The **Passivhaus** Standard

Rural Housing Enabler Tessa O'Sullivan writes,

In October 2011 I co-organised an event; 'The Passivhaus Standard in Affordable Housing'. I have a strong interest in environmentally sustainable housing and was keen to bring together contacts I have in this field with social housing providers who I work with on rural affordable housing schemes. Other delegates who attended included architects, building surveyors and two Parish Councillors. Interest in the subject was high and the conference was fully booked.

The event was held at Hadlow College's Rural Regeneration Centre which is itself a Passivhaus building. Together with Paul Mallion from Conker Conservation and Mark Saich from Green Building Solutions we compiled a programme and brought together speakers from organisations involved in environmental building, a list of whom appears below.

Passivhaus buildings provide a high level of comfort while using very little energy for heating and cooling; they achieve a 75% reduction in space heating requirements compared to the average UK new build, carbon emissions are therefore greatly reduced. Their construction plays close attention to thermal bridging, air leakage, solar gain and high levels of insulation. The buildings are air tight and therefore use Mechanical Ventilation with Heat Recovery (MVHR) to provide constant fresh filtered air. Damp and stale air is removed by the system and waste heat from this air is recovered and transferred back into the incoming air. In order to ensure the property does not overheat in the summer, shading of the windows is carefully designed into the build. The doors and windows which are triple glazed are highly insulated; the windows can however, be opened as and when required.

Heat losses are so reduced that the buildings hardly need any heating at all; passive heat sources including the sun, human occupation, household appliances and heat from the extract air warm the home sufficiently, although any remaining heat needed can be supplied by the supply air if the maximum heating load is less than 10W per square meter. In terms of fuel poverty, the Passivhaus standard clearly has great financial benefits for the occupant; if people on lower incomes could live in such a home, they would not be fuel-poor.

Recent figures show that 4.1 million households in England alone are in fuel poverty and that the proportion of households in fuel poverty is higher in rural areas. Some reasons for this are that many rural households are off mains gas, are older properties with poor levels of insulation and energy efficiency or are detached houses that don't have the combined heat benefits of living in a terrace or a flat.

Above & top: Interior and exterior of the Hadlow College Rural Regeneration Centre

Prior to our event at Hadlow, I visited a recently constructed Passivhaus rural affordable housing scheme in Wimbish, Essex. The scheme was developed by Hastoe Housing Association on a rural exception site with the support of Wimbish Parish Council. The development consists of 14 homes which include six flats; ten of the units are rented and four shared ownership. Three residents kindly allowed us to look around their homes and one said that the last quarterly gas bill for her family was £12; gas is used for heating, hot water and cooking in the property. There are no

The Wimbish development

radiators in the homes. It is reported that the filtered air supplied by the MVHR is beneficial to people who suffer with asthma; Passivhaus buildings do not suffer with damp or mould problems.

Although Passivhaus buildings currently cost more to construct (Hastoe reported a 10% uplift in costs compared to standard schemes, but are building a second scheme where the uplift will be limited to 6%, German evidence suggests this could reduce to 3% with more experience), savings are made by avoiding the need for radiators or underfloor heating, conventional extract fans and ducts and having smaller boiler plants. Careful design and keeping to a compact and efficient plan/volume arrangement keeps the cost down. Passivhaus does not require any new technology or skills, just a better attention to detail, better design and better implementation.

The way one lives in a Passivhaus building will differ slightly to a conventional home and it is important that occupants are aware of this. Hastoe for example, gave high priority to engaging with residents in order to enable the units to achieve their optimum energy efficiency potential and to understand the benefits of living in a Passivhaus home.

At our Passivhaus event, speakers' topics were the regulatory framework and building regulations, the Passivhaus standard, Passivhaus products and availability in the UK, a contractor's perspective on the Passivhaus standard, costs, value and funding of higher quality buildings, and retrofit of existing housing stock. During the lunch break James Anwyl from Eurobuild who built the Passivhaus centre at Hadlow gave a talk on its construction.

Speakers were the following;

- Mark Saich from Green Building Solutions **- www.greenbuildingsolutions.co.uk**
- Paul Mallion from Conker Conservation **- www.conkerconservation.co.uk**
- Joe Wild from Ecomerchant **- www.ecomerchant.co.uk**
- Andrew Bassant from Ecolibrium Solutions Ltd **- www.ecolibriumsolutions.co.uk**
- Paul Gannaway from Betteridge and Milson **– www.betteridge-milsom.co.uk**
- Keith Bothwell, Senior Lecturer in Architecture from the University of Kent - **www.kent.ac.uk**

Professor Ian Swingland kindly agreed to Chair the event; Ian founded DICE (Durrell Institute of Conservation and Ecology) at the University of Kent and is involved with many leading wildlife and biodiversity organisations worldwide.

A further event is to be held in December which will focus on the planning, policy and aesthetic issues of the Passivhaus standard.

Tessa O'Sullivan