

# Eco-eden in Angel Town

Closing the gap between what we know to be sensible and practical sustainable construction, and what Housing Associations and Local Authorities expect to build, is a big challenge for those of us working on social housing.

What a pleasure then to work with clients and other professionals who join us in achieving a green approach.

**Fran Bradshaw**  
reports ...





**B**oatemah Walk in Angell Town, London, represents a great achievement for LB Lambeth and is the result of concerted teamwork work by us at Anne Thorne Architects Partnership, the Sustainable Construction and Regeneration teams at Lambeth Council, and a willing contractor, Sandwood Construction. Following the refurbishment work by ATAP at Angell Town (see BFF spring 02) which resulted in halving resident's fuel bills, we expect to have significantly bettered these results with new housing facing onto Brixton Road.

Boatemah Walk also represents the other face of sustainability; Angell Town Estate was built in the 1970s with deck access blocks connected by high level bridges, with garages at ground level. It soon became the kind of estate taxi drivers wouldn't enter. Residents wanted ATAP appointed for our consultative method of working,

as well as for our green credentials, and worked closely with us throughout the design process, firstly in making decisions about demolition and rebuilding, and then in developing the design of the flats. Regeneration is also about employment and training, and the contract required contractors and subcontractors to use local labour during the construction phase. Consultants also offered training and employment to residents.

### **An end to the 'estate' feel**

The new building had an important function for the residents of Angell Town, as it replaced half of one of the 4 storey blocks which formed a fortress-like boundary to the old estate. The brief to architects working on the regeneration of Angell Town was that houses and flats, whether new or refurbished, should be reintegrated into the fabric of the city, and that the old idea of 'an estate' should go. Safety

was also a priority, and ensuring that pavements, entrances and stairs were both open and overlooked was an essential part of the design.

Boatemah Walk lines a new pedestrian route from central Brixton, opening up views to the new houses beyond. The walk was named after community leader Dora Boatemah, who campaigned tirelessly for the regeneration of the estate, and who died, sadly seeing the completion of only part of the work. The design was developed with residents through a series of workshops, and they brought their own experiences of living on the estate to the evolving design. The building encloses a south facing community garden with living rooms and bedrooms facing south. The living rooms also have glazed doors to kitchens with balconies on the north side overlooking the popular green space to that side. A pleached lime hedge, with holly below and native

underplanting lines the pedestrian route. This was extremely successful at Holles House as it screens flats but doesn't create hiding places, and creates green protection from Brixton Road. This 'hedge on stalks' now links the two phases of work.

### **The 'Chain of Custody' challenge**

The 3 storey block of 18 flats is of prefabricated timber frame construction uses non-toxic and natural materials. It includes Warmcell recycled cellulose (newspaper) insulation, with high performance timber windows, an integrated soft film photovoltaic roof by Solar Century, from which rainwater is also collected to flush WCs.

The first challenge was to get both contractor and timber frame manufacturer registered for FSC chain of custody. The contractor and

timber frame manufacturer Global Timber Frame Ltd were both prepared to go through this fairly bureaucratic procedure, and achieved registration in time to ensure that the frame, cladding and internal timber and composite boards are all FSC certified, and FSC was helpful in sourcing materials. To achieve Ecohomes 'excellent' labelling, the project has to demonstrate that 70% of the timber used comes from FSC certified sources.

Richard Garland from Sandwood Construction says, "FSC timber was available for most of the components but knowledge and implementation of Chain of Custody procedures was much more limited. The windows for example which were imported include, according to the manufacturer, 70% FSC content, but they have not yet seen any commercial advantage in implementing Chain of Custody procedures so they could not be

included in the overall calculation of percentages. This more limited availability caused problems in terms of lead times, particularly on small orders. The conflicting certification bodies further limits supply and causes confusion, while using locally grown timber to achieve FSC and limit transportation resulted in lower quality timber being used - largely an aesthetic rather than functional issue - but clients need to be aware of this. The chain was also broken where we used intermediaries to supply our timber products to either suppliers or subcontractors."

Garland continues, "Many of these problems will be overcome if greater demand can be generated for construction products. We have already added some of our supply chain to the chain of custody list and will be in a better position for the next project. For administration, in terms





of ordering and segregation, site discipline proved problematic, despite training. A site is short term, with staff who have no experience of the procedures elsewhere and are working under time pressures throughout.

The administrative procedures for documentation were a nightmare and are still not completed, but this has been recognized by FSC and procedures have been revised with some input from this project.

Overall it will get easier, but full commitment is required from all the members of the team including the client, and some flexibility is needed to accommodate current limitations on availability.”

### **The structure**

The frame was designed in 150mm deep timber sections, so this is the depth of Warmcell in the walls, with 300mm in the roof and 150mm Jabelite to the beam and block ground floor. It was made in panels in the timber frame workshop, and assembled on site. Rational windows with their Climaplust 1.1 argon filled glazing give whole pane U-value (that is the value for the window including frame) of 1.5w/m<sup>2</sup>K. Air tightness testing was required by the contract, although it is only becoming obligatory when the new part L takes effect in April.

Panelvent was specified externally for sheathing strength, but

NHBC required a breather membrane as well, primarily it seems, for the period the timber frame is exposed during construction. The construction was calculated for condensation, and clearly air tightness is improved, but this is not a 'breathing' wall any more. Following a workshop and discussion at the Association for Environment Conscious Building conference in the summer on timberwall construction, I'd be interested to hear if other readers have come up against this ruling?

Passivent ventilation was installed throughout, but this very simple and fantastically successful means of ventilation, which cost nothing to tenants, and which can hardly go wrong, seems more expensive than it ought to be. When clients are looking for savings, cutting out passive ventilation is one of the first suggested, it seems crazy that electrical equipment is cheaper than what is really just a hole in the roof!

### **Not a drop to lose**

Our first roof design was of sedum, with a reedbed for recycling grey water to flush WC's, on the basis that a block of flats always has grey water to recycle, so that water would be saved when it was needed most, in the summer. This proposal was supported by a DTI innovation grant, however it was a bit too risky for Lambeth, who opted for rainwater collection

to flush wcs instead. This meant the installation of a much larger collection tank, which could be located below the community garden.

Cath Hassle of Ech2o Consultants said "As the most important part of any sustainable water strategy is to reduce demand at point of use before sourcing water from elsewhere, we specified IFO 4/2.5 litre dual flush WC's, and flow regulators at 4 litres/minute to all basins, and at 10 litres/minute for the showers. Rainwater from the roof is filtered and stored in a 15,000 litre capacity underground tank, sized to make optimum use of rainfall on the site. The stored rainwater is pumped on demand to a header cistern which feeds the WCs in the flats. No UV disinfection has been specified as the rainwater is used for WC flushing only; thus the environmental load of using rainwater is reduced. The system is metered so that the exact amount of WC flushing demand offset by rainwater can be quantified. It is estimated that 220m<sup>3</sup> of water will be saved a year from the WC specification and a further 176m<sup>3</sup> from using rainwater on the site”.

### **Embedded solar power**

At the same time an application for large scale pv installation was successful, and Solar Century designed an integrated soft film pv aluminium roof of Corus aluminium panels, with

## Eco-eden in Angell Town

soft film pv stuck to the surface. The whole building had been designed to face south, and the slope of the roof at 12 degrees which was right for the reedbed concept, was pretty good for photovoltaics. The building design embraced the change from soft living roof to sweeps of bright metal and the planners gracefully accepted the change.

Boatemah Walk's standing seam roof integrates 230 m2 of Aluplus Solar, a glass free photovoltaic (PV) system comprising flexible PV laminate (PVL) adhered to the surface of a specific Kalzip profiled standing seam roof. This system size will generate 1300KW, enough electricity to power the equivalent of four 3 bedroom homes every year.

Electricity generated by the PV system feeds into the power supplies of the 4 wheelchair accessible ground floor flats, helping to address issues of fuel poverty for these tenants, whilst contributing to preventing global warming by offsetting 5.5 tonnes of Carbon dioxide, every year.

The high quality 'Triple Junction' PV laminate works well in low light conditions common to cloudy Britain and low pitch roof angles on these buildings. With no glass, the product is vandal resistant, and its non-stick surface makes the modules graffiti resistant and self-cleaning. Unlike

glass module systems which require rigid framework to hold them to the roof, the PV laminate is flexible, and can be integrated seamlessly into flexible roof systems such as the Kalzip standing seam roof used here and now a common roofing material within the construction market. They can be installed using the same methods as standard system roofing and DC electricity roof connections can be carried out by any roofing contractor

### Material considerations

With other materials, our approach is to specify 'natural and non toxic'. Tenants were concerned about health issues, especially asthma, because of living next to a main road. Externally the building is clad in douglas fir, ceramic tiles at ground floor level, and render. Internally douglas fir floor boards were used rather than chipboard. To avoid the use of pvc, marmoleum (from Forbo Nairn) was used in kitchens and bathrooms rather than vinyl, (some housing associations are not accepting linoleum in bathrooms claiming it is too slippery. I don't think this is the case and fortunately Lambeth were happy with lino, especially given it's lower embodied energy). We were also able to specify LHSF cabling throughout. Rubber was used on the external balconies.

'Os Color' finishes were used for timber externally and internally, and Biofa natural paints imported by the Green Building Store were used internally. Returning tenants were able to choose their own colours, and the flats were decorated in the most beautiful warm soft colours.

Tenants have now moved in and the response has been really positive, Angell Town residents have been proud to see the building on Channel 4 television news, and to take visiting groups around for London Sustainability Weeks, Architecture Week and Open House, while Lambeth have been getting phone calls from passers-by, asking if the flats are for sale!

We will monitor energy produced and used, water used, and other building in use information, so I hope we will have some hard facts to report next year.

Fran Bradshaw, for Anne Thorne Architects Partnership

### Design Team;

Architect; Anne Thorne Architects Partnership  
Landscape Architect; Studio Engleback  
Quantity Surveyor; Andrew Turner and Co  
Structural Engineer; Dewhurst Macfarlane and Partners  
Services Engineers; Mendick Waring  
Solar Roof; Solar Century  
Rainwater Harvesting; Ech2o consultants

Client; London Borough of Lambeth, Housing and Regeneration,

