Shared vision.
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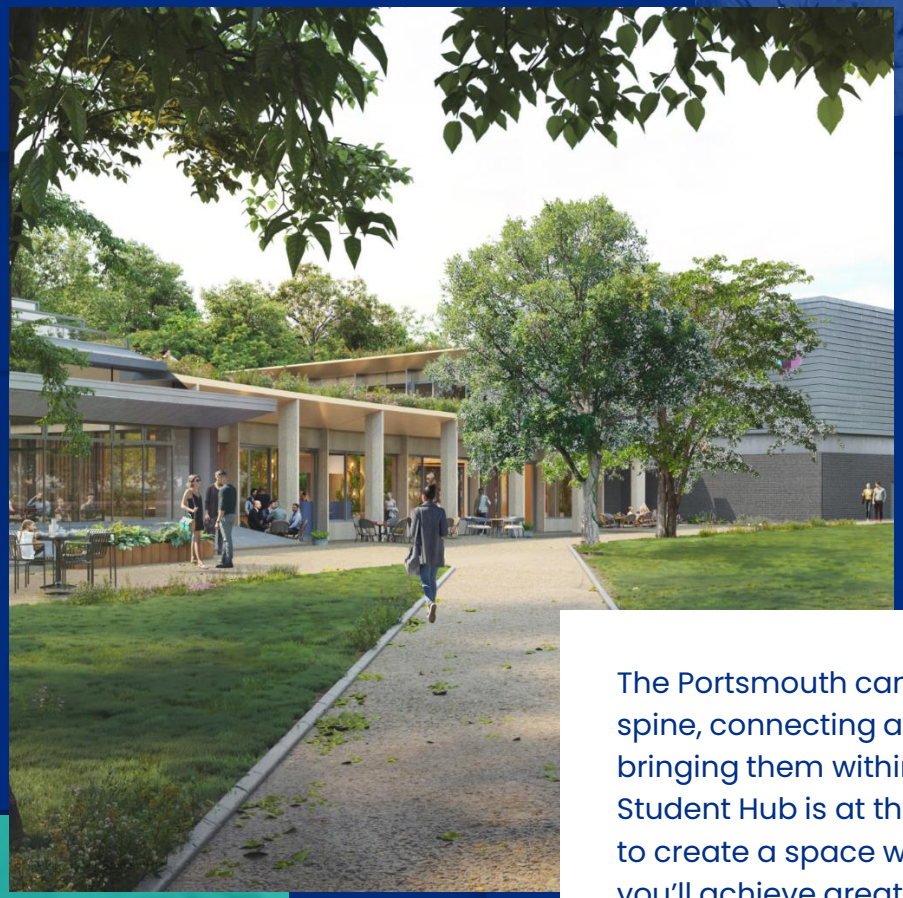
NHS
Shared Business Services

CASE STUDY

University of Portsmouth Student Hub

New and refurbished facilities for student well-being



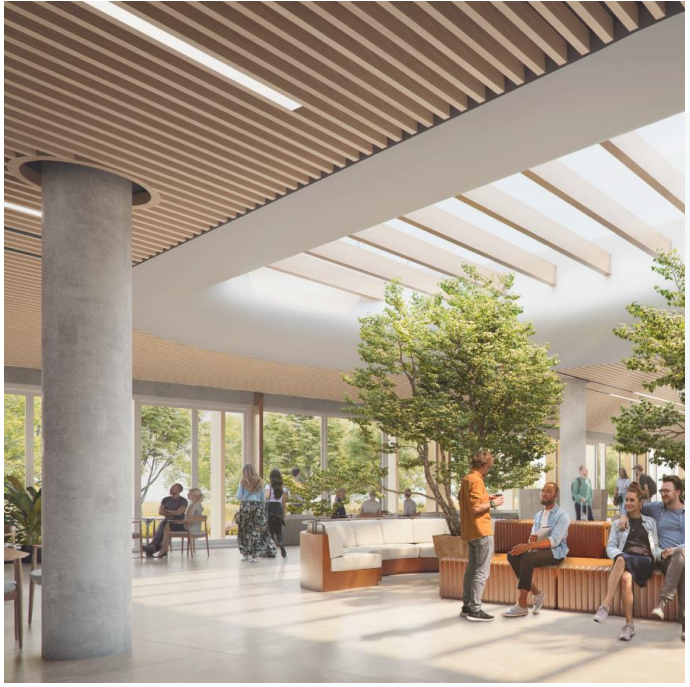
The University of Portsmouth Student hub is a comprehensive refurbishment and extension of the existing students' union building to provide a range of spaces for study, group activity, social and society functions, as well as student counselling and wellbeing support. Buro Happold acted as multi-disciplinary engineering consultant for the project on behalf of the University.

The Portsmouth campus is reenvisaged with a central spine, connecting all of its teaching facilities and bringing them within easy walking distance. The new Student Hub is at the heart of that plan and our vision is to create a space where you feel you belong, and that you'll achieve great things from being here."

Anna Panagiotopoulou
Project Manager
Estates and Campus Services

THE CHALLENGE

An enriching student experience is central to the mission of the University of Portsmouth



However, the existing students' union building is not set up to meet the high levels of wellbeing that the University aspires to provide.

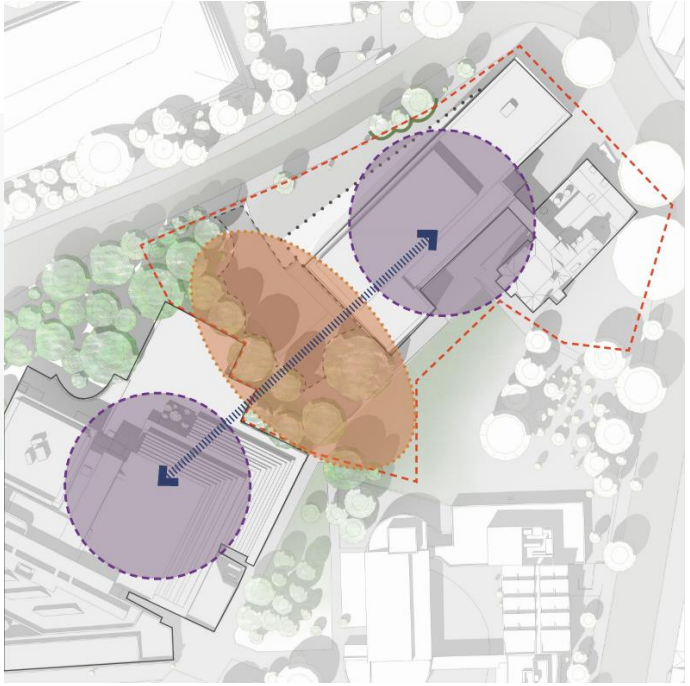
The design is centred around a black-box nightclub space and bar, with ancillary rooms for student groups and societies to use. It also houses the university radio station and shop.

In this prime, city centre building, on the edge of Ravelin Park, there is an opportunity to do something bold and creative as a 'front door' for the University and a place to collocate wellbeing services, information and support. The client identified a clear need to move beyond a 'beer and burgers' paradigm for a students' union.

The building's adjacency to the University Library and nearby Ravelin sports centre, within the park setting, creates a real centre of gravity for the student experience in terms of wellbeing.

A new extension and extensive refurbishment of the union building was proposed by Ridge and Partners, project architects. The extension is built between the existing library and the union, providing a linking function, as well as new open-plan accommodation for learning and socialising.

For the project, the University chose to appoint Buro Happold under the NHS Shared Business Services Healthcare planning, construction consultancy and ancillary services (HPCCAS) – SBS10190 - framework to provide structural, civil and MEP engineering design and sustainability consultancy services.



THE CHALLENGE

The site and presence of existing buildings presents a number of challenges to the engineering design

Building between two structures of different designs, and over an area of tarmac service yard and parkland, the site inevitably contains a number of obstructions, existing utilities and high-value fibre optic data routes.

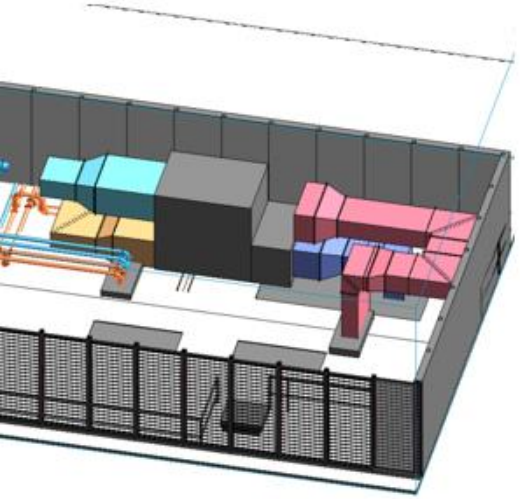
Specifying the necessary surveys was a crucial first step in understanding the development site. These included ground investigations, trial pits, CCTV and GPR surveys.

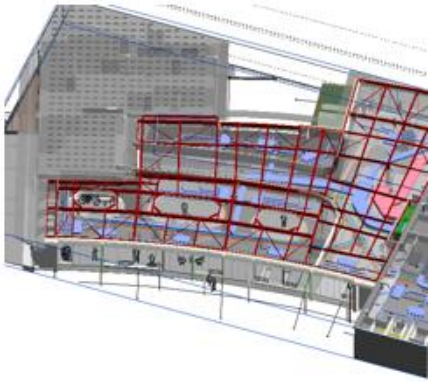
Working closely with the University's Estates and Campus Services team of specialists, we devised a scope of enabling works to move key assets ahead of the main contract works, lowering the risk profile of the project.

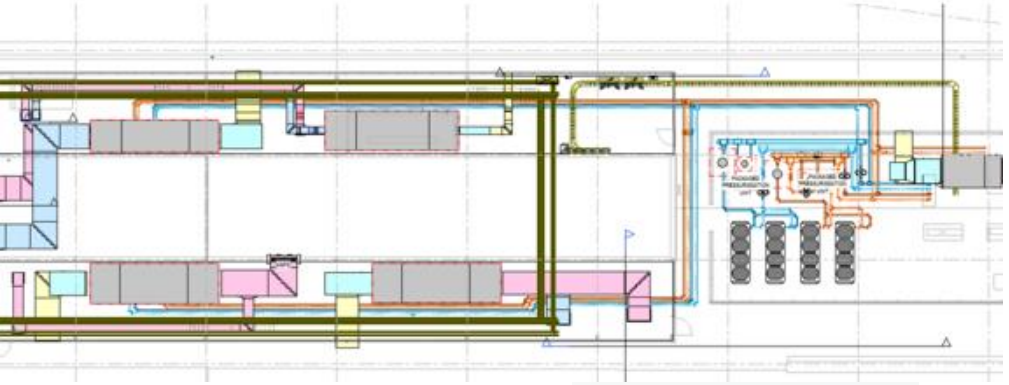
In doing so, we were able to include proposals for new diverse data and power supply routes including a back-up power supply to the library and nearby dental academy.

It was crucial to the University to maintain use of and access to Ravelin Park and Gun House green, the lawn to the immediate south-east of the Student Hub site, for the summer graduation ceremonies.

Working closely with a specialist contractor, we were able to achieve the required diversions to a programme that would give the University full usage of the site for these purposes.







THE SOLUTION

Environments for wellbeing

Buro Happold's MEP specialists have been engaged with users and other stakeholders to develop a building services strategy that balances:

- Upgrading to the latest Building Regulations
- All electric, low energy design
- The constraints of the existing building (space and structure)
- Design for well-being (temperature, air quality, lighting etc.)

Rationalising and assessing the condition of existing services was the first order of business. A condition assessment procured by the client had suggested that the installations were approaching end of life at 20 years old. This refurbishment was therefore an excellent opportunity to replace with state of the art, all-electric equipment, and remove the gas boilers from the building.

A new plant room and compound is required for the extension, and following a number of options proposed, this has been located on the existing Union roof within a louvred compound.

Power supply to the building comes from a spare transformer in the nearby Cambridge Road substation, which had been installed previously in anticipation of further development in the area.

Internally, the scheme of lighting has been totally upgraded with new low-energy LED fittings. This, combined with high levels of fresh air with CO2 monitoring through the BMS, will provide an excellent environment to all the different users of the building.

THE SOLUTION

Providing a robust and flexible framework

Working within an existing building provides a number of interesting challenges to a structural engineer. With a clear brief to specify the minimum interventions necessary, Buro Happold's structural team set about understanding the constraints to communicate these to the wider team.

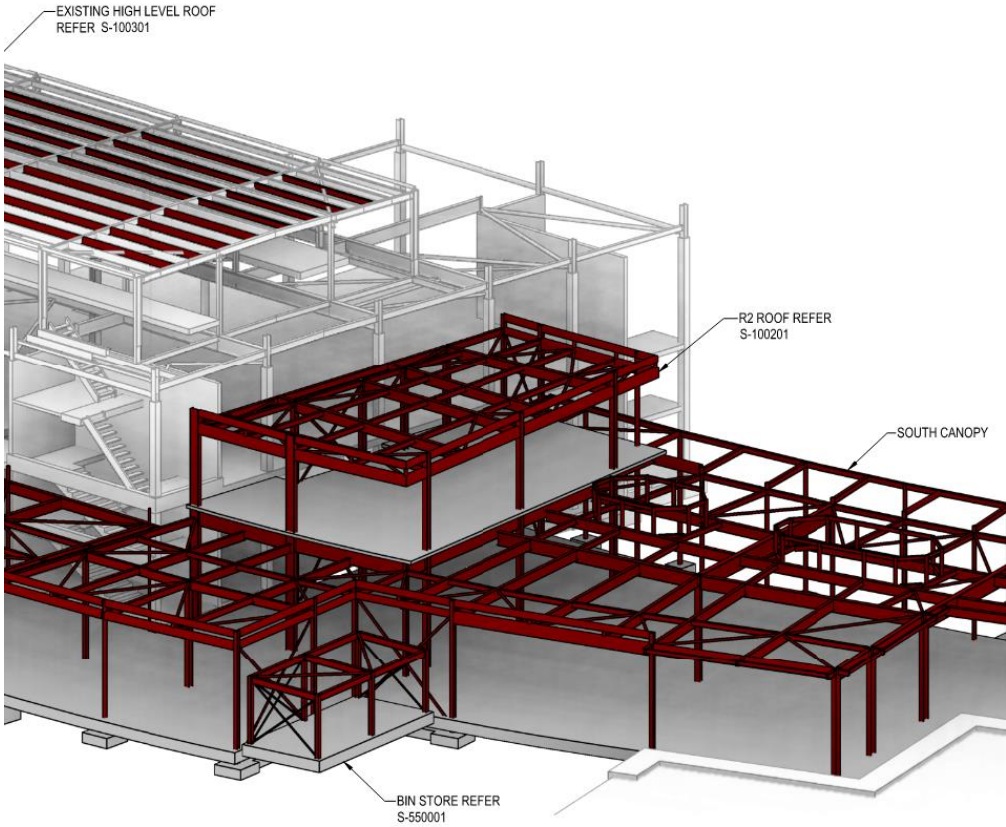
In upgrading the building's plant and providing additional equipment for the extension, the main enhancement to the existing structure was to reinforce the roof steelwork to take the weight of the new installations.

Integrating this plant within the building necessitated a review of the routes and risers, including new penetrations through the concrete flat slabs.

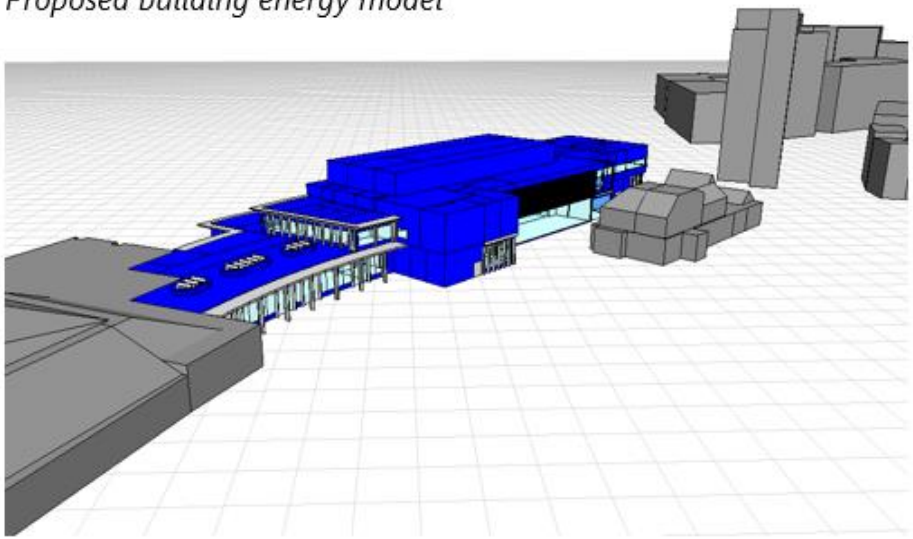
The new extension has been designed as a light-weight steel frame, composite with concrete deck slabs. This framing approach best suits the ambitions of the architectural design.

The primary consideration in the design of the frame was the weight of the green wildflower roof required to support the project's biodiversity credentials in the parkland setting.

Foundations have been specified as discrete pads based on a ground investigation and trial holes to review the foundations of the existing buildings on each side.



Proposed building energy model



Circular Economy workshop outcomes

THE SOLUTION

Design for people and planet

Buro Happold's sustainability and building physics consultants have provided a range of services on this project.

- Building energy modelling and Part L compliance
- BREEAM
- Embodied carbon consultancy (including LCA and WLC studies)
- Circular economy consultancy

Starting with the University's design standards as a basis, and bringing in the requirements of BREEAM, LETI and the Building Regulations, Buro Happold have worked with the university to define an optimal sustainable outcome for the project.

An example of this approach has been to refine the quantity of PV panels provided alongside other measures such as fabric upgrades and new windows in the existing building to derive the best balance of operational and capital costs, alongside considerations of whole-life carbon.

THE RESULT

Buro Happold and the wider client and consultant team have worked closely and collaboratively to provide a building that will redefine the student experience at Portsmouth.

The resulting spaces will offer something special for all users of the building, be that pleasant and airy workspaces, or comforting and confidential counselling rooms to support people experiencing difficult times.

High levels of sustainability are achieved through the design proposals with responsible use of materials, and consideration of circular and low embodied carbon principles.

Targeting high-impact interventions, as well as completing a range of plant and fabric replacements, will ensure that the Student Hub remains a high-quality facility for the University well into the future.

Appointing the design team under the NHS Shared Business Services Healthcare planning, construction consultancy and ancillary services (HPCCAS) – SBS10190 – framework provided confidence to the University on procurement, avoiding the often-lengthy negotiations which can arise over contractual matters.

Get in touch to find out more.

SUMMARY

- A space for student welfare and wellbeing
- The product of extensive client and user consultation
- Building reuse and refurbishment alongside new-build accommodation
- Highly sustainable, low carbon design
- BREEAM Excellent

“Solving the engineering challenges of this project with our client and collaborators has been a pleasure for the Buro Happold team. Our existing buildings are a valuable resource, and the skills created through each refurbishment project are vital in the move to a lower carbon future”

Felix Summers
Project Director
Buro Happold