

The Building and its Users

Newcastle's Baddiley-Clark Medical Sciences Building is built on a constrained site in a historic conservation area, and had to incorporate a Grade II listed structure. Its design has two separate structures, one with 3,000 m² of laboratory space for the 100 researchers of the Centre for Bacteriological Cell Biology (CBCB), and the other with 1900 m² of office-type space for the Institute of Health and Society. They are linked by 800 m² of social and learning space, at ground level, within a sloping site. The building had a construction cost of £2,800 per m², which was similar to previous laboratory buildings that did not achieve BREEAM Excellent.

The design was informed by research on the effectiveness of previous University buildings, and the views of a user group (who became a Building Management Group once the building was handed over). Its most distinctive feature is a 'terraced' arrangement of write up areas extending across the laboratory levels. An external glass wall provides a high level of natural lighting both to them and (via an internal glass wall) to the science spaces, which also have external windows. A central stair connects research staff on all levels and provides excellent views into the laboratory areas. The resulting open and airy feel, and good visual connection between the different levels and areas, achieves the key objectives of quality workspace to attract science high flyers, and a high level of interaction and cross-fertilisation between different research groups.

The building was procured through a two stage design and build process. The University chose the architects FaulknerBrowns to produce an initial design which enabled the selection of a contractor in the first stage. This was followed by a second stage construction tender, with FaulknerBrowns being novated to the successful contractor to complete the design on their behalf. Len Wilson, the University's Head of Capital Development, believes that "the arrangement gave continuity, enhanced teamworking and helped the contractors to understand and achieve the key design requirements such as BREEAM Excellent. It also helped to protect the key sustainability features during the inevitable value engineering phase."



High levels of daylight in central terraced write up areas

Key Points

- Design supports world class research through a terraced, airy, and naturally lit interior whose good sightlines to maximise intellectual and social connections between researchers
- BREEAM Excellent achieved without additional cost
- 2-stage design and build process ensured architectural continuity and protected key sustainability features
- Key users closely involved in design and now form a Building Management Group
- Independent commissioning process
- Ventilation energy minimised with low velocity displacement, VAV fume cupboards and low pressure drop duct design
- 12 kinds of glass used.

S-Lab Case 9 – Newcastle’s BREEAM Excellent Lab

Key BREEAM Excellent Features

- BREEAM ‘A’ rated envelope materials
- Heat pump boiler using freezer warm air streams
- High efficiency plant, e.g. fan motors
- Chilled beams
- VRF (Variable refrigerant flow) air conditioning
- Space for retrofitting solar water, PV’s and wind turbines
- Solar control glazing
- Potential for natural ventilation
- Low velocity displacement ventilation
- VAV fume cupboards
- Increased site habitat and species diversity
- Green roofs and soft landscaping give run off attenuation
- Extensive sub-metering
- Enhanced air-tightness
- Heat recovery through thermal wheels
- Refurbished accommodation where possible
- Provision for alternative transport
- Light pollution minimised
- Zoned lighting controls and occupancy/light level detection
- High efficiency lighting
- Low pressure drop duct design
- High efficiency lifts
- Grouping together highly serviced spaces
- Plant local to highest demands
- Spaces with high internal gains located on North elevation
- Independent commissioning

High Quality and Efficient Light

Andrew Bissell of Cundalls notes that “current lighting codes are helpful but can create bland design and over-lighting. This building has lights where they’re needed and doesn’t worry about areas that can use borrowed light. It also has 12 kinds of glass for variety and maximum use of natural light, and uses energy efficient downlights – which we needed fewer of than conventional fixtures. We also avoided over-complex control systems and fixtures which are likely to require a lot of maintenance.”



*Professor Jeff Errington,
Director, Institute for Cell and
Molecular Bioscience*

Views

“The CBCB is the world’s first major research centre with a focus on bacterial cells. Our bright and attractive layout incorporating both cellular and open plan office space, allows staff to be adjacent to their labs and, at the same time, close to other colleagues. This enables and encourages very positive intellectual interactions.”
Professor Jeff Errington

“BREEAM Excellent – which should deliver operational cost savings – needn’t involve additional capital cost if there is clear goal setting strong client leadership, , and close design management of sustainability issues from the outset. Everyone is then focused from the earliest stages, when most ‘win/win’ opportunities occur.”
Andrew Kane, Partner,
FaulknerBrowns

Further Information – www.goodcampus.org (presentations are in the Events section)

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Disclaimer – This case reports information provided at an S-Lab event. Every effort has been made to ensure accuracy, but readers should verify it as it is not professional advice.