

Sustainable Homes

A review of
Sustainable
housing issues

Moving rapidly towards housing's centre stage

The issue of sustainability has moved from the wings to the centre stage of housing association activity since the Sustainable Homes project began work four years ago.

The Government requires all publicly funded bodies to embrace sustainability in their work. The Housing Corporation has responded with a will to this requirement.

Environmental standards are included in the Housing Quality Indicators. By 2003, the Corporation is aiming to achieve a 'good' EcoHomes rating for 50 per cent of all the new-build schemes it funds.

The proposed new Regulatory Code, which will be in place next year, will require 70 per cent of all associations to produce Sustainable Development Strategies and Action Plans by 2004.

Meanwhile, the Egan report recommendations, which have profound implications for environmental policy, have been adopted.

Another indicator of the mainstreaming of sustainability is the small but growing number of private housing developers who are taking it on board, believing that green

features will help sell their homes.

Sustainable Homes has been at the centre of this change. It works with more than 200 housing associations of all sizes in cities, towns and villages promoting environmental awareness and action in housing. Based at Hastoe Housing Association and supported by an IGP grant from the Housing Corporation, it:

- ✓ Identifies and promotes the wealth of good practice among associations.
- ✓ Maintains the EcoDatabase a guide to sustainable housing schemes.
- ✓ Is working with 35 associations producing environmental policies and action plans.
- ✓ Runs the EcoHomes Club, providing support for associations working with the new BRE assessment system.
- ✓ Is developing a sustainability matrix.
- ✓ Publishes a regular newsletter, Sustainable Homes.
- ✓ Organises national seminars and meetings.
- ✓ Promotes Affordable Water to help housing associations and their residents reduce the consumption and cost of water.

Attention turns to older homes

The 'greening' of existing homes is moving rapidly up the housing agenda. The scope for energy and water conservation improvements, in particular, is enormous on older estates where the Government is committed to spending a great deal of its housing budget over the next decade. Housing associations are

applying new technology to old problems. Sandwell Borough Council with other local authorities and housing associations are pioneering the use of renewable energy in their refurbishment projects. The Peabody Housing Trust, for example, is considering installing photovoltaic cells on the south-facing roofs of all its properties. Other organisations are taking a simpler approach using passive measures to improve energy efficiency and water conservation in older housing.

An increasing amount of the Sustainable Homes programme will be devoted to monitoring and developing this work.

Case study

Eco homes in a Somerset village

A scheme of eight family houses in Holcombe, Somerset, has won a BRE Environmental Standard for Hastoe Housing Association. The highly insulated houses, which have very low CO₂ emissions, use timber from managed forests or from recycled sources. At least 50 per cent of the wall materials are recycled or reused, and demolition material was used for the hardcore and refill.

Double-fronted design produces passive solar gain, and passive stack ventilation is provided. Low energy



lighting is standard, WCs with a purpose-designed maximum 6-litre flush have been provided, and each house has a rainwater butt, recycling facilities and a garden-compost bin. Fencing is reinforced with a natural hedgerow. The rented houses were built on an exceptions site to provide affordable housing for local people. The project was developed with Mendip District Council as a demonstration project for its Local Agenda 21 programme. Average cost of the houses, which come complete with a logbook, is £55,000. The extra cost of incorporating the environmental features and achieving the Lifetime Homes standard in six of the eight homes was about £2,000 per house. Some of the environmental features and the Lifetime Homes standard are now part of Hastoe's standard Development Brief.



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Next step: helping associations meet the Corporation's code

The next major step for Sustainable Homes will be helping associations implement the Housing Corporation's new Regulatory Code, which will be introduced next year and will require, rather than propose, that 70 per cent of housing associations produce Sustainable Development Strategies and Action Plans by 2004.

This is in line with the requirement that all publicly funded organisations should meet the Government's four objectives set out in *Achieving a better quality of life*. These are:

- ✓ Social progress which recognises the

- needs of everyone.
 - ✓ Effective protection of the environment.
 - ✓ Prudent use of natural resources.
 - ✓ Maintenance of high and stable levels of economic growth and employment.
- Sustainable Homes is helping 35 housing associations, large and small, pilot environmental policies and actions. The results of this work will be published as guidance for others taking the green path. In addition, it is now seeking Housing Corporation support to run a series of regional seminars to help associations produce strategies and

action plans, which could affect the way they approach their business objectives.

The seminars will cover the range of sustainable development issues needed to tackle the Government's agenda and how they can be integrated into the association's business planning.

Successful sustainable development by housing associations will go beyond making the next new-build scheme a bit 'greener'. It will be about building environment friendly sustainable communities while maintaining the core activity of providing affordable housing for those on modest incomes.

Small association leads the way

Brampton Rural Housing Society has shown that small associations can achieve great deeds in the field of sustainability. Last year it completed the first home to achieve an Excellent EcoHomes rating. The three-bedroom demonstration house sought to raise environmental awareness in the building industry. Seminars and site visits were held during the design and construction phases of development.

An initial green specification proved too expensive and was radically modified to include features that give the greatest environmental benefit for the least cost. A timber beam system with a breathing wall was used. The panels were insulated on site with blown cellulose. Softwood windows, with low emissivity double-glazing, were fitted.

The high level of insulation and the airtight design of the house reduce

significantly the need for conventional heating and a small gas-fired central heating system with a vented Vaillant BTU boiler has been installed. Low-energy conventional extractor fans ventilate the kitchen and bathroom.

Low flow taps and showerhead and low-flush 6 litre WCs help conserve water. Rainwater butts are provided. Low energy light fittings are used throughout. The building is clad with reclaimed bricks and low maintenance, sustainable Larch. Reclaimed Welsh slates top it off. The detached house cost around £68,500, plus fees. However, if the design is repeated on a larger scale, considerable cost savings could be made. The process has shown that the greatest environmental savings can be made in the building's basic structure, rather than the services or technology.

Assessing environmental impacts

Sustainable Homes is running the EcoHomes Club, a group of 12 associations test-bedding the EcoHomes tool developed by BRE Ltd to assess the environmental impact of new and refurbished housing and identifying where improvements can be made. The results of this work will be published as a guide for others. It will highlight areas where it is relatively easy to achieve a good green score and those where it is more difficult.

A central part of the EcoHomes Club is to encourage housing associations to work together, sharing problems and solutions. Different EcoHomes ratings are being sought by club members.

A series of standardised environmental measures is being prepared which could be adopted as part of the EcoHomes assessment. Participating associations have been asked to consider these measures with their consultants and contractors.

Club members are not obliged to adopt the measures, but a part of the final survey of members will include feedback on reaction to the specifications, reasons for deciding to exclude or include the measures and identified cost where available.



Simple matrix to evaluate green options

The debate about the merits of simple and complex technological solutions has encouraged Sustainable Homes to develop a simple Sustainability Matrix, which can be used to evaluate a range of solutions available in any area of environmental activity. Some of these are relatively passive, requiring little or no attention after installation, while active solutions require regular attention to maintain their effectiveness or require significant changes in the lifestyle of users.

The Sustainability Matrix illustrates this process across a range of measures and over the life-span of the house. The following example considers the impact of various water conservation measures.

The Affordable Water project at Hastoe Housing Association showed that simple measures can be more successful than complex technology. Low volume flush WCs and low flow taps and showers, for instance, can produce more effective water savings more cheaply than high-tech recycling. In a similar project undertaken by Essex and Suffolk Water Company, the most cost

WATER		ACTION / REACTION				
		Passive	>	>	>	Active
P	Design					
	Specification					
H	Production					
	Occupation	Low vol flush WC	Low flow taps	Shower option	Water butt	Grey/Rain water recycling
A	Maintenance			Drought tolerant planting		
	Refurb					
S	Renewal					

effective measures proved to be the low volume flush WCs and low flow taps with a simple payback of two to three years. Grey water recycling installed in a number of houses as part of the project had a payback of between 20 and 30 years, and that did not take into account the added cost of maintenance over the operational life of the equipment.

While housing associations want to encourage greater environmental

awareness, they must recognise that not everyone shares the same priorities and concerns. Providing water butts as a source of garden water and car washing, for instance, is a very visible sign of environmental awareness. However, this only works if householders are interested in gardening or want to wash their car. If they are not, water will not be saved and the cost of the water butt has been wasted.

Greening older homes in Sheffield

Warmer and healthier homes, average energy costs reduced by about £6 a week and environmental benefits – all at a modest cost – are the fruits of the refurbishment of four Victorian terraced houses in Sheffield by the Arches Housing Association. Three of the houses were improved to very high energy-efficiency standards, the fourth to the Housing Corporation's minimum energy efficiency standards as a 'control' house, to provide comparisons for the monitoring of gas, electricity and water bills. Sustainable-source timber windows were installed with double glazed low-emissivity glass.

The roof was insulated with 200mm of cellulose insulation (recycled newspaper) and the 9 inch solid brick external walls were dry-lined using liner board with 52mm of mineral wool insulation. 150mm of mineral wool under-floor insulation was installed.

Heat loss was reduced to a rate similar to a standard cavity wall with a SAP

Case study

rating as good as some new homes.

Thermostatic radiator valves and low energy light bulbs were fitted. Gas condensing boilers were installed with simple heating controls. One house was fitted with solar water panel to pre-heat hot water.

This improved its SAP to 97, much higher than a typical new home. A grey water recycling system was fitted in one home.

The three houses have a final SAP of 94 and annual savings around £420, compared with a SAP of 68 and savings around £300 in the control house. Total cost of the control house refurbishment was £10,500.

This includes a condensing combination boiler needed to achieve the minimum SAP rating. Average cost of refurbishing the more energy efficient

Size is not important

'More and more housing associations are producing energy efficient and healthy homes, saving finite resources and reducing environmental pollution,' says Sustainable Homes Director Martin Rowbottom. 'Furthermore, they are helping the government and local communities meet the objectives of Local Agenda 21 and the 1992 Rio Summit. We can help them meet the sustainability challenge without re-inventing the wheel. It is not a complex task, but we have seen that continued success depends largely on a sustained commitment among senior staff and committee members. A sustainable approach is possible, whatever the size of the association.'

and sustainable houses was £17,500.

A small, but important, scheme demonstrating what can be achieved in older homes.

£300 cut in gas bills for Reading residents

Gas bills have been cut by almost £6 a week for families living in 50 houses built in Reading as a part of a European project to promote solar design in housing. The work of Ealing Family Housing Association, the scheme has received a BRE Environmental Standard award. The timber-frame houses have very high insulation levels, with roof insulation of 250mm cellulose and double-glazed softwood frame windows. Passive ventilation has been provided. Timber from sustainable sources has been used and treated only where absolutely necessary. Demolition materials have been used for fill and hardcore. Low energy lighting and a gas cooking point have been provided along with a rainwater butt and recycling storage. The houses have WCs with 6-litre flushes.

Two forms of space and water heating have been used to enable a comparison of efficiency. Vaillant gas combination boilers have been installed in 26 homes. The rest have solar pre-heated hot water systems and highly efficient gas

Case study

condensing boilers with storage tanks. All of this is explained in the log book, which comes with each house. The houses produce low levels of CO₂ and are highly energy efficient, using lower levels of energy for heating and lighting than similar properties. They cost less to run for families on low incomes, stay warmer and have fewer problems with condensation. They achieved a SAP of 96-100 and NHER 10.

The additional costs of the innovative energy efficiency features were funded by a THERMIE grant approved in 1996. Work cost £2,700 per unit. The additional Environmental Standard requirements cost an extra £325 per home. A detailed 12-month monitoring exercise on the 50 homes has revealed an average 31% reduction in gas consumption. A detailed monitoring of three THERMIE houses showed the solar contribution to the supply of hot water averaged 57 per cent.

Eradicating UK fuel poverty

An immediate challenge for housing associations and local authorities has been thrown down in the Government consultation paper *The UK Fuel Poverty Strategy*, which was published earlier this year and sets out targets for eradicating fuel poverty and providing affordable warmth by the year 2010.

The Government is looking for significant improvements in the quality of social housing to ensure that low income households can afford to maintain adequate levels of heating without going into debt or having to make unreasonable savings elsewhere in their family budget. While many houses have been improved over the past 15 to 20 years, it is estimated that 25 per cent of housing association tenants and their families live in fuel poverty. By 2004, says the Government, fuel poverty among the elderly, families with children and disabled people should be eradicated.

Most of the energy efficiency gains will be translated into improved comfort levels rather than reductions in greenhouse gas emissions. However, the improvements in living conditions will provide health gains as well as extra comfort.

The annual cost of poor health caused by cold and damp housing has been put at more £1 billion.

Housing associations can help cut this bill.



Sustainable Homes

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