The Chartered Institute of Building

submission to the

All Party Parliamentary Group for Excellence in the Built Environment

on inquiry into

Sustainable Construction and the Green Deal

4th January 2013

APPG for EBE inquiry into Sustainable Construction and the Green Deal

Introduction

The Chartered Institute of Building (CIOB) is at the heart of a management career in construction.

We focus on those entering and already in a management career in construction by delivering qualifications and certifications that meet the needs of a changing industry. We work with members, employers, academia and governments across the globe to drive forward the science and practice of management in construction.

The CIOB is a member of the Society for the Environment and is able to award the Chartered Environmentalist (CEnv) qualification. We currently have over 340 CEnv members and this number is steadily growing.

We welcome the opportunity to respond to this inquiry and we are happy to be involved in the debate as it develops.

General comments

The CIOB wholly supports sustainable construction, through best practice and innovation in the design, construction, operation, maintenance, retrofit and refurbishment, as well as in skills and leadership, of carbon reduction.

We are committed, through our Carbon Action 2050 initiative (www.carbonaction2050.com), to support the built environment sector in achieving the CO_2 reduction target set out in the Climate Change Act 2008 of an 80% reduction in emissions by 2050, based on 1990 levels. Much of the below submission and policy positioning forms the basis of Carbon Action 2050.

Sustainable Construction

Overview

More than 85% of the building stock that will exist in the year 2050 is already built.[1] Half of all dwellings in the UK are more than 50 years old and a fifth are more than 100 years old. Typically, buildings experience a number of refurbishments throughout their life, with a major refurbishment every 20 to 30 years. These refurbishments and retrofits represent an opportunity to reduce carbon emissions through refreshing a building's fabric and services equipment. Much of the technology to make these improvements already exists, and while take-up has been poor, the Green Deal can go some way to

[1] Existing Homes Alliance, 2010

alleviating this if its full potential is realised (more in the section on the Green Deal below).

The CIOB supports minimum energy requirements through the Building Regulations Part L and its effective enforcement, as well as the certification and regular inspection of boilers and air-conditioning systems. We have concerns over the Terms of Reference of the recently convened Building Regulations and Housing Standards Review, which state that the Group will undertake a *"radical and fundamental review of the entire framework of Building Regulations and voluntary housing standards"*. In terms of sustainable construction, there are aspects such as Part L and the Code for Sustainable Homes that promote minimum standards and best practice respectively that should not be undermined. Other aspects of the Building Regulations are essentially there for consumer protection, and we hope that the somewhat rash Terms of Reference focus on removing duplication etc. as opposed to removing important standards.

The CIOB believes that, while refurbishment and retrofitting measures afford the opportunity to improve the energy efficiency of existing buildings, the various benefits that can be accrued from good building maintenance and repairs must not be forgotten. Good maintenance and repair work not only helps to minimise energy wastage and living discomfort, but also increases the durability and longevity of a building's fabric, yielding further long-term benefits in terms of the retention of embodied carbon. Poor maintenance means increasing carbon in a wasteful manner, which can also put the carbon invested into the building fabric at risk – best practice repair and maintenance is essential to both reduce this risk and to achieve the carbon reduction targets set out in the Climate Change Act 2008.

Energy efficiency

It has been estimated that we spend 90% of our time indoors, with most of this time spent in homes. With approximately 30% of the UK's energy consumption used by homes and about 57% of this energy use attributed to space heating, the need for a focus on energy conservation is clearly evident.[2] To partly address this, CIOB supports the use of a regularly updated, simple-to-understand building operations and maintenance manuals. This gives a baseline level of optimum performance of building appliances and property generally, and is an invaluable tool for building owners and Facilities Managers to maintain the efficiency of the running of buildings through their lifecycle. This results in reduced emissions, greater energy efficiency, and reduced costs.

More information on this can be found in the Operations and Maintenance section of Carbon Action 2050.

[2] Nesbakken, R. *Energy Consumption for Space Heating: A Discrete-Continuous Approach* (2001)

Design performance gap

Studies have indicated that the energy efficiency of buildings has been underestimated when considering SAP/RdSAP estimates compared with actual performance i.e. the design performance gap. With the advent of zero

carbon homes from 2016, zero carbon non-domestic buildings from 2019, and demands from leading clients for more energy efficient, functional and comfortable buildings, it is vital that the construction industry addresses this. CIOB is working with organisations including BSRIA and the Soft Landings programme to assist in this. As above for energy efficiency, a regularly updated operations and maintenance manual can also assist in this regard to inform builder occupiers on how best to efficiently operate the building and its technology.

Display Energy Certificates (DECs)

CIOB supports the extension of DECs to commercial buildings as mooted in the government's Carbon Plan. This will provide a more accurate assessment of actual energy use in a building and how to reduce carbon emissions, as opposed to Energy Performance Certificates (EPCs), which show a predicted use.

Sustainable construction and Building Information Modelling (BIM)

The CIOB is involved in the leading industry groups regarding BIM and is working with the Government BIM Task Group. The use of BIM in its fullest sense enables environmental simulation and assessment of individual projects and also urban scale developments across cities. BIM provides a platform to design, construct and manage environmental performance at a level of accuracy previously unattainable. We expect that the use of BIM tools in the sustainability and environmental arena will make a significant impact upon being able to achieve more sustainable projects and communities.

Traditional buildings

At present there is insufficient understanding of the thermal performance of traditional buildings. Assumed U-values of solid walls are often quite different to test data, which suggests that many buildings, in particular those that are known as hard-to-treat (HTT) such as traditional solid wall buildings, are more efficient than currently realised. In England, HTT homes equate to an estimated 9.2 million dwellings and solid-wall homes account for 72% of this stock, of which 5 million in England are classified as "traditional buildings".[3] Non-domestic building data are unavailable.

[3] Energy Efficiency Partnership for Homes, 2008

Common retrofit and refurbishment solutions may not always provide the most cost-effective or energy efficient measures for HTT buildings. For example research has indicated that, rather than replace existing widows with new UPVC double-glazed units, secondary glazing can instead be installed to leave the original window intact, retain embodied carbon, and alleviate the cost of a new window.[4]

Traditional buildings have solid walls which breathe. They absorb moisture and this must be allowed to evaporate. Inhibiting this process has the potential to reduce the lifespan of existing building fabric, thus necessitating carbon-generating remedial work and reducing the building's energy efficiency. Wall insulation can also affect the performance of existing building fabric. For example, the installation of internal wall insulation will isolate the original wall from the effects of warm interiors. This will reduce the thermal performance of the original wall and also result in it remaining damp and cold for longer periods of time, thus increasing the risk of frost damage (cryoturbation) and that possibly caused by invasive vegetation (floralturbation). This is further exacerbated if a building is not kept in good external repair.

More information on this can be found in the Retrofit section of Carbon Action 2050.

Waste

The Strategic Forum for Construction (SFfC) and the Waste and Resources Action Programme (WRAP) aimed to halve construction waste to landfill by 2012, based on 2008 benchmarks. However, the latest report from the SFfC indicates an actual increase of 2.58million tonnes (MT) to 12.27MT (+27%) compared to 2009 levels, which is mainly attributable to more soil and stone being landfilled.[5] Excluding excavation, construction and demolition waste has, encouragingly, decreased by 30.4% in the period 2008 to 2010.

Effective waste management begins at the design stage. Well considered design solutions, such as using plasterboard sizes that match up with the height of internal walls and stud partitions, can significantly reduce waste. The role of BIM, alluded to previously, can play a key role here by providing accurate plans that negate wasteful re-working on site. The procurement stage is vital in effective waste management also, such as specifying a reduced amount of packaging, or recycling off-cuts, pallets, timber etc. There are numerous links to carbon reduction with waste, particularly in terms of the construction process and embodied carbon, and it is an area that requires strong leadership and commitment at all levels of construction management.

[4] Historic Scotland, *Improving the thermal performance of traditional windows* (2008)
[5] Strategic Forum for Construction, *Halving Construction, Demolition and Excavation Waste to Landfill by 2012 compared to 2008* (2012)

Education

CIOB's revised Education Framework, which forms the basis for all courses that we accredit worldwide, ensures that the theme of sustainable construction runs through all parts of a course, as opposed to being a topic contained entirely within a specific module.

More information on this can be found in the Skills and Education section of Carbon Action 2050.

Green Deal

Overview

CIOB wholly supports the government's commitment to energy efficiency and job creating initiatives through the Green Deal, as it has the potential to transform the energy efficiency of the UK's building stock, assist in eliminating fuel poverty, and contribute to a successful and world-leading construction industry and low carbon economy. However, there are a number of issues that require addressing if the Green Deal is to succeed on these levels. Indeed, DECC's own Impact Assessment highlights a drop-off in insulation upgrades as a result of the Green Deal and ECO, meaning lost carbon savings and lost financial savings for consumers.

In order to protect the reputation of Green Deal, and to prevent the safeguards being built into it from being undermined by the use of unregulated contractors and sub-contractors, it is essential that all ancillary works are carried out by TrustMark (or a similar quality mark) registered firms.

Incentives and regulation

We are concerned that the Green Deal in its current form offers no real structural or permanent incentive(s) for consumers to install energy efficiency measures at their properties. The cashback scheme, despite the fact it will run its course, is welcome and of course the lack of an upfront cost is an obvious benefit to the Green Deal, but the fact remains that energy companies are struggling to even give away free (or, in some cases, incentivised) insulation, and that research from both DECC and others has shown that there are still notable numbers of consumers who lack the knowledge and/or motivation to make their property more energy efficient.

On the reverse to this, there also appear to be few regulatory mechanisms in place to guide the Green Deal into position. For example, the use of Building Regulations that link to the Green Deal in terms of consequential improvements when carrying out other works on properties could quicken the pace of change to the UK's existing building stock, though we now understand this proposal has been dropped. We recognise that regulatory burdens are a real concern, but the Green Deal is an opportunity to guarantee that the

regulatory system is proportionate and ensure that there is a proactive 'carrot and stick' approach that will help underpin the ethos of the Green Deal and to reach the 2050 target of an 80% reduction in CO_2 emissions.

Skills and training

From the outset, a building must be understood in terms of its condition and its performance in-use (operation); options for retrofit and refurbishment must consider the effects on both these aspects. There are examples on trial Green Deal retrofit projects where satellite dishes, patios, alarm systems, wiring etc. were not calculated into initial surveys which led to increases in the ultimate cost of solid wall insulation[6]. This is as much a skills issue as anything and highlights the need that, from apprenticeship level onwards, there needs to be a partnership approach between industry, education, professions and government in ensuring that the appropriate range of skills are available to deliver the Green Deal, from the most basic installations to the utmost complex measures and packages, from small dwellings to large commercial premises.

No two dwellings are ever likely to be perfectly alike; we recommend ensuring work is not undertaken unnecessarily when alternative solutions, which might be more beneficial in the long-term, ought to have been considered. Assessors/advisors need to be fully aware of the benefits of good maintenance and repair and that the most simple and least expensive retrofit options may provide some of the best results, and should always be considered in the first instance.

In order for maintenance and repair to be sustainable, it must be undertaken properly. This means using compatible materials in repair with the appropriate skills used. Where traditional buildings are concerned, this means using traditional building materials and skills. More information on this is available from the Sustainable Traditional Buildings Alliance (STBA): www.stbauk.org

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[6] Nick Jones, BRE, *The Green Deal – when the low hanging fruit have gone*