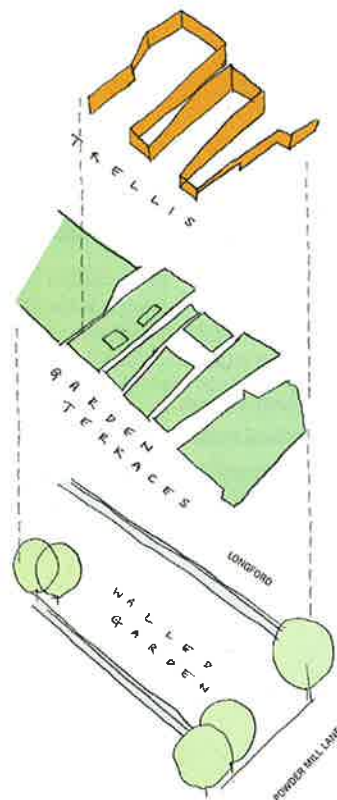


# PRIMARY COLOURS

Sarah Wigglesworth Architects is using a timber roof structure and brightly coloured detailing to create a vibrant and accessible children's centre, says *Sutherland Lyall*

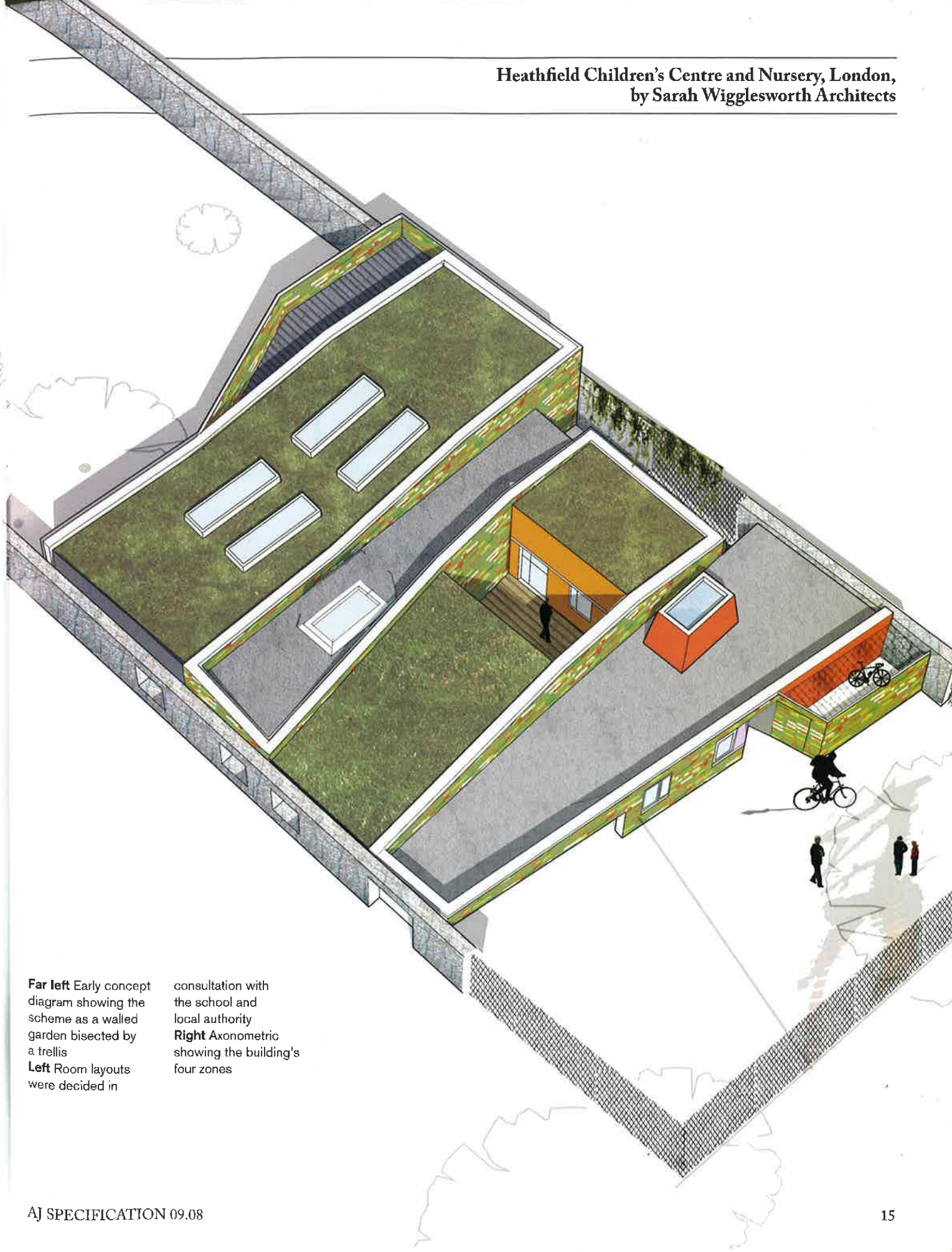


Sarah Wigglesworth Architects won Heathfield Children's Centre and Nursery following a competitive interview. The project is a new building which replaces below-standard nursery accommodation at Heathfield Primary School in Richmond-upon-Thames, London, and adds adult-education and children's day-care facilities.

The building's diagram is simple enough: four zones, each with its own flat roof, flanked by gabion walls with painted timber boarding above head height. Closest to the existing school, the north zone houses nursery-school accommodation, including a deep cantilevered canopy. The second zone contains services and lavatories, while the third zone is the local-authority creche, which incorporates two open courtyards for light and natural ventilation. The fourth zone is a covered play space for the creche, alongside adult-education accommodation. The third and fourth zones have their own entrance from the street across an enclosed courtyard. The creche will be used during the day and the adult-education facilities in the evening, so there will be some doubling up of uses.

External transverse walls are either timber or lime plaster. Two of the zones, the first and the third, have brown roofs: site rubble used as the growing medium for unseeded planting.

Project architect George Legg explains the structure: 'The construction is heavy-weight blockwork lined with insulation. For ecological reasons we started out with a timber-frame building. But the M&E consultant wanted a lot of thermal mass. We looked at phase-change materials, but they were expensive and slightly more "techie" than we wanted. And we looked >>

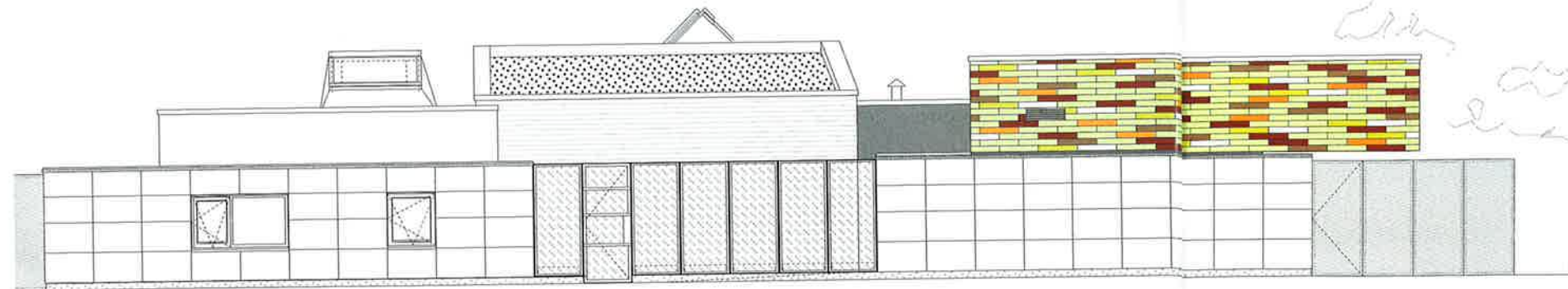


**Far left** Early concept diagram showing the scheme as a walled garden bisected by a trellis  
**Left** Room layouts were decided in

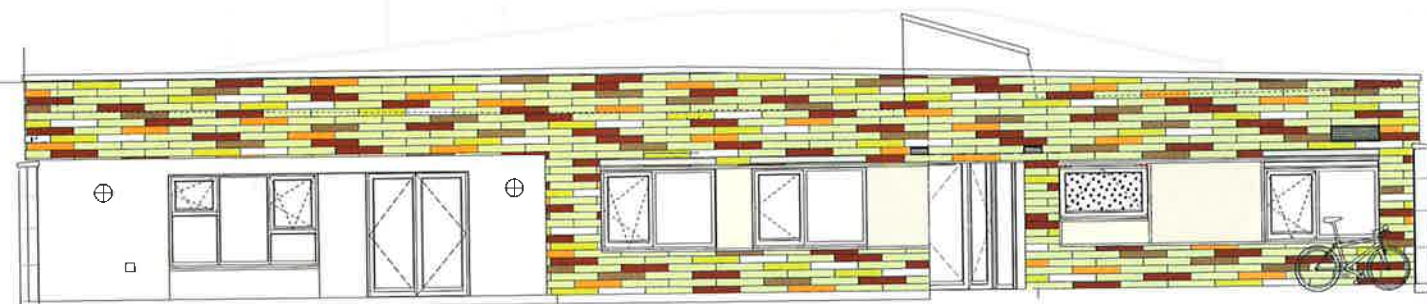
consultation with the school and local authority  
**Right** Axonometric showing the building's four zones



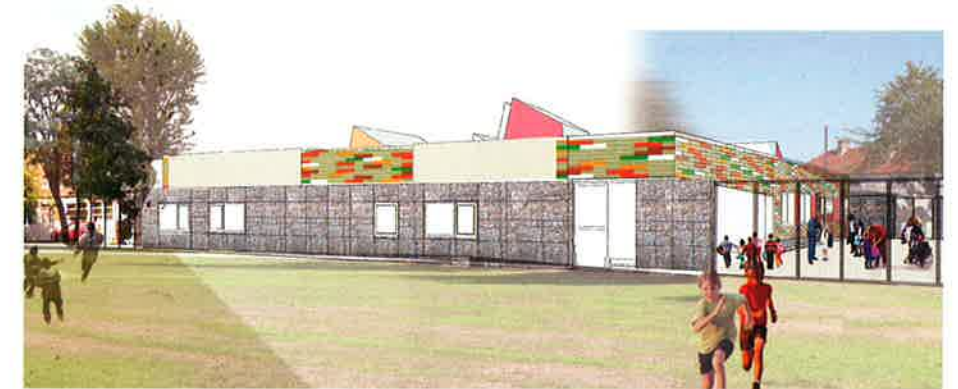
Bottom View of the children's centre from Powder Mill Lane  
Far right View north  
Far right, below View south



South-east elevation



South-west elevation



*'The M&E contractors have kept with the spirit of the design'*

at thin-bed clay blocks but they had insufficient thermal mass for this project. So it was blockwork.' Legg specified Topcrete Standard solid concrete blocks, which are unusually dense and, thus, smaller (290mm) than usual.

Legg adds: 'When we set ourselves a challenge to not use any [structural] steelwork, our structural engineer [Price & Myers] thought we were mad.' But this was achieved by using closely spaced Finnjoist beams, which sit on top of the massive walls to support the four roofs and cantilevered nursery canopy. These beams, Kerto webs with timber flanges top and bottom, are 360mm deep and come from Finnforest. Their narrow, 300mm spacing, and the fact that they are continuous across the skylight openings, enables the all-timber nursery overhang.

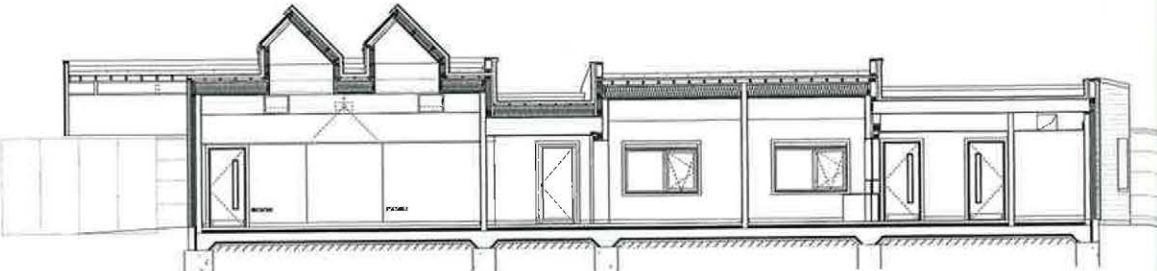
#### DESIGN AND THE CONTRACT

This was a JCT ICD 2005 contract, an intermediate contract with a contractor's design portion. 'This had been a straight intermediate contract, but at tender stage the contractor was asked to take on the M&E design,' says Legg. 'At the time, I was sceptical about contractors being asked to do a design portion. But here, the employer's conditions were quite stringent and our design was well developed. And the M&E contractors have been very good at keeping with the spirit of the design.'

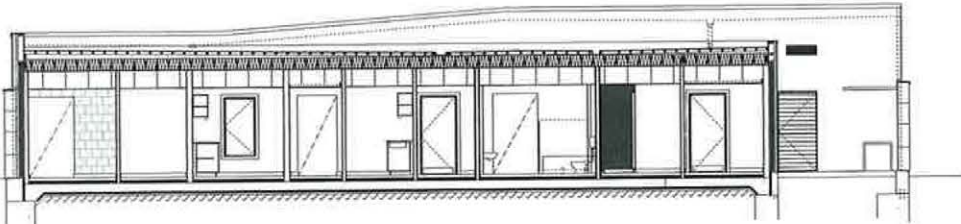
#### SPECIFYING FOR SUSTAINABILITY

Sarah Wigglesworth Architects has a reputation for sustainability and for specifying for it. Legg says: 'We tend to go in all guns >>

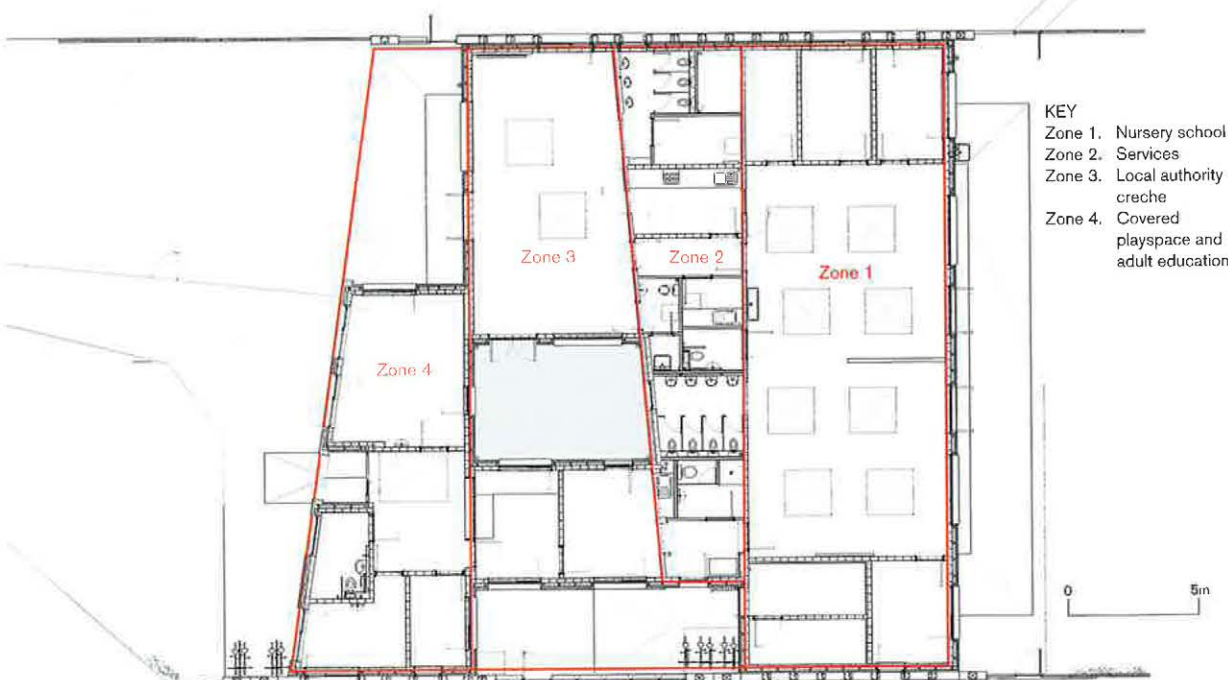




Section through all four zones



Section through the second zone



Plan of all accommodation

*'We tend to go in all guns blazing'*

blazing. At the start you aim for the highest standard, but, of course, the funds aren't infinite. So you have to start off high but you have to have a fallback plan.' Originally, in the cause of sustainability, Legg specified a night-time passive ventilation system. But, because the site is under the flight-path for Heathrow Airport, the building had to incorporate massive acoustic attenuation. And that meant a mechanical ventilation scheme.

Legg's team had a clear idea of what it wanted. For specialist elements the contrac-

tor had only a little scope to make contributions. 'Contractors have a lot of knowledge,' he explains. 'There is a tendency for architects to say, "we used it before". If they [Hilife Construction] thought there was a good reason, they stuck with what we suggested. But they did suggest other bits and pieces.'

Of the project so far, Legg says: 'We have been incredibly lucky. The project manager has been fantastic. He doesn't have a building background, but he has a very level head, and when problems come up he tries to work >>



*A brown roof is more ecological than sedum blankets'*

out how to work it through. So there's little adversarial stuff. And the contractor's site manager really cares about quality. Everybody has got on really well.'

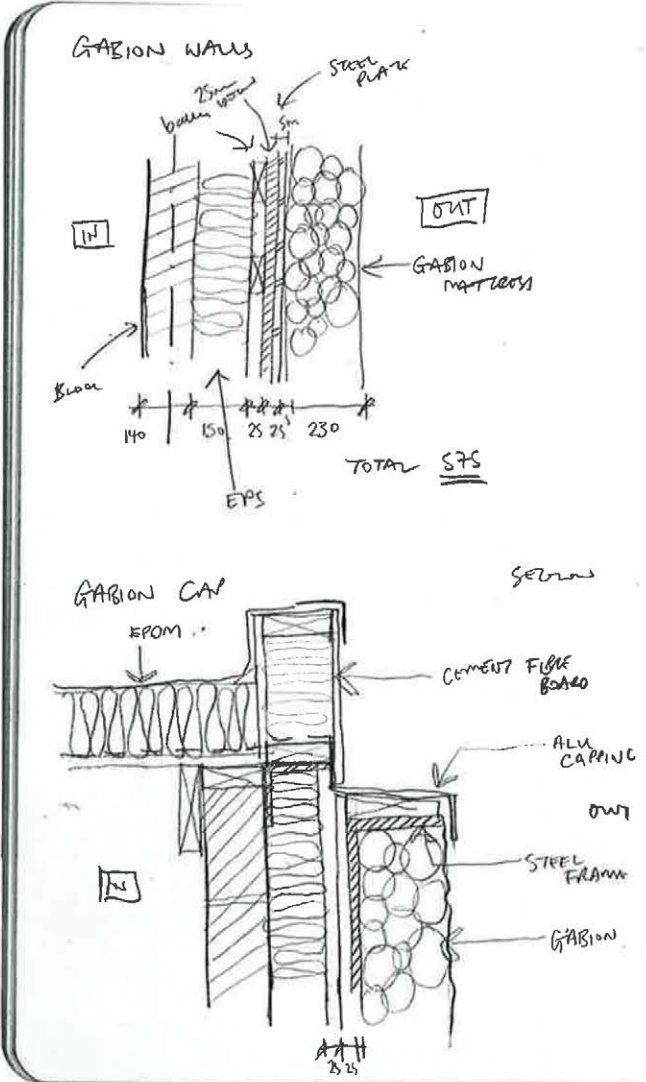
**FROM BOTTOM TO TOP**

'A brown roof is more ecological than sedum blankets, which you buy in,' says Legg. 'A brown roof involves taking the waste material from the old nursery's rubble and dirt. Crudely, you put down a matting layer [to protect the waterproof roof membrane], throw the rubble on the roof, and birds come along and all kinds of things grow.'

The roof is a single-layer Evalastic V EPDM membrane from ICB. Legg says: 'We used it on the Siobhan Davies Dance Studios [in Southwark, London]. ICB is very good with helping with the detailing. It is a single ply but a bit more naturally rubber than others.'

**STONE FORTIFICATION**

The gabions were specified as crushed recycled concrete. But it wasn't possible to get hold of recycled fill. 'We had some brought on site, but it was horrible brick and rubbish and we found the price included the rejected material,' explains Legg. 'At the last moment, we got stone. The trouble we had was that >>



Top left Stone gabion walls  
Top right The interior fit-out of the nursery in progress  
Right Sketches of gabion wall details and their resolution with the roof



the gabions had two tolerances: the steel was millimetres and the rock lots. But we've sorted it out and everyone is happy.'

#### COLOUR ME HAPPY

Of the distinctive coloured boarding used above the gabions and on the south elevation, Legg says: 'We could have used composite boards but we had set our hearts on a [painted] timber finish and the client went with us. The coloured accoya timber boards from Vincent Timber, who do quite specialist timber products, are 800mm long and factory-painted in 10 colours arranged in a repeating pattern.'

Limetec external cement-free lime render from Lime Technology is laid straight on to Heraklith sheathing board, a kind of wood wool with a textured surface.

The ceiling boards are almost exactly the same material as the weatherproofing layer base for the external render, and are from the same manufacturer, Heraklith. They are 25mm thick and are screwed to a layer of plywood fixed to the bottom of the roof beams. Legg says: 'We did look into other options but these were recommended by BDP's acousticians.'

Legg's original plan was to have different floor surfaces in each of the four zones. But, he says: 'The [school's] head was adamant that floors should be easily cleaned and that they should all be the same. She said, "If we need soft spaces we will buy rugs".' So he selected Marmoleum from Forbo Flooring in two colours: a bright canary yellow, and grey for the services areas and entrance. ■

**Client** Richmond-upon-Thames Council

**Architect** Sarah Wigglesworth Architects: Sarah Wigglesworth, George Legg, Eleanor Brough

**Main contractor** Hillife Construction

**Quantity surveyor** Dobson White Boulcott

**Structural engineer** Price & Myers

**M&E engineer** XCO2 Energy

**Electrical engineer** Edison Swan Engineering

**Mechanical engineer** Gatwick Park Mechanical Services

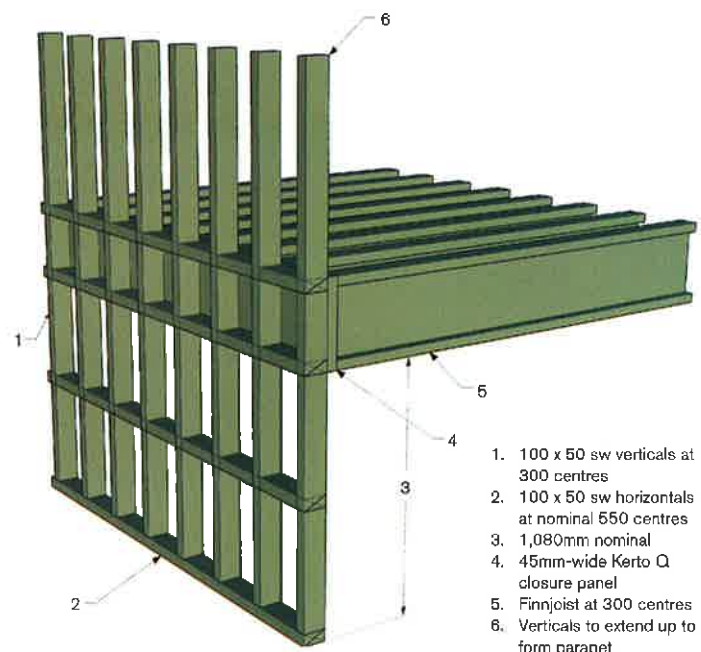
**Form of contract** JCT ICD 2005

**Gross external floor area** 448m<sup>2</sup>

**Total cost** £1.13 million

**Start on site** October 2007

**Completion on site** October 2008



*'We could have used composite boards but we had our hearts set on a timber finish'*



**Far left and centre top** Steelwork for gabion walls  
**Centre** Rooflights under construction  
**Above** Timber canopy frame detail  
**Left** Timber cladding and brown roof to the nursery zone



MATERIALS BOARD SARAH WIGGLESWORTH ARCHITECTS

ITEM	DETAILS
01.	NorDan composite timber and aluminium-faced windows. <a href="http://www.nordan.co.uk">www.nordan.co.uk</a> Rational and Scandinavian Timber windows were considered, but NorDan's have a low-maintenance exterior with the preferred timber finish to interior
02.	Factory-sprayed accoya timber boarding supplied by Vincent Timber. <a href="http://www.vincenttimber.co.uk">www.vincenttimber.co.uk</a> Alternatives included Cape Cod timber and western red cedar, but accoya has an excellent matt finish. Boards can be pre-cut off site to specified size
03.	Limetec external lime render by Lime Technology. <a href="http://www.limetechnology.co.uk">www.limetechnology.co.uk</a> This has no cement content, giving a good eco-rating
04.	Finnjoist timber beams to roof structure by Finnforest UK. <a href="http://www.finnforest.co.uk">www.finnforest.co.uk</a> Allowed us to achieve long spans. Cantilevered in timber without the need for any steelwork
05.	Herakustik Star wood-wool acoustic panels in a concealed ceiling grid by Skanda. <a href="http://www.skanda-uk.com">www.skanda-uk.com</a> Also considered plasterboard ceilings with suspended acoustic panels, but these panels provided a low-cost way of achieving the desired levels of acoustic absorption in the space. They have an interesting surface finish
06.	Armitage Venesta washroom systems laminate to WC panels. <a href="http://www.armitage-venesta.co.uk">www.armitage-venesta.co.uk</a> These come in simple, bright colours and are a low-cost solution
07.	Quarried limestone gabion walls with Zincalu gabion cages supplied by Betafence. <a href="http://www.gabionsolutions.com">www.gabionsolutions.com</a> We found that trying to find a suitably sized, recycled crushed concrete fill was very difficult and highly dependent on what was available at the time. Limestone was a good alternative
08 & 09.	Marmoleum dual no. 795 flooring by Forbo Flooring. <a href="http://www.forbo-flooring.co.uk">www.forbo-flooring.co.uk</a> Simple and cost-effective floor finish with a hard-wearing finish
10.	Lime green reception-counter laminate by Formica. <a href="http://www.formica.com">www.formica.com</a> Durable and brightly coloured
11.	Ultra high gloss kitchen cupboard doors by Price Kitchens. <a href="http://www.pricekitchens.co.uk">www.pricekitchens.co.uk</a> Good quality doors with a simple finish
12.	PRS79 kitchen tiles in lime by Johnson Tiles. <a href="http://www.johnson-tiles.com">www.johnson-tiles.com</a> These tiles are low cost and have a brightly coloured matt finish
13.	Duropol brushed aluminium kitchen counter supplied by Price Kitchens Good quality with a simple finish

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