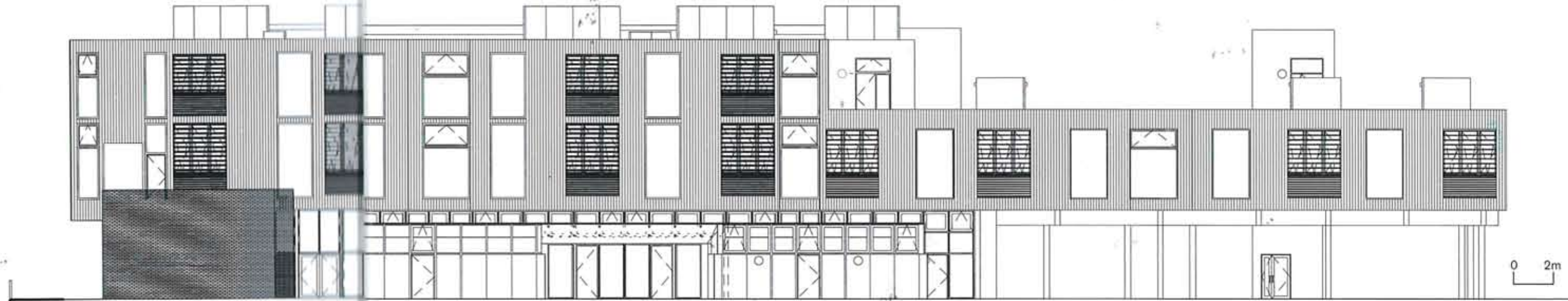
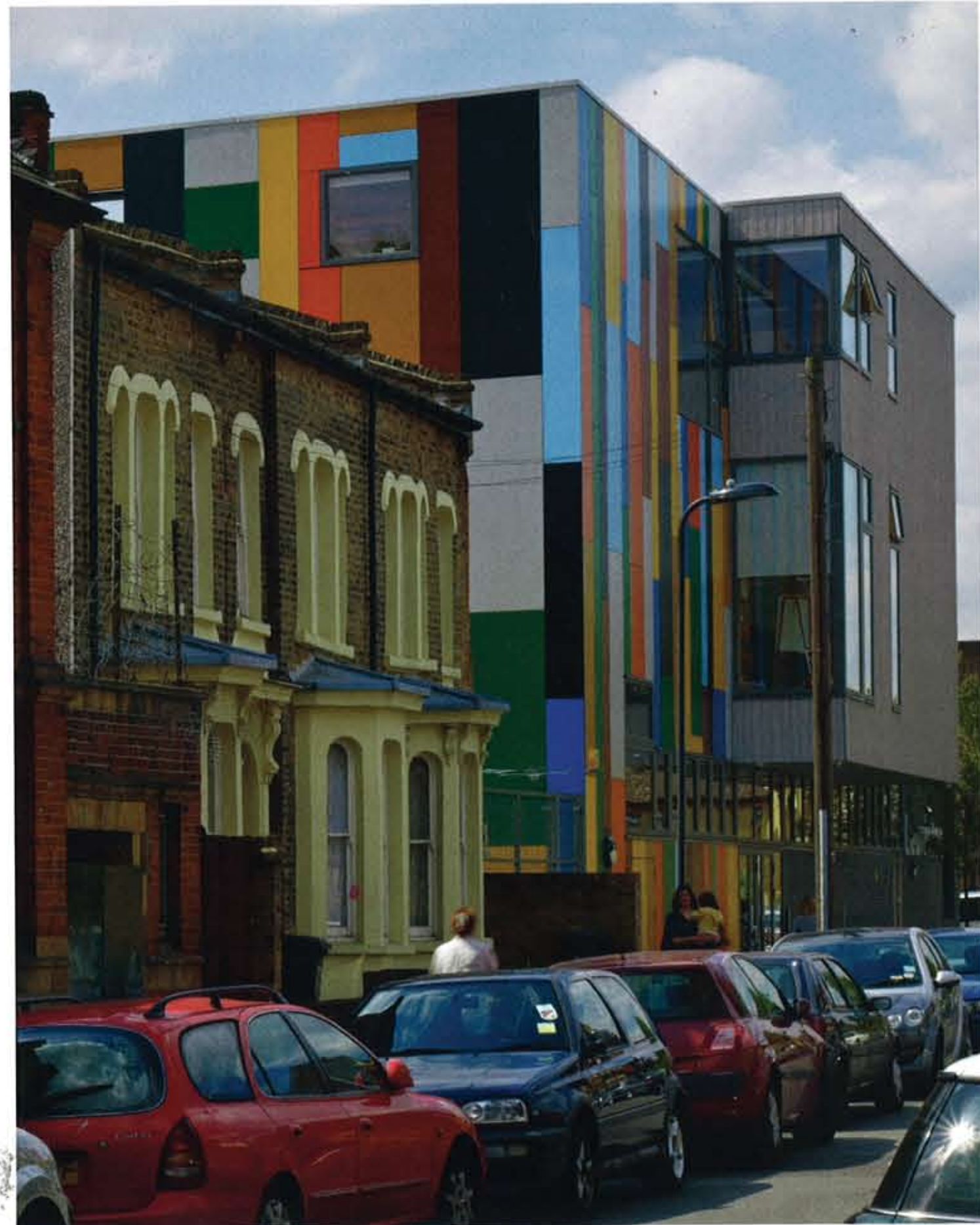
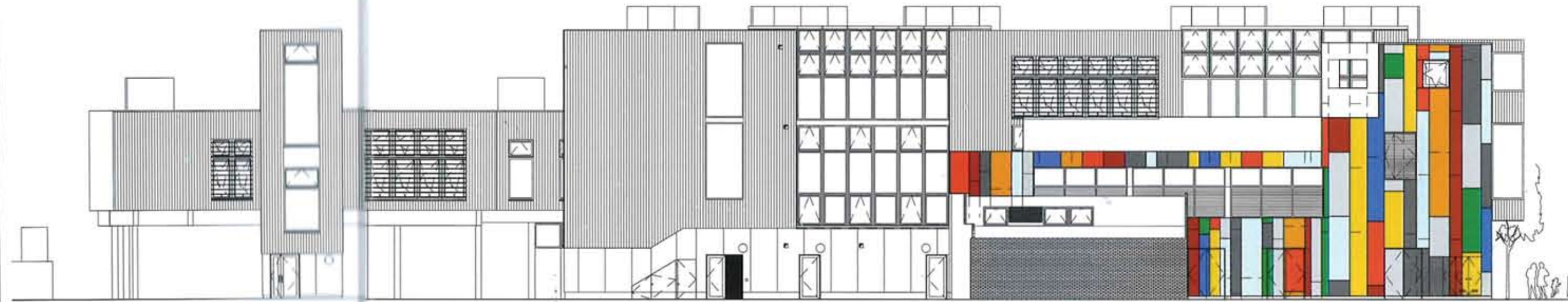


# Sustainability in Practice

**Lauriston School Meadowcroft** Griffin's new primary delivers an education in ecological values by letting the pupils monitor energy use, writes *Peter Blundell Jones*. Photography by *Tim Soar*



West elevation



East elevation

It all begins with a coat of many colours, exploiting the full spectrum of available cladding shades. Is it too much? Well, it is certainly lively and memorable, giving the east London school an appropriately strong presence on the street when its earlier incarnation had been invisible. What was the architects' colour theory? They didn't actually do it: the concept was developed by the school in collaboration with artist Liam Gillick, and the architects are happy, deferring to his sensibility and enjoying it as a piece of public art. This is just one manifestation of what turns out to be a deeply collaborative work with multiple authors, including the users.

Lauriston has long been an exceptional primary school, designated repeatedly by Ofsted as 'outstanding' and with a lively and

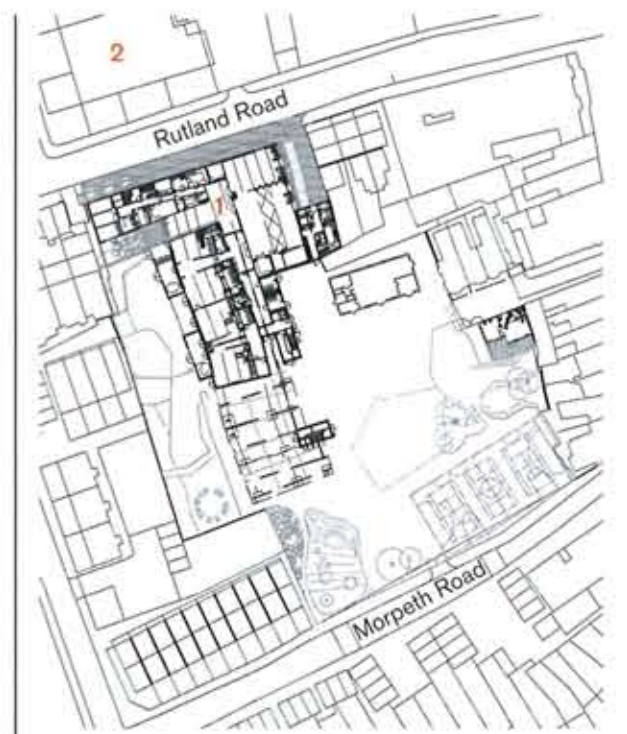
creative staff. In the 1970s it moved from its Victorian buildings to a single-storey, flat-roofed, open-plan box belonging to the 'schools without walls' phase of British school building, but it had become increasingly cramped and was in poor condition. Success led to doubling in size and the reward of a rebuild, an opportunity for redefinition not to be wasted.

Meadowcroft Griffin Architects was commissioned by competitive interview, and the fact that they had not designed a whole new school before appealed to the clients, the London Borough of Hackney. The architects spent the best part of two months with the staff and children – seeing how things were done, making exploratory projects, discussing needs and desires – as part of an explicit intention to make the planning and

building experience an education in ecological values. An initiative called Sustainability Now involved them in recycling, diverting rainwater into butts for watering plants and setting up a wormery. Another aspect was consciousness of site and locality. Historical studies of the area revealed that there had been a specialist culture of watercress, so the children undertook a project, first growing, then eating it. There were discussions about the school's activities and equipment: for example, an artist working with the school remarked on the limitations posed by small sinks, so the new building has huge, bath-like sinks. The change of building was followed by the curriculum in numerous ways, which the architects call 'micro-consultation'.

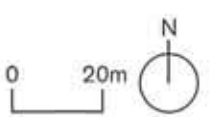
Given the school's radically open-plan history, there were many >>

**Left** The colourful exterior cladding is by artist Liam Gillick, rather than the architects



Site plan

1. Lauriston Primary School
2. Original Victorian school





conversations about kinds of space, but no reversion to full compartmentation; rather, a provision for variable enclosure, allowing a choice between isolation and collaboration. The architects came up with the idea of a wider range of spaces than before, varying from intimate nooks to which tiny groups could retreat, to the giant embrace of the double hall. The animation of street-like spaces as the main distributors, always with exhibited work, sometimes with active teaching, has eliminated sterile corridors in favour of a promenade that unfolds naturally.

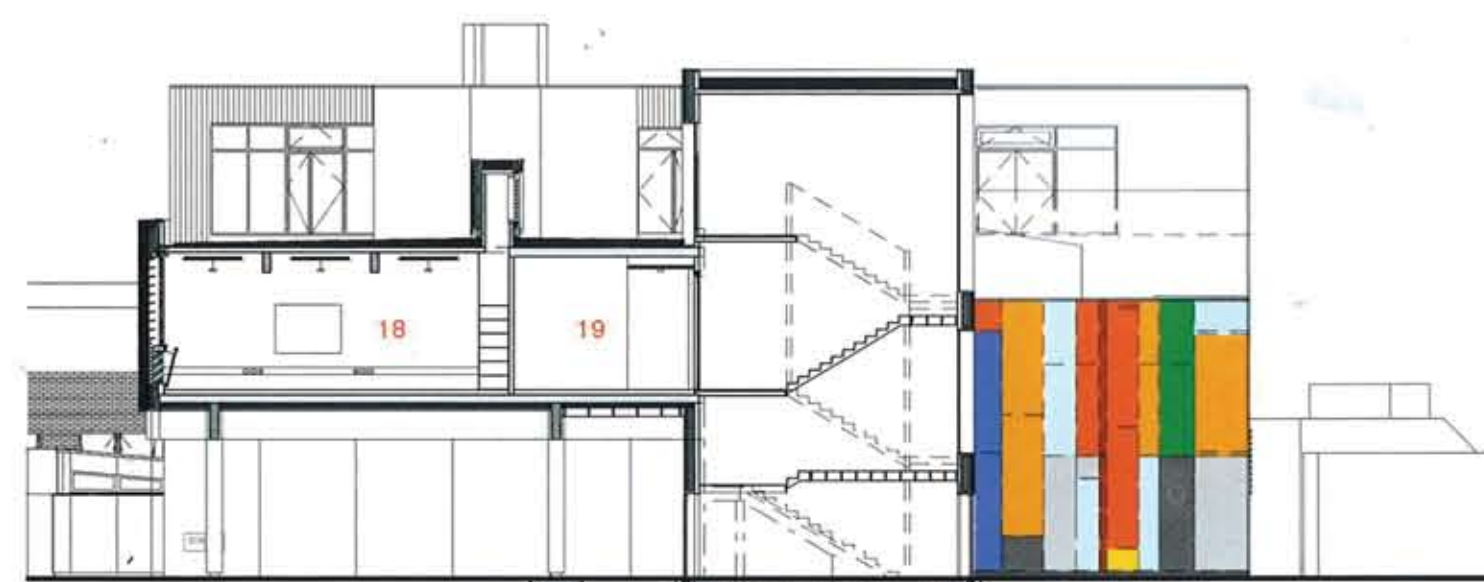
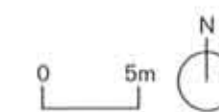
The project's greatest complication was the need for continuity: teaching was going on in the old building at the centre of the site while the new one was built around it, but this allowed the children to observe building progress every day. To maintain faith in a long process, early changes had to be seen and took the form of a new playground – a blue climbing hill and a red-posted grove – in collaboration with landscape architects Latz + Partner. In contrast to the 1970s habit of plonking objects in pools of space, Meadowcroft Griffin has respected the inherited street pattern and made best use of spaces between buildings, gathering space for the much-needed playground as well as creating small courts for local views.

In plan, the school starts to the north with the administrative wing following the public road, divided by the main entrance from the double hall. A tapered internal street runs southwards from here as the universal link, offering glimpses of galleries above while daylight pours down from the second-floor roof. Without this spine and its visual promises the school would be unthinkable, and it also acts as a lung, ventilating and lighting all levels, with extracts at the top. Off to



Ground-floor plan

First-floor plan



Section

- |                  |                       |                          |
|------------------|-----------------------|--------------------------|
| 1. Main entrance | 8. Kitchen            | 15. Environmental garden |
| 2. Lobby         | 9. Storage            | 16. Playdeck             |
| 3. Office        | 10. WC                | 17. Plant                |
| 4. Library       | 11. Cloakroom         | 18. Classroom            |
| 5. Art foyer     | 12. Buffer spaces     | 19. Circulation          |
| 6. Main hall     | 13. Reception         | 20. Activity spaces      |
| 7. Courtyard     | 14. Covered play area |                          |



Left A vertical internal street through the centre of the plan provides visual links, light and ventilation

the right is the classroom block for the youngest children on the ground floor, which opens into a play courtyard via buffer spaces as wind-lobbies, as in the previous building the constant in-out movement of this age group had caused severe heat loss. These buffers also serve as spaces for semi-external teaching. Older classes lie directly above in three clusters within a linear timber-clad 'treehouse' facing west. Classrooms can be used singly or in pairs, and have WCs and ancillary spaces. On the middle floor a second classroom cluster is added to the south, with approach staircases across the way to the east, the access areas again street-like and usable for teaching. It helps that the classrooms swing in and out in plan, both to produce the taper of the ground floor street and the widening centre-like activity nodes above. The southern classroom block stands on columns, covering an external play area for rainy breaktimes, though the relentless tarmac makes this, at present, less inviting than it could be.

Construction throughout is mass cross-laminated timber, an Austrian extension of glulam (KLH) involving multiple layers of softwood in prefabricated panels that can span substantial lengths to serve as roof or floor. Despite the disadvantage of long travel – why not produce it in Wales or Scotland? – it is a highly sustainable material involving 920 tonnes of sequestered carbon, and is a permitted fire-risk because panel thicknesses are sized to allow for >>

Shutters are opened by pupils appointed as 'air monitors'



charring. It also meant quick, relatively clean assembly, an important consideration in this continuously occupied site. Wood adds insulation, but the building also carries the usual thick fur coat under its external cladding. The efficacy of the cladding approach was tested in the rebuilt caretaker's house at the beginning of the project, which achieves almost PassivHaus standards, needing hardly any heating. But in normal operation the school has been found less effective, mainly because of constant movement in and out through doors and the air exchange

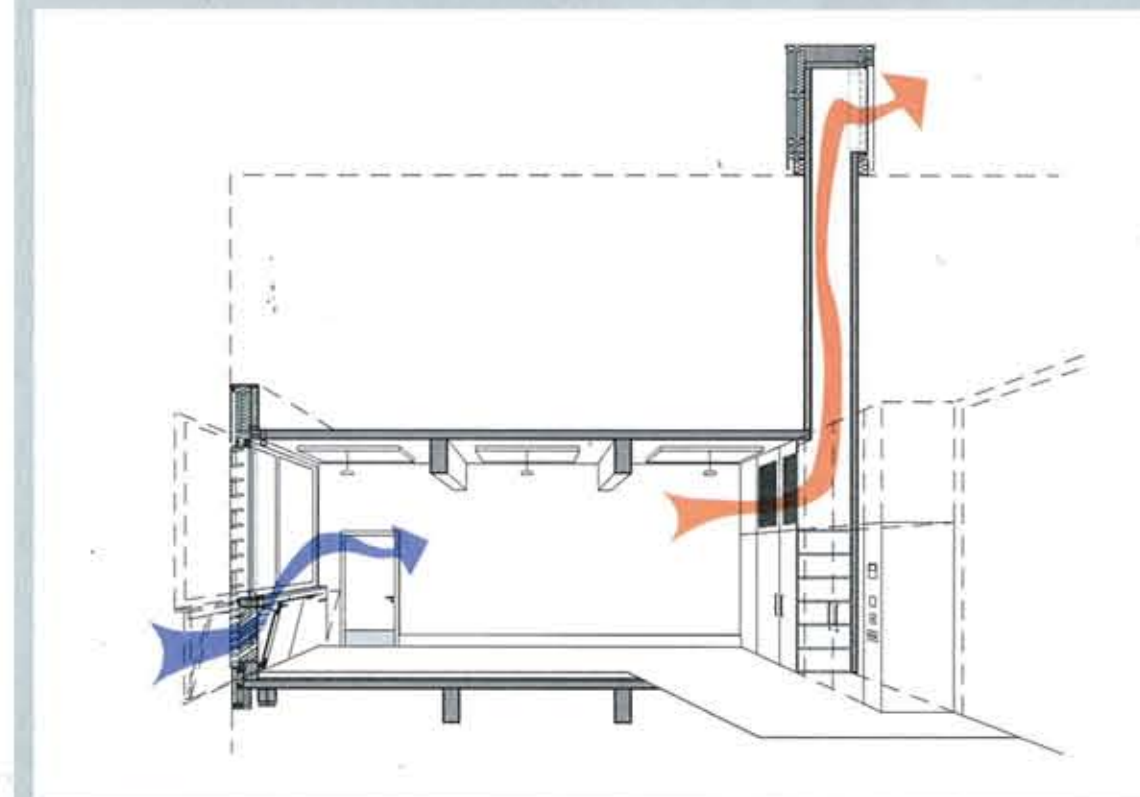
inevitably produced, despite measures like the previously mentioned buffers. Heating is by underfloor pipes, partly fed by a ground-source heat pump with a 100-metre sump, but also with a conventional back up. When the building is in use the children warm it, and ventilation becomes the problem, exacerbated by build-up of carbon dioxide. This is monitored electronically with a 'traffic light' system (green for normal, amber for threshold, red for excess), and effective shutters on the west side in the form of three large hinged panels are opened by children appointed as

**Opposite, clockwise from top** View of the school from across the playground; Cross-laminated timber from Austria is used throughout; The southern classroom block covers an outdoor play area for rainy days

'air monitors', performing this duty with glee. This strategy, grant-aided by the Zero Carbon Fund, both empowers the user and encourages understanding and responsibility for environmental control. Louvred and meshed on the outside, the side vents contain effective acoustic baffles to reduce noise, and operate in combination with rooftop extract chimneys to the east controlled by motorised shutters. Daylight is provided wherever possible, and ceiling heights of up to four metres combined with tall windows reduce dependence on electricity. Water usage has been restricted as far as possible by time-sensor taps, low-consumption fittings, and automatic shut-off in case of leaks. A separate source of cooled drinking water is supplied at every classroom sink.

But the most crucial aspects of this project are surely social. First, the engagement in the local context and participation of users in the process, so that life could continue without break, integrating the new buildings from the start; and second, the ecological lessons learned by the children in the course of building and using their school. ■

Classroom ventilation



Sustainability solutions are embedded in the physical learning environment to support an increased awareness of all users. Innovative, manual environmental control systems are designed to be activated and managed by the children. The classroom ventilation combines a multi-layered intake louvre on the external skin with chimneys in the depth of the plan for extract to high level. Traffic-light type CO<sub>2</sub> detectors in each room turn amber then red as the CO<sub>2</sub> levels approach the threshold which would impact on learning. On a rota basis children act as the CO<sub>2</sub> monitor to manually open louvres to provide acoustically attenuated intake air, and the high-level extracts. This low-tech solution was developed to avoid mechanical ventilation despite the external noise levels, while avoiding the more automated and higher cost proprietary systems. A grant was awarded by the Zero Carbon Fund as an exemplar prototype and has been written up as a nationwide case study, to be rolled out for other education projects, both new and refurbishment. It is currently being monitored by the children as a curriculum project to establish performance over the first few years of use.

Credits

**Start on site** July 2007  
**Completion** August 2010

**Gross internal floor area** 2,672m<sup>2</sup>  
**Form of contract** PPC 2000 Partnering  
**Total cost** £7.4 million  
**Cost per m<sup>2</sup>** £2,769  
**Client** The Learning Trust Hackney for the London Borough of Hackney  
**Architect** Meadowcroft Griffin Architects  
**Structural engineer** Price & Myers  
**M&E consultant** Atelier Ten  
**Quantity surveyor** Robert Martell & Partners  
**Landscape consultant** Latz + Partner  
**Acoustic consultant** Paul Gillieron  
**Fire engineering consultant** Kingfell Consulting  
**Project manager** Robert Martell & Partners  
**Main contractor** Neillcott Construction  
**CDM co-ordinator** Robert Martell & Partners  
**Approved building inspector** Approved Inspector Services  
**Estimated annual CO<sub>2</sub> emissions** 20.11kg/m<sup>2</sup>

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