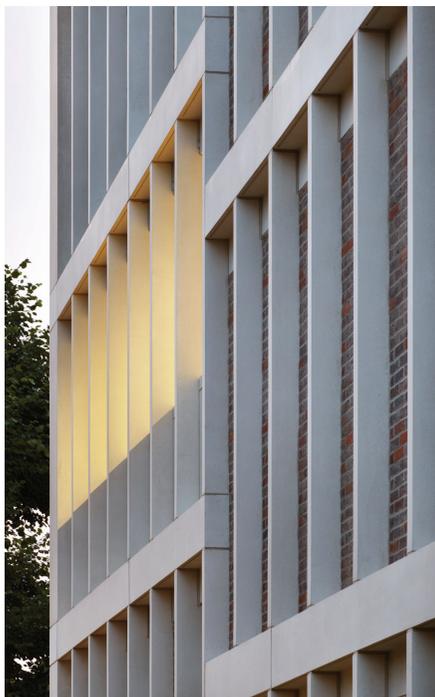


THE LIGHT FANTASTIC

The Ortus learning and events centre is an uplifting addition to the Maudsley hospital estate that benefits from a collaborative approach to design. **Alex Smith** reports



The deep window reveals help both to provide shading to the interior and reduce solar gain



PROJECT TEAM

- **Client:** Maudsley Charity
- **MEP, acoustic and environmental consultant:** Skelly and Couch
- **Client representative:** Articulate
- **Architect:** Duggan Morris Architects
- **Construction manager:** Cavendish Berkeley
- **Structural engineer:** Elliott Wood
- **Cost consultant:** Measur
- **Mechanical contractor:** Elmstead Mechanical
- **Electrical contractor:** Livewire
- **Controls specialist:** AIS

In recent years health experts have identified five factors associated with mental wellbeing: connecting with others; learning; giving; being active; and taking notice were identified as the elements key to good mental health by the New Economics Foundation in 2008.

Now there's a building that reflects these findings. The Ortus learning and events centre in Camberwell, South London, is a light-filled cube that invites the public to share space and resources with academics, doctors and patients on the Maudsley mental health campus.

The £6m event and conference building, sponsored by the Maudsley charity, is designed to be an uplifting, welcoming space that is open to all. It's the antithesis of the fortified Victorian asylums that were closed after the NHS moved from institutional to community care 30 years ago.

'It's got the Festival Hall factor,' says Ken Cowdery, the client representative from Articulate. 'Everyone is welcome. There are no barriers or security guards at the entrance. You can't tell who's a doctor, a visitor, a patient, or the local who's come in for a cup of coffee. It's changing the perception of what mental health is.'

Designing such an open, collaborative building presented the building services consultant, Skelly and Couch, with some tough design challenges, particularly around acoustics, thermal comfort and daylighting. The Maudsley wanted large, open spaces that could also function as intimate, contemplative spaces when required. The challenge was amplified by the decision to pursue a natural ventilation strategy as far as possible and to flood the building's core with daylight – Skelly and Couch had to devise a strategy allowing the free flow of air and penetration of daylight, while blocking noise.

Fortunately, the consultant was able to



Generous amounts of daylighting mean lighting is rarely needed in the interior during the day



Half levels encourage connectivity as people are more likely to walk up small flights of stairs – the lift is hidden away

influence the design at an early stage by engaging with the architects at building inception and then working closely with the trade contractors, thanks to the use of PPC200 procurement. This awards projects to trade contractors on the basis of an outline brief and cost benchmark, and allows them to work



JACK HOBHOUSE



Ortus was positioned away from other buildings to minimise overshadowing

The charity's vision of an open, engaging building is reflected in its design, which is arranged over seven half-levels on a sloping site. Daylight floods in via windows and rooflights into a central atrium, where people are encouraged to meet and relax on the main staircase and half landings. The café has been placed at the entrance to tempt passersby inside, while wooden floors, exposed brick walls and burgundy drapes give the environment a warmth not usually associated with hospital estate buildings. As well as a large conference space, there are also smaller meeting rooms, offices and a terrace on the roof with uninterrupted views towards central London.

The requirement for an open, connected building helped drive the services strategy, according to Skelly and Couch director Mark Maidment. 'The Maudsley's philosophy works for us,' he says. 'We pursued a passive first "aircon light" strategy and its open form aids natural ventilation.'

Engagement with the architect at inception meant that Skelly and Couch were able to drive the form of the building at an early design stage. The consultant was responsible for positioning the building away from other structures on the estate to maximise daylight. It used the sloping topography of the site to step the structure and create half levels that give a sense of openness in the atrium and allow sunlight to penetrate deep into the plan (see diagram on page 31).

Skelly and Couch minimised the need for mechanical plant, by utilising the passive stack ventilation effect in the atrium (which also doubles up as a theatre space on the ground floor). Fresh air enters the building through



Skelly and Couch used the topography of the sloping site to create half levels which helped maximise daylighting

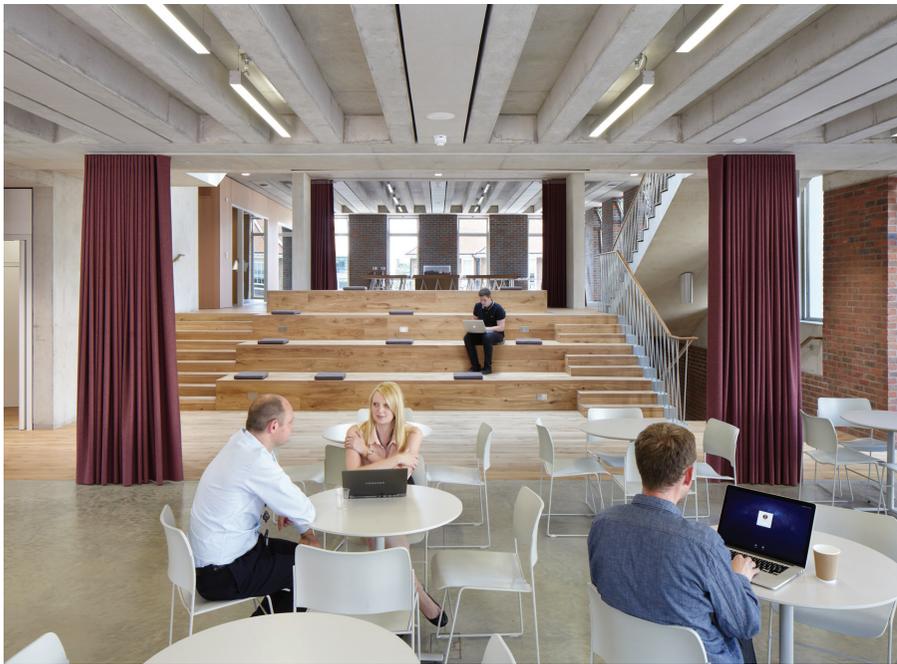
automated and manual windows, before passing up through an atrium and out of the building via louvres in the roof (see diagram on page 31).

In the main conference rooms, which can accommodate 120 people seated, the raised flooring acts as a supply plenum. Fans can be turned on to encourage the movement of air, and cooled, if required, by a closed loop ground source heat pump (GSHP) consisting of 120m vertical loops and a heat/cool pump. An open loop system utilising the 'Camberwell' was considered, but the site's position at the top of a hill made the option unfeasible. A 71m² PV array on the roof (44 panels measuring 1.6m x 1m offering 10kW peak) helps power the GSHP, and saves at least

collaboratively with design teams to an agreed budget. The result was that everyone on the design and construction team – from architect to contractor to M&E specialists – shared the client's vision for the building and were able to feed their expertise into the designs.

Opening doors

The Ortus learning and events centre is the home of Maudsley Learning whose mission is to 'support and provide world class and accessible learning in mental health and wellbeing.' Together with Ortus Online, Maudsley Learning aims to reach a local and world wide audience.



The ribbed design of the concrete soffit – seen here in the cafe and atrium – boosted thermal and acoustic performance



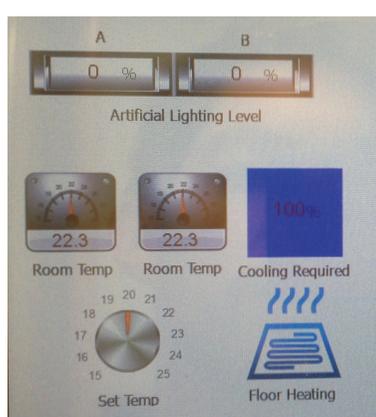
IN CONTROL

By combining the lighting and HVAC controls on one network, Skelly and Couch were able to cut control costs by 40%.

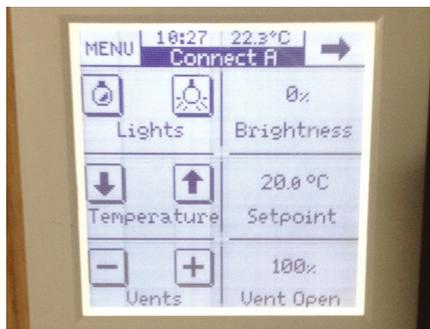
The controls specialist AIS suggested combining the controls using the well-established KNX protocol, which meant that lighting and HVAC could share field wire and the control system.

Temperatures, lighting, and windows can all be controlled from a single control panel in each room (right), so avoiding the clutter of multiple wall panels.

A lot of thought went into the design of the control panels. ‘People are often intimidated by controls and don’t understand them, but they don’t like to say in case they appear stupid,’ says Maidment. ‘The person managing the building has no building services experience so we had to make sure the systems were understood.’



Graphics on the plant room control panel designed to be operated by non-engineers



Single control pads operate lighting and HVAC

➤ 4 tonnes of carbon dioxide each year.

While only the conference room is mechanically cooled (when occupied), every room – the cafe being the only exception – has underfloor heating.

Exposed concrete soffits are a key component of the ‘aircon light’ strategy. The thermal mass provides cooling, and Skelly and Couch were able to increase the area of effective thermal mass by using a ribbed design that increased the surface area of the exposed concrete.

The success of the ventilation strategy depended on air being able to flow between separate rooms. To stop noise interference between connected spaces, cross talk attenuators were used, which allowed acoustic privacy without inhibiting air flow.

For Skelly and Couch’s low energy design strategy to be realised in the operation of the building, design details and installation had to be of a high quality. For example, the envelope needed to have very good airtightness and the supply plenum in the conference room had to be well sealed.

Maidment says the two stage open book procurement method enabled consultants and subcontractors to speak to each other and ensure a high quality installation. ‘Often there’s a main contractor in the middle who doesn’t understand what we’re doing, and they make the decisions.’

Maidment says the airtightness of the façade was dependent on quality workmanship. ‘It was about making subcontractors understand why they’ve got to do things in a certain way. If they know why they are doing it they are more likely to do it properly,’ he says.

Another area where close collaboration between subcontractors was crucial was in the underfloor heating, where the heating elements had to be in close contact with the metal plates, in order for the floor to radiate heat. Discussions between the base floor contractor and mechanical engineer ensured a good result.

One year on

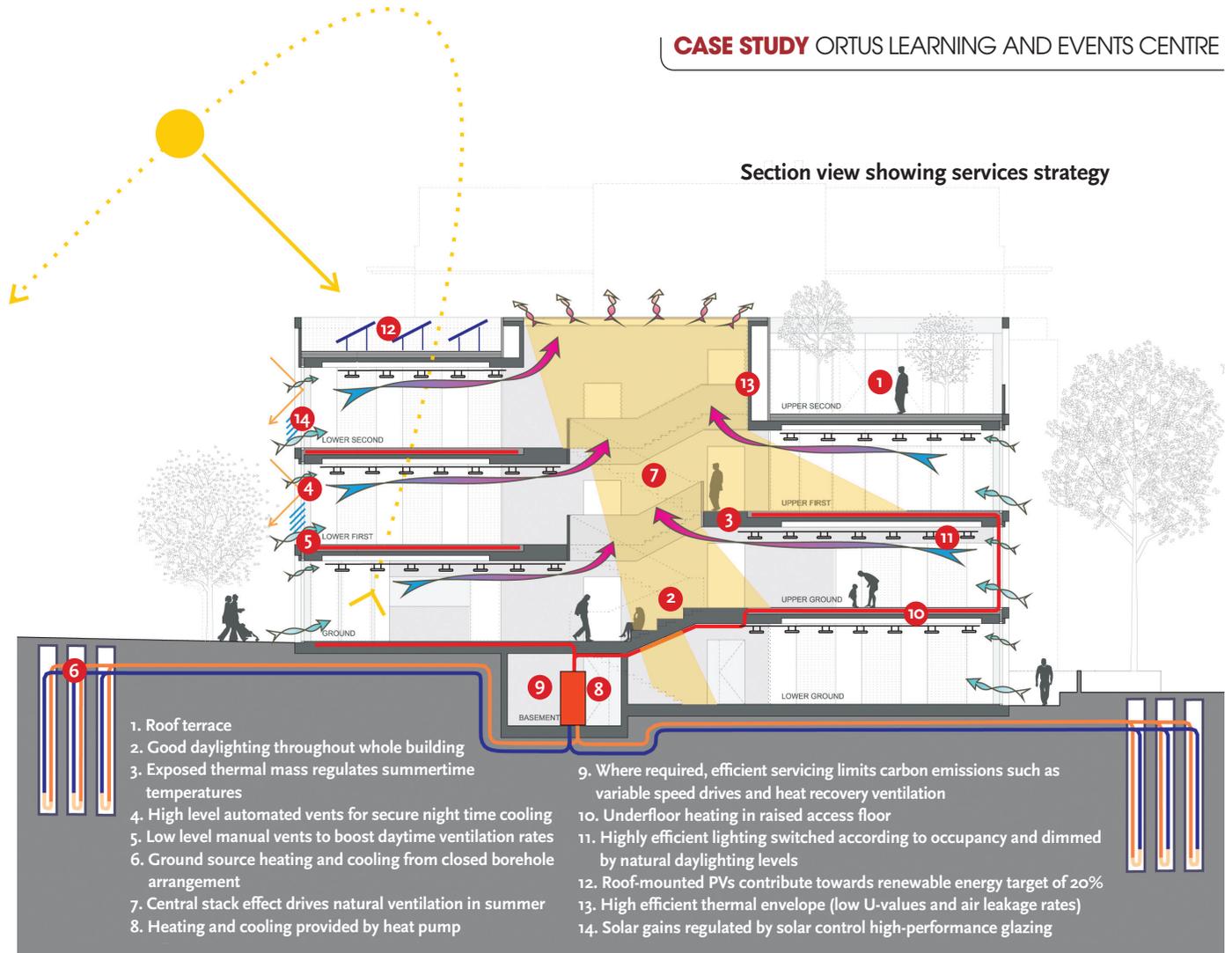
Ortus has now been in operation over one winter and summer. Maidment says the GSHP has worked well during that time achieving a COP of 3.8, slightly better than expected. The COP was calculated by measuring the complete electrical demand including all circulation pumps, an element that often gets missed says Maidment.

Skelly and Couch has been monitoring energy during the defects period, and may be employed on a soft landings strategy when this comes to an end. During that time it has worked with the control contractor to come up with winter and summer settings. ‘The settings are very different,’ says Maidment. The period when you go from winter to summer is quite short, which I was surprised by. As soon as you have a few hot days you need to change over.

Maidment says it has taken a little while to get the meters to read properly, but says figures from the spring and summer were looking very good and approaching the design figures. ‘We are looking at huge savings on the artificial light because the building is very well daylight, and as we move into the summer we are seeing the benefits of the passive cooling strategy.’

The open book partnering agreement meant that everyone knew what budget was being worked to, so if any element was coming in over budget, design teams looked at how they could value engineer costs elsewhere.

As a result the project came in ‘on budget, on time, and on quality,’ according to Cowdery and the Maudsley now has a world-class building to match its reputation. **CJ**



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