

## **Comisiwn Dylunio Cymru Design Commission for Wales**

<b>Design Review Report:</b>	<b>9 June 2004</b>
<b>Meeting Date / Material Submitted:</b>	<b>3 June 2004</b>
<b>Location:</b>	<b>Torfaen</b>
<b>Architects / Design Team:</b>	<b>Craig White Design</b>
<b>Client:</b>	<b>Torfaen Borough Council Rachael O'Shaughnessy</b>
<b>Scheme Description:</b>	<b>Educational facility for local business</b>
<b>Public/Other Body:</b>	<b>Carbon Trust</b>
<b>Planning Status:</b>	<b>Pre-planning</b>
<b>Panel Members:</b>	<b>Ed Colgan, Nigel Hanson, Ben Sibert, Geraint John, Paul Vanner, Rob Firth, Cindy Harris</b>
<b>Observing:</b>	<b>Steve Trigg, Architectural Liaison Officer, SW Police</b>
<b>Record of conflict of interest:</b>	<b>Richard Parnaby stepped out Non-executive director of White Design</b>

### **Presentation**

The brief for this building, which will need relocation at some point in the near future, is for a sustainable building utilising construction methods and technologies which are widely replicable. The building requires minimal environmental impact in its material use and its operation. The main construction materials - timber and straw - are grown in abundance, and as plant-based materials they are infinitely renewable. The existing building on the site is due for demolition and the intention is to reuse the demolition materials, either on this project, or others in the vicinity. There will be minimal use of concrete in this timber frame building, but where it is used it will incorporate recycled aggregate.

The site is long and thin, aligned on a north/south axis, with the main vehicular approach to the rear (north). It is shaded from the east and there are light industrial sheds to the west. The challenge will be to get good solar access on such a constrained site.

The architects have worked with straw bale before, and want to use this project to help bring 'green' construction techniques more into the mainstream. They intend to do this by using prefabrication in any one of a number of ways, including timber frame flat packs, pre-drilled and ready for assembly, or previously assembled and cross braced timber panels brought to site ready to receive the straw bales.

Complete panels, with bales installed, pegged together and covered with a render carrier is a third option. Glazed units are easily incorporated into this systemised construction method. Straw bales will also be used as sub-floor insulation under a concrete slab, and as the insulation material in a barrel vault roof. Because the building will have to be dismantled and re-erected, a rainscreen wall finish was preferred over lime render. Various brightly coloured recycled plastic board materials are under consideration for the rainscreen.

The use of the building will vary greatly, ranging from one worker to forty school children. Simple cross ventilation will be used for cooling and a passive ventilation control system will be installed. In such a well insulated building the heating demand will be minimal. A number of heating options are being considered, including electric heaters (using electricity from a renewable source) and a small wood pellet stove.

It is hoped that a local building or joinery business might be encouraged to take up the manufacture of the main constructional elements of this system, and join the development team in a partnering contract to advise on buildability. In this way the wider sustainability issues of economic prosperity and social inclusion would be combined with a sustainable way of building in a compelling 'win-win' situation.

The materials, construction method and operating technologies used in this building will tell their own story, which will mirror the message contained in the content of the building - that good environmental practice can help businesses grow and thrive.

### **Panel's Response**

The Panel asked for information on other environmental technologies which might be included, such as rainwater harvesting, composting toilets, photovoltaic units and solar water heating. The architect explained that as a demonstration building, the technologies used had to be meaningful within their context, and in any event should be 'built in' rather than 'bolted on'.

Consideration was given to retaining the existing building and refurbishing, but due to the relatively short lease on the site, a newly built structure which could be moved to a new site was considered favourable. It is intended, however, to reuse the ground floor slab of the existing building. In addition a fully documented audit trail will be operated, in conjunction with BRE, to track the demolition materials and ensure their reuse.

It was suggested that the main entrance to the building should be a pedestrian one located to the south, to which the rear vehicular entrance should be subordinate. Questions concerning Building Regulations and fire protection were explored. The architect stated that the wall construction with the rainscreen has a one hour fire protection, and that timber frame buildings are not considered a special risk by insurance companies. Security along the adjoining footpath had been considered and a landscape architect is currently looking at options.

The design company is conscious of its own environmental impact and has been logging the 'design miles' attributable to the project. The chosen procurement method of partnering is particularly well suited to a cooperative, problem-solving approach which is necessary when working with unconventional materials and

technologies. The client is considering ways in which the site can be developed in a sustainable way, once this building has been moved.

### **Summary**

The Panel congratulated the Local Authority as the client on having the vision to commission a forward looking scheme such as this. Although the proposals are radical they were felt to be realistic, rather than aiming for perhaps spurious targets such as 'zero emissions'. The integration of environmental technologies into the building fabric and structure was applauded, as was the intention to source local, renewable materials.

The Panel considered that the scheme and the approach behind it should be supported as a valuable embryonic indicator of both what it is possible to achieve in terms of 'eco-building', and ways in which mainstream construction could adapt to incorporate 'eco-measures'.

End