Fringe benefits

Greenbuild looks at the indirect environmental consequences of using offsite construction methods for a school redevelopment project

Advocates for volumetric or modular construction methods have been keen to promote the inherent environmental advantages of using pre-fabricated products. Enhanced thermal efficiency and greatly reduced embodied energy and waste make a compelling case for selecting products that are manufactured offsite, especially for school buildings that can benefit from improved acoustic properties of volumetric design.

However, the more incidental advantages of building the structure offsite should not be overlooked, especially when looking at the holistic environmental impact. The reduction of pollution caused by minimising traffic and on-site activities provides tangible benefits to the immediate environment that are felt by the local community as well as making incremental contributions to the project's overall sustainability.

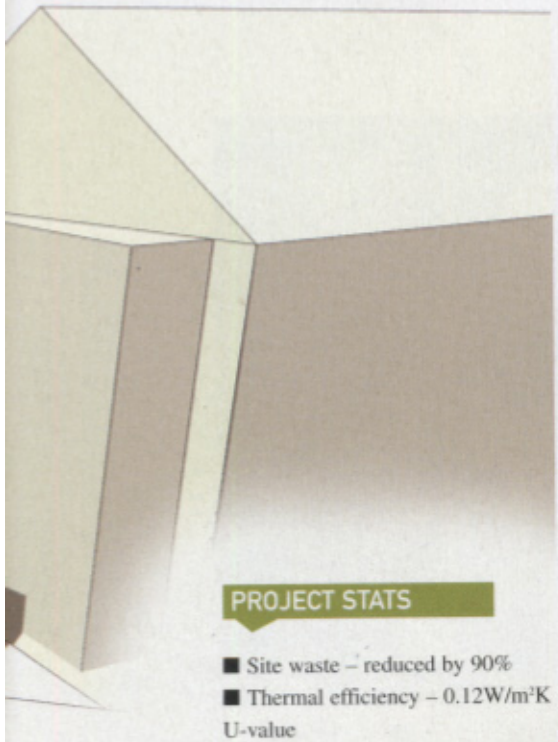
These indirect benefits have already had a significant influence to an on-going school development project in South London. In order to achieve plans to become a three-form entry school and accommodate an extra 210 pupils across all year groups, Sunnyhill Primary School in Streatham obtained funding in 2010 to build five additional classrooms, a new hall, a studio, and an administrative centre – as well as money to refurbish and remodel an existing Grade II-listed school building creating further teaching spaces. Lambeth Council appointed architects Shepheard Epstein Hunter to design the various elements of this project.

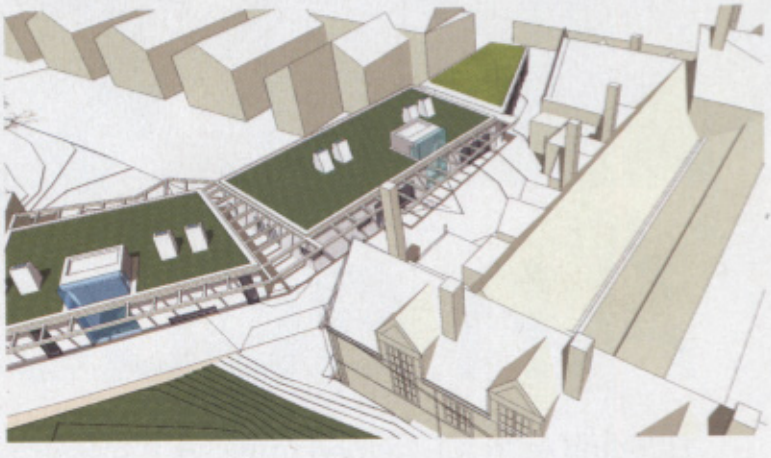
BUILD SCHEDULE

The first two of the additional classrooms, an extension to a recently completed children's centre building, will be completed in May 2011. The natural constraints on time and programme inherent to education projects require this extension to be ready for use at the start of the 2011 summer term. This will, in turn, enable the second phase to be complete by the 2012 summer term.

With such short windows available, the local authority decided to opt for offsite construction for the new classrooms:

"Schools expansions always involve tight planning and scheduling to accommodate the annual educational cycles with construction deadlines ideally built around term times and holiday periods, to mitigate impact on teaching and learning," explains Tom Walker, project manager for London borough of Lambeth's Building Schools for the Future (BSF) programme. "We realised that we could only achieve these deadlines by using offsite





PROJECT STATS

- Site waste – reduced by 90%
- Thermal efficiency – 0.12W/m²K U-value
- Embodied energy – 67% less than traditional build
- Materials – ODP rated zero insulation materials
- Acoustic Properties – 56Db

construction, which typically reduces traditional build programmes by up to 30%."

A competitive tender was won by a bid led by offsite construction specialists, HA Marks, who teamed-up with volumetric manufacturers Powerwall and environmental consultants Architype.

"The winning bid was particularly attractive because it reduced the programme from 25 weeks to 17 weeks, which enabled us to schedule the start of phase three to coincide with the commencement of the summer term," says Chweechen Lim of cost consultants Appleyards. "They were able to minimise the delivery and installation of the pre-fabricated structure to a two-day window and schedule it over a weekend to further reduce disruption and disturbance to the school and local residents."

SMOOTH PLANNING

This reduction in site-time for installation also had unexpected benefits in helping the council overcome local opposition to the planning application. "By removing the need for site traffic to deliver building materials, HA Marks was able to demonstrate significant reduction in local pollution that would be caused by site traffic as well as reduced dust and noise emissions," continues Tom Walker, "This minimisation of pollution will also contribute credits for Construction Site Impacts that will help us to achieve a BREEAM Very Good rating for the project."

Powerwall's design team were tasked with converting the architect's designs into a volumetric specification:

"We worked closely with Architype to translate their original specification into a modular assembly," says Powerwall's architectural manager, Paul McIntyre, who oversaw the three-week design phase. "Converting the specs into space frames while replicating the design of the adjacent classroom block was particularly challenging due to the existence of non-standard features such as a dual-pitched roof and two projecting facades."

The 14-day manufacturing stage started in mid-March and installation of the structure took place the second weekend in April. That left HA Marks a week to implement a second phase fit-out and connect its services just in time for the start the school's summer term on 26th April.

For futher information on offsite construction visit hamarks.co.uk or circle readerlink 040