

## Project Description and Aims



Cae Banc is a development of three bungalows, two of which have been constructed in the second phase using NBT's NW1 System. The bungalows have been specially designed for families where one or more family member has severe disabilities. Internal modifications and special design features help the families cope with living with disability in a family home environment. The properties are fairly large being 120 sq/m (plot 2) and 180 sq/m (plot 3) respectively. The house on phase one was built using conventional concrete blocks, finished with sand/cement render and masonry paint. The properties on phase two were built using an NBT timber frame system and render. All the properties therefore look similar in external appearance.



The client was keen to go beyond just meeting the basic building regulations and provide a higher performance specification whilst still maintaining the project within budget. The client was also keen to trial a timber frame solution and NBT's NW1 System allowed all these objectives to be met.

The second phase took just over 6 months to complete and energy use in the two different types of construction will be monitored to gain meaningful data on the "comfort levels" of each of the properties.

## NBT role in project

NBT provided design support, including detailing and thermal and interstitial calculations. NBT also provided training to subcontractors on site and application inspection. Materials supplied included Diffutherm woodfibre boards, render, beads rails, mesh, equalisation paint etc.

## Cae Banc - Swansea

Client: Swansea Housing Association  
Architect: Dewi Evans - Swansea  
Contractor: Jistcourt (South Wales) Ltd  
Contract Value: £350k

### Performance:

The walls were designed to a high thermal standard, (low U-Value), using NBT's NW1 System providing a final U value of 0.26 W/m<sup>2</sup>K. This was a significant improvement over the property built on phase 1 which was built conventionally and designed to a U value of 0.35 W/m<sup>2</sup>K. This improvement was an important consideration for the client as they were aware that fuel costs would be an important consideration for their tenants as the houses will be occupied throughout the day and have to be heated continuously.

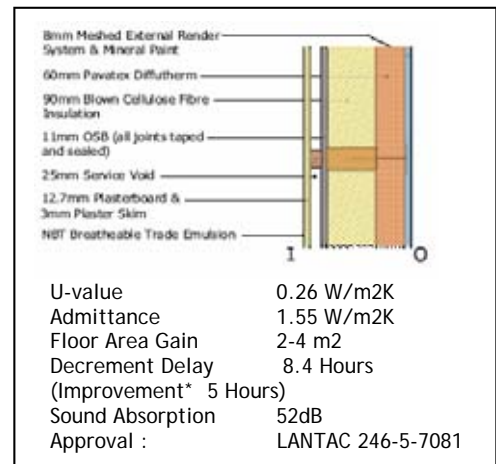
### Buildability:

The NW1 system is very quick to build. Once the frame is erected windows and doors are positioned to allow the insulation to be fitted and rendering applied.

Robust detailing throughout the system allows all membranes and vapour checks to be eliminated, along with their potential difficulties.

### Environmental:

Diffutherm woodfibre board has an exceptional ecological profile and consists of 99.5% waste pine wood. The board contains no artificial glue or resins, is extremely vapour open and has excellent moisture regulating properties. The propriety Baunit-Bayosan renders used in conjunction with the boards are mineral based, vapour open and have low embodied energy. These products were complemented by the use of cellulose insulation made from recycled newspaper which was used as the fill insulation between the timber stud work. All the products used in the construction of the walls and roofs give off no emissions and require no special treatment on final disposal.



### Design Issues:

Architect: There were no specific design issues and the advantages of a straightforward dry system enabled rapid construction to be implemented.

Engineer: Engineering was undertaken by the timber frame supplier, and there are no separate issues

Commentary: NBT now has CAD compatible drawings and a revised Diffutherm Design and Application brochure to simplify the understanding of the system and the design process.

### Build Issues:

Main Contractor: A quick and straightforward method of construction. Now that they understand the method and the procedures involved they would be happy to use it again.

The render contractors were already familiar with EWI thin coat systems and found the system easy to apply, without any problems.

### Cost:

The overall cost of the project finished within budget. The materials supplied by NBT were also within budget.

Commentary: For the performance of the building this seems to have been a cost effective build. Speed and dryness of build help the fit out. Further assessment of cost will be undertaken in more detail as information is made available by the contractors.



Application of Diffutherm Boards

### Performance:

Planned: The NW1 systems bungalows should be considerably cheaper to heat than the first conventional bungalow, and provide better comfort levels. They should also be better in terms of acoustic insulation and summer overheating than other rendered timber frames.

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Natural Building Technologies Ltd

The Hangar, Worminghall Road, Oakley Bucks. HP18 9UL

Tel: 01844 338338 Fax: 01844 338525 Email: info@natural-building.co.uk Website: natural-building.co.uk