

John Henry Brookes Building

Complete	Area	Client	Architect
2014	UK England	Oxford Brookes University	Design Engine Architects

As the largest building project in the university's history, the entire focus of the Headington Campus is changed through the development of this multi-function building. The building comprises four distinct blocks:

- The Abercrombie Building, expanded by 50% to consolidate the Faculty of Technology, Design and Environment (including the School of Architecture) with exhibition space at ground level, and providing connection to other campus buildings.
- The teaching block, providing 21 new classrooms and 3 new lecture spaces with student amenity areas (ie, cafés, restaurant, students' union, and multi-use event space).
- The library block, providing a variety of study and resource areas as well as stacks on a podium of university offices and services centres.
- The Colonnade, providing medical and dental facilities as well as retail accommodation.

Each block connects to a 20m high central atrium known as the Forum with the Library Block being left open to it. A key design feature in the Forum is a 'floating' 250-seat lecture theatre.

The project has received a number of awards including RIBA National Award and Stirling Prize Midlist, RIBA South Building of the Year, RIBA South Sustainability Award, AJ Retrofit Award (Abercrombie) and HE Estates Student Experience Award. Staff at the University have credited the building with achieving a more collaborative working environment for students and increasing the vibrancy and work rate of its users.



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Services provided

Sandy Brown provided the detailed acoustic design for the development. Key considerations included:

- control of noise break-out from plant and activity noise to sensitive neighbouring areas
- control of sound from the Forum and other atrium spaces to the rooms opening on to them
- sound insulation between naturally ventilated spaces
- noise control of the event space and other ground level spaces
- room acoustics and sound absorption.

Special acoustic features

The building is used for a variety of different functions, each of which has its own acoustic needs ranging from quiet teaching and study to noisier activities such as band practices, dance rehearsals and fitness classes. Yet where possible, the design allows for individual zones to remain open to the central Forum atrium to provide a better feeling of connectivity and community.

A key element to the building's connectedness, as well as its ventilation strategy, is that the Library Block has open windows overlooking the Forum atrium. This meant it was important to control the reverberant sound level in the Forum and to plan the library so that less sensitive group working spaces are closer to the atrium while more private, noise sensitive areas could be nestled behind stacks.

- Acoustic absorption was strategically concentrated at the ceiling of each library floor near the openings to the Forum to best capture the direct noise intrusion.
- A combination of stacks (ie, absorptive barriers), ceiling sound absorption, and distance work together to protect the more private and sensitive study areas.
- Specifically noise sensitive areas were located in enclosed areas to the north of the Forum in a portion of the building that could not be naturally ventilated.

The effect is a library that provides both collaborative and private study areas in a versatile floor plate.

The Forum itself needed its overall reverberant noise level to be controlled to allow the library to be open to it, and for its various reception, study, café and circulation functions to work in harmony. The ceiling finish is a sound absorbing finish emulating the look of plasterboard, while the wall shared with the Library contains dark grey sound absorbing panels to create an architectural link with the dark grey fibre-concrete rainscreen panels of the building's outer cladding. Further, the outside finish of the John Henry Brookes Lecture Theatre 'floating' within the Forum contained perforated metal sound absorbing panels nestled behind the timber fins providing sound absorption in a key area closer to the users.

Inside the Lecture Theatre, to avoid excessive sound absorption keeping sound from the stage from reaching the back rows, and to avoid flutter echoes with the exposed concrete wall, an angled timber treatment was provided to one side wall and the ceiling to diffuse sound and provide improved secondary reflections. The space is heated and cooled with a passive ground cooling system which draws in fresh air from under the adjacent piazza, which is expelled through a chimney stack that extends to the roof through the upper portions of the Forum. Sound insulation of this system (indeed the whole room) was a critical consideration.

The teaching block provides classrooms and lecture spaces over three naturally ventilated

floors. Each stack of three rooms has an innovative chimney system to draw air into the building from the façade and through the room. Air from each of the three chimneys is combined in a plenum at ceiling level of the top floor that expels the air through a sequence of turrets on the roof.

The students' union event space in the podium below the teaching block needed to provide space for a variety of activities, from quiet lecture and prayer to much noisier band practices, dance rehearsals and fitness classes. Sound insulation was key to protect the spaces above and around with double skin constructions. Though variable acoustics treatment was recommended, this was ultimately taken out of the budget, so the remaining treatments were designed to provide a 1.2 second reverberation time when the seats were retracted and 0.8 seconds when deployed.

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