

EcoHomes is BRE's environmental assessment scheme for new and refurbished residential dwellings. Launched in April 1990 it replaced the previous inflexible and unpopular *Environmental Standard*.

After a slow start, the take-up rate of the new scheme is now exceeding all but the most optimistic expectations. This is mainly because an EcoHomes 'pass' is required in all new developments receiving funding by the Housing Corporation – i.e. most social housing developments.

Almost as significant is the growing trend amongst planning authorities to set EcoHomes targets as part of Supplementary Planning Guidance, thereby dragging the private sector (in some cases, kicking and screaming) into the arena of sustainability.

We asked EcoHomes assessor, **Michael Priaulx** to examine how sustainable the EcoHome Standard really is ...

Illustrations by Moira Hay

EcoHomes

The first question is “what impact EcoHomes will really have on the long-term sustainability of the housing stock of this country”. Although EcoHomes is strictly speaking an environmental assessment rather than a ‘sustainability’ assessment, the narrow view of environmental impact must be expanded and become rather more sophisticated if we are to achieve the long-term goal of sustainable development.

Considering that, prior to the introduction of EcoHomes, the only consistent and significant nod to environmental issues was via Part L of the Building Regulations. Therefore, any widespread environmental assessment method has got to be some kind of progress. However, a number of significant issues have been raised as sources of discussion, and this article will attempt to resolve the significance of these and ways in which they could be resolved. These issues are:

1. Can EcoHome dwellings really be called ‘sustainable’?
2. Is there a more effective way to introduce sustainability into the construction process?
3. Will EcoHomes be a negative driver where established sustainable concepts, fail to score points?
4. Is it economically viable to attempt to gain an ‘Excellent’ EcoHomes rating?
5. How will EcoHomes apply to the existing housing stock?

I will attempt to answer these and other questions in this article.

Questions have also been raised as to how valid a measure of sustainability the eco-profiling system is – the ecoprofiling system forms the basis of the Green Guide to Housing Specification, the document which feeds into the Materials section of EcoHomes. This issue is discussed in the section entitled Eco-profiling.

Background to the scheme

EcoHomes follows the pattern of the tried and tested BREEAM for Offices assessment. There are seven sections relating to environmental impacts: Energy, Transport, Pollution, Water, Land Use and Ecology, and Health and Well-being. Within each section are further issues e.g. within Energy there is Carbon Dioxide Emissions, Building Envelope (i.e. insulation standards), Drying Space etc. Each of these issues is worth one or more ‘credits’, which can be achieved if certain criteria are met. A weighting factor is applied to each section to give an overall score out of 100. (One complication of this is that each credit is not worth an equal amount, varying between 0.48% (Materials) and 2.14% (Pollution)). The overall score dictates a rating of ‘Pass’, ‘Good’, ‘Very Good’ or

‘Excellent’. Over 70 achieves an ‘Excellent’.

Confused? There is no doubt it is baffling at first but if you want an EcoHomes rating for your development, you either:

- * Download and read very carefully the EcoHomes Guidance document from the BRE website (and keep a day free in your diary... I’m not joking, it is a very big document),
- * Enlist for training from BRE, or commission a licensed assessor for guidance, and at as early a stage as possible.

Don’t expect to gain credits just by, for example, installing a few bike stands in the pavement, and putting a few rainwater butts around the place. If you think your assessor will turn a blind eye to the flat in the corner with poor daylighting, forget it.

This brings us to the complicated mechanics of getting an assessment. BRE produce a document called the Developer Sheets. This is designed to enable someone with no knowledge of EcoHomes to apply – it provides tickboxes and tables to be completed, and lists the documentation which must be submitted in order to achieve credits. This document is also provided to all licensed assessors (there are an ever increasing number of assessor organisations across the UK, for a list visit www.breeam.org). The assessor will issue a ‘certification report’ to BRE. A quality assurance process is carried out by BRE, and then BRE issue the certificate for the appropriate rating.

Collating the information to enable certification can be a time-consuming process and should not be underestimated. With planning and suitable guidance, an assessment can be completed in a period of a just few weeks, but in some cases it can take months or even years.

EcoHomes is intended to be applied at the design stage. The ideal programme to enable the optimum rating to be achieved would be:

- * Refer to the EcoHomes criteria at the earliest possible stage, pre-plan, and consult with someone with experience or knowledge of EcoHomes, to ensure that the design can achieve sufficient credits
- * Incorporate the relevant issues into the specification and drawings as they are produced – ensuring sufficient detail to demonstrate compliance with the EcoHomes criteria
- * If necessary, obtain ongoing advice to ensure that design changes do not compromise the EcoHomes rating
- * At a later stage when the design has been finalised, but well ahead of completion, collate the documentation for certification.

Where documentation is not available at the time of certification e.g. timber proof of origin, the BRE reserve the right to audit

1. Can EcoHome dwellings really be called 'sustainable'?

The answer to this question is - maybe, but not necessarily. There is no doubt that meeting an Excellent, Very Good or even Good rating will bring about a significant improvement in environmental performance compared to a typical dwelling built to Building Regulations by a volume housebuilder. But the cynical amongst you may say that this is not too difficult anyway.

Although a high rating can be achieved with a standard house with a large number of bolt-on measures (which is not a particularly desirable approach), this is certainly not cost-effective and the realisation of this will hopefully lead to a more widespread development of an integrated methodology and a higher degree of sustainability in the future.

There are a number of apparent anomalies in the relative scores available for different items, but on closer inspection many of these could be longstanding misconceptions that are being set right.

In the Energy section, the most obvious 'discrepancy' is the low score for minimising CO₂ emissions due to space and water heating, with typically only six credits (worth approximately 7% in total) between the best and the worst possible under Building Regulations, and only three credits (3%) between good practice and the worst possible. However, this perhaps does reflect the fact that in new houses, space heating demand is low. Energy consumption is largely due to lights and appliances. A slight anomaly is that the formula for calculating CO₂ emissions from lights and appliances is only affected by internal low energy lights. However, the benefits of other measures are dealt with discretely as separate issues i.e. drying space, white goods, external lighting.

In fact minimising the use of private cars provides greater scope for improvements with respect to CO₂ emissions, with the added benefit of control of the other deleterious impacts of private road transport – the eight credits (9%) available in the Transport section provide some measure of this. Overall, 30% is available for Energy and Transport (and, by proxy, CO₂ emissions), which is perhaps a fair reflection of the importance of this issue.

The weighting of the Pollution section (15% overall) does seem a little anachronistic. Pollution from private homes has not stirred major debate for some decades. HCFCs are almost phased out anyway. NOx emissions are significant, but the contribution from homes is rather less important than from motor vehicles. Surface runoff is important, although this is also due to other issues such as flooding, erosion of natural watercourses and increased infrastructure requirements. Pollution during the construction phase might seem to provide the largest source of potential contamination of the environment, but this is currently excluded from EcoHomes (although it has been considered by BRE for future inclusion, and is part of other BREEAM schemes).

Materials might be expected by some to have a higher weighting (it is worth 15% overall) but this does reflect the fact that

impacts of a dwelling in use considerably outweigh the impacts of the materials used for construction. Use of recycled materials will achieve credits, but as new materials can achieve an equal number of credits if carefully selected, this does not perhaps account fully for the benefits of recycled and reused materials (the Green Guide to Housing Specification is discussed under 'Eco-profiling' later in this feature).

The Water section is mostly self-explanatory, although it may be surprising that it does not give many credits for internal rainwater reuse, particularly for 'tall' buildings with a relatively smaller collection area (the water consumption per bedspace is assessed rather than the absolute volume of water consumed per dwelling). It does, however, correctly account for the fact that if you have inefficient fittings then the benefits of any water reuse will be severely compromised. Under EcoHomes, you are arguably better off using rainwater for external irrigation rather than internally, although in reality this will be less efficient due to the seasonal mismatch between supply and demand.

The Land Use and Ecology section provides a straightforward method of obtaining credits with little effort. Perhaps too little. By having a survey and enhancing the ecology with some native species and bird boxes, the majority of developments can achieve six or even the maximum seven credits available for ecology (worth about 11%) even if built on a greenfield or valuable brownfield site. However, the criteria do at least provide a disincentive to developers who are inclined to turn a blind eye to any possible areas of ecological value on the site, as a survey is necessary on all but the most barren pieces of land.

The Health and Well-being section is, rightly I believe, given equal importance to many of the other issues (15%). As well as being beneficial in its own right, there is a positive connection between quality of life and awareness of one's environment and it is an important element of sustainable development. Good daylighting and a private external space can make an enormous difference to an individual's well-being, and noise pollution is one of the biggest 'quality of life' issues for many occupants of residential dwellings. The requirement for pre-completion testing to demonstrate suitable sound insulation is perhaps controversial, as this will be expensive and - assuming the contractor has carried out their work without defects in accordance with the contract - will not bring about any improvement for the occupants. It does, however, provide reassurance that the design intent is actually being delivered on the ground.

the documentation supplied post-certification. 'Design and Build' contracts can be a problem as it is often difficult to obtain documentary evidence demonstrating that measures are implemented according to the specification.

Post-construction reviews can be undertaken to ensure that the measures incorporated into the design are carried into the final build, although these are not compulsory and are currently rather infrequently carried out. English Partnerships have noted the importance of these reviews and now specify them for developments on their land (they generally require at least a Very Good rating).

A good way of ensuring EcoHomes credits are achieved is to incorporate measures into the specification e.g. following a specification review. This particularly makes sense when a standard specification is applied to a number of developments. Incorporating measures compliant with EcoHomes will ensure a target rating is achieved and also provides a valid source of documentary evidence.

It is proposed by BRE that EcoHomes will be updated every year – the latest version was issued in June 2003. The version in force when an assessment is registered with BRE will apply. These

2. Is there a more effective way to introduce sustainability into the construction process?

There may be a better method, but none has yet come close to the market penetration of EcoHomes. It is important to remember that EcoHomes is relatively new and will be reviewed every year. EcoHomes works because it provides a gentle introduction to sustainability to an industry which (in some sectors at least) previously didn't know what the word meant. Following its success, it is fairly certain that the fundamental format of EcoHomes will not now be changed, at least not in the near future. We must hope that future versions of the scheme will move closer to the target of genuine 'sustainability'. Constant tweaking will be required, and BRE have already responded to suggestions from the relevant stakeholders, and many of the early niggles have now been smoothed out (e.g. the replacement of timber 'cut under government licence' - which was almost impossible to prove - with 'independently certified timber'). Statutory requirements will simultaneously become tighter (the Scheme Development Standards are likely to require a Good rating as an essential requirement within a couple of years, and a Very Good rating within five). EcoHomes may soon become incorporated into the Building Regulations. It may not be perfect, but an imperfect scheme applied across the board will have vastly more impact than a more idealistic scheme with minimal take up.

3. Will EcoHomes be a negative driver where proven sustainable concepts fail to score points?

This could be a problem, but EcoHomes is only one of a number of market drivers and there is already evidence that where an exemplar of sustainability is expected, EcoHomes may not be seen as sufficient in itself.

A positive step is that EcoHomes does provide some basis for assessing the true sustainability benefits of a particular measure. Where the scheme does not seem to be doing this well, it must be hoped that BRE will react to feedback and revise the criteria accordingly in future years.

updates will hopefully take into account feedback received during the year, adapt to changing legislation, and ensure a continual rise in standards.

All dwellings listed on the certification application must meet the standard required i.e. each credit is awarded based on the worst-case dwelling with respect to that issue. The only exception is the carbon dioxide emissions and building envelope sections which are based on a weighted average value for the site. The site can be split into different 'phases' if desired – the definition of a 'phase' may need to be confirmed with BRE but flats and houses can usually be separated if required (the certificate must make clear which dwellings are assessed).

Bespoke EcoHomes assessments are applied by BRE where a development is not purely residential, or is a special case such as sheltered accommodation. Bespoke assessments are more in-depth and significantly more costly.

How much will an assessment cost? Licensed assessors will typically charge in the region of £1,500 for certification plus basic guidance, more for larger sites or if you require a high rating and consequently more in-depth guidance. Alternatively, anyone can be trained as an assessor - training is carried out by BRE: two days' training is required plus the satisfactory completion of a test assessment. This currently costs £950 in total. To be a licensed assessor, you must also pay £350 per year as a licence fee. There are certification fees payable to BRE of £5 per dwelling (minimum £200 per assessment) to cover quality assurance and administration. (All fees are subject to VAT and, of course, subject to change.)

Sustainable measures ready reckoner

Let's examine a range of sustainable measures which could be incorporated into the design of a residential dwelling, and consider how they would be likely to score under EcoHomes. It is important to remember that credits in different sections are not equally weighted and scores may vary depending on the design of the dwelling.

Passive solar design: You won't get much for this, maybe one

4. Is it economically viable to attempt to gain an 'Excellent' EcoHomes rating?

An 'Excellent' EcoHomes rating is still quite a rare achievement, with only 12 developments - representing 702 units - awarded this rating to date. The Brampton Ecohouse in Cumbria was the first development to achieve an Excellent rating, other high profile examples include the Greenwich Millennium Village and Gallions Ecopark in Thamesmead. How economically viable it is to obtain an Excellent rating really depends on what baseline you are looking at. To convert a standard Building Regulations house to an Excellent EcoHomes dwelling at a late stage in the design will undoubtedly cost a lot of money. However, if the ambition to obtain the EcoHomes rating is incorporated right from the conception of the project, then the costs can be hugely reduced, and it can be perhaps surprisingly straightforward to reach, and even beat, the magical 70% mark.

Costs are hard to define due to the large number of variables, and to minimise costs will require a very integrated approach, but this does provide an indication of the costs possible.

A cost-effective pathway to an Excellent EcoHomes rating might include:

- * pre-planning concept design - incorporate EcoHomes considerations from the earliest design stage
- * good use of building footprint (room in roof, or three or more storeys)
- * provision of private external space
- * commission an ecological survey by a suitable organisation and incorporate their recommendations into your landscaping scheme

Early design stages, specify:

- * improved levels of HCFC-free insulation
- * 'A'-rated materials for roof, external and internal walls, and windows
- * sound insulation better than Building Regulations

Later design stages specify:

- * condensing boilers with low NOx emissions
- * water-saving sanitaryware e.g. dual flush WCs, flow regulators in showers
- * best-practice white goods
- * FSC- / PEFC-certified timber

more credit for CO₂ emissions. The reason is that the SAP calculation is not strongly affected by solar gain and, in addition, for new well-insulated homes, space heating is only a minor proportion of the overall CO₂ emissions (lights and appliances being a dominant part).

Sunspaces: Zero additional credits are likely as sunspaces outside the thermal envelope do not strongly affect the SAP calculation, except for a small sheltering effect.

Wood-burning stoves: As wood is designated a renewable source of energy with zero carbon dioxide emissions, several additional credits can be achieved. NOx emissions may be high, however, which could cancel out any advantage over gas boilers.

Ground-source heat pumps (electric): As NOx emissions due to electricity from the grid are extremely high, zero credits will be achieved for NOx, regardless of the coefficient of performance of the heat pump. However, the CO₂ emissions are comparable with a gas condensing boiler and therefore would be an improvement over standard electric heating.

Solar hot water heating: This typically achieves one extra credit for reduced CO₂ emissions. As with the other previous issues, this relatively small benefit is a reflection of the SAP calculation - and the contribution assumed for the solar input - and also due to the high proportion of CO₂ emissions from lights and appliances.

Photovoltaics: There is an opportunity to gain several credits from installing photovoltaics, as they are replacing electricity for lights and appliances with proportionally higher CO₂ emissions than gas heating. The number of credits achieved will depend on the number and size of panels used.

CHP: The performance will be very variable depending on the system. On a mixed-use site with a high heat demand, the system can be sized to produce a large amount of electricity and could gain several credits. On a purely residential site with lower heat demand, less electricity will be produced and the performance will be nearer that of individual condensing boilers. NOx emissions may be higher than with a standard condensing boilers so performance may be reduced in the pollution section.

5. How is EcoHomes applied to the existing housing stock?

This is where real progress must be made in order to see measurable improvements for the UK's ecological footprint.

EcoHomes can apply to major refurbishments of existing houses. It is possible to gain a high score without major expenditure as although credits may be lost for issues such as CO₂ emissions and water consumption, they will be gained for reuse of materials and land use (reflecting the real-life balance between the benefits of new-build and refurb.). Note that the improvement of the building envelope is measured against the existing U-values rather than Building Regulations.

If the Housing Corporation were to introduce a requirement for an EcoHomes rating for all refurbished dwellings, this could be one way forward which would allow flexibility but also potentially lead to significant environmental improvements. An EcoHomes assessment, specifically for existing dwellings, is actually being developed by BRE and the Housing Corporation at the moment, although not due before 2005 at the earliest.

'Green' electricity from the grid: This is not awarded any additional credits because it is not a permanent or semi-permanent part of the dwelling.

Super-insulation: You will get five credits for the building envelope, although five credits can usually be achieved just by meeting best practice U-values as the baseline is the relatively lax 'unadjusted' Target U-value. (BRE propose to tighten this standard when the new Part L1 is issued in – if all goes to plan – 2005.) An additional credit may be achieved for improved carbon dioxide emissions.

Thermal mass: This will not generally gain any credits as the SAP calculation does not take thermal mass into account. You may be getting benefit when global warming kicks in and everyone else is plugging in their cooling units, but unfortunately this is not considered. You may also lose credits under materials as concrete tends to perform poorly. The one area you can perform well is for sound insulation, which can be improved above Building Regulations requirements (if you are having sufficient pre-completion testing).

Green roof: You will get one credit for reducing peak runoff from the roof by 50%, but beware as the increased mass required to support the roof may mean three credits could be lost in the materials section. There may be ecological benefits depending on the type of roof used.

Timber from sustainable sources: Up to nine credits can be achieved if timber with suitable documentation is used, but only if it is certified by FSC or PEFC, or reused/ recycled timber.

Timber frame/ off-site construction: Timber frame tends to perform better than masonry with respect to the Green Guide to Housing and maximum credits can be achieved for all the relevant elements. However, masonry construction can also obtain maximum credits if the correct materials are used. Timber frame may perform less

well for sound insulation unless measures are taken to significantly enhance the levels of sound insulation. Off-site construction is not in itself considered by EcoHomes – although there may be benefits in reduced transportation and waste generation, for example, it would be very hard to assess. Therefore, the materials used are assessed with the Green Guide in the normal way.

Rainwater recycling: A suitable rainwater butt or rainwater tank for external irrigation will get one credit. Alternatively, reusing rainwater for internal use (e.g. for flushing WCs and washing machines) may get one extra credit, but this depends on the dwelling (e.g. if you have three storeys or more, the rainwater will be spread rather thinly between each 'bedspace').

Greywater recycling: If you can reduce the overall water consumption to less than 30 m³/bedspace/year, five credits can be awarded, compared to a likely maximum of three credits with all other practical water conservation measures (e.g. low-flush WCs, spray taps, showers with flow regulators, best-practice white goods).

Improved daylighting: Three credits are available for daylighting and view of the sky, although beware that if more than 5% of the dwellings do not meet the criteria, credits will not be achieved (and the 5% must be due to existing site features rather than design).

Environment-friendly finishes e.g. paints with low VOCs: No credits are awardable for finishes. BRE proposes to introduce this into the next update – the main hindrance at the moment is the lack of labelling to enable benchmarks to be set.

Earth-sheltered dwellings: Credits may be achieved for good U-values, although these could also be achieved with conventional construction. There could be possible problems with materials, e.g. if a concrete roof is used, and no extra benefit can be awarded in terms of use of building footprint.

Sustainable Homes commissioned some research on EcoHomes costs on behalf of the Housing Corporation, published in December 2002 (based on the EcoHomes 2002 scheme). For a 'typical' dwelling built to the 'essential' 2002 Scheme Development Standards requirements, the additional costs were:

With maximum points for site credits:

Pass/ Good	no cost
Very Good	+ £1,430
Excellent	+ £1,760

With no points for site credits:

Pass	+ £30
Good	+ £111
Very Good	+ £1,680
Excellent	+ £3,040

The EcoHomes myth exploded

As you might expect with a fledgling scheme, there is still some confusion about EcoHomes and its requirements, and as assessors we often hear of the same misconceptions from different sources. Naturally, it can lead to disappointment when credits are not achieved as expected. This section attempts to put right some of these misconceptions.

Minimising CO₂ emissions due to space and/ or water heating is extremely critical in order to obtain a high rating:

This is not necessarily the case. Although twenty-one credits (worth approximately 22%) are available for energy use, the majority of these are for discrete items: building envelope, drying space, white goods and external lighting. Ten credits are available for the CO₂ emissions of the dwelling, but this includes energy use for lights and appliances which are the dominant factor in a new, well-insulated home. Two credits can typically be achieved with electric heating, four

credits with gas heating, perhaps five with a condensing boiler or better insulation. Solar hot water heating is likely to gain one extra credit (about 1%). CHP is unlikely to gain more than a couple of credits more. A wood-burning stove may get eight credits in total but watch out for the NOx emissions. In fact, with six credits (approximately 6.5%) separating the best and worst homes with respect to CO₂ emissions, the three more highly weighted credits for NOx emissions (also worth about 6.5% in total) are of major significance.

Low energy internal lighting is important: No. Specifying low energy lights throughout, although a worthwhile measure, will gain one additional credit at best. This does reflect the fact that Building Regulations requires dedicated fittings in the rooms with greatest lighting usage already.

Electrically heated dwellings cannot score well: This is partly true, as typically two credits will be lost for CO₂ emissions (compared to gas) and, more significantly, three credits will be lost for NOx, worth about 8% altogether. But an electrically heated development with an advantageous site can still get a Good or Very Good rating without massive expenditure due to the spread of measures included in EcoHomes.

The location is important: Again, this is only partially true. Five credits (worth about 6%) are available for the location but these can be made up elsewhere. And, anyway, only the most rural locations will gain zero credits.

Timber frame performs better than masonry construction: There is no reason for this to be the case. Although timber frame performs better than some masonry constructions in the Green Guide to Housing Specification, 'A' ratings can be achieved for a masonry construction for all elements. In fact, it is actually easier with masonry construction to get credits for sustainable sources for timber, and sound insulation.

MDF is prohibited: No, in fact MDF can help you obtain points as it is a reused material. Previous versions of BREEAM have awarded credits for only using MDF which meets the appropriate British Standards (in order to limit the free formaldehyde content), but this has now been removed.

Greenfield sites will perform poorly and brownfield sites well: This is not true as EcoHomes does take into account the fact that a brownfield site can have a higher ecological value than a greenfield one. A greenfield site can get maximum marks if measures are taken to protect existing features and enhance the overall ecological value. With a brownfield site, unless a suitable ecological survey is undertaken, very few points will be scored if there is even one tree over 1m in height on the site (even if it is being retained!).

Impacts during the construction phase are important: No, they are not covered at all. However, the next update is very likely to

include some aspects of the construction phase.

Eco-profiling

The Green Guide to Housing Specification (BRE 2000) awards ratings ('A', 'B', 'C') to construction types for each major element (e.g. external wall, roof), for a 'typical' residential dwelling. An example of a construction type for an external wall would be brickwork outer leaf, insulation, aerated blockwork inner leaf, plaster and paint – this is an 'A' rated construction type in fact. These ratings are based on a range of environmental issues such as climate change (reflecting embodied energy), freight transport, toxicity and resource use, based on the typical source and recycled content of the materials used in the UK, over a 60 year period (i.e. including any replacement during this period). An 'A' rating is the best with respect to environmental performance, and use of an 'A'-rated construction type can enable credits to be achieved in EcoHomes.

Eco-profiling has a number of advantages, the main one being its user-friendliness. Anyone can quickly determine the environmental performance of a construction type with minimal knowledge of either construction methods or environmental issues.

Some manufacturers have had eco-profiling carried out on their individual products by BRE. This can be used to determine a bespoke rating for the product. This is a positive step as it enables manufacturers who allow BRE to scrutinise their manufacturing process with respect to sustainability to gain benefit under the EcoHomes scheme.

If an element is reused - e.g. as part of a refurbished building - it will automatically obtain an 'A' rating. However, if only a portion of an element is reused or recycled then it may not alter the rating as the impacts of the other materials used may still be high. Where construction types are not included in the Green Guide, BRE will review them individually as part of an EcoHomes assessment - the full specification of that element must be provided to enable an accurate calculation to be carried out. Some major construction types have been overlooked, e.g. beam and block ground floor with a screed finish. Very few 'unusual' construction types are included: if you are trying to assess your straw-bale house then you will struggle without BRE's input.

The main disadvantage of the eco-profiling system is that, to create a universally applicable tool, assumptions have had to be made. A generic source is assumed for each material based on the typical case. Therefore, the actual impact of transportation of a material, e.g. whether it is locally sourced and manufactured or not, cannot be taken into account. Although it would be difficult to do this anyway, as all raw materials would need to be taken into account, and timber and aggregates are really the only materials where transport impacts are likely to be greater than manufactur-

ing impacts. A typical recycled input is assumed, and the 60-year life cycle will not give full credit to very long-lived construction types.

The Green Guide to Housing Specification is a useful tool although the limitations of the methodology should be borne in mind.

Michael Prialux

Refs.

FaberMaunsell: www.fabermaunsell.com

FaberMaunsell EcoHomes team:
www.ecde.co.uk/breem/breem_ecohomes

BRE EcoHomes: www.bre.co.uk/ecohomes - download the EcoHomes Guidance document and Developer Sheets, and also obtain a list of licensed EcoHomes assessors.

EcoHomes: the Environmental Rating for Homes – S Rao, A Yates, D Brownhill and N Howard (BRE 2000). Available from Construction Research Communications (CRC) tel. 020 7505 6622.

Green Guide to Housing Specification – Jane Anderson & Nigel Howard (BRE 2000). Also available from CRC.

Sustainable Homes: www.sustainablehomes.co.uk - download a 'Guide to EcoHomes' and lots of other useful information on sustainable housing.

Housing Corporation: www.housingcorp.gov.uk/resources/sustain

English Partnerships: www.englishpartnerships.co.uk - search for 'environmental standards' to view minimum development requirements.

Brampton EcoHouse: www.brampton-ecohouse.org.uk (see also BFF Vol.10 No.2)

Galliford Try Group: www.gallifordtry.co.uk

Stock Woolstencroft: www.stockwool.co.uk

Toynbee Housing Association: www.toynbeeha.co.uk

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FaberMaunsell's Sustainable Development Group have been EcoHomes assessors since the launch of the scheme. They have four licensed assessors based in London and Manchester and have been involved with more than sixty assessments. A representative of the Sustainable Development Group sits on BRE's EcoHomes Steering Group which helped to develop the EcoHomes scheme.

Michael Prialux will also be leading the 'EcoHomes - a critical assessment' workshop at the AECB's Ecobuilding Conference in July. See page 39 for more details.

'Excellent' EcoHomes

A case study

Two 'ecohouses' at Denmark Place achieved an Excellent rating in June 2003, only the tenth development in the UK to do so at the time. This demonstrates that an Excellent rating can be achieved on a restrictive urban site with a predominantly traditional masonry construction by incorporating sustainability at an early stage in the design process.

Denmark Place is located in Bow, London E4, on a previously industrial site – only a few minutes' walk from the amenities of Mile End Road and Bow Church DLR station. The development was officially opened on 16th June 2003. The whole development consists of 8 four-bedroom houses and 42 one - and two-bedroom apartments. Two of the houses were designated as 'ecohouses' and included additional features designed to enhance the environmental performance of the dwellings. These houses were assessed under EcoHomes by FaberMaunsell's Sustainable Development Group, and were awarded the Excellent rating shortly before the official opening.

The developer Toynbee Housing Association, and the architects, Stock Woolstencroft, started to consider the EcoHomes requirements at an early stage, with the initial EcoHomes design review meeting held nearly two years before the development was completed, in July 2001. This ensured that the fundamental design was optimised with respect to both sustainability and the internal environment, and confirmed that the Excellent rating was achievable. Issues considered at this stage were the ecological value of the site, the location, the use of building footprint, sustainable materials, good thermal and sound insulation, provision of private external space, and innovative measures such as the solar hot water system and rainwater recycling.

The development was constructed on a Design and Build contract by Galliford Try Partnerships. During the construction phase, they took over responsibility for implementing the measures required for the EcoHomes assessment, and for gathering the associated documentation. Measures considered in more detail at this later stage included



Various views of Denmark Place in London which achieved an Ecohomes Excellent rating.

Photos:
This page: Russell Duncan
Opposite: Benedict Luxmoore



best-practice white goods, recyclable material storage, and low-energy external lights.

The following features contributed to the Excellent rating:

- Solar hot water system
- High-efficiency low-NOx boilers
- High levels of insulation
- Private garden with rotary dryer
- Low-energy and low-water white goods
- Low-energy external lights
- Home office provision
- HCFC-free insulation materials
- Storage for recyclable materials
- Sustainable construction materials
- Rainwater recycling for WCs
- Reused site of low ecological value
- Good use of building footprint (3-storeys)
- Good levels of sound insulation

Lessons learnt

Although the 'Excellent' rating was successfully achieved, the design team felt that there were areas which could have been approached more effectively.

For instance, if ongoing advice had been commissioned, this may have reduced capital costs as additional measures needed to be added, after some credits were not achieved as expected.

Relevant clauses in the specification would have made gathering evidence for the assessment more straightforward. Evidence, such as order forms, needed to be supplied for individual items, e.g. white goods and insulation materials, which was considerably more time-intensive than providing a copy of the specification.

Credits were not achieved for sustainably sourced timber. Although sustainable timber was specified, some of the suppliers were unable to demonstrate compliance with suitable certification schemes. A more strongly worded specification clause may have been effective.

The supplier of the hot water cylinder could not confirm whether the insulation was manufactured with HCFCs. Although many hot water cylinders still do use HCFCs in their insulation, there are an increasing number available which do not, for little extra cost.

An ecological survey of the site by a suitable organisation, before development began, would have been a low-cost way to achieve one or more credits. The survey's recommendations on enhancing the ecological value of the site would need to be implemented, but these could have been combined with the existing landscaping scheme.

Michael Prialx

The Design Team

Developer: Toynbee Housing Association

Architect: Stock Woolstencroft

Contractor: Galliford Try Partnerships

