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Llywodraeth Cymru  
Welsh Government

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Welsh Government

## Consultation Document

# Building Regulations Sustainability Review

Incorporating aspects of the previous Sustainable  
Buildings National Planning Policy into the Building  
Regulations in Wales

Date of issue: 1 March 2016  
Action required: Responses by 24 May 2016

## Overview

The Building Regulations and the associated statutory guidance set out in Approved Documents seek to ensure buildings meet certain standards for minimum health, safety, welfare, convenience and sustainability.

This document covers proposals for changes relating to:

1. Part G (Sanitation, Hot Water Safety and Water Efficiency)
2. Part Q (Residential security)
3. Information to end user

This consultation relates to Building Regulations for Wales only. The previous application of Building Regulations to England and Wales ceased on 31<sup>st</sup> December 2011 when powers for making Building Regulations in relation to Wales were devolved to the Welsh Ministers.

Existing England and Wales legislation remains in force for Wales until any amending legislation is made by Welsh Ministers. Where changes are made to legislation in England this will not apply in Wales (other than excepted energy buildings in Wales).

This consultation is aimed primarily at firms, individuals within construction and construction-related industries and their representative bodies and the building control bodies that enable the building control system to operate. Specific elements

## How to respond

A response form is provided at Annex A of this document.

Consultees are invited to email responses to: [enquiries.brconstruction@wales.gsi.gov.uk](mailto:enquiries.brconstruction@wales.gsi.gov.uk)

Those who prefer to submit a paper copy of their response should send these to:

Building Regulations Consultation  
Building Regulations Policy  
Planning Directorate  
Welsh Government  
Rhyd y Car Offices  
Merthyr Tydfil  
CF48 1UZ

The Welsh Government will continue to engage with

external partners throughout the consultation period and beyond on the range of consultation proposals. In particular, it will seek out opportunities presented by our partners to engage with relevant sectors on specific issues at relevant industry events around the country.

The views of the public are also welcomed.

**Further information and related documents**

**Large print, Braille and alternative language versions of this document are available on request.**

Cost consultant report

Cost benefit analysis technical report

Regulatory impact Assessment

Proposed changes to Approved Documents G and Q

<http://gov.wales/consultations/?lang=en>

<http://gov.wales/consultations/?skip=1&lang=cy>

**Contact details**

For further information:

Building Regulations  
Welsh Government  
Rhyd y Car Offices  
Merthyr Tydfil  
CF48 1UZ

Telephone: 0300 062 8535

[enquiries.brconstruction@wales.gsi.gov.uk](mailto:enquiries.brconstruction@wales.gsi.gov.uk)

**Data protection**

How the views and information you give us will be used

Any response you send us will be seen in full by Welsh Government staff dealing with the issues which this consultation is about. It may also be seen by other Welsh Government staff to help them plan future consultations.

The Welsh Government intends to publish a summary of the responses to this document. We may also publish responses in full. Normally, the name and address (or part of the address) of the person or organisation who sent the response are published with the response. This helps to show that the consultation was carried out properly. If you do not want your name or address published, please tell us this in writing when you send your response. We will then blank them out.

Names or addresses we blank out might still get published later, though we do not think this would happen very often. The Freedom of Information Act 2000 and the Environmental Information Regulations 2004 allow the public to ask to see information held by many public bodies, including the Welsh Government. This includes information which has not been published. However, the law also allows us to withhold information in some circumstances. If anyone asks to see information we have withheld, we will have to decide whether to release it or not. If someone has asked for their name and address not to be published, that is an important fact we would take into account. However, there might sometimes be important reasons why we would have to reveal someone's name and address, even though they have asked for them not to be published. We would get in touch with the person and ask their views before we finally decided to reveal the information.

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# Chapter 1 - Introduction

## 1.0 Background

Building Regulations control certain types of building work, principally the erection and extension of buildings and provision or extension of certain services or fittings, chiefly to ensure that buildings meet certain standards of health, safety, welfare, convenience and sustainability.

Compliance with the Building Regulations is the responsibility of the person carrying out the work and the building control system helps to ensure that the required level of performance has been met. The role of a building control body, either the local authority or a private sector Approved Inspector, is to act as an independent third-party check to help achieve compliance. As an alternative to third-party checking by building control, some types of work may be self-certified as being compliant by installers who are registered as a member of a competent person self-certification scheme and have been assessed as competent to do so.

Building Regulations greatly influence how our buildings are constructed and used. As such, they help to deliver significant benefits to society. Regulation can also impose costs on both businesses and individuals. The “functional” nature of the Building Regulations, by having regulation setting out the broad requirement rather than prescribing how it must be achieved, seeks to minimise this cost and also ensure innovation is not hindered. Guidance in the Approved Documents that accompany the Regulations then sets out some of the ways that these requirements can be met although it does not have to be followed if the required level of performance can be shown to be achieved in a different way. This approach provides clarity for building control bodies and industry alike.

To avoid the risk of unnecessarily onerous and costly standards being imposed on industry it is important that a proper cost/benefit assessment and consultation with industry has been undertaken by Government to assess what reasonable minimum standards are appropriate.

It is also important to ensure that the Building Regulations regime remains current and fit-for-purpose.

## 1.1 Development of these proposals

In July 2014 Welsh Ministers approved the amendment of national planning policy on sustainable buildings and the withdrawal of the related guidance in TAN 22: Sustainable Buildings. TAN 22 set an expectation that all new housing in Wales should achieve Code for Sustainable Homes Level 3 (with extra energy credits) and that all new non domestic buildings in Wales should achieve BREEAM ‘Very Good’ with an ‘Excellent’ score for energy. The policy had been introduced in 2009 to support Welsh Government sustainability in the built environment aspirations in advance of the transfer of building regulations function to Welsh ministers in 2012.

Changes made to Part L of Schedule 1 to the Building Regulations made in July 2014 set energy performance levels at broadly the equivalent of that expected under the sustainable buildings national planning policy.

As part of the review of the sustainable buildings national planning policy, the Welsh Government commissioned Mott MacDonald to identify which components of TAN 22, the Code for Sustainable Homes and BREEAM are, or could be, addressed through the Building Regulations or planning policy/guidance.

<http://gov.wales/topics/planning/planningresearch/publishedresearch/planning-for-sustainable-buildings-review/?lang=en>

The research report identified that there were a number of components of the Code and BREEAM that were currently adequately addressed in the Building Regulations and planning policy/guidance and that many of the remaining components could potentially be incorporated into future changes to the Building Regulations or planning guidance. Work to address those areas that the report identified as related to planning guidance has included revision to TAN 12: Design and the publication of good practice guidance on planning for sustainable buildings.

<http://gov.wales/topics/planning/policy/guidanceandleaflets/practice-guidance-planning-for-sustainable-buildings/?lang=en>

In respect of Building Regulations a programme of work was then developed, based on the Mott McDonald analysis, of topics with a strong connection to current Welsh Government policies. The selected areas identified as having potential for inclusion in Building Regulations were:

- Materials: sourcing, and life cycle impact;
- Acoustic performance;
- Information provision to the end user;
- Water efficiency
- Residential Security;

The following were deferred to future review:

- Energy efficiency;
- Drying space
- Lighting.

Two rounds of technical Working Party meetings were held between April and August 2015 inform development of proposals which were presented to the Building Regulations Advisory Committee in November 2015

## **1.2 Consultation proposals**

In Chapters 2 - 7 we set out the information presented to the working parties and BRACW, the discussion and conclusions reached. Not all have resulted in proposals for change, nevertheless where this was the case it was felt important to demonstrate that the topic had been given proper consideration. Where relevant individual chapters identify future thinking and potential work areas outside of regulation which might assist in progressing the topic objectives.



This document covers proposals for changes relating to:

1. Part G (Sanitation, Hot Water Safety and Water Efficiency) – Domestic and non domestic
2. Part Q (Residential security)
3. Information to end user

In developing these proposals the Welsh Government is grateful for the input and support from industry and other stakeholders. The advice provided by the Building Regulations Advisory Committee for Wales (BRACW) in its meetings between May and August 2015 have shaped the proposals and reasoning which we put forward for consultation.

### **1.3 Regulatory Impact Assessment**

The Welsh Government has published a Regulatory Impact Assessment (RIA). The RIA is an important part of the consultation, as its analysis has shaped the proposals. Consultees are encouraged to read the impact assessment and respond to the relevant questions.

## Chapter 2- Part E (Resistance to the passage of sound)

### 2.0 Background

This chapter considers the potential for the incorporation of the equivalent of 1 credit provision of the Code for Sustainable Homes relating to residential acoustics for impact and airborne sound into the Building Regulations, thus raising the regulatory requirements by 3dB.

In relation to sound insulation the Code for Sustainable Homes (CfSH), which has now been withdrawn, allows for optional credits to be achieved. Hea 2 of the Code for Sustainable Homes allowed up to 4 credits for sound insulation in Homes as set out below:

#### Code for Sustainable Homes, Hea 02 Assessment Criteria

Condition	Credit
Where:	
<ul style="list-style-type: none"> <li>• airborne sound insulation values are at least 3dB higher</li> <li>• impact sound insulation values are at least 3dB lower</li> </ul>	1
OR	
<ul style="list-style-type: none"> <li>• airborne sound insulation values are at least 5dB higher</li> <li>• impact sound insulation values are at least 5dB lower</li> </ul>	3
OR	
<ul style="list-style-type: none"> <li>• airborne sound insulation values are at least 8dB higher</li> <li>• impact sound insulation values are at least 8dB lower</li> </ul>	4
than the performance standards set out in the Building Regulations approved for England and Wales, Approved Document E (2003 Edition, with amendments 2004).	
<u>This can be demonstrated through EITHER</u>	
A programme of pre-completion testing based on the Normal programme of testing described in Approved Document E (AD E), for every group or sub-group of houses or flats, demonstrating that the above standard or standards are achieved.	
OR	
Use of constructions for all relevant building elements that have been assessed and approved as Robust Details by Robust Details Limited (RDL) and found to achieve the performance	
<u>Default cases</u>	
Detached dwellings	4
Attached dwellings where separating walls or floors occur only between non-habitable rooms	3

## 2.1 Summary of Research

### 2.1.1 Raising residential acoustics standards

The implications of raising new build standards was considered specifically with reference to the single credit available under the Code for Sustainable Homes obtained by achieving sound insulation figures 3dB above the requirements of the building regulations.

The question of the standard to be achieved by party walls and floors is essentially one of cost effectiveness and where the standards are increased whether there are issues with meeting compliance with composite construction methods. All of the standards applied are principally a balance between the ideal and the practicably and affordably achievable. It must be understood that whilst achieving the requirements of AD E 2003 or any of the credits discussed would make it difficult to understand a conversation being held next door, they would not be sufficient for it not to be known that a conversation was taking place. Raised voices and shouting may even be understandable.

It was felt, generally within the stakeholder group, that the proposed uplift would be achievable for the larger house builders, but it would involve a further expense and may require additional materials. Enquiry and survey data suggests that a sound insulation performance of 3dB above the requirements of AD E 2003 is commonly being achieved by default by the use of Robust Details. Although this might suggest that an increase in standards required by increasing the requirement of the Building Regulations would not incur further costs to the builder, it was expressed that this was not the case.

The requirements of the building regulations being mandatory mean that builders require a margin of confidence that that they will be achieved. Similarly acoustic consultants providing advice to builders are also conservative in their recommendations in order to ensure confidence of compliance. Use of Robust Details provides that confidence and the probability that the CfSH credit is also achieved. The achievement of the credit is less critical however and does not therefore require the same level of confidence. Therefore any increase in the standards required by the Building Regulations would result in higher performance constructions being specified and, potentially, a significant increase in cost.

Due to the logarithmic nature of sound, the relationship between cost and materials required to produce a higher performance may not be linear. The higher performance constructions would need to be better in performance than some of the current robust details and this would also reduce the range of technical solutions available. Since the introduction of the current standards with a combination of pre-completion testing and Robust Details there has been significant reduction in complaints over sound insulation between dwellings. There is little evidence that an increase in standards is required.

The NHBC Foundation Report 'A review of homeowner feedback on noise in new homes' published in 2014 notes that "from 2004, attached homes built in successive years, generated progressively fewer homeowner contacts related to noise problems. For attached homes first occupied in 2004, about 7 households per 1000 contacted NHBC about a noise problem. For homes first occupied in 2010, the level was down to about 4 for every 1000 households. The reduction in homeowner contacts is found to be largely attributable to fewer concerns over transmission of noise from adjoining homes."

Although no formal estimate of the cost of increasing the standards required by the Building Regulations has been made, the cost to reduce the level below 4 complaints per 1000 households is not considered cost effective. Evidence from other areas of acoustic research shows that, within a population there is massive variation in sensitivity to noise, a certain percentage of the population being hypersensitive. It is therefore likely that increasing the standards required by the Building Regulations would have little effect on the complaint rates of this element of society. It is therefore proposed that the current standards of sound insulation required by the Building Regulations should remain.

### **2.2.2. Methods of Compliance**

There are currently two methods of compliance in relation to the sound insulation requirements of the building regulations.

- Pre-completion testing (PCT);
- Approved Robust Details (RD):

Pre-completion testing of 10% of the walls and floors constructed, and the potential cost of subsequent repairs and remediation to dwellings which failed to meet the required standards, has resulted in a significant incentive for builders to construct party walls and floors to a high standard and resulted in a 96.5% rate of compliance with the required standard of sound insulation within England and Wales.

Although pre-completion testing produces a good rate of compliance with the required standards of the Building Regulations, and positive evidence of compliance for the tested constructions, a disadvantage of the PCT method is that it imposes a significant cost on the builder and introduces an element of uncertainty just at the most inconvenient time for the builder, when the site is almost finished and the sale process is commencing. The house building industry has in the past demonstrated a preference for other methods of compliance where applicable, i.e. Robust Details for new build.

Robust Details (RD) are a set of construction details that have been tested to demonstrate performance standards above the minimum Building Regulation requirements. Adoption of RD requires registration with Robust Details Limited (RDL), adherence to a construction checklist to ensure that the details are followed correctly and are subject to random independent 2% pre-completion testing by RDL inspectors. Robust details are not available for all methods of construction and currently apply to new build only. Robust details are proposed by a manufacturer and adopted by a

developer or builder. It is therefore in the manufacturer's interest to propose a detail that can be reliably built on site.

Historically it has been seen that the housing industry, particularly the larger house builders, are likely to adopt a Robust Details option and the existence of Robust Details has provided significant knowledge transfer to those companies which use Pre-Completion Testing, which has resulted in improved sound insulation performance within those housing companies.

Pre-Completion Testing allows non-standard constructions to demonstrate satisfactory performance and thus allows innovation and adaptation to use local methods and materials. It has also been expressed, within the Working Party, that this is also the favoured option for some SMEs on new build.

Pre-Completion Testing is the only method available for change of use properties as Robust Details are not available for existing buildings. Whilst refurbishment has not been part of this study it is relevant to the extent that verification of performance of partition walls within refurbished buildings cannot be achieved by Robust Details. It can only be checked by PCT. It is likely that some degree of refurbishment and re-use of buildings is desirable, from an economic, sustainability and conservation of heritage point of view. Therefore some capacity for PCT is likely to be required in Wales anyway regardless of which compliance route is chosen for New Build.

### **2.2.3 Building Control Officer Discretion and Guidance to Building Control Bodies**

The stakeholder group considered if Building Control Officers should be allowed greater discretion in defining the required sound insulation performance to be achieved?

Whilst the group agreed that generally Building Control Officers flexibility was important, there was no desire to increase the scope of their responsibility in respect of sound. It was generally agreed that this may lead to confusion and inconsistency. It was however felt that publication of additional guidance for Building Control Officers could be helpful to ensure consistency and clarity for house builders particularly in relation to the testing regimes for sites where Pre-Completion Testing is the preferred method of compliance.

Approved Document E states: *'The duty of ensuring that appropriate sound insulation testing is carried out falls on the person carrying out the building work, who is also responsible for the cost of testing.'* The guidance is addressed in the first place to persons carrying out the work (and to testing bodies employed by them). It is also aimed at Building Control bodies, *'as the secretary of state expects building control bodies to determine, for each relevant development, the properties selected for testing.'* It is clear that Building Control bodies are therefore expected to select the properties to be tested.

Section 1.31 of ADE states that: *'Testing should be conducted more frequently at the beginning of a series of completions than towards the end, to allow any potential*

*problems to be addressed at an early stage. However on large developments testing should be carried out over a substantial part of the construction period'.*

In practice however, due to the incentives to get the testing regime finished as early as possible and the increased mobilisation costs of having the testing organisation visit site on multiple occasions, the dwellings on a particular development which are tested are usually those completed, enough to be tested, first, and as such are often proposed by the builder in conjunction with the builder's testing organisation. Early selection of units to test could allow particular care to be devoted to these units, which may, or may not, be applied to subsequent dwellings completed, which may not be tested. Clearly it would be advisable for all of the dwellings on sites to be completed with the same degree of care.

As noted in the current Approved Document E however, it is also useful for at least a number of tests to be conducted early in the site completion process to allow any problems to be ironed out in later completions.

#### **Question 1**

Do you consider that there is a need for greater guidance for Building Control Officers in relation to the testing regime on sites where Pre-Completion Testing is the preferred method of compliance particularly on choice of dwellings to be tested?

#### **2.2.4 Approved Document E typical construction details.**

The current Approved Document E 2003 provides guidance on typical types of construction methods which would achieve the sound insulation requirements. It was felt however that this guidance may be out of date and secondly that it may be better placed than within the regulations. Welsh Government surveyed a number of housebuilders of various sizes as to whether they use this guidance. The results showed that generally builders use Robust Details or manufacturers details (since deviations from manufacturers details usually voids any guarantee of performance).

It was felt among the Working Party that the guidance currently within AD E 2003 still had value in terms of general principles and guidance on required mass per unit areas of wall and floors.

#### **2.2.5 Metrics**

In the UK there are currently two metrics applied to airborne sound insulation, these being  $D_{nT,w}$  and  $D_{nT,w} + C_{tr}$ . Impact sound insulation is measured throughout the UK in terms of  $L_{nT,w}$ . In Scotland  $D_{nT,w}$  is used whilst at present England and Wales use  $D_{nT,w} + C_{tr}$ . Consideration was given to adopting  $D_{nT,w}$  in Wales.

It should be noted that the metric used will also have a bearing on the numerical standard used to assess compliance. For example in England and Wales a figure of 45  $D_{nT,w} + C_{tr}$  is currently used for walls, whilst in Scotland a figure of 56  $D_{nT,w}$  is applied. There is no simple numeric comparison between  $D_{nT,w}$  and  $D_{nT,w} + C_{tr}$ .  $D_{nT,w} + C_{tr}$

incorporates a low frequency weighting designed to take into account the low frequency content of traffic noise, music and other common noise sources. The performance of a party wall system at low frequency will be dependent on a number of factors within its design and these will determine the relative levels of the particular partition wall's  $D_{nT,w}$  and  $D_{nT,w} + C_{tr}$ .

Data kindly supplied by Robust Details Limited suggests that  $45 D_{nT,w} + C_{tr}$  is roughly equivalent to  $53 D_{nT,w}$ . Experience in Scotland has shown that the adoption of  $56 D_{nT,w}$ , as the minimum requirement for sound insulation between dwellings has resulted in particular problems in compliance for floors, particularly those of timber construction. Within the Working Party it was considered that there was little to be gained by moving back to the use of  $D_{nT,w}$  and there was little or no evidence for re-adopting it. Given the disruption and initial confusion which would result among builders by the introduction of a different measurement parameter it is proposed to retain the use of  $D_{nT,w} + C_{tr}$ .

### 2.3 Main proposals

In the light of the analysis set out above, stakeholder group discussions and the consultation with industry stakeholders, it was concluded that subject to the outcome of the consultation process, a further regulatory approach would not be a practical option at this time.

#### Question 2

In light of the analysis undertaken, do you have any comments relating to the decision not to amend Part E of the Building Regulations?

## Chapter 3 - Part G (Sanitation, Hot Water Safety and Water Efficiency)

### 3.0 Context

Although not obvious, the United Kingdom has less available water per person than most other European countries<sup>1</sup>. With the volume of water consumption predicted to increase, consideration must be given to the reduction of water consumption, both within the home and across industry.

A report undertaken by the Environment Agency and Natural Resources Wales<sup>2</sup> classified that all three water companies operating in Wales; Dee Valley Water, Dwr Cymru Welsh Water and Severn Trent Water, are deemed as being under 'moderate stress', both currently and throughout all future scenarios. It should be noted that this is on a company-wide basis, with certain areas within these operating zones defined as under 'serious stress' with regards to water resources. Preservation of this natural resource is therefore key in ensuring both current and future demands can be met.

It is reasonable to draw the conclusion that the water consumption of an individual or household is relatively minimal in comparison with process water usage, such as agriculture, industry or manufacturing. However, it should still be considered and minimised wherever possible as collectively it will have a large impact on total water use within Wales.

There is a variety of influences and scenarios which affect how much water is used, including population, household size and income. Climate change is also likely to put our supplies under greater pressure in the future. It is for these reasons that good water management be labelled a priority in the current situation.

In addition to the water stress which Wales is currently under, the financial and carbon cost of extraction and processing is a key influence for the proposed incorporation of water efficiency measures within the Building Regulations. Every day, around 11 billion litres of waste water enters the sewage system in the UK<sup>3</sup>. This waste water is a mixture of domestic waste from baths, sinks, washing machines and toilets as well as waste water from industry and rainwater run-off from surfaced areas. This huge volume of water will lead to increased costs for waste water treatment plants to ensure suitable

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<sup>1</sup> Waterwise; Water – The Facts. Why do we need to think about water?  
[http://www.waterwise.org.uk/data/resources/25/Water\\_factsheet\\_2012.pdf](http://www.waterwise.org.uk/data/resources/25/Water_factsheet_2012.pdf)

<sup>2</sup> Water stressed areas – final classification. July 2013. Developed by the Environment Agency and Natural Resources Wales.  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/244333/water-stressed-classification-2013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf)

<sup>3</sup> Sewage Treatment in the UK - UK Implementation of the EC Urban Waste Water Treatment Directive; Published by Defra March 2002.



treatment, thereby limiting damage to the environment and the minimisation of public health problems.

Water use and energy use within properties are inextricably linked. A joint study by the Energy Saving Trust and the Environment Agency in 2009<sup>4</sup> predicted that CO<sub>2</sub> emissions from hot water use will increasingly dominate the carbon footprint of new, fully-insulated housing, unless progressive regulation in energy efficiency is matched by higher water efficiency standards. Again, the potential for cost and energy savings for a home-owner, and throughout the non-domestic sector, is a driving influence with regards to the regulation of water efficiency.

It is understood that behavioural changes are a key factor in water efficiency; however we note that the regulation of water use within domestic and non-domestic properties will help to drive this forward.

### 3.1 Summary of Previous Research

The proposals set out for water efficiency of new housing and non-domestic properties have been developed based upon a review of existing policy and regulation which govern water use within the UK, and on a global scale. Previous technical Working Party discussions and review papers considered full details of this research. Section 3.1.1 of this consultation paper provides an overview of the key standards, policies and regulation which have influenced the development of the Welsh Government proposals relating to Water Quality and Efficiency.

#### 3.1.1 Domestic

- **Building Regulations 2010 Approved Document G 2010**  
Applicable in England and Wales (currently only in Wales), regulating water use within a dwelling to 125 litres per person per day, calculated through the use of the Water Efficiency Calculator for New Dwellings.
- **Building Regulations 2010 Approved Document G (2015 Edition) England**  
As a result of the major technical review of the Housing Standard in England, Approved Document G has been revised, coming into force on 1 October 2015.

The three key changes which have been recognised within the 2015 edition include:

- i. Inclusion of an optional requirement for water efficiency, enabling a local planning authority to impose a limit of 110 litres per person per day (as opposed to 125l/p/d) for the consumption of wholesome water through Building Regulations.
- ii. The methodology now includes an alternative fittings-based approach which can be used as an alternative option in demonstrating compliance.

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<sup>4</sup> Energy Saving Trust and Environmet Agency (2009). Quantifying the energy and carbon effects of water saving. Full technical report.

iii. The Water Efficiency Calculator for New Dwellings has been included within the Approved Document with minor alterations since 1 October 2015.

- **Code for Sustainable Homes**
  - Although not a regulatory standard, Planning Policy previously required that all new dwellings in Wales must achieve a minimum Code for Sustainable Homes Level 3 rating;
  - To enable a project to achieve this Code rating, the dwelling must demonstrate a maximum internal water use of 105 litres per person per day.
- **Scottish Building Regulations**
  - 2013 Technical Handbooks published in June 2013, in which a mandatory standard for water efficiency within new dwellings was introduced.
  - This was in the form of a regulatory fittings-based approach for WCs and wash hand basin taps only.
- **Water Efficiency Labelling and Standards (WELS) scheme**
  - WELS is an Australian scheme which requires that certain products be registered and labelled with details of their water efficiency.
  - It is a mandatory scheme, in that a product cannot be sold on the Australian market if they do not carry this label.
  - Minimum water efficiency standards are applied to only two of the seven product types; toilets and washing machines.

In addition to these regulatory policies and standards, there are a number of voluntary labelling schemes, which are either product specific or related to whole-building sustainability assessment schemes, for which water efficiency is a category. The key voluntary schemes which have been reviewed as part of this process include:

- EU Ecolabel;
- European Water Label;
- The AECB (Association for Environment Conscious Building) Water Standard;
- LEED for Homes (US);
- WaterSense (US);
- Nabers for Homes (Australian);
- BREEAM Domestic Refurbishment.

The review of these regulations, policies and standards has enabled the development for the proposals as detailed within this consultation paper.

### 3.1.2 Non-Domestic

There are no existing provisions for the regulation water efficiency of non-domestic buildings within the Building Regulations 2010 Approved Document G. There is, however, a number of voluntary sustainability benchmarking schemes, in which water efficiency is a category against which performance must be assessed. The BREEAM

scheme was an inclusion within national planning policy in Wales from 2009 to 2014. This policy required that new non-domestic developments either greater than 1,000m<sup>2</sup> in floorspace, or carried out on a site having an area of one hectare or more, must achieve a minimum BREEAM rating of 'Very Good' (excellent for energy credit – Ene1). To achieve any level of BREEAM certification above 'Good', a water use reduction of at least 12.5% over the BREEAM baseline is required.

Scotland has introduced water efficiency requirements within the Building Regulations for non-domestic buildings; however these are currently only applicable to educational buildings. The introduction has not yet been developed for other non-domestic properties. These are based upon a fittings approach, with a regulatory limit set for toilets, showers and wash hand basin taps.

In Wales, all buildings (with some exceptions for smaller buildings) funded by the Welsh Government are required to achieve a BREEAM rating of Excellent (or equivalent).

The review of regulations, policies and standards acknowledged that the water efficiency of non-domestic properties is not heavily regulated, but instead is often detailed as part of whole building sustainability assessment methodologies.

### **3.1.3 New buildings**

Section 3.2 to 3.2.3 sets out the Welsh Government's intentions to achieve water efficiency throughout both domestic and non-domestic properties in Wales. Options for changes to the regulations represent a significant step towards this objective.

### **3.1.4 Compliance and performance**

Detailed discussions and subsequent reviews have been undertaken in the development of the Welsh Government's proposals surrounding water efficiency in new buildings. Throughout this process, a range of potential compliance and performance issues were raised. The process we have undertaken and the reasoning for our proposals have been fully detailed within section 3.4 of this document.

### **3.1.5 Existing buildings**

There are no proposals for buildings formed by a material change of use. The current requirements in Approved Document G (2010 edition) for dwellings of 125l/p/d will remain unchanged for dwellings formed by a material change of use. There are also no proposals in relation to regulating replacement fittings in existing buildings. Further explanation and methodology as to how this conclusion has been drawn is detailed in section 3.3.

## **3.2 Main Proposals – New Buildings**

This section of the consultation report details the Welsh Government's proposals for potential incorporation into, and the amendment of, Approved Document G. Proposals have been detailed for both domestic and non-domestic buildings in Wales.

### **3.2.1 New homes**

Minimum water efficiency standards were introduced into the Building Regulations (England and Wales) in 2010, however these were only applicable to domestic properties. The current directive governing water efficiency requires that the water consumption of new dwellings do not exceed 125 litres per person per day, which is inclusive of a 5 litres per person per day allowance for external water use.

Between 2010 and 2014, all new homes in Wales were subject to the sustainable buildings national planning policy which required that a minimum Code for Sustainable Homes Level 3 rating must be achieved. To enable a new home to demonstrate this rating level, the Code set a mandatory requirement for water efficiency that the maximum internal water use per dwelling of 105 litres per person per day must be demonstrated.

Taking into account the existing regulation, planning policy and voluntary standards (as detailed in section 3.1.1), new proposals have been developed by the Welsh Government for potential inclusion into the Building Regulations.

The regulatory change to deliver the water efficiency element of a dwelling is currently included within regulation 36 of the Building Regulations 2010, Approved Document G. This regulation currently requires that all new dwellings are designed so that their estimated water consumption is not more than 125 litres per person per day.

#### **3.2.1.1 Proposal 1 - Implementation of a water use limit**

Further to the review of existing regulation, standards and policies within Wales, the wider UK and globally, it has been determined that the implementation of a 110 litres per person per day limit within Wales is a reasonable regulatory limit.

This limit has been proposed to allow for continued improvement and progression with regards to sustainability, and particularly water efficiency, within new developments throughout Wales. Although progressively better than the existing maximum consumption allowance detailed within Building Regulations Approved Document G 2010, it is in line with previous planning policy, which required all new developments to achieve Code for Sustainable Homes Level 3, since it came into force. The planning policy detailed;

*To move towards more sustainable and zero carbon buildings in Wales, the Welsh Government expects that the following standards will be met;*

*Applications for 5 or more dwellings received on or after 1<sup>st</sup> September 2009 to meet Code for Sustainable Homes Level 3 and obtain 6 credits under issue Ene-1 Dwelling Emission Rate.*

*Applications for 1 or more dwellings received on or after 1<sup>st</sup> September 2010 to meet Code for Sustainable Homes Level 3 and obtain 6 credits under issue Ene 1 – Dwelling Emission Rate.*

*Dwellings registered under the Code for Sustainable Homes (Version 3) will be expected to meet Code for Sustainable Homes Level 3 and obtain 1 credit under issue Ene1 – Dwelling Emission Rate.*

All new applications for new dwellings, irrespective of the development size, have been regulated to achieve at least a Code for Sustainable Homes Level 3 since September 2010, thus being obligated to achieve an internal water consumption rate of 105 litres per person per day.

In line with existing regulations, this will also allow for a fixed factor of 5 litres per person per day for external water usage. However a proposal for external water use to enable this fixed factor to be removed is discussed in further detail in section 3.2.1.8 of this report, and the subsequent revised Water Efficiency Calculator for New Dwellings outlined in the draft requirement G2 guidance accompanying this consultation.

The housebuilder representatives present during the BRACW meeting confirmed that the removal of TAN22 had not altered their sanitary ware specifications. Instead, they continue to specify water consuming components in line with the existing sanitary ware schedules which have been followed when complying with Code for Sustainable Homes Level 3.

**Question 3**

Do you agree that the proposed maximum limit of 110 litres per person per day is acceptable?

The Water Efficiency Calculator for new dwellings<sup>5</sup> is the existing calculation methodology of water consumption in Approved Document G. It is also the methodology to demonstrate compliance with the Wat1 credit of the Code for Sustainable Homes. This calculator tool methodology is used to assess the 'whole-building' water consumption for a new dwelling in England and Wales.

From the review we have undertaken, and continued discussions with the Building Regulation Advisory Committee for Wales we have concluded that there are mixed opinions regarding the feasibility and appropriateness of this calculation methodology.

<sup>5</sup> <https://www.gov.uk/government/publications/the-water-efficiency-calculator-for-new-dwellings>

All opinions have been taken into consideration when developing these proposals. Based on this feedback, it is proposed that this calculation methodology remain part of the Building Regulations, however it is proposed to include the water efficiency calculator methodology within Approved Document G with minor alterations as discussed in paragraph 3.2.1.8.

This approach allows for flexibility within the design and construction of a dwelling, whilst also being a familiar tool for house builders and developers, due to its current existence in Approved Document G 2010, and Code for Sustainable Homes.

However, it should be noted that the flexibility of this approach was also deemed to be a flaw. The calculator allows for poor performing water consuming components to be offset by efficient ones, thus not encouraging water efficiency throughout a dwelling. This approach could then impact the hot water demand of a dwelling, which in turn would influence a household's energy consumption. For example, a shower with a high water demand may be specified, and then offset with specification of an efficient WC. This may allow a project to achieve the required water performance target, but may have a negative impact on household bills due to the increase in hot water use and thus energy demand and ultimately carbon emissions. Irrespective of this, the flexibility and familiar nature of this calculation methodology provided encouragement that it should remain within the Building Regulations.

This proposal should be seen as an enhancement of requirements via the already existing channel of compliance. There is no alternative and proven water consumption calculation methodology for dwellings currently in existence. The Welsh Government does not propose to develop an alternative calculation tool for the purpose of this regulation.

### **3.2.1.2 Proposal 2 - The Fittings Approach**

The proposal for a fittings based approach has been developed to allow for a simplified alternative approach to compliance (an alternative option to the water efficiency calculator). This approach does not set a maximum water consumption allowance, as per proposal 1, but is instead based upon maximum performance levels for water consuming components that are commonly found within a dwelling.

A number of different options have been provided as part of this consultation exercise, as we want to better understand the opinions of the consultees with regards to the most appropriate performance standards that could be applied as a method of compliance. Tables 3.1 to 3.4 detail the alternative scenarios which are being proposed by the Welsh Government for potential incorporation into the Building Regulations.

An overall regulatory limit has not been set under this proposal as it is difficult to accurately determine this value without assuming usage factors for each of components. For comparison, the scenarios detailed within the tables have been input into the Water Efficiency Calculator for Dwellings and a similar total water consumption to the water

efficiency calculator method (110 l/p/d) was determined. The performance standards for each of the components within the four tables are commonly available products on the market, and different configurations have been proposed for consideration. These configurations have been developed to allow for higher water consumption in certain components to be offset by another highly efficient component. The standards and regulatory policies detailed in section 3.1.1 of this paper have helped to steer and develop the options below, to ensure robust standards are proposed.

### 3.2.1.3 Option 1

This option allows for relatively high flush volume toilets, with options for both dual and single flush mechanisms. It also allows for a reasonable flow rate of 8 litres per minute for the shower. The flow rate of the wash hand basin taps and kitchen taps within the scenario are relatively low to counter the higher water using components.

**Table 3.1: Proposed performance standard – Option 1**

<b>Component</b>	<b>Proposed maximum performance level</b>
WC – Dual Flush	6 / 4 litres per flush
WC – Single Flush	4.5 litres per flush
Wash hand basin tap	4 litres per minute
Shower	8 litres per minute
Kitchen Tap	5 litres per minute
Bath	170 litres capacity

### 3.2.1.4 Option 2

Option 2 is the same performance standard which has been incorporated into the Building Regulation 2010; Approved Document G (2015 Edition) England. This approach includes for a dual flush toilet, which is actually the lowest flush volume currently available on the market. The proposed flow rate for the shower is as per Option 1, while the low flush toilets actually allows for higher flow rates of both the kitchen and wash hand basin taps within the dwelling.

**Table 3.2: Proposed performance standard – Option 2**

<b>Component</b>	<b>Proposed maximum performance level</b>
WC – Dual Flush	4 / 2.6 litres per flush
Wash hand basin tap	5 litres per minute
Shower	8 litres per minute
Kitchen tap	6 litres per minute
Bath	170 litres capacity

Source: Approved Document G – 2015 Edition

**3.2.1.5 Option 3**

This third proposed option includes a higher capacity bath, effective flush volume for the toilet and slightly lower flow rates for the showers. The flow rates of the taps within a dwelling remain in line with Option 2.

**Table 3.3: Proposed performance standard – Option 3**

<b>Component</b>	<b>Proposed maximum performance level</b>
WC – Effective flush volume	4.5 litres per flush
Wash hand basin taps	5 litres per minute
Shower	7 litres per minute
Kitchen taps	6 litres per minute
Bath	185 litres capacity

**3.2.1.6 Option 4**

This final option differs slightly again, in that the proposed maximum performance of the toilet is a dual flush volume of 4.5 / 3 litres per flush. The incorporation of a dual flush toilet will allow for a higher flow rate for the shower.

**Table 3.4: Proposed performance standard – Option 4**

<b>Component</b>	<b>Proposed maximum performance level</b>
WC – Dual Flush	4.5 / 3 litres per flush
Wash hand basin taps	5 litres per minute
Shower	9 litres per minute
Kitchen taps	5 litres per minute
Bath	170 litres capacity

**3.2.1.7 Summary**

By detailing four proposed options for consideration, the Welsh Government is not defining exact performance standards which must be met, but instead providing differing scenarios for consultation and comment.

**Question 4**

Do you consider that Options 1 to 4 are viable? YES/NO

If NO, which options do you consider are not viable and why?

**Question 5**

Do you think that any other alternative maximum performance level standard could be proposed?

All of the fittings detailed within this approach are based upon a maximum flow rate, with the exception of the bath. Throughout discussions during this process, the flow rate and



volume of a bath within a domestic dwelling has been a key topic. Limiting the flow rate of bath taps did not seem appropriate, as home owners will typically fill the bath irrespective of how long this may take – hence, limiting the volume of a bath was deemed to be the appropriate parameter to regulate.

Discussions were held as to whether the same approach should be taken for the taps on kitchen sinks also. However, it was agreed that it is not always the behaviour of home owners to fill a sink, but often to leave a tap running while washing up instead. As consumer behaviour can influence the water use in this instance, the inclusion of regulation to limit the flow rate of the kitchen tap should be considered.

**Question 6**

Do you agree with the performance standards detailed in tables 3.1, 3.2, 3.3 and 3.4?

**Question 7**

Do you agree that the component types which have been included for within the fittings approach are appropriate?

**Question 8**

Do you consider that the water calculator and fittings approach provide a flexible route to compliance with the building regulations?

Following discussions with the Working Party, some concern was raised with respect to the regulation of low flow and flush rates with regards to consumer satisfaction and the capability of drainage systems within the country. Section 3.5 of this consultation paper provides additional reasoning for the proposed maximum performance level choices as noted within the tables above.

**3.2.1.8 Proposal 3 - Installation of a rainwater storage system (e.g. water butt) for external water use**

Throughout the review period and ongoing Working Party meetings, discussions with house-builder representatives and other industry professionals indicated that the installation of water butts within a garden to be a relatively easy and cost-effective solution to external water use savings. The Wat 2 external water use credit of Code for Sustainable Homes has previously been a popular credit for developers to comply with, due to the reasons noted above.

The credit is awarded where a compliant system is specified for the collection of rainwater for external irrigation purposes. Where no outdoor space is provided, then the credit could be awarded by default. Data provided by BRE Global<sup>6</sup> concluded that 87% of the 17 domestic projects which were analysed in Wales demonstrated compliance with Wat2 credit of the Code for Sustainable Homes.

<sup>6</sup> BRE Global, Colin King\_Code 3+ Feedback v1 23 08 13

To encourage the installation of water butts in dwellings, the Welsh Government proposes that the fixed factor of 5 litres per person per day for external water usage is removed from the Water Efficiency Calculator for New Dwellings where a dwelling installs a rainwater storage system (e.g. water butt) for the collection of rainwater. This will then offset the potable water demand for gardening purposes. In order for the fixed factor to be removed, it is proposed that a minimum 100 litres capacity rainwater storage system (e.g. water butt) is installed per dwelling. However designers and developers may choose to incorporate a larger capacity if they wish, particularly on larger dwellings. A water butt is a relatively simple and low-cost installation which we consider to have minimal technical implications. During the design and construction of a property, additional consideration to the placement of the dwelling's rainwater downpipe in relation to the water butt position is required.

#### **Question 9**

Do you agree that the fixed factor of 5 litres per person per day for external water usage is removed from the water calculator for dwellings incorporating a rainwater storage unit?

#### **Question 10**

Do you agree that a minimum 100 litres capacity be required before removal of the fixed factor from the water calculator?

### **3.2.2. New non domestic buildings**

There are a variety of building types which fall under the heading of 'non-domestic' properties. As part of this review, the following types have been considered:

- Education;
- Commercial offices;
- Healthcare;
- Industrial / manufacturing facilities;
- Retail;
- Leisure.

There is currently no provision for non-domestic buildings within the Regulation. It is only the Building Regulations in Scotland which have taken account of water use within non-domestic properties – however, this is only applied to educational buildings, and also limited to just three component types; WCs, wash hand basin taps and shower heads.

It should also be noted that the main aim for the inclusion of water efficiency within the Scottish regulations is to reduce the energy used for the abstraction and disposal of the resource, as well as heating of water for health and hygiene purposes within a school.

At present, Welsh Government funding policy requires that new non domestic developments (with some exceptions for smaller buildings) achieve a BREEAM rating of Excellent (or equivalent), meaning that the mandatory requirement of compliance with at

least one credit under Wat01 must be demonstrated, equating to a minimum 12.5% reduction in water consumption within the building.

As with all of the building types listed above, consideration has been given to the potential of incorporating water quality and efficiency regulations for Healthcare buildings; however after extensive discussions, particularly with National Health Service (NHS) Wales, this type of regulation was not deemed to be appropriate. Welsh Government funded healthcare buildings are required to demonstrate a BREEAM rating of Excellent (or equivalent), however there is flexibility for the NHS in the selection of sanitary-ware with this methodology. This flexible route allows for new healthcare buildings in Wales to incorporate water efficient measures without compromising the stringent and overarching regulatory standards of the Health and Safety Executive (HSE) and the Welsh Technical Memorandum (WHTM) documents. Further details are outlined in section 3.4.5 of this document.

Therefore it is being proposed to apply proposals across all other new non-domestic buildings. We believe the regulatory limits which are being proposed are not particularly onerous, and one may expect that they are standard practice throughout non-domestic buildings – particularly for the lease tenants seeking a sustainable building and work environment, and developers who wish to market their commercial office space.

For building types such as retail, leisure and industrial / manufacturing facilities regulating minimum water efficiency is also not a straightforward exercise. Due to the different usage patterns expected within these building types, it is difficult to determine which water consuming components should be included within the regulation. Thought should be given to the viability of the regulation across all non-domestic buildings, and a consistent approach should be implemented across all building types. This would then allow for water use across all buildings to be comparable from one sector to the next.

As BREEAM utilises a calculation methodology to determine a project's water consumption, there isn't one particular approach which we can define as being a popular strategy for compliance. This is because a project may specify very low flush toilets and / or waterless urinals, which would then allow for specification of higher flow rate taps and showers, whilst still achieving the 12.5% reduction required to meet the mandatory standard of Wat01.

Within BREEAM, there are also various calculation approaches dependent upon the building type; the Standard Wat01 method and the Alternative Wat01 method. The standard method determines the water consumption of a building based on the building's actual component specification, default usage patterns which are in turn based upon the building type and activity areas present within the project space. This is suitable for what the BRE term "common building types", such as education and offices. Where this standard approach is not suitable, the alternative approach to compliance should be used. The alternative calculation is based upon an elemental approach, through the specification of efficient water-consuming components compared to the BREEAM

performance baseline. Although this is based on a fittings approach, there is an underlying weighting to the calculation. This weighting varies based upon the specific building type for which the calculation is being done. As with the calculation methodology for domestic properties, the methodology is not transparent. The total water use is therefore not comparable across different building use types of the non-domestic sector.

### 3.2.3 Proposal 1 - Fittings-based performance standards

For the reasons detailed in the previous section, it is proposed that the fittings approach be applied to all new non-domestic buildings (including extensions) in Wales. Unlike in domestic dwellings, it is not proposed that all water use within a property be regulated, but instead only the 'domestic scale' water consuming components which will be present across all building types, including;

- WCs;
- Urinals;
- Wash hand basin taps;
- Showers.

Kitchen taps could potentially be included within the regulation, however at this time they have not been allowed for. This exclusion is due to kitchen taps potentially contributing to the process water use of a building, in the case of restaurants or buildings with large kitchen facilities, where food preparation will take place. Where a fixture is not present in a building, then the requirement for that particular component will not be applicable.

It is understood that these fixtures alone may not be responsible for the main water consumption across all buildings, particularly within industrial and manufacturing facilities. Dependent upon the nature of their processes, the largest water consuming aspect of these building types will likely be process water. During the initial review, it was decided that it would not be viable to attempt to regulate process water consumption, even though these types of buildings are a much larger consumer of potable water across non-domestic buildings. Regulating process water consumption would likely impact the manufacturing / industrial process for which the water is utilised.

The approach we propose for consideration within the regulation is in line with the performance standards as outlined within the BREEAM New Construction 2014 technical manual<sup>7</sup>. The BRE note that specifying components for a building in accordance with these performance levels will in most cases correspond to the number of credits which can be achieved. So, although not an exact science, we propose that fittings within non-domestic buildings be specified in line with these performance levels as a minimum.

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<sup>7</sup> BREEAM UK New Construction; Non-domestic buildings (United Kingdom) Technical Manual SD5076:1.0-2014.

**Table 3.5: Proposed performance standard for non-domestic buildings**

<b>Water-consuming component</b>	<b>Minimum performance standard</b>	<b>Stretch targets</b>
WC	5 Litre effective flush volume	4.5 Litre effective flush volume
Urinals	6 litres / bowl / flush	3 litres / bowl / flush
Wash hand basin taps	9 litres per minute	5.0 litres per minute
Showers	10 litres per minute	8 litres per minute

Source: BREEAM New Construction 2014, Technical Manual

Table 3.5 provides the minimum performance standards which we propose, along with potential stretch targets for comment. Neither performance levels are very demanding targets, which allows for a feasible, cost-effective solution of incorporating a fittings approach into the regulations for non-domestic buildings.

Other components such as kitchen taps, washing machines etc. are also considered under BREEAM; however it is not proposed that these be incorporated into the regulation at this stage. It is proposed that the approach for non-domestic buildings be kept relatively simple, thus focusing on the fittings noted above in the first instance.

**Question 11**

Do you agree with the inclusion of water efficiency regulation for non-domestic buildings?

**Question 12**

Do you agree with the fittings approach for non-domestic buildings?

**Question 13**

Do you agree with the proposed maximum performance standards?

**Question 14**

If no, should these proposed performance standards be increased in line with the stretch targets?

### 3.3 Existing Buildings

Areas were considered for potential regulation in existing buildings, these are where an existing building is going through a material change of use (i.e. conversion from existing office building being into apartments) and where an existing fitting is being replaced.

#### 3.3.1 Material change of use of an existing building

Discussions have been held throughout this review process with regards to the potential incorporation of further regulatory standards for material change of use of an existing building. Current regulation in Wales requires change of use developments to achieve a maximum water use of 125 litres per person per day, and it is not proposed that there will be any changes to this legislation.

Although this may be considered a relaxed standard, some concern was raised as to the compatibility of the existing drainage systems with limited flow fittings, thus raising the potential risk of blockages within the system. In scenarios where the change of use will involve significant changes, i.e. where an existing commercial building were to be changed to a block of residential flats, then it would be expected that the drainage system will be reviewed to ensure that there is sufficient capacity for this change of use, with re-design being undertaken where necessary. However, the difficulty remains of differentiating the scale and scope of the change of use within the regulation, and so it is not proposed at this time to introduce any further regulatory standards into the Building Regulations. Instead, the existing 125 litres per person per day limit would remain applicable for dwellings formed by a material change of use.

**Question 15**

Do you agree with the proposal not to introduce further water efficiency requirements (i.e. further than the existing 125l/p/d requirement for dwellings) for buildings undergoing a material change of use?

**3.3.2 Replacement fittings in existing buildings.**

As part of the original scope of works, the provision of regulatory standards and policy of water efficiency within existing dwellings was reviewed. Following this review, and discussions with the Building Regulations Advisory Committee for Wales, it was deemed that the implementation of regulation for replacement (which are outside of the scope of Approved Document G 2010) water fittings would be difficult.

Detailed feedback and guidance was provided by the Water Regulations Advisory Scheme Ltd (WRAS), in which it was noted that there are many regulations surrounding the testing requirements for the replacement of fittings. Attention was drawn to the legal requirements of the Water Supply (Water Fittings) Regulations (1999), as amended, regarding;

- Replacement of storage cisterns by connections directly off the supply pipe;
- By retrofitting devices to WCs; and
- By replacing individual components of WCs.

Under this regulation, any removal, alternation or addition of fittings in an existing plumbing system must be compliant with the regulation standard.

To elaborate on this further, the complete replacement of a WC suite to one which meets the requirements of the Water Fittings Regulations is permitted, and for domestic premises would not normally require prior notification to the water supplier. However, the replacement on any single component of an existing WC such as the flushing mechanism device or WC cistern is different.

Schedule 2 para 25(2) of the Regulations states 'Every water closet, and every flushing device designed for use with a water closet, shall comply with a specification approved

by the regulator for the purposes of this Schedule.’ The Regulators’ WC Suite Performance Specification<sup>8</sup> requires all WC suites to meet the performance criteria having been tested as a complete suite.

The changing of a component on an existing suite will demand evidence that testing has been undertaken, proving that the modified WC complies with the WC specification. As such, in considering alterations of this type to be incorporated into the Building Regulations, the implications of compliance with the Water Fittings Regulations must be fully considered.

This existing and overarching regulation may therefore lead to complications with the potential introduction of additional legislation relating to water efficiency within existing dwellings. Should a home owner choose to retrofit existing water fixtures and fittings within a dwelling, then they will be subject to compliance with the Water Supply (Water Fittings) Regulations (1999). The introduction of additional water efficiency legislation in this situation would not be impractical for home owners, as the only additional action would require for the specification and installation of water efficient components – The Water Supply (Water Fittings) Regulations (1999) would already be applicable in this circumstance.

The impracticality of introducing requirements for replacement fittings come where the legislation requires all fittings being replaced, to be fitted with efficient ones, which would in turn lead to the home owner having to demonstrate and notify compliance with their legal duty of this overarching regulatory standard.

Rather than the inclusion of such a measure within the Regulation for all replacement fixtures to be replaced with efficient ones, we feel that this may be better dealt with through non-regulatory measures, such as through the provision of an advisory note within the Approved Document, and separate guidance to include details of the importance of component replacement and the benefits to the home owner.

It is therefore proposed that rather than inclusion within the regulation, supplementary guidance should be produced to include full details of the regulatory procedure surrounding the testing requirements; thereby ensuring individuals have a clear understanding of the procedures.

**Question 16**

Do you agree with the Welsh Government’s approach of not regulating water efficiency for replacement fittings?

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<sup>8</sup> Regulators WC Suite Performance Specification; located at <http://webarchive.nationalarchives.gov.uk/20130402151656/http://archive.defra.gov.uk/environment/quality/water/industry/wsregs99/>

## **3.4 Compliance and Performance**

### **3.4.1 Introduction**

The 2010 review of the Building Regulations recognised the importance of water quality and efficiency, which led to the inclusion of minimum water efficiency standards. The importance of water efficiency is a continuing consideration, particularly with the increased risk of climate change and potential water stress. In addition to this, the withdrawal of TAN 22 in Planning Policy in Wales (July 2014) meant that there is no longer any Planning policy to control this.

### **3.4.2 Compliance and performance issues**

Throughout the review process, there were a number of compliance and performance issues which were raised. Many of these have been detailed previously within this consultation paper; however this section provides additional detail surrounding further issues which were raised, particularly during and following the technical Working Party meetings with the BRACW.

### **3.4.3 Drainage and Pipe-Sizing**

One of the key issues which was noted on numerous occasions throughout the review and subsequent discussions was the impact that reduced flow and flush rates would have on the drainage system.

Numerous research reports have been previously undertaken to determine the impact of reduced flush rates in WCs specifically. An Environment Agency Report; Impact of reductions in water demand on wastewater collection and treatment systems<sup>9</sup> identified WCs as offering the greatest opportunity for reducing household demand for water, but also highlighted that flushes from WCs are very important in helping to move solids through sewers.

The report looked closely at the impact of reducing flush volumes in a conventional WC from six litres to three, and concluded that this level of reduction could cause significant problems in drainage systems. However, it goes on to note that these problems could be lessened by using new technologies and changing design standards for drainage systems. In addition to new technologies, another solution which could be used to tackle potential blockages include using pipes with a smaller diameter and steeper gradient, and to ensure there are fewer pipes taking only very low wastewater flows.

This option creates possibilities for new buildings; however it maybe difficult and costly to retrofit existing properties to this standard. This is an additional reason for replacement fittings and buildings undergoing a material change of use being excluded from the proposals at this stage. Current design methodologies have served the industry well, but it is questioned whether these are becoming outdated, and the installation of reduced

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<sup>9</sup> Science Report; SC060066; Environment Agency. Impact of reductions in water demand on wastewater collection and treatment systems; February 2008.



water consuming appliances may not be appropriate for the older design methodologies. For example, in a scenario where the building code calls for a large pipe while the toilet attached to the system is low-flush, there is a higher possibility of waste material being deposited as it can accumulate in a large pipe with the potential of causing a blockage<sup>10</sup>.

Ensuring adequate sizing of pipes is the responsibility of the project's design engineers. British Standard BS EN 806<sup>11</sup> provides design guidance with regards to the correct sizing of pipes, and where the procedure within this standard is followed; there should be no issue with the specification and installation of low flow taps and efficient toilets.

The National House Building Council (NHBC) produced a report, in collaboration with the Department for Environment Food and Rural Affairs (DEFRA), Severn Trent Water and Plastic Pipes Group, titled 'Pull the Chain, Fill the Drain'<sup>12</sup>. This research report was undertaken due to the promotion of reduced water consumption in domestic properties, and the concerns that this reduced water use could inadvertently lead to problems with the effective transport of sewer solids and small sewers close to the property.

A testing programme was therefore developed to determine at what flush rates sewer solid movements would travel the acceptable distance of 10 metres before reaching a point where it was able to move no further. The report notes that this distance was chosen as being the distance, in a typical domestic drainage configuration, from one WC discharge to the next downstream connection with a WC discharge. The gradients of the sewer configuration were also changed throughout the test to determine whether this had any influence on the distances travelled by the sewer solid.

The key recommendations drawn from the report were;

1. A minimum flush volume of 4.5 litres is deemed necessary to transport solids in drains and sewers, the minimum distance of 10m;
2. Changes such as altering the ratio of high / low flushes in a dual flush WC could help to achieve improved solid movement. Reducing the volume of the lower flush would not be detrimental as they generate little benefit to sewer solid movement; although any reduction would have to ensure that adequate bowl clearance could still be achieved.
3. Two litre or three litre flush volumes are insufficient to carry the solid at least 10 meters.
4. Proprietary low flush WC design focuses on WC bowl clearance – it does not give improved flow patterns in the downstream drain and as such does not enable sewer solids to travel further.

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<sup>10</sup> Transient free surface flows in building drainage systems. *John Swaffield with Michael Gormley, Grant Wright and Ian McDougall.*

<sup>11</sup> BS EN 806-3:2006 Specifications for installations inside buildings conveying water for human consumption – Part 3: Pipe sizing – Simplified Method

<sup>12</sup> 'Pull the Chain, Fill the Drain' CP 367 – The effect of reduced water usage on sewer solid movement in small pipes. Report No.:P7904.

5. Better design and construction of pipework between the WC and the external drain line may improve sewer solid movement. However, the design is only marginal and only observed at the lower flush volumes

The result of these testing scenarios and recommendations has been considered when developing the fittings approach proposals, and is the reasoning for the inclusion of up to four different options as outlined in section 3.2 of this report.

#### **3.4.4 Calculation Methodology**

Careful consideration has been given to the potential inclusion of the Water Efficiency Calculator for New Dwellings methodology within the revised Approved Document G. The calculation methodology was discussed in detail throughout the review process.

One of the key issues to be raised related to the transparency of this methodology and the existing tool. The Water Efficiency Calculator Tool was originally developed by the Building Research Establishment (BRE); however there is limited information available regarding the background of the calculation.

Embedded within the calculator are usage factors and a normalisation factor. According to an explanation from the creators of the tool, this normalisation factor is used to bring the calculated consumption of the water efficiency calculator in line with typical UK water consumption. The Building Regulations 2010 Edition states that typical consumption in the UK is 150 litres per person per day; however, using 'typical' UK fittings (e.g. WC with a 6 litre effective flush volume), the daily consumption would be calculated as 163.50 litres per person. The normalisation factor therefore adjusts this calculation by a factor of 0.91 to bring the calculation, which uses typical fittings, into line with UK consumption. This adjustment aligns predicted average and the actual average usage.

Where there are no washing machines or dishwasher specified for the dwelling, the calculator tool utilises default water consumption rates for both of these appliances. This may not always be appropriate where the appliances are not specified for installation within the building, or alternatively the housebuilder does not have responsibility for the specification of these factors. As such, this will influence the results obtained based upon the components which have been specified in accordance with water efficiency targets.

The default values of the calculator do not differ hugely from the average performance available on the market, however the inclusion of the actual usage data would influence the result of the calculation either for the positive or negative.

#### **3.4.5 Consumer Satisfaction and Behavioural Patterns**

Water consumption within a home and a non-domestic property is largely dependent upon the behavioural patterns of the building's occupants. This is a factor of water efficiency which is not possible to control directly, and so it was argued throughout the

review period that it is pointless to regulate water-consuming components when the behavioural patterns are a major influence.

We understand this impact but also suggest that it is not a reason for not incorporating further improvements to regulate water use. Specification and installation of more water-efficient products are a driving factor of water efficiency within the built environment. Please see further details relating to the influence of consumer behavioural patterns in section 3.5.2 of this report.

Throughout the review and discussions during the technical Working Party meetings, concerns were raised regarding the performance of a number of water-consuming components, all of which we have tried to provide a response to. Please see further details below;

### **Shower**

Consumer behaviour will greatly influence the total volume of water usage of a shower, in that the duration and frequency of a shower may vary greatly among users. Although this will impact the total water usage within a dwelling and non-domestic property, the efficiency of the shower will have a positive impact on the water consumption irrespective of the duration.

Concerns were raised with regards to user satisfaction where the flow rate of a shower is too low. Careful consideration has therefore been given to ensuring that the proposed maximum performance levels of the showers also meet consumer expectations.

In the case of all water-consuming components, there is a risk that the home-owner will immediately change these fixtures for less efficient ones where there is dissatisfaction. This will increase wastage, whilst also meaning that the designed water consumption rates will not be achieved when in use.

### **Wash hand basin and kitchen taps**

Similarly to showers, the total water usage of wash hand basin taps and kitchen taps are greatly influenced by consumer behaviours. An argument was put forward that when a user is to fill a sink, the flow rate of the tap would be irrelevant. Our response to this performance issue is that the consumer behaviour is constantly changing and not always clear cut. Some users may fill a sink to do the washing up, however others may continuously run a tap, in which case the efficiency of the tap will have an influence on the total water usage within a building.

### **Toilets**

As discussed in section 3.4, the flush volume of toilets within the home and in non-domestic buildings should be carefully considered. Discussions relating to the functionality of these components, in relation to the drainage design and pipe sizing have taken place. Further to what has already been discussed, where the toilet bowl is not

fully cleared after flushing, then the user will flush the bowl again thus increasing the overall water usage, which in turn means that the low-flush toilets would be inadequate and possibly lead to double the expected water use through increased flushing.

## **Bath**

The bath is the only component for which the maximum performance level is based upon capacity as opposed to a flow rate. Home owners will typically fill the bath irrespective of how long this may take. Baths are one of the components which seem to have received bad press with regards to specification of water efficiency fixtures. The complaints surrounding this component type within a dwelling is typically due to the size. Within Code for Sustainable Homes, and the Water Efficiency Calculator for New Dwellings, it is the volume of the bath which must be documented. A development may therefore specify the installation of small bath tubs to favourably influence the overall water use calculation for the property, however this will then lead to the fitting being unfit for purpose. Where this is the case, they may often be replaced with a larger volume bath tub when occupied.

## **Healthcare Buildings**

Healthcare buildings are of particular importance when reviewing potential regulation of water efficiency within non-domestic buildings. The maintenance of a good throughout of water within a healthcare building is very important to minimise the levels of bacteria within the systems.

The main bacteria responsible for infections caused by water borne contamination are legionella and pseudomonas aeruginosa. The introduction of water conservation measures in particular to outlets could have a detrimental effect on achieving the correct parameters to maintain a safe water system free of these harmful bacteria.

Feedback from the National Health Service (NHS) Wales elaborated on the initial report / review, in that they further emphasised that the introduction of water conservation measures within healthcare buildings has the potential to increase the risk of water bacterial infection to highly susceptible patients and needs to be carefully considered.

### **3.5 Proposed measures to improve compliance and performance**

#### **3.5.1 Calculation Methodology**

Within the report two different methodologies have been included for new dwellings, allowing people to utilise either the fittings approach or the Water Efficiency Calculator, this will provide more flexibility and choice.

Although potential issues with the transparency of the calculation methodology were raised, it should be noted that it also allows for a flexible and familiar approach to demonstrating compliance with the regulations.

### 3.5.2 Consumer Satisfaction and Behavioural Patterns

Consumer satisfaction and behavioural patterns are very subjective, and opinions can vary greatly from person to person. Research has been undertaken by a number of institutions to help determine the impact these have on the selection and installation of efficient technologies.

The NHBC Foundation released a primary research report on sustainable technologies<sup>13</sup> which provided very useful understanding of the uptake and preference of sustainable technologies within new homes, including water efficiency measures. The key findings which have been taken from this research, to assist in development of these proposals, include;

- Housing associations taking part in the survey have fitted over 75,000 new homes with low-flush toilets and over 66,000 with low-flow taps and showers. These are now regarded as standard specification items,
- 100% of those surveys stated that their reasons for installing sustainable technologies were due to planning / the requirement of Code / funding requirement.
- Established water-reducing technologies in wide-spread use (low-flush toilets and low-flow taps and showers) are widely viewed as performing well, whereas experiences with greywater recycling and rainwater harvesting have resulted in poor levels of satisfaction.
- Low-flush toilets and low-flow taps, which are now commonly installed, have high levels of satisfaction
- Low-volume baths meet the housing associations' criteria, but residents have not been particularly satisfied with them.
- Focus group comments about ultra-low flow toilets (4-5 litres per flush) indicated problems with poor cleansing performance and frequent blockages in downstream drainage pipework, requiring increased rodding.

United Utilities (UU) and Liverpool John Moores University (LJMU) undertook research looking at water and energy efficient showers<sup>14</sup>. The study investigated showers in terms of both key physical performance criteria and customer satisfaction, with the aim to utilise the findings to identify potential strategies to encourage efficient use of water and energy by showers in homes. There were a number of recommendations and findings drawn from this research, one of which identified that customers with a mixer or pumped shower operating at over 8 l/min can enjoy a financial payback within a few months from installing a water saving showerhead that does not impair customer satisfaction.

### 3.6 Summary

The performance standards detailed as part of the proposed fittings approach for both domestic and non-domestic buildings are based upon products which are currently

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<sup>13</sup> NHBC Foundation Sustainable Technologies – The experience of housing associations. Primary research – May 2015.

<sup>14</sup> Water and Energy Efficient Showers: Project Report. Authors: Richard Critchley, United Utilities and Dr David Phipps, Liverpool John Moores University. May 2007.

available on the UK market, and have been steered by a range of published regulation, policy, standards and sources, all of which have been reviewed and referenced throughout this process.

Within the fittings-based approach, the proposed performance standards are all maximum water consumption flush and flow rates, and so should a home owner or developer wish to exceed minimum performance, more efficient components can be specified.

As mentioned, although behavioural patterns are highly influential on the overall water usage of a building, the proposed regulations aim to drive market transformation and enable water consumption to be minimised as far as possible, irrespective of consumer behaviour.

**Question 17**

Do you foresee any additional compliance and performance issues which may arise from the introduction of enhanced water efficiency standards for new dwellings?

**Question 18**

Do you foresee any additional compliance and performance issues which may arise from the introduction of water efficiency regulation for new non-domestic buildings?

**3.7 Re-structured Approved Document G**

Following consultation we propose to amend approved document G in relation to water efficiency requirements. Requirement G2 of the Building Regulations currently has requirements for water efficiency, therefore a draft proposed requirement G2 and associated guidance is included with this consultation. We also propose to include the water efficiency calculator methodology within the Approved Document, which is therefore also included this in the draft document. We welcome any comments on this draft guidance document.

**3.8 Future Thinking**

**3.8.1 Behavioural patterns**

As noted throughout this report, the behavioural pattern of building users has a large influence on the overall water usage. This is because factors such as duration of a shower, or frequency with which a tap is utilised, will have a major impact on the total water use calculation of a building. Typically, average usage factors are used to determine these, but these factors are not exact and every individual potentially has a different pattern of use. Within homes, this could also be influenced by the work patterns of individuals and families, e.g. whether they work from home, or if there are members of the family who do not work and are therefore in house throughout the day.

The proposals included within the report are intended to help reduce water usage in Wales. This together with opportunities for the water companies in Wales to engage with

the public to promote behavioural change will be a key factor in achieving acceptable levels of water efficiency.

## Chapter 4 - Part Q (Residential security)

### 4.0 Context

The Welsh Government is considering the introduction of a mandatory standard for residential security, through Building Regulations, for the target hardening of windows and doors for new dwellings.

There are currently no requirements within the Building Regulations for residential security, although the Building Act (as amended by the Sustainable and Secure Buildings Act 2004) gives Welsh Ministers powers to make regulations for this purpose.

Within Wales the issue of community safety is embedded within national planning policy. Planning Policy Wales and Technical Advice Note 12: Design highlight the importance of community safety in the design of new development. Crime prevention is capable of being a material consideration when planning applications are considered.

Planning Policy Wales states that local authorities are under a legal obligation to consider the need to prevent and reduce crime and disorder in all decisions that they take. Crime prevention and fear of crime are social considerations to which regard must be given by local planning authorities in the preparation of development plans. They should be reflected in any supplementary planning guidance, and may be material considerations in the determination of planning applications. The aim should be to produce safe environments through good design.

Whilst there are no requirements within Welsh Building Regulations; Registered Social Landlords in Wales are required to comply with Secured by Design standards for all developments. Part 2 of the Welsh Housing Quality Standards states:

*External doors and windows must have a reasonable level of physical security. A “reasonable level of security” is defined as being capable of complying with Secured by Design (SBD), although may not necessarily have an SBD certificate. Where it is necessary to replace doors, windows or fencing, the replacements must comply with the Police Force’s ‘SBD specification and be certified as such. On replacement landlords should consider a ‘door set’ which complies with SBD. SBD is the Police initiative to encourage the adoption of crime prevention methods in new and existing housing and aims to achieve a good standard of security for both the dwelling and the surrounding environment.*

Secured by Design is the established Police initiative which focuses on designing out elements within developments that may contribute towards housebreaking and other crimes and promotes the use of security standards for a wide range of applications and products. The objective of Secured by Design is to reduce burglary and crime in the UK by designing out crime through physical security and processes by combining minimum



standards of physical security and well-tested principles of natural surveillance and defensible space.

Secured by Design was a non mandatory element under the Code for Sustainable Homes providing two credits when met. The recommendation for meeting this element is for a Crime Prevention Design Adviser to be consulted at the design stage and their recommendations incorporated into the design of the dwelling. Upon completion a 'Secured by Design' certificate can be provided, this will be deemed to satisfy the requirements and no other evidence will be required.

### Other UK requirements

New build homes should provide reasonable protection against the risk of burglary, but that the standard of security required should be proportionate to that risk. A new requirement for security, Part Q1 (Security – unauthorised access), was introduced in October in England following the Housing Standards review. Security in relation to windows and doors in domestic dwellings was introduced in Scotland in October 2010. Scottish Government guidance provides details of basic measures to improve the physical security of dwellings, including robust specification of doors, windows, glazing and locks.

The National House Building Council is an independent regulator and the largest new homes warranty provider. NHBC Standards are the definitive standards for house construction and conversion in the UK; they produce technical standards and advice which builds on statutory requirements within building regulations.

The standards are set by a committee taking into account a number of factors including Building Regulations and relevant British Standards, representing all relevant organisations interested in improving the quality of new and converted dwellings (builders, consumer organisations and professional institutions).

Secured by Design has developed a new initiative to provide developers with a route to compliance with Part Q of Schedule 1 to the Building Regulations 2010 in England. The Secured by Design National Building Approval (SBD NBA) provides a structured approach to discharge the English Building Regulation and the Scottish Building Standard, by ensuring that all suppliers of door, window and roof light products consistently meet the requirements of the regulations, minimising the possibility of delays to the build process due to non-compliance issues. Secured by Design will conduct all relevant due diligence checks on behalf of the developer throughout the lifetime of the partnership and issue a certificate of conformity with Approved Document Q, or the Scottish Standard 4.13, and the Secured by Design Silver award.

#### 4.1 Development of Proposals

The Welsh Government proposal is that the standard will be based on the provisions of British Standard PAS 24, the well established industry standard which sets standards for door and window assemblies including tests and specifications for locks as well as the robustness of the doors and windows themselves.

The first consideration in proposing the introduction of a mandatory standard is whether a mandatory security standard is necessary, and, if so, the most cost effective approach to maintain the reduction seen in burglary incidents through appropriate security standards in new domestic development.

The England & Wales Crime Survey states that 'Households where there are no home security measures were almost ten times more likely to have been victims of burglary than households where there were simple security measures such as deadlocks on doors and windows'.

The two most common means of unlawful entry into a dwelling are through doors or windows, where these are either left open or can be easily forced open. The level of security of any dwelling can be significantly enhanced by ensuring that all external doors and any windows or glazing in vulnerable locations are manufactured and installed to resist forced entry and also that unauthorised entry into common areas is prevented.

Respondents to the England and Wales Crime Survey 2013/14<sup>15</sup>, when asked about levels of home security, 59% had no or less than basic home security<sup>16</sup>. Of those with at least some basic security, only 28% had some form of enhanced security. The survey also showed that the method of entry into a home where a burglary had taken place was through forcing a lock (71%), broke/cut a panel off door (9%) and where the door was rammed/kicked/smashed or glass of door broken or smashed accounted for 5%.

Police recorded crime statistics for domestic burglary across the four force areas within Wales has shown cumulative year-on-year decreases from 14,954 offences in 2002/03 to 7,496 offences in 2013/14. The overall number of domestic burglary incidents has fallen by just over 50%.

The statistics demonstrate that burglary rates show a decline year on year and that the current industry standards for target hardening for domestic security are effective in the majority of cases of attempted burglary. However, there are areas where the likelihood of burglary is much higher and are often on a localised basis, older developments, neighbourhoods, sometimes street level and consideration should be given to how enhanced security on a development by development option could be introduced where crime in that area is considered a particular problem.

<sup>15</sup> <http://www.ons.gov.uk/ons/rel/crime-stats/crime-statistics/year-ending-september-2014/stb-crime-in-england-and-wales--year-ending-september-2014.html>

<sup>16</sup> One or more security measures but not having both window and double/deadlocks in place.

## Technical Working Parties

Technical Working Parties (TWP) were held on the 19<sup>th</sup> May and 6<sup>th</sup> August to inform development of the proposals. Membership of the working parties consisted of Registered Social Landlords, South Wales Police, Secured by Design liaison officer, House Builders Federation, National House Building Council, BRE and IG Doors representing manufacturers. Building Regulations Advisory Committee for Wales members for Access, Architecture, Builder, Housebuilder, Mechanical and Engineering, Private Sector Building Control, Local Authority Building Control and Sustainability were also in attendance.

The TWP were asked to consider the implications for introducing a minimum standard for residential security and that standard should be based on the provisions of British Standard PAS 24, the well established industry standard which sets standards for door and window assemblies including tests and specifications for locks as well as the robustness of the doors and windows themselves. The scope of the Working Party discussion was limited to the technical standards and design features that begin at the front door of domestic properties, including entrances to communal areas in flats. Site planning and design issues were outside the scope of this work.

Welsh Government presented three proposals to members of the first TWP for discussion regarding the physical security of windows and doors in new build homes:

- Continue with the current industry security standards for windows and doors and not introduce a mandatory standard or legislative change.
- Introduce a mandatory standard through Building Regulations.
- Introduce a mandatory standard through Building Regulations with an optional higher standard incorporating elements of section 2 of Secured by Design New Homes (intruder alarms, utility meters etc.)

Members discussed the current situation in Wales and the potential impact of the introduction of a standard in England if no mandatory standard was introduced and the effect of cross border issues was also discussed with members stressing the importance of Wales' standards being broadly similar to those in England. Costs of the current practice against current SBD requirements and potential impact on the supply chain and manufacturers in Wales were also to be considered in any further development of a mandatory standard.

A consensus for developing a mandatory standard was agreed but further clarification was needed on conservatories (where within the building envelope the standard would apply) and further consideration of including external security lighting as an element of the mandatory standard.

Members were largely opposed to the third option of utilising an optional standard as the likely take up of this would be limited. Members were in agreement that defensive measures such as target hardening were preferable to active measures such as burglar alarms.

Members were also asked for their initial views on the potential for a mandatory standard for the replacement of windows and doors in existing dwellings and were in agreement that could possible be considered as the replacement market is significantly bigger than new build.

At the second TWP it was agreed that a do nothing and continue without a mandatory standard would be a consultation option but further discussion centred around the following two proposals put forward by the Welsh Government:

- Introduce a mandatory standard for windows and doors and security lighting in new dwellings, the Welsh Government preferred option.
- Introduce a mandatory standard but seek views through this consultation on the principle of introducing a standard for replacement windows and doors in existing dwellings.

Members discussed the possibility that Wales could be used as a 'dumping ground' for any dated lower quality stock for new builds if the do nothing option is preferred. Poor quality doorsets still exist and a do nothing option, waiting for the standards to rise with manufacturers following implementation in England, may not lead to an uplift in standards in Wales.

The Welsh Government reaffirmed its preferred option of introducing a mandatory standard, utilising PAS 24 requirements. There was some discussion about using one standard being restrictive for bespoke products but there are 4 or 5 standards available for bespoke products that would make them PAS 24 compliant. This would be set out in a draft Approved Document to accompany the consultation proposals and follows bespoke requirements introduced in England.

Further information was provided to members on flats and external lighting requirements. It was agreed that external entrances to flats, including individual flat entrances from any communal areas, and external security lighting should form part of the consultation proposals within the mandatory standard.

In consulting on its preferred option the Welsh Government officials also proposed to seek views through this consultation on regulating the replacement windows and doors in the existing dwelling market. Discussion amongst members about the market being fragmented and introducing a mandatory standard may have unintended consequences which may potentially have a detrimental effect. However, members were in agreement that the opportunity should be taken during the consultation period to seek views and

considerations for the implications, cost, volume and market willingness for introducing a standard for physical security in the replacement market.

## 4.2 Proposals

The two proposals for consultation are set out on the following pages, however this consultation document is accompanied by a draft Approved Document Q, which provides the more significant detail into the relevant compliance routes for meeting the proposed new standards for windows, doors and external lighting.

### **Option 1 – Continue with the current industry practice in Wales for the security of windows and doors and not introduce a mandatory standard through a legislative change.**

Most new dwellings do provide basic standard of security but it would be desirable for all new dwellings to meet at least the basic standard currently reflected in home building industry good practice warranties such as those provided by NHBC.

This option of not introducing a mandatory standard in Wales would therefore mean that the industry in Wales would continue with the current level of security standards for windows and doors utilising the current standards and good practice within the industry as set out in the NHBC standards guidance.

The NHBC guidance provides security advice on doors, door frames, windows and locks which are designed and specified so as to improve their resistance to unauthorised entry. The guidance provides advice on the material standards for non-timber and timber doors and windows and security.

In addition to the standards mentioned above, the current requirements elsewhere in the UK such as the new Part Q in England, Scottish Standards and the Secured by Design National Building Approval, indicates that the industry will already be seeking to achieve compliance with these requirements.

In considering the option of not introducing a mandatory standard for security, consideration must be given to the potential effect in Wales and whether the upturn in standard requirements in the rest of the UK will flow into the Welsh market and necessitate legislating for a mandatory standard in Wales.

#### **Question: 19**

Do you consider that the current industry practice in Wales for windows, doors and locks in new dwellings are sufficient to address residential security in Wales?

**Question 20**

With the recent changes in England in relation to residential security, current Scottish standards and Secured by Design National Building Approval, do you think is it sufficient for the Welsh Government to provide guidance for residential security and not introduce a mandatory standard?

**Option 2 - Introduce a mandatory standard through a legislative requirement for all new dwellings to meet a minimum standard for security for windows and doors and external lighting.**

The Welsh Government preferred option is to introduce a mandatory standard, utilising PAS 24 requirements, for windows and doors security which guarantees that the windows, doors, frames and lock fittings have all been attack tested.

PAS 24 test requires testing against an opportunistic intruder attack rather than a test of individual hardware components and comprises testing against the following:

- Manipulation of hardware
- Evaluation of glazing security
- Mechanical loading test
- Manual check test

Introducing this standard for all new dwellings would mean that the effective level of security goes further than those covered by warranty requirements. The standard will be higher than the current industry practice as set out in Option 1 and as such there will be extra costs for dwellings currently meeting the NHBC standards.

In proposing a mandatory standard, all doors, associated doorframes, windows and frames, locks and hardware within the scope of the mandatory standard will be designed, constructed and installed so as to reduce the risk of unauthorised entry and should be securely fixed in accordance with the manufacturer's specifications.

Doors and windows should comply with the relevant material standard:

- BS 4873:2009 (Aluminium)
- BS 7412:2007 (PVC-U)
- BS 644:2012 (Timber)
- BS 6510:2010 (Steel)
- BS 8529 (Composite)

In addition all ground floor windows and other windows which are easily accessible from the outside may be fitted with lockable devices which cannot be released without a key.

It is proposed that the mandatory standard will apply to doors and windows in new dwellings, in particular:

- front entrance door or the primary access to a dwelling;
- secondary external access door i.e. the back or side door but not excluding sliding patio doorsets, French doors or bi-fold doors;
- door connecting a dwelling to a garage or conservatory;
- external windows located at ground floor level and easily accessible; and
- where the window is easily accessible from outside, including rooflights, such as climbing on building projections.

In relation to flats:

- communal entrances to flats;
- secondary access door (i.e. maintenance access) to communal areas within flats;
- access doors to individual flats from communal areas; and
- any glazing which forms part of the glass panel or side panel to a communal entrance door.

In addition communal entrance access systems for flats (audio/visual) and mail delivery systems associated with flats where access to a communal area is provided are also being considered.

Applying the same mandatory standard in Wales would provide consistency and clarity for manufacturers, installers and house builders who operate on both sides of the border.

Since the introduction of requirement Q1 in England there has been little opportunity to determine the impact of the mandatory standard whilst Option 1 does describe the potential for an industry standard uplift in Wales as a result of the introduction in England.

However we are interested in your views on other proposed options for achieving compliance with the proposed standard.

The Welsh Government is also proposing to introduce security lighting as a mandatory requirement for the illumination of external doors in dwellings. Security lighting is provided to protect property and there are two types of security lighting commonly used in dwellings, high wattage intruder lights that are operated via PIR sensors which only switch on for a short time, and low wattage lighting that is controlled by time switches and daylight sensors.

The proposals for security lighting include:

- external lighting at the front entrance and at secondary entrances such as rear access doors;
- external lighting for communal entrance doors into a block of flats; and
- lighting within communal areas where access is possible to individual flats.

The Code for Sustainable Homes previously required security lighting to be switched by PIR and for the lamp not to exceed 150w. This type of security lighting is not specified by Secured by Design in their new homes design guide following advice from the Institute of Lighting Professionals (ILP) and police concern regarding the increase in the fear in crime (particularly amongst the elderly) due to repeated PIR lamp activations.

In line with the requirements of SBD the proposals for lighting is to use a photo electric cell (dusk to dawn including a switched manual override control) for new dwellings. For communal parts of flats 24 hour lighting (switched using a photoelectric cell) will be required. This will normally include the communal entrance hall, lobbies, landings, corridors and stairwells.

The draft Approved Document Q, which accompanies this consultation document, provides the relevant compliance routes for meeting the proposed new standards for windows, doors and lighting.

**Question 21**

With the year on year decreases in domestic burglary do you agree that there is a need for a mandatory security standard for windows and doors for new dwellings in Wales?

**Question 22**

Do you agree that introducing a mandatory standard through building regulations is the best option?

**Question 23**

If there is no need for a mandatory standard, what difficulties do you think will be faced by house builders in differing standards across England and Wales?

**Question 24**

Introducing lighting to the mandatory standard goes further than what is currently required in the rest of the UK. Do you agree with including lighting as part of the mandatory standard?

**Question 25**

Do you think there are any other elements that should be considered as part of the mandatory standard such as third party certification?



### 4.3 Future Thinking (Existing Dwellings)

The preferred Welsh Government option is to introduce a mandatory security standard for windows and doors and security lighting in new dwellings as set out under Option 2. As part of this consultation the Welsh Government is also seeking views on a mandatory security standard when replacing windows and doors in existing dwellings.

At present there is no intention to introduce a standard at this time but to get a better understanding of the issues associated with any potential regulation of the replacement market.

A standard for replacement windows and doors in existing dwellings has not been introduced elsewhere in the UK, the current requirements in Scotland and those introduced in England from October this year could influence manufacturers operating in both the new and replacement sectors.

Historically, new regulations in the new build market have worked their way into the replacement and refurbishment market and the Welsh Government is taking this opportunity to seek views on whether there would be a benefit in the replacement windows and doorsets market being required to be comply to a mandatory standard in the future.

Currently the installation of replacement windows and doors is covered under Competent Person Schemes (CPS) within which installers can be registered as competent to self-certify that their building work complies with Building Regulations and are covered within Schedule 3 of the Building (Amendment) (Wales) Regulations 2015.

Row 10 of Schedule 3 covers “*Installation, as a replacement, of a window, rooflight, roof window or door in an existing dwelling*” and has 9 competent person schemes authorised to undertake this work and provide self certification notification to building control. For the period 1 October 2014 to 30 September 2015 the total number of notifications in Wales was 40,653, whilst it is not possible to break down the individual components (i.e. door or window) from the statistic returns it does provide an indication of the volume of work undertaken in this sector.

Introducing a mandatory standard for replacement windows and doors would require a legislative change to incorporate this within the competent person schemes in Wales. The changes will require additional up skilling requirements to the “Minimum Technical Competencies” that scheme members are required to meet.

Given the broad nature of the replacement market, the range of companies, their capacity to deal with any suggested standards in terms of certification, the need to

consider an appropriate balance we are seeking the views of manufacturers, installers, competent person schemes etc. on the following questions.

**Question 26**

Do you agree that market forces for new build will inform the replacement market and encourage manufacturers to start to develop the changes in their product developments and specifications for residential security?

**Question 27**

What are your views on the practicality of regulating the replacement windows and doors sector for security standards in existing dwellings.

**Question 28**

Do you agree there is a need to regulate security standards in the replacement market?

## Chapter 5 - Information for the end user

### 5.0 Background

In January 2014 the Welsh Government published a report undertaken by Mott McDonald which assessed the components of BREEAM and the CfSH and the potential for addressing these through Planning guidance and/or Building Regulations. Some aspects of Information Provision to End User were already dealt with under these existing mechanisms. This review has considered how Information Provision to End User as a topic which could potentially be incorporated into the Building Regulations in Wales.

This consultation is proposing to introduce guidance to encourage developers to create home user guides (HUG) for all new domestic developments in Wales. The guidance would potentially include the provision of a HUG template, to assist SME developers and improve the consistency of the information provided to homeowners. Review the guidance route to determine its success, with a possible regulatory route in the future, making the creation of a HUG mandatory.

### 5.1 The Consultation

This consultation contains proposals for the provision of information, similar to some aspects of the Code and BREEAM's Information Provision to End User credit, as guidance within Building Regulations Approved Statutory Guidance (Approved Documents) in Wales. The consultation also includes some discussion on the potential for future requirements concerning Information Provision to End User and the Building Regulations in Wales.

### 5.2 Context

As a means of optimising resources and ensuring that the full benefits of enhanced energy efficient and sustainable systems are realised, it is essential that building users understand the correct use and maintenance of facilities within buildings, e.g. operation of windows, building services equipment and renewable systems. In the consultation it will be summarised how information provision to end users has been approached by other standards, guidance and policies and discuss the potential for inclusion within the Building Regulations in Wales.

The initial analysis focused upon how information provision to end users has been approached by other standards, guidance and policies in both the domestic and non-domestic sectors. This included a review of existing home user guides and building user guides (BUGs), to determine what information is currently provided to end users and to see if there is a difference in the quality of the information provided by larger developers and SMEs.

For domestic buildings, consideration was given to the provision of a Home User Guide (HUG), in line with the Man1 CfSH requirements, which could either be appended to the existing Approved Documents, or within an all-encompassing technical guidance document. Further to this, it was proposed that 'supplementary guidance' could be developed within technical guidance to support and provide further information to housing developers that will be required to produce the proposed user guides. The supplementary guidance would be aimed at aiding the developer when producing and providing information to the homeowner. As a minimum, it would contain an

introduction about the user guide, its scope, useful information about producing it, suggested template/sections and the level of detail it should provide on each topic.

For non-domestic buildings, consideration was given to the incorporation of the BREEAM Man04 requirements into the Building Regulations in Wales. Similar to the domestic proposals, the provision of supplementary guidance was proposed for the production of a BUG or log book. The guidance would contain more information covered by BREEAM Man04 for developers to incorporate in the BUGs or log books. The supplementary guidance could be appended to the existing Approved Documents or within a more suitable all-encompassing technical guidance document. It was noted that this option would provide further information to building developers for producing a BUG and in turn give useful information to building owners and users.

### **5.3 Existing Standards and Regulations**

As part of the review, research was undertaken into all current standards and provisions in Wales and other administrations in order to determine where any regulation or guidance currently exists for information provision to end user.

#### **5.3.1 Welsh Standards – Approved Documents**

The Approved Documents were reviewed to determine the extent the current regulations and guidance cover the requirements stipulated under CfSH Man 1 for a HUG and under BREEAM Man 04 for a BUG. Part 8 of the Building Regulations, *Information to be Provided by the Person Carrying Out Work*, legislates that information on fire safety, ventilation and fuel and power needs to be provided to the building owner. The regulations for fire safety, ventilation and fuel and power information provision are referenced in Approved Documents Part B, Part F and Part L respectively. Therefore the remaining Approved Documents only offer guidance on information provision, if at all.

##### **5.3.1.1 Approved Document L**

The current Welsh Building Regulation Approved Documents for Part L (both domestic and non-domestic, new and existing buildings) requires building occupants to be provided with information concerning the energy efficiency systems that are employed in the building, their operation and maintenance. The Approved Documents identify the reasonable provision required in order to demonstrate compliance; for non-domestic buildings compliance can be demonstrated by following the CIBSE TM31 logbook toolkit. Information provision is required for the energy systems only and as such it does not include any other sustainable features (e.g. information on water, waste etc). The domestic Part L provides no guidance with respect to how to provide this information.

##### **5.3.1.2 Approved Document F**

The current Approved Document F requires the owner of the building to be provided with sufficient information on the ventilation services and their operation and maintenance requirements. Information provision is required for the ventilation systems only but does not include any other sustainable features.

### 5.3.1.3 Approved Document B

The current AD B, for domestic buildings, provides guidance on the need for information on the building to be provided with sufficient information to ensure proper and safe use and maintenance of emergency/egress systems. This includes information on the risk of unauthorised material alterations. For non-domestic buildings Regulation 38 requires that work covered by the Regulatory Reform Order should be provided with sufficient information to maintain the building in reasonable safety. Appendix G of Approved Document-B (Volume 2) gives guidance on the typical fire safety information on simple and complex buildings.

### 5.3.2 CIBSE TM31

As stipulated Guidance in Approved Document L for non-domestic buildings, explains building owners should be provided with a summary of information about new or refurbished buildings, the building services and the associated maintenance requirements in the form of a building logbook. The information provided should follow the CIBSE TM31 Building logbook toolkit, or by adding to an existing logbook. Logbooks provide a simple, easily accessible summary of a new or refurbished building rather than the detail contained in an Operation & Maintenance (O&M) manual. The CIBSE TM31 guidance is a helpful guidance document for completing the building logbook.

### 5.3.3 Planning Policy Wales (PPW) & Technical Advice Note (TAN) 18<sup>17</sup>

Planning Policy Wales and Technical Advice Note 18 identify the requirement for a transport assessment (TA) to be completed when applying for planning permission for developments that are likely to result in significant trip generation. Within this assessment a Transport Implementation Strategy (TIS) is required to set objectives and targets for managing travel demands of a development. The TIS should include measures to achieve its transport objectives, one of which is the provision of information to ensure the end user has access to and knowledge of public transport, walking, cycling and car sharing schemes.

### 5.3.4 Microgeneration Certification Scheme (MCS)<sup>18</sup>

All buildings that utilise sustainable technologies and are eligible for the Feed-in Tariff<sup>19</sup> fall under the remit of the MCS. The technology must be installed by registered contractors (certified under the Microgeneration Certification Scheme) who have a duty to provide user guides for the installed systems.

## 5.4 Other Industry Standards

A review of existing standards from other administrations, including the UK, US and Australia, has been performed to determine the information provision measures that are being utilised in other regions.

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<sup>17</sup> Technical Advice Note 18: Transport (more information found here - <http://gov.wales/topics/planning/policy/tans/tan18/?lang=en>)

<sup>18</sup> Microgeneration Certification Scheme (more information found here - <http://www.microgenerationcertification.org/about-us/about-us>)

<sup>19</sup> Feed in Tariff (more information found here - <https://www.gov.uk/feed-in-tariffs/overview>)

#### **5.4.1 Scotland's Standards – Technical Handbook 2013 Domestic – Energy**

The Building Regulations and technical guidance are produced by Scottish Ministers to ensure buildings are safe, efficient and sustainable for all. The Technical Handbooks provide guidance on achieving the standards set in the Building (Scotland) Regulations 2004 and are available in two volumes, domestic buildings and non-domestic buildings.

The domestic guide<sup>20</sup> covers the fixed building services outlined in CfSH and is a good example of a guide to safe maintenance and operation of systems, notably through the provision of a template HUG. The guide covers aspects such as locations of all key system components and highlights good methods to provide advice to help reduce energy consumption during operation. The non-domestic template gives important information to include for each section of the document while also giving word limits and lists of important diagrams. Emphasis is placed on energy saving features and measures but the template at this stage is only applicable to Schools. Both guides are good examples to follow with respect to creating HUGs and BUGs, however the information provided is limited to energy systems and not all requirements identified under CfSH and BREEAM are covered.

#### **5.4.2 Northern Ireland's and England's Standards**

Current requirements for England and Northern Ireland are similar to the Wales regulatory requirements.

### **5.5 Other Schemes – Domestic Buildings**

For domestic buildings the following sources were also reviewed:

#### **5.5.1 Environmental Protection Agency (EPA) for the USA<sup>21</sup>**

The information provided by EPA gives home owners generic guidance and solutions to key environmental and energy issues related to a home. It is predominately focused towards homeowners who wish to improve their existing homes and/or save energy, therefore gives information on more sustainable systems and practices that can be installed. Their website allows users to find out more information on typical room fittings/fixtures and systems and it gives information about the different types of energy saving that can be achieved through the correct use of these systems.

#### **5.5.2 National Australian Built Environment Rating System (NABERS)<sup>22</sup>**

NABERS (National Australian Built Environment Rating System) is a national rating system developed to measure the environmental performance of Australian buildings and homes. The approach taken by NABERS is unique in that the tool(s) take real, measured impacts and communicates these in a clear way, judging environmental initiatives by their actual results in star ratings.

<sup>20</sup> Scotland Template Guide (more information found here - <http://www.gov.scot/Resource/0040/00409085.pdf>)

<sup>21</sup> EPA USA Guidance (more information found here - <http://www.epa.gov/greenhomes/index.htm>)

<sup>22</sup> NABERS Rating System (more information found here - <http://www.nabers.gov.au/public/WebPages/Home.aspx>)

### 5.5.3 The Australian Government ‘Your Home – Australia’s guide to environmentally sustainable homes

The Australian Government have produced a detailed home user guide covering topics such as; before you begin, passive design, materials, energy, water, housing, case studies. They have a website dedicated to the purpose of the efficient running of a home. Although it is a generic book that isn’t specific to one particular building, there is a lot of information covering many aspects of the efficient running of a home. The information covered ranges extensively from researching a house to operating the house in an efficient manner.

## 5.6 Other Schemes – Non-domestic Buildings

For non-domestic buildings the following sources were reviewed:

### 5.6.1 Leadership in Energy and Environmental Design (LEED)<sup>23</sup>

LEED is a set of rating systems for the design, construction, operation, and maintenance of green buildings, homes and neighbourhoods. It has been developed by the U.S. Green Building Council (USGBC) and is intended to help building owners and operators be environmentally responsible and use resources efficiently. To receive LEED certification, building projects must satisfy prerequisites and earn points to achieve different levels of certification; the intent of this is to promote the continuity to ensure that energy-efficient operating strategies are maintained and provide a foundation for training and system analysis.

### 5.6.2 RICS SKA<sup>24</sup>

The Royal Institution of Chartered Surveyors (RICS) has produced a SKA rating document which is an environmental assessment method, benchmark and standard for non-domestic fit-outs, led and owned by RICS. As part of the SKA Rating there is the BUG measure, which is focused for office and administrative spaces. As part of this measure, it lists the criteria, scope, assessment, rationale and guidance for producing the BUG. As seen from other user guides, the SKA BUG is provided as a means to inform the occupants and non-technical building management staff on the operation and environmental performance of the space and how to ensure a high level of environmental operation on a day to day basis. It states that the guide should be a lightweight tool, depending on the project size or complexity, but should not exceed more than 10 pages or the equivalent amount in digital or online format.

### 5.6.3 Industry Best Practice

As a result of the review undertaken in the two discussion papers, proposals were put forward for the potential incorporation of the CfSH and BREEAM requirements for information provision to end user into Welsh Standards. These schemes are explained in more detail in this section, along with additional schemes that go a step further in offering comprehensive information on new buildings to the end user.

### 5.6.4 Code for Sustainable Homes

The CfSH is an environmental assessment method for rating and certifying the performance of domestic developments. Up until the government withdraw the scheme in March 2015 following a

<sup>23</sup> LEED Rating System (more information found here - <http://www.usgbc.org/LEED/>)

<sup>24</sup> RICS SKA Rating System (more information found here - <http://www.rics.org/uk/knowledge/ska-rating-/about-ska-rating/>)

fundamental review of technical housing standards, CfSH was a national standard for use in the design and construction of new homes with a view to encourage continuous improvement in sustainable home building. CfSH takes into consideration a wide range of factors beyond simply constructional issues, with nine different design categories covered, these include; energy, water, materials, surface water run-off, waste, pollution, health and well-being, management and ecology. There is one credit within CfSH related to the provision of information which falls under Category 8: Man1, *Home User Guide*, where a total of 3 credits are available. The aim of Man1 is to promote the provision of guidance, enabling occupants to understand and operate their home efficiently and make the best use of local facilities.

Data provided by BRE Wales<sup>25</sup>, Barratt Homes Wales<sup>26</sup> and Redrow Homes Wales<sup>27</sup>, which identifies where credits have been achieved for certified CfSH schemes, was reviewed to determine which credits are most commonly targeted. BRE Wales data covered 17 schemes that varied in size and type of dwelling, 16 of these achieved all 3 credits under Man 1, with 1 scheme achieving 2 credits, while none of the schemes opted out of compliance. Barratt Homes reviewed 3 developments with a total of 20 dwellings over the 3 schemes. The 3 schemes achieved all 3 credits under Man 1, with none of the schemes opting out of compliance. Redrow Homes provided data for 2 schemes with a total of 25 dwellings over the 2 schemes. Of the 2 schemes reviewed, all 3 credits were achieved under Man 1, with none of the schemes opting out of compliance. Given the requirements to meet a CfSH 'very good' was only recently cancelled from Planning Policy Wales in June 2014, it is assumed that developers are relatively accustomed to producing Home User Guides stipulated under the Man1 CfSH requirement.

The following requirements for information provision are stipulated under Man1 of the CfSH:

#### Energy:

- Fixed building services
- Heating
- Ventilation
- Hot water
- Renewable systems
- Low energy fittings
- EU labelling
- Energy efficiency

#### Water use:

- Water-saving measures
- External water use and efficiency

#### Recycling and waste:

- Local authority collection scheme
- Locations of communal facilities
- Locations and use of recycling and waste
- WRAP

<sup>25</sup> Work undertaken by C King of BRE Wales in September 2013; achieving the requirements of TAN22 for the Code

<sup>26</sup> Work undertaken by F Browning of Barratt Developments Wales, received in June 2015; achieving the requirements of Tan 22 for the code

<sup>27</sup> Work undertaken by D Hastings of Redrow Homes Wales, received in June 2015; achieving the requirements of Tan 22 for the code



Sustainable DIY (home improvements)

Emergency Information (smoke detectors etc.)

Site and surrounding recycling and waste:

- Information on authority collection scheme
- Information and location of local recycling facilities

Sustainable Urban Drainage Systems (SUDS)

Public transport:

- Public transport facilities maps and timetables
- Cycle storage and cycle paths, including maps
- Car parking, park and rides, car sharing schemes

Local amenities

Responsible purchasing:

- Low energy/low water white goods
- Electrical equipment, including light fittings and bulbs
- Timber products from sustainable sources
- Organic food procurement/growing, local produce

Emergency information (services, locations of services)

Links, references and further information

Alternative formats

### 5.6.5 National House Building Council

NHBC is the UK's leading standard-setting body for new home construction, working with the house building-industry to raise standards. The NHBC provides household guides to new homeowners, in the form of an online Home User Guide, as well as other documentation to help with moving in such as the '*Guide to your new home*'. They also provide support to developers building new homes, such as information on how to comply with the Part L Building Regulations regarding provision of information to homebuyers.

The Home User Guide (HUG)<sup>28</sup> is a unique high-quality online tool for NHBC registered builders and developers. The tool allows homebuyers to be provided with all the information required about their new home. It enables builders and developers to provide their customers with consistent general handover information such as a moving-in checklist and guide for running new homes, while more specific information can be added to tailor it to the development and house types. This online tool can provide homeowners with floor plans, images, material specifications, videos and user manuals all of which can be stored online/ on software in PDF copies therefore eliminating the risk of losing a hard copy, use of paper and enables the homeowner to update information when modifications are made to the home.

### 5.6.6 BREEAM

BREEAM<sup>29</sup> (Building Research Establishment's Environmental Assessment Method) is an assessment tool used to promote sustainable *non-domestic* developments, encouraging

<sup>28</sup> NHBC Online HUG (More information found here - <http://www.nhbc.co.uk/Productsandservices/homeuserguide/>)

<sup>29</sup> BREEAM Assessment Tool (more information found here - <http://www.breeam.org/about.jsp?id=66>)

developers to go beyond the standard regulatory requirements and consider higher levels of environmental performance as well as a wider range of factors such as health and ecological impacts. There are a total of forty nine separate issues covered, categorised in ten sections, these are management, health and well-being, energy, transport, water, materials, waste, land use and ecology, pollution and innovation. Under the Management category is Man 04, Commissioning and Handover; this credit aims to encourage a properly planned handover and commissioning process that reflects the needs of the building occupants. Within Man 04 there are 4 credits available, with one of these credits relating to the BUG and the provision of information to end users.

Data provided by BRE, breaking down the performance of 68 BREEAM certified schemes, was reviewed to assess how popular the BUG Man04 credit is amongst developers. Of these 68 schemes, 67 achieved the Man04 credit, with only 1 scheme opted out of compliance with the credit. This information demonstrates that achieving compliance with Man04 and producing a BUG is the most common approach. The BRE data reviewed also demonstrates that the credits and performance under Man04 are achieved with relative ease. Given the requirements to meet a BREEAM 'very good' was only recently cancelled from Planning Policy Wales in June 2014, it is assumed that developers are relatively accustomed to producing Building User Guides stipulated under the Man04 BREEAM requirement.

### **5.6.7 BSRIA**

#### **BSRIA BG26/2011**<sup>30</sup>

The BSRIA BG26/2011 publication is intended to help those responsible for creating documentation that satisfies building regulations requirements with regard to the building logbook and also the Building User Information for BREEAM. It explains the difference between a building manual and a building user guide. It sets out similar guidance to that in the CIBSE TM31, however is not as detailed and instead provides examples and a template for building manuals and user guides. The publication suggests that the Building Manual replaces the building log book, as it incorporates all the features needed to meet the requirements of building regulations and it also acts as a historical log of the building's operation and maintenance as well as a record of refurbishments and alterations.

#### **BSRIA Soft Landings**<sup>31</sup>

Soft Landings is the BSRIA-led process designed to assist the construction industry and its clients deliver better buildings. This is done by providing a step-by-step process for clients and their project teams to follow in order to avoid running into pitfalls and deliver a better-performing product. The process begins at the design stage and continues beyond handover and occupancy of the building.

In simple terms Soft Landings requires clients to appoint designers and constructors to stay involved with their new building beyond practical completion and into the critical initial period of occupation. This will assist building managers during the first months of operation, help fine-tune

<sup>30</sup> BSRIA BG26/2011 Guidance (more information found here - <https://www.bsria.co.uk/information-membership/bookshop/publication/building-manuals-and-building-user-guides-guidance-and-worked-examples/>)

<sup>31</sup> BSRIA Soft Landings (more information found here - <https://www.bsria.co.uk/services/design/soft-landings/>)

and de-bug the systems, and ensure the occupiers understand how to control and best use what they have been given. This is followed by a longer, less intensive period of aftercare lasting for up to three years, to monitor energy use and occupant satisfaction, and to check on the operation of systems that might need seasonal fine-tuning.

There are five stages which Soft Landings covers, these are:

Stage 1 – Inception and briefing – ensuring the client’s needs are achieved.

Stage 2 – Design development and review – Review and assess design proposals in relation to facilities management and building users.

Stage 3 – Pre-handover – Ensuring operators understand systems before occupation.

Stage 4 – Initial aftercare – Soft landings team stationed on site receiving feedback and ensuring proper operation of systems.

Stage 5 – Years 1-3 extended aftercare and POE – Resolve outstanding issues, monitor energy use and receive post occupancy evaluations.

Each stage has its own checklist, Stage 3 is where a simple user guide should be produced, and that this should complement the required O&M manuals and logbook, within which a copy of the user guide should be fitted. Also a technical guide should be produced providing succinct information for the facilities management team to help the smooth transition to local operation. Ideally, it will have been developed in the course of design and construction, so that at any stage in the project people can find a clear description of how the systems in the building are supposed to work.

## 5.7 Industry consultation

### 5.7.1 Working Party Meetings

The working parties included members of the Building Regulations Advisory Committee for Wales (BRACW) and a number of other industry stakeholders.

The Working Party discussed current industry practices and analysis of the provision of information to the end user, and proposed options for their potential incorporation in the Building Regulations in Wales. A brief summary of the key discussion points raised by the Working Party is provided below:

Domestic buildings:

- There was the issue surrounding the refurbishment of buildings, and subsequent updating of advice.
- BIM was identified as a potential solution to the issue of storage and updating, but was still a developing area.
- It was noted that the National House Building Council (NHBC) would store home user information, although whilst it would include information on renewable technologies, it would not cover the information required by the Code.
- Going forward, it would be preferable if home user information was stored digitally and centrally, but this had the potential to be expensive and there was no central storage facility (the HUG only available where NHBC provide the building warranty).
- When buying off plans for new homes, new homeowners might specify minor alterations to the building prior to fit out, it would not be practical to address all these variations within a

user guide customised for an individual property. House builders generally provide information that relates to a particular dwelling configuration type and the relevant information on the building services specific to that type.

- In general, there was group consensus that the provision of home user information was already being met by major house builders and Registered Social Landlords (RSLs) etc. However, a potential issue lay with the small and medium enterprise (SMEs) companies, who lack the necessary back-office facilities.
- Localised information, such as waste collection, is often subject to change by local authorities on a regular basis and would therefore be difficult for the developer to provide.
- The advice provided by building regulations should be primarily concerned with closing the performance gap. It should help the occupant use their building as efficiently as possible.
- Housebuilders confirmed that the information is already provided. However, homeowners do not tend to use it regularly and often call head office in the event of a problem.
- Everyday information in the form of a quick start guide would be useful but breakdowns and problems should be treated differently.
- 

#### Non-domestic buildings:

- The delivery of BUG should require notification to the Building Control Officer (BCO).
- O&M manuals are usually delivered to clients at completion of a building; however, these don't contain practical advice in terms of physical location of components and may not be practical for building users.
- The CIBSE TM31 document provides a template for log books however the final documents often lack quality and consistency.
- This variation and quality of information provided in log books can be an issue and much information is being treated as a tick box exercise at the end of jobs without the view to assist building users.
- Soft landings approach was deemed to be out of remit for Welsh Standards as BCO involvement would end at the completion of a development thus outside of their sphere of influence.
- Small and medium enterprise (SME) often lack back office facilities to undertake paper required. The potential for a standard template to be developed would help solve this issue.
- BCO receive large variation in the type of information received. Where large information was received, they can lack resources to analyse in fullness.
- In order to make it effective it would need to be mandated and subject to scrutiny. Further it would need to be simple and easy to complete.
- It was suggested that Building User Guides are very useful, but only where they relate to the everyday running of the building. Where O&M manuals are provided, they are often technical and only useful to someone experienced in Facilities Management.
- An overall guide for non-domestic buildings would not work because they vary significantly in size and use. A generic guide could be produced but this would not be practical as these buildings tend to undergo a wide variety of alterations after completion.
- Information provision is not currently a statutory requirement and therefore Building Control Officers may not be best placed to comment on the quality of information.

### **5.7.2 BCB Survey**

Following the Working Party Meetings, further consultation was carried out to seek the views of Building Control Bodies (BCB). Particular emphasis was placed on what information small and medium size contractors provide to the end user in comparison to that provided by larger contractors. In considering the need to provide further guidance or regulate, it is important to gain an understanding of how SME's are handling the current information provision requirements.

The results of the survey found that BCBs are not aware of any complaints in relation to the lack of information provided to end users, for both domestic and non-domestic buildings. However, complaints would likely be directed at the builder, requesting them to resolve any snagging issues or problems with the building. The results that are specific to domestic and non-domestic buildings are summarised below.

#### **Domestic Buildings**

It was generally considered that more information needs to be provided by the developer to the end user at the handover of new dwellings. The consensus found that larger developers provide adequate information however there is a lack of information provided by SMEs. It is considered that smaller builders are less aware of the information they are required to provide and due to their limited back office resources they would need help in creating a comprehensive handover document that covers the required standard.

The BCBs were generally in agreement that a user guide, based on the use and maintenance of the end product, is required. This would be focused on heating, plumbing and ventilation as well as providing information on fire alarms and emergency lighting. It was agreed by 90% of the BCBs that there is a need for the provision of further guidance or a generic template in order to aid SMEs in the creation of the user guide. This would reduce the wide variety of user guides created and aid SMEs who do not have the time or expertise to create a bespoke guide.

#### **Non-Domestic Buildings**

In comparison to the domestic building results, the majority of BCB's surveyed considered that the information provided to the end user in non-domestic new buildings is adequate and produced to a good standard. In total, 78% of the responses agreed that information provision for non-domestic buildings is not an issue. It was noted that larger companies can be far more involved than SMEs due to their back office capabilities with much more comprehensive information provided. However, there were mixed reviews on whether there was a difference in the quality and content of information provided by larger developers and SMEs, with a 50/50 split in the replies.

### **5.8 Main proposals**

This review began by considering how elements of the Code for Sustainable Homes topic requirement of Information Provision to the End User could be incorporated into the Building Regulations in Wales. Following discussions with technical working parties and the results of the BCB survey, the review has concluded that it is not practical to introduce any new requirements concerning information provision to the end user at this time.

This consultation does, however, contain proposals for the inclusion of some aspects of the Code's Information Provision to End User credit as referenced guidance within Building

Regulations Approved Statutory Guidance (Approved Documents) in Wales. The consultation also includes some discussion on the potential for future requirements concerning Information Provision to End User and the Building Regulations in Wales. The proposals are accompanied by a draft sample document to support the proposed guidance.

### 5.8.1 Building Regulations Approved Documents

For domestic buildings, the Welsh Government is proposing to reference a simple example of a Home User Guide. Given that the requirement for information provision to the end user does not necessarily fall within any single document, the guidance on information provision would be referenced in all of the Approved Documents in Wales, possibly via a web link.

The creation of a template HUG would aid SMEs in the development of this document and improve the consistency and quality of any information provided to the end user.

The consensus of the technical working parties and the BCB survey was that sufficient information was already being provided for non-domestic buildings. The Welsh Government is not therefore proposing to publish any new guidance for non-domestic buildings.

### Domestic buildings

#### **Question 29**

Do you agree that there is a need for SMEs to provide more information to the end user for domestic properties?

#### **Question 30**

Do you agree that an advisory route, as opposed to regulation, would be the best option to encourage the provision of information to the end user?

The intention of any template would be to provide more information to the homeowner, whilst also not representing a significant burden upon smaller developers. With 90% of BCOs agreeing that there is a lack of information provided by SMEs, the goal of this route is to reduce the information provision gap when compared to larger developers.

The creation of a template and guidance may also improve the consistency and quality of information provided to the end user. Any statutory requirements, such as those identified in Approved Documents L, F and B would be identified in any published part template.

#### **Question 31**

Do you agree that the creation of a template guide would help SMEs and improve the consistency and quality of information provided to the end user?

It should be noted that the level of detail outlined in the CfSH requirements may be too broad, and therefore not essential to ensure efficient operation of homes. It was noted at the Working Party meetings that a number of the requirements were only relevant to the surrounding area and were

not necessarily specific to the home; therefore some of the information should not be a requirement.

In some cases the information is covered by other regimes i.e. transport information in planning. However, the developer could easily provide information via the use of reference links to appropriate sites where more information can be found. This would also help when providing information that is likely to change on a regular basis such as local authority waste collection.

The following requirements for information provision are stipulated under Man1 of the CfSH. The topics which the Welsh Government feels should be included within the user guide are highlighted in **bold**:

Energy:

**Fixed building services**

**Heating**

**Ventilation**

**Hot water**

**Renewable systems**

**Low energy fittings**

EU labelling

**Energy efficiency**

Water use:

**Water-saving measures**

**External water use and efficiency**

Recycling and waste:

**Local authority collection scheme – links to LA scheme details**

**Locations of communal facilities – links to LA disposal/recycling facilities**

**Locations and use of recycling and waste - links to LA disposal/recycling facilities**

Sustainable DIY (home improvements)

**Emergency Information (smoke detectors etc.)**

Site and surrounding recycling and waste:

Information on authority collection scheme

Information and location of local recycling facilities

**Sustainable Urban Drainage Systems (SUDS)**

Public transport:

Public transport facilities maps and timetables

Cycle storage and cycle paths, including maps

Car parking, park and rides, car sharing schemes

Local amenities

Responsible purchasing:

Low energy/low water white goods

Electrical equipment, including light fittings and bulbs

Timber products from sustainable sources

Organic food procurement/growing, local produce

**Emergency information (services, locations of services)**

**Links, references and further information**

**Alternative formats**

**Question 32**

Do you agree with the topics highlighted in paragraph 5.8.1 should be included within any potential Home User Guide template? If not, please explain why in the comments section below.

**Non-domestic buildings**

As with domestic buildings following the Working Party meetings and the BCB survey, it was decided that regulations are not required to improve the provision of information to the end user for non-domestic buildings. In the case of non-domestic buildings, it was also felt that the volume and quality of information currently being provided by the construction industry to the end user was sufficient, and so no new guidance would be needed.

It was identified at the Working Party meeting that a generic guide for all non-domestic buildings may not be successful due to the wide variety of sizes and uses. It was also noted that alterations are common, making the creation of generic guide impractical. In addition, 78% of BCOs agreed that enough information was already provided to the building end user in the form of a log book and comprehensive O&M manuals.

**Question 33**

Do you agree with the Welsh Government's position that due to the wide variety of size and uses of non-domestic buildings, generating a BUG template would not be feasible?

Typically for larger projects there is a requirement within building contracts for a detailed operation and maintenance (O&M) document to be produced alongside a log book in accordance with CIBSE TM31 to comply with building regulation requirements. O&M manuals offer a large amount of information to the end user for extensive maintenance and operation requirements. The building owner's manual is prepared by the contractor with additional information from the designers, suppliers and under new CDM regulations, the principle designer (previously CDM coordinator).

The CIBSE TM31 building log book covers how a building is intended to work and how it is meant to be maintained and serviced. A means to record the energy use and maintenance of the building services within the building is provided. TM31 details guidance on the scope, structure and contents of the logbook, who is responsible for producing it and keeping it up to date. This demonstrates that adequate information is provided to the end user. However, as discussed previously this information is often limited to energy efficient systems employed in the building.

**Question 34**

Do you agree with the Welsh Government's position that there is already enough information provided to the end user for non-domestic building?

**5.9 Future thinking****5.9.1 Potential for Future Regulation**

Although the conclusion of this review is that it is currently not considered feasible or necessary to introduce information provision requirements into the Building Regulations for Wales, this does not limit future consideration for such inclusion in future iterations. During the first Working Party, it



was suggested that there may be a need to make a HUG mandatory if developers are to adhere and produce comprehensive and useful guides for the end user. In light of this, the regulatory option in the future may be favoured.

As SMEs develop an understanding of the environmental and social benefits that information provision can bring, and gain more experience in creating HUGs, it is likely that the provision of information, similar to that contained within the Code, will become standard industry practice. The majority of large developers already provide a home user guide as good practice identifying that producing such a guide for SMEs is achievable if provided with sufficient guidance.

As noted in the BCB survey, some smaller house builders require education and guidance to identify the important information they need to provide to the end user. As this learning process develops it will be easier for more developers to adopt the creation of a Home User Guide and provide relevant information that will aid home users in sustainable operation and maintenance of their home. It is likely that a further BCB survey would be required in order to ascertain the extent of information and guidance that would be required.

### **5.9.2 Non-Domestic Buildings & Building Information Modelling (BIM)**

In the case of non-domestic buildings, The Welsh Government, BRACW and the technical working parties have identified Building Information Modelling (BIM) as a potential future solution to the issue of providing information to the end user. The BIM method involves the creation of a single digital model of a building which can be updated by the various parties involved in the construction process. This provides significant benefits at the design and construction stage of a development by increasing the efficiency of the design.

The BIM model can then be provided to the building owner upon completion of the development, significantly improving their ability to maintain and manage the asset in question. The BIM model can be updated throughout the life of the building, allowing the owner to maximise the potential of all the services and use the building as efficiently as possible. The information provided by BIM would be over and above what is currently required through Building Regulations and may only be applicable to larger projects and those where the client is conversant with and able to use BIM information.

Much of the work to encourage BIM in Wales has been undertaken by Constructing Excellence in Wales (CEW). CEW are an organisation tasked with improving the construction process in Wales. They receive support from the Welsh Government in the form of core grant funding. To date, CEW's activities include the establishment of a BIM Task Group, numerous training sessions and the development of a 'Client Toolkit' to assist in the application of BIM principals to local authority assets.

#### **Question 35**

Do you believe that BIM could potentially provide a solution to the issue of providing information for the end user?

## Chapter 6 – Life-Cycle Assessment (LCA)

### 6.0 What is ‘Life-Cycle Assessment’ (LCA)?

As energy efficient materials and equipment are increasingly being adopted in new construction projects around the world, we are witnessing a broadening of focus to include all environmental impacts associated with a building throughout its entire lifespan. Architects and engineers have started taking a holistic approach to assess a variety of environmental impacts associated with all stages of a building’s lifetime, from extraction of raw materials to demolition. These embodied impacts are becoming a major focus in the industry as numerous studies have demonstrated that up- and downstream impacts – before and after the building is operational – account for a highly significant portion of the total life-cycle impacts.

This broader, holistic approach is now referred to as Life-Cycle Assessment (LCA) – a multi-attribute quantification of environmental impacts which considers the entire lifecycle of a product or service across its entire value chain.

### 6.1 Summary of Research

The review carried out a high-level analysis of the different standards which currently set the rules for life-cycle assessment, identified a number of existing schemes which give consideration to life-cycle environmental impact, and provided examples of different life-cycle programmes and schemes implemented by other countries. Further research was conducted following the two Working Party meetings and feedback from various stakeholders. This paper provides a summary of the most significant points highlighted by our research and engagement with industry stakeholders over the past six months.

### 6.2 Existing systems, industry standards and schemes

#### 6.2.1 Environmental Product Declaration (EPD)

##### a) Description

An Environmental Product Declaration (EPD) is a verified and standardised way of disclosing the known environmental impacts of a product throughout its entire life-cycle. Formally known as Type III environmental declarations, EPDs are a voluntary reporting method which a number of manufacturers and service providers have adopted as a reliable way of communicating environmental information to their customers.

Unlike other labelling schemes like the CE marking and associated Construction Product Regulation (CPR), Environmental Product Declarations are not meant to establish conformity with any particular regulation. The purpose of EPDs is strictly informational, allowing customers to gain greater awareness of the environmental impacts associated with products and services.

Environmental Product Declarations are always based on a standardised assessment framework called a Product Category Rule (PCR), which is specific to a particular type of product or industry. The PCR framework defines a specific set of rules to carry out a life-cycle assessment for a type of product (e.g. insulation, carpet tiles, or adhesives) and guarantees the consistency of results

within a product category to allow potential comparison between products under very specific conditions.

### **b) Relevant standards**

The ISO 1404432 standard establishes clear requirements for a life-cycle assessment. It identifies the scope of the LCA, different phases and methodology of the assessment, interpretation of results, along with reporting and critical review of the LCA. The standard covers both the life-cycle inventory (LCI) phase and subsequent life-cycle assessment phase.

ISO 1402533 is the most stringent standard for evaluating life-cycle environmental impacts and the only recognised standard for publishing Type III environmental declarations. It identifies a clear set of requirements including pre-determined parameters and assessment methodology which together constitute the above-described Product Category Rules (PCR). The standard also requires that all Type III environmental declarations be administered by a programme operator specific to the industry; this can be a company, group of companies, trade association, regulatory body or other agency. All Type III declarations must then be verified by an accredited third party to ensure compliance. Finally, ISO 14025 requires that the environmental impacts claimed for an EPD be extracted from the results of a life-cycle assessment performed in accordance with the rules, methodology and criteria set out in ISO 14044.

EN 1580434 Sustainability of Construction Works was developed to help in the creation of Product Category Rules (PCR) specific to construction products and services for the European Market. The standard, issued in 2012, represents a great improvement towards the harmonisation of life-cycle impact assessment and reporting for construction products. In particular, the standard defines the parameters to be declared, the way in which they are collated and reported, and describes the stages of a product's life cycle that are considered in the EPD.

## **6.2.2 Green Guide to Specification**

### **a. Description**

The Green Guide to Specification is a document produced by the Building Research Establishment (BRE) to help designers choose materials and products to minimise a building's environmental impact. The Green Guide is effectively a catalogue containing more than 1,500 construction product types (specifications) for which a Life Cycle Assessment was carried out for different applications. All product types are given a Green Guide Rating from A+ to E based on the results of their life cycle impact assessment.

The product types are categorised into 9 element types based on their nature and application such as insulation, windows or floor finishes. The Green Guide does not provide information for specific building products but enables a comparison between various types of materials for a particular application.

### **a) Methodology**

The Green Guide to Specification is based on Life Cycle Assessments conducted for each product type to assess the associated environmental impact over a 60-year study period which includes

<sup>32</sup> [http://www.iso.org/iso/catalogue\\_detail?csnumber=38498](http://www.iso.org/iso/catalogue_detail?csnumber=38498)

<sup>33</sup> [http://www.iso.org/iso/catalogue\\_detail?csnumber=38131](http://www.iso.org/iso/catalogue_detail?csnumber=38131)

<sup>34</sup> EN15804 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products <http://shop.bsigroup.com/ProductDetail/?pid=00000000030279721>

manufacture, installation, use, maintenance, repair, replacement, and disposal. This type of Life Cycle Assessment is also called Cradle-to-Grave.

The life-cycle assessment for all Green Guide product types follows the BRE's Environmental Profile Methodology. This document was developed by the BRE as a Product Category Rule (PCR) for creating Environmental Product Declarations in accordance with EN 15804. The document provides additional requirements for assessing the life-cycle impacts of construction products where EN 15804 allowed variations in the approach. Being based on EN 15804, the BRE's Environmental Profile Methodology also complies with the broader ISO 14025 and ISO 14044 standards which define the overall methodology for life-cycle assessments and environmental declarations.

The Green Guide analyses the environmental impact of each specification against 13 environmental impact categories, from climate change, water extraction and ozone depletion to human toxicity, ecotoxicity and eutrophication. Environmental impacts for each category are assessed then normalised and weighted based on the BRE's prioritisation of impact categories. The final figures for each category are added to form a total final score known as Ecopoints. The Green Guide then awards a ranking from A+ to E based on the number of Ecopoints obtained.

### 6.2.3 BREEAM

#### a. Description

BREEAM (Building Research Establishment's Environmental Assessment Method) was the world's first sustainability rating scheme for the built environment and has contributed much to the strong focus in the UK on sustainability in building design, construction and use. BREEAM is now an international standard that is locally adapted, operated and applied through a network of international operators, assessors and industry professionals. Through its application and use, BREEAM helps clients measure and reduce the environmental impacts of their buildings and in doing so create higher value, lower risk assets.

BREEAM 2014 analyses the life cycle impacts of construction materials via the issue Mat 01 Life Cycle Impacts. This credit – like all material credits under BREEAM – is heavily weighted and offers up to 6 credits, contributing by up to 5.8% to the final score.

BREEAM takes a performance-based approach by assessing the life cycle impact of the following building elements; external walls, roof, windows, upper floor slab, internal walls, floor finishes and landscaping

The life-cycle data of each building element is based on generic types of materials from the Green Guide to Specification.

#### b. Use of the Green Guide to Specification

BREEAM Mat 01 awards points to building projects based on the environmental impact of materials incorporated into the building. This environmental impact of each material is assessed and quantified based on the Green Guide to Specification described earlier in this report, which follows the standardised life cycle assessment methodology defined by the Building Research Establishment (BRE).

BREEAM determines the building elements which are expected to be analysed for different building types. The Green Guide rating for each building material is then weighted based on its respective proportion of a particular building element. This weighted score, along with the lifecycle

CO<sub>2</sub> emissions, is then entered into the bespoke BREEAM Mat 01 Calculator to determine the final score and number of credits available to the project.

One of the main advantages of using the Green Guide is the concept of weighting and normalisation. While the idea of attributing greater importance to certain types of environmental impact can be considered controversial, one must acknowledge that very few project teams involve a life-cycle impact specialist who would be able to determine which impact category should be prioritised for a particular project. With this in mind, the Green Guide system allows non-specialists to assess the environmental performance of a product and prevents them from making design decisions that could potentially act against one-another.

The use of the Green Guide to assess the environmental impact of building materials is more practical than a detailed assessment specific to each individual product. However, the Green Guide does not differentiate proprietary products and uses generic product types. This method is more practical and easier to implement, yet presents higher uncertainties and margin for error than a detailed assessment of individual products. The absence of specific brand names and products also prevents any direct competition between manufacturers from an environmental perspective. Consequently, unlike other schemes and standards, the Green Guide is less powerful as a driver for product optimisation and industry improvement through increased market competition.

## 6.2.4 LEED

### a) Description

Developed by the U.S. Green Building Council, LEED (Leadership in Energy and Environmental Design) is a framework for identifying, implementing, and measuring green building and neighbourhood design, construction, operations, and maintenance. LEED is a voluntary, market driven, consensus-based tool that serves as a guideline and assessment mechanism. LEED rating systems address commercial, institutional, and residential buildings as well as neighbourhood developments.

The new version of LEED (LEED v4) takes a completely different approach to the materials credits compared to earlier versions of the scheme. LEED v4 includes two credits which specifically address the issue of life cycle assessment (LCA) and offers up to 7 points, which potentially contributes to the final score by an identical 7%.

The first credit takes a performance-based approach and rewards project teams which either re-use building elements and materials, or carry out a detailed life-cycle assessment of the relevant building materials. The second credit takes a different approach and focuses on the disclosure of environmental impacts by encouraging the use of materials for which an Environmental Product Declaration (EPD) is available. An additional point is available when such disclosure demonstrates a reduced environmental impact.

### b. LEED credit: Building and material re-use

LEED v4 encourages project teams to use salvaged materials as a substitute for new materials, and rewards the renovation of abandoned or blighted buildings. The points available for material re-use depend on the amount of salvaged materials used, as a percentage of the total amount of material used for a specific application. Points available under the building re-use option require that at least 50% of an existing building surface area be maintained.

**c. LEED credit: Whole-building life-cycle assessment**

This option requires that project teams undertake a full life-cycle assessment of the proposed building to analyse its potential effect on 6 major environmental impact categories.

This comprehensive approach intends to give project teams a wider understanding of the environmental impacts associated with various design solutions, and allow designers to choose the best options from an environmental point of view.

**d. LEED credit: Environmental Product Declaration**

As discussed above, LEED also goes beyond the usual performance-based approach and acknowledges the importance of public disclosure with regard to the environmental impacts associated with construction materials. By promoting an increased level of disclosure, LEED v4 takes a long-term approach and intends to allow architects and designers to make informed decisions in the selection of building materials as their respective environmental impacts become public knowledge.

LEED recognises the need for a standardised method of assessing environmental impacts to allow comparison, and requires the use of Environmental Product Declarations (EPD) carried out in compliance with the relevant ISO standards, the internationally-recognised standard for EPDs.

LEED offers a diversity of options rewarding the disclosure of known environmental impacts through industry-wide EPDs as well as product-specific EPDs.

This diversity of options is designed to encourage various levels of commitment to the reduction of life-cycle environmental impacts. The long-term goal of the USGBC is to initiate and support a transformation of the global market for building materials by encouraging disclosure and transparency.

**6.2.5 Policies and proposals from other administrations****a. The Dutch Environmental Impact Assessment Method**

The Dutch system for assessing the environmental impact of construction works (Bepalingsmethode Milieuprestatie gebouwen en GWW) was developed as an answer to the growing number of independent assessment schemes, with the goal of providing a fair and consistent benchmarking tool. The method utilises a harmonised set of rules for calculating and reporting environmental impacts of construction works. Environmental performance is assessed according to existing standards to cover the full life cycle of the product; assessments must follow EN 15804 for the cradle to gate period and EN 15978 from gate to grave.

Similarly to the Green Guide for Specification, the purpose of the Dutch system is to support architects, contractors and customers in the selection of construction products and design solutions. The strength of the Dutch system is its ability to provide a way of using and interpreting LCA data in the context of an actual building. Without being extremely advanced, the Dutch system takes one step further by providing teams with a methodology to integrate LCA data within the larger project.

## b. The French EPD Programme

The French EPD programme is built around the Inies<sup>35</sup> database, with the goal of providing a reliable and standardised way of assessing and communicating environmental performance. This initiative was born from the observation that an increasing number of products were being sold using sustainability performance claims for marketing purposes. The proliferation of unverified and unreliable environmental claims led the French authorities to take action and ensure a clear, accurate and verifiable methodology for assessing and reporting the environmental performance of construction products.

The database contains over 1,600 EPDs covering more than 30,000 construction products; it is publicly-funded and free to access. The most important aspect of the French system is the requirement for manufacturers to publish a compliant EPD if they want to advertise the environmental performance of their product. This system does not require that an EPD be available for every product on the French market, but it makes it mandatory when a manufacturer decides to claim any level of environmental performance for a product. This system prevents manufacturers from using unverified performance claims for the purpose of 'green advertising'. All EPDs in the Inies database must comply with EN 15804, along with a national addition (Complement National) in the form of the XP P 01-064/CN<sup>36</sup> standard. XP P 01-064/CN clarifies a number of aspects and presents examples to facilitate the implementation of EN 15804. In addition, XP P 01-064/CN also provides further requirements for the calculation of various indicators based on NF P 01-01037, the French standard governing the creation of EPDs for construction products before EN 15804 was published.

## c. The EU Single Market for Green Products Initiative (PEF)

The European Commission initiated the development of the Product Environmental Footprint (PEF) and Organisational Environmental Footprint (OEF) as part of its Single Market for Green Product Initiative. The objective of this programme is to create a single metric for reporting life-cycle environmental impacts within the European market. The pilot started in 2013 and is expected to conclude in 2016.

The Commission identified four major goals for the PEF/OEF pilot programme:

- Development of PEF Category Rule (PEFCR)
- Development of OEF Sector Rule (OEF SR)
- Evaluation of communication vehicles
- Development of a verification process

The PEF/OEF is intended as a harmonised approach to life-cycle assessment and reporting based on existing ISO standards such as ISO 14044 for LCA methodology and ISO 14025 for LCA-based environmental claims. The PEF/OEF standard includes 14 LCA environmental impact categories which can be reduced to the 3 most 'important aspects' in the final step of communication to the customer.

<sup>35</sup> <http://www.base-inies.fr/inies/>

<sup>36</sup> <http://www.boutique.afnor.org/norme/xp-p01-064-cn/contribution-des-ouvrages-de-construction-au-developpement-durable-declarations-environnementales-sur-les-produits-regles-re/article/818868/fa178629>

<sup>37</sup> <http://www.boutique.afnor.org/norme/nf-p01-010/qualite-environnementale-des-produits-de-construction-declaration-environnementale-et-sanitaire-des-produits-de-construction/article/663460/fa136284>

One of the main goals of the initiative is to allow the creation of Product Category Rules, which are an essential step in the standardisation of life-cycle assessment to allow comparison between products. This is an important difference between the PEF/OEF and the usual ISO 14025 standard; the European initiative breaks with existing standards and clearly identifies comparison between products and services as a major objective for the PEF/OEF programme. The Commission acknowledges that existing standards are not sufficient to enable reliable comparison between products due to inconsistencies between LCA datasets and the lack of consideration for the 'in use' period and actual intended application of the product.

Another important concept is the creation of reference products in each product group. These reference products will be used as benchmarks to represent the median impact score within a product category. According to the definition, 50% of products in the category will have a lower impact score and 50% will have a greater impact score. This concept intends to facilitate the communication of a product's environmental impacts relative to the reference product and improve readability.

This goal of enabling reliable comparison between products introduced the need for increased verification; while ISO 14025 relies on the review of the methodology used, PEF/OEF requires the verification of the actual results and a much more thorough evaluation of the data.

The programme is currently undergoing its second phase of consultation with industry professionals and organisations.

### **6.2.6 Industry Consultation**

Consultation with industry stakeholders, and in particular construction product manufacturers, was undertaken to understand the benefits and potential challenges associated with life-cycle assessments from a manufacturer's point of view. Working Party discussions acknowledged that recommendations and proposals for addressing the issue of LCA should consider the impact that additional regulation may have on the construction product industry, weighed against the potential benefits of making LCA data widely available.

Stakeholder consultation took place in the period between May and August 2015. A number of UK and global manufacturers were contacted, including Knauf Insulation, Akzo Nobel, Legrand and Pilkington among others. The Welsh Government and Construction Products Association also organised a consultation event with over 20 members of the on 17 July 2015 at Bath University. In addition, various other stakeholders were consulted including the EU Commission, LCA practitioners and trade associations. The outcomes from the consultation is summarised below.

### **6.2.7 The progress of LCA**

The Consultation revealed that most trade organisations within the construction industry have been taking action towards the creation of PCRs and generic EPDs. In most instances, larger manufacturers have been driving the process at European level to ensure a consistent response across all EU Member States and minimise redundancy. It was confirmed that the implementation of EN 15804 has been highly beneficial in the ongoing process of harmonising the creation of EPDs in Europe. In addition, a number of manufacturers highlighted the positive role played by the ECO Platform<sup>38</sup> in standardising the creation of EPDs to satisfy the variety of local requirements and enable the creation of a single EPD valid across most European countries. ECO Platform was developed by a number of EPD programme operators and trade organisations to enable the

<sup>38</sup> ECO Platform is an International Non-Profit Association established by European EPD Program Operators <http://www.eco-platform.org/>



creation of EPDs that can be recognised by most European and international EPD operators, and accepted in a large number of countries. As a voluntary programme, ECO Platform has not been adopted by all manufacturers but provides considerable benefits to those who wish to ensure compliance of an EPD with various different local requirements.

### **6.2.8 The drivers for LCA**

The first review paper identified a number of drivers for LCA, most being voluntary assessment schemes such as BREEAM and LEED. It was our assumption that customers' demand for LCA was increasing and driving the market to publish EPDs. However, consultation with manufacturers and the Construction Products Association (CPA) revealed that the demand for LCA data from customers is in fact relatively low, and isn't currently increasing as much as we initially believed. Most manufacturers reported that while they are often actively engaged in producing EPDs, the reason for this engagement is not coming from customers but from EU Member States with specific regulations that require manufacturers to publish compliant EPDs.

### **6.2.9 The benefits and issues of LCA**

There are many potential benefits to LCA; some aspects can be beneficial to consumers, others to manufacturers, and most are expected to drive the construction industry towards more sustainable practices.

#### **a. From a manufacturer's point of view**

A number of manufacturers reported having gained a better understanding of their supply chain and the environment impacts of every stage of production by carrying out a life-cycle assessment. LCA is recognised as having the potential to become a useful tool for manufacturers to identify inefficiencies along their supply chain and improve the life-cycle environmental impact of their products.

The consultation with manufacturers provided an insight into the practical difficulties associated with conducting life-cycle impact assessments and in particular publishing EPDs. The overwhelming majority of manufacturers reported very substantial costs associated with conducting a life-cycle assessment for an EPD. Manufacturers also pointed out that although EN 15804 and ECO Platform have somewhat harmonised the LCA process across Europe, the variety of standalone LCA schemes implemented by national European governments often contain different requirements which can lead to additional work to comply with each individual schemes. It is understood that this cost, while substantial for major manufacturers, is particularly consequent for smaller manufacturers who may not have the financial and human resources of the bigger players and often need to rely on generic EPDs produced by the relevant trade associations.

#### **b. From a consumer's point of view**

Most stakeholders reported that customers show a lack of understanding for EPDs, particularly regarding the type and usefulness of the information they contain. EPDs are a method for reporting life-cycle environmental impact and demonstrate a certain commitment to improving manufacturing processes; however, the current standards still present very significant issues related to the comparability of products and EPDs, as discussed further in this report. The impact figures provided by an EPD are very difficult – if not impossible – to assess reliably in relation to other products or industry benchmarks, especially without advanced knowledge and the use of dedicated software tools. Consequently, the information contained on an EPD is of little use to most consumers whose objective is to perform a simple, direct comparison between a selection of products and demonstrate superior environmental performance for their building.

In addition, EPDs display environmental data for a number of impact categories, from global warming to eutrophication, and do not give guidance on the importance of each category. Prioritising impact categories is a complex issue which requires specialist knowledge and potentially subjective decisions. This high level of complexity, combined with the lack of easy comparability was reported to create great confusion amongst customers.

### **c. As a driver for the construction industry**

LCA is often seen as a potential driver for the improvement of the construction market on the issue of life-cycle environmental impact. By making environmental information available, LCAs could create competition based on environmental performance and lead all manufacturers to improve the performance of their products.

This assumption has been confirmed in some cases, such as in the UK, where a system has been in place to enable a consistent and reliable interpretation of the LCA data contained on EPDs and therefore allow direct comparison between products. The Green Guide to Specification has provided manufacturers with a consistent methodology to assess and also interpret, normalise, compare and report environmental performance and has been a major driver for the construction industry in the UK. The Green Guide however, is a complex and proprietary scheme owned by the Building Research Establishment, which offers little transparency and mostly relies on generic data (industry average). It is therefore limited in its application on a larger scale.

Since a similarly reliable and consistent system for interpreting and comparing LCA data is not available on a European and global level, the industry has been struggling to make adequate use of the data provided by the EPD. Most stakeholders recognise that despite recent efforts to harmonise methodologies across Europe, the direct comparison of products using EPD data presents too much uncertainty to be a clear indicator of the environmental performance of construction products in relation to other alternatives available on the market.

Consequently, since EPDs do not currently enable easy and direct comparison between products, they usually fail to promote sustainable manufacturing and construction practices.

### **6.2.10 Conclusions from our Research**

The combination of our research and consultation with various industry stakeholders has led us to the conclusion that while life-cycle assessment is widely recognised as “the next big thing” in the field of sustainable construction and offers great potential, it also presents a number of significant issues which currently hinder its potential use as a valid environmental assessment method for construction products.

### **6.2.11 A great potential**

The strength of a life-cycle assessment lies in its comprehensive nature where every stage of a building’s lifespan is considered and assessed. LCA is widely recognised as the most comprehensive assessment of a building’s true sustainability performance and it is generally agreed that LCA could become a very useful tool for customers to make informed purchasing decisions, as well as improving manufacturing and construction processes. In addition, the multi-criteria approach of a life-cycle assessment will help customers and local authorities focus on certain environmental aspects which may be considered a priority due to the location of a project, local policies or general preferences. The wide scope of life-cycle assessment allows a ‘big picture’ approach to give consideration to certain crucial environmental aspects which other

methods have overlooked; however, this complexity is also the source of many challenges which need to be addressed before LCA can achieve its full potential.

### **6.2.12 Harmonising standards**

The industry has evolved rapidly in recent years with the publication of a number of governing standards for performing life-cycle assessments. In particular, ISO 14025 defined clear rules for the assessment and verification of life-cycle environmental performance and creation of EPDs. In the past 3 years, EN 15804 has been a significant step forward in harmonising the process for construction products and improve the overall reliability and comparability of products based on their EPD. EN 15804 provides a solid base for manufacturers and trade organisations to develop PCRs that can be used and recognised across Europe and has helped harmonise the assessment and reporting methodology to avoid redundancy and disparity between European countries. It must be noted however that a number of European countries have specific requirements beyond EN 15804 that manufacturers must meet in order to make an EPD compliant. A good example of additional requirements is the French national addition XP P 01-064/CN or the additional requirements imposed by the BRE in the UK. These local variations can put additional pressure on manufacturers who have to comply with a number of different requirements across the European market.

### **6.2.13 Uncertainty on the results**

The recent harmonisation of standards across the EU has considerably improved the reliability of the results provided by EPDs. However, despite these improvements, a number of significant issues still remain, that usually make any reliable comparison between products and EPDs very difficult.

The issue that is currently seen as the main source of uncertainty in the results lies in the variations between the different databases used to carry out a life-cycle assessment. There are a number of life-cycle databases from which LCI data can be extracted to build an EPD. Most of these databases are proprietary and often present great disparity in their assessment of a particular process. Consequently, unless otherwise demonstrated, a product assessed with one database should not be compared against another product assessed with a different database due to potentially significant disparities in the secondary data used in the calculation.

The potential comparability of results obtained using two different datasets has not been demonstrated and the variance on the end result due to these disparities is not being quantified. In addition, there is a crucial need for LCA standards as well as practitioners to quantify the uncertainty on the figures provided as part of an EPD. The lack of information on the margins for error at every step of the calculation makes it impossible to accurately quantify the potential margin for error on the end result and evaluate the overall reliability of any LCA calculation. This lack of information is a major obstacle to any reliable comparison between products.

### **6.2.14 Evaluating products in their context**

One of the most significant areas for the improvement of LCA and EPDs in particular is the current lack of focus on the intended use of the product being assessed. Most of the industry now understands that assessing the environmental performance of a product is only relevant at building level, with a specific end-use application where the operational stage of a product's lifespan is an accurate representation of its intended use.

The data provided by EPDs is only useful as part of a wider calculation that takes into account other aspects of a building's lifespan, including operating energy use and end-of-life processing. It is usually believed that this process can only be achieved by incorporating life-cycle product data within a computer model or calculator. Similar solutions already exist in the form of Building Information Models (BIM) and other proprietary software such as BRE's IMPACT<sup>39</sup>.

### 6.3 Main proposals

In the light of the analysis set out above, Working Party discussions and the consultation with industry stakeholders, it was concluded that a regulatory approach would not be a practical option at this time.

The following sections detail the reasons that led to this conclusion and suggest a number of areas that might be considered for promoting LCA outside of regulation.

#### 6.3.1 A Regulatory Approach

Through investigations into existing regulation across Europe and in particular France and the Netherlands, we were able to identify two distinct routes for regulating LCA:

- **Mandatory labelling.**

This route requires mandatory labelling of all relevant products and services to reflect environmental performance based on life-cycle data. A product which does not display the required information would not be allowed for commercialisation.

- **Voluntary labelling, mandatory requirements.**

This route does not require environmental labelling, but mandates compliance with specific standards when a manufacturer chooses to display environmental performance on their products.

In light of our research and the consultation with industry stakeholders, the conclusion has been drawn that it would not necessarily be useful, at this moment in time, to implement requirements for life-cycle environmental impact assessment into the new Building Regulations for Wales. The reasons behind this conclusion relate to the lack of clear benefits associated with LCA for consumers, manufacturers and the construction industry as a whole. In addition, the industry is currently moving towards the elimination of independent national schemes with the creation of a harmonised system and methodology at European level.

#### Question 36

Do you believe the labelling of construction products based on LCA data should be mandatory? Please explain why if you do not.

#### a. Lack of clear environmental benefits

As described previously in this report, it is highly questionable whether life-cycle assessment methods and standards are currently refined enough to enable reliable assessments and comparisons of construction products. While great environmental benefits could be gained by enabling product selection based on environmental performance, this lack of reliability makes very difficult any performance-based assessment and comparison. The variations in the secondary

<sup>39</sup> <http://www.impactwba.com/>

data extracted from various proprietary databases, the lack of clear quantification of uncertainties, along with the need to consider products for their intended use in the proposed building are extremely significant issues that need to be addressed in order for LCA to become a reliable source of information on the environmental impact of construction products. These issues are being researched extensively and there is no doubt that the industry will find ways to refine LCA processes and improve the reliability of the results in the coming years. It is questionable however, whether significant investment from the Welsh Government and manufacturers for developing a regulatory framework for LCA are currently justifiable considering the lack of clear evidence of environmental benefits.

### **Limited commercial benefits for manufacturers**

The consultation revealed that manufacturers report limited or no commercial advantage associated with the publication of an EPD. Manufacturers overwhelmingly agreed that customers seem to show very little interest in EPDs, which suggests that providing an EPD may not be particularly beneficial from a commercial point of view. Manufacturers also pointed out that because EPDs are intended as informational only and cannot offer reliable comparison between products without extensive work, they do not allow 'good' products with high environmental performance to be recognised and gain competitive advantage over products with lower performance. Consequently, it is very unlikely that the commercial benefits for manufacturers would outweigh the significant cost associated with the creation of an EPD.

#### **Question 37**

In your experience, do the commercial benefits of offering an EPD outweigh the cost of performing a life-cycle assessment?

#### **Question 38**

Are you aware of concrete improvements brought to a manufacturer's supply chain following a life cycle assessment?

### **Working towards a single European system**

The opinion expressed by the European Commission is that another isolated LCA regulatory scheme would not be a productive use of manufacturers and government resources at a time when all European countries are working together towards a common harmonised process for assessing and reporting life-cycle data.

#### **6.3.2 Working Outside of Regulations**

While it is believed that regulating LCA on the Welsh market would not be practical nor necessarily useful at this moment in time, it is acknowledged that LCA is a particularly promising environmental assessment technique that ought to be developed further to reach its full potential. There are numerous ways by which governments can promote life-cycle assessment and support the construction industry in developing the necessary improvements to LCA processes and standards. Our research along with the stakeholder consultation has led us to suggest the following options.

## Increase awareness and understanding

One of the clear outcomes of the consultation is the general confusion and lack of understanding around life-cycle environmental impact assessment, both from manufacturers and customers. In addition, there seems to be a general lack of knowledge around the inherent limitations associated with the results of a life-cycle assessment. The general public as well as the wider construction industry would certainly benefit from gaining greater understanding of the potential benefits and adequate use of LCA data. In particular, the limitations around the comparison of products, uncertainties, and intended use of a product should be clearly established and explained.

### Question 39

Were you fully aware of the limitations associated with life-cycle assessment before reading this review?

## Support improvements to LCA processes

As detailed in this report, the two major issues currently hindering the development of LCA are the lack of information on the reliability, comparability and uncertainty around the results, along with the difficulty in assessing building products as they are intended to be used in the proposed building. The Welsh Government could take action and support the industry to solve these issues.

### Reliability

On the subject of reliability of the results, it appears little information exists on the uncertainty associated with the results of a life-cycle assessment. In particular, there has been limited research on quantifying the variations between the different LCI databases and how these differences impact the comparability of EPDs. In addition, very little has been done to quantify the uncertainty of the results of an LCA and how this uncertainty should be considered when comparing products and design solutions.

Consequently, it has been suggested that the Welsh Government could sponsor research into these two areas in order to help the construction industry understand how to make the best use of LCA data.

### Question 40

Do you believe there is a need to research, quantify and improve the accuracy of the results of a life-cycle assessment?

### Question 41

If answered Yes to question 40, what role might government (Wales or UK) take in the promotion and sponsoring of such research?

## Context

The issue of assessing products in the context of the actual building in which they are intended to be used is one of the key areas currently being discussed by LCA professionals. It is widely believed that the complexity of an assessment that takes into account the product's life cycle along

with all the different aspects of the proposed building can only be overcome by powerful software solutions such as BIM. While BIM is becoming more common in the construction industry, it is still a complex and costly service which tends to be used on larger, more demanding projects.

### **Take part in the development of new and improved European standards**

As discussed above, the European Commission is currently working on the development of a single methodology for the calculation of life-cycle environmental impact through the Single Market for Green Product Initiative. This methodology, referred to as Product Environmental Footprint (PEF) is currently in its pilot phase, undergoing consultation on the first draft of the PEF Category Rule. Individual companies can participate in the consultation by registering as a stakeholder. In addition, Member States are currently engaged in the development of the PEF at government level through the Steering Committee and Technical Advisory Board.

It is suggested that the Welsh Government promotes the development of the new generation of European standards by supporting Welsh manufacturers who wish to participate in the consultation and to consider involvement at government level alongside the UK Government in collaborating with the European Commission via the Steering Committee and Technical Advisory Board.

## **6.4 Life-Cycle Assessment: Future thinking**

### **6.4.1 Addressing the issue of unfounded environmental claims**

One of the main goals for the development of ISO 14044, ISO 14025 and EN 15804 was to tackle the proliferation of unfounded environmental claims for marketing and advertising purposes. The standards provide a consistent way of assessing and reporting environmental impact and provide better confidence in the sustainability claims made by product manufacturers.

Welsh Government does not believe this is an issue that can or should be addressed at a Wales level but would look to encourage dialogue amongst the home nations as to how we might start to address obstacles to improving the level of trust and reliability in sustainable products and services. Following the example of France, it is possible to imagine regulating environmental claims to ensure that all claims are based on reliable standards and a methodology that enables comparison and verification. Such regulation would require that when manufacturers wish to make a claim related to the environmental performance of their products, this claim would have to be made in accordance with a specific standard such as EN 15804. Due to the significant questions surrounding the reliability of LCA and EPDs in particular, we believe that extensive work and research are needed to quantify and improve the accuracy of LCA before any regulation could be contemplated.

#### **Question 42**

Do you believe that unfounded environmental claims made for marketing purposes are an obstacle to the promotion and success of products that are 'truly' sustainable?

### 6.4.2 Promoting Building Re-use and Refurbishment

A recent study by the National Trust for Historic Preservation states that “it takes 10 to 80 years for a new building that is 30 percent more efficient than an average-performing existing building to overcome, through efficient operations, the negative climate change impacts related to the construction process”.

This report, along with numerous studies shows that the cumulative environmental impacts of a new building can outweigh the benefits of a potentially more energy-efficient design. The figures also demonstrate the significantly lower environmental impacts associated with refurbishing an existing property. The construction industry is only starting to realise the considerable environmental benefits of re-using buildings and materials, as seen by the recent focus on these techniques by the LEED and BREEAM systems.

In the future, the review suggested that the Welsh Government may wish to promote the better understanding of the whole life benefits of the refurbishment of existing properties over their demolition and the construction of a new building and that that this might involve extension the current BREEAM funding policy to make the case for the construction of a new building against the benefits of refurbishing an existing one.

**Question 43**

Do you believe that environmental impact of new buildings compared to that of refurbishments is a consideration in decisions to build?

**Question 44**

In order of significance can you list the three most important factors in deciding whether to refurbish an existing building or build a new one?

- 1.
- 2.
- 3.



## Chapter 7 - Responsible sourcing

### 7.0 What is 'Responsible Sourcing'?

Responsible Sourcing of materials provides a holistic approach to managing a product from the point at which component materials are mined or harvested, through manufacture and processing. It is a voluntary commitment which is demonstrated through an ethos of supply chain management and product stewardship and encompasses social, economic and environmental dimensions. Responsible Sourcing addresses aspects such as stakeholder engagement, labour practices and the management of supply chains serving materials sectors upstream of the manufacturer.<sup>40</sup>

As production chains expand, companies of all sizes and sectors are devoting more efforts to managing supply chain risks and building long-term supplier relationships. Improving social and environmental performance in production chains is becoming a major element of this process. Effective supply chain management is a way for businesses to build a competitive advantage. It is the hope of many stakeholders in the construction industry that working towards improving social and environmental standards in the supply chain will become a natural extension of companies' commitment to corporate responsibility and, as such, forms part of their overall business model.<sup>41</sup>

### 7.1 Summary of Research

There are currently no existing provisions for the responsible sourcing of materials in the current Approved Document 7 - Material and Workmanship (Wales). This review has therefore looked existing relevant standards, guidance and policies, that could potentially be adopted by Welsh standards, by way of incorporating the BREEAM and CfSH requirements into the Welsh Building Regulations. This included current British Standards, various responsible sourcing certification schemes for construction products used around the world and international guidelines on environmental and social responsibility. The fact that the number of these standards and certification schemes has increased in recent years, reflects the growing importance of responsible sourcing in the construction industry and the built environment. Further details of this research are provided below.

### 7.2 Standards, Responsible Sourcing Certification Schemes guidelines and rating systems

The Appendix in Chapter 8 sets out the main international standards, certification schemes and environmental rating schemes

### 7.3 Main proposals

A number of proposals for Working Party discussion were put forward as to how the responsible sourcing aspects of CfSH and BREEAM could be integrated within the new Building Regulations for Wales. These are set out in Section 7.2.1 together with their intended effects. Also detailed are the reasons why ultimately, it was decided these proposals should not become regulation following Working Party discussions.

This chapter also sets out below a number of non regulatory recommendations for promoting the responsible sourcing of materials outside of regulations have been made. The aim of these is to

<sup>40</sup> <http://www.bre.co.uk/page.jsp?id=1514> (accessed on 11/11/2015)

<sup>41</sup> ICC guide to responsible sourcing (International Chamber of Commerce, 2008)

promote discussion on how voluntary criteria for responsible sourcing in Wales might be encouraged. These recommendations are discussed in Section 7.3.2

### **7.3.1 Regulatory options**

#### **7.3.1.1 Implement the scoring methods from the CfSH and BREEAM rating systems**

This approach would involve utilising the scoring method used to determine the number of credits achieved under the responsible sourcing issues for both rating systems. The regulations could then specify the need for new projects to specify materials that have been responsibly sourced under specific certification schemes in order for a pre-determined score to be achieved.

The thought behind implementing this approach into regulations is that this would promote the use of responsibly sourced materials for building in Wales, as well as increasing competition in the market, with manufacturers making it one of their top priorities that their products are appropriately certified by a responsible sourcing scheme. There would also be potential for an industry standard score to be defined within the regulations.

#### **7.3.1.2 Sustainable Procurement Plan**

The aim of this proposal was to ensure principal contractors on medium to large developments have a procurement plan in place that sets out a clear framework for the responsible sourcing of materials which will guide procurement for all parties involved in the specification and procurement of construction products throughout a project's duration. The plan could cover the following content as a minimum:

1. Risks and opportunities are identified against a broad range of social, environmental and economic issues. BS 8902:2009 Responsible sourcing sector certification schemes for construction products- specification can be used as a guide to identify these issues.
2. Aims, objectives and targets to guide sustainable procurement activities.
3. The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible.
4. Procedures are in place to check and verify that the sustainable procurement plan is being implemented/adhered to on individual projects. These could include setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate compliance.

This would ensure all members of the supply chain on a project are aware of their responsibilities with regards to providing responsibly sourced materials.

#### **7.3.1.3 The implications of introducing regulations**

Following discussions with the Working Party members and further research being conducted on this topic, it was concluded that it would not be practical at this time to introduce responsible sourcing requirements into the Building Regulations for Wales. For regulation on this issue to be effective, the same conditions must be applied to all relevant parties across the industry. However, it will inevitably be the case that many companies, especially those smaller in size (SMEs), will find it difficult to comply with these requirements.

The difficulties they would likely face have been detailed below. These issues were also the focus of a study conducted by Loughborough University (Glass, J., 2012)<sup>42</sup>, which was discussed in the second review paper (July 2015).

It has been found that there is a general lack of awareness concerning responsible sourcing amongst many SMEs. Small contractors, suppliers and manufacturers often work on smaller scale projects where clients themselves are not aware of responsible sourcing certification or not concerned about it. The result of this is that SMEs have less exposure to the requirements of the process and if they are aware of them at all, there is less opportunity to pursue certification. It is the opposite for larger companies, who often work for clients that have a significant interest in making sure responsibly sourced products are used on their buildings. This promotes a high level of corporate social responsibility, which can potentially bring commercial benefits. Therefore, larger contractors, manufacturers and suppliers are usually more aware from the outset of the project that they will need to provide evidence that the products specified have been responsibly sourced.

By doing this, larger contractors, suppliers and manufacturers have a competitive advantage over those who do not and are more likely to be engaged on projects which require these products to be used. Suppliers and manufacturers will be more likely to sell their products and contractors will be more likely to be engaged on the construction of new developments if they can demonstrate they have a responsible supply chain.

It is for this reason, that it would be very difficult to implement responsible sourcing requirements into the new Building Regulations for Wales. Larger companies simply have greater resources, both financial and human, than SMEs to devote to the responsible sourcing certification process. For example, achieving BES 6001 certification without having a certified management system against ISO standards would be a very difficult task.

There are also significant costs associated with this, something which many smaller companies are not able to afford. In addition, many SMEs do not have the capacity to keep an organised database for all the documentation required for products to obtain certification. The result of this is that large enterprises will be in a much better position to meet building regulation requirements, resulting in customers engaging with these companies more readily than the smaller ones. The consequences could be as significant as small manufacturers and suppliers having to cease trading, due to the fact they are unable to comply with the regulations. It is apparent that many organisations would not be ready for these requirements to be set under new regulations.

#### **Question 45**

Do you agree that, at this time, it is not practical to introduce responsible sourcing regulations for Wales?

<sup>42</sup> GLASS, J., 2012. Engaging small firms in sustainable supply chains: responsible sourcing practices in the UK construction industry. *Int. J. Agile Systems and Management*, 5 (1), pp. 29 - 58

**Question 46**

What in your view are the biggest barriers to introducing responsible sourcing regulations for Wales?

**7.3.2 Outside Regulation**

Legislation, even if practical, may not be the best way of encouraging responsible sourcing. There is an argument that one way of levelling the playing field between small and larger companies is for the responsible sourcing to take place at the supplier level. That is, contractors would purchase material and products in the knowledge that what they were being offered by suppliers had been responsibly sourced. Other mechanisms and activities that might encourage adoption of responsible sourcing practice, an alternative to regulation might be identified. We are therefore interested in finding ways to support and encourage actions by SMEs who are voluntarily aspiring to obtain responsible sourcing certification for products and materials they use. This could be driven by the larger suppliers and manufacturers of construction products, but there may be a supporting role for government.

**Question 48**

What would be the best method(s) of raising awareness of responsible sourcing amongst SMEs? Would you be able to provide any examples?

Documentation is the key to demonstrating responsible sourcing. Obtaining and archiving this documentation can be a very onerous process due to the many stages of the supply chain that must provide information to show that a product has indeed been responsibly sourced. Showing chain of custody for timber products is a prime example of this.

Larger manufacturers, suppliers and perhaps contractors who have an established understanding of responsible sourcing requirements could take the lead on producing and disseminating guidance alongside government. They can pass on their knowledge of the most efficient way of obtaining and documenting the required information. SMEs would gain valuable insight into achieving or providing evidence of responsible sourcing certification in a timely manner without excessive use of human resources and significant financial cost. A greater understanding within the industry of the best way to tackle this issue could lead to responsible sourcing certification becoming a standard industry practice.

**Question 49**

Could more be done within the industry to create guidance on achieving responsible sourcing certification, can you give examples?

**7.4 Future thinking****7.4.1 Future Potential for Regulations**

The conclusion of this review is that it is currently neither desirable nor practical at this time to introduce requirements for the responsible sourcing of materials into the Building Regulations for Wales. As the review has established, the main issue with creating regulation for this topic is that,

for a variety of different reasons, smaller companies would find it disproportionately difficult to provide and manage the evidence required to demonstrate compliance.

The following thoughts are offered as pointing to potential future activity aimed at embedding responsible sourcing. Clearly there is value in awareness raising and improving SMEs understanding of the environmental and social benefits and the different responsible sourcing schemes but a key action would be around reducing the burden on smaller organisations.

#### 7.4.1.1 Scaling the requirements

One approach to consider would be to scale back responsible sourcing regulations for SMEs, making them more realistic to achieve. Smaller companies could have to achieve simpler and/or specific versions of responsible sourcing requirements to ease them into complying with any new regulations. This might be based on a number of key materials and products.

Larger companies often find meeting responsible sourcing standards to be much more straightforward. Working with the bodies that run responsible sourcing certification schemes, a method to create more credible regulations could be developed, that ask companies of a certain size to achieve a higher level of requirements. For example, by making the credits in BES 6001:2009 tougher to achieve or extending their scope. This could include re-orienting the standard around key risks, thus better reflecting different supply-chains, having additional credits for good practices and mandating 100% traceability of constituent materials.

However, consultation with industry stakeholders would be required, to decide whether or not this would be a suitable approach.

#### Question 50

Do you agree that scaling back responsible sourcing requirements for SMEs would make creating new regulations more practical

#### Question 51

In terms of market competitiveness within the industry, do you feel the approach outlined above would reduce the gap between large and small companies, or shift the disadvantages to the larger companies?

#### 7.4.1.2 Simplifying the documentation process

Before this point can be realistically reached, other changes would ideally need to be happen in the industry. An opinion that has kept reoccurring throughout this review is that the process of obtaining and storing the information required for responsible sourcing certification is too onerous, and a significant administrative burden. There is a large amount of paperwork required and there was a general consensus amongst the Working Party members that the process should be digitised in order to save time, as well as financial and human resources. This is not something that can be accomplished just through government action; consultation with the organisations that run the certification schemes is required. If the certification process for the different schemes can be streamlined with the majority of actions carried out online, this will encourage the companies to pursue certification more often.

#### Question 52

To the best of your knowledge, do you feel there is too much 'red tape' which can interfere with achieving responsible sourcing certification?

### 7.4.1.3 Major suppliers to lead the way

There are clear signs that an increasing number of suppliers of construction materials in the UK have placed responsible sourcing high on their agenda, which is encouraging. Major building merchants such as Travis Perkins, Wickes, Jewson and Buildbase supply products that have been certified as responsibly sourced. The majority of these products are timber based, which reflects the need to comply with the UK Government Timber Procurement Policy. Other certified products are available though, for example, Travis Perkins supply a variety of roofing materials certified under BES 6001 and Buildbase have a large selection of brickwork and blockwork sourced under the same scheme. More could still be done to increase the amount of products certified, but the fact these large suppliers are aware of the benefits of responsible sourcing is a sign that the industry may be ready for regulation in the future.

However, in order for regulations to be developed that will be fair and beneficial for the whole construction industry in Wales, smaller building supplies companies must also be able to provide a similar range of responsibly sourced products, relative to their size.

One issue that has been identified by industry stakeholders that must be very carefully considered, is that although the larger UK suppliers and manufacturers have a strong understanding of responsible sourcing and provision of certified products, if regulation is introduced then overseas suppliers might claim to be disadvantaged in Britain if responsible sourcing certification is not easily available to them or only valued in one of their export markets. It may prevent them from being able to sell their products in the country. UK-based companies, especially Contractor's, who are wishing to import products from their overseas supply chains, may also be disadvantaged by this. This whole area needs to be approached carefully as there are strict European laws supporting a single EU market without barriers to trade, which new regulations in Wales could be.<sup>43</sup> Any responsible sourcing requirements should be realistically achievable by not just UK companies, but also ones in the EU and those outside it.

This issue could suggest that taking a voluntary approach outside of regulations would be the most beneficial option. However, further research on how future building regulations in Wales could implement responsible sourcing requirements that do not compromise European laws should be carried out, rather a potential regulatory approach being dismissed at this stage.

Any responsible sourcing requirements should be realistically achievable by not just UK companies, but also ones in the EU and those outside it.

#### Question 53

In your opinion, could major building suppliers and manufacturers do more to promote the use of responsibly sourced materials?

<sup>43</sup> <http://www.siniat.co.uk/blog/pioneering-responsible-sourcing-past-and-future/> (accessed on 03/11/2015)

## Chapter 8 - Appendix

### Standards, Responsible Sourcing Certification Schemes guidelines and rating systems

#### 8.1 Existing Industry Standards

##### ISO 14001

ISO 14001:2004 sets out the criteria for an environmental management system and how it can achieve certification. It maps out a framework that a company or organisation can follow to set up an effective environmental management system. It can be used by any organisation regardless of its activity or sector. Using ISO 14001:2004 can provide assurance to company management and employees as well as external stakeholders that environmental impact is being measured and improved.

A manufacturer or supplier who is certified under ISO 14001 is likely to have ensured that responsible sourcing is an integral part of their business.<sup>44</sup>

##### BS 8902:2009 Responsible Sourcing Sector Certification Schemes for Construction Products

BS 8902:2009 provides a framework for the development of sector certification schemes for responsible sourcing of construction products. It gives requirements for the management, development, content and operation of sector certification schemes for responsible sourcing and supply of construction products. It does so in alignment with the guidance given in BS 8900:2006 Guidance for managing sustainable development.<sup>45</sup> The relationship between BS 8902, any sector certification schemes developed in conformity with it and the organisations likely to be involved is included in the standard.

##### UK Government Timber Procurement Policy

The UK government has recognised the pressures placed on our forest resources and has had a timber procurement policy since 2000. This policy requires that all timber and wood-derived products procured for government schemes originate from:

- Legal and sustainable sources, or
- FLEGT (Forest Law Enforcement, Governance and Trade) licensed or equivalent sources

Evidence of legality and sustainability can be shown through compliance with third party, independent forest certification schemes.<sup>46</sup>

#### 8.2 Responsible Sourcing Certification Schemes

##### 8.2.1 BES 6001 The Framework Standard for Responsible Sourcing

BRE Global developed a Framework Standard for Responsible Sourcing (BES 6001) along with an associated independent third-party certification scheme. The aim of this Standard and

<sup>44</sup> <http://www.iso.org/iso/home/standards/management-standards/iso14000.htm> (accessed on 07/04/2015)

<sup>45</sup> <http://shop.bsigroup.com/ProductDetail/?pid=000000000030191223> (accessed on 06/05/2015)

<sup>46</sup> <https://www.gov.uk/timber-procurement-policy-tpp-prove-legality-and-sustainability> (accessed on 08/04/2015)

certification scheme is to help organisations manage and reduce any negative environmental and social impacts throughout the supply chain.

There are some key differences between BES 6001 and BS 8902:2009. The most important of all is that the former does not compete with the latter. Whereas BES 6001 is a Standard against which products can be assessed and certified, BS 8902:2009 is a Standard against which other sector standards can be assessed and accredited by third parties, such as UKAS. BS 8902:2009 sets out criteria for the development, operation and management, and future improvements of sector standards. BS 8902:2009 is not in itself a Product Standard that can examine the responsible sourcing claims of material or product manufacturers.<sup>47</sup>

BES 6001 provides manufacturers with a means by which their products can be independently assessed and certified as being responsibly sourced. The scheme is recognised by the BREEAM family of certification schemes and the Code for Sustainable Homes where credits can be awarded for construction products independently certified through BES 6001. Where a product demonstrates compliance beyond the mandatory levels, higher levels of performance can be achieved. The standard's performance ratings range from Pass to Good, Very Good and Excellent.<sup>48</sup>

### 8.2.2 Green Dragon (Level 4)

Green Dragon is a levelled UK standard recognising effective environmental management. The Standard offers an environmental management system relevant to the specific needs of companies and organisations, rewarding actions taken to achieve environmental improvements. There are five levels within the Green Dragon Standard Level One to Level Five, with each step contributing towards achievement of the International and European environmental standards ISO 14001 and EMAS.

During the appraisal and audit processes for the Green Dragon Standard, there is an evaluation of costs as well as environmental performance - this means that at each stage the company or organisation will have an outline environmental management system that relates to its bottom line.<sup>49</sup>

### 8.2.3 Eco-reinforcement

Eco-Reinforcement is a third-party certification scheme which assesses and recognises responsibly sourced reinforcing steel products. It has been developed as a sector-specific standard which complies with the requirements of BRE's BES 6001 Framework Standard for the Responsible Sourcing of Construction Products.

The Eco-Reinforcement Standard was developed by a consortium of reinforcing steel producers and fabricators, in collaboration with BRE Global and a wide range of external stakeholders, to identify the priority areas of the sector and work towards consistent performance measurement and improvement.<sup>50</sup>

### 8.2.4 UK Certification Authority for Reinforcing Steels (CARES) Sustainable Constructional Steel (SCS) Scheme

The objective of the CARES Sustainable Reinforcing Steel Certification scheme is to provide independent certification of the environmental performance of steel products. The assessment is based on an environmental management system to ISO 14001 in addition to the collection, auditing and reporting of sustainability data to CARES.<sup>51</sup>

<sup>47</sup> [http://apres.lboro.ac.uk/docs/Nov2011\\_Hughes\\_Howells\\_Baker\\_Smith.pdf](http://apres.lboro.ac.uk/docs/Nov2011_Hughes_Howells_Baker_Smith.pdf) (accessed on 06/05/2015)

<sup>48</sup> <http://www.greenbooklive.com/search/scheme.jsp?id=153> (accessed on 07/04/2015)

<sup>49</sup> <http://www.greendragonems.com/index.html> (accessed on 08/04/2015)

<sup>50</sup> <http://www.eco-reinforcement.org/what-is-ecoreinforcement/> (accessed on 13/04/2015)

<sup>51</sup> <http://www.ukcares.com/certification/sustainable-reinforcing-steel> (accessed on 13/04/2015)



### 8.2.5 Forest Stewardship Council (FSC) Certification

The FSC Principles and Criteria (P&C) set out best practices for forest management. In many countries, FSC Regional or National Standards are developed by FSC working groups, and transfer the P&C to the specific conditions and context found in each country or region. FSC certification ensures that products come from well managed forests that provide environmental, social and economic benefits. Forest owners and managers may want to become FSC certified to demonstrate that they are managing their forests responsibly. Along the supply chain, FSC certification can provide benefits such as access to new markets.

### 8.2.6 Programme for the Endorsement of Forest Certification (PEFC)

PEFC is an international non-profit, non-governmental organisation dedicated to promoting Sustainable Forest Management (SFM) through independent third-party certification. PEFC works throughout the entire forest supply chain to promote good practice in forest management and to ensure that timber and non-timber forest products are produced with respect for the highest ecological, social and ethical standards. PEFC's distinctive 'green trees' logo makes it a truly global brand and means consumers are able to identify products from sustainably managed forests.

### 8.2.7 SGS UK Chain of Custody Certification for Wooden Products

SGS Chain of Custody (CoC) certification for forest and wood products ensures that forestry and wood products supplied for new construction projects come from certified, well-managed forests and confirms their authenticity as they travel through the supply chain from processing to the customer.

SGS Chain of Custody Certification sets out methods for developing organisational strategies and improving performance in the construction process. SGS' independent and accredited forest and wood products certification services enables firms to put in place processes that ensure customer compliance and reduce the risk of product denial and possible litigation.<sup>52</sup>

### 8.2.8 Convention on International Trade in Endangered Species (CITES)

The Convention on International Trade in Endangered Species of wild fauna and flora (CITES) works by subjecting international trade in specimens of selected species to certain controls. It is an international agreement to which countries adhere voluntarily. States that have agreed to be bound by the Convention ('joined' CITES) are known as Parties. Although CITES is legally binding on the Parties – in other words they have to implement the Convention – it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level. The UK is one of these parties under the umbrella of the European Union, which joined as recently as the 9th April 2015.<sup>53</sup>

### 8.2.9 Canadian Standards Association (Chain of Custody)

Forests certified to the CSA SFM Standard CAN/CSA Z809 provide independent third party assurance of meeting a strict set of biological, environmental and social criteria. Recognising that 95% of Canada's forests are publicly owned, the CSA certification demands active public involvement by local residents. Throughout the country, approximately 40 public advisory groups are involved in annual discussion with forest managers to continuously improve their performance.<sup>54</sup>

<sup>52</sup> <http://www.sgs.co.uk/en-GB/Construction/Services-Related-to-Materials/Chain-of-Custody-Certification-for-Wooden-Products.aspx> (accessed on 13/04/2015)

<sup>53</sup> <http://www.cites.org/eng/disc/what.php> (accessed on 20/04/2015)

<sup>54</sup> [http://www.csasfmforests.ca/docs/csa\\_group\\_sustainable\\_forest\\_management\\_profile\\_dec\\_2013635222722591220745.pdf](http://www.csasfmforests.ca/docs/csa_group_sustainable_forest_management_profile_dec_2013635222722591220745.pdf) (accessed on 10/04/2015)

### 8.2.10 Malaysian Timber Certification Council (MTCC)

MTCC was established in October 1998 as an independent organisation to develop and operate the Malaysian Timber Certification Scheme (MTCS). As a voluntary national scheme, the MTCS provides for independent assessment of forest management practices, to ensure the sustainable management of Malaysia's natural forest and forest plantations, as well as to meet the demand for certified timber products.

The MTCS is another national scheme which has been endorsed by the Programme for the Endorsement of Forest Certification (PEFC).<sup>55</sup>

### 8.2.11 Sustainable Forestry Initiative

The Sustainable Forestry Initiative (SFI) programme improves sustainable forest management in North America and supports fibre sourcing globally. It is the largest single voluntary forest certification standard in the world, with one standard that applies to forest lands in the United States and Canada.

It does this through procurement objectives requiring that all SFI programme participants, both those who own or manage forest lands and those who buy the raw materials, must show that the raw material in their supply chain comes from legal and responsible sources, whether the forests are certified or not. In North America, they must promote responsible forestry by sharing management and stewardship knowledge when they buy timber from lands that are not certified if they are to achieve certification.<sup>56</sup>

## 8.3. International Guidelines

### 8.3.1 Global Reporting Initiative Sustainability Report

The GRI Sustainability Reporting Guidelines are the most widely used comprehensive sustainability reporting standards in the world. They provide organisations with the tools to be transparent about their sustainability goals, performance and impacts.

A sustainability report discloses an organisation's most critical impacts on the environment, society and the economy, whether they are positive or negative. By using the Guidelines, reporting organisations can generate reliable, relevant and standardised information with which to assess opportunities and risks, and enable more informed decision-making, both within the business and among its stakeholders.<sup>57</sup>

### 8.3.2 OECD Guidelines for Multinational Enterprises

The OECD Guidelines for Multinational Enterprises (MNEs) are the most comprehensive set of government-backed recommendations on responsible business conduct in existence today. The governments adhering to the Guidelines aim to encourage and maximise the positive impact MNEs can make to sustainable development and social progress.

The Guidelines are far-reaching recommendations addressed by governments to multinational enterprises operating in or from adhering countries. They provide voluntary principles and standards for responsible business conduct in a variety of areas, such as information disclosure, of which transparency in the responsible sourcing process forms a part.<sup>58</sup> The guidelines are general and not intended to define specific reporting requirements; therefore it is up to a product's manufacturer to confirm that their report covers the required measures and, if it is third-party verified, that the verification process is truly independent.<sup>59</sup>

<sup>55</sup> <http://www.mtcc.com.my/> (accessed on 20/04/2015)

<sup>56</sup> <http://www.sfiprogram.org/files/pdf/responsible-fiber-sourcing-jan-2011pdf/> (accessed on 10/04/2015)

<sup>57</sup> <https://www.globalreporting.org/resourcelibrary/GRI-An-introduction-to-G4.pdf> (accessed on 13/04/2015)

<sup>58</sup> <http://mneguidelines.oecd.org/about/> (accessed on 13/04/2015)

<sup>59</sup> LEED Reference Guide For Building Design and Construction v4 (2013)

### 8.3.3 United Nations Global Compact: A Guide to Traceability

This document is a guide which aims to provide an overview of the importance of traceability for sustainability purposes, outline the global opportunities and challenges it represents and summarise practical steps for implementing traceability programmes within companies. It aims to show companies and stakeholders the benefits of working together to implement a common approach to traceability across commodities.<sup>60</sup>

### 8.3.4 ISO 26000:2010 Guidance on Social Responsibility

International Standard ISO 26000 gives guidance on social responsibility and is intended for use by global organisations in order to assist them in their efforts to operate in the socially responsible manner that society increasingly demands. This is not a standard to which a company can be certified, rather it helps clarify what social responsibility is, helps businesses and organisations translate principles into effective actions, and shares best practices relating to social responsibility.

## 8.4 Building Rating Systems

### 8.4.1 Code for Sustainable Homes (CfSH)

BRE research indicated that there are large variations in the lengths new residential developments go to achieve these credits. From a selection of assessments, it was found that for Mat 2: Responsible sourcing – basic building elements; around 30% did not attempt these credits while around 40% achieved at least 4 or 6 credits. For Mat 3: Responsible sourcing – finishing elements there was again a variation, with 23% of schemes not targeting these credits while around 70% achieved at least 2 or 3 credits. There is a consensus in the industry that many manufacturers obtain the necessary certification required for these issues, however very few developers will actively seek responsibly sourced products unless they are required for a project to achieve a certain level under Code. Project teams can also be discouraged from targeting these credits as the calculation process to determine a score is often onerous.<sup>61</sup>

### 8.4.2 BREEAM

As of March 2014, 52% of BREEAM projects have gained credits under the issue Mat 03 Responsible Sourcing of Materials. Through various consultation events, the BRE received feedback from developers and BREEAM assessors as to why they feel the uptake of the issue has been limited and the difficulties and concerns project teams when pursuing these credits. The feedback given was as follows:

- Calculating the breakdown of volumes / percentages of applicable materials within each applicable element is a time consuming and challenging process and is seen as a major barrier to assessing the issue.
- Obtaining the relevant information from suppliers and manufacturers is difficult.
- Often the associated time and financial cost of achieving this credit makes the issue unviable for the client to realistically seek.
- The impact of this issue on the overall assessment rating does not reflect the amount of effort one needs to put in, which leads the credits not being targeted for many projects.
- The focus on volume or percentage of overall material over-emphasised certain materials in particular structural materials.

<sup>60</sup> [https://www.unglobalcompact.org/docs/issues\\_doc/supply\\_chain/Traceability/Guide\\_to\\_Traceability.pdf](https://www.unglobalcompact.org/docs/issues_doc/supply_chain/Traceability/Guide_to_Traceability.pdf) (accessed on 14/04/2015)

<sup>61</sup> Colin King, Could Code credits be incorporated/ adapted into other enforced functions?, 23/08/13

- The growing adoption of RSM schemes across the range of materials sectors and their differing supply chain models raises questions over the approach taken to compare different RSM schemes.<sup>62</sup>

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<sup>62</sup> Assessing the responsible sourcing of materials within BREEAM UK New Construction 2014 (BRE Global, March 2014)

# Chapter 9

## Timetable for introduction of the changes

The proposed timetable for the introduction of changes is set out below.

1 March 2016	Consultation commences (12 weeks)
24 May 2016	Consultation closes
September 2016	Publication of Approved Documents, Regulations laid