

EcoHomes XB

A guide to the EcoHomes
methodology for existing buildings

bream.ecohomesXB



Sustainable Homes Ltd

EcoHomes XB Guide

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Gentoo Group (formerly Sunderland Housing Group)
Hastoe Housing Association
John Grooms Housing Association
Keniston Housing Association
Ocean Housing Group
Sovereign Housing Association
Walsall Housing Group

Hastoe Housing Association set up Sustainable Homes in 1996, becoming Sustainable Homes Ltd in 2007. The team provides training and consultancy services on improving sustainability and environmental performance to anyone involved in the housing sector.

Please note that information and opinions have been gathered together in this document to give general guidance on EcoHomes XB. They are believed to be correct but Hastoe, the Housing Corporation, BRE and the other organisations participating in the project cannot accept any liability arising from them. Housing associations and others will need to obtain their own professional advice when implementing schemes or contemplating new arrangements.

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Contents

	Page no:
Foreword	4
Executive Summary	5
Chapter One: Introduction to EcoHomes XB	6
• What is EcoHomes XB?	6
• When to use XB	6
• Main differences to EcoHomes New Build	6
Chapter Two: Overview of carrying out an assessment	7-9
• What does XB assess?	7
• Example of credit assessment	7
• How an assessment works	7
• Stage 1: Initial benchmark	7
What data/information is required?	8
• Stage 2: Refining your score	8
Calculating the XB score	8
• Who can carry out an assessment?	9
• Setting targets	9
• The best things to start looking at	9
• Where can you get the XB guidance from?	9
Chapter Three: Why focus on existing stock?	10-11
• Why is sustainability important?	10
• Drivers for sustainable development	10
• The significance of existing stock	10
• Is XB regulation?	11
Chapter Four: How can EcoHomes XB help?	12-13
• Why use XB?	12
• The business case	12
• The case for residents	13
• Refreshing resident engagement and the environmental agenda	13
Chapter Five: Practicalities and Prompts	14-17
• Management	14
• Energy	15
• Transport	15
• Pollution	16
• Water	16
• Health & well-being	16
• Waste	17
• Overall comment	17
Chapter Six: Educating the end user	18
Chapter Seven: Recommendations	19
• The XB tool	19
• Undertaking improvements	19
Chapter Eight: References and sources of further help	20-21
• General background reading	20
• General sources of advice and help	20
CASE STUDIES	22-40
• ASRA Greater London Housing Association	23
• Drum Housing Association	24-25
• Elgar Housing Group	26-27
• Festival Housing Group	28-29
• Gentoo Group (formerly Sunderland Housing Group)	30
• Hastoe Housing Association	31
• John Grooms Housing Association	32-34
• Keniston Housing Association	35
• Ocean Housing Group	36
• Sovereign Housing Association	37-38
• Walsall Housing Group	39-40

Foreword

The Housing Corporation is committed to increasing sustainability across the whole of the affordable housing sector. To reduce the environmental impact of the new homes we fund, we pioneered the use of BRE's EcoHomes standard, making it a requirement across our multi-billion pound national investment programme. Now we require the Code for Sustainable Homes level three as our minimum new build standard, in support of the Government's goal of achieving zero carbon homes by 2016. The development of the EcoHomes XB standard extends this challenge to existing housing stock and all social landlords.

We cannot ignore the significant environmental impact posed by the existing housing stock. It is far more significant in number than new build, with a large percentage built before any sort of environmental or building regulations. There is great potential through the planned maintenance and small scale refurbishment programmes of social landlords to improve the environmental performance of the existing stock using fairly simple measures. We commissioned BRE to develop EcoHomes XB, based on the EcoHomes new build model, to enable property managers and landlords to assess the environmental efficiency of their stock, and to help them identify the potential for improvement; and to measure this improvement when works have been carried out.

EcoHomes XB has the potential to support environmental improvements across the almost five million existing homes owned and managed by housing associations and local authorities, emitting an estimated 27.6 million tonnes of carbon dioxide every year¹. Designed to be easy to use, not only is EcoHomes XB a cost-effective way for social landlords to target their resources, it can also celebrate their achievements, and can bring genuine cost-savings to residents.



A stylized graphic of a hand holding a glowing green lightbulb. The hand is rendered in a simple, rounded style, and the lightbulb has several curved lines representing light rays emanating from it. The entire graphic is in shades of green.

Clare Miller
**Clare Miller, Director of Regulation
The Housing Corporation**

¹ Housing Corporation: press release on EcoHomes XB, June 2006

Executive Summary

EcoHomes for eXisting Buildings (XB) is a voluntary environmental assessment method for existing managed stock. It was developed by the Building Research Establishment (BRE), using a similar format to EcoHomes for new build, in recognition that, as with new build, there is a need to improve the environmental performance of the existing housing stock. The purpose of XB is to provide a range of housing stock-holders with an easy to use environmental assessment tool. It is designed for self-assessment and does not require accreditation from an external assessor.

This guide has been commissioned by the Housing Corporation to provide a simple resource to assist landlords in undertaking an XB assessment. It provides prompts and recommendations for using the tool, as well as highlighting the experiences of social landlords that have already applied the tool to their stock. It also identifies some of the benefits for your organisation in applying the tool, for example the business case for adopting XB, such as using it to help highlight properties in need of attention, and for prioritising resources and budgets.

XB should be used to measure the environmental impacts of simple refurbishment measures and planned/cyclical maintenance programmes. The XB tool comprises a guidance document, credit checklist and Excel scoring spreadsheet. Properties should be assessed and scored against the guidance to provide an initial benchmark score, which can then be revised through

repeat assessments, as and when improvements are undertaken and as data is updated. The score can be used to establish environmental improvement targets for the following year. Unlike EcoHomes for new build, there are no set ratings that have to be achieved, e.g. Pass, Good, Very Good. The score is unique to your stock, and aims to provide an indicator of the direction of travel for your stock in terms of environmental improvement. The whole stock can be assessed all at once, or can be assessed in smaller sections. For example you may wish to start with a small scheme or neighbourhood to get used to using the tool.

XB is not just about physical improvements to your stock; it also includes a Management section which focuses on getting corporate policies in place which mainstream the environmental agenda in your organisation's maintenance/refurbishment activities and beyond.

Chapter One

Introduction to EcoHomes XB

What is EcoHomes XB?

EcoHomes for eXisting Buildings (XB) is an environmental assessment method for existing managed stock. It was developed by the Building Research Establishment (BRE) in recognition that, as with new build, there is a need to improve the environmental performance of the existing housing stock. XB was launched in 2006 after a two-year development phase, including two pilot phases where a number of housing associations and local authorities, including Ocean and Walsall housing groups, volunteered to test it on their stock. The development and use of XB is supported by the Housing Corporation, who commissioned its initial development phase through an Innovation and Good Practice Grant.

The purpose of XB is to provide housing stock-holders, such as housing associations, local authorities or private landlords, with an easy to use environmental assessment tool for existing housing. XB is designed as a self-assessment tool to provide stock-holders with a framework for identifying the environmental performance of their stock.

An XB assessment can give a single environmental 'score' for an entire stock, or down to an individual district or street, or property. The XB score allows stock-holders to identify parts of the stock that have a high or a poor environmental performance, thus assisting stock-holders to prioritise maintenance and repair works to improve the overall environmental performance of their stock. This also allows benchmarks and targets to be set, allowing stock-holders to demonstrate improvements over time.

XB is based on the EcoHomes methodology for new build. It is an approach tailored to the constraints and challenges inherent in existing managed stock. It looks at the environmental issues that concern existing dwellings which can be altered by the stock-holder given the inherent constraints that existing buildings have. The assessment can be carried out using information and data already to hand within a stock-holders existing records, such as housing condition surveys and maintenance reviews.

When to use XB

XB is a separate entity to the EcoHomes version for new build. XB should be used when considering the benefits of various aspects of minor refurbishments and general/planned property maintenance in managed stock. For example, XB will account for topping up loft insulation, replacing a boiler or recycling waste from minor refurbishment works. This differs from EcoHomes (new build), which cannot account for such minor changes. EcoHomes (new build) should be used only on new builds or on major refurbishments, which require the entire gutting of a residence. In England, EcoHomes (new build) has been replaced by the Code for Sustainable Homes from April 2007² (with application to social housing funding programmes from April 2008), however the Code cannot currently be used on refurbishment projects, so in the case of major refurbishments, EcoHomes (new build) still applies.

Main differences to EcoHomes New Build

- XB is based on self-assessment - you do not have to engage a licensed EcoHomes assessor or require formal training to use the tool.
- There are no standard ratings which have to be achieved (e.g. Pass, Good etc) - the tool provides a score specific to your stock.
- It can monitor continuous improvement of the stock.
- It is currently a voluntary standard.
- It does not currently include a credit area on local ecology.

² Code for Sustainable Homes: A step-change in sustainable home building practice, DCLG, Dec, 2006

Chapter Two

Overview of carrying out an assessment

What does XB assess?

XB assesses the individual components of a dwelling that contribute to its overall environmental performance such as level of insulation, provision of recycling facilities, water fittings etc. XB considers those items which have environmental relevance and that can be altered or changed with relative ease. The issues looked at include:

Section	Example of Issues Assessed
Management	The provision of management policies such as an energy policy, environmental policy and energy efficiency advice to residents.
Energy	Level of insulation to properties, SAP rating, type of heating system and controls, and low energy lighting.
Transport	Access to public transport such as community bus.
Pollution	Zero Emission Energy source.
Water	Internal water fittings.
Health	Adequate ventilation, provision of internal/external private space.
Waste	Recycling, reduction of refurbishment waste, safe disposal of appliances.

Credits are awarded for achieving the criteria for each of the above issues. The requirement for each credit (the credit criteria) is set out in the XB guidance document which provides further guidance and advice on achieving each issue, with references to sources of further information.

Example of credit assessment

Taking an example of the Energy Efficient Fittings credit (Ene 2), here is how you would assess a credit within XB. For this issue, there are four credits available, as shown in the following table:

Credits	Example of Issues Assessed
1	For the provision of condensing boilers
1	For the provision of 'A' rated boilers under the EU labelling scheme
1	For the provision of dedicated low energy light fittings in the kitchen, hall and living room
1	For the provision of dedicated low energy light fittings to all rooms

For this example, the properties have 'A' rated boilers (one credit achieved) but they are not condensing (no credit). However, there are low energy light fittings to the hall, kitchen and lounge (one credit achieved), but not in the rest of the house (no credit), therefore a total of two credits can be awarded.

When assessing credits, attention should be made to the further guidance section of the credit which details further information on the credit criteria. Where a credit has not been achieved, it is advisable to note down why it was not achieved for future reference. This will help to inform future maintenance programmes and will assist where reviewing the XB score in the future. For this example, it would be relatively easy to improve this score by installing low energy light fittings to the whole house (giving a total of 3 credits), which may be appropriate at the point of rewiring or at another opportunity. However, it may make sense to leave upgrading the boilers until the maintenance programme calls for this to be done.

How an assessment works

You can carry out an assessment in many ways. For example you might like to start off small and concentrate on a small scheme of houses, or just a street. This is a particularly good way of familiarising yourself with the XB methodology, especially if you are using it for the first time. Once you are familiar with the guidance you can then work up to assessing your whole stock. This is the approach which is illustrated in the next few sections. Remember that this process will remain the same whether the whole stock or just a specific section of it is being assessed.

Stage 1 - Initial benchmark

The first stage of carrying out an XB assessment consists of calculating an initial benchmark score to give you an idea of your stock's overall performance. This first attempt at scoring the site is likely to be a rough estimate of what the actual performance of the stock is. However, it will set a benchmark from which to work. Improvements to the data held, and physically to the stock itself, can then be measured against the original benchmark. This benchmark is also used to set targets and an eventual goal based on where you currently are.

What data/information is required?

The information required should currently be available in-house in stock databases, stock condition surveys, CDM folders, planned maintenance records and HQI (Housing Quality Indicator) returns to the Housing Corporation. Any information source that gives the answer to the requirements of the criteria may be used. If data is not known, or is not available, it is better to leave the credit and amend it once the information is known. It may be necessary to expand the data collected in the stock condition survey where data is not already gathered on a particular issue, e.g. the provision of drying space. BRE and the Housing Corporation are currently working with software providers who provide database services to the social housing sector, with a view to incorporate the XB assessment process into existing database formats, to facilitate the collection of the required data. It is also suggested that social landlords raise this with their database providers direct.

The data required for undertaking an assessment are the:

- ¥ age of property;
- ¥ property type e.g. terrace, flat, etc;
- ¥ wall construction (this can be deduced from age and type if survey data is not available);
- ¥ roof insulation thickness;
- ¥ boiler and heating controls type;
- ¥ local authority recycling provision;
- ¥ sanitary fitting types;
- ¥ SAP rating (where a full SAP rating has not been calculated, a default SAP rating based on property age and type is supplied in the guidance document); and
- ¥ location in respect of transport links.

A total stock assessment can be carried out using some assumed or 'default' information. The assessment is used to prioritise your worst performing stock environmentally. As improvements are carried out the score becomes more accurate.

To calculate your initial benchmark, you should break the stock down into each age band and house type as identified in table 2 (page 5) of the XB guidance, which is based on the English House Condition Survey³. It is suggested that this should initially be just one unit from each house type and age band to give an estimate of your rating, and this can be used to set the benchmark. The assessment will be carried out against the assessment criteria based on data that is already to hand. The score per unit type can then be extrapolated across all units of that type to estimate the score. The Excel XB scoring spreadsheet should be used with a 'site' sheet completed for each unit type/age band. Once all sites have been assessed, this can be transferred to the 'total stock' spreadsheet to give the average XB score for your stock. This figure should then be recorded as the initial benchmark from where any improvements made to the stock or to the accuracy of data on your stock can be measured.

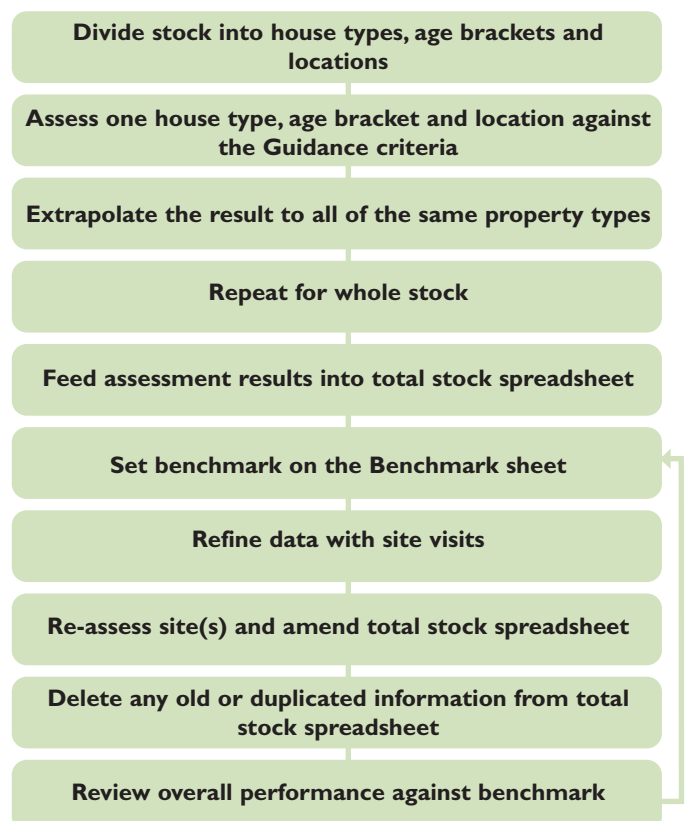
Stage 2 - Refining your score

Once the initial benchmark has been established you can then go on to refine your data. With your stock broken down into age bands and types, you can then look at individual districts or streets as part of that age band/type. The extent to which this is done can be adapted to suit individual requirements and can be based on your own maintenance strategy. You may want to split your score up to look at individual districts, streets or houses or to an individual area where you may be focusing your maintenance programme. As you visit each site or carry out maintenance you can further refine your data to get a more accurate score for that site. As data is refined and the score improves for a particular street or site within a house type/age band, a new 'site' sheet should be created within the XB scoring spreadsheet. To avoid double counting units, where the score has improved and a new 'site' sheet has been created for those particular units, these units should be removed from the initial score.

Calculating the XB score

The XB score for each site is calculated within the XB summary score spreadsheet. The score for each issue (e.g. management) is given, and to this score an environmental weighting factor is applied to reflect the relative importance of that issue. The weightings are based on a stakeholder consultation exercise which calculated the relative comparable importance of each issue. Once the weighting is applied to the score this gives the issue category score. All of the issue category scores are then summed up to give the overall XB score as illustrated below:

Flow chart for completing an assessment



³ English Housing Condition Survey: Private landlords survey, English Housing Condition Survey: Technical Report, DCLG, 2004

Who can carry out an assessment?

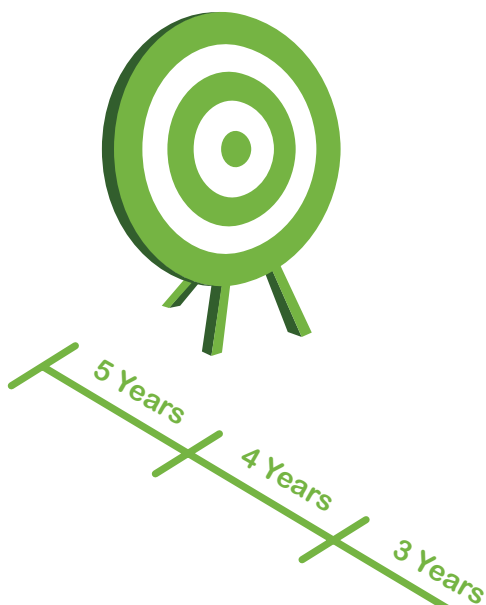
Anyone can carry out the assessment using data already held in-house and there are currently no requirements for formal training in order to carry out an XB assessment. Information from external site visits can be added at any time. There is no requirement for an assessment to be formally verified or certified: provisions for future development of quality control may include peer review and benchmarking.

As the tool currently relies on self-assessment it is important to get well acquainted with the credit scoring system. As with EcoHomes (new build), it is important to remember that if the requirements of a credit area cannot be met completely then the credit cannot be awarded. The guidance provides assistance for each credit area, and the Excel scoring sheet makes the calculation of individual assessment and overall scores easy, with weightings and scores calculated automatically. In some instances it may require a call of judgement when awarding credits, however it is important to be consistent on how this particular credit is awarded in similar situations.

As there is currently no requirement to report on scores to any formal body, or to achieve set ratings, it may be tempting to be generous when awarding credits. However it is more beneficial to achieve as accurate a score as possible to make the optimum use of the tool, e.g. for it to highlight priorities to focus on. It will also provide good preparation if a mandatory standard was ever to be imposed.

Setting targets

Once the initial benchmark is set, targets can be planned. The targets can be over any time period but should realistically reflect what is planned by way of maintenance and improvements and what can be achieved in the time period chosen. As a guide, targets may be over the next year, two years and five years to fit in with the maintenance programme. It may be appropriate to set an overall target for your stock and individual targets for different age bands/types. This is to reflect that most age bands/types will be at a different starting point and will have different limitations in the potential improvement that can be made.



The best things to start looking at

Some areas are easier to achieve than others. One of the most effective categories to implement as soon as possible is the management section as this will affect the whole stock in one move. However to gain credits for management policies, they must be in place, actively pursued, monitored and have targets set. Other areas to look at are those that are relatively easy to implement and which are cost effective. Examples are working with your water company to install water meters in void periods, and specification of water efficient taps in responsive maintenance specifications. Credits that are harder or more expensive to implement can be worked in with planned maintenance schedules.

As previously mentioned, when using the tool for the very first time, it may be useful to start with a small scheme or neighbourhood. This will allow you to become familiar with the guidance and scoring on a small scale, and once you feel proficient in its use you can move on to a full stock assessment. Once you have had a couple of opportunities to try out the guidance and assessment process you will find that it is quite intuitive.

Where can you get the XB guidance from?

The XB methodology comprises:

- A guidance document - detailing the process of assessment and credit areas;
- A credit check list - a quick reference guide to the credit areas; and
- An Excel scoring spreadsheet - to easily calculate property/age type scores and overall assessment scores.

All the documents can be obtained from the EcoHomes XB section on www.breeam.org. Currently you need to sign up to access the information, however this is free, and is only so that BRE can monitor take-up of the tool.



Chapter Three

Why focus on existing stock?

Why is sustainability important?

Sustainable development is about creating a better quality of life for everyone, now and in the future. It is an issue of global, national and local concern, and can be affected by the work of all organisations and individuals. Achieving sustainability is a key consideration for social landlords as housing is a fundamental need of day-to-day life. However, if not done with consideration, the construction and use of housing can be detrimental to our environment, prosperity and communities. In building, maintaining and managing houses, vast quantities of natural resources are used - including energy, water, materials and land - and large amounts of waste produced. Residents living in the houses account for even greater resource use than during construction and refurbishment. 75% of the housing required in 2050 is already built⁴. For these reasons it is important that the environmental impacts of the construction, refurbishment and use of homes are considered. Housing accounts for nearly a third of CO₂ output⁵ and is a major contributor to global warming. Issues such as the consumption of energy and water also can have a direct impact on households through the costs of services. Just like EcoHomes (new build), the XB tool is a key instrument for achieving greater sustainability in housing.

Drivers for Sustainable Development

In March 2005 the Government set out its strategy for achieving a more sustainable way of life across a broad spectrum of issues and agencies, in the UK Sustainable Development Strategy, *Securing the Future*⁶. The provision of housing and construction has a key role to play. In addition there are several other drivers emerging which will impact on the housing sector:

International

There are a number of international drivers that aim to directly or indirectly reduce global emissions of CO₂ and energy consumption. The most significant piece of legislation is the Kyoto Protocol. Negotiated in 1997, it aims to reduce the net emissions of certain greenhouse gases, particularly CO₂. Each of the participating countries has a five-year period in which to decide how to meet their respective reduction goals. As part of this, the UK is committed to reducing greenhouse gas emissions to 12.5% below 1990 levels, and to reduce CO₂ emissions by 20% below 1990 levels, by 2010⁷.

In Europe, the need to achieve the targets set by Kyoto has led to the introduction in 2003 of the Directive on the Energy Performance of Buildings (EPBD). This requires member states to take measures to significantly improve the energy efficiency of new and existing buildings. The Directive requires minimum energy performance standards for all new buildings and large refurbishments, and a valid energy performance certificate for all dwellings at the time of construction, sale or rental, to be made available to the prospective owner or tenant. In the UK, compliance with the Directive will be through the Building Regulations and the requirement for Energy Performance Certificates (EPC) at point of sale or rental. For private sales, EPCs will form part of the Home Information Packs (currently required for

properties with three or more bedrooms). For the social rented sector, compliance is required by October 2008, and currently infrastructural and funding arrangements are being put in place to meet this. The XB assessment collects much of the information that will be required for an EPC; therefore this is an added incentive for organisations to consider using the tool.

National

In 2003 the Government published the *Energy White Paper*⁸ with the aim to shift the UK to a low carbon economy by increasing resource productivity and reducing the impact of CO₂ on the climate. The Paper sets four goals and establishes a framework with an emphasis on sustainable energy. Of particular significance is the goal of a 60% reduction of CO₂ emissions by 2050⁹, with evidence of this being achieved by 2020. This paper is continually revisited and evolving with the publication of *The Energy Challenge*¹⁰ in 2006, and the recent major update with the publication of *Meeting the Energy Challenge*¹¹ in 2007, which saw a greater emphasis on the use of renewable technologies.

The significance of existing stock in numbers:

- Housing is responsible for a third of the UK's CO₂ emissions.¹²
- There are 26.5 million existing homes in the UK.¹³
- Of these 38% are over 60 years old, and 55% were built before thermal regulations.¹⁴
- Nearly 4 million¹⁵ of these existing homes are in the ownership of social landlords and 9% of these are over 60 years old.¹⁴
- In 2005 there were 160,000 new builds per year; representing an annual housing replacement rate of less than 1%.¹⁶
- It is estimated that only 20% of these new builds will be built to EcoHomes or Code for Sustainable Homes standards. Currently the Housing Corporation funds the building of 20% of all new build built each year.
- The UK government has a target of a 60% reduction in CO₂ by 2050.¹⁷
- The majority of the existing homes today will be still in use in 2050!¹⁸

⁴ Building houses or creating communities: A review of Government progress on Sustainable Communities, Sustainable Development Commission, May 2007

⁵ Housing Corporation: Housing Corporation annual report and accounts 2005-06

⁶ Securing the Future: Delivering a sustainable development strategy, Defra, DCLG, March 2005

⁷ Climate Change the UK programme: Tomorrows Climate, Today's Climate, Defra, 2006

⁸ Energy White Paper: Our energy future - creating a low carbon economy, DTI, 2003

⁹ Climate Change the UK programme: Tomorrows Climate, Today's Climate, Defra, 2006

¹⁰ The Energy Challenge: Energy review report, DTI, 2006

¹¹ Meeting the Energy Challenge: A white paper on energy, DTI or BERR, 2007

¹² In 2002 the figure was 28%, or 40.4 million tonnes of carbon. Source: DEFRA

¹³ Housing statistics (Stock - including vacants, conversions and demolitions): Live tables Communities and Local Government, August 2007

¹⁴ House Condition Survey, 2001

¹⁵ BRE launch EcoHomes XB: EcoHomes for existing housing, BRE, June 2006

¹⁶ Housing Green Paper: Figure 6, DCLG, July 2007

¹⁷ Energy White Paper: Our energy future - creating a low carbon economy, DTI, 2003

¹⁸ Building houses or creating communities: A review of Government progress on Sustainable Communities, Sustainable Development Commission, May 2007

There has been much focus on the sustainability of new homes, both in their construction and subsequent use. The Government is strongly committed to this agenda, through its proposed incremental changes to the Building Regulations and higher regulatory standards, via the requirement for all homes to be zero carbon by 2016¹⁹. The foundation for the momentum is reinforced by the increasing public awareness that climate change is happening, with 90% certainty that the root cause is human behaviour, predominantly through the burning of fossil fuels²⁰ and that the economic cost of taking action against climate change is far superior to the cost of taking no action²¹.

However new build housing forms only a small percentage of the total housing in the UK, with on average only 160,000 new homes per year¹⁶. This compares with a total UK housing stock of 26.5 million¹³, much of which was constructed before any environmental standards, or even building regulations, were in place. Furthermore, once the keys are handed over, all new builds form part of the existing stock, of which only 30,000 per year are currently subject to any environmental regulation (over and above current Building Regulations). Therefore there is a significant amount of existing stock which is potentially impacting negatively on the environment, through factors such as poor energy and water efficiency. Refurbishment can be the key, with the potential to use more sustainable materials and methods to mitigate further negative impacts on the environment, albeit to ensure that the process of refurbishment is done in such a way that it does not further impact on the environment, for example through poor waste management.

It may also be argued that new build is well covered by environmental regulation, at least in the social housing sector, with the requirement of EcoHomes (new build) on all Housing Corporation funded housing since 2003. More recently, the launch of the Code for Sustainable Homes (the replacement for EcoHomes in England), has set higher environmental standards and has the strongest potential yet to translate across to the wider house building sector. It is a condition of Housing Corporation funding that developments reach level three of the Code.

The focus is now shifting more firmly onto existing homes. The extent of the environmental impact of existing stock can be seen in this extract from the *Stock Take*²² report from the Sustainable Development Commission, the UK Government's critical friend on its sustainable development activities, which provides a framework of recommendations for improving the environmental performance of existing homes and the sectors that maintain them:

'There are 21 million²³ homes in the UK with widely varying standards of resource efficiency largely depending on the age of the home, house construction and the awareness of the occupants of the level of their energy and water consumption and waste management, and of the measures they can install to improve these. The occupants of these homes are responsible for 27% of our total CO₂ emissions through their energy use, half of public water use and they generate 8% of the total UK waste.'

Stock Take, Sustainable Development Commission Report, July 2006

In order to achieve the UK's Kyoto Protocol target of reducing carbon and other greenhouse gas emissions by 60% in 2050 and live within our ecological footprint, then significant attention needs to be paid to increasing our understanding of our actions in relation to existing homes; our policy responses; regulatory standards; personal and corporate behaviours; and maintenance sector processes. The CLG led existing buildings review estimates that a quarter of the savings needed to meet climate change targets (7MtC per annum) can come from behaviour change, influencing consumers, behaviour and cost effective improvements to existing homes; improvements in the fabric of existing stock, new renewable energy technology and the periodic fitting upgrades.²⁴

Is XB regulation?

XB is a voluntary standard. However the Housing Corporation is strongly encouraging the take-up of the tool by social landlords as a way of benchmarking how the environmental impact of their stock can be improved, and as a useful governance tool. The realities of climate change and the increasing number of sustainability related regulations mean that it cannot be ruled out that at some point in the future a regulatory standard for refurbishment may be introduced - there has been some speculation that XB may become the post-Decent Homes standard when it comes to an end in 2010, however there has been no indication of this from Communities and Local Government. Whatever the case, by applying XB now, social landlords can get ahead of the game and make dealing with such issues standard practice.

Since the introduction of the Decent Homes standard in 2001, the Housing Corporation has provided significant support and guidance for social landlords to improve the effectiveness of their asset management strategies. XB is the latest and most comprehensive framework to date. The toolkit has been introduced at a time when most social landlords have either met the Decent Homes Standard or have an implementation plan to do so by 2010. Through the toolkit and its inclusion in the *Design and Quality Strategy*²⁵ published in April 2007, the Corporation is reinforcing its focus on sustainability. During this period of increasing awareness of the social and economic impacts of climate change, XB offers the opportunity for social landlords to explore the environmental imperatives of their stock beyond the acknowledged restrictions of Decent Homes and concentrate on a new framework, one that fits with their commitment to the environment and the growing awareness of their residents.

In addition to the direct use of the toolkit by landlords, since its launch, several local authorities have seen the potential to apply the standards across regeneration projects incorporating new build, major works and planned maintenance. Once in the planning arena, the standards have become a negotiating point for existing stock and enable planning departments to contribute to local environmental agenda.

¹⁹ 'Towards a Greener Future' CLG Consultation Paper December 2006

²⁰ IPCC Report February 2007

²¹ Stern Review Economics of Climate Change, HM Treasury, October 2006

²² Stock Take: Delivering improvements in existing housing, Sustainable Development Commission, July 2006

²³ The Stock Take report uses the UK total existing stock figure of 21 million, however this guide uses the 26.5 million figure from the Communities and Local Government Housing statistics (Stock - including vacants, conversions and demolitions) Live tables, August 2007 - www.communities.gov.uk

²⁴ Building a Greener Future - Towards Zero Carbon Development CLG December 2006

²⁵ Design and quality strategy: Housing Corporation, April 2007

Chapter Four

How can EcoHomes XB help?

Why use XB?

There are numerous ways from a practical point of view in which XB can assist with effective and sustainable asset management:

- Using XB will build measures to improve environmental performance into planned maintenance programmes and responsive repair specifications;
- The timescale of implementation is determined by landlords;
- It is designed as an aid to improving the environmental performance of the existing housing stock;
- It allows stock managers to demonstrate achievements and environmental credentials in respect of improving existing housing;
- It will highlight areas for priority works;
- It gives an overall score (out of 100) which relates to the performance of the stock;
- It is easy to use;
- It can be updated at any time;
- Measures relatively minor maintenance improvements; and
- It is a continuous monitoring tool.

However in addition to this, it is considered that there are a number of other significant benefits and influences which strengthen the case for using the tool:

The business case

Not only is climate change a significant issue for the various levels of the UK Government, it is fast becoming an issue of strategic importance for the wider business community. From a practical point of view businesses in all sectors are finding it necessary to consider and mitigate their impacts on the environment, and recently they are appreciating the public relations impact of becoming 'green', with several high profile businesses pledging to reduce their carbon footprint. For example, a recent report has revealed that over 94% of construction professionals believe that 'green' building is the future for the construction industry.²⁶

In terms of the social housing sector, social landlords have a well established model of corporate social responsibility (CSR). This is expressed through their governance structures, transparency in operation and reporting structures, and their corporate reflection of the communities they serve. Founded on social responsibility, the sector has long acknowledged the moral imperative in addition to the tangible benefits from CSR that contribute to social harmony, community well-being and quality services. Increasingly, social landlords are developing mitigation and adaptation plans. Nevertheless the pressures for change on social landlords remain the same as those on the wider business community. Asset management is one of the key functions of managed

housing but is an area of landlord activity that has seen only limited progress in terms of sustainability.

In its publication *The Carbon Management Programme*²⁷, The Carbon Trust identifies four key pressures on business to change:

Cost	The cost of doing nothing, cost savings through energy and other operating efficiencies, particularly during a period of rising fuel, material and labour costs.
Stakeholder pressure	The expectations and aspirations from customers, financiers, suppliers etc, reputation loss from failure to engage.
Regulation	The ability to steer a course through and mitigate the widening array of legislation and regulation.
New business opportunities	Ranging from competitive advantage, changing markets and technologies to capability building, green technology and credit offset strategies.

With increasing importance on growth, competitive advantage and reputation to complement operating efficiencies, social landlords face a particularly strong set of drivers to change.

In asset management terms, and more broadly risk management terms, these prompt the following questions:

Decision Making	<ul style="list-style-type: none"> • Are our maintenance practices the most effective in terms of cost, value, technical need and environmental performance? • What are we doing in terms of value management? • How does this contribute to stock rationalisation? • Does our stock enable alternative technologies to be applied?
Residents	<ul style="list-style-type: none"> • Are these the measures that residents want? • What have we done to engage with customers on this agenda? • Are we supporting effective behaviour change?
Supply chain	<ul style="list-style-type: none"> • Have we reviewed our specifications and choice of materials? • Can our supply chain partners deliver? • What else can we influence? • What can we learn from our supply chain?
Standards	<ul style="list-style-type: none"> • What can we do to influence the performance of our assets? • How can we conserve energy, conserve water better, manage waste better and recycle more? • How can we align the organisation to national environmental targets particularly CO₂?
Regulation	<ul style="list-style-type: none"> • How do our actions contribute to our 'direction of travel' and demonstrate our adoption of best practice and best value in service delivery?

The answers to all these questions must include environmental performance. Using XB will help to supply these answers

As can be seen in Chapter Five, the Management section of XB prompts a review of organisation commitments to energy, environmental protection and enhancement, and a review of best practice in maintenance. For the first time in a BREEAM toolkit, there is a pull to re-order governance arrangements, identify internal change agents and assemble a continuous improvement plan for change.

The case for residents

The Ipsos Mori *General Attitudes Survey* has tracked opinion on climate change for several years. For example, 88% believe, irrespective of the cause, that the climate is changing; and 46% think climate change is mainly caused by humans.²⁸ The trends suggest that climate change is growing in prominence as the most serious threat to the future wellbeing of the world. Calls for action to combat climate change have also gained prominence. On a much smaller scale these trends reflect the work published by Sustainable Homes Ltd on residents' attitudes to environmental concerns and solutions in domestic housing. *Green Voices and Choices*²⁹ examined tenant priorities for higher environmental performance in their homes.

The environmental agenda offers opportunities for:

- Revisiting and enhancing resident engagement;
- Enhancing health and wellbeing;
- Increasing commitment to affordable warmth and cooling, affordable water and affordable waste;
- Increasing resident choice and influence on standards and fittings in their homes; and
- Reduced cost in use and higher satisfaction levels.

This is an agenda that is relatively new, one that requires collective action and shared learning as we embrace new technologies and change our behaviours. This is also an area where opportunities exist for social enterprise and capacity building, e.g. Resident Green Champions and advice services.

Refreshing resident engagement and the environmental agenda

As social landlords reposition their organisations to respond to climate change and diminishing resources, there is an imperative to consult with residents, agree priorities and explore new standards. For behaviour change to deliver at its maximum there needs to be a consensus around revised standards, the benefits and the consequences. This will apply equally at all levels of engagement: individual; neighbourhood; estate and organisation and is likely to result in national standards emerging in the medium term. To a certain extent these already exist in terms of best practice advice on energy use from organisations like the Energy Saving Trust. However, the environmental agenda for existing homes takes into account a much wider set of principles including water management, waste management and the environmental impacts of selection of materials.

Home environments will increasingly change, either by way of new technologies (such as renewable energy solutions, smart metering, grey water systems etc) or by way of increased external controls (such as carbon management at a domestic level, increased water metering to existing homes, affordable waste and recycling etc). Social landlords have a significant role to play in looking after the more vulnerable and those on low incomes, as price combined with technology increasingly acts as a lever to manage consumption.

Residents will want to be in the forefront of change. Media interest and reporting has heightened awareness and residents will want to be part of the solution.

²⁶ The Green Perspective' report by the Chartered Institute of Building, August 2007.

²⁷ Carbon Management: Assessing and managing business responses to climate change, June 2005

²⁸ Ipsos MORI Survey of 2031 UK adults, 4 July 2007.

²⁹ Green Voices and Choices: Residents views of environmental housing & lifestyles, Sustainable Homes, August 2004



Chapter Five

Practicalities and prompts

This chapter provides a quick overview of each of the seven main XB credit areas and their sub-sections. It lists each credit area and flags up issues for consideration and prompts for how credits may be achieved.

Management

	Credits available
Man 1 - Energy Policy	2
Man 2 - Energy Efficiency Advice	2
Man 3 - Environmental Policy	2
Man 4 - Energy Labelled Appliances	2
Total	8

Comment

The Management section provides both a framework for re-ordering maintenance practices into a more sustainable package and an entry point for establishing (or reviewing) the organisation's commitment to sustainable property services. Essentially it provides a governance framework for responding to the challenges of climate change relating to domestic buildings. It is also what distinguishes XB beyond just an environmental standard and establishes it as a useful governance tool for your organisation. The implementation of policies will provide a transparent corporate commitment which can be understood and acted upon by all members of staff and encourage support from residents.

The Management section addresses two broad themes:

- Commitments, policy drivers and organisational change (Man 1 and 3)
- Behaviours (Man 2 and 4)

Influencing behaviours is an important consideration, as the most significant environmental impact, particularly in terms of energy use, comes from the occupation of the house, and it has been proven that providing efficiency advice can reduce energy demand by up to 10%.³⁰

The section offers up to eight credits. More important is the ability to extend these policy commitments to other credit areas, e.g. a commitment in the energy policy to affordable warmth can also be expressed through specific actions in other credit areas such as the Energy section: Ene 2 - energy efficient fittings and Ene 3 - heating system controls.

The XB guidance provides a group of headings to enable the organisation to set its commitments against good practice:

Energy Policy

- Reductions in energy consumption
- Reductions in carbon emissions
- Affordable warmth strategy
- Raising awareness and changing behaviours
- Exploring the use of CHP and renewable energy (site specific)

Environmental Policy

- Environmental protection
- Environmental enhancement
- Protection of ecological features
- Maintenance policy and standards

Behaviour change

- Raising awareness among staff and residents
- Better explanation on how to use the home more efficiently
- Discerning procurement e.g. best practice white goods

The commitments must be signed off by the Board and Senior Management, subject to rigorous action plans and annual review, and supported by identified change managers within the organisation.

Prompt

These credits are organisation specific, rather than property type specific, therefore once obtained they can be extrapolated to each assessment undertaken. However the feasibility credit area for the inclusion of CHP or other forms of energy under Man 1 is site specific. Once these credits are obtained they provide a sound framework for the organisation's direction and activity on environmental protection and improvement, not just for asset management but potentially for the activities of the whole organisation.

A good starting point is a review of current commitments and activities: What is there currently? What needs to change or be updated? Who will lead on this and who else needs to be on board? Social landlords often have pockets of good practice spread across their broad range of activities, and recent research by Sustainable Homes Ltd³¹ has identified that these are not always identified as sustainable good practice or collated in a recognisable policy framework. The emphasis should be on your organisation, your starting point and your longer term objectives, taking into account the business arguments for change in chapter four of this guide.

Another key point is the review of maintenance standards. This provides an opportunity for the organisation to work with residents and various supply chain members; revisiting procurement arrangements; reviewing the specification of materials; looking to reduce

transport movements; supporting local economies; closing the recycling loop by specifying the use of more recycled materials; exploring better waste and re-use practices; and specifying more water efficient appliances.

In respect of raising awareness and behaviour change, the emphasis is on reviewing internal arrangements and staff training as well as working with residents to change the way they might use their home. The commitments extend beyond property service managers and will typically draw in housing and estate staff (e.g. accompanied lettings and void standards) as well as finance staff (e.g. revised procurement standards). In terms of the provision of energy efficiency advice (Man 2), it is important to remember that one size does not fit all. The credit is reliant on advice being provided that is specific to the heating controls used in individual properties. It is acknowledged that this can be difficult, especially if your stock uses a variety of different controls. It is important not to rely on one method, but tailor advice to your resources and the needs of residents. For example, specific energy advice could be provided at void handovers or at regular servicing appointments. An additional credit can be gained for providing written advice on appliances which can link to the credit in Man 4 for providing advice on purchasing of energy efficient goods.

Ultimately this section is about capturing a base line; leading, managing and measuring change; reviewing processes; and working in partnership with residents and contractors to raise standards.

Energy

	Credits available
Ene 1 - Fabric Energy Loss	6
Ene 2 - Energy Efficient Fittings	4
Ene 3 - Heating System controls	2
Ene 4 - SAP rating	5
Ene 5 - Drying space	1
Ene 6 - External Lighting	2
Total	20

Comment

This section provides the highest number of credits available in any one section: 20 in total. It provides prompts and guidance for improving the energy efficiency of the stock via an efficient building envelope and heating and lighting controls, thus reducing energy consumption, reduced carbon emissions and reduction of the cost in use for residents (perhaps as part of the affordable warmth commitments).

There is an increasing external focus on reducing energy consumption, achieving carbon management in terms of cost efficiency, and environmental protection. The guidance provides a set of specific items for organisational focus.

Prompt

For many landlords this is an opportunity to measure and reflect on both their Decent Homes programmes to date and their post Decent Homes Standards relating to energy efficiency.

The credit guidance helps you to review thermal insulation standards, demonstrate SAP rating improvements, and target asset management improvements via measuring environmental gain against improvement costs. For example, in very simple terms, double glazing installation versus insulation upgrades and draught-proofing.

The guidance is specific and care needs to be taken in interpretation e.g. having double glazing installed does not automatically secure the credit for draught-proofed windows and doors.

Be alert to the cross over of credits e.g. the linkage between Ene 2 - heating system controls and Man 2 - energy efficiency advice.

In respect of lighting, the Government has signalled that it intends to phase out the manufacture of non efficient light-bulbs, and landlords will have a responsibility to manage the transition on behalf of more vulnerable households, perhaps linked to energy efficiency advice for residents.

Transport

	Credits available
Tra 1	2
Total	2

Comment

The aim of this credit area is to encourage the provision of a choice of transport modes for residents, to reduce the level of car use and associated carbon emissions. The credit area is broken down into requirements for urban and rural areas, in recognition of the challenges of public transport provision in rural areas, with the inclusion of community bus schemes and other such provisions.

Prompt

It is recognised that the scope for existing developments to influence and change the provision of public transport provision is more limited than for new developments, as the properties are already in situ. However, if need/demand can be demonstrated then it is worth consulting with local providers.

Another useful prompt is to consider promoting the choice of transport modes to reflect healthy lifestyles, such as cycling more, and estate improvements.

³⁰ EcoHomes XB methodology guidance document, BRE, 2006

³¹ Survey of 60 out of 71 developing RSLs on existence of sustainability strategies, 2006 - A Guide to Developing a sustainability strategy and action plan, Sustainable Homes Ltd, August 2007.

Pollution

	Credits available
Pol 1 - Zero Emission Energy Source	3
Total	3

Comment

The aim of this credit area is to reduce the overall carbon emissions of the housing stock by providing individual or local generation of a renewable energy source, therefore reducing the demand on fossil fuels which have finite sources, and also providing a zero emission energy source. Credits are awarded for the inclusion of renewable energy sources or where the stock owner is an Energy Services Company (ESCO), with increasing credits awarded for the partial or full supply of 1%, 5% or 10% of the total housing stock through either method.

Prompt

Green tariffs are not sufficient to gain a credit as they are not guaranteed to supply energy generated by renewable sources and residents can easily swap to a different tariff. The renewable source can be either individual to the properties or local generation supplying several properties, and can be a mixture of renewable energy technologies. Gas or oil fired CHP will not be awarded credits due to the fossil fuel still required.

Water

	Credits available
Wat 1 - Internal Water Use	9
Wat 2 - External Water Use	1
Total	10

Comment

Water stress is becoming increasingly more prevalent, with some areas of the UK having less water per head than arid areas such as Syria and Egypt. Demand for water in the South East of England is particularly high, and is exacerbated by this area being a focus of construction activity. More and more homes have metered water supplies.

The aim of this credit area is to reduce water use. Wat 1 focuses on potable water and encourages the use of water efficiency measures within the home. A range of credits are available from implementing simple efficiency measures, such as flow regulated or aerated taps, to the use of more innovative technology, such as grey water recycling. Wat 2 encourages the recycling of rainwater, to maximise a water source which would otherwise be discharged into drains and other water courses. The use of rainwater will reduce the amount of water taken from the mains, e.g. for watering garden areas, and can help to reduce the risk of localised flooding in some areas.

Prompt

The measures included in this section provide a focal point for an increasing emphasis on water as a valuable resource. Along with other sections, the guidance here combines behaviour change with technological solutions, although the more significant savings will come from consumption behaviours. Ultimately an increase in the use of water meters, recommended by the Sustainable Development Commission, and an increased understanding of the cost/value of water is likely to have the most effect.

Temporary water saving devices placed in cisterns (bricks, 'hippos', filled bottles etc) will not be awarded credits. Best practice dishwashers and washing machines are not the same as 'A' rated appliances, where the rating in this case relates to energy consumption only.

The provision of a rainwater butt is a cost effective way of credit compliance and reducing demand for water.

Health and Well-being

	Credits available
Hea 1 - External Private Space	1
Hea 2 - Internal Private Space	1
Hea 3 - Controlled Ventilation	1
Total	3

Comment

The health and welfare of residents within homes is an important consideration. Not only is it an important facet of social sustainability, it also has a knock-on effect on other areas, such as environmental impacts and healthy lifestyles.

Hea 1 aims to improve residents' quality of life by providing outdoor space, which is at least partially private, allowing all occupants to sit outside, and is easily accessible, e.g. private or communal garden or balcony. Hea 2 deals with internal private space with the provision of a home office. This has the positive environmental impact of reducing the need to commute to work by providing residents with the necessary space and services (e.g. sockets, two telephone points or broadband/wireless systems) to work from home, thus reducing the number of car journeys and associated carbon emissions. It can also reduce the need for shopping trips through the use of online shopping. Hea 3 aims to encourage organisations to provide an adequate level of controllable ventilation to maintain a healthy and safe indoor environment. Good ventilation will prevent the development of damp and mould which can lead to health problems for occupiers.

Prompt

Many estate regeneration programmes have already addressed the re-ordering of public space for flatted developments and the XB toolkit acknowledges those efforts. A number of landlords have combined this with home produce initiatives and skills training alongside community harmony work.

In respect of home working, many traditional tenancy agreements restrict the extent of this. With the advances in information and communication technology, home and remote working is on the increase and those who have yet to review agreements will increasingly find pressure to do so.

Waste

	Credits available
Was 1 - Reduction of Material Waste	4
Was 2 - Domestic Recycling Facilities	6
Was 3 - Safe Disposal of Appliances	1
Total	11

Comment

Waste, both from construction and occupation of domestic dwellings, is a significant issue. Construction waste is the most significant waste stream in the UK, accounting for 50% of all waste.³² Waste from maintenance and refurbishment projects often ends up going to landfill, which is becoming increasingly expensive as landfill space diminishes (some areas in the UK have less than 9 years space left).³³ An illustration of this is the WWF/Insight Report *Investing in Sustainability*³⁴ which reported the Environment Select Committee findings that 19% of new materials in the construction industry are taken to site and subsequently disposed of without being used. There is ample opportunity to reuse and recycle much of this waste. Was 1 aims to reduce the amount of waste going to landfill from refurbishment projects and to encourage practical re-use and recycling of materials.

Domestic waste is also a significant contributor to landfill. Currently just over 10% of all rubbish is recycled in the UK³⁵ and, to address this, the government is increasing its emphasis on recycling. In 2007 the Waste Strategy for England increased the domestic recycling target from 25% in 2005 to 40% in 2010, 45% in 2015 and 50% in 2020.³⁶ The Was 2 credit encourages organisations to provide homeowners with the opportunity and facilities to recycle household waste.

In 2002 the EU Ozone Depleting Substances (ODS)³⁷ regulation came into force making it a requirement that all ODS are removed from old fridges and freezers prior to their final disposal. Was 3 aims to reduce the quantity of ozone depleting substances released into the atmosphere by encouraging the safe disposal of these substances and appliances containing these substances. The Was 3 credit requires a system to be in place for ODS disposal and that residents are provided with a DEFRA information leaflet.

Prompt

In Was 1 timber, brick/block and tiles must be recycled as a minimum with additional credits available for other materials e.g. glass, sanitary ware and copper.

In Was 2 the existence of a local authority recycling collection will achieve the maximum six credits. This is a quick win, and the local authority/provider should be approached if such a scheme is not available as they are under pressure from the government to increase recycling targets and reduce material entering the waste stream.

Overall comment

Feedback from the regional training seminars run by Sustainable Homes Ltd was that landlords were concerned about the cost of changes to the fabric of buildings and the introduction of new technology. The toolkit acknowledges that not all landlords are ready for, or have the resources to instigate, new programmes while they are still working towards the 2010 Decent Homes Standard. This is why the emphasis is on individual organisation progress rather than establishing a medium term set of standards to progress towards.

However, 23 out of the 57 available credits can be achieved with no physical improvement to stock. Much can be achieved through organisational leadership and change, resident behaviours and education for staff and residents, and partnership arrangements with contractors and suppliers. These are measures that, directly or indirectly, will have a beneficial effect on environmental performance.

³² Construction Resource Efficiency (CoRE), 2006

³³ Local Government Association, April 2007

³⁴ WWF / Insight Report *Investing in Sustainability*, 2005

³⁵ The UK produces 420 million tonnes of solid waste every year. That's the weight of 5 cars for each person every year. We only recycle 11% of it. (Source: The Green parent website).

³⁶ Waste Strategy for England: Defra, May 2007

³⁷ European Council Regulation No. 2037/2000 on substances that deplete the ozone layer, which came into effect in October 2001, requires Member States to remove ozone depleting substances (ODS) (including CFCs and HCFCs) from refrigeration equipment before such appliances are scrapped. This requirement came into force immediately for industrial and commercial appliances and applied to domestic appliances from 1 January 2002.

Chapter Six

Educating the end user

A strong message that came out of the regional training sessions was that it is not enough just to provide an environmentally improved stock. There is a role for organisations to educate their residents on how to use, and get the full benefit of, the environmental features which have been incorporated into their homes. This was an issue that was echoed by the UK Sustainable Development strategy *Securing the Future*, published by the Government in March 2005. In addition to setting out the priorities and objectives for the next 20 years, the strategy has a much greater focus on action and changing people's behaviours, than in previous strategies.

Behaviour is a crucial element in the achievement of a more sustainable society, with strategies and action plans being no more than words on paper if people cannot be influenced to move to more sustainable ways of life. Research for the *Green Voices and Choices* guide from Sustainable Homes Ltd, illustrated that residents want to live in environmentally efficient homes, however organisations may need to invest more time in communicating and educating efficiency measures to residents so that their homes achieve their full potential. Based on the research, the guide makes a series of recommendations on how to engage with residents on environmental issues and how to ensure that residents use environmentally improved properties to their optimum potential. For example, providing simple, straightforward information on heating system controls, and providing it at an appropriate time, i.e. not when they are just moving in and have other things on their minds. Another useful piece of research is *User Behaviour in Energy Efficient Housing* by the Association for the Conservation of Energy (ACE)³⁸, which highlights typical behaviours and ways in which to improve energy efficiency.

Residents are interested in environmental issues, which is borne out by the research for *Green Voices and Choices*, and research undertaken by the Housing Corporation with their Residents Panel³⁹ (a representative sample of 1,300 RSL residents). For example, the quarterly survey of the Panel in April 2007 included questions on environmental issues. The vast majority of the Panel (83%) said that given a choice of home if they were to move, energy efficient features would play a 'very' or 'fairly' important role in what home they would choose. Importantly for XB, the vast majority of the Panel (79%) were confident they know how to operate their heating systems in the most efficient way. However, fewer than half (46%) had been told by their landlord (either written or verbally) about the best way to operate their heating controls, while 52% had received no information from their landlord. Those that had received information from their landlord had generally received it from a heating engineer (42%) (considered to be the most effective source of advice), or housing officer (27%).

In terms of implementing XB there are three key issues concerning residents:

1. Communicating about any planned maintenance and refurbishment work.
2. Gaining access to individual properties to undertake the work.
3. Educating residents to achieve XB credit compliance, such as written and verbal advice on the use of heating controls, written information on simple energy efficiency measures and energy efficient appliances (Man 2 Energy Efficiency Advice).

There is no one-size-fits-all approach, and it will require some effort and resources from your organisation to decide on the best approach for your residents. It is also important to recognise that for credit compliance the advice needs to be tailored to individual properties, e.g. to the heating systems within them, so a one-off leaflet drop will not be sufficient.

In terms of the problems with access, a well planned consultation period to advise residents of the planned improvements, to allow feedback and importantly to outline the benefits of undertaking the improvements, will go some way prevent this. It is also useful to co-ordinate works together as far as possible to minimise disruption to residents.

In addition to the two resources mentioned in this section, there is a wealth of information available to assist with engaging residents. For example the *Toolkit for Empowering Residents on Energy* from the Energy Saving Trust. There are also organisations that can provide help directly to community groups, such as the Community Action for Energy (CAfE). CAfE is a community project that promotes sustainable energy. It provides a range of services to help make sustainable energy work for communities, offering:

- a national network of members;
- case studies;
- a database of community energy projects;
- regular newsletters;
- training courses for community groups and members;
- training courses for energy professionals;
- the CAfE conference;
- the community support panel;
- information on sources of grant funding;
- an Energy Efficiency Guide for Community Energy;
- travel bursaries;
- a helpline; and
- written and on-line resources including briefing notes and publicity resources.

For further information call the helpline on 08701 261 444 or see <http://www.energysavingtrust.org.uk/cafe>

³⁸ User Behaviour in Energy Efficient Homes: Phase 2 report, Association for the Conservation of Energy, March 2004

³⁹ Housing Corporation Residents Panel: Decent Homes Standard Questionnaire, BMG, June 2007

Chapter Seven

Recommendations

XB is a useful tool to improve and monitor the environmental performance of your organisation's stock. The following recommendations have been developed through commissioning and undertaking training on XB and from the learning points from each of the RSL XB case studies included in this guide:

The XB tool

If you are using XB for the first time, it may be easier to start off small, for example with a small group of properties or a street. Once you become more familiar with the methodology you can quickly build up to a whole stock assessment.

For organisations with a diverse stock profile, with potential for multiple archetypes, it may be useful to start off by taking a representative sample of stock to initially undertake an assessment on.

XB is not just about physical improvement of the stock, with 23 out of the total 57 points available requiring no direct improvement to properties. A major part of this is the XB management section, which gets the organisation to focus on their corporate approach to sustainability, encouraging this ideology to become more engrained, so that business activities automatically follow the low environmental impact option.

XB can provide a confirmation of the progress already achieved by an organisation in improving the environmental performance of stock, or in achieving the criteria of the Management section. This can give confidence as well as momentum to an organisation. Similarly, XB is useful for highlighting properties/issues in need of attention, and for prioritising where resources for improvements are best targeted.

Data availability is a critical factor for undertaking an XB assessment. Whilst gaps in data may be inevitable, ensure that the missing data is captured in future planned data collections, such as stock condition surveys. Also approach your database software provider about including XB fields in future versions.

XB is useful for forward planning maintenance activity. For example different measures can be run through the scoring spreadsheet to ascertain how XB scores are affected. This can help when trying to decide how best to utilise budgets and resources.

There is potential for the creation of an 'XB club or forum' where organisations with similar stock profiles can share their experiences of applying XB to assist with problem-solving and in identifying quick wins.

Undertaking improvements

A partnership approach is key to successfully undertaking improvements to properties, where all stakeholders (such as client, consultant, contractors, suppliers and residents) should be fully involved from start to finish.

Effective communication is also essential between all stakeholders, especially at key stages, for example, briefing contractors on requirements and specification, and briefing residents on proposals.

Resident involvement is a critical factor. This can be achieved through actively involving residents at key stages of the process, such as design (e.g. allowing them to have their say on specifications and products) and in communicating changes with them at completion (e.g. the benefits of new technologies or equipment and how to use them).

Access problems (such as residents refusing entry) may arise. These can be overcome through resident consultation, and by co-ordinating works so that they are undertaken when making other improvements, e.g. a large kitchen re-fit, to minimise disruption to the customer.

Chapter Eight

References and sources of further help

General background reading

Review of Sustainability of Existing Buildings (Department of Communities and Local Government, 2006) - www.communities.gov.uk

The 40% House (Environmental Change Institute, 2005) - www.40percent.org.uk

The Stern Report on the Economics of Climate Change - www.hm-treasury.gov.uk

Stock Take: Delivering Improvements in Existing Housing, (Sustainable Development Commission 2006) - www.sd-commission.org.uk/publications

General sources of advice and help

Sustainable Homes Ltd

Sustainable Homes Ltd is a consultancy providing training and support to all organisations involved in the design, construction and maintenance of sustainable housing and communities. In particular we can provide training on how to implement EcoHomes XB, including detailed facilitation services on undertaking assessments of your stock - www.sustainablehomes.co.uk.

Green Street

The Green Street website has been developed by Sustainable Homes Ltd to provide information and advice on undertaking sustainable refurbishments of various types of housing. It includes a section on EcoHomes XB, highlighting RSL and local authority case studies - www.greenstreet.org.uk.

BRE

The BRE Group is a world leading research, consultancy, training, testing and certification organisation delivering sustainability and innovation across the built environment and beyond. It has also developed the BREEAM family of environmental assessments, including EcoHomes and EcoHomes XB - www.breeam.org (go to BREEAM Buildings, then BREEAM EcoHomes XB).

T-Zero Project

This is a three-year project led by BRE with a range of partners, including the Housing Corporation and Sustainable Homes Ltd. The main objective of the project is to reduce the environmental impacts of existing housing by:

- showing refurbishment is a viable alternative to demolition and new build when certain standards of environmental performance are met;
- helping decision making by quickly identifying the best mix of refurbishment options to reduce environmental impacts, from the point of refurbishment through subsequent use/maintenance and eventual demolition;
- collecting data and using case studies to ensure recommended approaches are viable within the context of other drivers such as whole life cost, maintenance and preservation of heritage buildings; and
- addressing overall impact, including material resource efficiency and other life cycle impacts, alongside the main environmental priorities in existing housing of energy efficiency and renewable energy production.

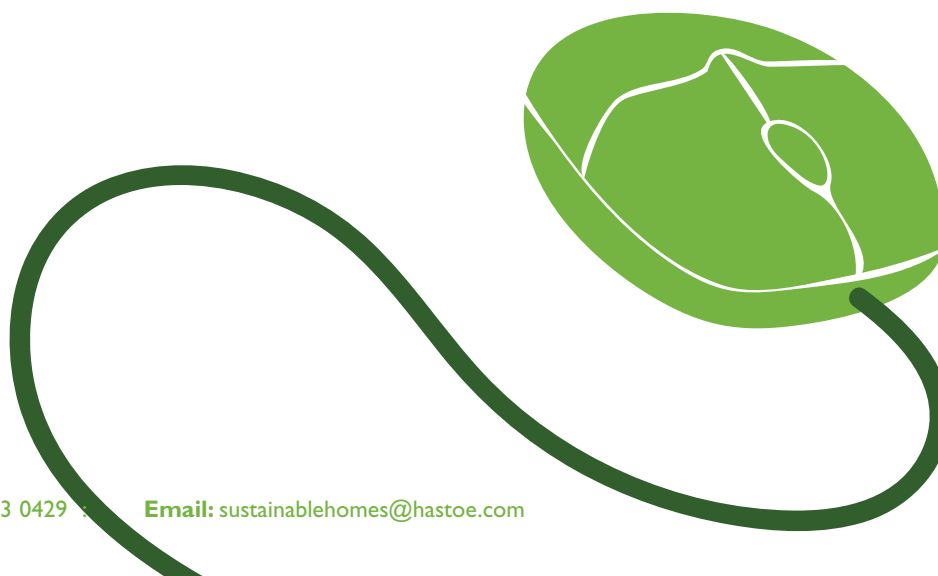
See www.bre.co.uk for more details (search for 'T zero').

EcoHomes XB

Guidance document, credit check list and Excel scoring sheets can be downloaded free from the EcoHomes XB extranet site (requires sign up first) - see the EcoHomes XB section of BREEAM Buildings - www.breeam.org.

When to use EcoHomes and when to use EcoHomes XB

A guidance note is available from BRE on when the different methodologies should be used, i.e. major refurbishment (EcoHomes), or planned maintenance (EcoHomes XB). See the EcoHomes XB section of BREEAM Buildings - www.breeam.org.



EcoHomes XB Guidance Document - individual credit sections

Management

Energy policy

The Carbon Trust - www.carbontrust.org.uk, particularly GPG 186: Developing an effective energy policy.

Environmental policy

Sustainable Homes Ltd (August 2007) - A Guide to Developing a Sustainability Strategy and Action Plan

Energy advice and resident engagement

Energy Efficiency Best Practice for Homes (EEBPfH) - www.est.org/bestpractice particularly GPG 208: Providing Energy Efficiency Advice to Householders Practical Help - www.practicalhelp.org.uk
Green Voices and Choices, Sustainable Homes, 2004 - www.sustainablehomes.co.uk
User Behaviour in Energy Efficient Homes (Association for the Conservation of Energy, 2004) - www.ukace.org.uk

Energy labelled products

Information on goods and suppliers - www.saveenergy.co.uk
Database of high efficiency goods - www.saveenergy.co.uk/howto/recom.cfm
Practical Help - www.practicalhelp.org.uk
BRE - www.bre.co.uk/breacu
Energy Efficiency Best Practice for Homes (EEBPfH) - www.est.org/bestpractice
Action Energy - www.actionenergy.org.uk

Energy

Energy Efficiency Best Practice for Homes (EEBPfH) - www.est.org
Practical Help - www.practicalhelp.org.uk
The Carbon Trust - www.carbontrust.org.uk
BRE - www.bre.co.uk/breacu
UK Building Regulations - www.communities.gov.uk
Boiler efficiency database - www.boilers.org.uk

Heating controls

Energy Efficiency Best Practice for Homes (EEBPfH) - www.est.org/bestpractice:
GPG 302 Controls for Domestic Heating and Hot Water
GPG 191 Energy Efficiency Primer
GPG 345 Domestic Heating by Electricity

Transport

Highways Agency - www.highways.gov.uk
Department for Transport - www.dft.gov.uk

Pollution

Energy Efficiency Best Practice for Homes (EEBPfH) - www.est.org/bestpractice:
CE 28 Renewable Energy in Housing: Case Studies
CE 69 Renewable Energy Sources for Homes in Urban Environments
CR 70 Renewable Energy Sources for Homes in Rural Environments
CR 72 Installing Small Wind Powered Electricity Generating Systems
CE 82 Domestic Ground Source Heat Pumps: Design and installation of Closed Loop systems

Water

The Environment Agency - www.environmentagency.gov.uk/savewater
OFWAT (information on water companies and efficiency tips) - www.ofwat.gov.uk

Health and well-being

Better Places to Live By Design: A companion guide to PPG3 (2001) - www.planning.odpm.gov.uk/betrplac/index.htm

Controlled ventilation

Energy Efficiency Best Practice for Homes (EEBPfH) - www.est.org/bestpractice:
GPG 171 Energy Efficiency Primer
GPG 155 Energy Efficient Refurbishment in Existing Housing
GPG 224 Improving Air Tightness in Existing Homes

Waste

Recycle Now (searchable database of local authority schemes and materials collected) - www.recyclenow.com
WRAP (Waste and Resources Action Programme) - www.wrap.org.uk

Safe disposal of appliances

www.defra.gov.uk/environment/waste/topics/fridges/householders.ht

Related issues

Sustainable materials and products

BRE Green Guide to Specification - www.bre.co.uk
One Planet Products (bulk-buying initiative for procurement of sustainable and environmental products and materials for the construction and refurbishment industry) - www.oneplanetproducts.org.uk

Local ecology (XB may be expanded to include this)

Neighbourhoods Green - www.neighbourhoodsgreen.org.uk

Listed buildings

Building Regulations and Historic Buildings - An Interim Guidance Note on Part L (English Heritage, 2004) - www.english-heritage.org.uk

Case Studies

1. ASRA Housing Association
2. Drum Housing Association
3. Elgar Housing Association
4. Festival Housing Association
5. Gentoo Group (formerly Sunderland Housing Association)
6. Hastoe Housing Association
7. John Grooms Housing Association
8. Keniston Housing Association
9. Ocean Housing Group
10. Sovereign Housing Association
11. Walsall Housing Group



ASRA Greater London Housing Association - using XB to focus on your corporate approach to sustainability

Summary

ASRA were approached to consider using XB on their stock by Sustainable Homes Ltd, as part of the work they were undertaking on behalf of the Housing Corporation in promoting the take up of the tool. ASRA decided to focus this support on Board engagement and developing an environmental policy for Board approval.

Activity

ASRA and Sustainable Homes Ltd developed and undertook an activity programme as follows:

- A presentation to the Board regarding climate change strategies and the impact of existing buildings.
- A workshop for property service colleagues, housing staff and representatives from Leicester Housing Association (ASRA's sister organisation and part of the LHA-ASRA housing and regeneration group) to identify work-strands and priorities.
- Feedback to the Senior Management Team.
- Coaching and facilitation on developing an environmental policy.
- Coaching on data capture to produce an initial whole stock XB assessment.
- Submission for Board approval.

Lessons learned/comments

ASRA opted to follow a traditional route for reviewing its policies against XB. They took a lead from the Board, worked with colleagues to identify what they currently did well and where they needed to change, and assessed this against the XB credit areas. This information was then fed back to senior managers.

ASRA is considering carrying out a sample assessment of their stock, and utilising the process to identify the future needs, within the framework of LHA-ASRA Group environmental policy.

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Refurbishment Location: Kingsley, Hampshire
House Types: Semi-Detached House (3) and Bungalow (3)
Age Bands: 1945-1964

Drum Housing Association (a part of the Radian Group) - use of innovative technologies in a refurbishment

Summary

This refurbishment of six homes has been undertaken as part of the 'Generation Homes' project initiative in partnership between Drum Housing Association, the Energy Saving Trust and consultants Energy for Sustainable Development (ESD) Ltd. The refurbishment was undertaken between November 2006 and March 2007. Generation Homes aims to establish systematic approaches to addressing the challenge of 60% national carbon emission reductions by focusing on the key sector of UK existing housing.

The homes are located in a rural area, off the gas supply network, and were previously heated by a combination of solid fuel and electric storage heaters. A survey of residents' running costs prior to the works being undertaken revealed annual costs of around £1,000 - £1,250 on average. The refurbishment had the dual aims of providing easily controllable affordable warmth for the predominantly elderly residents, and achieving carbon reductions. A post-refurbishment XB assessment was completed achieving a score of 67.13. A pre-refurbishment assessment will also be compiled for comparison, to fully understand the effect that the improvements have made.

Sustainability features

In terms of the project outcomes, it is estimated from the SAP assessments that carbon emissions for the three bedroom homes have been reduced from 9.8 tonnes CO₂/year to 2.4 tonnes CO₂/year as a direct result of the improvements undertaken, representing a 75% reduction. New annual running costs will also be closely monitored and it is anticipated that around 50% savings will be realised in use.

Fabric energy loss

The homes already had double glazing, cavity wall and loft insulation. However the loft insulation was upgraded from a thickness of 150mm to 300mm. To reduce heat loss, the air tightness of the buildings was improved with draught proofing, plus redundant flues and air bricks being in filled.

Heating

A new heating system was installed comprising Ground Source Heat Pumps rated at 3.5kW for bungalows and 5kW for houses. Boreholes were sunk into the ground to a design depth of 60m and 80m to take advantage of the stable temperature of around 9C stored in the ground. The coefficient of performance (COP) of the heat pump is 3 in space heating mode and 2.25 when producing hot water at higher temperatures. Hot water for space heating is delivered by specially designed low surface temperature radiators controlled by a room-stat and partial TRV's. Domestic hot water is stored in a new cylinder from where it is drawn off on demand.

Heat recovery

The three houses additionally benefited from the installation of waste water heat recovery. This took the form of a 'Power-Pipe' which was installed in a section of vertical waste water stack pipe. The heat exchanger recovers up to 60% of waste heat and recycles it - in this case back to the shower head. The Power-Pipe was insulated and neatly boxed-in externally.

Energy efficiency

As part of the Generation Homes approach, a solar electric photovoltaic array was installed on the southerly aspect of each home's roof. The combination of the two renewable energy technologies on site collecting heat and generating electricity, enable significant carbon savings to be made. The 6 x 1kWp photovoltaic arrays will produce a minimum of 750kWh/pa/unit. This is used to feed the base electrical load of the homes. Some residents have chosen to install export meters as a contract with their energy supplier, enabling any surplus electrical generation to be sold back to the grid. Although dedicated low energy fittings were not installed in the properties (and therefore do not earn the relevant credit under for Ene 2 - Energy Efficient Fittings), low energy (CFL) light bulbs were installed internally throughout all the homes, further reducing energy consumption and running costs. Bulbs are provided free to residents ensuring that energy efficient bulbs are always used.



Water conservation

Two of the homes did not previously have a shower installed and therefore the opportunity was taken to provide these and in so doing also reduce residents' mains water consumption (the showers have a flow rate of less than nine litres per minute). The decision was also taken to install mechanical extract ventilation with heat recovery controlled by a humidistat in each of the bathrooms containing the showers. Water butts were installed where requested by residents and composting units similarly provided.

Resident advice and education

Residents were provided with clear operating manuals/instructions relating to the new installations and were briefed face to face on the same.

Cost implications

As the project was an exemplar, considerable sums were invested. Approximate average cost breakdowns are provided in the table below:

Feature	Cost (£/unit)
Loft insulation	£200
Air Tightness	£1,500
GSHP*, heat plant enclosure, ground works, electrics	£7,250 total £6,000 (bore hole and heat plant) £1,250 (Associated ground works, electrics etc.)
Hot Water cylinder and radiators	£3,000
Heat and kWh meters	£250
Photovoltaic's	£8,000
Low energy light bulbs	Free from Scottish & Southern Energy
Total cost per unit: £22,700	
Total cost for project (6 units): £136,000 + 5% VAT	
Funding:	
Low Carbon Buildings Programme: £19,000 (photovoltaic's)	
Energy Savings Trust (Generation Homes): £30,000 (consultancy & promotional material)	
Drum Housing financed the balance: (~ £87,000 total, £14,500/unit)	

* Ground Source Heat Pump (GSHP)

Lessons learned/comments

Key to project success was a partnership approach where all stakeholders including client, consultant, contractors, suppliers and residents were fully involved in progress throughout. Effective communication was also central, especially at the key stages when residents were briefed on proposals, and on completion regarding operation of the new technologies incorporated.

A large number of contractors were employed on the site and delays with progress of specific operations on occasion caused knock-on delays. If a high number of GSHP installations are planned on a site (19 were provided at a site adjacent) it is worth considering a soil investigation, as the unforeseen soil conditions resulted in delays with progress. The works, all undertaken without additional cost to residents, were offered to another tenant in the road; however, they refused works owing to perceived upheaval.

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Refurbishment Location: Barrs Orchard, Tarrington, Herefordshire

House Types: Traditionally constructed, semi detached, terraced houses, bungalows and flats.

Age Bands: 1981-1989

Elgar Housing Group (part of Festival Housing Group) - XB assessment with consideration of resident and contractor issues



Summary

The overarching aim of the project was to modernise the properties and to improve the affordability of 25 homes occupied by elderly, single, and family units, all typically on low incomes. The properties suffered from poor insulation, coupled with electric hot water and space heating.

Sustainability features

The following works were undertaken:

- a new gas main was installed on the site;
- a new gas central heating system was installed incorporating A-rated condensing combination boiler coupled with 'Data term' energy efficient controls, providing an overall 92% efficient heating system;
- double glazing was installed for all windows and doors;
- additional loft insulation up to 300mm was installed;
- designated energy saving light fittings were installed, and residents were provided with low energy lamps for remaining rooms;
- whole house ventilation system was installed; and
- new bathroom suites including the use of thermostatic showers drawing hot water from the combination boiler opposed to electric showers; 6 litre dual flush mechanisms within WC's and spray tap inserts for bathroom sink taps to improve water conservation.

XB assessment

A desktop XB assessment was conducted retrospectively on this refurbishment project to environmentally rate the improvements made. Prior to refurbishment, when insulation and heating systems were poor and water efficiency was low, these properties achieved an XB score of 24.6. Post refurbishment, the properties scored 41.4. This is a 68% environmental improvement on the pre-refurbishment scheme.

Cost implications

Overall the cost per property was approximately £16,500 (inclusive of VAT). The cost of the environmental improvements included in this, beyond like for like replacement, was approximately £3,840. It is expected that residents will have an average cost saving per unit of £200 to 300 per annum.

Lessons learned/comments

The works were undertaken using one of Elgar's partnered contractors acting as main contractor, who in turn utilised other partnered contractors, such as gas infrastructure and window/door providers, along with associated supply chain partners to deliver the works. It was evident that the complexities of this project, together with the scale of works undertaken within occupied properties over a three week period (per property) demanded good organisation and communication between the contractors, design consultants, project manager and most importantly the residents.

A lot of time and resources were invested in preparing for the project six months prior to the actual start on site, including resident consultation days, design surveys and design survey follow up visits prior to works starting, together with daily liaison with residents during the works on site.



From an operational point of view a great deal was learned from undertaking a trial property some months prior to actual works starting on site, allowing the contractors to identify and minimise any problems likely to arise.

Post installation it was noted that issues relating to resident education arose particularly in regard to the operation of the energy efficient heating controls, and residents wishing to change their credit gas and electric meters to token meters. This was an educational issue, which Elgar has subsequently tried to address through discussion with the residents. However, this was not helped by the ongoing uncertainty in gas and electric price increases during the spring and summer of 2006. To address this issue in future, Festival Housing Group (which Elgar Housing Association is part of a group structure with) are looking to publish information in the various resident handbooks, booklets and presentations, and are including a section within their Programme Works handbook and a DVD which forms part of the pre-works communication package.

Elgar is currently in discussion with local authorities and the local water authority in their operational areas, in regard to the supply and installation of rain water harvesting equipment and home composting kits, which it is hoped will form part of their refurbishment package in the near future. However, it is appreciated that these measures are likely to require a firm commitment from individual residents that they wish to have them installed and are likely to use them.

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Festival Housing Group - resident engagement

Refurbishment Location:	Oak Crescent, Malvern (60 properties)
House Types:	Mid/End Terrace and semi-detached Wates pre-cast
Age Bands:	1945 - 1964



Summary

The aim of this project was to modernise 64 homes by replacing and updating the following elements:

- bathrooms;
- kitchens;
- central heating;
- windows;
- electrical systems;
- front and rear doors; and
- internal and external insulation (funded through Energy Efficiency Commitment (EEC) funding).

Wherever feasible, environmental/energy saving measures were adopted and implemented to reduce the impact of these works on the environment. The main environmental focus of the project was energy efficiency/heat loss. It is hoped that these works will give a new lease of life to these homes and engender a positive attitude amongst the residents/community towards the Group and the environment.

Sustainability features

The following measures are currently being implemented on the first refurbishment phase at Oak Crescent on a total of six properties. The second phase (50 properties) at Oak Crescent will benefit from these measures and any subsequent amendments.

Heat loss

- Over haul uPVC double glazed units, including renewal of seals around windows.
- Loft insulation to meet current regulations (funded through EEC).
- Block passive ventilation (as many as nine vents in each home) to enable effective use of Dri master whole house ventilation system.
- New external composite front and rear doors with insulated panel and double rebates.
- Externally insulate and render walls (single property only).

Energy saving

- High efficiency central heating boiler, temperature optimising programmable thermostat (Dataterm IHC) and thermostatically controlled radiator valves.
- Electrical upgrade incorporating two dedicated low energy lamps and additional four low energy lamps for remaining rooms.
- Installation of Nuair Dri-master whole house ventilation system. This system uses £0.01 of energy per day.

Water conservation and waste minimisation

- Spray taps on wash hand basins and sinks to reduce water consumption.
- Installation of dual flush toilet cisterns.
- Showers with flow rate of nine litres per minute.

In addition to the above, wall tiles were selected that are made from recycled materials.

XB assessment

A desktop XB assessment was conducted retrospectively on this refurbishment project providing scores for the scheme pre and post refurbishment in order to environmentally rate the improvements made. Prior to refurbishment the Oak Crescent properties, originally built in the 1950's, achieved an XB score of 25. The properties scored low on insulation, heating systems, and water efficiency. Post refurbishment, the properties scored 43.2 based on the improvement above. This is a 72.8% environmental improvement on the pre-refurbishment scheme.

Cost implications

The average overall cost for the refurbishment of a single Oak Crescent property will be £16,500 (Inc VAT). The cost for implementing environmental measures is approximately £880 above Festival's minimum standards. It is estimated that the residents will save between £200 and £300 per annum on fuel bills.

Lessons learned/comments

Festival considers that the biggest factor in achieving a successful refurbishment project is resident involvement. This has been achieved through actively involving residents at the design stage, allowing them to have their say on the specifications and products. Residents are involved when detailed design surveys are undertaken, to enable the production of refurbishment schedules. This is an opportunity to talk with the residents about the energy saving benefits on offer, particularly the new central heating system. This is followed up by resident consultation days where all residents on the forthcoming year's refurbishment programme are invited to meet the project surveyor managing the works, and see mock displays which demonstrate the products to be installed. This positive involvement has served to improve relationships between staff and residents but more importantly this encourages residents to give feedback on services. A void property on Oak Crescent prior to the phase first starting was used to showcase the end product.

Difficulties

Oak Crescent properties are designated Wates PRC structures. This was the first barrier that had to be overcome, particularly as there was internal evidence of structural movement in several dwellings. The latter created the perception amongst many residents that these homes had a limited lifespan. A great deal of time and money was invested in assessing the viability of injecting large sums of money into these homes. The outcome of the structural testing was that deflection within the first floor could be resolved by inserting a single beam and/or the removal of inadequately supported walls.

Whilst energy advice has been given through consultation days, the show home and at the design stage, it is still considered that more work is required in this area in order for the residents to fully benefit from the measures that have been introduced. Recent fuel price increases mean that even more emphasis must be placed on managing gas central heating systems and household electrical appliances. Festival is looking to address this problem by producing an 'energy pack' which will include a handbook, various leaflets and an educational DVD in the near future.

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Gentoo Group (formerly Sunderland Housing Association) - using XB retrospectively to form part of an ongoing maintenance programme

Summary

Since 2001 the Gentoo Group has been driving forward the refurbishment of its stock through its Energy Efficiency Programme (EEP). The Programme has the core aim of improving the energy efficiency of properties, and is providing energy savings of £4.1 million and 7,504 tonnes of CO₂ pa for its customers, and contributing to their planned maintenance programme. The EEP consists of a range of improvements such as increasing cavity wall and loft insulation, double glazing, and installing condensing boilers. The Monkwearmouth flat complex, consisting of 104 units constructed in 1964, was improved within this investment plan. A retrospective XB assessment was conducted to quantify the environmental improvements that were made.

Refurbishment Location:	Monkwearmouth, Sunderland, Tyne & Wear
House Types:	High rise purpose built flat.
Age Bands:	1945-1964



XB assessment

Based on knowledge of the property prior to the refurbishment works, the building achieved an XB score of 15. The improvements to insulation, water efficiency and low energy external lighting increased the XB score to 29.5, an improvement of 14.5 points, representing almost a 100% improvement on the initial XB score.

In terms of further potential for improving on this score, the Gentoo Group has recently endorsed an environmental policy, and are also negotiating with the local authority to provide a recycling service to all its high-rise schemes, which secures an additional 6 credits increasing the XB score for this scheme to 45.4 - just over a 200% improvement.

Lessons learned/comments

The main lessons learned were:

- Any potential change in standards or regulations needs to be taken into account at the refurbishment planning stage.
- Access problems (such as residents refusing entry) may arise - try to ensure that work is undertaken when making other improvements, e.g. a large kitchen refit, to minimise disruption to the customer.
- There is real value to creating a large customer / property database to ensure the clear and consistent recording of information.
- Educating customers on the benefits and how to use any new systems is of critical importance.

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Hastoe Housing Association - choosing a stock sample to test the application of XB



Summary

Hastoe Housing Association is a niche rural affordable housing provider, with a diverse range of stock types spread over a wide geographic area. Hastoe wished to test out the XB tool on a small stock sample before applying it to their whole stock of 3,803. However due to the diverse nature of the stock and the geographical spread there was an issue of choosing an initial sample. This was resolved by similar sites chosen in the three main geographic areas of the South East, South West and East Anglia. This provided an average sample score as an initial benchmark, whilst importantly showcasing the usefulness of XB as a tool and how to use it. Hastoe are now preparing to complete a full stock assessment using the tool.

Establishing the benchmark sample

A report was run using data from Hastoe's Housing Management System and Asset Management programme, which had been populated via a stock condition survey carried out in 2006. Each Hastoe property is identified by a Unique Property Reference Number (UPRN), which relates to a scheme, Local Authority, County and region. Using UPRNs, age band data, house type data, and region codes properties were categorised into age band/house type groups establishing a 'property demographic'. Based on the property demographic a 10% sample was taken from each region. This sample essentially emulates the spread of properties based on house type and age band, and follows the BRE's proposed approach to benchmarking in the XB guidance notes. As a result 110 properties were selected from the South East region, 43 from the South West region, and 41 from the East Anglia region, providing a benchmark sample of 194 properties. Once properties were selected for each region, information was collected based on the XB credit areas. In-house information from stock condition surveys and external information was compiled to assign credits. Once all desktop information was exhausted a final benchmark score of 15.9 was achieved for the sample properties. Information gathering for each region is not yet complete; therefore the benchmark score achieved is only indicative. Hastoe will repeat the assessment once further information is collected to provide a more complete XB benchmark score.

Limitations

The limitations of this benchmarking exercise and the actual score are as follows:

- The benchmark score is representative. Hastoe manages a total of 3,803 properties at the time of this exercise. The stock of other RSLs managed by Hastoe, such as English Rural and Kilmersdon, were excluded from this benchmarking. In addition the data set was limited to 1,926 properties based on the availability of house type and age band data.

	No. of properties
Total Hastoe stock size	3803
Excluding other RSLs	3032
Properties with adequate data	1,926
Benchmark sample size	194

- The benchmark score currently achieved is likely to be much lower than the actual environmental performance of existing stock. Due to lack of data many credit areas were devoid of information and were therefore withheld. Hastoe have identified the areas where information needs to be strengthened and a planned programme has been put together to gather and complete the benchmark. In lieu of the data set being completed there is a strong chance that credits should be awarded in some circumstances, but because this information is not yet known, the benchmark score is likely to be very conservative.

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John Grooms Housing Association - undertaking a whole stock assessment

Summary

John Grooms Housing Association (JGHA) specialises in providing accommodation for disabled people, predominantly wheelchair users. They were approached to consider using XB on their stock by Sustainable Homes Ltd, as part of the work they were undertaking on behalf of the Housing Corporation in promoting the take up of the tool. The Association decided to focus this support on exploring how the organisation met the credit criteria of the Management section, particularly focusing on the development of an energy policy. They then went on to complete a detailed initial XB assessment of their stock.

Energy policy

The Association set up a working group consisting of officers, Board members and residents to discuss current policies and how best to amalgamate these and incorporate new criteria to lower their carbon emissions and improve energy efficiency throughout their housing stock. Sustainable Homes Ltd assisted by facilitating this meeting and providing direction and comments on the resulting policy document. The Energy Policy was finalised and approved by the John Grooms Housing Services Committee in February 2007.

Undertaking an initial XB assessment

The Association undertook a detailed initial whole stock assessment of 1,185 properties, using data from their Housing Management relational database, a spreadsheet of SAP Ratings, gas-servicing record spreadsheets (since April 2004), ad hoc internet searches, development archive records and in-house knowledge of the stock. Each property type in the Housing Management database was allocated to one of the XB property types. Where there was more than one property type in the database for any of the XB property types then each were initially allocated to one XB property category. For example, the Association's Housing Management data identified three types of bungalow: detached; semi and terraced; each of which was given the same XB property type of Ref _ 4 = Bungalow. Follow-up advice was

requested from BRE to clarify whether the non-detached bungalows in the Association's database, should instead be re-classified as either semi-detached or terraced houses along with properties that are two-storeys or taller. However the advice was that all bungalows should be treated as bungalows whether detached, semi-detached or terraced. The Association also queried whether sheltered homes, which are not covered by the XB property types, would require a 'bespoke' assessment. BRE advised that a 'bespoke' assessment is necessary where a central kitchen provides meals, for example where the dwellings do not have their own kitchen. BREEAM bespoke software exists for new-build schemes, however a toolkit had not been developed for existing schemes. Necessarily a new category - BED, (Bed-sit) not self-contained - was created in the main spreadsheet, for dwellings within a supported scheme (where meals are prepared in a central kitchen) that are often not self-contained dwellings. The Association has one such non-self-contained scheme, and being beyond analysis for the present, that scheme was omitted from the XB analysis. Whereas, the dwellings in the other supported scheme were built as entirely self-contained, it has been included in the initial baseline assessment. Overall this revealed that, having treated the two supported schemes' dwellings as noted above and excluding garages, the Association's stock is made up as follows:

Ref No.	Description	Quantity	% of stock
1	High Rise Purpose Built Flat	0	0%
2	Low Rise Purpose Built Flat	817	68.9%
3	Converted Flat	0	0%
4	Bungalow	172	14.9%
5	Detached House	28	2.4%
6	Semi Detached House	136	11.5%
7	Medium Large/Terrace	26	2.2%
8	Small Terrace	6	0.5%
Total (for initial assessment)		1,185	100%
	Bedsit not self-contained	19	
Total		1,204	
	Garages	5	
Total		1,209	



Once the data collection phase was completed, each property type/age band was assessed against the XB guidance. Zero scores were entered throughout any column where it was known that the Association does not score for any property. Examples of zero credit scores obvious at the outset included the whole of the management policy criteria, the renewable energy source criteria, the refurbishment-projects re-cycling criteria, plus other specific requirements such as the composting toilets

criterion, 'Best Practice' washing and dish-washing machines criteria, the grey-water criterion and the fridge and freezer safe-disposal information leaflet criterion.

The XB credits, scores and calculation of the overall stock initial assessment are shown in the following table, from which it can be seen the Association's baseline initial assessment across all the stock is a rounded **XB score of 23 out of 100**.

XB Ref	XB Description	% of Stock	Mean SAP rating	XB credits	XB score	No. of Properties	Initial Assessment Score	
1	High Rise Flat	-	-	-	-	x -	-	
2	Low Rise Flat	68.9	80.4	16.0	25.94	x 817/1185	17.88	
3	Converted Flat	-	-	-	-	x -	-	
4	Bungalow	14.5	75.4	9.5	16.98	x 172/1185	2.47	
5	Detached House	2.4	82.7	14.3	22.71	x 28/1185	0.54	
6	Semi Detached House	11.5	79.0	9.9	12.86	x 136/1185	1.48	
7.	Medium / Large Terrace	2.2	75.8	13.6	21.76	x 26/1185	0.48	
8.	Small Terrace	0.5	86.8	14.6	23.71	x 6/1185	0.12	
TOTAL:							1185	22.96

The Association is in the process of replacing single-glazed exterior doors and windows with double-glazing, installing cavity-wall insulation and upgrading the loft insulation throughout one of its schemes. This will improve the XB score by generating additional credits under Ene 1 - Fabric Energy Loss. It will also require a new SAP rating to be calculated with the knock-on effect of an improved XB score under Ene 4. Refurbishment works and various day-to-day repairs and adaptations that materially alter any of the XB credits all necessitate reassessment of the XB Score on an on-going basis.

Lessons learned/comments

- XB has provided a useful tool to track the environmental impact of the Association's refurbishment/major repair programme along with influencing product selection for responsive repairs.
- Installing the Association's new asset management software, and rolling stock condition surveys will ensure that the necessary data for updating the XB assessment will be captured, complimenting external data requirements such as the National Registration of Social Housing requirements when this replaces the CORE and RSR returns to the Housing Corporation.
- For ease of desk-top assessment, calculation of the XB criteria does require as much detailed information as possible, (however the score can be refined through repeat XB assessments as and when more data becomes available). In-house knowledge of stock is invaluable, especially, if possible, from the original design-construction team. One such example is the construction detail enabling the more accurate assessment of the likely in-use CO₂ emissions - criteria Ene 1 - Carbon Dioxide in EcoHomes (new-build) which may be compared to the Ene 1 - Fabric Energy Loss in XB.

- It was recognised that the Association's most populous property type is type 2 - 'Low Rise Purpose Built Flat', amounting to 69% of the Association's stock. The actual 'Flat' assessment was based on a first floor flat, which is not representative of the scheme's ground floor flats which recently had high-efficiency condensing boilers installed, whereas the first floor flats did not. Nevertheless the assessed first-floor flat, in retaining its original boiler, is more typical of the Association's stock overall, which generally pre-date the April 2004 change to condensing boilers. The outcome effect on the Association's overall initial assessment score was to mark it down by 1.8803.
- Balanced against the previous 'mark down', the assessed flat potentially gained extra points because it is within a scheme with a resident Scheme Manager. The reason is that whereas the Association is not confident that all tenants have received individual instruction on how to use their central heating controls, the contrary is true for schemes with on-site staff.
- The assessed flat may also be somewhat untypical in that being within the bus-regulated London area, there is a nearby bus service that runs throughout the required period, from which the assessment gained slight additional scoring.

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Keniston Housing Association - a tool for highlighting priorities and achievements



Refurbishment

252- 270, Lyham Road, SW2

Location:

5NP, London Borough of Lambeth

House Types:

8 two bedroom and 2 three bedroom houses of traditional brick construction.

Age Bands:

1965-73

Summary

Keniston Housing Association received training from Sustainable Homes Ltd in 2007 to enable them to carry out EcoHomes XB assessments as part of a wider initiative to improve Keniston's environmental impact. The association intends to carry out assessments of all its properties with a view to developing a strategy for achieving an improvement in the environmental performance of the stock. It had been assumed that a key part of the actions to improve environmental performance would be the introduction of technological building or component solutions.

The pilot assessment was carried out on a small estate of two and three bedroom houses in the London Borough of Lambeth. The houses were constructed in 1972 and underwent major repairs and improvements in 1995. Works included the replacement of a flat roof with a pitched roof, installation of double glazing and full gas central heating.

The assessment was carried out by three staff who have a good knowledge of the estate, the properties, maintenance history and location. They were confident that they had been able to carry out the assessment within the guidance notes provided by the BRE.

The pilot assessment clearly demonstrated that big improvements in EcoHomes XB rating could be achieved quickly and easily by improvements in two key areas. Firstly by introducing new procedures for advising and assisting tenants with managing their heating systems, the EcoHomes XB rating could be improved by more than 15%. Secondly by introducing and implementing suitable environmental and energy policies, a further 10% improvement in the rating could be gained.

As these improvements can be achieved relatively easily for all stock the conclusion of staff at Keniston is that these should be adopted first. This is clearly not the hi-tech and relatively more expensive building solutions that had initially been anticipated.

Lessons learned/comments

Homes constructed in this era are amongst the worst for environmental performance and Keniston carried out works in 1995 to mitigate the worst aspects. XB has helped them to focus next on policy and management tools, and they consider XB to be a rich source of ideas for planning the next phase of their asset management programme. They were pleased that it acted as a confirmation that much of the work they had already undertaken was contributing to reducing environmental impacts. This has given them confidence as well as momentum. They also plan to focus on resident communication and education.

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Ocean Housing Group - using XB to compare environmental performance of existing stock to new build, and for targeting resources



Summary

Ocean Housing Group conducted a research exercise to compare the environmental performance between their new build developments (assessed under EcoHomes for new build) and their existing stock. The purpose of the research was to quantify the difference in environmental performance between the stock types, and to determine the cost of raising the environmental performance of the existing stock to (or close to) new build standards. XB was used to assess the environmental performance of these properties, using on-site and desktop information in accordance with XB credit areas and guidance.

The following is a summary of the stock sample selected for this research.

XB score for sample schemes

Scheme	No. of properties assessed	XB Score	Age
Water Hill Close	11	57.48	1965-1973
Trevowah Road, Crantock	8	55.71	
Trevowah Meadows	16	74.91	Post 2002
Ocean View, St Austell	23	76.68	

Results

From the sample selected it was found that the existing stock (1965-1973) scored on average 19.2 credits lower than new build stock. This difference can be attributed as follows:

- The older stock scored 3 out of 6 credits for fabric energy loss, whereas the new build stock scored full credits meaning greater energy efficiency and heat retention.
- The older stock had less efficient boilers and no low energy light fittings.
- SAP ratings of the older stock were between 60 to 74 compared to new build ratings between 80 to 93.
- The older stock did not have energy efficient external lighting.
- The older stock scored 3 out of a possible 9 credits on water efficiency compared to 4 out of 9 for new build stock.
- The older stock has no rainwater harvesting system to capture rainwater for garden use.

Cost implications

Ocean investigated the cost implications for increasing the XB score for the older stock, evaluating the marginal cost for environmental improvement in the existing stock on a cost per credit basis.

Costs were evaluated for credit areas where maintenance work could occur within the design constraints of the property. For the older stock (Watering Hill & Trevowah Road, Crantock) Ocean found that improvements could be made in the Ene 1, Ene 2, Ene 6, Pol 1, Wat 1 and Wat 2 credit areas.

The indicative cost per property was assessed for (i) achieving an additional credit in each targeted credit area, and (ii) to achieve maximum credits in the targeted credit areas. The results indicate that Ocean could increase the XB score for Trevowah Road and Water Hill Close from 56.6 to 69 at an associated average cost of approximately £800 per property. However the cost to achieve maximum credits for the properties (achieving a XB score of 85.5) would be on average, £10,000 - £11,000 per property.

This cost research indicates that Ocean can cost-effectively raise the environmental performance of their existing properties close to the performance of EcoHomes assessed new build. Some environmental improvements and XB credits can be achieved at low additional cost, such as installing rainwater butts, flow regulated taps, security lighting and loft insulation, compared to more expensive options, such as grey water recycling, renewable energy devices, and A-rated condensing boilers.

Lessons learned/comments

XB has proved itself an appropriate tool for measuring sustainability performance and driving continuous improvement. XB is useful for deciding where resources for stock improvements are best targeted. Some criteria have proved easier to assess than others. For example, CO2 emissions are not entirely within a landlord's control; nor are the purchase of white goods, transport links, domestic recycling and waste disposal.

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Sovereign Housing Association - using XB to identify improvements and a way forward



Summary

Sovereign Housing Group owns and manages nearly 22,000 properties across the South and South West of England, including homes in Newbury, Bristol, Christchurch, Abingdon and Plymouth. The Group consists of three main subsidiaries including Sovereign Housing Association, Twynham Housing Association and The Vale Housing Association. The Group's stock is mainly maintained through reactive maintenance with some planned programmes, however they are looking to move towards a more planned maintenance regime. The largest subsidiary, Sovereign Housing Association, hopes to achieve the decent homes standard on all its properties by the end of April 2008. They also have an average SAP rating of 71.7 which reflects the progress made and further progress needed in achieving energy efficiency. However, their overall environmental performance until now had not been assessed. To facilitate this, Sovereign Housing Association committed to using XB to monitor their stock and to improve their stock's performance beyond the decent homes standard, improving SAP ratings with the eventual goal of high environmental performance with a high XB rating.

Initial XB assessment

Sovereign carried out an initial assessment of their stock over a two-week period using data held on their asset management software. One distinct advantage was that the majority of data needed for the XB score was already available from the House Condition Survey. However, opportunities for further data to be collected were identified for areas of XB not currently considered. This included issues such as public transport, provision of drying space, recycling facilities, ventilation and private space. This has been fed back so that future surveys can collect this data, with additional questions added to stock condition surveys.

In carrying out the initial assessment, one unit from each age band and house type was assessed against the XB criteria with a total of 54 units assessed. This formed the initial benchmark and gave a rough indication of their stock's current average XB score. The average initial XB score for the entire stock was 23.73, with the worst performing type scoring 8.83 and the best

performing unit scoring 39.64. This helped to indicate which parts of their stock were performing well and which were not performing so well, to help prioritise maintenance works. Sovereign envisages that this score will become more accurate as more refined data is collected and as more units are assessed.

Improving the XB rating

The initial XB assessment highlighted several key areas where the XB score can be improved. These key areas are improvements to management policies, and information provided to residents. These improvements have been put forward as part of a report highlighting Sovereign's strategy for improving the XB score, to be considered by an XB focus group. The report has initial recommendations for a one-year target to look at credits which are relatively simple to implement with a low financial burden (such as management policies). The report looks at further credits to be considered as part of the Association's ongoing maintenance programme so that further targets can be set, leading to an eventual goal. These additional credits include A-rated condensing boilers, heating system controls, double glazing, renewables, and water fittings.

Targets and actions

An initial target has been set to improve the average stock score up to a potential 45 points and requires the actions below to be taken. If all the following issues are adopted this will see an improvement in the XB rating of 15 points, bringing the average rating up to 45.15 points and achieving their target. Sovereign also plan to refine their score by assessing individual streets and areas of their stock, assessing more individual units to identify further areas for improvement. The actions to be taken to achieve the initial target will give benefits across the entire stock and will also hopefully help to promote behavioural change amongst residents. These actions are also in addition to any further improvements to the stock (such as replacement of windows with double-glazing, and new boilers) so the score can also be further enhanced through these measures.



Actions

Management credits

- Expand environmental policy to cover issues from XB not currently included;
- Create a separate Energy Policy including SAP targets, average CO₂ emissions for stock, feasibility study for renewables and so on;
- Provide written advice to occupants on heating system controls, ensure gas services engineer gives verbal advice on controls to occupants, and ensure this is also done for new occupants and where a heating system is replaced; and
- Have a policy to provide A-rated white goods (where being provided) and include leaflet on eco-labelled white goods as part of information magazine sent to residents.

Energy credits

Ensure advice on operating heating system is given by engineer and information leaflet given to occupants.

Transport credits

- Carry out a desktop analysis to identify distance to public transport and frequency of service.

Waste credits

- Add to management policies to ensure recycling and reuse of refurbishment waste;
- Add as a requirement for contractors to sort refurbishment waste for recycling/reuse;
- Carry out a desktop study to identify properties that have a local authority collection service and potential areas where a collection service is required; and
- Provide residents with the DEFRA information leaflet about how to dispose of old fridges and freezers.

The way forward

Going beyond the initial target requires some further planning and consideration, so Sovereign agreed to look at this as part of an XB focus group to work with their maintenance strategy. Some of the potential areas include:

- considering efficient water fittings when kitchens and bathrooms are replaced;
- improving heating system controls when boilers are replaced, including fitting A-rated condensing boilers;

- fitting dedicated low energy light fittings at the point where houses are rewired, providing residents with the first low energy light bulb to help get over issues of acceptability;
- grounds maintenance being given responsibility for the collection of recycled goods from flats where there is no current collection service; and
- considering planned maintenance roll out of double glazed windows and insulation.

Once the above have been considered, along with any other further measures, additional annual targets can be set going forward. Aspirational goals can also be set, depending on the maximum score achievable for different property age bands/types.

Lessons learned/comments

Sovereign found XB to be a useful tool in terms of the guidance given to achieve credits and to improve and monitor environmental performance, and the Association sees it as something to use to monitor their ongoing performance. Areas of difficulty highlighted by the Association are in assessing transport and recycling facilities as their stock is spread over such a wide area. It was identified however that this could be resolved through desktop studies. The collection of some data was also another issue as not all information was currently collected. However, this can be achieved through amending survey questionnaires. Sovereign also identified that there are potential IT solutions required to allow their entire stock to be broken down into the potentially hundreds of XB sub-groups as part of the entire XB stock rating. The integration of XB within existing software, to generate automated ratings, was identified as something which would be a distinct advantage and the feasibility of which needs further investigation. It is suggested that organisations with similar stock profiles should share their experiences of applying XB to assist with problem-solving and identifying quick wins.

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House Types:	Two-bedroom flats (on 3 storeys), mid terrace, end terrace
Age Bands:	1965-73

Walsall Housing Group - a pioneer of EcoHomes XB

Summary

Walsall Housing Group consists of six housing trusts in Walsall, part of the West Midlands conurbation. The Trusts in Walsall Housing Group, which include Aldridge and Brownhills, Bloxwich, Darlaston, Willenhall, as well as Central Walsall Housing Trusts, received stock transfer from Walsall Metropolitan Borough Council in 2003. The Group currently owns 22,000 properties.

The Group were involved in the pilot phase of the development of EcoHomes XB, trialling it on one of their estates.

Undertaking the assessment

Walsall Housing Group participated in the EcoHomes XB pilot programme and then tested XB on its stock in its final form. They applied it to Bridgewater Close and Wyre Close, a 1970's development of 127 homes. The estate is situated in the Aldridge and Brownhills Trust.

When Walsall transferred its stock in 2003, they made commitments to tenants. Since then they have been working to keep those promises. They have installed 4,771 new kitchens and bathrooms; 5,056 replacement central heating and insulation packages; 7,856 replacement double glazed windows and doors; and rewiring to 2,405 properties - so far. A retrospective application of XB to the properties at Bridgewater Close and Wyre Close produced a score of less than 10, before any additional works were carried out. Walsall Housing Group then undertook a range of improvements to the properties:

- installation of condensing boilers, together with upgraded heating controls, and replacement radiators;
- installation of cavity wall insulation;
- upgrading of roof insulation from a bare 50 mm, to 250 mm; and
- new double glazed windows with trickle vents.

A repeat XB assessment undertaken after the improvements were completed reflected that the environmental performance of the homes had increased exponentially. EcoHomes XB reflects this, with a score of 24.64 achieved, representing a massive increase of 148%.

In addition, XB was used to identify what other work could be carried out at the same time as the Group's major improvement programme. The following measures could be installed:

- water meters;
- rainwater butts;
- photovoltaic tiles to power communal lighting to flats;
- telephone points for home working; and
- recycling provision.

As well as this, the Group could review its policy framework by adopting the rigorous policy requirements set out in the XB Management section - the Energy Efficiency Policy, the provision of energy advice to all tenants, and an Environmental Policy. By doing all of this, the group could achieve the optimum XB score of 40.03 - improving on their original score by a further 64%.

Lessons learned/comments

- XB captured the Group's achievements, and identified further, modest actions that it can take to reach the optimum score for the properties.
- Overall they considered it a thorough methodology to rate their properties.
- The Group considered it an easy way to benchmark their progress and it provided a holistic framework to address the environmental agenda.
- XB doesn't just concentrate on physical improvements, but encapsulates behavioural change and benefits for residents.
- The majority of the credits can be achieved at nil cost.
- Some criteria proved easier to assess/address than others.
- They considered that some criteria, such as the provision of a Local Authority recycling scheme, can be out of RSL's control. However the government's emphasis on recycling is set to continue with all authorities providing some sort of recycling collection. It is also something that the RSL can potentially influence with their relevant local authority.
- The Group will continue to use XB to influence the maintenance of their 22,000 units.

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