Resilient student halls at Oxford Brookes University

In November 2021, Oxford Brookes University received planning permission to redevelop the Clive Booth Student Village – an existing student accommodation site. This redevelopment will increase resilience to higher temperatures and heatwaves, flooding and potential risks of energy shocks, while also providing benefits to student quality of living, reducing pressure on local housing supply and reducing carbon emissions.

Redeveloping the Clive Booth Student Village is part of Oxford Brookes' strategy to increase the resilience of its estate and adapt to the current and future impacts of climate change. The project aims to benefit student health and well-being, and increase the sustainability of University operations.

In stages, eleven 1970s blocks will be replaced with twelve sensitively designed, high-performing buildings, which have estimated carbon savings in excess of 70% when compared to a 2013 Building Regulation compliant base case. The building design adopts a fabric first approach, which is about maximising the performance of the external components and materials that form the building, to reduce the energy demand for heating and cooling. Air source heat pumps will replace natural gas boilers, well ahead of the UK's 2035 target date to phase out gas. They recover heat from extracted air and preheat the supply air, reducing carbon emissions.

Naturally ventilated spaces are being designed to reduce the risk of overheating, a key effort to build resilience to the impact of climate change on local and regional temperatures, and the increased frequency and intensity of heatwaves in the UK. The landscape design around the buildings focuses on enabling students to interact with the woodland setting of their accommodation, and with each other. It aims to both protect and enhance the existing mature woodland landscape, targeting an 11.87% net gain in biodiversity.

KEY MESSAGES

- **HEIs should consider a very wide range of factors** that may, at first, seem to be contradictory for estates to become more resilient.
- **HEIs should recognise that estate adaptation projects can deliver 'a range of benefits** including enhanced resilience of the estate, wider community and global environmental benefits as well as commercial benefits.
- **There are significant opportunities for student wellbeing, reputation and long-term cost benefits** that can be realised through the current push to enhance the sustainability and resilience of the university estate.

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Creating a sustainable urban drainage scheme is a key part of flood risk mitigation, even though the site is not currently in a high flood risk area.

The scheme features a decentralised energy system that increases the resilience of the accommodation to potential energy shocks or risks of security of supply. Moreover, the facilities management team will be able to isolate system failures, rather than having to shut down the whole system and therefore causing disruption to every occupant.

One of the key challenges of the project has been balancing the commercial realities of an estate adaptation project with its long-term benefits. For example, the choice of a concrete frame as the structural system meant balancing higher embodied carbon and cost with a more flexible building that could be more easily adapted to different future uses. Currently, the engineering consultants are evaluating the options to procure concrete with low embodied carbon.

Beyond addressing climate risks, the project will also provide additional benefits to Oxford Brookes students and the wider community. These include giving the University greater control of rent prices, which can help them lower costs in the context of the UK's cost of living crisis; providing higher quality accommodation as part of the student offer; and as helping to reduce pressure on local housing supply and local transport systems, contributing to the resilience of Oxford as a city system.

Finally, monitoring the outcomes of the project, including the actual performance of the buildings, is essential. Establishing effective information sharing between the delivery and operations phases of the project is equally important and has led to the ongoing development of a 3D building information model (BIM).

Key facts about the institution:	
Institution name:	Oxford Brookes University
Location (city and nation):	Oxford, England
Number of students (total for institution):	16900
Number of staff (total for institution):	2800
Campus type and location:	Split across three campi in Oxford, with a satellite operation in Swindon.

Key facts about the intervention (case study):	
University or department led:	University Lead (Estates & Campus Services)
Number of staff engaged:	Approx 25 Oxford Brookes University staff + 15 consultants
Number of students is:	Student involvement was achieved through the Student Union representation at the Halls Investment Project Panel (HIPP), with a small group of students engaged during early design. Further student engagement workshops will be arranged right through to occupation. Dedicated webpages were created, alongside a series of articles, which were shared with all students via email throughout a detailed engagement period.
External partners:	Oxford City Council, Natural England, Oxford Design Review Panel. Oxford Brookes also consulted with key external stakeholders, including local residents' associations, Councillors, and other relevant local organisations.
Climate risks the intervention addressed:	Rising temperatures and heatwaves Flood risk Risk of energy shocks and security of supply Climate change mitigation

PROJECT TEAM:

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