

Accommodating a

GREENER FUTURE II

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Accommodating a Greener Future II

Contents

Foreword	4
Introduction	6
The Challenge for Housing	8
New Developments	14
Sustainable Mixed Developments	20
Retrofit	22
Partnership Working	36
Greening your Organisation	39
International Learning and Good Practice	45
Supporting our Members	49

Foreword

Tackling the impact of climate change is undoubtedly one of the biggest issues we face today. The UK Government has committed to a 80% reduction in greenhouse gases and since almost half of all emissions arise from the built environment, this places a huge responsibility on our industry.

For Keepmoat, sustainability has become an integral part of our community regeneration service package and a key component of our overall business strategy as we pro-actively respond to environmental and socio-economic demands rather than waiting for the inevitable changes in regulations and legislation.

Working at the forefront of the Code for Sustainable Homes, we have developed cost effective solutions at both Code levels 3 and 4 and were the first contractor in England to receive BRE Certification at Level 4. We are also leading on several Code 5 and 6 housing projects which often means taking a more holistic, community based approach to meeting the technical and financial challenges.

Whilst new build housing undoubtedly has a key role to play in tackling climate change and creating sustainable communities for the future, it is the 26.5 million existing homes that provide the greatest carbon cutting potential. Keepmoat are taking a leadership role by identifying and implementing energy, waste and water efficiencies across a number of pilot and mainstream developments. This is the tip of the iceberg and the size of the challenge cannot be overstated.

We are currently undertaking a comprehensive review of all our internal and external sustainability activities. Having drawn upon our first year results from the nationally recognised Next Generation benchmark, Keepmoat have identified strategic, organisational and policy changes that will need to be made to ensure we remain at the forefront of this growing agenda and are able to offer our customers the best possible service.

In order to manage these challenges we have now established a Sustainability Action Team which consists of Keepmoat Directors and senior individuals drawn from across all our business units. Our overall goal is to ensure that we continue to provide all our stakeholders with the leadership and innovative solutions that will be necessary if the industry is to succeed in meeting the unprecedented environmental expectations placed upon it.

We all share responsibility; individuals; families; private companies and public bodies can play their part. By recognising this and taking action now, we can not only ensure the sustainability of our homes for future generations but also hopefully protect them from the detrimental effects of climate change.

This report demonstrates not only the extent of the challenge that lies ahead, but also the steps that are already in motion to bring about change and tackle the issues head on.

Dane Elliott, Director of Sustainable Development, Keepmoat



Accommodating a Greener Future

Introduction

This document is the second in a series of publications which aim to provide case study examples of how Local Authorities and Social Housing providers are contributing towards green house gas emission reductions. The Climate Change Act 2008 set out the requirement for the United Kingdom to reduce carbon emissions by 80% by 2050, and the housing sector has a major role to play in meeting this.

This publication will look at best practice in how low carbon homes are being built, how existing stock can be retrofitted to improve its carbon footprint and how organisations are working with their staff, tenants and residents to meet this challenge. We will look at best practice from the UK and draw upon international best practice where appropriate.

We hope this document will act as a resource for identifying good practice, provide inspiration for those that read it and help direct the sector towards "Accommodating a Greener Future".

The Big Picture

The Stern Review on The Economics of Climate Change (October 2006) saw the first major piece of work into the actual 'costs' of climate change. This document highlighted the reality of climate change and set out the challenge of stabilising carbon emissions in the next 20 years.

In response to this challenge, government brought out the Draft Climate Change Bill which received Royal Assent in November 2008. Two key aims underpin the Act:

- To improve carbon management and help the transition towards a low carbon economy in the UK
- To demonstrate strong UK leadership internationally.

"We need to change the way that we plan, design and build homes for the future. More than a quarter of Britain's carbon emissions come from our homes. We will also need to reduce emissions from existing homes"

RT Hon John Healey MP (July 2009)

Key provisions in the act included:

- Legally binding targets for carbon emission reductions - green house gas emission reductions through action in the UK and abroad of at least 80% by 2050, and reductions in CO² emissions of at least 26% by 2020, against a 1990 baseline
- Proposals for a new Community Energy Savings Program to place an obligation on energy providers and generators to install energy efficiency measures to low income households
- Other Measures to reduce carbon emissions from other non housing sectors.

Since the 2008 Act a number of measures have now been put in place to assist in meeting the Carbon Reduction Targets.

- The Community Energy Saving Programme was implemented in September 2008
- Community Sustainable Energy Programme is providing £8 million to community-based organisations for the installation of micro generation technologies
- The Low Carbon Buildings programme also provides grants to allow households to access renewable technology.

Furthermore the 2007 Housing Green paper re-iterated the Governments plans for all homes being built to zero carbon standards by 2016 with a 25% reduction by 2010 and a 44% reduction by 2013. The green paper also highlighted the possibility of setting new minimum standards to support sustainable water use and October 2009 saw Part G of the building regulations altered to provide enhanced water efficiency measures. The Code for Sustainable Homes, a mandatory

rating system for rating the sustainability of a new home was also brought into force by the Housing and Regeneration Act 2008.

The Energy Act 2008 also set out a number of proposals that impact upon the housing sector. Mainly the target of tripling the use of renewable energy sources by 2015 to 15% of all energy produced. As part of this a renewable heat incentive payment will be brought in from 2011 to allow those using micro generation to sell surplus energy back to the grid. Furthermore households will be supported to reduce their energy consumption in the home through domestic energy suppliers providing smart meters in all homes by 2020.

More recently the Government has consulted on a Heat and Energy Saving Strategy and some of the measures proposed in this include;

- All homes to receive "whole house" package of energy-saving measures, "plus renewable heat and electricity measures as appropriate", by 2020
- All lofts and cavity walls "where it is practical to do so" to be insulated by 2015
- More information and advice to be made available
- Possible new delivery model for rolling out improvements "house by house" - a Community Energy Saving Programme, potentially run by a single body.

It is clear from the wealth of policies and legislation that has emerged over the last 3 years that climate change has become an increasingly important issue for government and key stakeholders. The challenge for housing providers is to enable this reduction in carbon emissions whilst still delivering homes and communities that people want to live in.

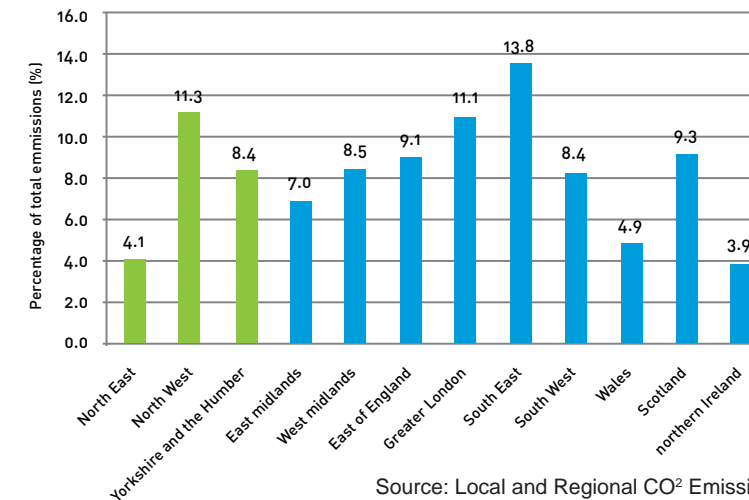
The Challenge for Housing: Domestic Carbon Emissions

In 2007, 145.7kt CO₂ were produced by the domestic housing sector, equating to 27% of the UK's total carbon emissions. The industrial and commercial sector accounted for 45.8% of emissions and road transport made up the remainder. The domestic housing sector's proportionate contribution to the total figure has remained constant since 2004 while that of the industrial and commercial sector has increased.

Social housing stock is generally more energy efficient when compared to the private sector, due largely to the age of the stock and the volume of more energy efficient flatted accommodation. Despite this, all sectors must play their part in improving the efficiency of our homes.

Figure 1 illustrates each region's contribution to the UK's domestic carbon emissions. As can be seen, the North West is the second largest contributor with 11.3% of the total for the UK, with Yorkshire and Humberside and the North East seventh and eleventh largest contributors respectively of the twelve areas.

Figure 1: Regional Estimates of Regional Domestic Carbon Emissions (kt CO₂), 2007



Source: Local and Regional CO₂ Emissions Estimates for 2005-2007, AEA

However, comparing each region's domestic CO₂ emissions with its population shows very little variation between the different areas of the UK (Table 1). Furthermore, it can be seen that almost all areas have seen a reduction in emissions per capita in recent years.

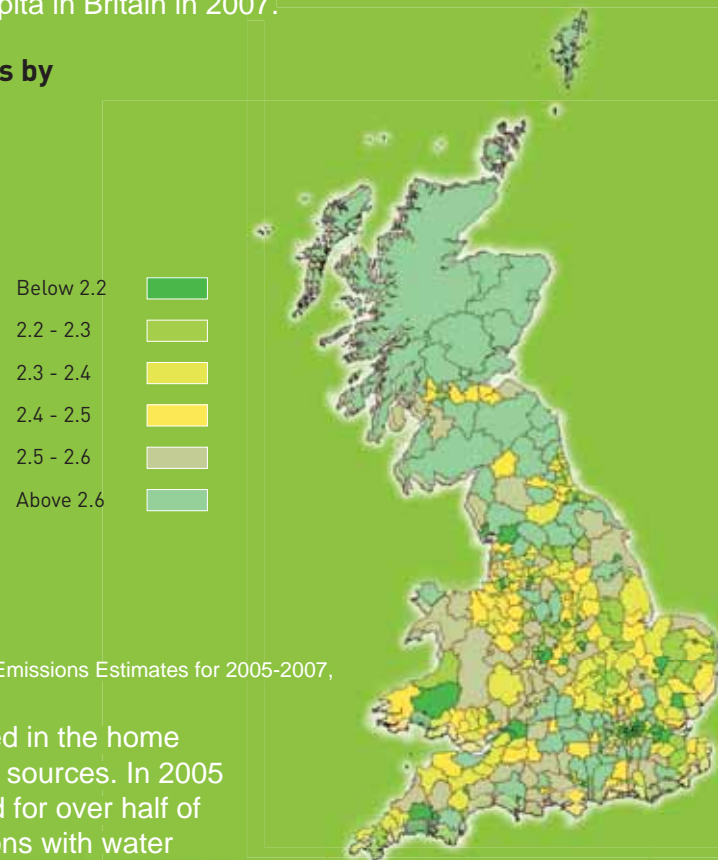
Table 1: Domestic CO₂ emissions by Region

Area	Domestic emissions per capita CO ₂ (tonnes)		
	2005	2006	2007
North East	2.5	2.5	2.3
North West	2.5	2.5	2.4
Yorkshire and the Humber	2.5	2.5	2.4
East Midlands	2.4	2.4	2.3
West Midlands	2.4	2.4	2.3
East of England	2.4	2.4	2.3
Greater London	2.2	2.2	2.1
South East	2.5	2.5	2.4
South West	2.5	2.5	2.4
Wales	2.5	2.6	2.4
Scotland	2.7	2.7	2.6
Northern Ireland	3.4	3.5	3.3
UK	2.5	2.5	2.4

Source: Local and Regional CO₂ Emissions Estimates for 2005-2007, AEA

Using this same methodology, carbon emissions per capita can be ascertained for each local authority area in the country. The map below shows the distribution of carbon emissions per capita in Britain in 2007.

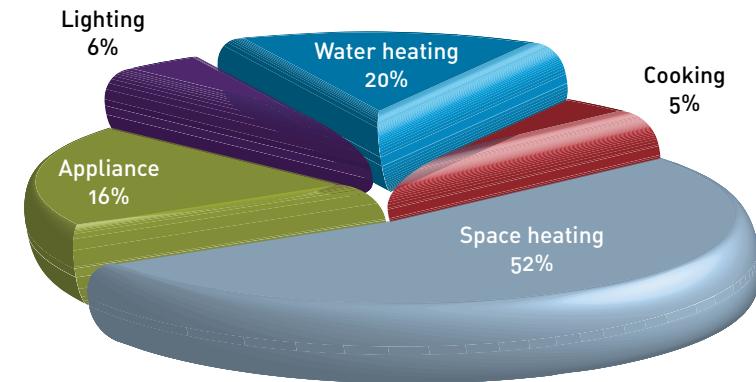
Domestic CO² Emissions by Local Authority, 2007



Source: Local and Regional CO² Emissions Estimates for 2005-2007,

AEA Emissions generated in the home originate from a range of sources. In 2005 space heating accounted for over half of domestic carbon emissions with water heating accounting for one-fifth of emissions.

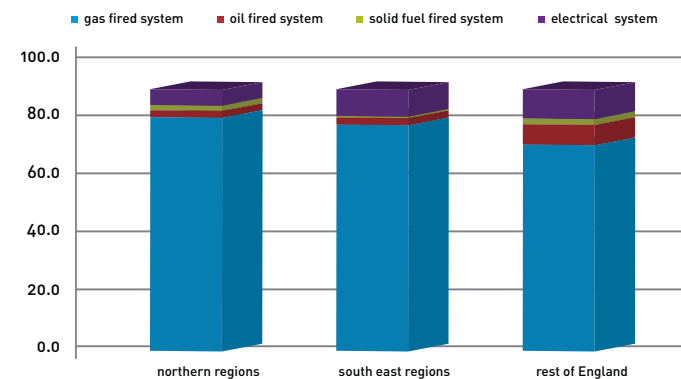
Figure 2: Domestic Carbon Emissions, 2005



Source: DEFRA

The 2006 English House Condition Survey reveals that the majority of homes use gas fired heating systems, although they seem to be more popular in the northern regions (90.5%) (figure 3 below). Oil fired systems are most prevalent in areas outside the north and south east (6.9% compared to an average of 4.2%).

Figure 3: Heating fuel by broad regional areas

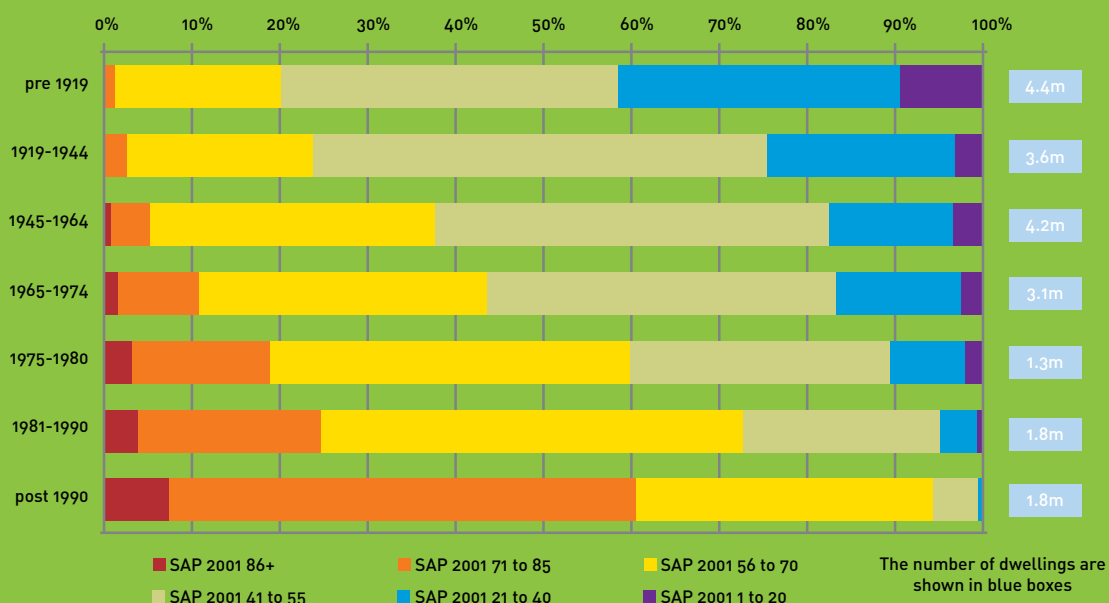


Source: CLG English House Condition Survey

The factors that have the greatest correlation with energy performance of the existing stock, are age and dwelling type/size. The Review of the Sustainability of Existing Buildings (CLG, 2006) found that modern properties are much more energy efficient and smaller properties suffer less heat loss. The quality and amount of insulation and efficiency of heating systems also affect energy performance. Other factors that are taken into account in the Standard Assessment Procedure (SAP) calculations include building shape, orientation, window sizes and distribution.

Energy efficiency varies widely across the stock. The energy efficiency of many older homes will have been improved over the original condition as a result of householder improvements such as installing new boilers, draught proofing and insulation. Overall however, there remains a close correlation between the age of a property and its energy efficiency, as demonstrated in the chart below.

Figure 4: Profile of Energy Performance in Existing Dwelling Stock, 2004



Based on English House Condition Survey (EHCS) 2004, DCLG

The chart shows a change in the energy efficiency of post-1990 stock as Part L of the Building Regulations has progressively raised the energy efficiency standards for new homes.

In 2007/08, household sources accounted for 88.7% of municipal waste or 25.3million tonnes, which equates to 495kg of household waste per person. The amount of waste collected from household sources decreased by 1.9% in 2007/08, from 25.8 million tonnes in 2006/07 to 25.3 million tonnes in 2007/08 (Defra).

In order to reduce this contribution doorstep recycling is now commonplace and the increase in recycling rates in recent years is heartening. Notwithstanding that, as Table 2 illustrates, the three northern regions fall below all other regions in England with the exception of London.

Table 2: Regional household recycling rates 2000/01 to 2007/08 (%)

Region	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
North East	4.1	5.2	6.6	12.2	15.4	21.1	26.4	28.4
North West	7.5	9.2	11.3	14.2	19.2	23.8	28.9	33.4
Yorkshire and the Humber	7.3	8.9	11.2	14.5	18.6	21.8	26.9	30.5
East Midlands	13.1	13.7	15.1	19.3	26.3	31.8	35.6	41.9
West Midlands	9.1	10.2	13.0	15.7	19.9	25.1	28.6	33.0
East	15.2	17.4	19.4	23.4	29.8	34.1	38.3	41.2
London	9.0	9.3	10.9	13.3	17.6	20.7	22.9	25.5
South East	16.4	17.7	19.6	22.8	26.1	29.2	33.1	36.0
South West	14.9	16.6	18.6	21.4	26.6	31.4	37.2	40.3
England	11.2	12.5	14.5	17.8	22.5	26.7	30.9	34.5

Source: Municipal Waste Statistics - tables for November 2008 Statistics Release

It is clear from the data above that much progress had been made in recent years. However, more could be done not only in developing new accommodation and refurbishing existing dwellings, but also by improving organisations' practices or raising residents' awareness of the improvements that could be made by changing habits.

New Developments

In 2007 government set targets for all new homes to be built to zero carbon standards by 2016 with a 25% reduction by 2010 and a 44% reduction by 2013. These targets present significant challenges for those involved in the planning and development of new homes. The move towards considering the longer term environmental impact of new housing has led to a number of innovative design and build methods. The following section considers a number of projects that have addressed this issue.



First Straw Bale Council Housing in the UK

What?

A pioneering pilot project in Lincolnshire will see the construction of the first straw bale council houses in Britain. These straw houses will be the first in the country to be built by a local authority to be used for social housing. North Kesteven District Council has appointed architectural designers, Amazonails (based in Todmorden, West Yorkshire), to design a pair of three-bedroomed semi-detached houses out of straw. Amazonails designs for at least a 200-year life and will be indistinguishable from traditionally-constructed homes.

There will be a real benefit to the tenants of these houses, which will be allocated in line with the Council's usual lettings policy. They are better insulated and require far less heating than traditionally built homes. The tenant benefits by having more money in his or her pocket and the environment benefits because less energy is being used.

How?

This is a pilot project and as such a budget of £110,000 per home has been set. This is approximately £20,000 less than a traditional brick-built property of the same size and design. The houses are being funded through a grant from the Homes and Communities Agency as part of a new-build grant fund.

Locally sourced materials and labour (Taylor Pearson) have been used to build the houses. The properties use straw bales as the structural element, which is unusual, but the most sustainable way of construction. The straw bale walls are now fully constructed and the roofs have been added, putting the walls under compression, and giving them their strength. The straw bale walls will be plastered with lime and have conventional windows.

Because of the high insulation values of straw - the properties will be up to three times better insulated than building regulations require - the properties will not need heating systems - however wood burning stoves will be installed for very cold weather.

Why?

North Kesteven is an innovative Council and has a national reputation for successfully delivering new ideas and techniques. This project will allow the Council, as a district authority to learn more about new construction techniques using sustainable materials that are available in this area.

The Council is taking direct action to tackle the problem of providing affordable homes in the District - the waiting list currently has 1,105 families on it. The Housing Market Assessment which includes West Lindsey, Lincoln and North Kesteven, states that there is a need for 850 properties per year in North Kesteven alone.

Kesteven are project managing the construction of these houses in order to learn more about this exciting construction method and will then impart that knowledge to developers in the district and to their registered social landlord partners.





Eithinog Road, Bangor

Eithinog Road is a collection of four houses in Bangor that have been built to Level 4* of the Code for Sustainable Homes. Although a mandatory requirement for Level 4* is a 44% reduction in CO₂ emissions compared to current Building Regulations Part L, the emissions for these dwellings have been reduced by over 70%. This is equivalent to the Carbon Compliance level under the proposed zero carbon definition.

The internal and external walls have been constructed from block work to provide thermal mass and regulate internal temperature, whilst the windows have been designed and positioned to prevent too much solar gain entering the dwelling. The houses have also been designed to require minimal heating and cooling and will be more resilient to climate change and the impacts of changes in weather on the thermal performance of the dwelling.

Why?

The overall aims of the development were to provide high quality exemplar sustainable homes with a contemporary appearance. Social benefits were a priority and it was crucial that each unit met affordable housing needs and offered high quality living environments. The kitchens are east facing, benefitting from the sun in the morning and the living rooms are west facing in order to allow occupants to benefit from the afternoon sun.

How?

Each house includes a ground source heat pump, solar thermal collectors to generate space and water heating, and photovoltaics to generate electricity. The site waste management plan also set targets to reduce waste generated on site and effectively sort and recycle waste where possible. In addition, the main building materials used in the development achieved A+ or A ratings in the Green Guide and materials were specifically chosen for their durability and minimal maintenance requirements so that the overall impact on the lifespan of each unit is reduced.

Prior to work starting on site an ecological survey and report were commissioned and as a result, four bird and two bat boxes were installed on trees within the site boundary. Exemplary horticultural practice was also observed as no pesticides were used and at least 10 standard trees and 30 whips were planted on site, of which 50% of the trees and 30% per cent of shrubbery are native species.



Each house exceeds the internal potable water consumption target within Code Level 4* as fittings and rainwater recycling facilities that only consume 86 litres as opposed to the required 105 litres per person per day have been incorporated. Water butts also collect water for external use and combined with the SUDS system for the site to reduce the flow of run-off from hard surfaces.

From a transport perspective, a lower parking provision than council stipulation was agreed and weatherproof cycle storage has been provided for each house to encourage the occupants to cycle for short journeys. Space and services for a home office have also been designed in to provide residents with the option to work from home if required, thus reducing CO₂ emissions associated with travel.

Denby Dale Passivhaus

The Denby Dale Passivhaus project in West Yorkshire will be one of the first certified Passivhaus homes in the UK and is expected to be the first to be built in the British vernacular style, using a cavity wall construction. The house will require minimal heating and will use 90% less energy for space heating than the UK average (15 kWh/m²/annum, as opposed to 150 kWh/m²/annum). Built to a tight budget of £140K, the 118m² three-bed detached house aims to be an exemplar of how Passivhaus construction can be achieved inexpensively by a small, skilled construction team. The project has been led and managed by Green Building Company (Green Building Store's construction division).

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How?

The project has been designed using Passivhaus Planning Package software (PHPP). PHPP has allowed the design team to play about with different materials and design permutations, while still keeping within the strict Passivhaus requirements of space heating needs of no more than 15 kWh/m²/annum and air-tightness at less than 1m³/h/m².

Key features

Super-insulation

Target: combined U-value of 0.8 W/m²K for windows

Target: U-value of less than 0.15 W/m²K for external envelope.

- Cavity (300mm) fibreglass batts
- Roof void (500mm) fibreglass quilt
- Under groundfloor (225mm) polyfoam insulation.

Minimising thermal bridging

Measures taken to minimise thermal bridging at junctions (e.g. between the ground floor and walls and at window and door openings).



Stringent air-tightness

Leakage target: less than 1 m³/h/m².

Measures include:

- Wet plaster coating to interior walls
- Floor slab carried across the top of the blockwork of the inner leaf of the wall
- Attention to air-tightness detail around window and door openings and junctions between floors, walls and roofs.

Mechanical ventilation heat recovery (MVHR)

The PAUL Comfort Ventilation system used can transfer up to 90% of the heat from the outgoing air to the incoming air.

Minimising thermal bypass

Minimisation of air movement around insulation in cavity wall and roof void through wind-tightness detailing

Why?

Private clients Geoff & Kate Tunstall wanted to downsize for their retirement and fixed upon the idea of building a new house in their back garden. After approaching West Yorkshire firm Green Building Company with the project, they were introduced to the idea of building a highly insulated, airtight Passivhaus that would be cheap to run with minimal fuel bills. Traditional cavity wall construction was chosen due to West Yorkshire planning requirements for exterior stone and restrictions on the alternative exterior render option.

More information

Green Building Store, Tel: 01484 461705, www.greenbuildingstore.co.uk

To read the Passivhaus diaries fortnightly blog on the Denby Dale Passivhaus, go to: www.greenbuildingstore.co.uk/denbydalehouse





Providing Sustainable Mixed Developments

What?

MediaCityUK is the first scheme in the world to become a BREEAM approved sustainable community, by incorporating world leading sustainability into the design of the £500m development. It is set to become a dynamic media hub and creative community in 2011 when the first construction phase is complete.

Community consultation is on-going through Salford City Council and the North West Regional Development Agency (NWRDA) and BREEAM Communities certification helps planners and developers improve measures and independently certify the sustainability of development proposals at the planning stage.

Occupying 36 of a potential 200 acres of former dockland, Phase One will house over 65,000m² of office space, 23,000m² of studio facilities and 7,000m² of retail and leisure units alongside apartments, a hotel and public recreation areas. When construction is complete, over 1,000 organisations will be based in MediaCityUK including the BBC and the University of Salford.

How?

Phase one has incorporated many features to meet the BREEAM criteria, in particular using its greatest asset - water from the Manchester Ship Canal – to power, heat and cool the buildings on the 36-acre site. Buildings including the 216-bed-hotel and the seven HD and two audio studios will benefit from the use of a combined heat and power plant energy system known as Tri-Gen, which has many benefits including reducing CO₂ emissions.



Key sustainable features of MediaCityUK

- Major brownfield urban regeneration
- Tri-generation scheme, linked to a community trust to ensure cheap heating and energy across the development
- All buildings to be BREEAM 'Very Good' or 'Excellent'
- Development located in an area of low flood risk
- Enhanced features to reduce urban heat effect
- Extensive transport mixed modal transport plan
- Biodiversity action plan
- Community plaza and recreation areas
- 80% of construction timber utilised will be FSC certified.

Lessons learned

Many positive lessons have already been learned from the construction of MediaCityUK.

MediaCityUK is the first development to receive a BREEAM Communities Masterplan Certificate. This means that the final masterplan submitted for planning approval set out the highest sustainability standards that can be delivered for the site. In maximising the site's sustainability potential, the stakeholder delivery team are on target to create a truly sustainable community.

The site's tri-generation scheme will save a projected 20,000 tonnes of CO₂ per annum. The scheme works in conjunction with a canal water cooling system to maximise energy efficiency, particularly in the winter period where heat generated from the CHP unit is fully utilised for heating and the canal water temperature is low enough to provide free cooling. It also has the potential to be extended in the future.

The BREEAM Communities methodology enabled the design team to identify issues early on and provide the most practical, cost effective solutions. For example, recognition of transport issues enabled these to be addressed at the start of the project and subsequently, the Manchester Ship Canal was used to deliver building materials, minimising CO₂ and local traffic congestion.

The Future

MediaCityUK will be a mixed use development with a range of tenures and occupational uses providing a cohesive community. Around 15,000 people will work on-site and a footbridge across the Manchester Ship Canal will link Salford Quays with Trafford Wharf, encouraging local residents to walk to work.





Retrofit

Currently over a quarter of the country's emissions come from existing housing therefore extensive retrofitting of homes is key to meeting carbon emission reduction Targets. This is particularly important given the lifespan of a property, as figures suggest that 86% of housing standing at 1996 will still be standing in 2050. The following section considers a number of projects which have sought to reduce emissions from the existing housing stock.



Insulating hard to treat properties

What?

Solid wall insulation of a block of pre-1919 terraced properties comprising of a mixture of owner occupied, private rented and Registered Provider accommodation.

Why?

Newcastle City Council undertook a Neighbourhood Renewal Assessment for Lemington Village, an area of private sector housing on the outskirts of Newcastle. The assessment highlighted problems with housing condition with 30% of homes in the area having poor heating and insulation compared with an average of 21% across England. The area consists of mainly pre 1919 terraced properties with a mix of solid and cavity wall construction.

A number of measures were taken to insulate easy to treat properties in conjunction with Newcastle Warm Zone. Funding was also secured to carry out a pilot project to externally insulate a terraced block of 14 solid wall properties with the aim of gaining experience and information for future funding bids.

How?

The terraced block with solid walls was assessed on the technical feasibility for installation using the following principles:

- Front elevations -minimal architectural features, such as bay windows, feature roof and existing render
- Rear elevations – simple layout and structures, avoidance of conservatories, etc
- Condition of the block – no major structural problems, condition of existing window and doors
- Defensible space - properties with boundary walls to the front would provide additional protection to the render

Although the owners were offered a 100% grant for the works there was still significant marketing required to encourage owners to agree to works. This included information leaflets, home visits and a community event. The main concern from owners was the look of the appearance of the render. The team investigated various render finishes and residents decided on a brick effect finish to retain the existing style of the block.

The product

The external insulation systems elected was Perm a Rock Phenolic. The insulation slabs come in 1200 x 600 x 50 mm sheets which are faced on both sides with plain glass tissue. Boards are mechanically fixed to external walls. After fixing the boards are ready to receive a Perm a Rock high polymer cementitious base coat and reinforcing mesh. A further two coats of render are applied, the first coat being mortar coloured and the second coat the colour of the brickwork. The brick pattern is cut out by hand by scraping the top coat render off to reveal the mortar colour underneath. This process results in a raised profile for the brick simulating a traditional brick wall.

The insulation requires a damp proof course to be present as the insulation will dry out the wall increasing the potential of drawing water up the wall from the ground level. All the properties were surveyed with the majority requiring a new damp proof course (DPC) with three requiring internal works in addition.

Work started on site in September 2008 and was completed in March 09 with properties having external insulation to the front and rear thereby improving the visual appearance of the block and improving the thermal capacity of the properties.

Feedback was very positive and residents reported that they were happy with the insulation works. A common factor was that they now used their heating less than before and secondary heating was now almost never needed. All residents thought their home stayed warmer for longer as a result of the works and most agreed that these factors would lead to lower fuel bills due to a drop in consumption. The energy rating of the properties moved from band F to D following an Energy Performance Certificate survey. In addition some owners have also invested further in their properties with 6 properties having new double glazing installed and 4 properties upgrading the central heating systems.

The total cost of the works was £200,000 funded mainly by the Council with support from our Newcastle Warm Zone partner Scottish power.





Changing Streets – Energy Efficiency in Regeneration

What?

The Advance Goole, “Changing Streets” Scheme is a housing regeneration project within the East Riding of Yorkshire that is making a difference to people’s lives.

The project was set up in 2008 to fund badly needed improvements to 55 streets of private sector homes. The scheme has been so successful that it has been extended to include additional street works and additional home energy efficiency measures. To date over 560 properties have been refurbished on 17 streets in 17 months.

Why?

The project aims to improve the outward appearance of properties, increase confidence in the area and provide incentives for landlords and home owners to undertake further improvements to their properties.

How?

The first phase of work commenced in February 2008 and was completed by June 2008 with improvements to 113 houses on 4 streets. Costs for this were initially met through funding from the Humber Housing Partnership. The success of this phase helped secure further funding for 2008–11 from the Regional Housing Board. Phase 2 of the project involved 8 streets and a total of 253 houses. Phase three involved a further 196 properties and was completed in May 2008.

The net result is that 450 properties will have been refurbished during 2008-09 compared to the 250 originally scheduled, with 99% take up of the scheme.

Improvements to properties and their surrounding areas have included;

- Provision of insulated render
- Re-pointing of brickwork
- Replacement windows
- New boundary walls
- Guttering and fall pipes

In addition cross departmental working across East Riding of Yorkshire Council has allowed the provision of;

- Replacement footpaths
- Refurbishment of street lamps / provision of hanging baskets “dropped kerbs” to streets with parking issues
- 200 m of fencing and clean up in an area prone to “fly tipping”

Energy Efficiency

Further funding was also obtained for a scheme of loft insulation works which will allow the insulation of over 450 properties. Furthermore energy efficiency measures have become increasingly part of the project rising from 29% of properties externally insulated in Phase 1 to 66% in phase 3.

The tables below show vast improvements in the SAP ratings of properties and CO₂ emissions, along with noticeable costs saving for household’s fuel bills.

2 storey type 1 mid terrace

	SAP	CO ²	£
Existing	57	4.2	741
+ loft insulation	59	4.0	709
+ cladding (to front)	62	3.7	667

2 storey type 1 End terrace as above

	SAP	CO ²	£
Existing	41	6.2	1033
+ loft insulation	42	6.0	997
+ cladding (gable only)	53	4.6	804
+ cladding (front & gable)	55	4.4	768

The project team are hoping to build on the success of this scheme and further integrate energy efficiency measures into the stock and they are currently working with intermediaries towards obtaining funding for additional energy efficiency works.





Journey to the Centre of the Earth

What?

In September 2008 Stafford and Rural Homes (SARH) completed an innovative project, installing ground source heat pumps to help tenants in a rural location keep warm and reduce their fuel bills.

Why?

Tenants in the village of Swynnerton who live in a small complex of warden linked bungalows do not have access to mains gas and heated their properties either by storage heaters using the Economy 7 tariff or solid fuel, both of which are expensive and did not always provide the heat required at an affordable cost, particularly for those tenants who spend a lot of time at home

How?

Ground source heat pumps involve drilling to a depth of 80 metres to install a loop to extract heat from the ground which is used to provide heating and hot water.

The new heating system itself is easy to use with simple controls and unlike storage heaters, provides heat whenever it is required. Once installed the gardens and surrounding area were restored back to how they looked before, with no unsightly equipment visible to spoil the look of the village.

Inside the tenants' homes the system looks no different to any other heating system with heat provided through radiators that look just like any other system.

The project is part of SARH's Affordable Warmth Strategy and is one initiative to help combat fuel poverty. The ground source heat pumps provide a cheaper and more efficient heating system for the occupants of the nine properties, with estimated savings based on figures from the Energy Savings Trust of around £1000 per year per property. These savings come at a time when the economic downturn means that more of our tenants are having difficulty paying bills. The project was completed before the start of the 2008 winter which was one of the coldest for some years.

Impact

The installation does not require any costly maintenance or annual inspections, so tenants are not inconvenienced by having to be available for appointments to carry out such work.

The ground source heat pumps provide:

- Low carbon emission heating – 50% lower CO² emissions per kWh than gas
- Lower running cost than conventional heating systems– lower impact from fuel cost increases– no requirement for annual safety checks
- 100% of heating and domestic hot water demand– unlike many other renewable technologies
- An energy source that is always available– unlike wind/solar, etc which is intermittent
- A 25 year + lifespan.

Grants made the project affordable to undertake, with the cost per property of £3,777. Partnership working was key to the success of the project.

All stages of the project were carefully planned, working in partnership with the tenants, making sure tenants were aware of the work involved and timescales. Without the involvement of the tenants and their strong agreement to go ahead SARH would not have proceeded with this project. Tenants were involved in the selection of the contractor to carry out the work and able to ask questions about the way the work would be carried out and the benefits of such a system.

SARH worked in partnership with Dimplex and Azure Natural Energy to install the ground source heat pumps. The benefits that the partners brought to the project were their experience of such work and their understanding of tenants' needs and concerns, but also importantly their help in accessing grant funding.

Future

Following completion of the installation SARH is working in partnership with the Energy Savings Trust who are monitoring the actual cost of running the heating systems on six of the properties as part of a wider survey. The results will help to inform decisions on future installations both at SARH and more widely.



Intelligent Metering

What?

Oldham MBC and First Choice Homes Oldham (FCHO) have delivered one of the UK's first intelligent metering packages - allowing over 2,000 customers to pay for the heating energy that they actually use rather than a fixed weekly charge.

Why?

Traditionally sheltered housing and multi-storey schemes rely on gas-fired communal heating and hot water systems. This means that residents have unlimited heating for a flat weekly payment. However, rising energy costs have pushed up the weekly charge making elderly and vulnerable tenants more at risk of fuel poverty.

In addition the payment of a flat weekly charge does very little to encourage residents to manage their heating energy consumption. By paying for energy used and not the energy available, residents are able to lower their fuel bills whilst reducing their impact on the environment. The smart metering system when installed with separate time and temperature controls for both heating and hot water offers real opportunities for energy saving.

How?

The metering technology and new controls have been installed in more than 2,000 Oldham households by sustainable energy solutions business ENER-GSwitch2.

The funding was available through prudential borrowing from Oldham MBC once it was realised that customers were facing real financial difficulties following the implementation of increases in excess of 40% to the weekly heating charge.

Product

ENER-G Switch2 has used an innovative new Fixed Area Radio Network to collect meter readings as and when required, removing the need to enter a resident's property. The company is also responsible for the maintenance of internal systems including the radiators and domestic hot water cylinders. Meter readings are collected and downloaded into Excel and provided to FCHO which allows heating charges to be varied if required.

Impact

Residents have seen their energy bills reduce by an average 30 per cent per home since the scheme was installed. A number of households have seen cuts up to 60 per cent with some monthly bills falling from more than £60 to below £25. Figures also show that around 75% of households are now paying less than the previous fixed weekly charge for heat and hot water.

Future

FCHO intends to continue working with customers to ensure everyone has the opportunity to save energy and reduce their weekly outgoings. The Heating Team engineers continue to visit and provide advice to customers on the most efficient way to operate the time and temperature controls provided. Consideration is also being given to replacing the old communal gas boilers and other plants with new gas fired condensing boilers, variable drive pumps and building management control systems (which aid the operation of heating appliances to allow them to operate to the exact degree and thus save energy) to reduce FCHO's energy usage with any savings benefitting customers by keeping the charges as low as possible.



Green Living Islington – Affordable Large Scale Refurbishment

What?

A pilot scheme between United House, a social housing contractor, and the London Borough of Islington to take a ground floor flat within a Victorian terraced house and give it a green overhaul.

Why?

By undertaking this exercise it was hoped to establish how eco-friendly refurbs can be achieved at mass-market prices. By selecting the best value improvements in terms of costs and cuts to carbon emissions it was hoped that social housing providers will be able to opt for these improvements as part of their decent homes work.

How?

The pilot opted for a 'Value Carbon' approach. In other words United House set out a list of measures that would give the greatest savings of carbon dioxide for the cheapest price, taking into consideration the type of property being retrofitted. The table shows the improvements that could be made to the flat within the Victorian Terrace flat.

Improvement	Cost	Kilos of CO ² saved	£ per kilo of CO ² per year	CO ² Saving (%)
Set thermostat at 20 degrees instead of 21	0	130	0	50%
Reduce hot water use by 10%	0	33	0	
Low-energy lighting	45	90	0.50	
Draught proofing windows	650	282	2	
Replace band G with band A fridge	300	100	3	
Baxi micro Combined Heat and Power (including 10 years maintenance)	4,750	1,300	4	
Replace band G washing machine with band A washing machine	300	76	4	
Double glazing (4.37m ² vacuum)	600	100	6	
Insulate external walls (Aerogel 23m ²)	4,470	623	7	80%
Insulate floor (29.4m ²)	3,700	140	6	
Insulate party wall 'magic wallpaper' 14m ²	1,650	41	40	
Heat recovery ventilation (including 10 years maintenance)	6,000	70	86	
Overall (excluding tenant action items)	21,865	2,646	8	

The 'Value Carbon' approach is based on the premise that social housing providers with a set pot of money will be able to get the greatest energy savings by installing measures that can achieve the largest emission reduction per pound spent. Under this method not all properties would get the same treatment as only the most efficient measures for that property would be fitted. It is also worth noting that no renewable technologies were included in the retrofit, as at the moment technology is so expensive to buy and install that under the 'Value Carbon' methodology the energy saving achieved per pounds spent are not viable.

The pilot took the approach that over the life course of a property it will undergo major repairs at least twice. At the moment the renewable energy industry is in its infancy and it was decided that this technology should not be fitted as part of the pilot. The aim of the pilot was to see what levels of energy saving can be achieved at a relatively low cost. The pilot set out with no predefined percentage carbon saving target or financial budget, but simply set out with the intention of doing the right thing for the lowest cost.

Impact

In total 24 improvements were applied to the property (but no renewables) and a carbon reduction of 2.7 tonnes per annum was achieved, bringing this figure down to 1.1 tonnes per annum from 3.8. The decrease represents a 70% reduction for a £21,865 spend and interestingly a 50% saving was achieved for one third of the costs at £6,645.

With the measures to achieve a 70% carbon reduction installed, the saving on the utility bill was £1 per annum for every £64 of capital spend, and the carbon was saved at a cost of £8 per kg/per annum. If only the measures to give a 50% carbon reduction were deployed, the utility savings are improved to £1 for each £28 of capital spend, and a carbon saving cost £3.50 kg/per annum, demonstrating that simple low cost measures are effective in reducing carbon emissions.

Key lessons

The Green Living home demonstrates that good value low-carbon refurbishment is possible as part of a Decent Homes program. However budgetary restrictions mean we have to be realistic about the level of carbon savings we hope to achieve. The average home will undergo two major repairs programs in its lifetime and within this pilot it is reasoned that retrofitting properties should be approached in two stages.

An initial 50% reduction can be achieved at a relatively low cost as part of the decent homes programme and rolling repairs. Whilst deeper carbon savings will be able to be made at a later stage and when the renewable technologies market has matured and the cost of technology has reduced.

It is reasoned that a first fix should include as a minimum:

- Upgrading the heating with a condensing boiler
- Thermostatic radiator valves (TRVs) on all radiators, plus time and temperature controls
- A hot water cylinder with foam lagging;
- Draught strip to windows/doors
- Improving external wall and roof insulation
- Low-energy lighting
- Fitting used chimneys with closing doors to prevent room heat loss
- Adding enabling technology to simplify the 'second fix' renewables

In summary the pilot has demonstrated that cost effective action now is a major stepping stone in meeting the longer term 2050 carbon reduction targets.




Retrofit Reality

What?

A Tenant Services Authority Innovation and Good Practice project looking at ways to improve the efficiency of Gentoo's housing stock. So far the project has secured £115,000 of funding from the TSA and the Low Carbon Buildings Programme, with £255,000 committed to the project from Gentoo's own funds.

Why?

Currently Gentoo's housing stock generates 180,000 tonnes of CO² per annum with associated fuel costs to tenants of £30m. Gentoo met the Decent Homes standard in 2005 and since then they have been increasingly interested in how to make their homes more sustainable.

The aim of the project is to test products designed to make homes more sustainable. Products used in the first stage of the research include: solar thermal panels, A rated condensing boilers, energy efficient showers, external insulation and double glazing. Gentoo are interested in finding out:

- How much energy efficiency products reduce fuel bills for tenants?
- How difficult the products are to put into a house?
- How easy they are to use?
- What are the benefits to people living in the Homes?
- What type of maintenance do they require?

How?

The first stage of the project involved identifying homes to install the products. Gentoo were keen to ensure the products are people friendly, that the right homes were chosen and the right products were used. Gentoo initially identified 1500 homes which were due to be improved to the decent homes plus standard, the homes were assessed in terms of their suitability and for additional sustainability measures and a total of 139 properties for the project were chosen.

Lessons Learned

A number of lessons were learnt from the above process. These included:

The importance of clear communication in terms of staff's knowledge of the technical details of the products and being able to communicate these to tenants, furthermore it was important for technical staff to communicate clearly with tenants.

Choosing the right properties for the technology was difficult. Some homes were not suitable for the products chosen and a number of practical issues were identified:

- The space and orientation of some roofs did not lend well to solar panels
- Some customers expressed concerns about the loss of storage space to cylinders etc related to the heating system
- Some homes were not suitable due to the location of their gas or electricity meters which would have required moving
- Some homes needed a large amount of re-plumbing for hot water cylinders or their floors were not strong enough to support the weight of the cylinders
- Equally some roofs would have needed strengthening to support the solar panels

All of the previously listed issues would add costs and time delays to any programme of retrofitting.

Choosing the right products was an important part of the project. Gentoo worked to identify which products gave the best carbon emission savings for their price (£ per tonne of CO² emissions saved). Results from this process included:

Solar thermal panels

- Solar panels are traditionally thought of as being placed on the roof of properties however they can also be placed on the sides of houses and boundary walls.
- A balance needs to be struck between the size of hot water tanks used and the number of people in the household using them
- Solar panels will need regular checks as part of their 10 year warranty
- Benefits from solar panels can be between £50 per tonne of CO² saved to £207 per tonne of CO² saved

Double Glazed Windows

- A balance needs to be struck with regards to the size of windows. Large windows allow more light in however they provide a greater surface area for heat to escape
- This can be combated by providing a coating that allows light through while keeping heat in (Low E Coatings)
- Windows are rated from A to G by the British Fenestration Rating Council depending on their daylight to heat loss ratios
- Changing to A rated windows is predicted to save £10 per tonne of CO² to £23 per tonne of CO² saved.

- Aerated flow shower heads were preferred by tenants as they give the illusion of a higher volume of water
- Low water flow showers save both water and the energy needed to heat it
- Putting low flow shower heads on electric showers is problematic
- The benefits of fitting low flow showers range from £18 per tonne of CO² saved to £1,284 per tonne of CO² saved

Buying the products involved a competitive tendering process. Tenders were invited from suppliers eligible for grant funding under the Low Carbon Building programme and from those who were not. In some cases those who were not able to access grant funding gave better value for money. Overall comparison of the various products indicates that A rated windows can be a cost effective method for reducing carbon emissions. Whilst some other technologies can be more expensive.

Summary

The first stage of this project has provided a number of key lessons which can be shared with other housing providers interested in retrofitting their properties. This case study summarises the results from an initial report produced by Gentoo. Two further reports are expected over the course of the project and these will be available at www.gentoo-group.com.



Partnership working for water efficiency

What?

A water efficiency pilot undertaken in the Preston Ward, Tadworth in Surrey was overseen by Reigate and Banstead Borough Council with funding from the Governments Growth Points Programme. A number of partners were involved in the delivery of the programme including Raven Housing Trust, the local water agency, the local County Council, the Environment Agency and Water Wise.

Why?

The pilot aimed to:

- Reduced levels of water consumption of tenants in social housing through the installation of water efficiency equipment and an awareness campaign to help change tenants attitudes to water consumption.
- Provided a series of lessons learnt and recommendations to inform future water efficiency in social housing.

The pilot ran from April 2007 and was completed in May 2008. Monitoring of the impact and data from the scheme took place until February 2009.

How?

Water efficiency measures were installed in bathrooms in conjunction with planned Decent Homes work, as 160 dwellings were due to have their bathrooms re-fitted. This work consisted of the standard replacement of washbasins and baths as would be expected in Decent Homes however as part of the water efficiency pilot, dual flush toilets, showers and shower curtains were installed. In addition tenants were offered a water butt.

Approximately 340 properties in the project area were not due any Decent Homes work therefore alternative methods of achieving water savings were employed. Initial assessments were made of these properties to determine what retrofit water efficiency measures were needed. This involved an assessment by a Water Conservation Officer and a self completion questionnaire for the household. A number of measures were offered to households including: fitting dual flush devices to existing toilets or replacing high-level cisterns with new toilets. Taps were inspected and any drips were repaired, visual checks were carried out for leakage and these were repaired. Leakage alarms were also offered where appropriate. Tenants with gardens were also offered a water butt kit.

Another part of the initiative was the piloting of a rainwater harvesting system. This was installed on a block of twelve flats with the aim of providing water to be used in toilets. The system was fitted to the outside of the building using a sunken rainwater storage tank underground which then pumps water under pressure directly to the toilet system.



An awareness campaign was also delivered to encourage local residents to think more about their water consumption using a variety of marketing methods including: promotional literature, giveaways and vouchers towards selected water efficient washing machines.

Impact

The impact of the scheme was measured by recording water usage both before and after the programme. Baseline data was collected on the composition of households, their size and what water using products they had. This then allowed the calculation of per capita consumption (PCC) which is the amount of water used per person per day. The project team calculated the PPC across the area as 165 litres. Targets were then set for anticipated reductions in this amount. Changes in water consumption were recorded through the installation of a number of meters to blocks of flats, looking at households with existing meters and installing small area meters to clusters of houses where supplies can be isolated through a single supply. Readings were taken for two months before carrying out any works and then for six months following installation.

Actual Water Savings

The scheme achieved considerable savings in PCC. Properties refurbished as part of the decent home programme saw savings between 23%-28% whilst those properties retrofitted achieved savings between 13%-15%. Indeed average PPC was reduced by 41

litres per day for the refurbished properties and 23 litres per day for the retrofitted properties. This represents significant value for money in terms of the initial costs of these measures.

Slightly lower levels of saving and value for money was achieved by the rainwater harvesting system. This was due to technical problems and the relatively low base levels of PPC for those living in the flatted properties. Despite this savings of around 5.2% were achieved.

Conclusion

Overall the programme has demonstrated that it is possible to achieve reductions in water usage if a co-ordinated local approach is taken. High levels of tenant satisfaction were recorded with the scheme and a number of tenants felt that their attitudes to water usage had changed as a result of the pilot. A number of key lessons were learnt as part of the process and further details of these can be found at www.waterwise.org.uk

However it was concluded that social housing providers should start to include some water efficiency measures in their decent homes work and begin to move towards retrofitting properties with some form of water saving devices.



Partnership Working Towards Renewable Energy

What?

A successful Alternative Energy Scheme that received a runner-up award in the 2009 National Renewable Energy Awards. The scheme is a partnership project with Durham County Council, Dale and Valley Homes and EAGARenewables. In the past two to three years more than 100 council-owned homes in the area, which are not connected to a mains gas supply, have been helped to install a range of renewable technologies. These have varied from solar water heating and wind turbines to solar electricity generation and ground source heat pumps.

Why?

The scheme initially aimed to find alternative energy solutions to vulnerable rural homes, off the gas network in hard to reach areas of the community. However as the project progressed this remit has expanded and the partnership began working with local firms to increase the availability of accredited renewable energy installers in the local area.

The partnership now has a network of accredited installers they can call upon at any time and by utilising suitably accredited products and installers, it was possible to gain additional funding for the scheme. In some cases this funding doubled the number of properties where appropriate works could be carried out.

A framework of suppliers in all renewable technologies has now been established across the County which has highlighted Durham as an area with varied renewable energy expertise and increased the opportunities for economic growth in this vastly growing business field.

How?

Early works were carried out as 'pilot projects' due to the rural nature of the dwellings, however further installations were carried out under the Decent Homes Program or utilising budgets previously allocated for Boiler or Heating Upgrades. A specific Renewable Energy Budget has now been established to develop this programme and resolving the funding demands of the scheme and encouraging the development of suitably qualified local installers to deliver is felt to be a key factor in the success of this scheme.

Impact

Since the initial installations customer feedback has proved to be very positive with residents seeing a substantial reduction in their energy bills. The partnership will be seeking to revisit households once the installations have been in place for one year to gather overall cost benefits and carbon savings.

Future

The partnership is hoping to roll the scheme out across the County Durham area.



Greening your organisation

For many organisations going green will be part of their Corporate Social Responsibility (CSR) programme however reducing carbon emissions from the public sector will become increasingly important given Governments moves towards a low carbon economy and the fact that over a third of UK carbon emissions come from businesses. There are a number of different ways that you can green your organisation ranging from: transport policies, procurement processes, recycling facilities and helping tenants and residents make the shift towards greener living.



Fylde Low Waste and Energy Project

What?

Hosted by Fylde Borough Council, the Fylde Low Waste and Energy (FLoWE) project is a unique partnership initiative that aims to assist all sectors of the Borough's society with energy efficiency, renewable energy, waste, recycling, transport and associated climate change issues.

Over the two years that FLoWE has been operating it has been involved with a variety of projects, particularly aimed at the domestic sector. A large proportion of work is to provide information and create opportunities for individuals to improve energy efficiency and in so doing save money.

How?

Between June 2008 and March 2009 FLoWE, with assistance from the Council's housing team, worked with an independent business that surveys property's insulation and forwards work onto installers. The scheme focused on council areas which have a high proportion of residents who are eligible for free loft and cavity wall insulation. With the addition of funding from the Older People's Partnership, 486 houses had 633 measures (loft and/or cavity wall insulation) installed. This equals savings of almost 640 tonnes CO² and approximately £90,000 per year for those residents.

FLoWE has also established an interest free loan scheme in partnership with Blackpool and Wyre councils to enable Fylde Coast residents the opportunity to obtain interest free loans for energy efficient measures. In particular, this loan is aimed at able-to-pay residents who may not be able to afford the relatively high one-off costs of many of these measures.

Finally, the partnership in conjunction with the Heritage Trust held an event to demonstrate ways that Victorian and Edwardian buildings can be made more energy efficient while retaining their architectural style, as most advice only focuses on newer houses.

Future

FLoWE will continue to work with households, schools and local businesses to take forward the environmental agenda through road shows, advice provision and other initiatives.



Barnsley District Heating from local tree waste

What?

Barnsley Metropolitan Borough Council (MBC) has installed around 3 MW of wood-chip boilers in council flats and buildings. This will rise to around 10 MW over the next 3 years as their 'Building Schools for the Future' Programme (BSF) is completed. In June 2004, the Council adopted a 'Biomass Implementation Policy', committing it to considering biomass heating systems for all new and refurbished buildings. It has already completed a 470 kW wood-fuelled district heating scheme for 166 flats, a 500 kW scheme for the council depot, its new Civic HQ (Westgate Plaza One) also at 500 kW, a new Digital Media Centre and several smaller buildings thereby demonstrating the flexibility of the newer technology. Some of these replaced old coal boilers, but the Westgate scheme will eventually serve a new Civic Centre District Heating Scheme which will encompass the new Westgate Plaza Two, the Central Library and the Town Hall in preference to gas.



Why?

In 2004, Barnsley MBC still had 133 coal-fired boilers at 66 premises (mainly primary schools), including 26 district heating schemes, which jointly consumed 6,500 tonnes of coal per year. Barnsley had implemented a programme of efficiency measures for coal boilers, but by 2004 many coal boilers were due for replacement.

The Council disposes of many tonnes of wood waste from its parks and gardens each year. One function of the depot in the past had been to handle large volumes of waste from council tree management. A small amount of this was used as mulch in urban parks, but most was sent to landfill. Barnsley MBC then decided to convert this waste to wood-chip and a 700-tonne drying store has been constructed, which will allow storage and air-drying of the wood-chip for supply to different biomass heating systems. The depot now makes its own fuel and burns its own fuel thus forming a 'closed loop'.

Another 'spin-off' of the Council's work has enabled a small wood-chip supply business to start up, and Barnsley MBC is also starting its own wood-chip supply from Council waste.

How?

In the beginning, as part of a major £1.7 million refurbishment to a complex of flats in the city, two linked wood-chip boilers rated at 320 kW and 150 kW were installed. The smaller boiler is used alone to provide heat demands during the summer, thus avoiding the inefficiency of running a single large boiler at a small fraction of its rated output. The biomass boilers have reduced energy consumption and carbon emissions considerably. This is partly because they replace old, inefficient, coal boilers. However, the programme has also emphasised the efficient use of energy. This includes the use of heat metering which has motivated tenants to reduce wastage. The estimated primary energy and CO² savings are given in the table below. As Westgate HQ, is a new development, the CO² savings assumes that gas would otherwise have been used as the fuel, which is less carbon-intensive than coal.

	Primary Energy Saving	CO ² Saving (t/yr)
Sheffield Road Flats	72%	1300
Smithies Lane Depot	50%	350
Westgate HQ - phase 1	New build	270
Westgate HQ - phase 2		400

The second installation was a 500 kW wood-chip boiler at the Smithies Lane Depot, which belongs to Barnsley Council. This boiler was installed in early 2006 to heat the depot and supply hot water to 450 council employees, in place of two coal boilers which were in urgent need of replacement. It will use an estimated 150 tonnes of wood-chip each year.

As for the Civic HQ at Westgate, although the capital cost of £150,000 for the 500 kW biomass heating system was much higher than £18,000 for a gas-fired equivalent, the 25-year running costs were projected to be only about £300,000 rather than £1,200,000 for gas (based on the prices ruling then). These estimates were based on wood-chip being purchased, rather than using the Council's own supply which will soon be available at much lower cost. Barnsley MBC also saves by not having to pay landfill tax to dispose of surplus tree waste.

The Future

There is plenty of scope to go further, with many coal boilers still in place in Council-owned properties; and significant further potential for local wood supply from forestry management and coppice.

Barnsley MBC has a clear long-term commitment to future developments. It is significant that wood-chip is being used not just as a replacement for old coal fired systems, but also as a cost-effective alternative to gas in new buildings.

In addition, 1,300 hectares of short rotation coppice have been planted. The new demand for biomass created by Barnsley MBC has helped to form a wood fuel supply chain, supporting the active management of woodland and preventing wood from going to landfill.

At the end of March 2009 the Council's carbon footprint, related to its buildings portfolio, was measured to be 52% below the 1990 base level. The Council remains on course to reach the Government's original 60% reductions target by the end of 2010 (40 years early) and the revised 80% reduction target by around 2013 – 37 years ahead of deadline.



Emmissions Trading Scheme

What?

Kirklees Council has consciously been reducing its carbon emissions since 1992. In 2002, uniquely, it signed up to challenging reduction targets, through the UK emissions trading scheme. It began by cutting the Council's own emissions. The resulting cost savings have funded a wide range of other initiatives.

Kirklees became the first (and only) local authority to join the newly created UK emissions trading scheme in 2002 – with legally-binding targets to reduce carbon emissions by 30% over 5 years.

How?

Before focusing on a number of residents' projects, Kirklees instigated major changes to its own energy consumption to create cost savings for further investment in carbon savings in the Council. Measures include:

1. Setting up a Renewable Energy Fund. The fund has enabled around £4million of additional funding to be raised from the EU, UK Government and private investment.

2. Implementing one of the largest local authority solar energy projects in the UK (Sun Cities), involving 500 households, resulting in 5% of the total UK photo-electric generation in 2006 which won the International Ashden Award in 2007.
3. Installing a biomass boiler to the Titanic Mill luxury office and apartments development
4. Installing wind turbines on council buildings, including the first two 6kW wind turbines ever installed on the roof of a council building in the UK.
5. Delivering the Climate Champions project in Kirklees schools one of which installed their own 15kW wind turbine.
6. 220 solar electricity panels and 48m² of solar thermal panels on the main Civic building in Huddersfield.
7. Planning applications for the installation of renewable technologies are considered free of charge as the fees have been waived.

The council has achieved environmental, poverty reduction and job creation benefits – securing cross-party political support, and a 34% reduction in emissions.

The Council have invested approximately 50% of the 'Warm Zone' funds from its own capital investment programme with a further 50% match funded from Scottish Power. National Grid also contributed start up finance, advice and officer time.

The three year Warm Zone Project commenced in February 2007 was the only scheme in the country offering free insulation to all households, regardless of income levels, solely dependent on the suitability of the home. The target for this £20 million project is to retrofit 50% of Kirklees' 172,000 homes by 2010, so saving up to 55,000 tonnes pa of CO² (2% of district emissions).

Why?

This programme delivers across the sustainable communities agenda and is a great example of Local Strategic Partners working in an integrated way. As well as environmental benefits, it is delivering health, safety, poverty alleviation, neighbourhood regeneration, local jobs and skills. As a result the scheme has strong cross-party backing and has been able to secure mainstream budget funding and lever in external funds.

Kirklees has increased the Council's capacity to deliver large scale renewables initiatives on domestic properties.

A major factor in the success of these projects was the ability of the Council to access and co-ordinate several funding streams (European, national and partners) to finance the capital measures. Savings made from energy and water efficiency measures are reinvested in efficiency measures in other buildings therefore giving a continuous funding stream to help the council meet its own CO², waste and water reduction targets.

The Future

For the future Kirklees Council's District Emissions Reduction Plan sets targets of 3% pa CO² reductions for 3 years. Further investment is planned for: biomass wood fuel and boiler installations, a District Heating network and small scale hydro. As in the past, this will be part funded from savings the Council makes from reducing its own energy, waste and water consumption. The Council recognises there is still a long way to go in tackling climate change. The next phase will mean getting others – businesses and the public sector – to take their own practical measures.

Lessons Learned

Kirklees Council has learnt many lessons from both their energy efficiency and renewable work:

- Develop a strong vision and keep it at the top of the agenda
- Be opportunistic – if funding is available from mainstream budgets, EU or Central government programmes then tap into it
- Ensure the right technical support. The Council's 30-strong environmental team has built a strong technical base and is not scared of the technologies. They keep up to date with climate issues, technical developments, funding opportunities and procurement rules
- Tackle the easy measures first; start with practical interventions which will make a difference
- Offer something for everyone – to ensure the scheme is seen as fair and the uptake by residents is high



BuilderScrap: saving the environment, saving costs

What?

BuilderScrap is a completely free website for the construction trade, set up by builders for builders, that aims to facilitate contact between different trades people and help them to use up surplus in the supply chain. It provides an outlet to encourage reuse of material that would otherwise be thrown away. It is a way for the industry to work together to reduce the amount of builders' waste sent to landfill.

Why?

DEFRA statistics show that over 90 million tonnes of construction and demolition waste is produced every year in England and Wales, making up approximately 25% of total waste. At least 13 million tonnes of this refuse is said to be surplus, new material; most of which could be reused, and a further large proportion is second hand product which could also potentially be reused, or recycled. BuilderScrap aims to provide a platform for builders and others in the trade to reduce the amount sent to landfill by utilising each others' surplus where possible.

Benefits of using the service include cost savings by passing on materials which would otherwise require chares for skips, landfill tax and labour. If materials are used from the site there are obvious savings on material costs.

Environmental savings include reducing the toll that construction waste takes on the environment.

How?

The website allows participants to post a picture and description of the website. MMS or picture messaging can also be used. For further information visit www.builderscrap.com

Other interesting initiatives which are being pursued by housing providers in an effort to reduce the environmental impact of their business include;

- Car sharing and shared transport for staff
- Office recycling schemes
- Refitting energy saving light bulbs
- Insulation measures for office buildings etc
- Introducing paper waste management and a move toward paperless offices and the use of recycled paper
- Training schemes for staff and tenants to change behaviours impacting on the environment
- Moving towards more environmentally friendly vehicles in fleet management
- Reducing the amount of waste from water cooling systems by switching to mains filtered water or banning the use of plastic cups
- Fitting micro generation technologies to supply office heating and/or lighting

International learning and good practice

In 2008, the G8 group of nations set a target of reducing greenhouse gas emissions from EU member states. This target was to reduce emissions by 20% by the year 2020 compared to 1990 base levels. This replaces previous emission reduction targets set out under the Kyoto protocol when these expire in 2012. Furthermore under the new agreements, the world's leading industrialised nations agreed to cut emissions by 50 percent by 2050.

In anticipation of such a demand on them, several countries including Britain have already begun to implement programmes to cut emissions. Not surprisingly some of these schemes have focused on reducing the carbon emissions from new and existing housing stock. Since the introduction of

the 2050 target, there have been a number of pan European initiatives to share the learning and best practice that comes as a result of the EU members trying to achieve measurable reductions in carbon emissions.

The European Commission set up the one such programme entitled 'Intelligent Energy Europe'. This programme was set up to encourage the use of untapped opportunities for saving energy and encourage the use of renewable energy sources. Over its life course the programme has published a number of research reports and best practice studies, many of which provide technical advice around the many aspects of retrofitting the housing stock and providing alternative sources of domestic energy.

http://ec.europa.eu/energy/intelligent/index_en.html

Specific programmes funded by Intelligent Energy Europe include SHARE –Social Housing Action to Reduce Energy Consumption. The project ran from January 2006 to June 2008 and funded a number of projects for social housing including;

- Energy awareness for tenants
- Trialling wood fuels
- Investigating finance solutions
- Energy and water metering
- Trialling various technologies

Further details of the project can be found at; http://www.socialhousingaction.com/case_studies__english.html

Intelligent Energy Europe also co funded with the European Union the 'Retrofitting Social Housing and Active Preparation for EPBD' (RESHAPE) programme. This programme aimed to contribute to the understanding of the Energy Performance of Buildings (EPBD) in the social housing sector. The programme ran for 30 months from January 2006 and aimed to demonstrate the preparation of social housing for the implementation of EPBD and Energy Performance Certificates. The project also aimed to increase awareness and attitudes towards solutions for refurbishment.

http://www.reshape-social-housing.eu/project_summary/index.html

More recently, the Power House Europe initiative has been set up with the aim of promoting expertise around building and retrofitting to greener standards. This programme will run from October 2008 for 36 months. The programme will fund 20 projects under the title 'retrofitting social housing' aimed to provide learning on how to widely deploy retrofitting to the social housing stock. The programme hopes to highlight and share best practice around energy efficiency and renewable energy and promote information and knowledge exchange. The programme is also set up to provide guidance on technical, legal and financial issues involved in this.

More locally, current learning and best practice programmes in operation in Britain include the retrofit for the future programme which was announced in March 2009. This programme seeks to identify innovative solutions to improve the energy efficiency and environmental performance of the UK's housing stock. The £10m competition, invited proposals for suppliers to design and install new high performance solutions to dramatically improve the energy efficiency of houses. Companies were invited to bid for contracts to work with social housing providers, refurbishing example buildings and evaluating their environmental performance. Overall the programme seeks to deliver a minimum of 50 demonstration prototypes. A number of projects have now been chosen and are in the early stages of planning.

Furthermore the Carbon challenge programme hosted by the Homes and Community Agency is working in response to zero carbon housing targets for new build properties by 2016.

It is hoped that by engaging with the above initiatives housing providers and developers in Britain will be able to play a significant role in meeting the 2020 and 2050 carbon emissions reduction targets. Now is the time for the housing sector to take a leadership role on climate change.

Supporting our Members

The Northern Housing Consortium and Consortium Procurement are working together to develop and provide a range of support and advice services to keep housing providers up to date with key issues and thinking around the environmental agenda.

Our main service offering will include;

- The production of briefing papers on latest government legislation and what this means for our Members
- Newsletters highlighting policy changes and show casing Members' positive developments
- Responding to consultations and government press releases on behalf of our Members to best represent their needs
- Acting as the conduit between our Members and government departments and other important partners, e.g. BRE
- Assisting our Members in developing their own internal environmental, strategies, policies and practice
- Developing information sheets on energy efficiency for our Members and their customers
- Providing collaborative procurement frameworks for energy efficiency technologies
- Running conferences and workshops around this agenda and its impact on the achievement of wider strategic aims
- Producing a range of timely publications to support the work of our Members such as best practise booklets and case study publications

Contact Us

If you would like to get involved or would like to discuss this work stream further please contact us at enquiries@northern-consortium.org.uk or call 0191 5661000.

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