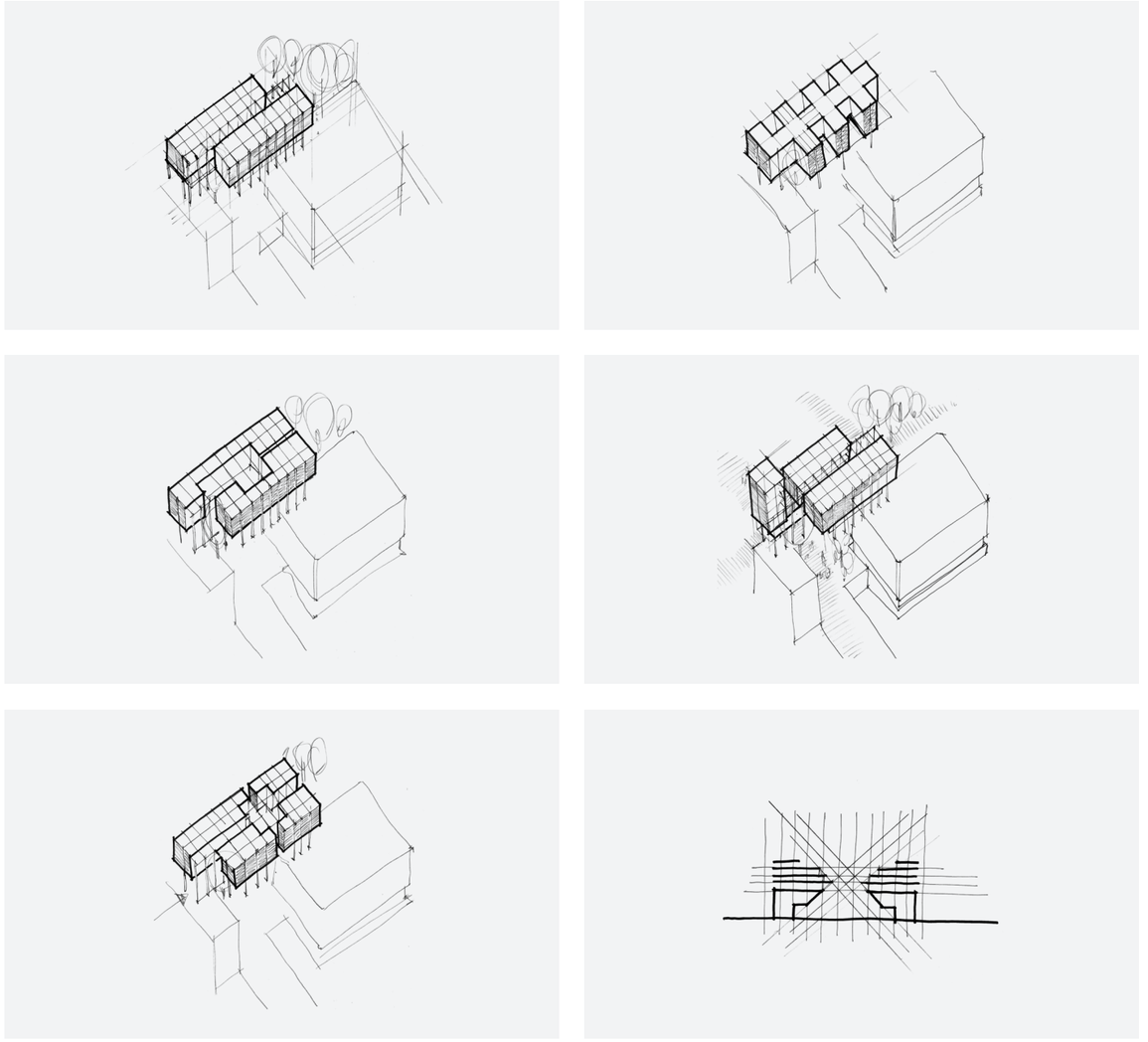




1 (Above and opposite) Concept sketches for the atrium that emphasise natural light and natural ventilation. This top-lit, double-height space accommodates 1,500 students arriving hourly.



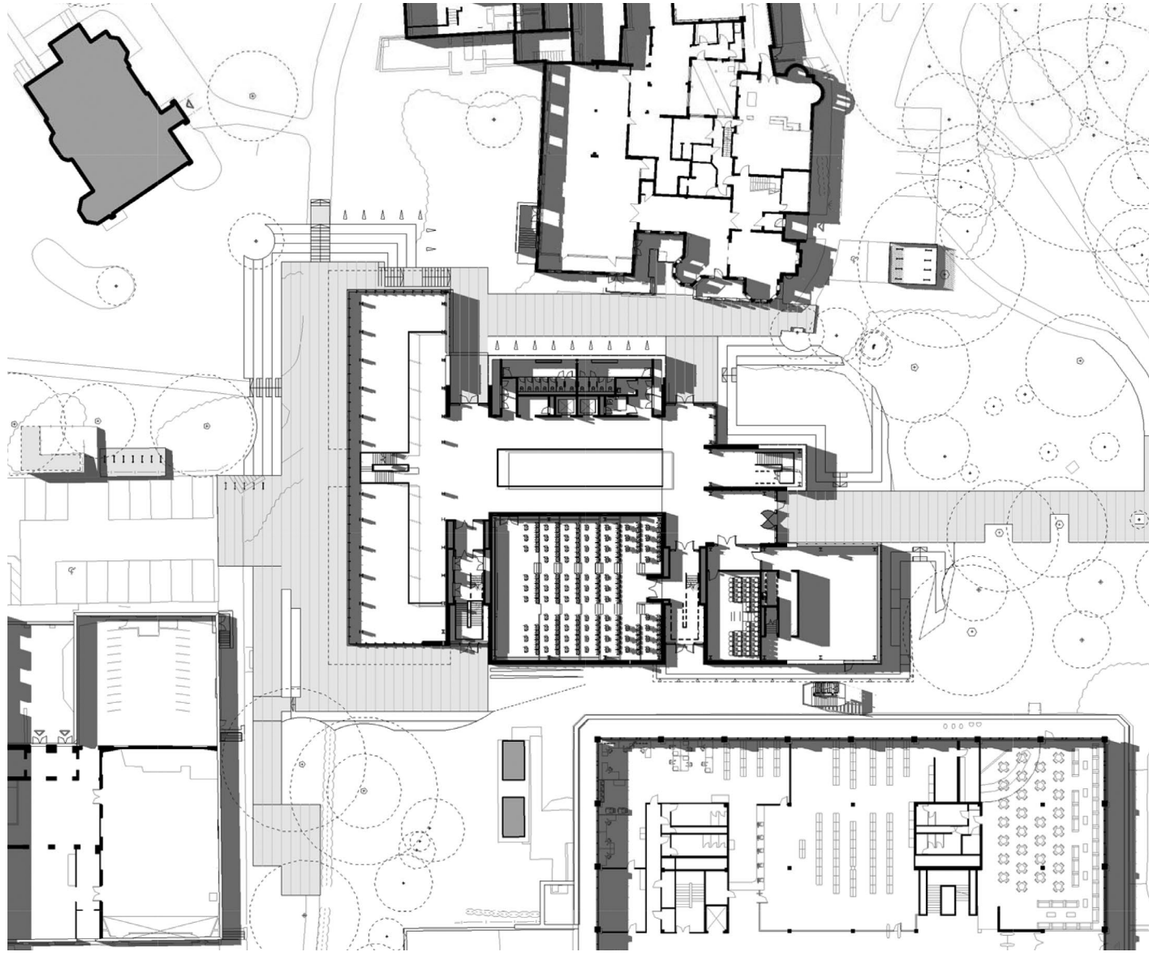
2 Sections showing building modules and flexible teaching spaces. We based our concept design on a diagram with six volumes of column-free teaching spaces defined by pedestrian desire lines and grouped around the central atrium.



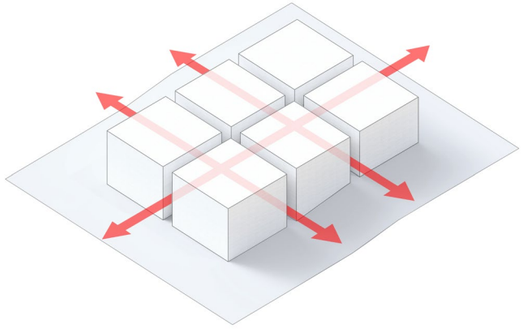
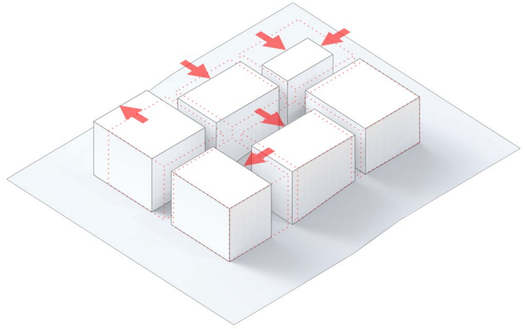
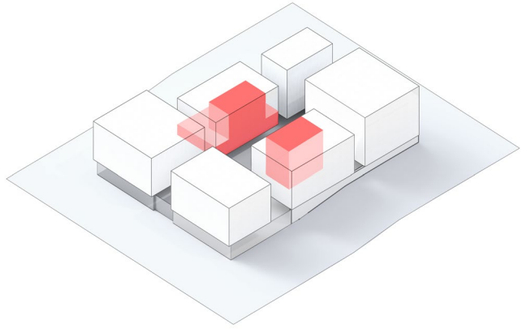
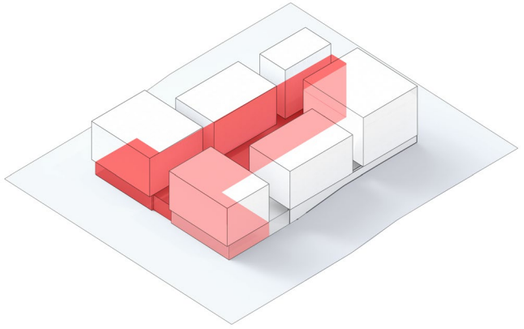
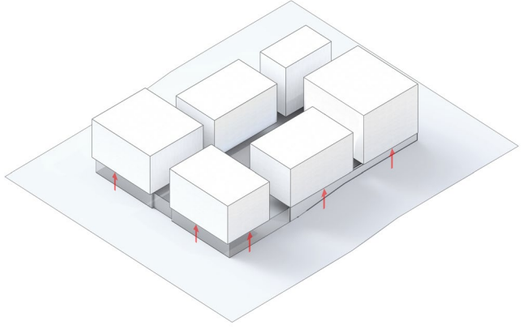
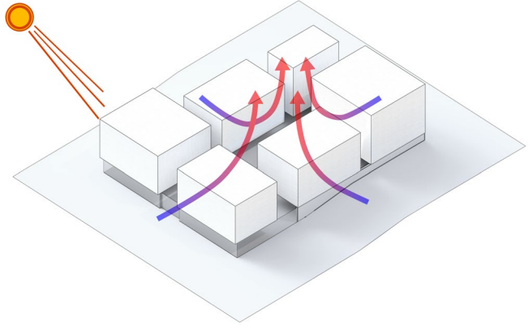
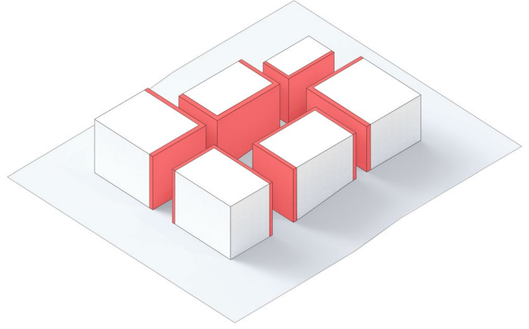
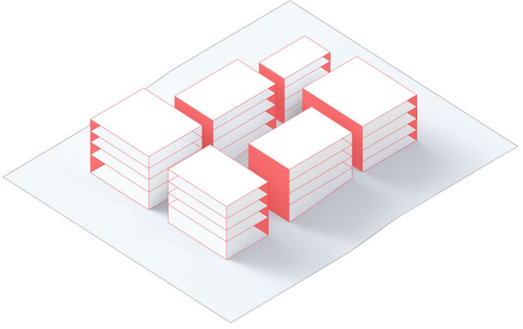
3 Three-dimensional sketches exploring ways that different teaching spaces could be arranged across the building. We designed floorplates with proportions that allow for a variety of reconfigurations by simply adding or removing internal partitions.

4 (Above and opposite) Model in detail. We refined our proposal by producing physical models at a variety of scales, plus a BIM model that produced internal and external animations. These visual tools helped communicate our design during consultation and engagement process, and allowed us to develop the design iteratively with the university.

5 Plan showing the proposed building within the context of the campus. We identified principal pedestrian routes adjacent to the site, and connected them to the building to maximise permeability and provide accessibility from 360 degrees. These routes converge within the building's central atrium.



6 Enlarged view showing the building's accessibility from 360 degrees.

7 (Above and opposite) Diagrams exploring key concepts for the building form. These included creating accessibility from 360 degrees, delivering modifiable teaching clusters, responding to existing topography and enabling column-free teaching.

8 Visualisation of the Learning Hub, a double-height space with drop-in desks, shared tables and private study rooms, as well as a mezzanine for quieter, informal learning and peer mentoring.

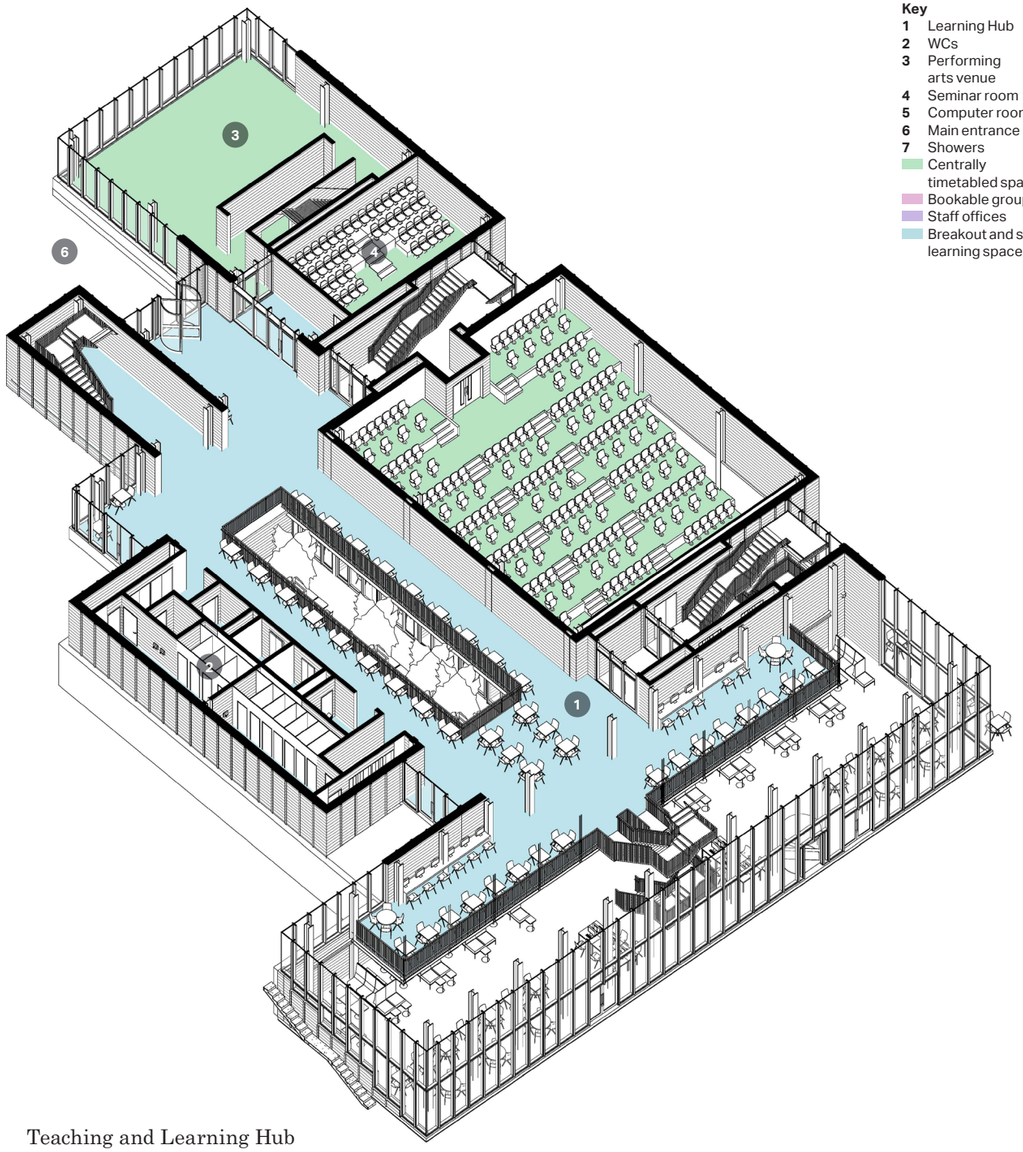
9 Competition CGI showing the Learning Hub.

10 Visualisation of the building entrance from Library Road.

11 Competition section showing the Learning Hub and atrium. Getting the scale of the building right was key, as it is located in a sensitive location adjacent to the architecturally significant Hallward Library.

12 (Opposite) Selection of the 40-plus study models produced to develop the facade design. After rigorous testing, we chose cross-laminated timber as a facade substrate to provide thermal mass and mitigate against temperature fluctuations.

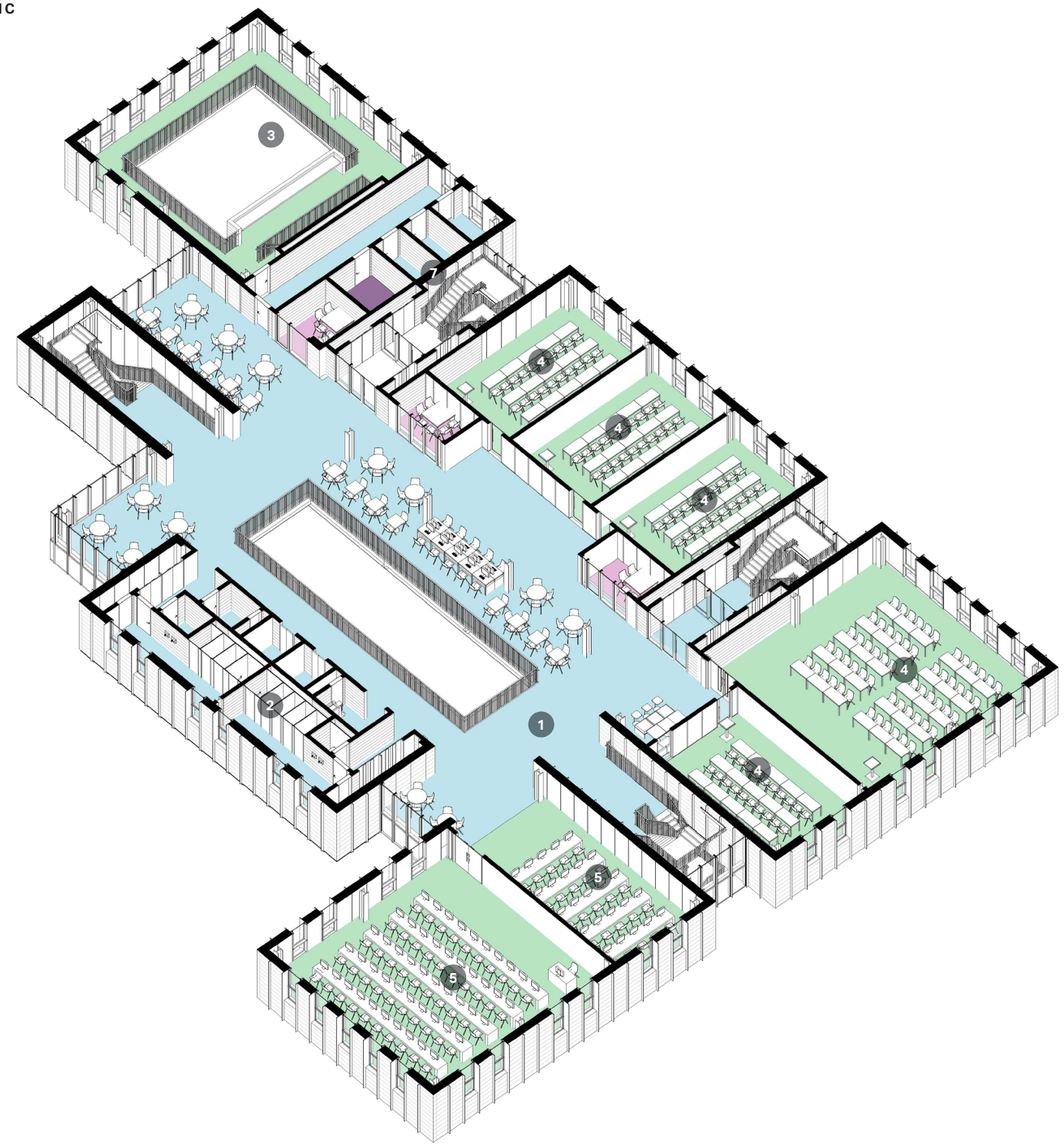
Level B

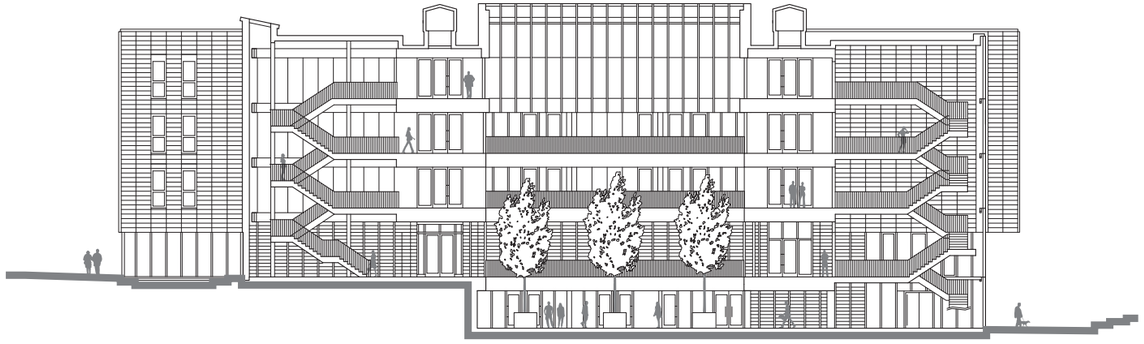


Key

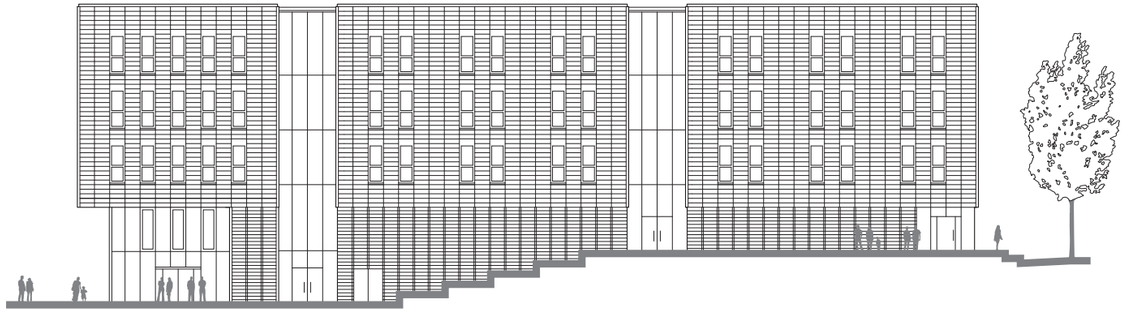
1 Learning Hub
2 WCs
3 Performing arts venue
4 Seminar room
5 Computer room
6 Main entrance
7 Showers
Centrally timetabled space
Bookable group study
Staff offices
Breakout and social learning space

Level C





13 Long section through the building showing the atrium.



14 South elevation, with glazed elevations to entrances and circulation routes.

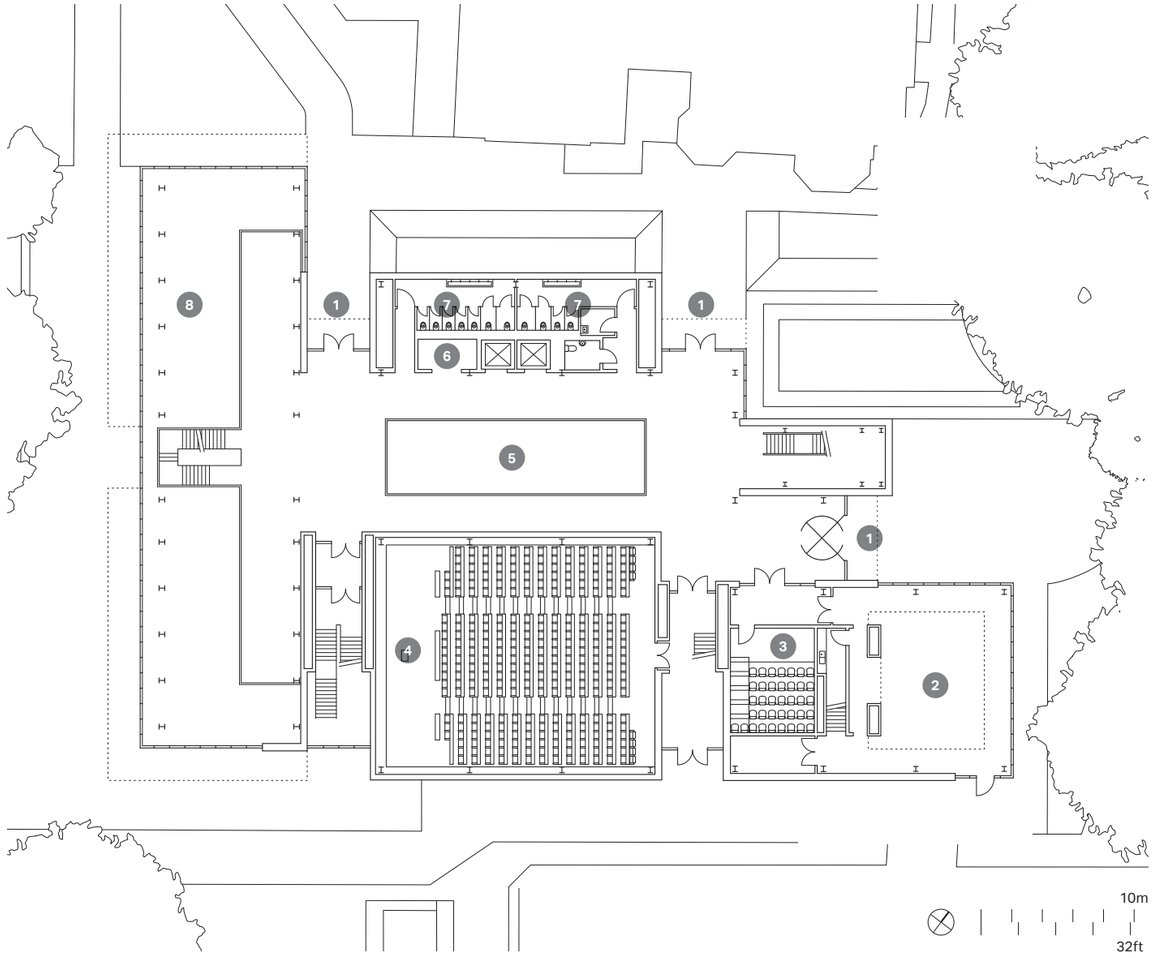
10m

32ft

15 Site plan showing the building in context. Using a flexible diagram helped us respond to site conditions and create a welcoming nexus for students as they move across this quarter of the campus.

50m

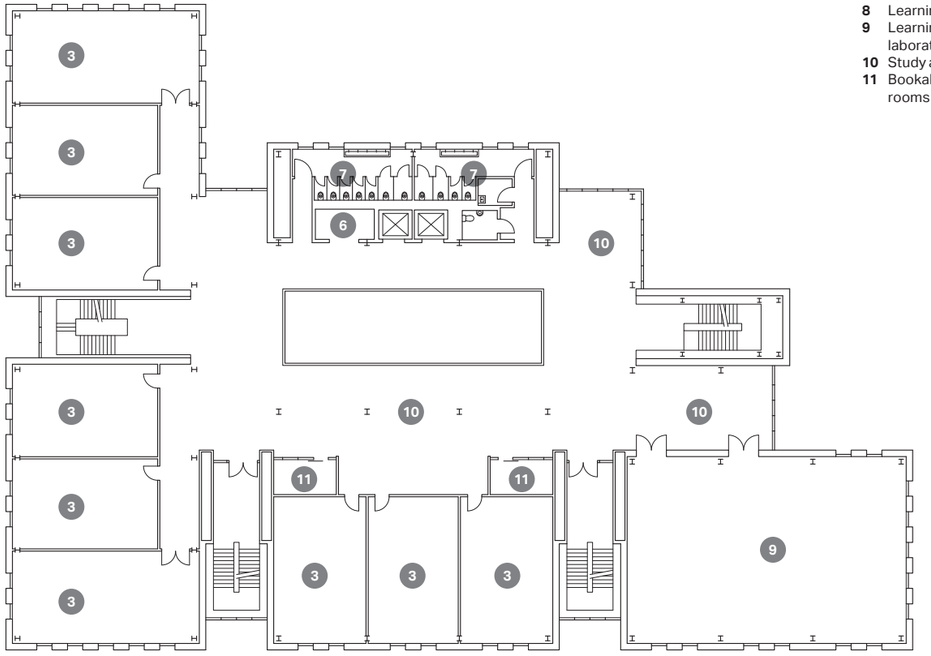
160ft



16 Level B plan as built.

Key

1 Main entrance
2 Performing arts
3 Seminar room
4 Lecture theatre
5 Atrium
6 Photocopy room
7 WCs
8 Learning Hub
9 Learning laboratory
10 Study area
11 Bookable study rooms



17 Level C plan as built.

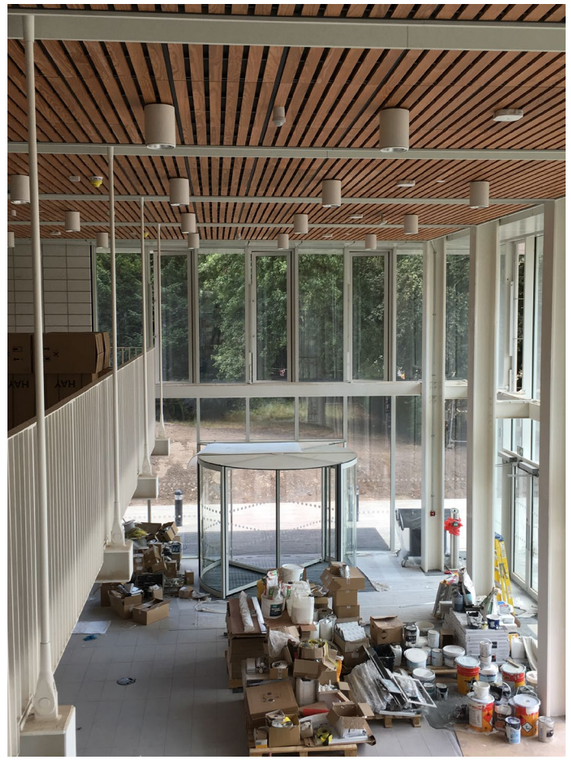
18 Steel frame of the Learning Hub under construction. All the major building components were prefabricated, including the steel frame, the cross-laminated timber, and the concrete and rainscreen cladding.

19 (Opposite, top left) South elevation under construction. We worked closely with the university and cost manager AECOM to develop an affordable, achievable construction budget.

20 (Opposite, bottom left) Learning Hub elevation nearing completion and in use. Our design includes a new outdoor public space in front of the building and large glazing that maximises views.

21 (Opposite, bottom right) Entrance from Library Road nearing completion.

22 (Clockwise from top left) Construction images showing the level B atrium, level C atrium, lecture theatre with acoustic wall panels, and stair 02.



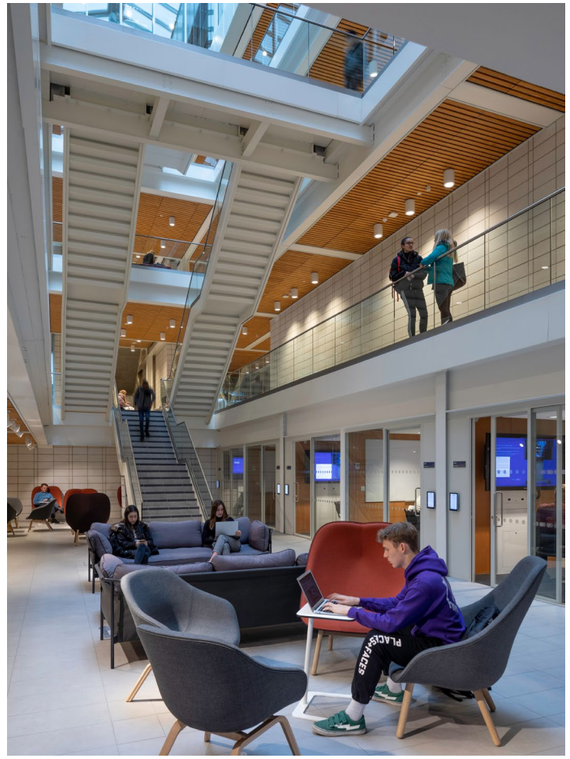
23 Learning Hub nearing completion.

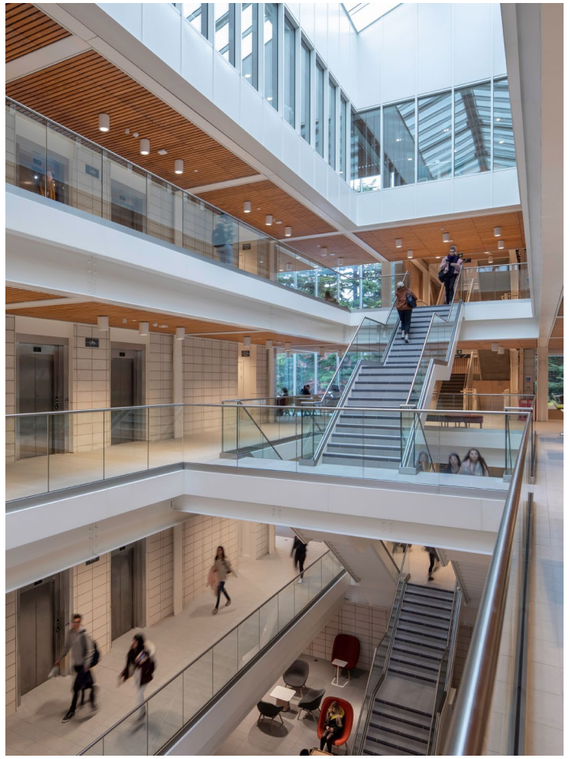
24 Stair 03 with toplight nearing completion.

25 North elevation in use. The building has carefully planned window locations to frame views of the mature campus landscape.

26 Learning Hub entrance in use. We worked to optimise occupancy levels by developing an accommodation schedule that incorporated timetabling, class sizes and utilisation rates.

27 (Above and opposite) Double-height Learning Hub in use. We appointed a specialist sub-consultant to help us model pedestrian flows and avoid overcrowding.





28 View of the multi-level atrium showing breakout spaces and bookable meeting rooms.

29 Atrium facing stair 02 and the Learning Hub.

30 (Above and below) 320-person lecture hall and multi-functional performing arts space. The former features raked seating and an angled ceiling to maximise speech intelligibility, while the latter can be used to host performances as well as exhibitions, conferences and social events.

The Barn

CAMPUS
Sutton Bonington

BUILT
2015

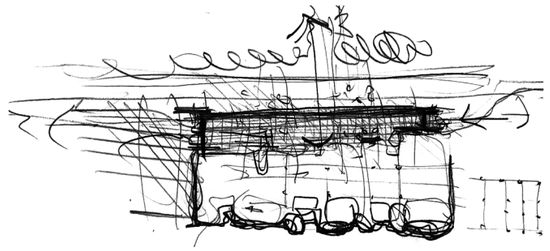
UNIVERSITY REPRESENTATIVES
Gaynor Bradshaw-Willson, Tim Brooksbank, Gareth Hill

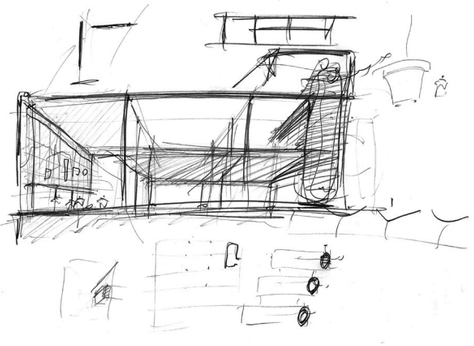
CONTRACTOR
Willmott Dixon

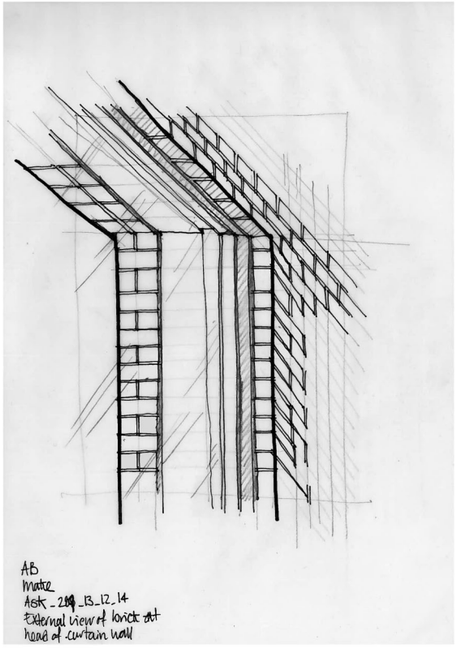
DESIGN TEAM
Architect: Make
Project manager: Gleeds
Building services: Atelier Ten
Structural engineer: AKT II
Cost consultant: William Saunders Partnership

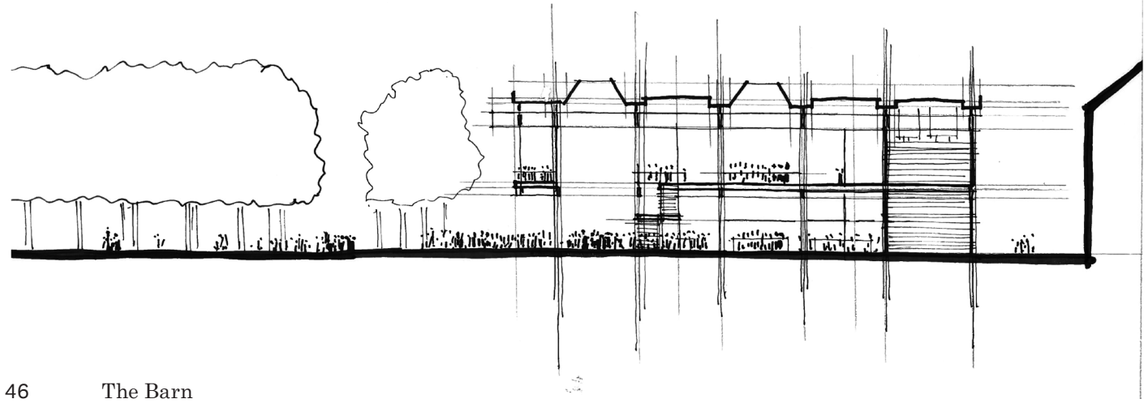
MAKE TEAM
Eva-Katharina Barile, James Flynn, Anna MacDougall, Wandrille Madelain, Paul Miles, David Patterson, James Phillips, John Prevc, Ken Shuttleworth, Luke Smith, Tracey Wiles

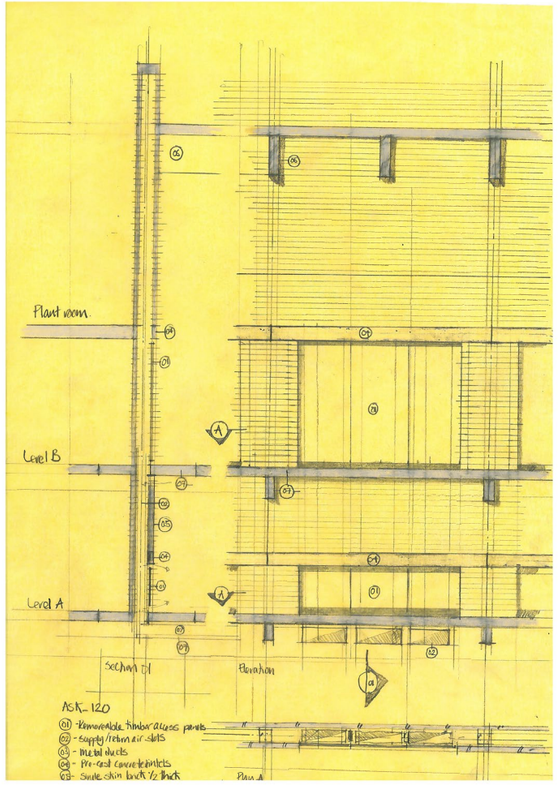
The Barn is the social heart of the Sutton Bonington campus. This vibrant amenities hub is home to a bar, common room, faith room, graduate centre and student services, plus a beautiful double-height dining hall with a top-lit roof structure and grand window. Our design facilitates social interaction, and is both physically and aesthetically connected to its surroundings. The project won two RIBA East Midlands Awards in 2015, including one for sustainability.

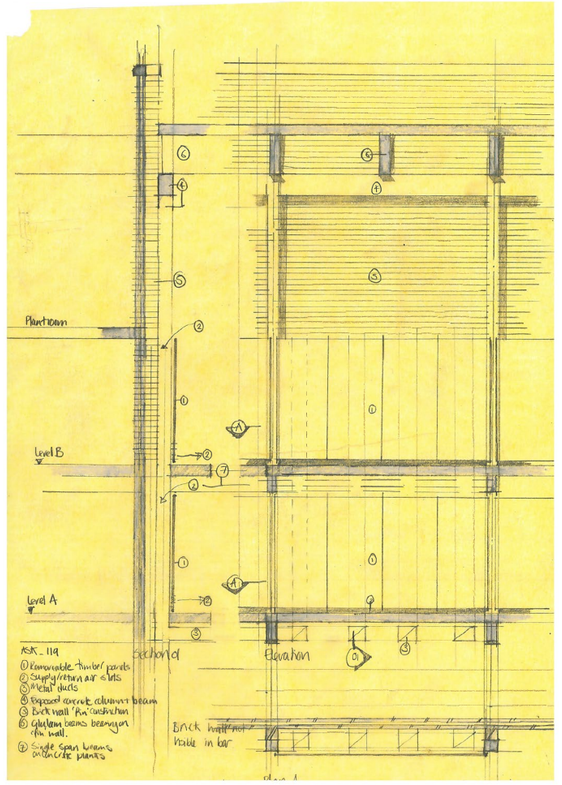






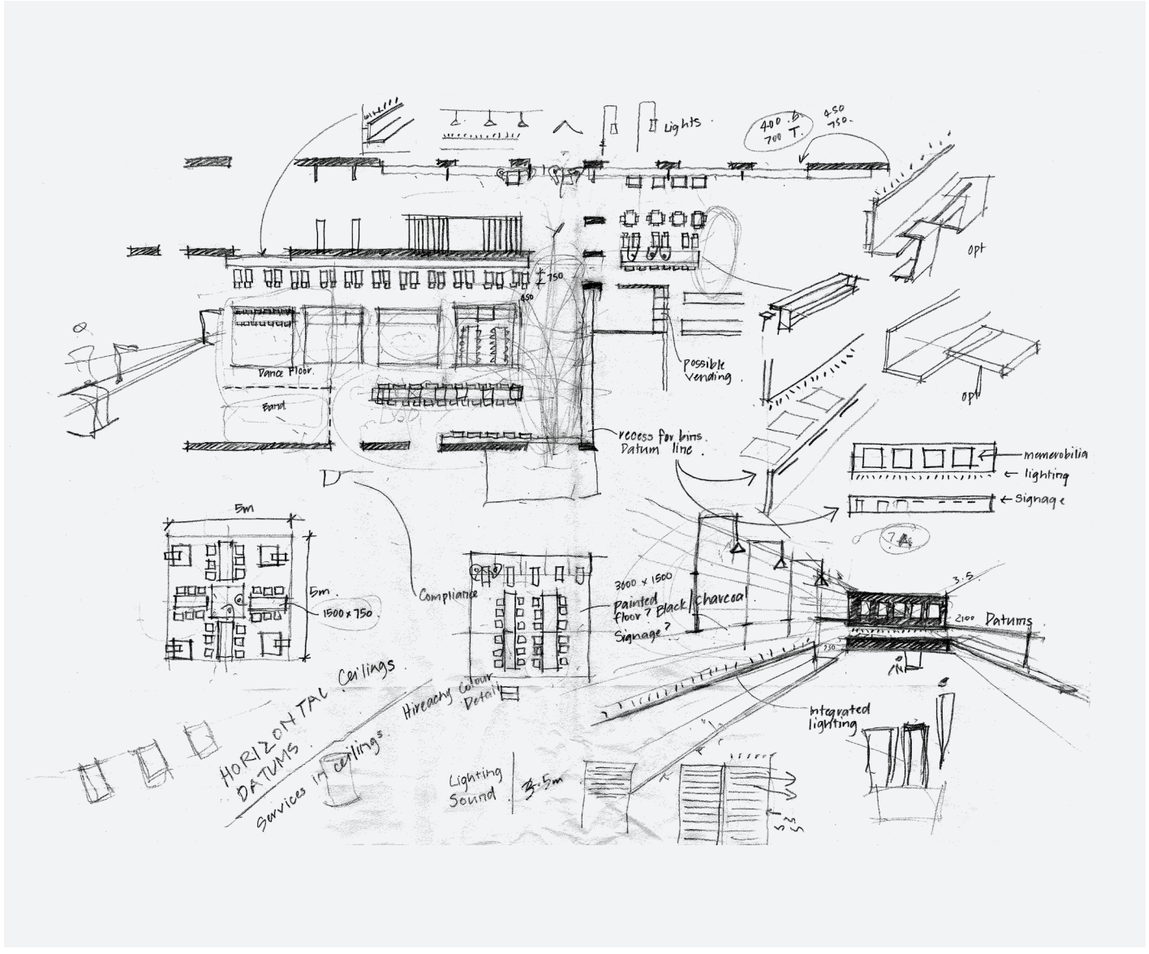


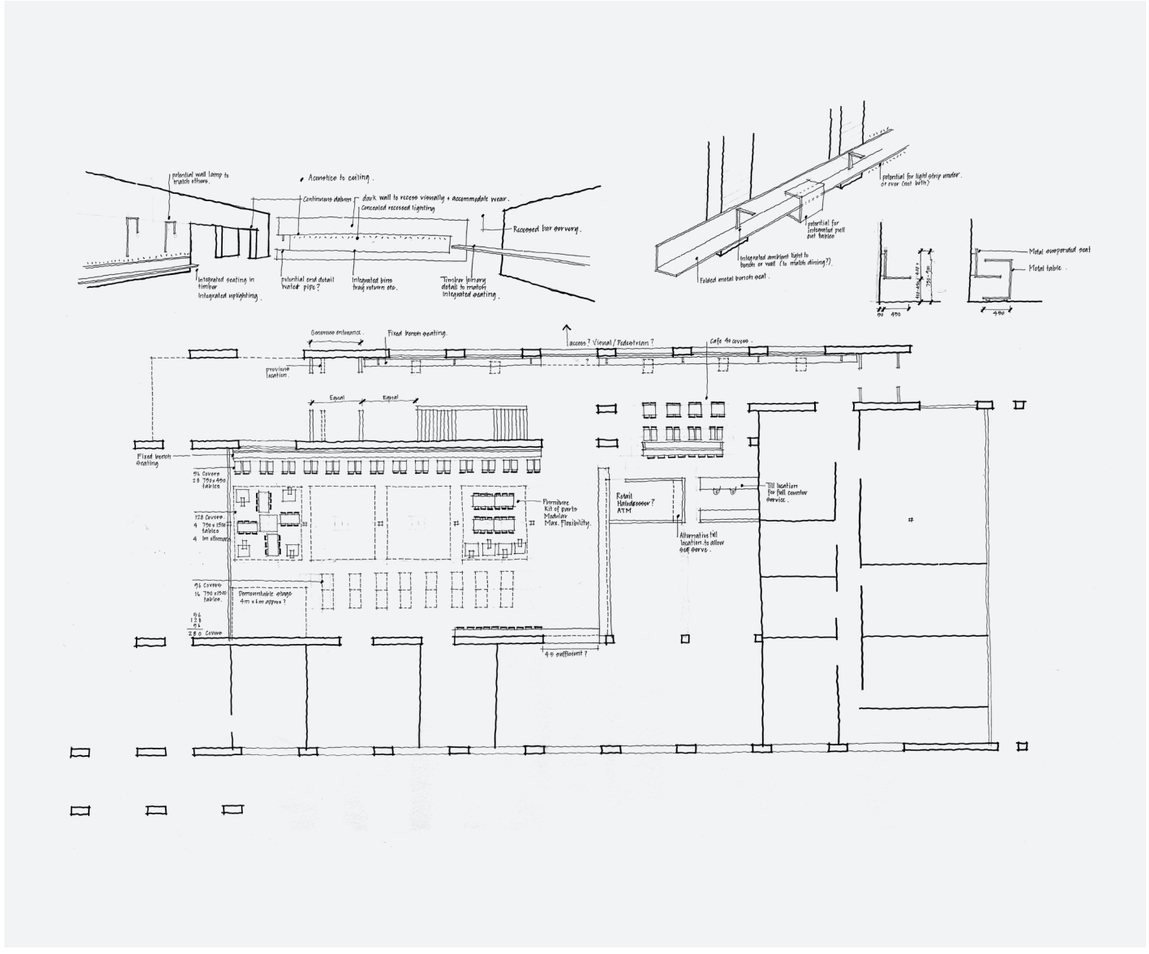




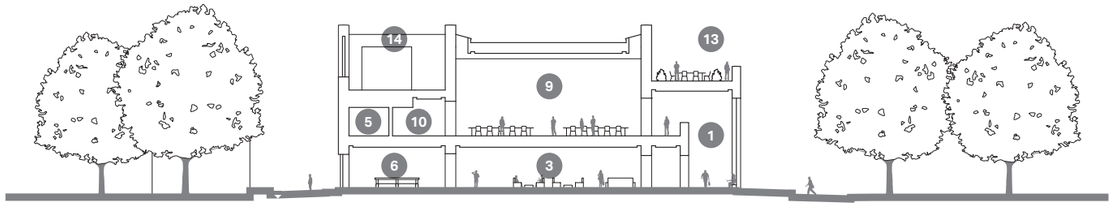
1 Drawings exploring the relationship between brick, timber panelling and structure. We used natural building materials across the building to optimise natural light and create a sense of presence.

2 (Opposite) Sketches exploring the double-height entrance concourse connecting to the bar, and detail of an external window interfacing with brickwork. The concept for the concourse was a welcoming, calm space with strong visual links to the campus.

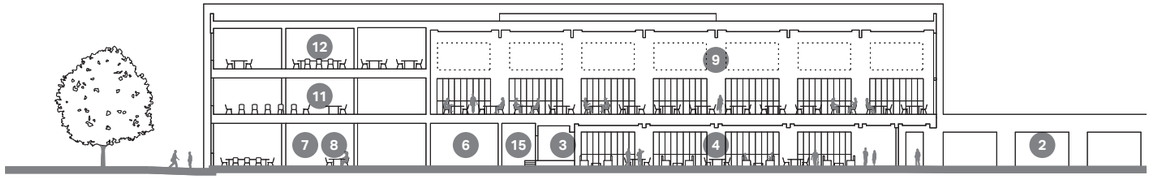




3 (Above and opposite) Sketches exploring potential reconfigurations of the furniture in the bar and concourse. Both areas support a variety of uses.



4 Cross-section of building.

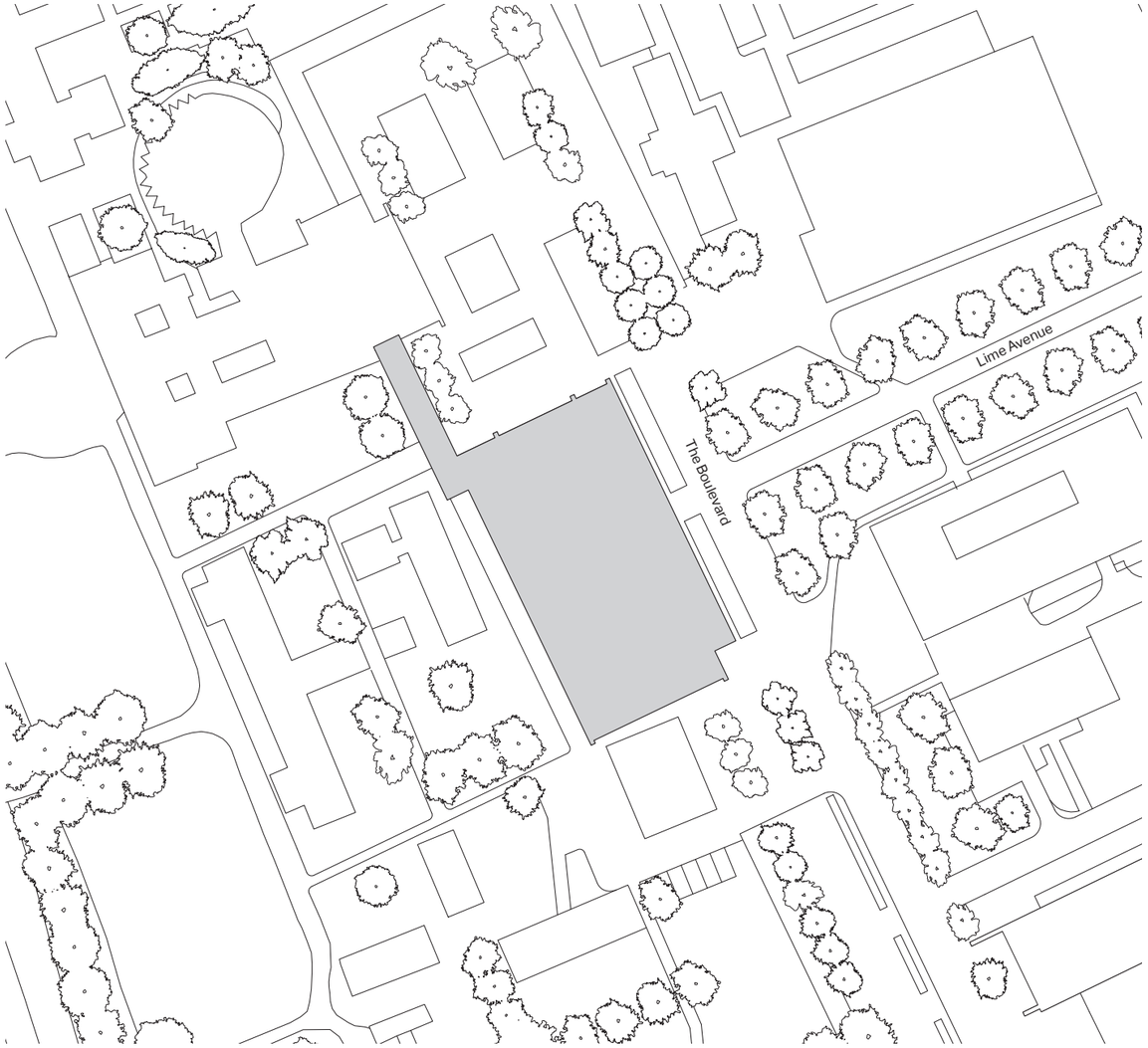


5 Long section through the bar and dining hall, both of which feature views out to the new square and the university's historic Lime Avenue.

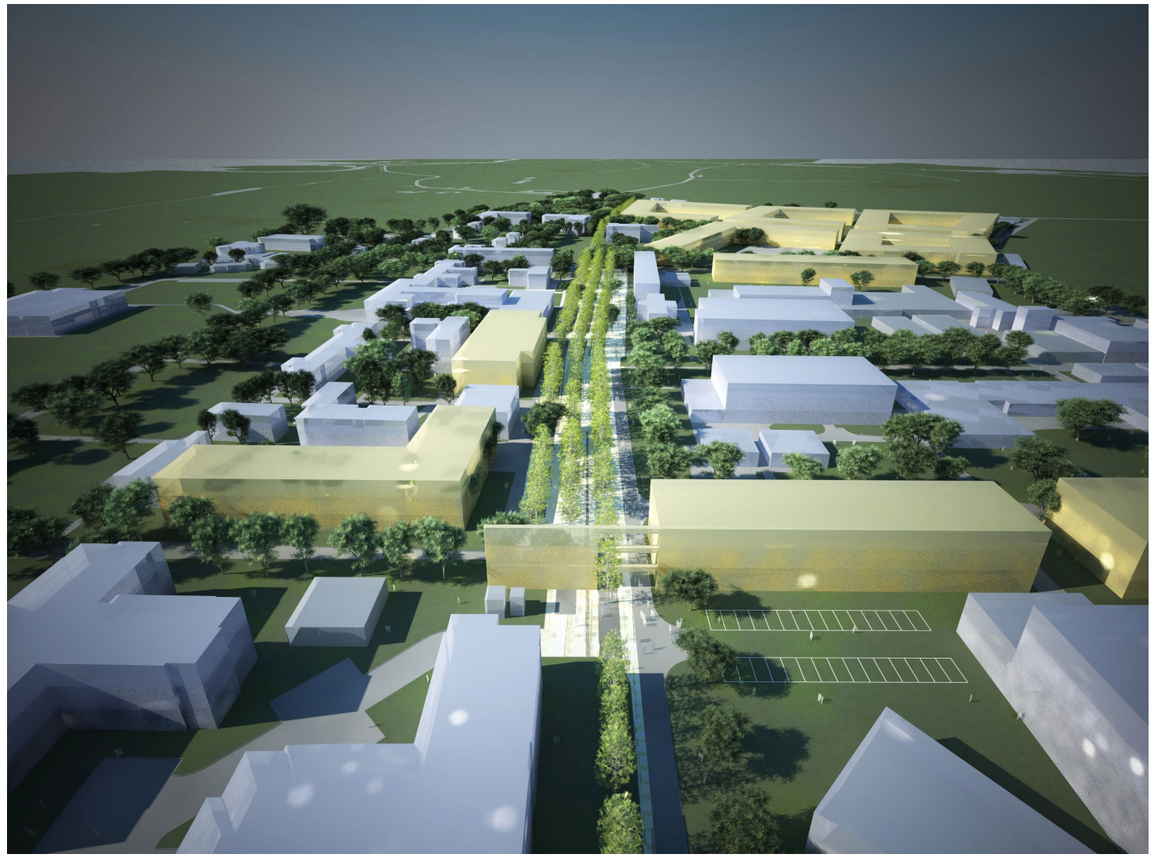
10m
32ft

Key

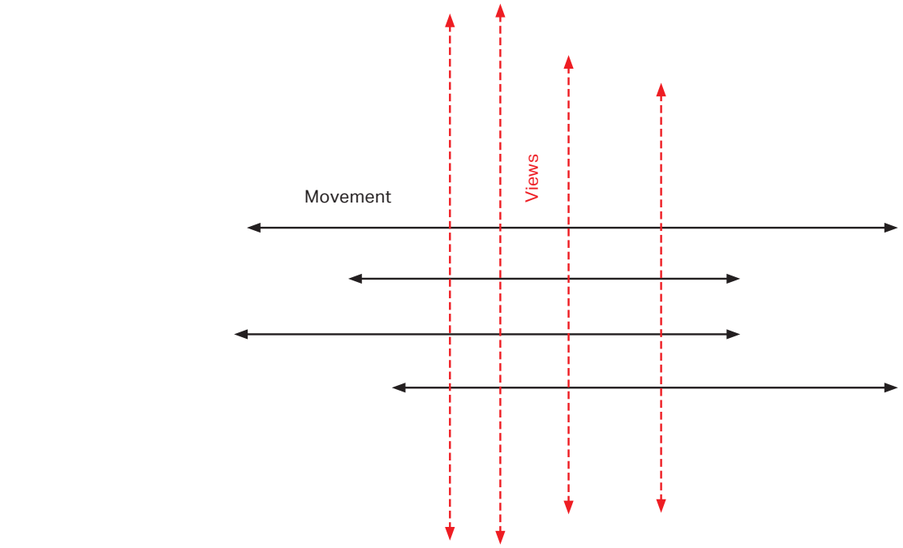
1 Concourse
2 Covered walkway
3 Bar
4 Stage
5 Kitchen
6 Snooker room
7 Student guild
8 Student services
9 Dining hall
10 Food court
11 Faith spaces
12 Graduate centre
13 Roof terrace
14 Plant
15 Store

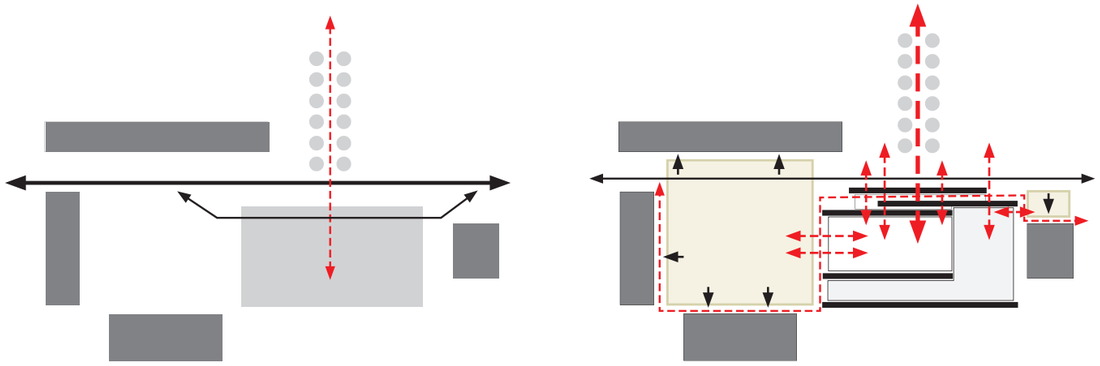


50m
160ft



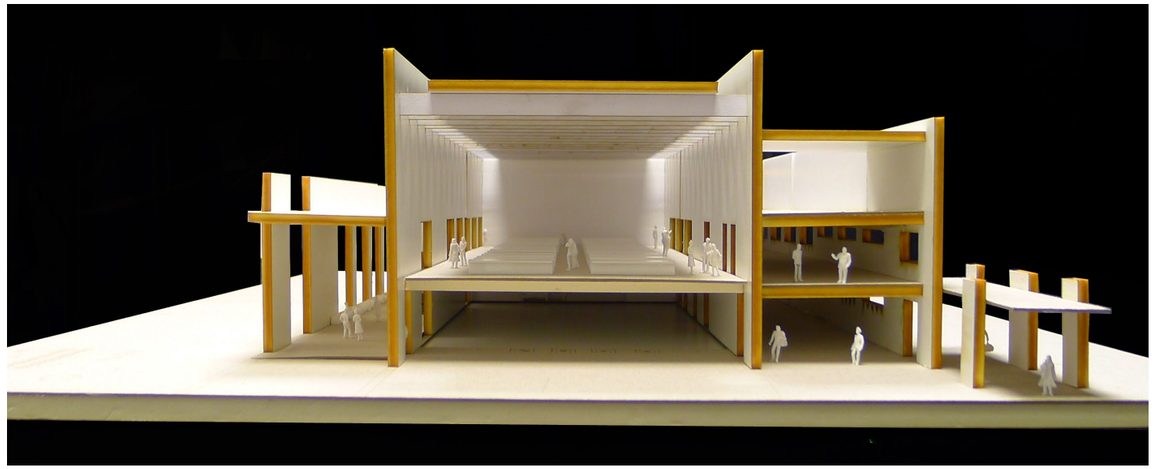
6 Consolidation and expansion plans for the campus. The university's ambition was to use The Barn to anchor the Sutton Bonington campus masterplan Make produced in 2008. We designed the building footprint to clear the way for the creation of the Boulevard, a new pedestrian thoroughfare.

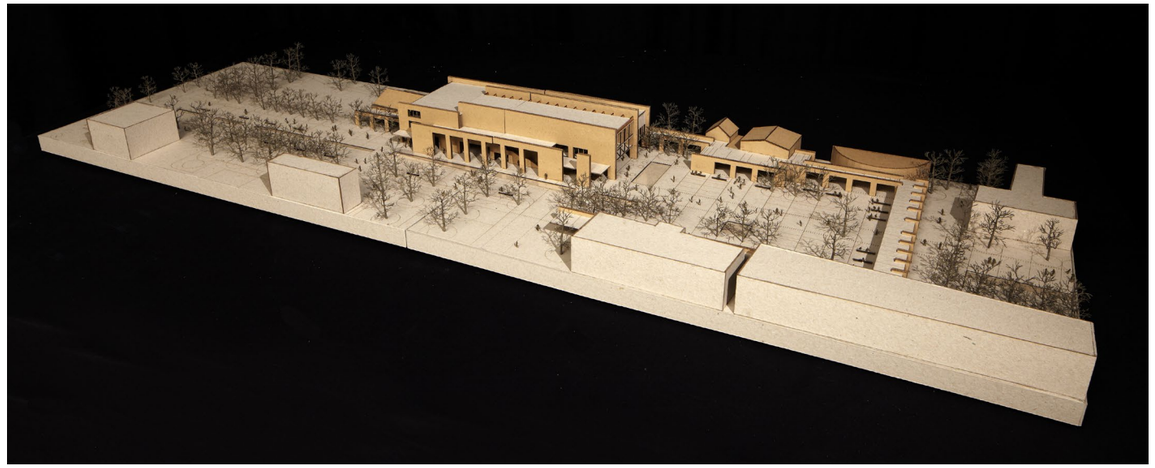




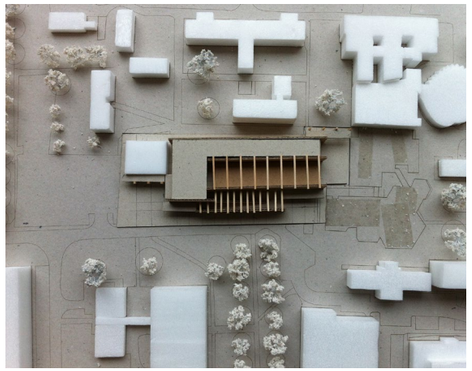
7 (Top) Movement patterns and views into landscape. The building layout was arranged to encourage pedestrian flow, draw in people from the Boulevard and provide strong visual links to the surrounding landscape.

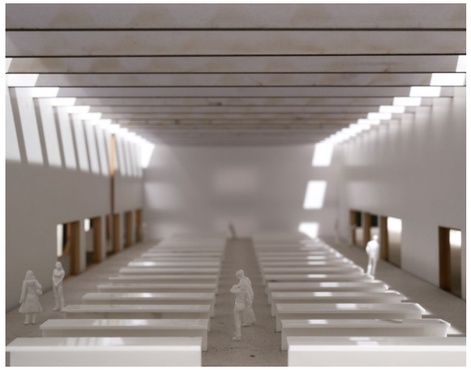
8 (Above) Creation of a new space for the dining hall, which includes a food court, back-of-house catering areas and a private dining area.

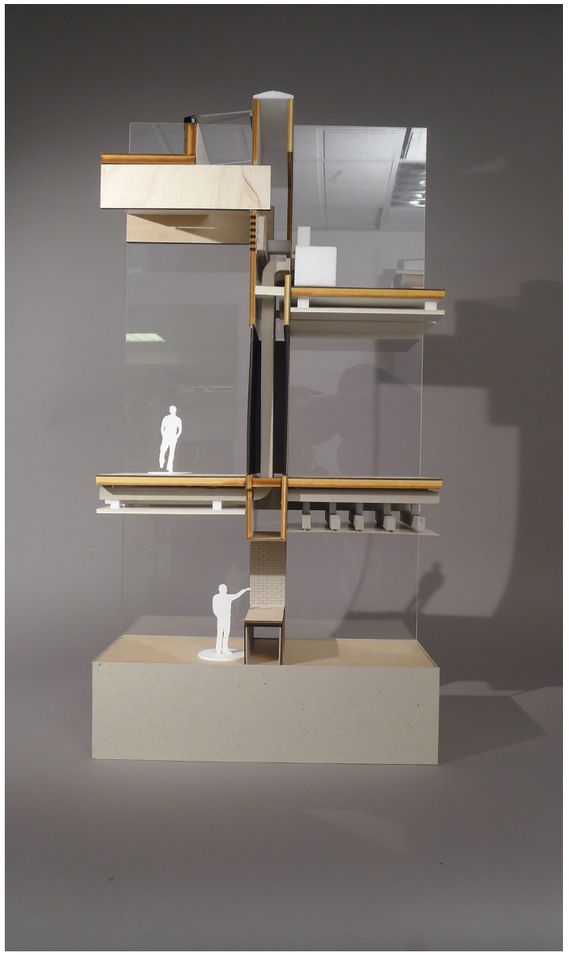




9 Competition models showing the building in context with the top-lit dining hall, a new central space.







10 Concept models created to demonstrate design development to stakeholders. We engaged with students, staff and university management during the design stages via open days, workshops, exhibitions and more. Their feedback helped inform the building's layout, materials, service provision and maintenance strategies.

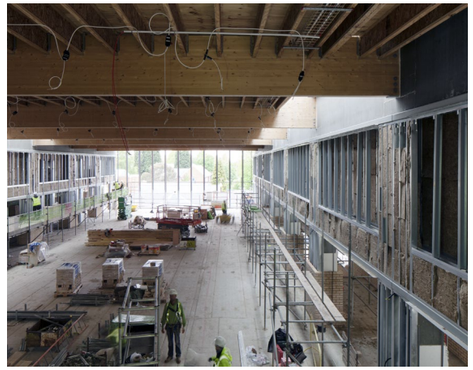
11 Visualisation of the north elevation and square. This outdoor space offers a new gathering point at the centre of the campus.

12 Renders produced for stakeholder engagement to show the building at different times of day. The warmth of the brickwork and window design is especially evident at night.

13 (Clockwise from above) Renders showing the entrance concourse, dining hall, bar and internal view of the new square. Glazed openings in the concourse give fantastic views of the Boulevard and Lime Avenue.

14 (Opposite) Dining hall with its 'great north window', which features views to the new square.

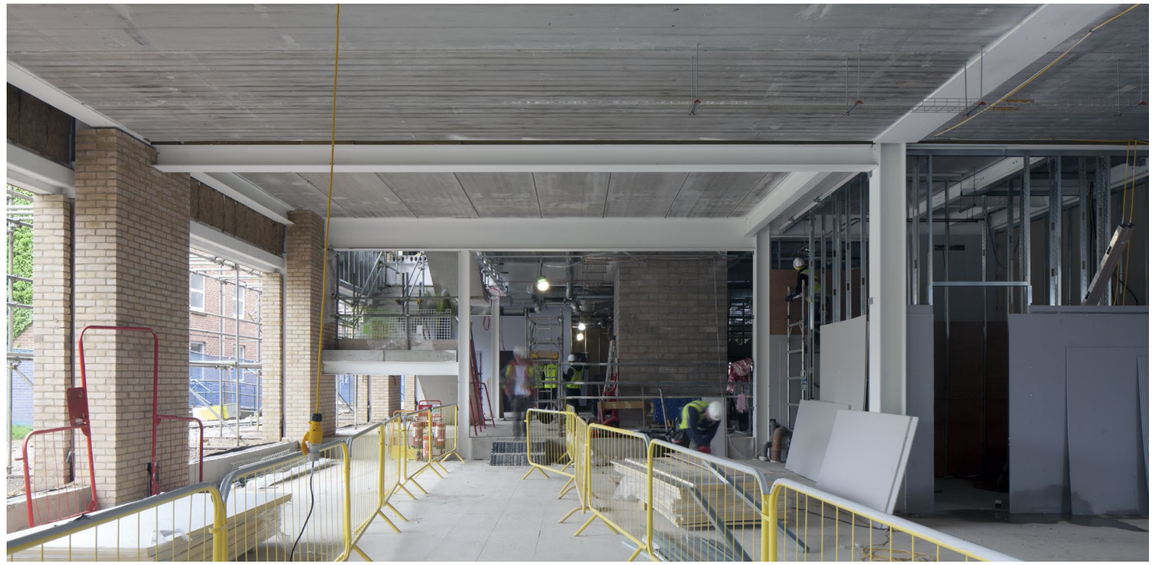
15 View down Lime Avenue to the former building on site, a dairy that had been repurposed for student amenities. We preserved the building's tower and weather vane (right), and reinstalled them in the new square.



16 Entrance concourse and dining hall under construction.

17 Concourse under construction. It functions as the building's primary circulation space, and can also accommodate events like markets and the Freshers' Fair.

18 Dining hall nearing completion. Brickwork 'screens' on either side of the hall provide openings for return air and acoustics.



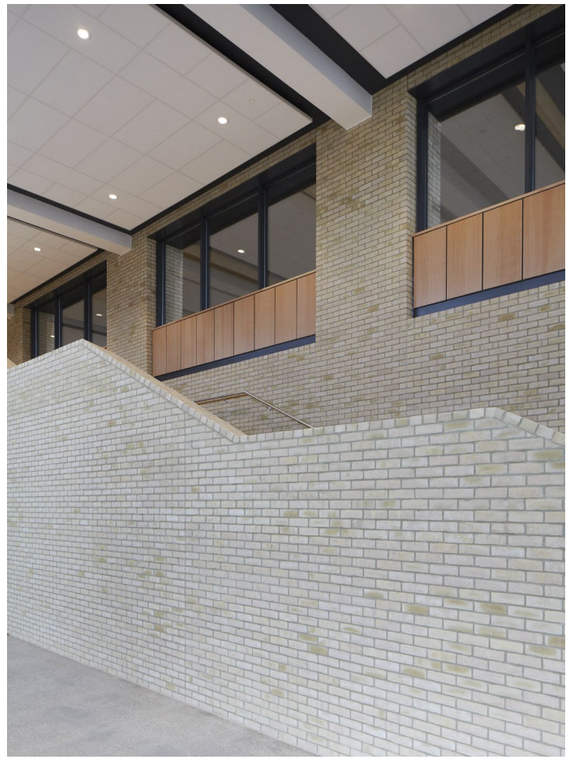
19 First floor spaces under construction.

20 Model of the east elevation at a 1:200 scale, viewed from Lime Avenue.

21 Model showing the new square at a 1:200 scale. This outdoor space sits on the site of the old dining building.

22 Building in use, with view of the great north window and students standing outside the entrance to the bar. As part of our inclusive design, direct access is available to the faith rooms without users passing the bar.

23 Colonnade in use. This covered space links The Barn and the campus's Main Building.

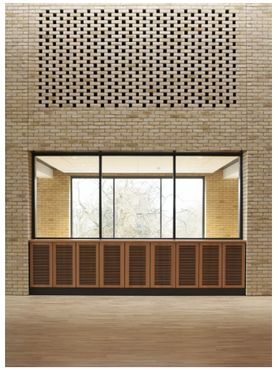


24 Completed staircase. All principal spaces are accessible from either the stairs or a lift.

25 Completed entrance concourse. This linear space is parallel to a key north–south route, forming a continuation of the street and establishing a direct connection with the entrance at both ends.

26 Completed colonnade, with new square under construction.

27 Existing landscape, with the colonnade in use and square under construction. The orientation complements the nearby teaching buildings and residence halls.



28 (Clockwise from above) Main entrance in use, view of the timber grilles in the dining hall for acoustic absorption, details of perforated brickwork. We considered acoustics from an early stage, particularly the noise transmission around open-plan areas.

Gateway Building

CAMPUS
Sutton Bonington

BUILT
2011

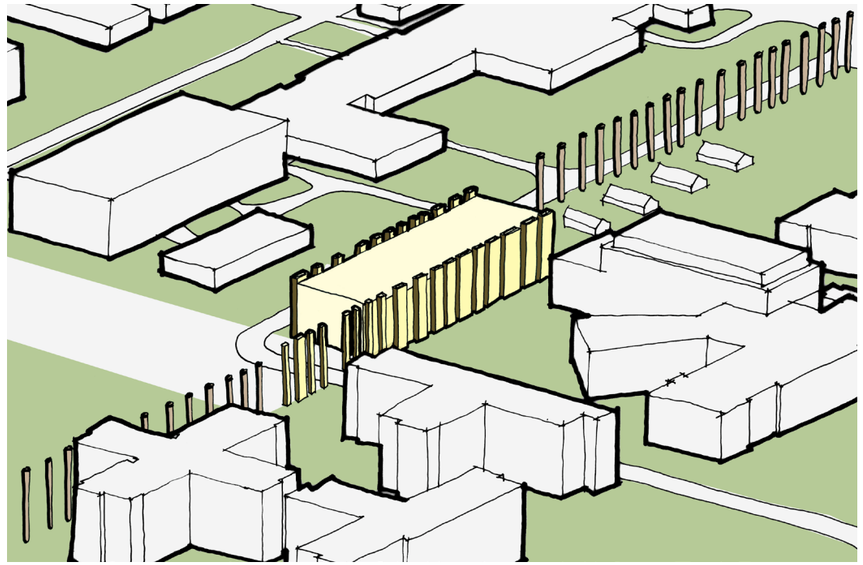
UNIVERSITY REPRESENTATIVE
Tim Brooksbank

CONTRACTOR
Herbert Baggaley Construction

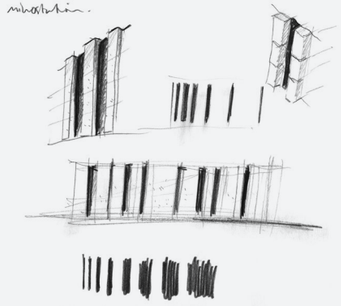
DESIGN TEAM
Architect: Make
Project manager:
Sand Project Management
Building services:
Couch Perry Wilkes
Structural engineer:
Price & Myers
Cost consultant:
Sand Project Management

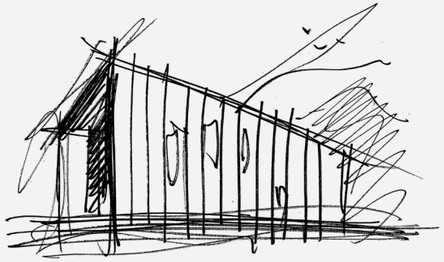
MAKE TEAM
James Goodfellow,
Bob Leung, David Patterson,
Joanna Pilsniak, John Prevc,
Matthew Seabrook,
Ken Shuttleworth, Tim Tan

Our environmentally friendly design for this building – which encompasses labs, teaching spaces, offices and study areas – was informed by Sutton Bonington's strong agricultural heritage. We used straw from the university's own farmland in an external curtain wall system, fitting it into timber frames prefabricated in a local flying factory. The Gateway Building is one of the largest straw-bale structures in the UK and sets a new standard for efficient, sustainable design.



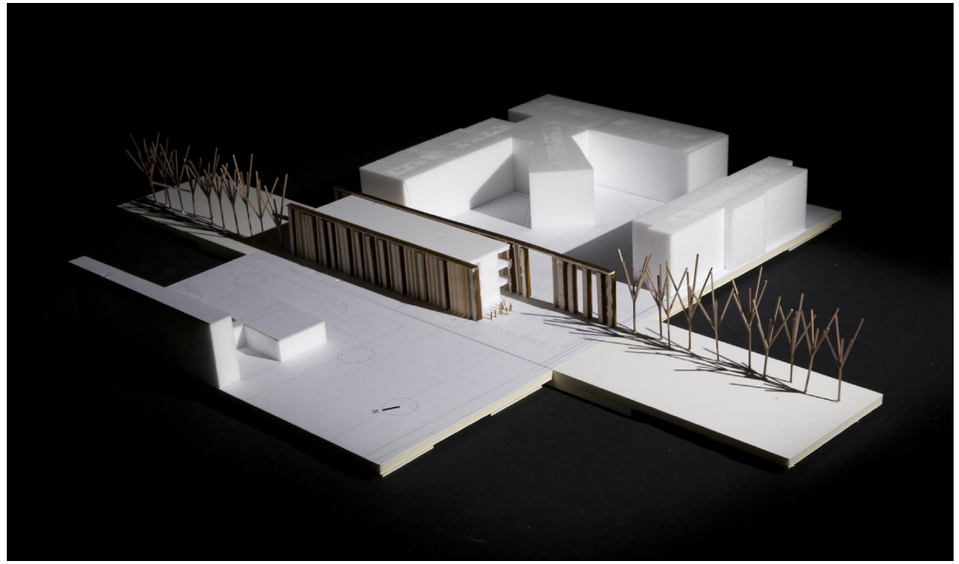
1 Sketch showing the building's termination at a new boulevard and the treeline that flanks the building,





2 Competition visuals showing the building as an arrival point on the tree-lined boulevard.

3 Models exploring our innovative straw-bale facade concept, which uses straw in an external curtain wall system. We fitted the straw into timber frames finished with render for a natural look to the external face.

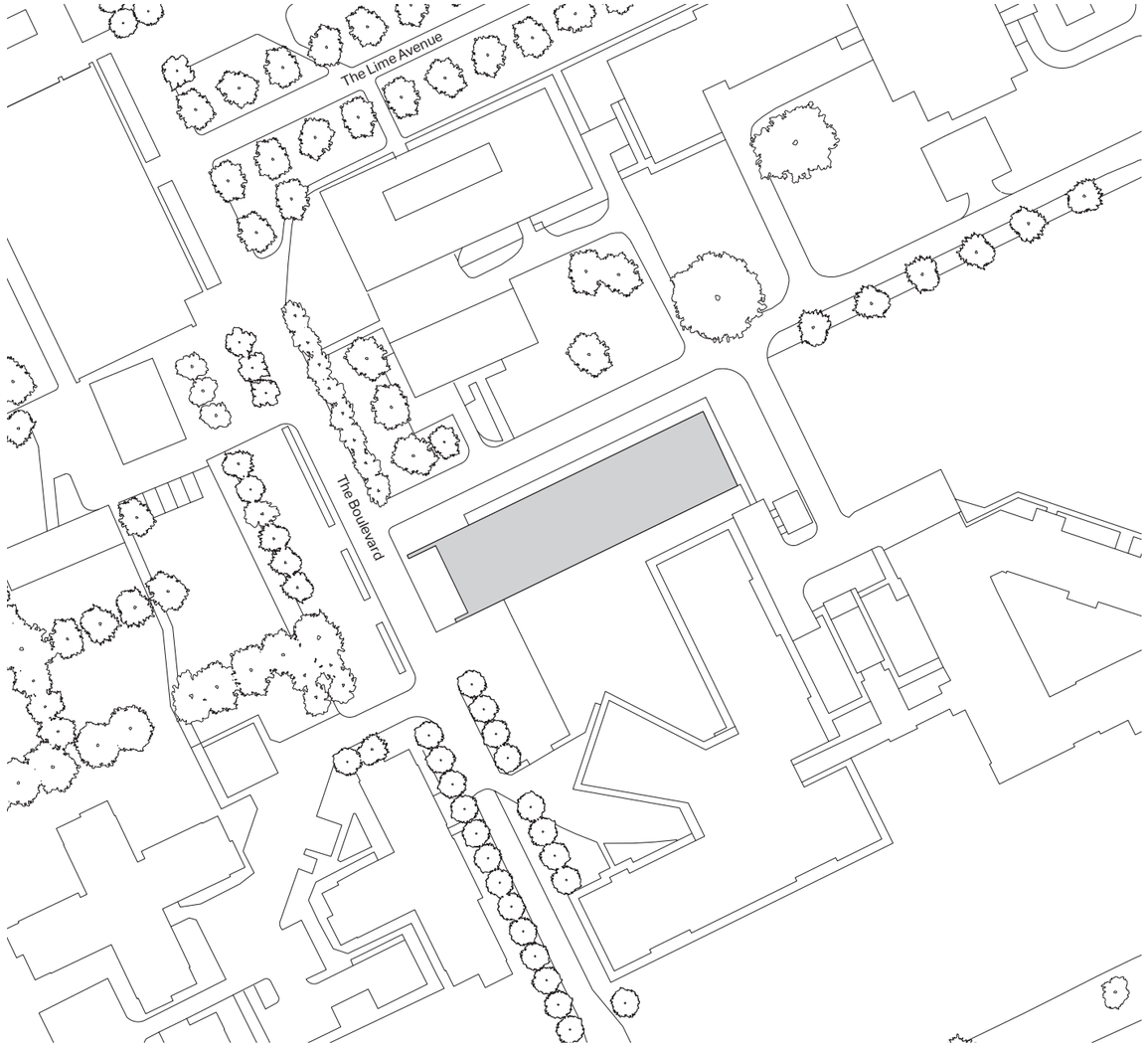


4 The flying factory where the timber panels were prefabricated, using local labour and straw from the university's own farmland – a show of local, sustainable production.

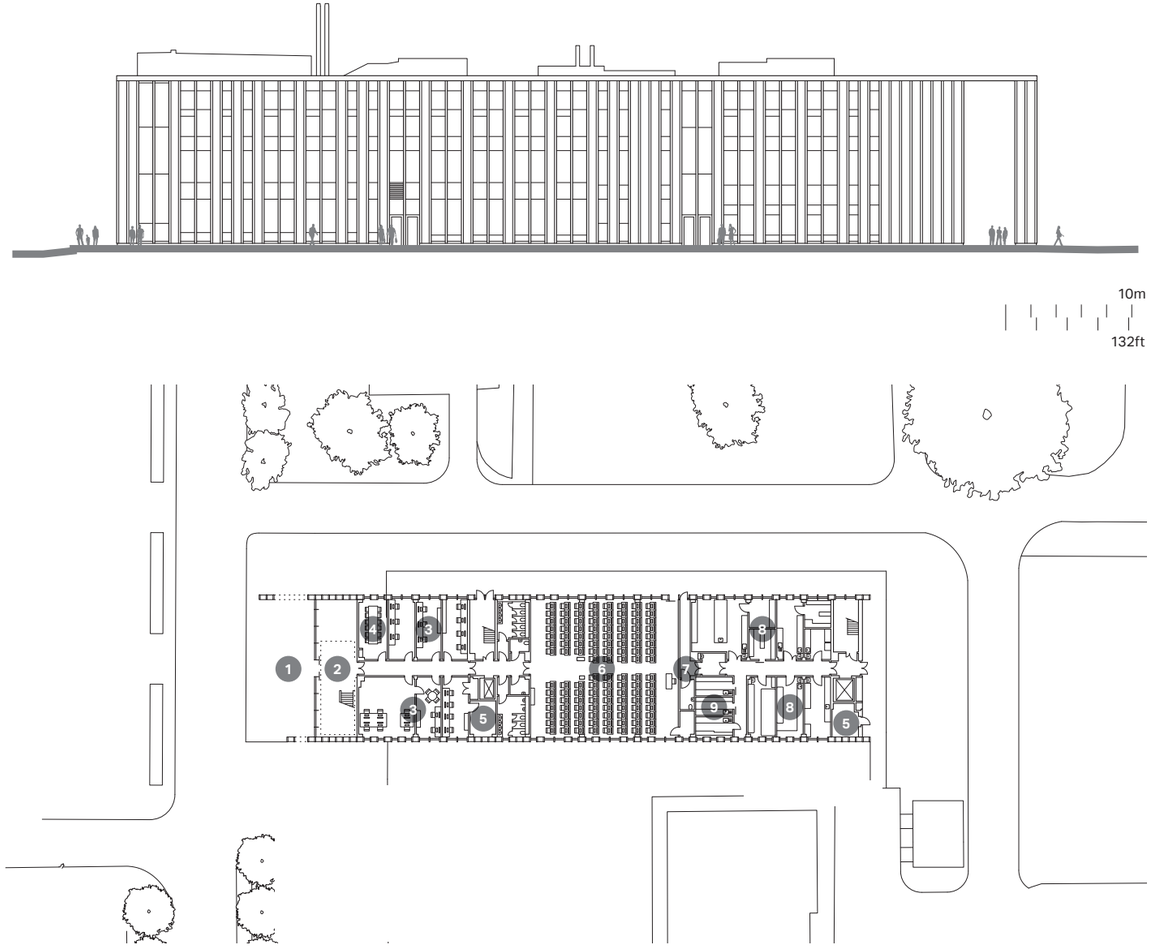
5 Straw panels constructed on site. Our environmentally friendly design was informed by Sutton Bonington's strong agricultural heritage and sustainability track record.

6 Construction images showing the straw panels being installed on site.
Each panel spans all four floors of the building in one prefabricated piece.

7 (Opposite) Internal views of the central circulation route and facade.
We maximised this multi-purpose interior with an 80% efficient floorplate.



8 Site plan.

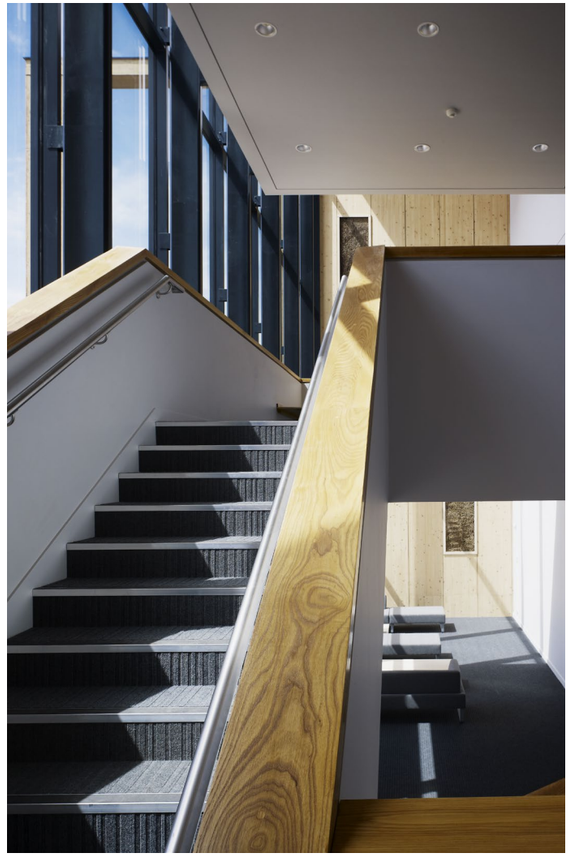


9 North elevation and level A plan.

Key

1 Main entrance
2 Atrium
3 Office
4 Meeting room
5 Plant/services
6 Computer room
7 Lab lobby
8 Lab
9 Temperature-controlled growth room

10 (Opposite) The completed gateway, which offers visitors a distinct sense of arrival.



11 Internal view of the new atrium with feature staircase. This arrival space was not part of the initial brief, but it has created a much-needed space for students to gather and meet before classes.

12 View of the exposed straw via truth windows that reveal it to passers-by.

13 Entrance atrium and gateway upon completion.

14 View of the cladding on the atrium.

15 (Opposite) Lab space and teaching room in use.

Sir Colin Campbell Building

Yang Fujia Building

Xu Yafen Building

Aspire

CAMPUS
Jubilee

BUILT
2008

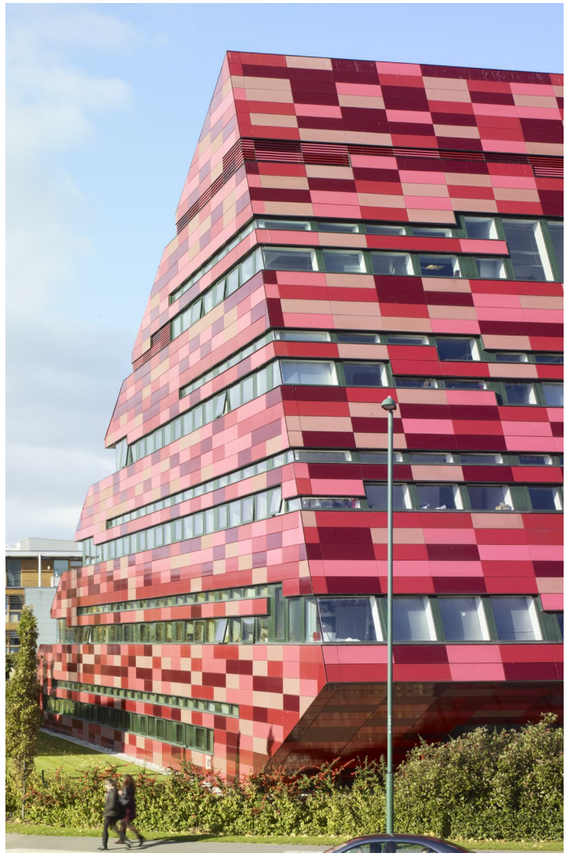
UNIVERSITY REPRESENTATIVES
Tim Brooksbank,
Richard Wigginton

CONTRACTOR
SOL

DESIGN TEAM
Architect: Make
Project manager:
Gardiner & Theobald
Building services: AECOM
Structural engineer: AKT II
Cost consultant:
Gardiner & Theobald
Landscape: craft:pegg

MAKE TEAM
James Goodfellow,
Christina Gresser, Sam Hobson,
Bob Leung, David Patterson,
John Prevc, Matthew Seabrook,
Ken Shuttleworth

In 2008 we re-examined the Jubilee campus masterplan and delivered a trio of multi-purpose buildings, plus a public artwork, to expand its facilities. The facades of all three buildings were designed to reduce heating and cooling loads, and each incorporates a highly efficient displacement system to maintain the internal air quality. This environmental focus underscores what the Jubilee campus is all about – innovation, inspiration and progress.

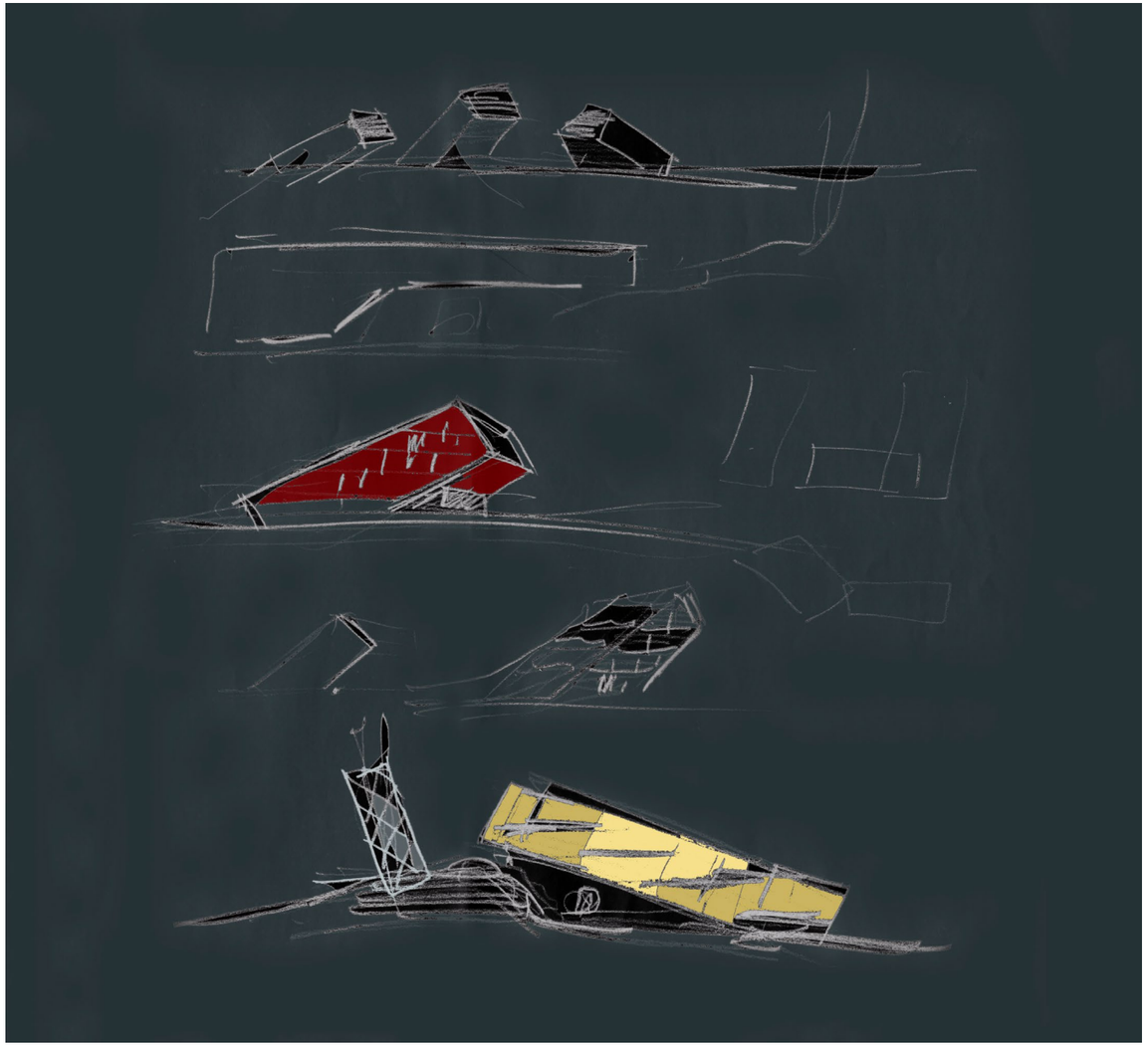


1 The completed Yang Fujia Building, which houses seminar space, academic offices and student services. Like the Xu Yafen Building, it has an angular, crystal-like form, with red and brown terracotta cladding.

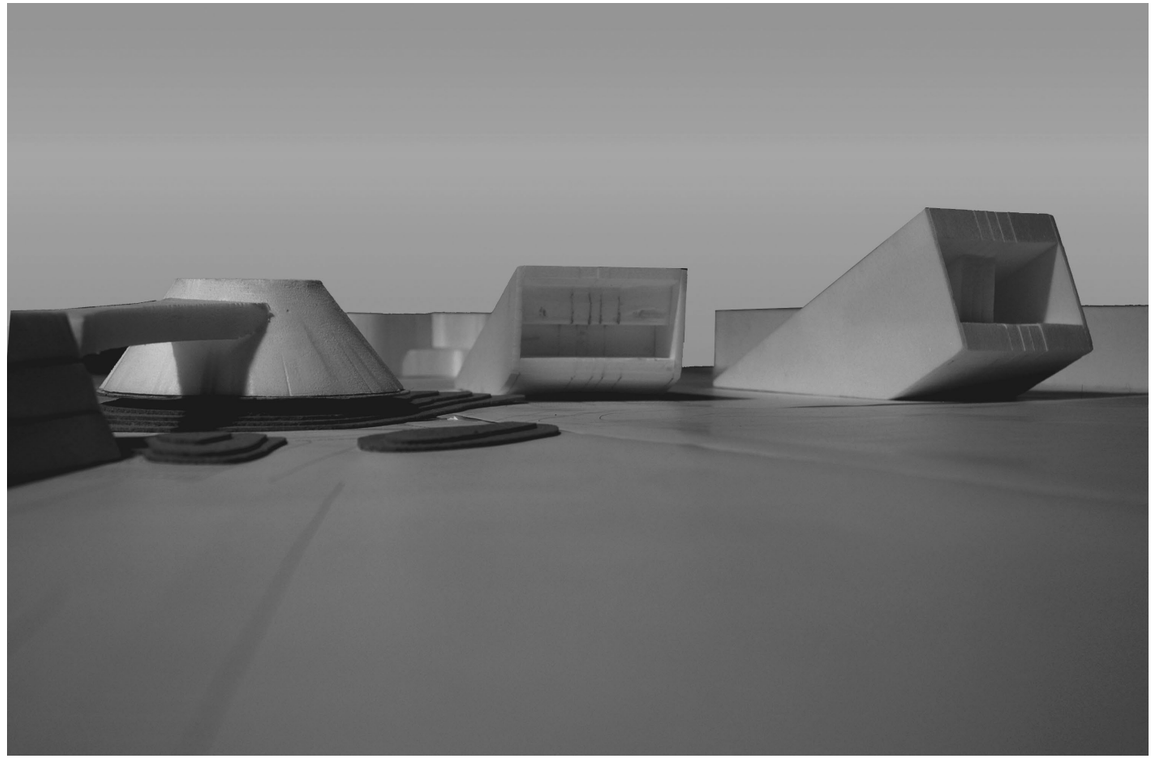
2 View of public artwork Aspire from a new boulevard. The tubular steel sculpture is exactly 60m tall to commemorate the university's 60th anniversary, celebrated in 2008.

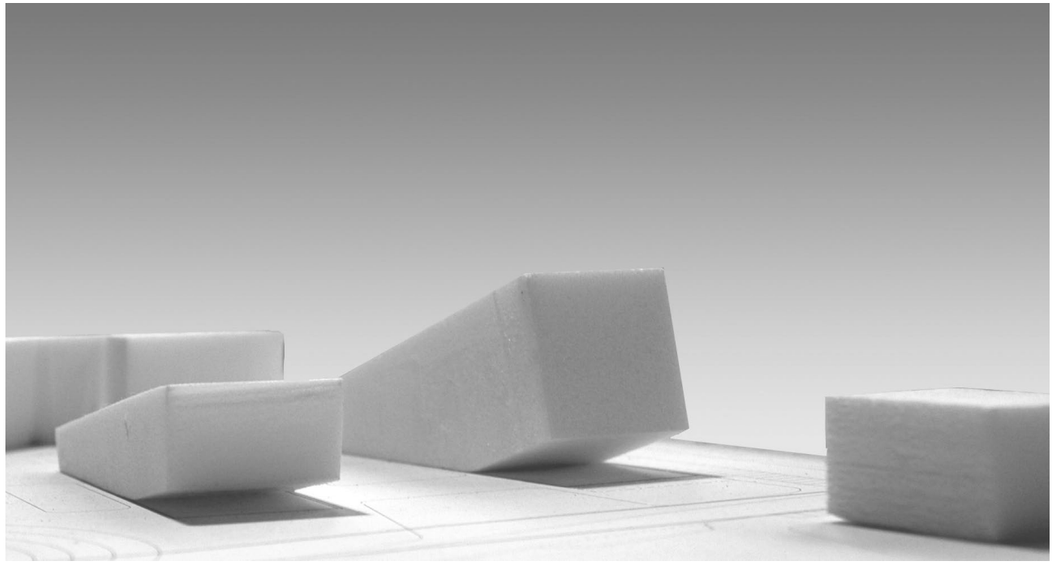
3 (Opposite, top) The completed Sir Colin Campbell Building, a 3-storey exhibition centre with business incubator space. Its sleek, sinuous form and zinc shingle cladding provide a salient contrast to the other buildings.

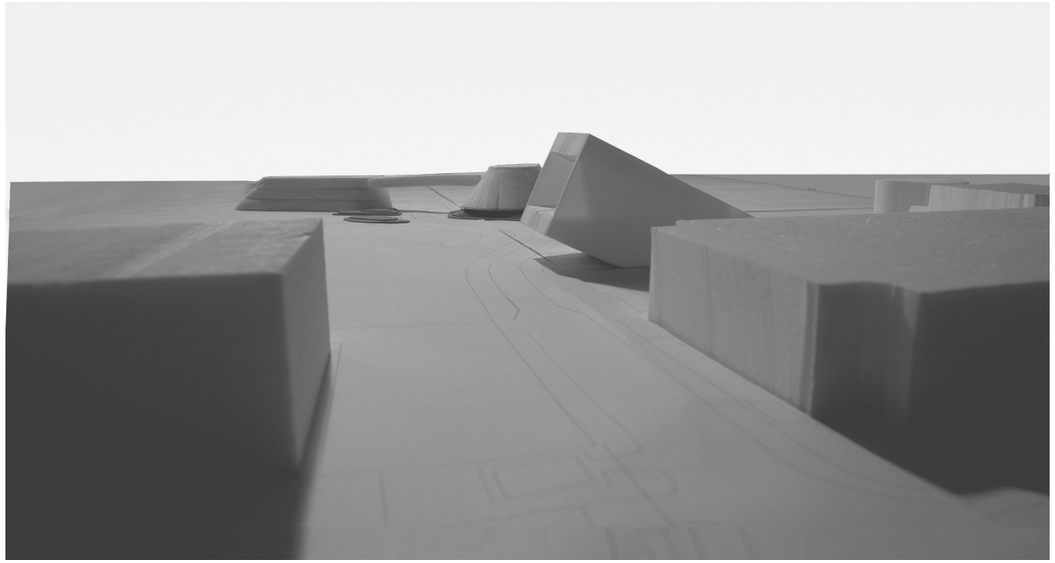
4 (Opposite, bottom) The completed Xu Yafen Building, home to apartments for visiting academics, a cafe and other amenities. A sister structure to the Yang Fujia Building, it is wedge-shaped in form, recalling the geological land forms that characterise Nottinghamshire.



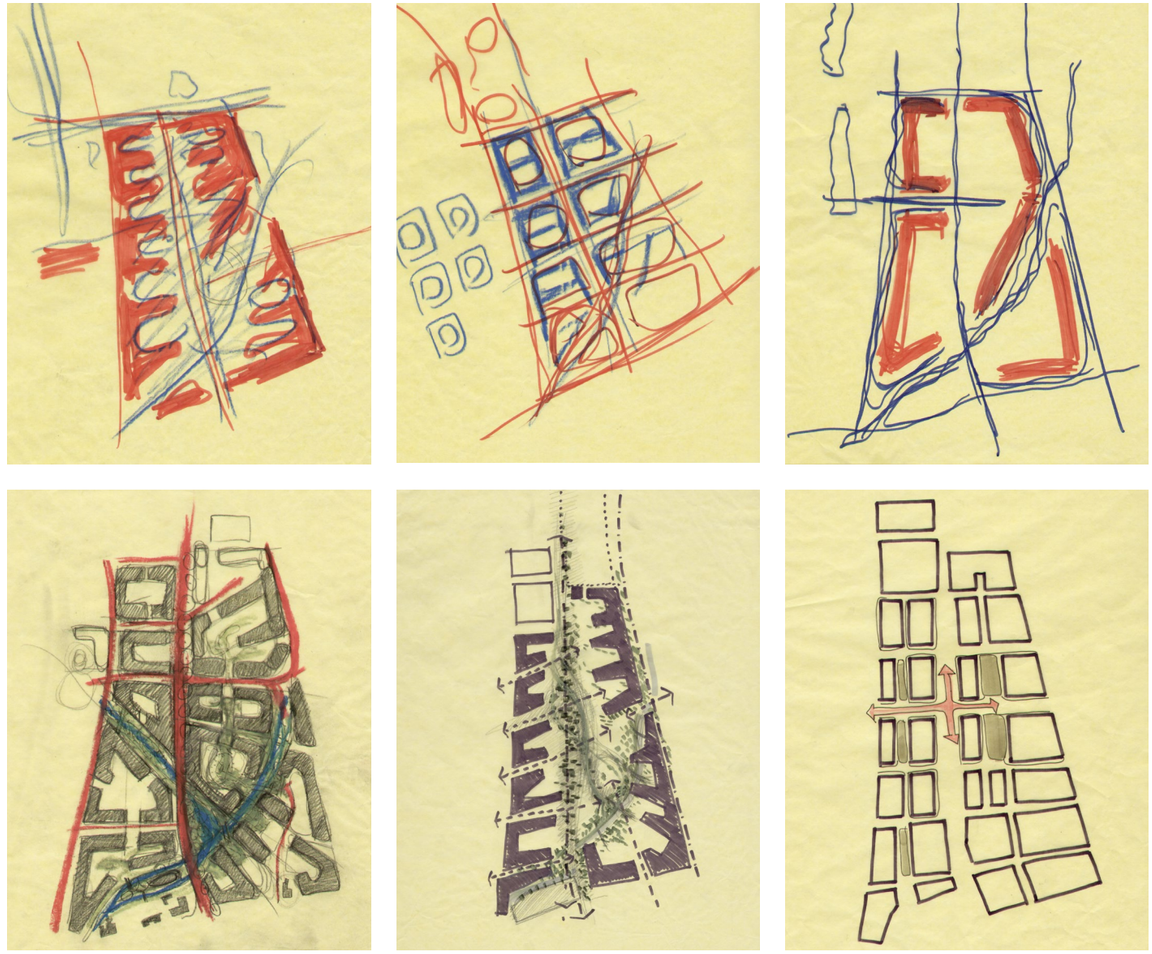
5 Initial sketches exploring the idea of buildings that emerge from the landscape. The university's vision was to transform this former industrial site with a distinct, visually striking design that helps promote the institution abroad.



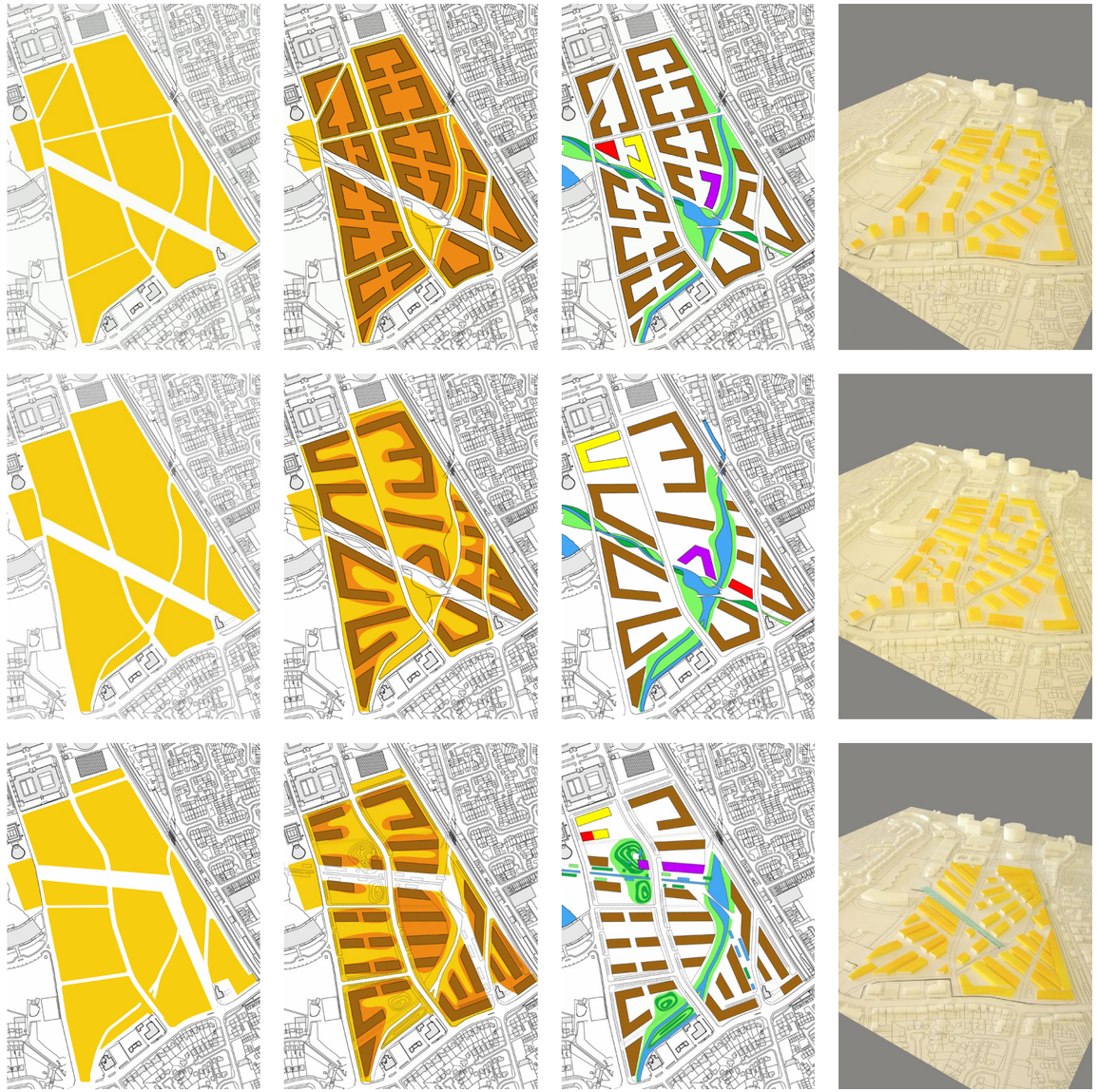




6 (Above and opposite) Massing studies to develop the university's vision and determine the types and locations of windows. We introduced a number of measures to reduce the buildings' impact on the environment, including considered glazing, highly insulated facades, and a series of heat pumps that extract embodied energy from nearby lakes for cooling and heating.



7 Sketches for an overall campus masterplan showing new connections with surrounding facilities, including nearby student residences.

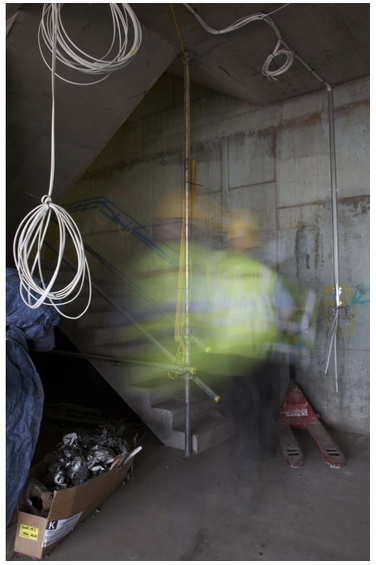


8 (Opposite) Studies and models for an overall campus masterplan. We have revisited these several times since 2004 to reassess the building locations in light of the university's new land acquisitions.

9 Masterplan study in detail. The design re-exposes the River Leen and establishes a presence on Derby Road, helping enhance the local community.

10 Masterplan study showing the evolution of new roads on the site, including the new boulevard. These curve to slow traffic and create a more pedestrian-friendly campus.

11 (Above and right) Sir Colin Campbell Building under construction. As with the Xu Yafen and Yang Fujia Buildings, its concrete frame is exposed to improve thermal mass.

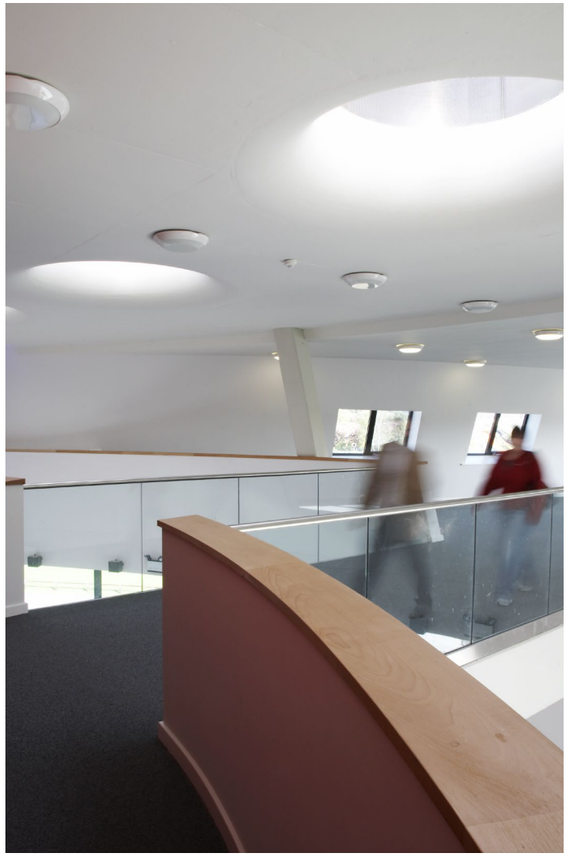


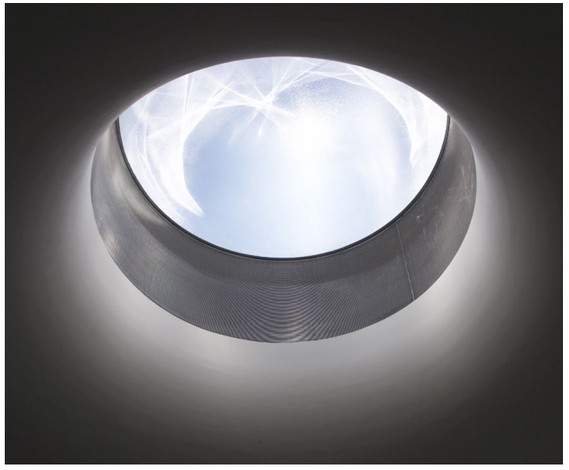
12 (Above and left) The Yang Fujia Building under construction. Its facade is hung from a central core, and its form is inspired by the rocky outcrops that occur throughout the region.

13 Aerial view of Make's new buildings on campus circa 2012. Many nearby structures have since been demolished. The once-barren site now has extensive greenery, with hedges, trees and water features, including a new lake that is part of the campus flood alleviation strategy.

14 Aerial visual showing the massing proposal prior to construction. There are physical links between the academic and business zones of the campus, with the Sir Colin Campbell Building straddling the two.

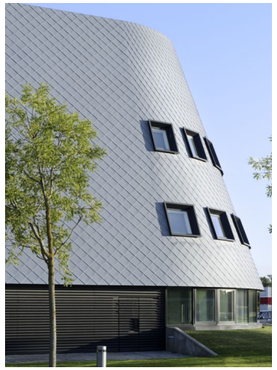
15 Internal view of the triple-height entrance atrium in the Sir Colin Campbell Building. The interior is highly adaptable, allowing for reconfiguration into open-plan or cellular layouts depending on future requirements.





16 Interior shots of the Sir Colin Campbell Building in use. Its bespoke 'suncatcher' lights draw in and diffuse natural light across the atrium.

17 New landscaping and pedestrian paths around the Yang Fujia and Xu Yafen Buildings. Both echo the university's tradition of pavilion structures in a parkland setting.



18 (Clockwise from above) The new boulevard in use, the completed Sir Colin Campbell Building, detailed view of the building's zinc shingle cladding, which emphasises its curves and echoes materials seen elsewhere on the Jubilee campus.

Photo archive

Photos of the Make team members, past and present, who have worked on projects for the university.


Jacob Alsop


Eva-Katharina Barile


Liam Bonnar


Ilias Chatziioannidis


Chong Chuah


James Flynn


Harry Godfrey


James Goodfellow


Peter Greaves

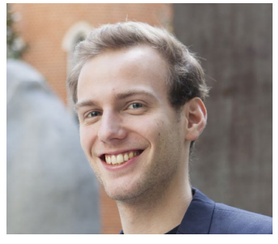

Christina Gresser


Joanna Griffiths


Sam Hobson


Bob Leung


Anna MacDougall


Wandrille Madelain

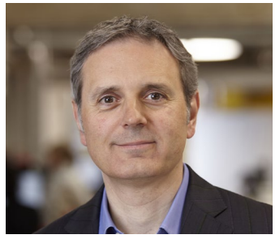

John Man


Paul Miles


David Patterson


James Phillips


Joanna Pilsniak


John Prevc


Matthew Seabrook


Ken Shuttleworth


Sarah Shuttleworth


Luke Smith


Roman Shumsky


Tim Tan


Emma Thomas


Ian Wale


Tracey Wiles


William Yam

BOOK TEAM
Tom Featherby, Martina Ferrera,
Daire Hearne, Ben Hutchings,
David Patterson, Ken Shuttleworth,
Sara Veale

PRINTED BY
Pureprint Group, a Carbon Neutral
Printing Company

Make
32 Cleveland Street
London W1T 4JY

www.makearchitects.com
info@makearchitects.com
@makearchitects

All photography by Martina Ferrera,
Zander Olsen and Make unless stated opposite.

TEACHING AND LEARNING HUB
p. 9 – Martine Hamilton Knight
p.26–29: 13–17 – Advanced Animations (UK) Ltd
p. 34–35 – Martine Hamilton Knight
p.37: Left – Martine Hamilton Knight
p.40-41 – Martine Hamilton Knight
p. 43 – Martine Hamilton Knight

THE BARN
p. 50–51 – Advanced Animations (UK) Ltd
p. 66: 22 – Martine Hamilton Knight
p. 71: 28 – Martine Hamilton Knight

GATEWAY BUILDING
p. 82–83 – Advanced Animations (UK) Ltd

JUBILEE CAMPUS
p. 92: 3–4 – John Maclean
p. 93: 1 – John Maclean
p. 108 – John Maclean
p. 109: Top Left – John Maclean