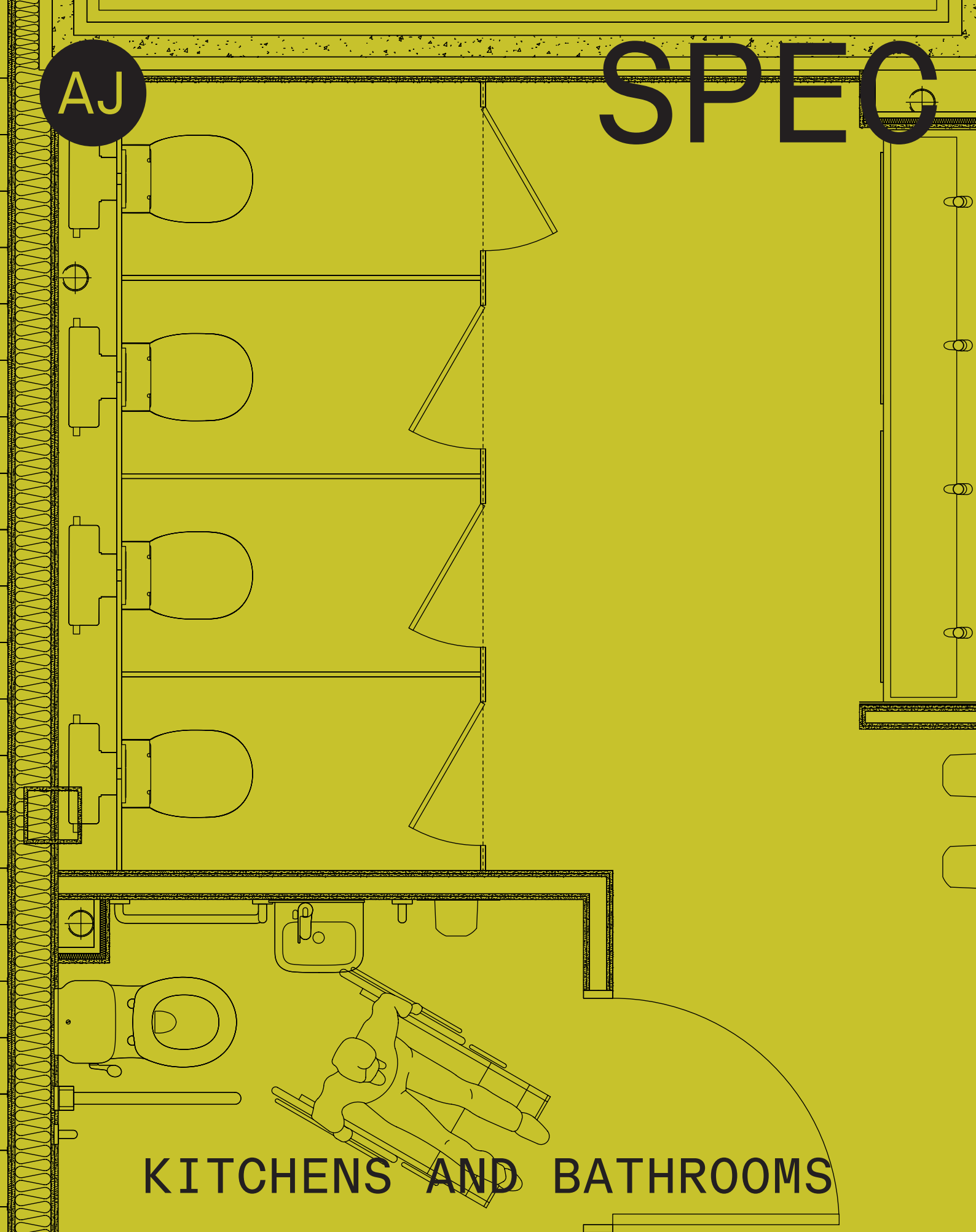


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SPEC



KITCHENS AND BATHROOMS



**IN PRACTICE**

## Down on the farm

Nissen Richards Studio's conversion of barns on a Kent farmstead into homes threw up challenges ranging from methane mitigation to potting shed design. *Rob Wilson* talks to founding director *Jim Richards* about the complexities of the environmentally sensitive project



Barn 9

CAWILLIA ULLIOA



Barn 1 elevation



Barn 1 interior

While Nissen Richards Studio is well-known for exhibition design, with clients ranging from the Courtauld and British Museum in London to the Munch Museum in Oslo (and its recently announced appointment by the RIBA to work on the House of Architecture), the practice has also built up an impressive roster of transformative retrofit projects. Led by Jim Richards, one of the founding directors, these have notably included Printworks in East London – which turned a newspaper printing press building into a 6,000-capacity nightclub and events venue. Nissen Richards Studio's latest retrofit scheme, Hartdene Barns, proved to be a new departure for the practice, however. It involved the conversion of a series of mainly steel-framed agricultural sheds on a former dairy farm in Kent into net-zero homes – an unusual project for the studio and one 'which threw up a lot of new challenges', says Richards. 'But,' he adds, 'we learnt a huge amount in the process.'

The site was formerly the centre of a dairy farm sitting in 40 acres of land on the Kent-Sussex border within an Area of Outstanding Natural Beauty close to the villages of Hartfield and Cowden.

The client, Q New Homes, which also acted as contractor on the project, had previously worked with Nissen Richards on residential retrofit schemes in London. But this was their first in a rural setting.

'It's a very dense clay kind of soil round there, so the site was very, very muddy,' recalls Richards.

The scheme developed an existing planning consent for the site. It is located near Sevenoaks, where local planning policy governing the re-use of agricultural buildings requires most of the existing structure to be retained.

'It was a good consent overall,' says Richards. 'The layout was derived from the original farm buildings and the farmer had just added sheds as needed so, while it is not planned development, it's perfect in an organic way.'

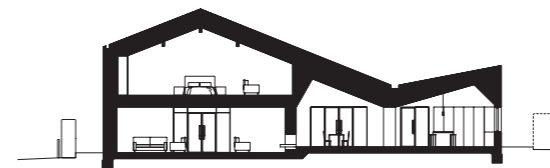
'We kept this arrangement, which has a kind of communal centre, just knocking down one or two smaller buildings to tidy it up a bit.'

The volumes were broken down further in the build by varying the patterning of the cladding boards.

The practice also reworked the consented layouts, which Richards describes as being 'odd and non-domestic in scale'. 'There was a shower-room shown on the plans that my colleague Andrea said her flat would fit into,' he recalls.

The key planning requirement was to retain 80 per cent of the original structure, as well as preserving the profiles of the different

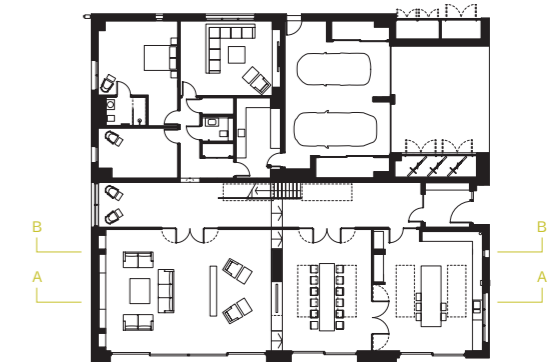
Section A-A (Barn 1)



Section B-B (Barn 1)



Ground floor plan (Barn 1)



farm buildings. These included distinctive round-gabled Dutch barns. However, their structural frames – primarily steel – were only sized for agricultural barns and in poor condition.

'I went on an initial site visit with structural engineer Jonathan Darnell of Price & Myers. He came out of one barn warning me not to go in; it was too dangerous,' says Richards. 'Half the columns were not even touching the ground. The farmer had obviously driven a tractor into another, while a third had a load of telegraph poles propping it up. And everything was covered in asbestos sheeting.'

After looking at it, threading new structure in-between the old proved too complex. Richards suggested they look at forming a new structural skin using either structural insulated panels (SIPs) or a fabricated panel system. 'Basically forming a kind of overlay on the outside which was structural in itself,' he explains.

Various solutions were looked at for this exoskeleton. The preference was for a timber-based SIPs system manufactured in Scotland. 'It was agreed that the SIPs approach was a better one than other timber framing panel systems, because of the accuracies of off-site fabrication and speed of erection,' says Richards.

Existing foundations were retained but the new exoskeleton required concrete upstands to sit the panels on. These were formed using low-carbon concrete with a large percentage of aggregate recycled from the site's original hard cover. This had had to be broken up anyway to lay new gas membranes to deal with methane

contamination across the site from cow manure. Over the top of this, new concrete slabs were then poured. 'Everything stayed on site as much as possible, although, obviously, all the asbestos sheeting had to go off to a licensed tip,' says Richards.

The use of a highly insulated and airtight SIPs system has been a major contributory factor in helping make the homes net-zero in operation, supported by the use of MVHR, air source heat pumps and photovoltaic panels.

However, while the scheme was always intended to be highly energy-efficient, net-zero wasn't originally the goal, Richards says. The push for net-zero actually arose from a condition of the funding – raised from Atelier Finance – which stipulated that the scheme should meet the RIBA's Climate Challenge criteria.

'The funding offered an incentive that, if you successfully designed to meet the RIBA Climate Challenge 2025, you would be entitled to a 1.25 per cent rebate on the overpayment or interest – with a larger incentive if you hit the RIBA 2030 Climate Challenge,' he explains. 'But there was no way that we were going to hit the water recycling target for the latter, as we had already done a lot of the work in the ground for the civils, so hadn't built in the level of water recycling needed – something like 65 litres per person per day.'

The landscaping for the scheme took advantage of an existing pond on the site to provide water attenuation. 'Because of the clay, you couldn't actually use SuDS, as water wouldn't percolate through, so



Barns 5, 6 and 7

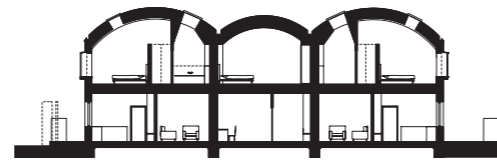
GARETH GARDNER



The pond

CAMILLA ULLOA

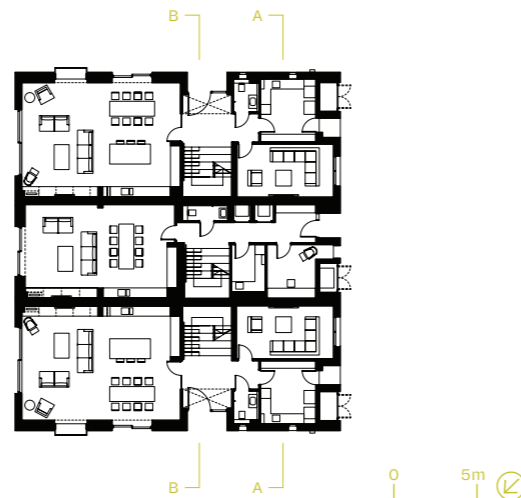
Section A-A (Barns 5, 6 and 7)



Section B-B (Barns 5, 6 and 7)



Ground floor plan (Barns 5, 6 and 7)



Barn 9 elevation

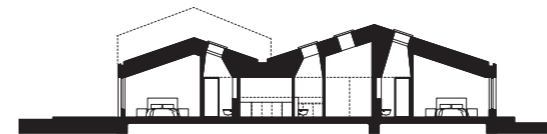


CAMILLA ULLOA

Section A-A (Barn 9)



Section B-B (Barn 9)

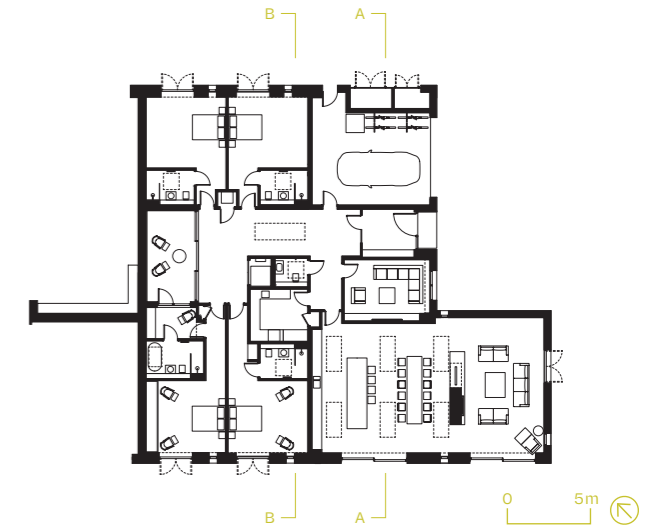


Individual allotment allocations per barn



CAMILLA ULLOA

Ground floor plan (Barn 9)



we had to capture it and for this used the existing pond, which had originally been formed by a Second World War bomb.'

The area around the pond is a communal area but the scheme has also sought to build a sense of community by means of a series of allotments and potting sheds. 'We basically gave each house a 5 x 10m patch of land and a potting shed to put tools in, with a little built-in bench you can sit on outside, a window and water butts at the back,' says Richards.

The sheds are like mini-me versions of the houses: clad in charred boarding. 'We used all the off-cuts from the houses for the cladding,' Richards says.

The allotments themselves are managed by a company called Roots Allotments. 'They offered a turnkey solution: they plant the beds and you can choose to maintain your patch yourself or paying £30 a month gets you somebody to come and maintain it.'

The houses' architecture nicely incorporates features thrown up by the push for net-zero into its design. This is seen particularly in the thickness of the super-insulated roof and ceilings. 'Getting the insulation value we needed from the thermal modelling meant we had to add about 350mm of additional Rockwool insulation to the roof,' says Richards.

'It was so thick that we couldn't find any screws that went through. But below this we have taken advantage of this to sculpt the ceilings to suit the rooms below: not necessarily always forming them to the

roof but angling them off. We had good fun playing with the sections.'

The deep rooflight reveals that this occasioned, as well as their positioning, was played with, too. Richards points out a rooflight sitting directly above a shower: 'You feel like you are having a shower under the sky.'

This play of light and shade continues in the planning of the interiors more generally. 'We tried, where possible, to have long vistas, with a big window at the end. The living areas are filled with light, but these are made to contrast with darker back-of-house areas, rather than the whole thing being full of glass.'

Lightness and contrast continue into the specifying of the interior finishes, in particular the kitchens and bathrooms, where Richards points to the hierarchy of colours. 'In the downstairs WC you have a green tile. And then your master suite has the grey, and your secondary en suites are all-white. And we used a finger detailing on the tiling and a patterning of bigger and smaller tiles.'

The kitchens are also two-tone. Other details include slatted and open stairs, with tactile handrails and built-in joinery.

Overall, the scheme successfully riffs off the spirit of the original farm but balances this with ecological credentials elegantly incorporated into the architecture.

It's clearly a project that Richards and the practice have learnt a lot from. 'My car has still not quite recovered from the mud. My site boots certainly haven't,' he laughs.