Communities and Local Government

2012 consultation on changes to the Building Regulations in England

Section two

Part L (Conservation of fuel and power)

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Part L (Conservation of fuel and power)

January 2012
Department for Communities and Local Government

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Summary form

Scope of the consultation

Topic and scope of this consultation:	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 is one of four sections of a consultation that covers a number of proposed changes to the Building Regulations regime and the building control system. This section covers proposals for changes relating to Part L (Conservation of fuel and power).
Geographic scope:	This consultation relates to Building Regulations for England only. The previous application of Building Regulations to England and Wales ceased on 31 December 2011 when powers for making Building Regulations in relation to Wales were devolved to the Welsh Ministers.
Impact Assessment:	An Impact Assessment is published alongside this document.
IA Number	DCLG/0086

Basic consultation information

To:	This consultation is aimed primarily at firms, individuals and their representative bodies within construction and construction-related industries and the building control bodies that enable the building control system to operate. Specific elements may be of interest to members of the public. The Department has published an easier to read summary of the proposals which provides a useful introduction to the consultation package and highlights those aspects of the consultation which may be of interest to consumers This is available at: www.communities.gov.uk/planningandbuilding/buildingregulations/buildingregulationschanges/
Body/bodies responsible for the consultation:	The Building Regulations and Standards Division within the Department for Communities and Local Government (DCLG).

Opening date:	31 January 2012
Closing date:	• For responses on the proposals for regulatory changes triggering consequential improvements: 27 March 2012 • For responses on all other proposals: 27 April 2012
Enquiries about the subject being consulted or the policy being considered:	Email: building.regulations@communities.gsi.gov.uk or write to: Building Regulations Consultation Building Regulations and Standards Division Department for Communities and Local Government Zone 5/G9 Eland House Bressenden Place London SW1E 5DU
How to respond to this consultation:	Two response forms are provided at Annex B of this document. They have also been published separately as part of the consultation package on the Department's website at: www.communities.gov.uk/publications/planningandbuilding/brconsultationsection2 Consultees are invited to email responses to: building.regulations@communities.gsi.gov.uk Those who prefer to submit a paper copy of their response should send these to: Building Regulations Consultation Building Regulations and Standards Division Department for Communities and Local Government Zone 5/G9 Eland House Bressenden Place London SW1E 5DU
Additional ways to become involved:	The Department 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. If you require this publication in an alternative format please email alternativeformats@communities.gsi.gov.uk.

After the consultation:	The Department will consider the responses to the consultation and finalise regulatory proposals. We will also publish a summary of responses on the Department's website, in line with the consultation protocols.
Compliance with the Code of Practice on Consultation:	This consultation complies with the Government's Code of Practice on consultations, which can be downloaded from: www.bis.gov.uk/policies/bre/consultation-guidance. In order to coordinate with the timescale for delivery of the Government's flagship Green Deal policy, we have shortened the consultation period on the consequential improvements element of this consultation section, from 12 weeks to 8 weeks.
How to complain or make comment about the process of this consultation and/or whether it adhered to the code of practice on consultation	Should you want to raise any issues in this respect, you should write to: Consultation Coordinator Department for Communities and Local Government Zones 4/H3 Eland House Bressenden Place London SW1E 5DU or email: ConsultationCoordinator@communities.gsi.gov.uk

Background

Getting to this stage:	In July 2010 the Department invited external partners to submit ideas and evidence on ways to improve the Building Regulations and the building control system, on reducing the regulatory burdens and on ways to deliver even better levels of compliance. We received several hundred responses which we used, along with contributions gathered at seminars and workshops, in developing a programme of work to review a number of areas of the Regulations. In December 2010 the Building Regulations Minister, Andrew Stunell announced a programme of work to develop proposals for consultation in advance of changes in 2013. This document is one of four sections of a consultation on proposed changes to the technical aspects of the Building Regulations and the building control system which are the result of that work. The consultation package is largely deregulatory in nature.

Previous engagement:	Through 2011 we have continued to work with a variety of external partners including the Building Regulations Advisory Committee, various Working Parties and Advisory Groups to develop detailed proposals for consultation.

Contents

Code of Practice on Consultation, Freedom of Information and Data Protection

Code of Practice on Consultation

The Code of Practice on Consultation is issued by the Better Regulation Executive (BRE) in the Department for Business, Innovation and Skills (BIS). The Code sets out seven consultation criteria, to which formal public consultation must adhere:

1. Formal consultation should take place at a stage when there is scope to influence the policy outcome.

2. Consultations should normally last for at least 12 weeks with consideration given to longer timescales where feasible and sensible.

3. Consultation documents should be clear about the consultation process, what is being proposed, the scope to influence and the expected costs and benefits of the proposals.

4. Consultation exercises should be designed to be accessible to, and clearly targeted at, those people the exercise is intended to reach.

5. Keeping the burden of consultation to a minimum is essential if consultations are to be effective and if consultees' buy-in to the process is to be obtained.

6. Consultation responses should be analysed carefully and clear feedback should be provided to participants following the consultation.

7. Officials running consultations should seek guidance in how to run an effective consultation exercise and share what they have learned from the experience.

Where this consultation does not adhere to the Code, it will be explained in the Consultation Profile.

Your opinions are valuable to us. Thank you for taking the time to read this document and respond.

If this is a formal, written, public consultation, are you satisfied that this consultation has followed these criteria? If not or you have any other observations about how we can improve the process please write to:

DCLG Consultation Co-ordinator
Zone 4/H3
Eland House
Bressenden Place
London
SW1E 5DU

or email:

consultationcoordinator@communities.gsi.gov.uk.

Freedom of information and data protection applicable to consultation

Representative groups are asked to give a summary of the people and organisations they represent, and where relevant who else they have consulted in reaching their conclusions when they respond.

Information provided in response to this consultation, including personal information, may be published or disclosed in accordance with the access to information regimes (these being primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential, please be aware that, under the Freedom of Information Act, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence. In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

The Department for Communities and Local Government will process your personal data in accordance with the Data Protection Act and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.Individual responses will not be acknowledged unless specifically requested.

Chapter 1

Introduction

Background

1. 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.

2. 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.

3. 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 provided 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.

4. 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.

5. It is also important to ensure that the Building Regulations regime remains current and fit-for-purpose. That is why DCLG undertook an exercise in the latter half of 2010 to determine what changes were necessary to the Building Regulations. The exercise emphasised a desire to identify measures that would reduce the cost of regulation to business. It also asked for evidence and ideas about what other 'must do' regulatory changes there were as well as seeking ideas as to how we might deliver even better levels of compliance in the future. There were 248 individual responses from external partners to this exercise (as well as several hundred responses as part of a campaign for inclusion in the regulations of provision of Changing Places toilets). In addition, we drew upon ideas and suggestions submitted to the Cabinet Office's *Your Freedom*[1] and the Department for Communities and Local Government 's own *Cut Red Tape*[2] websites, plus other reviews and sources of evidence.

6. Few responses questioned the principle of regulations setting national standards that ensure buildings are built to baseline standards. Many specifically recognised the positive role Building Regulations played and welcomed the fact that there was a nationally applied set of minimum requirements. However, the exercise did suggest that there were areas where aspects of the regime might be streamlined to reduce the burden on business and others, where compliance might be improved yet further or where there was a strong case for considering further regulation. In the light of the ideas submitted, Building Regulations Minister Andrew Stunell set out in December 2010 the areas of work that would be taken forward in advance of consultation on detailed proposals.

The consultation package

7. This section is part of the package which sets out those detailed proposals. On 31 December 2011 responsibility for the Building Regulations for Wales transferred to Welsh Ministers. **Proposals in this consultation package, therefore, relate to England only.**

8. The four sections cover:

   - Section one – Parts A, B (including Local Acts), C, K, M and N, Access Statements, security, Changing Places toilets and Regulation 7
   - **Section two – Part L (Conservation of fuel and power)**
   - Section three – P (Electrical safety – dwellings)
   - Section four – the building control system.

[1] http://webarchive.nationalarchives.gov.uk/20100824180635/http:/yourfreedom.hmg.gov.uk/

[2] www.communities.gov.uk/localgovernment/about/helpcutredtape/

9. All the sections can be found at: www.communities.gov.uk/planningandbuilding/buildingregulations/buildingregulationschanges/.

10. This section contains proposals for Part L changes in 2012 and 2013 (Chapters 3 to 5) and a discussion on issues for future regulations (Chapter 6). The proposals are also accompanied by draft changes to the Part L Approved Documents[3], the domestic and non domestic Building Services Compliance Guides and a summary of proposed changes to the National Calculation Methodology for both homes and non-domestic buildings. These are available from www.communities.gov.uk/publications/planningandbuilding/brconsultationsection2. Views are also sought on these changes, and cross-references are included in this document where relevant.

11. DCLG has published an Impact Assessment which is available at www.communities.gov.uk/publications/planningandbuilding/brconsultationsection2. The Impact Assessment is an important part of the consultation, as its analysis has shaped the proposals, and we are keen to test the results. As such, consultees are encouraged to read the impact assessment and respond.

12. The Building Regulations are supported by the National Calculation Methodology, which is used to calculate building energy performance for compliance checking purposes. These are the Standard Assessment Procedure (SAP) used for homes, and the Simplified Building Energy Model (SBEM) or approved Dynamic Simulation Model software tools, used for non-domestic buildings. Changes are periodically made to these tools to ensure that they remain fit for purpose to support the Building Regulations and other Government policies. Consultation versions of SAP and SBEM software are published alongside this consultation[4] to allow consultees to model the effects of the different options.

13. Two consultations by the Department of Energy and Climate Change (DECC) are also key to these proposals. Firstly, the Government has published proposals for revised carbon dioxide (CO_2) emission factors for different fuels[5]. These have an important impact on the Department's analysis of different options for reducing emissions from buildings, and on developers' choice of technologies to use to meet the standards.

[3] The four Approved Documents offer guidance on the regulations for new dwellings (L1A), existing dwellings (L1B), new buildings other than dwellings (L2A) and existing buildings other than dwellings (L2B).

[4] Consultation versions of SAP and SBEM software are available from www.2013ncm.bre.co.uk.

[5] http://www.decc.gov.uk/en/content/cms/consultations/sap/sap.aspx

14. Secondly, DECC have consulted on the framework for delivering the Green Deal[6]. The proposals on changes to the requirements for works to existing buildings have important links to the Green Deal (see Chapter 4).

15. Respondents are asked to reply to this consultation using one or both of the response forms at **Annex B** (available electronically at www.communities.gov.uk/publications/planningandbuilding/brconsultationsection2), which contain questions on this document and also on the Impact Assessment and draft guidance. There are two forms because we are asking for responses relating to the requirements which are linked to the Green Deal to be returned earlier than those for the remaining proposals. Therefore responses on the introduction of consequential improvements should reach the Department by 27 March 2012 and remainder of proposals by 27 April 2012 and should preferably be submitted via e-mail to building.regulations@communities.gsi.gov.uk.

[6] http://www.decc.gov.uk/en/content/cms/consultations/green_deal/green_deal.aspx

Chapter 2

Context

16. Under the Climate Change Act 2008, the UK has committed to legally binding greenhouse gas emissions reduction targets of at least 34% by 2020 and at least 80% by 2050 (relative to 1990 levels), with legally binding five-year carbon budgets governing the trajectory to the 2050 target. Around 45% (27% from homes and 18% from non-domestic) of UK carbon dioxide emissions come from buildings, principally space heating and cooling, water heating, lighting and other fixed systems[7] – energy uses which are covered by the Building Regulations. Energy used by industrial processes and plug-in appliances (computers, white goods, televisions, etc.) is not covered by the Regulations except in so much as it impacts on the energy performance of the building.

New buildings

17. The Government has announced that from 2016 all new homes[8], and from 2019 all new non-domestic buildings[9], in England will be built to zero carbon standards. Options for changes to the Regulations in 2013 have been developed to act as an interim step on the trajectory towards achieving zero carbon standards from 2016/19.

18. It is also important to look ahead to what other changes may be needed in future years. Chapter 6 discusses some of the issues which are not directly related to the 2013 changes, but which are informing thinking on those changes.

[7] Meeting the energy challenge: A White Paper on energy – May 2007
http://www.decc.gov.uk/en/content/cms/legislation/white_papers/white_paper_07/white_paper_07.aspx. See also the Carbon Plan at http://www.decc.gov.uk/en/content/cms/tackling/carbon_plan/carbon_plan.aspx.

[8] Written Ministerial Statement, Grant Shapps, 27 July 2010:
http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm100727/wmstext/100727m0001.htm

[9] Written Ministerial Statement, Grant Shapps, 20 December 2010:
http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm101220/wmstext/101220m0001.htm

Compliance and performance – new homes

19. Recent research[10,11] on 2016 emissions targets for zero carbon homes has proposed that action is needed by industry and Government to investigate and tackle the risk of a discrepancy between the energy performance of new homes as calculated at the design stage and the as-built performance of the same buildings.

20. There are also concerns, often anecdotal, about the level of compliance (whether wilful or due to lack of awareness or technical factors in the construction process) with the Building Regulations. This is a different issue to that of discrepancy between calculated design and as-built performance, but the two are linked, and action to address one may help deal with the other.

21. While this work is at an early stage, this consultation discusses possible measures to start tackling these issues, including the introduction of an enabling framework to incentivise housebuilders to develop and adopt quality processes, where they do not already work to such a scheme.

Existing buildings

22. Much has been done through previous Building Regulation amendments to strengthen energy efficiency standards when building owners decide to carry out building work to existing properties. Although current analysis suggests that this is approaching the point of diminishing return, there remains some potential to further raise performance standards for extensions and domestic replacement windows and potential improvements in controlled services like non-domestic lighting.

23. The Building Regulations already place a requirement for additional – consequential – energy efficiency improvements on extensions and the initial provision or increased capacity of fixed building services in buildings over 1000m^2. This consultation looks at options for extending these requirements where notifiable building work is already planned and Green Deal finance is available as a way to help the building owner to meet the requirements.

24. The Green Deal is the Government's flagship policy designed to significantly reduce emissions from existing buildings through promoting an increase in retrofit activity. The Green Deal will create a new financing mechanism to enable private firms to offer domestic and non-domestic consumers energy efficiency improvements to their buildings at no upfront cost, and to recoup payments through a charge in instalments on the energy bill. DECC consulted on the introduction of the Green Deal

[10] http://www.zerocarbonhub.org/resourcefiles/CC_TG_Report_Feb_2011.pdf.

[11] Zero Carbon Hub Carbon compliance for tomorrow's new homes: A review of the modelling tool and assumptions. – Topic 4: Closing the Gap Between Designed and Built Performance http://www.zerocarbonhub.org/resourcefiles/TOPIC4_PINK_5August.pdf

and new Energy Company Obligation between November 2011 and January 2012. The framework for the Green Deal is due to be in place in October 2012.

Development of these proposals

25. DCLG relies heavily on input and support from industry and other external partners in developing policy on changes to the Building Regulations. In spring 2011 we established four industry working groups, reporting to a Building Regulations Advisory Committee technical working party, to offer views on emerging analysis results and advice on the consultation options. The industry working groups met between April and July 2011, and the Building Regulations Advisory Committee technical working party met in July and September 2011 and will continue to meet in 2012.

26. The groups included, among others, representatives of housebuilders and non-domestic developers, architects, the products/services industry, non-Governmental organisations and the Zero Carbon Hub. We are extremely grateful for the advice and assistance provided by the participants in these groups, and we look forward to working with them as we finalise proposals after we have received the consultation responses. Full membership lists are shown at **Annex A**.

Timetable for introduction of the changes

27. The changes outlined above and discussed in more detail in the following chapters have different (proposed) coming into force dates, subject to any transitional arrangements (see consultation section 1). The dates corresponding to the Government's preferred option are set out below.

Date	**Government's preferred option on timing**
Summer 2012	Regulations on consequential improvements for domestic extensions laid in Parliament
October 2012	Consequential improvements for domestic extensions come into force
April 2013	Regulations on new build standards, performance standards for works to existing buildings and other consequential improvements laid in Parliament
October 2013	New build standards and performance standards for works to existing buildings come into force
April 2014	Other consequential improvements (domestic boiler and window replacements, and specified other non-domestic works) come into force

Chapter 3

Main proposals – new buildings

New homes

28. The potential change in the standards for new homes has been considered in the context of the Government's commitment to move to zero carbon standards from 2016. Any 2013 step would need to be meaningful, drive innovation and aid learning in advance of implementation of the 2016 standards. For example we do not want to set standards which rely on a particular technology that then effectively becomes redundant from 2016.

29. The work of the Zero Carbon Hub (an industry body set up to aid the transition to zero carbon standards for new homes) has been instrumental in development of a definition for zero carbon homes. Two of their reports on the on-site standards have been particularly important in considering the 2013 changes:

    a. *Defining an Energy Efficiency Standard for Zero Carbon Homes*[12] (November 2009). This proposes an energy performance target measured in terms of total space heating and cooling load. It is differentiated by building type and expressed as a maximum delivered energy demand by floor area. Apartments and mid terrace houses have a maximum energy demand of 39 kWh/m²/yr, and semi-detached, end of terrace and detached houses have a maximum energy demand of 46 kWh/m²/yr. These specific targets are referred to in this document as the Fabric Energy Efficiency Standard (FEES or 'full FEES'). In response to this work, the Government has committed to introducing a fabric standard for zero carbon homes, but up until now has not stated when or how such a standard will start to be introduced into regulation[13].

    b. *Carbon Compliance for Tomorrow's New Homes*[14] (February 2011). This proposes limits on the CO_2 emissions of new homes over and above the fabric energy efficiency standard, expressed again as performance targets in kg CO_2/m²/year, and differentiated by building type. The assumption behind the Hub's work is that these targets would be met by building-integrated low and zero carbon generation technologies. The Government has said that it intends to

[12] http://www.zerocarbonhub.org/building.aspx?page=2

[13] The Minister for Housing, Written Ministerial Statement (July 2010): http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm100727/wmstext/100727m0001.htm

[14] http://www.zerocarbonhub.org/definition.aspx?page=8

use these recommendations as a starting point for consultation as part of future revisions to the Building Regulations[15], and the 2013 review has assumed that these are the targets which would apply from 2016.

30. These proposed standards differ from the current approach to standard-setting in Part L in a number of important ways, and as such the 2013 review has had to consider how, when and to what extent it is appropriate to move to the new approach. In developing these proposals, we have relied heavily on the input and views of the domestic industry working group and the Building Regulations Advisory Committee technical working party.

Differentiated standards

31. In 2010, differentiated performance standards were introduced for new non-domestic buildings, with targets differing according to building type, recognising the differing potential for carbon abatement between different forms of building. This meant that the standards did not have to be set at the level of the lowest common denominator, or at a level where some building types were unfairly penalised and the potential to cost-effectively improve others was not fully exploited.

32. The Zero Carbon Hub recommend[16] that such an approach is extended to the standards for new homes. Previously it has not been necessary to differentiate domestic standards because the fabric/services performance target has been set at a level which has been achievable by all building types. As standards are raised, there is a benefit to recognising the differing abilities of building types to cut energy demand and carbon emissions – for example, apartments and mid-terrace houses have the natural advantage of lower external floor/wall/roof area per dwelling (and thus lower heat loss) than semi-detached and detached houses.

33. It is assumed that for 2016, this differentiation will become even more important, as the cost-effectiveness of using renewable energy technologies in different building types varies considerably: for example the roof space available for photovoltaic panels is proportionately higher per dwelling in a detached house than in a tall thin apartment block. Starting this transition now will aid a move to absolute standards from 2016, and as such, all the options for 2013 changes have some differentiation between building types.

[15] Grant Shapps Written Ministerial Statement, 17 May 2011: http://www.communities.gov.uk/statements/newsroom/1905627

[16] This is recommended in both their Energy Efficiency and Carbon Compliance proposals.

Metrics – relative and absolute standards

34. Regulation 25 of the Building Regulations requires a CO_2 emission rate limit to be set for new homes. These standards are set by the National Calculation Methodology[17] on the basis of a notional building (a recipe of elemental standards for walls, roof, etc.). The methodology calculates a bespoke emission target on the basis of the parameters (shape, size, orientation etc.) of the actual building under consideration.

35. Performance values for individual elements and components are set out in statutory guidance. These 'reasonable provision' backstops are set some way back from the performance levels which would be required in practice to achieve compliance with the CO_2 emission target, and are designed to ensure a base level of energy efficiency. The domestic notional building is a 2002 compliant building, and the 2006 and 2010 standards asked designers to achieve a relative improvement on that specification. The benefits of this approach include:

    a. Flexibility: the target is tailored to the building under consideration. This means that when the specific target for the actual building is calculated, difficulties such as an awkward shaped site or aspect are taken account of

    b. Clarity: it is possible to set a 'concurrent' notional building[18], which gives builders a clear recipe of elemental standards. Whilst meeting these is not obligatory, builders know that following them will achieve compliance

    c. Familiarity: this is an approach which is well established and would not require industry to adapt to changes to the methodology and software.

36. In contrast, the Zero Carbon Hub proposes that the Fabric Energy Efficiency Standard should be an absolute performance target per m^2 of floor area. Their 2009 report suggests that this has the benefits of:

    a. Taking into account building form. The main downside of the flexibility of the notional building approach is that there is no way to incentivise more efficient forms. In contrast, absolute targets, which have to be met by a particular building type regardless of shape, location or size, could be a way to rule out less efficient forms. The issue of whether or not this is appropriate is discussed in the section below

[17] The methodology of calculation of the energy performance of buildings was established as a requirement of the original EPBD and includes the Standard Assessment Procedure (SAP) for new homes and the Simplified Building Energy Model (SBEM) or approved Dynamic Simulation Models for non domestic buildings. SAP and SBEM are being updated as part of the current Building Regulations review.

[18] This is currently the approach for non-domestic buildings, and as explained below, it is proposed to develop a 'concurrent' domestic notional building for 2013 and abandon the 2002 notional building.

b. Allowing design flexibility and encouraging innovation: as a performance target, different designs and combinations of elements could be used to meet the target. However, the Hub acknowledges that to support industry, design guidance would be needed to provide examples of a range of dwellings with a broad combination of solutions that meet the standard

c. Delivering a specific level of dwelling performance and being a known 'currency' for energy efficiency internationally. The use of a kWh/m^2 target is a more readily comparable metric than percentage improvements

Choosing a metric for 2013 standards

37. Assuming that both the fabric energy efficiency and CO_2 emission performance targets will be set on an absolute basis in 2016, the task for 2013 has been to identify an appropriate transitional arrangement.

    a. For the 'FEES plus efficient services' option (both options are explained in the following section), we propose a hybrid metric. The Regulations would be amended to include a fabric energy efficiency target alongside the existing CO_2 target. Designers would need to meet both the energy target relevant to their building type (a detached house, for example) and also a CO_2 target. While the energy target would be fixed by dwelling type, the CO_2 target would be bespoke to the building under consideration[19]

    b. For the 'Halfway point' option, which is much closer to the proposed 2016 zero carbon levels, we propose adopting an absolute approach in full, with absolute energy and CO_2 targets fixed by dwelling type.

38. A summary of the differences between the options, compared to the current approach, is set out below.

[19] CO_2 targets would be set by the National Calculation Methodology on the basis of a new, 2013-compliant concurrent notional building.

Table 1

	2010	2013 'FEES plus services' option and hybrid approach	2013 'Halfway point' option and full absolute approach
Metric for regulatory CO_2 target	Relative improvement on 2002 notional building (same shape and size as actual building)	Concurrent notional building (same shape and size as actual building)	Absolute $kgCO_2/m^2/yr$
Metric for regulatory energy target	No energy target	Absolute $kWh/m^2/yr$	Absolute $kWh/m^2/yr$
Set the regulatory energy target at…		'Full FEES' levels of 39/46 kWh/m^2/year	'Full FEES' levels of 39/46 kWh/m^2/year
…or…	n/a	'Interim FEES' levels of 43/52 kWh/m^2/year	'Interim FEES' levels of 43/52 kWh/m^2/year
Elemental backstops in guidance?	Yes	Yes	Yes

39. The Government's preference is for a hybrid approach, to accompany the preferred 'FEES plus efficient services' option. This strikes a reasonable balance by retaining some of the flexibility of the relative approach, whilst still aiding the move towards zero carbon and more efficient building form by introducing an energy target that all buildings must meet. The issue of the appropriate level for such a regulatory energy demand target (at the full 39/46 kWh/m^2/year levels or lower interim levels) is discussed below.

Setting the targets

40. This section discusses the **levels** at which regulatory energy and CO_2 targets should be set, as opposed to the metrics used to set the targets.

41. The development of options for 2013 changes was carried out in close consultation with the domestic industry working group and a Building Regulations Advisory Committee technical working party, in order to gather views from industry on what would constitute a useful interim step to aid the transition to zero carbon. Options

that introduced technologies or design solutions which were deemed at risk of becoming obsolete from 2016 were rejected on the grounds that they would not aid learning in building to 2016 standards.

Setting the CO_2 targets

42. Detailed modelling was carried out on a range of options involving improvements in fabric and services, and the addition of low and zero carbon generation technologies. Photovoltaic panels were used as a ***proxy*** for renewables in the modelling because this technology is feasible in a wide variety of dwelling types. The modelling is explained in more detail in the Impact Assessment, with the main costs and benefits summarised in tables 2.2 and 2.3[20]. A proposed method for setting these targets in SAP is discussed in the technical guidance.

43. Following discussion with the group and assessment of this initial analysis, two options for 2013 CO_2 targets are proposed for consultation.

44. '**FEES plus efficient services**': This is a target emissions rate which is *equivalent* to applying the full 39/46 kWh/m^2/year standards to the new home, with efficient services including a condensing boiler and 100% low energy lighting. To meet this target, the designer will have to meet an energy demand target and an overall CO_2 target. The designer would be free to choose how to achieve this extra saving over and above the fabric energy efficiency target. In *practice*, if the energy targets were set at the full 39/46 kWh/m^2/year standards then the existing standards for services mean that there would be limited scope to flex the specification or play elements off against one another. If the energy targets were set at less demanding interim levels, there would be more flexibility on how the overall emission target could be met. This is discussed further below.

45. '**Halfway point**': This is a CO_2 target which is (approximately) half way between the Part L 2010 target and the full on site carbon compliance target being proposed by Zero Carbon Hub for 2016 for each dwelling type. Again, the designer would meet an energy target (the level of which is discussed below) then achieve an extra reduction in emissions. Just as for the option above, the designer would be free to choose how to meet the CO_2 target provided that the energy target had been met. Because the 'halfway point' standards are more demanding, there is a greater difference between the energy demand target and the CO_2 target, giving the designer more options on how to meet the overall standards.

[20] The impact assessment also explains the assumptions on which the modelling is based, including: phase-in (i.e. when the 2013 standards would start to take effect); annual build rates and build mix; and costs for fabric, services and renewables and the impact of learning rates on these costs.

46. In developing these options we have assessed what the most cost effective way to meet these standards would be (by dwelling type, but then aggregated across the build mix). For the 'FEES plus efficient services' target, the most cost effective option is to build to the more exacting full FEES standards, rather than build to lower 'interim' standards and make up the extra savings by adding photovoltaic panels to the building. This is because only a very small array would be needed, and the high fixed costs make this uneconomic. For the more demanding 'Halfway point' standards, photovoltaic panels become more cost effective due to economies of scale, meaning that the cheapest (across the build mix) way of meeting the standards would be to build to less demanding energy efficiency standards and rely more on the savings from a larger photovoltaic array.

47. The 'Halfway point' option has the advantage of reducing the impact of the 2016 change to full zero carbon, on the assumption that from 2016, as well as introducing carbon compliance targets, builders would also start paying for allowable solutions to offset new homes' remaining regulated carbon emissions. However, it introduces a higher cost for housebuilders at a time when the Government has a commitment to reduce the burden on the housebuilding industry over the course of this Parliament[21].

48. The tables below show the approximate reductions in CO_2 emissions and increases in capital costs over and above Part L 2010 standards for both options. These numbers use a reduced 'fuel factor' (the central case), which impacts on the costs and carbon savings for electrically heated flats. This is discussed further below.

Table 2[22]

	Mid terrace house	**End of terrace house**	**Detached House**	**4-storey apart-ment block**	**4-storey apart-ment block**	**Aggregate % reduction from 2010**
'FEES plus efficient services'	**4%**	**7%**	**15%**	**0%**	**12%**	**8%**
'Half-way point' rounded	26%	28%	29%	19%	28%	26%
Fuel assumed	*Gas*	*Gas*	*Gas*	*Gas*	*Electricity*[23]	*Mix*

[21] Comprehensive Spending Review, paragraph 2.31, p48: http://cdn.hm-treasury.gov.uk/sr2010_completereport.pdf

[22] These figures are illustrative for consultation purposes, and use preliminary CO_2 emission factors.

[23] If the fuel factor was retained at 2010 levels these figures would as for the gas heated 4 storey block

Table 3[24]

	Mid terrace house	End of terrace house	Detached House	4-storey apart-ment block	Average cost per dwelling
FEES plus efficient services	**£294**	**£755**	**£2,622**	**£248**	**£795**
Half-way point	£2,517	£3,131	£4,910	£1,959	£2,866
Fuel assumed	*Gas*	*Gas*	*Gas*	*Gas*	

49. **The Government's preferred option is a CO_2 target equivalent to the 'FEES plus efficient services' option**, on the basis that this minimises the cost impact on housebuilders whilst still providing a meaningful step towards zero carbon. This was also the option preferred by the majority of members in the industry working group and the Building Regulations Advisory Committee. The supporting document on proposed technical guidance changes contains more detail on the changes to the National Calculation Methodology and on how the 2013 CO_2 targets could be set.

Setting the energy demand targets

50. We have identified two options for setting the energy targets. The level of energy target does not change the overall CO_2 target – so regardless of where the energy target is set, the percentage improvements in emissions shown in Table 2 would be unaffected. What follows is simply a discussion on the energy target that would sit within the CO_2 target.

51. In either scenario, we propose to retain limiting fabric parameters in guidance. This would be to deter designers from meeting the regulatory energy target through one single, highly-efficient, fabric element with much poorer fabric performance elsewhere. If this single fabric element was to fail, or perform less well than expected, this would have a significant impact on performance.

52. '**Full FEES**': To meet this standard, a designer would need to meet the new target of 39kWh/m^2/year for mid-terrace houses and apartments, or 46kWh/m^2/year for detached and semi-detached houses. As mentioned above, under the 'FEES plus efficient services' option, building to these targets would meet most of the required reduction in emissions , leaving limited scope to flex the specification or play elements off against one another.

[24] The cost figures are for fabric and services improvements only, and do not include the costs of introducing a new quality assurance process. All the figures assume building to the full FEES targets, and are based on 2014 prices.

53. The industry working group's view was that if these targets are a certainty for introduction in 2016, only by introducing them in full in 2013 would developers gain meaningful experience in building to this standard. Hence those that favoured any change in 2013 favoured the introduction of the Fabric Energy Efficiency Standards in full[25].

54. The modelling carried out for the impact assessment suggests that the cheapest way to meet a 'FEES plus efficient services' CO_2 emission target is by building to the full 39/46 kWh/m^2/year standards, at an average capital cost of £795 per dwelling. The alternative approach of an interim energy standard plus photovoltaic panels has much higher fixed costs (due to the small photovoltaic capacity), at an average capital cost of £1,094 per dwelling.

55. '**Interim FEES**': Setting regulation at less demanding 'interim' levels of 43kWh/m^2/year for mid-terrace houses and apartments, and 52kWh/m^2/year for detached and semi-detached houses would provide more scope for designers to flex elemental standards and still meet the same overall CO_2 target. Of course builders would still be free to build to the full 39/46 kWh/m^2/year targets if this was the most cost-effective and practical approach, and the modelling indicates that this may well be the case in the majority of situations, meaning that learning benefits could still be captured. Whilst these 'interim' targets are less demanding than the full FEES targets, they still provide a good level of fabric efficiency.

56. The Hub have acknowledged that there is further work to do on their proposed fabric energy efficiency targets. Recent modelling indicates that some building types may struggle to meet these standards, and setting mandatory limits could mean these buildings would only be able to do so at considerable cost. An example of this is detached bungalows, which can have relatively high heat loss due to high exposed surface area per unit volume. There are also complications to meeting the standards on certain awkward sites, and some dwelling types which defy neat categorisation (e.g. a terrace built on a slope, in which the houses have a higher exposed wall area than those in a terrace built on flat ground).

57. The role of Part L is to provide reasonable provision for the conservation of fuel and power, not to dictate what can or cannot be built, and these issues need further investigation to ensure that 2013 regulatory standards do not have unintended and unwanted impacts on the build rate for certain dwellings or the viability of certain sites. Setting a less demanding regulatory level now would provide more time to reassess these standards in advance of the move to zero carbon from 2016.

[25] Some members of the working group did not support a change in standards in 2013.

58. Less exacting energy demand targets would also reduce the cost of building to the new standards for homes fitted with heat pumps. As explained below, such homes would overshoot the 'FEES plus efficient services' standards because of the combination of the high fabric energy efficiency and the carbon saving from the heat pump. A less demanding energy efficiency target will reduce (though not remove) this extra cost for homes fitted with a heat pump.

59. There could be advantages to setting the *regulatory* energy target at the **'interim' levels of 43 and 52 kWh/m^2/year**, because this provides flexibility whilst still leaving designers to find the most cost-effective solution for their building – and as the impact assessment modelling indicates, in most cases this would mean building to the full FEES targets anyway. But where the more exacting 39/46 kWh/m^2/year standards would be more difficult to meet, designers would not be forced to do so.

Fuel factors

60. The purpose of the 'fuel factor', which was introduced in 2006, is to provide some relief for those who have to use more carbon intensive fuels either because gas is not available or is not preferred because of (for example) the potential risks of installing a safe gas supply in a high rise apartment block. In the absence of this factor, homes[26] without access to gas would have to be built to higher fabric standards in order to meet the Part L emission target, which is set for a building with a grid gas supply. The aim is to strike a balance which avoids disproportionate extra construction costs for homes off the gas grid without allowing significantly higher emissions from these buildings.

61. To date this arrangement has worked well, and most builders have not used more carbon intensive fuels where gas is available or safe to use. However, some concern has been raised that the use of the fuel factor has created a loop-hole. Where a new home is designed to use a heat pump, the benefits this offers in terms of carbon saving are sufficiently great to mean that it can be built to lower/worse fabric standards than a gas-supplied home, and yet still meet the regulatory CO_2 emissions target. For Part L 2013 homes, the introduction of a regulatory fabric energy demand target (regardless of which level this is set at) should close this loop hole, regardless of what decision is taken on the fuel factor.

62. DECC are consulting on updated CO_2 emission factors alongside their SAP consultation[27]. Once finalised and published, Part L compliance calculations will be based upon these updated CO_2 factors. For the primary uses of SAP (including Part L compliance), the proposed methodology for calculating updated CO_2-emission factors is based upon a projected three year system average, reflecting little

[26] There is no need for a fuel factor for non-domestic buildings because the target is set relative to a standard which assumes the same fuel as is being used in the actual building, rather than relative to the standard for a gas-heated building. However, as for homes, this will need to be reviewed as part of the transition to zero carbon, to ensure that the benefits of low carbon fuels are properly recognised.

[27] http://www.decc.gov.uk/en/content/cms/consultations/sap/sap.aspx

decarbonisation of the national electricity grid. These are the factors which have been used in this Part L analysis. DECC are also recommending provision of an alternative 15 year system average to inform consideration of longer term impacts although they recognise there are uncertainties about the potential accuracy of longer term projections. Assuming the final decision is that the three year system average values would be used for setting the Building Regulations, the ratio between the carbon intensity of mains gas and other fuels is unlikely to alter significantly for the purposes of Part L 2013 compliance calculations.

63. One view is that by the time zero carbon standards are introduced, the fuel factor should have been removed, and homes which do not have access to gas will have access to alternative low carbon heating systems such as heat pumps. Reducing the fuel factor in 2013 could aid such a transition, but would result in 2013 homes with no access to gas needing to meet fabric standards which are *higher* than those for homes with a mains gas supply in order to meet the CO_2 emission standards, or install a renewable system such as a heat pump, which results in a significant overshoot of the 'FEES plus efficient services' CO_2 target. While this would mean lower energy bills for occupiers, it also raises the capital cost to developers of building these homes.

64. Our modelling (not counting the costs of introducing a quality assurance process – see Chapter 5) shows that these increased costs will be greater than the benefits generated (of increased energy savings and reduced carbon), so that with a reduced fuel factor the proposals show a net present cost of £195 million, in comparison to £56 million net present benefit if the fuel factor is maintained at current levels.

65. The modelling shows the most cost effective way for developers to meet more demanding emissions targets in apartments off the gas grid would be to install mechanical ventilation and heat recovery systems. . While the standards are not prescriptive, and this is not a disadvantage necessarily, it does introduce ongoing maintenance costs for consumers[28].

66. On the other hand, if the fuel factor is retained at current levels, this would mean that for high rise apartments (the majority of which are electrically heated), targets set at the 'FEES plus efficient services' levels would be lower (i.e. less demanding, with higher target emission rates) than current Part L 2010 standards[29]. This is because more inherently

[28] The Zero Carbon Hub's November 2009 report on the Fabric Energy Efficiency Standard for zero carbon homes set out its 'decision to exclude whole house ventilation with heat recovery from the Fabric Energy Efficiency Standard. Whilst this does mean all of the specifications assuming natural ventilation result in slightly higher energy demand it was felt the greater flexibility provided for designers and house builders by not assuming a standard that must include such an approach to ventilation was considered important. It should be remembered that whilst ventilation heat recovery is not included within the Fabric Energy Efficiency Standard it is rewarded in the accompanying Carbon Compliance calculation. Therefore the benefits of such a system will be rewarded within the overall Zero Carbon standard.' (p 40)

[29] This is the case regardless of whether the regulatory energy target is set at 'full FEES' or interim levels, as this relates to the overall CO_2 target.

efficient built forms like tall blocks of flats find it easier to meet the absolute FEES targets. High rise electrically heated apartments make up (according to the Department's modelling) around 20% of the new build mix.

67. Based upon the same fuel base line, the table below sets out the additional capital costs for an end-of-terrace home for differing fuel factor options for the 'FEES plus efficient services' target.

Table 4[30]

Fuel	Retain Fuel Factor	Reduce Fuel Factor	Remove Fuel Factor	Impact of reducing the fuel factor	Impact of removing the fuel factor
Mains Gas	£950	£950	£950	£0	£0
LPG	£1,098	£1,589	£1,991	£491	£893
Oil	£825	£1,426	£3,350	£601	£2,525
Heat Pump	£2,903	£2,903	£2,903	£0	£0
Direct Electric	£739	£1,640	£5,731	£901	£4,992

68. The supporting document on proposed technical guidance changes contains more detail about the derivation of fuel factors for 2013.

69. The Government is not expressing a preference on fuel factor levels for 2013. Reducing the fuel factor could aid the transition to zero carbon standards and encourage the market to find cost-effective low carbon options for homes with no access to mains gas. But any reduction also increases the cost of building off the gas grid, and could introduce technologies which were not envisaged by the Hub's proposed 'zero carbon' standards. We would welcome views on this issue.

New non-domestic buildings

70. As for new homes, a 2013 change for new non-domestic buildings should be seen as one step on a trajectory towards zero carbon. However, as an overall aggregate target for 2019 zero carbon on-site standards has not been set, for 2013 the emphasis has been on setting challenging on-site targets based on an assessment of what levels of improvement would be cost-effective in 2013.

[30] The costs in this table are presented in 2013 prices.

Options

71. For new non-domestic buildings no change is proposed to the basic standard setting approach, and it is considered that the principle of differentiated standards, first introduced in 2010, is sound. We expect that this approach will continue to deliver cost savings compared with a requirement for all buildings to meet the same level of reduced energy consumption.

72. This means that standards will continue to be based on a 'concurrent notional building' – a recipe of elemental standards in the National Calculation Methodology which deliver a bespoke Target Emission Rate when applied to the actual building (size, shape, use) under consideration. In 2010 there were two main notional building recipes – one for top-lit buildings (principally warehouses) and one for side-lit (most other buildings).

73. To develop options for 2013 standards, the analysis has used the same principle in a slightly different way. As standards are pushed harder, there is a strong argument for greater differentiation between the notional buildings so that, for example, fabric standards can be relaxed in buildings which are predominantly cooled. The notional buildings are explained in the proposed changes to the National Calculation Methodology.

74. The analysis then assessed how renewable generation technologies could be incorporated. As for homes, photovoltaic panels (as a percentage of floor area) were used as a ***proxy***. It is important, perhaps more so than for homes, to stress that this is a proxy and designers could choose a different ways (fabric and services improvements or renewables) to meet the standard. A range of four options were analysed, and two chosen for consultation:

75. **An 11% improvement on Part L 2010**. This overall level of improvement is achieved by applying packages of fabric and services efficiencies to the notional buildings, then aggregating the resulting improvements across the most common build types to achieve the 11% improvement. This results in a range of improvements in the individual building types modelled of 8-12% over 2010.

76. **A 20% aggregate improvement on Part L 2010**. This overall level of improvement is achieved when a more challenging package of fabric and services improvements is applied, and then a photovoltaic array equalling 1.6% of the floor area is added. Thus a 20 storey building would have a greater percentage of its roof area covered in photovoltaic panels than a 4 storey building with the same footprint/roof area. The range of resulting targets from the actual buildings modelled is somewhat wider for this option, from 15% in the five star hotel to 23% in the shallow plan office.

77. As explained above, this does not oblige designers to use photovoltaic panels, or to use renewables. However, the more detailed cost curves (see Appendix 1 of the impact assessment) demonstrate that in all of these examples, renewable technologies are among the cost-effective ways to meet the target for a 20% aggregate improvement.

78. The 20% uplift gives the highest long-term benefits to business through significant energy savings for building occupants, and results in over twice the carbon savings of the 11% option. The full analysis on these costs and benefits is set out in the impact assessment – see in particular the main costs and benefits summarised in tables 2.14 and 2.15.

79. This will provide a significant learning step for non-domestic buildings in the trajectory towards zero carbon, since as well as taking fabric and services standards close to the limits of likely 'zero carbon' levels, renewables will also start to be used in most instances. Given the preference for a standard for new homes based on fabric and services efficiencies, this would also provide incentives for innovation in the renewable energy technology market, helping to reduce longer term costs for both the domestic and non-domestic sectors.

80. That said, the modelling has to date focused on the six main building types[31] which dominate the new build mix, and has looked only at standard examples of these types. Before a decision is taken on the final 2013 targets, more work is needed to examine the effects of both the 11% and 20% uplifts in a wider range of circumstances. We would be particularly keen to gather information from consultees on the following issues:

    a. Size of building, for example to test the theory that energy performance improvements are more challenging in smaller buildings due to a proportionately higher heat loss through construction joints

    b. Differences between sectors, to understand whether some sectors are likely to be more sensitive to increases in new build costs at the time when the 2013 changes will take effect

    c. Renewables potential in different buildings, to understand how the introduction of building-integrated renewables could / should be managed, and what barriers and opportunities are involved in the use of building-integrated renewables

81. **The Government's preferred option for consultation is the 20% uplift,** as this provides the highest benefits to business and a significant step towards zero carbon standards.

[31] These are: a distribution warehouse, a deep plan office, a retail warehouse, a shallow plan office, a five star hotel and a secondary school.

82. The supporting document on proposed technical changes explains these options and the target setting process in more detail, in relation to the National Calculation Methodology and notional buildings for 2013. It also includes proposals on changes related to SBEM, including:

    a. A new process to allow innovative and low carbon technologies to be considered for incorporation into SBEM. A similar process already exists in SAP in 'Appendix Q'

    b. Proposals on setting up an impartial and expert sounding board for the development of the software (an 'Integrity Group') to support future developments of SBEM. It is anticipated that this group might comprise of experts in energy modelling and the application of SBEM, on the assumption that group members would be willing to declare commercial interests and act impartially.

83. We would welcome views on these proposals.

Chapter 4

Main proposals – existing buildings

84. This chapter looks at changes to the application of the Building Regulations to existing buildings in two areas. Firstly we have looked at the potential to raise the standards for controlled works in existing buildings, where this can be shown to be cost-effective.

85. Secondly, and more significantly, we are proposing to extend the requirements for 'consequential improvements'. This is the term used to describe the use of the Building Regulations to trigger a requirement for extra energy efficiency works in a building where other controlled work is already taking place. The reason for proposing these changes now is to recognise the urgency of reducing emissions from the existing building stock, and, in a time of rising energy prices, to make homes and non-domestic buildings easier and cheaper to heat. It would also take advantage of a new market mechanism which has the potential to remove some of the existing barriers to action – the Green Deal.

Performance standards for works to existing buildings

86. Discussions with the domestic and non-domestic industry working groups indicated that the current performance standards for works to existing buildings are already at a good level, and reaching the point of diminishing returns. However, there is some scope for improvement, and the areas identified for potential changes include:

87. **Replacement domestic windows**. Currently Approved Document L1B suggests that replacement windows should be the equivalent of a Window Energy Rating Band C or better (broadly equivalent to a whole window unit U value of 1.6 W/m^2.K). The option of raising this to Band B or equivalent (U value of around 1.4) is proposed.

88. **Extension standards**. For domestic extensions, the domestic working group noted that if the 39/46 kWh/m^2/year Fabric Energy Efficiency Standards are introduced for new dwellings, this will introduce a large discrepancy between the fabric standards for a new dwelling and those for extensions. However, these new build efficiency targets allow credit for good airtightness and were thought to be too onerous for extensions. Thus to allow for some flexibility (e.g. aligning floor levels) a lower standard is proposed[32].

[32] Details of the proposed standards are set out in the proposed changes to Approved Document L1B.

For extensions to non-domestic buildings which are similar in nature to homes (e.g. care homes) we are proposing similar standards to those proposed for domestic extensions. For other non-domestic extensions, standards would be raised to equal the fabric and services specification in the relevant notional building corresponding to the 11% aggregate improvement[33].

89. The proposal would be to introduce these changes in Approved Documents L1B and L2B in 2013 alongside the other technical changes to the Regulations. We would be particularly interested to hear from smaller manufacturers and builders or their representatives on whether meeting these standards from 2013 would be technically and economically feasible.

Consequential improvements

90. This consultation is proposing options for extending and expanding the regulatory requirement[34] for consequential energy efficiency improvements in existing buildings.

91. The central proposal is that the Regulations would (for all of the triggers discussed below) only require consequential improvements which were technically, functionally and economically feasible[35]. The guiding principles in developing these proposals are that:

    a. Consequential improvements should be required only when defined notifiable building work is already planned

    b. Green Deal finance should be an option to offset any upfront costs (should the building owner wish to choose this financing route)

    c. The consequential measures should be in proportion to the nature and cost of the original work.

92. The Green Deal is an important element of this policy because we want to ensure that any measures which are required under the Building Regulations have the potential to be provided at no upfront cost, as part of a Green Deal offer[36]. However, the regulatory requirements for consequential improvements would not be explicitly tied to the Green Deal. It would be possible to demonstrate compliance via alternative means, for example by carrying out the recommended improvements in a valid Energy Performance Certificate.

[33] Details of the proposed standards are set out in the proposed changes to Approved Document L2B.

[34] Regulation 28 already requires consequential improvements in certain circumstances in buildings over 1000m^2 (ie mostly large non-domestic buildings).

[35] This is the approach taken in Regulation 28 at the moment for larger buildings.

[36] This link is relatively easily achieved because SAP and SBEM will support both the Building Regulations and the Green Deal (they are the assessment tools used to generate Energy Performance Certificates, and these certificates will underpin the Green Deal assessment).

93. The Green Deal is the Government's flagship policy for achieving significant reductions in emissions from existing buildings, and is designed to encourage a step change in retrofit activity. The framework for the Green Deal is due to be in place in October 2012. It will create a new financing mechanism to enable private firms to offer domestic and non-domestic consumers energy efficiency improvements to their buildings at no upfront cost, and to recoup payments through a charge in instalments on the consumer's energy bill.

94. In order to identify possible points at which requirements should be triggered, consideration has been limited to works which are already notifiable under the Building Regulations. This should ensure that only reasonably significant works are caught and minor property improvements (such as decorating or replacement of minor fixtures and fittings like a kitchen fan) are avoided.

95. The proposal is to require consequential improvements in the following scenarios.

96. **Extensions or increases in habitable space**. Consequential improvements are already required for buildings over 1000m^2 which have an extension added. However, this requirement excludes the vast majority of extensions and conversions carried out each year, most of which are in homes. We are therefore proposing to apply the requirements for consequential improvements to <u>all</u> existing domestic buildings which undergo works to add an extension, and also apply it to increases in habitable space (i.e. loft and integral garage conversions).

97. **The replacement of <u>specified</u> controlled services or fittings**. For homes we propose to limit this to the replacement of a boiler or a percentage of the home's windows. For non-domestic buildings, this consultation discusses a number of case studies and seeks views on whether there are appropriate trigger points which could apply across the board to non-domestic buildings.

98. **The initial provision of a fixed building service, or an increase to the installed capacity of a fixed building service <u>only</u> in buildings over 1000m^2.** These triggers are already in the Regulations. We do not propose to change these or extend these requirements to smaller buildings.

99. It is important to note that if a building had already undergone energy efficiency improvements (a modern boiler, loft insulation, filled cavities), or if it was a relatively new building with a high energy performance, then the strong likelihood is that there would be no further requirement, because it is unlikely that further improvement measures would be technically, functionally or economically feasible.

100. We are proposing different options on when these various requirements might be brought in. These are explained further below.

Consequential improvements for homes

Domestic extensions

101. Around 200,000 domestic extensions, loft conversions and integral garage conversions are carried out per year[37]. These are works which generally result in increased energy use and carbon emissions from the home, and tend to be relatively high-value projects. The rationale for introducing consequential improvements is therefore that upgrading the energy efficiency of the rest of the building will help to offset the increase in carbon emissions from the new extension, and also help mitigate some of the increase in fuel bills resulting from the new habitable space.

102. The current approach for assessing **what value** of consequential improvements should be required where a building is extended are as follows (for buildings over 1000m^2):

    a. Regulation 28 of the Building Regulations[38] requires consequential improvements where these are 'technically, functionally and economically feasible'

    b. The statutory guidance in Approved Document L2B sets out that not less than 10% of the cost of the principal works should be spent on other energy efficiency improvements, where this is cost-effective. The guidance recommends that measures should be assessed on the basis of a simple 15 year payback.

103. While we plan to retain the regulatory tests in (a) above, the introduction of the Green Deal provides an opportunity to reconsider how building occupiers might approach these feasibility tests in practice, because one of the ways a homeowner could choose to work out their obligations is by commissioning a Green Deal assessment. A key principle of the Green Deal is that energy efficiency measures should be provided in packages of measures which meet a 'Golden Rule'. The Golden Rule is that a building owner accepting a Green Deal should not see any increase in their energy bills – ie the Green Deal charge should be less than or equal to the expected savings generated by the measures, within the particular payback period for that measure (or the package overall).

104. The implication for the Building Regulations is a building owner who commissions a Green Deal assessment may find that the value of the Green Deal package is more than 10% of the cost of the primary works, yet still carries no upfront cost. This is most likely to be the case where the property is suitable for the installation of solid wall insulation and the Green Deal offer is accompanied by funding from an

[37] This estimate is derived from DCLG minor residential planning statistics at http://www.communities.gov.uk/planningandbuilding/publications/statistics/.

[38] http://www.legislation.gov.uk/uksi/2010/2214/regulation/28/made

energy supplier under the Energy Company Obligation[39]. Arguably in this situation the availability of subsidy means that all the works could be seen as technically, functionally and economically feasible, despite exceeding 10% of the value of the principal works.

105. Another way in which a homeowner could determine their requirement is by consulting the Energy Performance Certificate for the property, which includes recommendations of cost-effective energy-saving measures for the building and the expected savings. Any building which has been built, bought or rented out since October 2008 will have an Energy Performance Certificate which is valid for 10 years.

106. Alternatively it is likely that the builder or architect involved will be able to advise on what measures would be feasible without a formal assessment (Green Deal or Energy Performance Certificate).

107. To support homeowners in making these decisions, information will be available from the Planning Portal, Direct Gov and the new Green Deal Advice Service (which is being developed by DECC) on how to reach a view on which measures would be appropriate and cost-effective to install.

108. Ultimately, the homeowner would need to justify their decision on the works required (or not required) to building control. This would most likely take place at the building control officer's visit to the site during the works. We would welcome views on whether this seems like a workable process, and whether this provides consumers with sufficient means to understand the requirements without undue cost or disruption.

109. We would welcome views on the effectiveness of these different ways of defining and assessing the requirement and the proposals for providing guidance to building occupiers. However, **the Government's initial preference is to maintain the current regulatory feasibility tests and cite 10% of the value of the principal works as a guide to a value of the works that would meet the regulatory requirement**. This provides an important safeguard and guide for those who do not use the Green Deal. We would welcome views on whether there are benefits to expressing the 10% guide as a minimum or maximum value.

110. We have also considered whether, and how, to specify **what improvements** might potentially be required as consequential improvements. The relatively high value of extension projects means that (assuming that 10% of the principal works is a guide to the value of consequential improvements) most standard energy efficiency measures could fall within this value. The domestic energy performance

[39] DECC have suggested that the Energy Company Obligation scheme might help support more expensive Green Deal measures, in particular solid wall insulation, which might not otherwise meet the Golden Rule. The Energy Company Obligation is a requirement which Government plans to place on energy supply companies to fund demand reduction measures.

assessment software (SAP) includes a list of measures including both low cost measures (loft or cavity wall insulation, hot water cylinder insulation, heating controls and draughtproofing) and higher cost measures (a new boiler, new windows or solid wall insulation). This list is being updated and will be used to generate both domestic Energy Performance Certificates and Green Deal assessments. We propose that this list should be used to define what measures could potentially be used as consequential improvements under the Building Regulations.

111. The new Approved Document L1B guidance would therefore explain that a consequential improvement could be any measure from the approved list of Green Deal-eligible measures[40], from a Green Deal assessment or from a valid Energy Performance Certificate.

Replacement of domestic windows and boilers

112. Where a homeowner replaces a boiler or windows, this is notifiable work, and the performance standards required by the Building Regulations for replacement services and fittings typically result in an improvement in the energy efficiency of the building, unlike an extension which will usually increase the emissions of the building. The motivations involved also tend to be different – a homeowner will make a considered decision to build an extension, whilst replacing a broken-down boiler (a 'distress' purchase) or old windows[41] is often done out of necessity rather than choice.

113. Therefore, the purpose of requiring consequential improvements is not to mitigate an increase in carbon emissions, but to use the opportunity to further improve the energy efficiency of the building overall whilst other works are taking place, making it cheaper to heat and shielding householders against future increases in fuel prices. The introduction of the Green Deal will remove the barrier of upfront costs, and carrying out these simple, cost effective improvements at the same time as the other works would 'future proof' the building, avoiding some of the disruption associated with having to install these measures at a later date.

114. For windows, it does not seem reasonable to trigger a consequential improvement on replacement of a single window, and therefore a threshold will need to be set. This could take a number of forms, for example, 50% of the windows in a single elevation or 50% of all the windows in the home. We would welcome views on these or alternative suggestions.

115. To ensure that the requirement remains proportionate, we propose to limit the requirement for consequential measures to a package of standard energy efficiency measures, specifically:

[40] This will be in the form of a list in SAP (Appendix T), which will be freely available on the web. This list/appendix is being developed to support the Green Deal. The draft list of measures that it (and by extension, the Green Deal assessment and EPC) will contain can be seen in the Green Deal consultation document at http://www.decc.gov.uk/en/content/cms/consultations/green_deal/green_deal.aspx

[41] Note that replacement of a smashed pane of glass is not work which is controlled by the Regulations and would not trigger consequential requirements.

a. Loft insulation

b. Cavity wall insulation

c. Hot water cylinder insulation

d. Draughtproofing.

116. We are seeking views on whether the requirement should be for one, some or all of these measures. In any case we assume that the requirements would also be subject to the overarching tests of technical, economic and functional feasibility. The Building Regulations and Approved Document statutory guidance would be drafted accordingly.

117. A homeowner who did not want to use the Green Deal or who did not possess a valid Energy Performance Certificate to consult could obtain information via the Approved Document guidance, Planning Portal, Direct Gov and the proposed Green Deal Advice Service to help them to reach a view on which measures would be appropriate and cost-effective to install. Ultimately, it would be for building control to judge whether the action they had taken met the requirements. However, given that building control will (in most cases) not be on-site during the works (unlike extensions and loft/garage conversions) more guidance may be needed to ensure that this process does not result in extra costs or hassle for consumers. We would welcome views or suggestions on this issue.

Further considerations

118. The impact assessment demonstrates that introducing a requirement for consequential improvements (especially those linked to domestic boiler and window replacements) has a significant impact, and this element of the policy could contribute the largest carbon saving of the whole Part L package.

119. One of the key assumptions of the concept of consequential improvements is that the long term energy savings are maximised and the hassle for the building occupier is minimised because the works (both the original works and the consequential improvements) are done at the same time. We will need to consider this further, drawing on consultees' views, to ensure that the proposed changes can achieve this aim.

120. The changes should result in an increase in work for small builders, and if the Green Deal is used, this work would be provided at no upfront cost to consumers. But we will need to consider the risk that the new requirements could deter building occupiers from carrying out works. This would mean consumers would not benefit from improved homes (and energy savings from improvements such as better performing windows), and it would also impact on those in industry who carry out such works.

121. We will also be looking at 'hidden' costs. For example, if in order to install a consequential improvement, a householder needed to organise for a different contractor to do the extra work, clear out their loft and take extra time off work to supervise the new contractor, the costs (whether financial or not) should be included in the analysis. The costs to consumers of assessing what measures were/were not required should also be considered. However, we may see businesses develop services to resolve these obstacles, for example by developing 'one stop shop' approaches that offer to provide both the original and consequential works.

122. The impact assessment contains further areas where we plan to update and develop the evidence base. We will consider these further with DECC and the Department for Business, Innovation and Skills (BIS) following the consultation.

Consequential improvements for non-domestic buildings

Non-domestic extensions

123. We have assumed that the majority of extensions to non-domestic buildings below 1,000m^2 will be to domestic style construction. About 80% of buildings with floor area below 1,000m^2 are below 250m^2. Offices of that size are mainly converted Victorian houses used for professional businesses. Hotels of that size will be B&Bs or small boarding houses. Health facilities will be doctors/dentists surgeries. Retail units and warehouses below 1,000m^2 are unlikely to be extended – the occupier is much more likely to trade up to a bigger unit than extend an existing one.

124. For consultation stage, we have therefore assumed that the arrangements for consequential improvements in non-domestic buildings would mirror those for homes, e.g. the requirement would be subject to tests of technical, functional and economic feasibility, with a fixed percentage cost of the original works provided as a guide and with the same options available to businesses for assessing their requirements. Any improvement which is eligible for the non-domestic Green Deal, included in the SBEM list of Energy Performance Certificate recommendations or listed in Approved Document L2B could be used as a consequential improvement[42]. We would welcome views on these assumptions.

Replacement of controlled services and fittings in non-domestic buildings

125. We have considered scope to adopt an equivalent approach for consequential improvements on replacement of controlled services or fittings in non-domestic buildings. However, this has proved difficult due to the wide range of non-domestic building types and disparity in refurbishment costs, particularly associated with building fabric (e.g. walls or windows).

[42] With the exception of the Green Deal, this is the approach taken now for consequential improvements in existing non-domestic buildings over 1000m^2.

126. While the intention is to continue to explore which controlled fittings and services works might act as triggers for consequential improvements, to date the analysis has focussed on replacement of a controlled service. The impact assessment includes two case studies (the replacement of a chiller and an air handling unit), demonstrating what measures could be installed if an indicative 10% of the cost of the original works were spent on upgrading other services. While these case studies identified scope for improvements (in the cases studies, the replacement of the chiller was supported by a replacement boiler and the air handling unit was supported by upgraded lighting) this was only cost-effective where the existing services were below a certain level of efficiency to start with. We would welcome views on these case studies, to help inform further thinking on the introduction of any changes.

127. As explained above, we are not proposing to change the requirements for consequential improvements in buildings over 1000m^2. These would continue to be required on the initial provision of a fixed building service, or an increase to the installed capacity of a fixed building service.

Process and compliance issues

Financing and the Green Deal

128. Because a Green Deal assessment generates a test of cost-effectiveness, a building occupier who could demonstrate to a building control body that they had sought but were unable to obtain Green Deal finance because the package of required measures breached the Golden Rule would have a strong case not to have to make consequential improvements on the grounds this demonstrated that the work failed the test of cost-effectiveness. We would welcome views on whether this approach is workable.

Building control process

129. Extensions, loft and integral garage conversions are all notifiable works, and the builder or building owner should have direct contact with a building control body[43] – by submitting a building notice to the local authority, for example. Therefore it is assumed that the relevant building control body would alert the building owner to the potential requirement for consequential improvements, as is the case currently for buildings over 1000m^2. It would then be the responsibility of the homeowner or business, possibly in consultation with their builder or architect, to take steps to identify and arrange installation of appropriate measures (if any were required). As an extension requires a broad range of works, it is likely that the builder(s) carrying out the work will be either capable of installing the consequential improvement measures, or have ways of arranging the work to be done without significant administrative cost or complication for the building occupier.

[43] local authority building control or an Approved Inspector.

130. The expectation is that consequential improvements triggered by extensions, loft or integral garage conversions will be installed at the same time as the originally planned work, or soon after, and compliance will be assessed as currently by the relevant building control body before a final completion certificate for the project is issued. Because of this good fit with the current process, we do not envisage major problems with introducing these arrangements, but would welcome consultees' views on this.

131. By contrast, domestic gas boilers are installed by Gas Safe registered engineers[44] and the majority of domestic window installations and non-gas (e.g. solid fuel or oil) boiler installations are undertaken by members of Competent Persons schemes[45]. Except in cases where this work forms part of a larger project (e.g. a new kitchen) these installations tend to be standalone jobs. In these cases a building control body has no involvement in the work, though local authorities receive notifications from Competent Person Schemes within 30 days of the work being done.

132. It does not seem appropriate to require such businesses to offer to install consequential improvement measures, as this would extend their role beyond their specialist areas of competence – although some companies may see the Green Deal as an opportunity and make the business decision to do this. As such, we propose to develop an arrangement with Competent Person Schemes and Gas Safe installers so that they will inform the building owner that a consequential improvement may be required and provide information on where to find further advice (for example, through the wording on the certificate of compliance).

133. Local authorities would receive the notifications relating to the boiler and window replacements as happens now. They would be free to follow up to ensure that the consequential improvements had been carried out, but would not be under an obligation to do so. Where the consequential improvements were also notifiable works, they would of course receive information that the works had been completed. Following the existing building control process in this way should ensure a balance between sufficient checks on compliance and avoiding introducing complex new processes and burdens for local authorities and installers. However, it is likely that some local authorities, in particular those planning to operate as Green Deal providers, or in partnership with Green Deal providers, will take a proactive approach in thinking about how best to use this information to respond to demand in their area.

[44] This is a person or company approved in accordance with the Gas Safety (Installation and Use) Regulations 1998. The Health and Safety Executive oversee these arrangements.

[45] Competent Persons schemes are approved in Schedule 3 of the Building Regulations to self-certify that their work complies with the Regulations.

Implementation timing

134. Two options for the introduction of these new requirements for consequential improvements have been considered, taking into account the fact that the framework for the Green Deal is due to be in place in October 2012 and will be supported by £200m to incentivise early take-up over 2012/13 – 2013/14.

    a. A single commencement date with all the requirements introduced in **October 2012** in tandem with introduction of Green Deal, or

    b. A phased approach with consequential improvements triggered where an existing home is extended, or has its energy use or habitable space increased from **October 2012**. The same requirement in relation to smaller non-domestic buildings, plus requirements on replacement boilers and windows and any requirements on replacement of components and fittings in non-domestic buildings would be introduced from **April 2014**.

135. A single commencement date would maximise the carbon saving benefits of the policy and send a strong signal on future demand to the Green Deal market. However, it would mean implementing a significant increase in regulatory requirements over a relatively short period and at a time when industry, building control bodies and consumers are preparing for the Green Deal. There is also a case for allowing the Green Deal, supported by the incentive scheme, to demonstrate its capacity to drive voluntary take-up of energy efficiency measures at scale before exploiting the full potential of regulatory levers.

136. Under a phased scenario, the benefits of the policy remain significant but are realised more slowly because improvements triggered by high volume works (the analysis assumes 1.4 million replacement boilers a year, and new windows fitted in 1 million homes a year) are delayed until April 2014. Whilst the immediate impact on the Green Deal would be limited, future demand for take-up of measures would continue to be underpinned, as a result of a clear plan of action for further regulatory action should voluntary action fail to deliver. This approach would also allow more time for the Green Deal to bed in and industry to adapt, and to consider detailed implementation arrangements, particularly regarding replacement of boilers and windows, where the vast majority of work is undertaken by members of Competent Person Schemes.

137. **The Government's preferred option is to phase in consequential improvements.** This balances the need for urgent action to improve the energy efficiency of our existing stock with time for the innovative approach of the Green Deal to succeed, and for consideration of whether further regulation remains necessary.

Chapter 5

Compliance and Performance

Introduction

138. The 2010 review of Part L recognised the potential for discrepancy between the calculated and as built energy and carbon performance of buildings. Two classes of issue were identified. Firstly, direct non-compliance through the wilful or inadvertent substitution of substandard specifications or poor construction practice and secondly, underperformance that may occur even when regulatory guidance and procedures are followed diligently. Non-compliance and underperformance can be difficult to control since in-situ performance of both fabric and services cannot always be detected using traditional inspection methods.

139. Under performance has many impacts: the customer may not realise expected energy bill savings; Government's commitments to planned carbon savings will not be achieved; and industry may suffer reputational damage if homes do not perform as expected.

140. To help tackle this problem, a number of measures were introduced in 2010 including guidance on tackling party wall heat loss, increased airtightness testing for new homes with 'confidence margins' for those not tested, and improved procedures relating to design submissions to aid enforcement by building control bodies.

141. The Government believes that the regulatory environment should provide the incentives for industry to develop the processes and expertise it needs to ensure that the energy performance of the buildings it produces is achieved and assured as a matter of routine. This chapter sets out a proposed approach to achieving that aim.

142. When considering these issues, it is important to note that the performance of all buildings is a function of both the building technology provided by the design and construction industry and those who manage and use the building. In calculating the performance of buildings for regulatory purposes, the national calculation methodologies assume a standard user regime and there is no intention in the proposals for 2013 to change this position. These proposals focus on ensuring a completed and well commissioned building is capable, under these standard operating conditions, of meeting the carbon targets set within the potential Regulations. Other Government policies, including aspects of regulation, seek to enable owners and users to realise the full potential of all buildings, both newly constructed and existing.

143. It is also important to distinguish between the possible solutions. Government considers that regulation should be a last resort, and as such this consultation discusses different kinds of levers: some regulatory provisions such as mandatory sample testing, voluntary routes such as industry best-practice standards and other initiatives such as training and the provision of guidance.

Compliance and Performance Issues

144. Although it is too early to evaluate the impact of the changes in 2010, further work on the nature of the problem, particularly in new homes, has been undertaken by the Zero Carbon Hub[46].

145. Other recent case evidence continues to add support to the likely existence of a performance gap[47] including studies of the performance of heat pump[48] and solar thermal systems[49]. These have identified a wide variation in performance, citing issues of design and installation as well as the need for more effective advice to users.

146. There are however some grounds for optimism. The Energy Saving Trust work on services conclude that if well designed, commissioned and installed, services could perform at or close to predictions. Some measurements of whole house heat loss contained in the Hub's work show a reasonably close match between predicted and measured values, as do homes measured in a more recent study commissioned by the Good Homes Alliance[50].

147. The Government acknowledges that the available evidence is based on a relatively small number of detailed scientific field studies, but is convinced that the risk of wider scale underperformance cannot be ignored and that the potential performance gap could be very significant. As such, action is needed to investigate and, where justified, make changes to better ensure that standards are met and evidence is produced to show as much.

148. The need to focus on as-built performance has been reiterated by recent work by the Zero Carbon Hub, which recommended that the zero carbon standard for new homes should be based on as-built performance and verified by appropriate physical testing. The Hub also recommended that the industry should work towards a goal that from 2020 at least 90% of all homes should meet or perform better than the

[46] http://www.zerocarbonhub.org/resourcefiles/TOPIC4_PINK_5August.pdf.

[47] *Low Carbon Housing: Lessons from Elm Tree Mews*. Joseph Rowntree Foundation, http://www.jrf.org.uk/publications/low-carbon-housing-elm-tree-mews

[48] *Getting Warmer: a field trial of heat pumps*, Energy Saving Trust: http://www.energysavingtrust.org.uk/Generate-your-own-energy/Air-source-heat-pumps/Heat-pump-field-trial-report

[49] *Here comes the sun: a field trial of solar water heating systems*, Energy Saving Trust: http://www.energysavingtrust.org.uk/Publications2/Generate-your-own-energy/Here-comes-the-sun-a-field-trial-of-solar-water-heating-systems

[50] http://www.goodhomes.org.uk/downloads/news/GHA%20Monitoring%20Report%20-%20APPROVED.pdf.

designed energy / carbon performance. In order to make the changes necessary, the Zero Carbon Hub task group recommended that an industry/government group be established to oversee the change process[51]. A similar recommendation was made in the 2007 Callcutt review of housebuilding delivery[52]:

We recommend that CLG, with the house building industry, construction products industry and representatives of building control, undertake work to ensure that regulatory requirements for zero carbon are verifiable in the course of building control inspections. The technical aspects of verification will need to be considered in parallel with the development of SAP.

149. In the non-domestic sector, similar concerns about performance have emerged in the last 15 years, notably as a result of the PROBE studies[53]. However, the sector is far more diverse than the domestic sector, and the performance issues are likely to involve a wider range of technical challenges. As regulation is developed to meet the Government's goal for zero carbon non-domestic buildings from 2019, performance issues will need to be considered in more detail, building on the experience in securing reliable as-built standards and processes for new homes.

150. The Government is aware that there is a need for a greater volume of data on the energy and carbon performance of buildings. Although the detailed studies provide considerable insight into the nature of and reasons for underperformance, they do not provide a clear picture of the extent of the problem or of the performance distribution across building production as a whole. Should the proposals in this consultation be agreed, it is hoped that these actions will help develop the evidence base.

Proposed measures to improve compliance and performance

151. In preparation for this consultation, the Government have drawn from the work of the Zero Carbon Hub, discussions with the Building Regulations Advisory Committee Part L technical working party and recommendations of the industry working group for this topic.

New Homes

152. As noted above, Part L already requires an element of over design where testing is not undertaken. The performance problems identified suggest to us that the national calculation methods should continue to include confidence margins unless

[51] http://www.zerocarbonhub.org/definition.aspx?page=8.

[52] http://www.communities.gov.uk/archived/publications/housing/thecallcuttreview

[53] Assessing building performance in use 3: energy performance of the Probe buildings. Building Research and Information, Vol. 29, no. 2, pp. 114-128.

the developer can demonstrate that they have in place a robust **quality assurance process** designed to ensure that the intended performance will be delivered through the design and build process. Where house builders can demonstrate this, then confidence factors which might otherwise be required through increasing the Dwelling Emission Rate in relation to the Target Emission Rate could be relaxed. In effect the developer would not have to compensate through over-design since they have reduced their risk of underperformance through tighter performance control and sample testing.

153. The Government believes that an agreed benchmark for a quality assurance approach could be beneficial. This could be done, as recommended by the Zero Carbon Hub and supported by a number of industry partners, through the development of a Publicly Available Specification (PAS)[54] or similar code of practice or standard to codify good practice in the design and construction of homes. A PAS is a fast-track standard developed according to British Standards Institution guidelines. The advantage of a PAS is that it has all the functionality of a British Standard for the purposes of creating management systems.

154. This consultation proposes that industry and Government should work together to develop such a quality assurance standard in advance of the introduction of the 2013 Regulations. The key questions for this consultation are:

    a. Whether using the Regulations to incentivise the use of a new quality assurance process will achieve the aim of better as-built performance for new homes

    b. Whether a PAS is the right approach. Although the discussion which follows refers to a 'PAS', this is not to suggest that other ways of codifying a quality assurance process have been ruled out, and consultees' views on this would be welcome

    c. What such a standard should cover

    d. Who needs to be involved in its development.

155. The ultimate objective of the standard would be to reduce the risks of under-performance although initially taking a sensible step towards that objective. But the adoption of a PAS approach could have other benefits for a participating developer and for building control bodies since the PAS could bring together a broad range of other regulatory requirements relating to such things as use of Competent Persons, airtightness testing, commissioning and testing of services etc. In the longer term it is anticipated that widespread adoption of the PAS would open the way towards a more streamlined approach to building control, involving the use of stronger

[54] http://shop.bsigroup.com/Navigate-by/PAS/

competency provisions and potentially an element of self-certification. Government proposes that the PAS, when developed, is referenced in Approved Document L1A as a way of demonstrating that the levels of performance required by regulation and shown in the original design can be achieved in practice.

156. For such an approach to work, developers and others in the supply chain will need a way to demonstrate that they were following the PAS. This would need to be sufficiently robust to provide confidence in the process, but sufficiently simple to avoid creating burdens for building control bodies in verifying claims of compliance. The Department can see advantages in an approach which involves formal United Kingdom Accreditation Service (UKAS) accreditation to appropriate standards (e.g. ISO 9001) as this would provide both an initial approval and ongoing monitoring, but would welcome views on whether this is workable, and ideas on other approaches.

157. To avoid an overly restrictive approach, a house builder should have the choice of using their own performance control system, as long as this provides equivalent levels of assurance as a quality system following the PAS. Those adopting this route would need to demonstrate this equivalence to building control.

158. Where a house builder decided that they did not want to follow a quality assurance standard, the National Calculation Methodology for new homes would be modified to include an addition (a confidence adjustment) to the calculated Dwelling Emission Rate. The effect of this addition would be to increase the Dwelling Emission Rate, and therefore in order to meet the fixed Target Emission Rate, a developer would have to over-design by improving the specification of energy and carbon-saving measures. The intention of this would be to mitigate the risk of underperformance where a quality assurance process had not been followed.

159. The specification would be increased to compensate for the adjustment by a set percentage, meaning the required standard would still be performance based and technology neutral. Ways that designers could achieve the extra saving required might include increased insulation levels and/or additional services solutions to increase efficiency, reduce demand or provide carbon free energy. It is proposed that an adjustment factor of 3% be adopted for 2013 and reviewed for 2016 in the light of additional data on as-constructed performance.

Scope of the quality assurance process

160. For such a quality assurance process to be ready in time to be recognised in 2013, development work will need to start as soon as possible following this consultation. This consultation sets out the Government's current thinking on the potential extent and nature of the PAS. It is anticipated that different industry sectors will develop sections of the PAS that are relevant to their sector, building on recognised best practice, existing voluntary standards, existing Competent Person Schemes and any

additional elements that improve process. Each section would be designed to fit into a common set of principles and process standards so as to ensure that all achieve the same end.

161. Any standard would need to cover the life cycle of the house building process (design, procurement and supply, construction, commissioning and handover) thereby codifying the end to end process requirements for the design and production of homes. It could also be supported by a representative element of physical testing (on a sample basis) and feedback processes to aid continuous improvement.

162. Whilst the PAS, for practical and cost reasons, would need to be relatively simple, some of the areas that impact 'as built' performance, and thus might be covered, are described below to provide context. This list is not intended to be definitive or exhaustive, and suggestions for additions, deletions and amendments will all help the group in the development of the new standard.

163. **Design**: the whole design process from inception to detailed design. Issues to be addressed might be: robustness of design calculations (e.g. U-value and/or thermal bridging calculations); assessment of performance data (particularly for novel systems), and assurance that designs are buildable, accurate and contain an appropriate level of detail for use on site.

164. **Construction**: both construction of fabric and the installation of fixed services. Issues to be addressed might include ensuring that site operations follow the design specifications, sequencing, skills, competency requirements and training/briefing requirements.

165. **Use of systems**: The PAS could make provision for suppliers of construction systems (either fabric or services) to provide performance-assured systems to simplify developer processes and integrate with other systems.

166. **In-production performance control and appropriate testing regimes**. The PAS might give guidance about key stages at which testing could be undertaken to minimise the level of sample post construction testing. This might include a mix of traditional inspection and some in-production performance testing, for example, airtightness testing at air-barrier completion stage to detect and rectify leakages before finishes are applied. The system would be expected to include services testing and commissioning tests which could be undertaken in-house or by an external body. It is anticipated that such in-production tests would be subject to a low level of PAS audit but would remain confidential to the developer undertaking the works.

167. **Post-construction testing**: The objective would be to confirm (or not), on a sample basis, that the expected level of performance was being achieved, not to demonstrate that a particular dwelling complied. Capturing feedback from this testing could also provide information to allow a developer's processes to be continually improved. Initially, the PAS might specify a level of sample testing (eg whole house fabric co-heating tests or equivalent carried out post completion but pre-occupation). With time, as more is learnt, it could become more detailed, specifying actions to be taken in the event of underperformance occurs, and even triggering forensic testing when underperformance is detected (e.g. instrumenting homes to study a specific aspect of performance). During the development of the PAS the level of independence of testing would need to be agreed.

168. **Feedback and continuous improvement**: Learning and feedback are crucial to closing the performance gap and keeping it closed in the future. For this reason the PAS would need to consider an appropriate framework to inform the development of the housebuilders own quality and performance control approach / system and make improvements to processes as required.

Introducing a quality assurance process

169. It is assumed that a developer would need to demonstrate that they were able to operate in accordance with the PAS over a reasonable period of time. This increases the importance of starting the development work on the standard as soon as possible. The sooner developers start to implement new processes, the more learning can be generated in advance of 2016 and the implementation of zero carbon.

170. As indicated above, the aim of a PAS would be to offer a way for developers to be deemed to have met those elements of regulation and guidance covered by the standard. Thus, for example, since requirements for airtightness testing could be included in the PAS, the testing requirements set out in Regulation 43 could be met automatically in homes built by developers following the PAS. However it would be necessary for the developer to prove their compliance with the requirements of the PAS in the case of each new home on a development, and for building control to check this as necessary.

171. Given that one of the intended benefits of this route to compliance is the development of independent performance data, there would be benefits if those developers following the PAS were to agree to test data being stored for future analysis and (potentially) development of policy and regulation. The lodgement of data could apply also to data from airtightness testing undertaken on developments where the default route to compliance was adopted, and other contextual information, such as data on construction form.

172. All other aspects of the standards, as set out in the proposals for modified Regulations and Approved Documents would be applied. In particular, there are no proposals to relax compliance requirements with respect to such aspects as airtightness testing and commissioning. If test data from developers following the PAS is to be centrally collected, there would be benefit if compliance test data provided to building control under the Regulations could also be included.

New non-domestic buildings

173. Given the diversity of building types in the non-domestic sector there are no parallel proposals involving the development and application of an overall approach to quality processes incentivised by confidence factors. However, the Government accepts the need for progress to be made in improving the performance of non-domestic buildings. The experience gained from the implementation of the measures proposed for new homes and other data from supporting research could be evaluated and considered in any review for 2016.

174. Independent accreditation of quality assurance schemes for construction joint details is currently disapplied from Part L 2010, and the option for quality assurance schemes is not included in this consultation.

175. For 2013 we are however suggesting that signposting guidance in Approved Document L2A might encourage developers to obtain and act upon feedback from their buildings in use. The BSRIA Soft Landings[55] approach provides a model process for briefing, design, construction and commissioning of buildings, including feedback from the first 3 years of use. The aim is that a recently completed building can be tuned to meet user needs and to ensure that energy and carbon performance is maximised. The process also provides for learning to be collated and applied in the design, construction and commissioning of subsequent buildings.

176. The parallel consultation on proposed changes to the building control system is also considering ways to incentivise and strengthen the compliance role of those carrying out building work. One way of doing this would be to allow for the introduction of Appointed Persons under powers in the Building Act 1984. For larger developments it may prove cost effective for developers to voluntarily bear the additional cost of an Appointed Person and benefit from potentially fewer building control inspections and lower building control charges.

177. Views and suggestions for addressing compliance and performance issues in non-domestic buildings would be welcome.

[55] http://www.bsria.co.uk/services/design/soft-landings/

Existing buildings

178. As part of the establishment of the Green Deal, DCLG is working with DECC to develop a joint accreditation framework to cover energy assessors, Green Deal advisers and Green Deal installers. It is intended that the framework for installers would draw upon existing standards and certification where appropriate and Building Regulations Competent Person Schemes framework extended to support the Green Deal.

179. As part of a separate exercise new conditions of authorisation are being proposed for Competent Person Schemes and in future schemes would be required to achieve accreditation to the relevant British Standards and commit to monitoring by UKAS.

Education and training

180. Producing low carbon buildings that achieve the required energy and carbon performance is highly dependent on improvements in understanding, knowledge and skills in all sectors of the industry. However, the responsibilities for achieving this are widely distributed, with many agencies involved.

181. In order to provide the necessary support to the Regulations it is proposed to work with industry partners, training providers, the professions, education institutions and competency accreditation scheme providers, to develop a framework of education and training based on the following outline:

    a. **Regulation specific training programmes**: As was the case for previous Part L amendments, it is anticipated that programmes will be developed by building control bodies, developer organisations, Competent Persons Scheme providers and the professions that deal with the 2013 changes and aspirations for 2016, 2019 and beyond. This training could deal also with the key issues in understanding as-built performance and the critical requirements for feedback and testing, including in-use feedback. The programmes would use as their baseline, the process and performance control standards developed as part of the PAS (for new homes) and the processes and procedures in relation to non-domestic buildings. Against this general background, more detailed training programmes in relation to system specific elements of the PAS and supporting competency schemes could be developed as part of the PAS programme.

    b. **Testing and evaluation skills development programmes**: if the verification of as-built performance involves more performance testing than at present, then education and training programmes will need to be developed to increase the capacity of the industry to undertake in-situ testing of buildings. This could

be done in conjunction with existing testing providers and, as part of the PAS development for new homes, could include accreditation processes to ensure that testing organisations have the appropriate level of competence.

c. **Wider education and training programmes**: In its 2010 report on Low Carbon Construction[56], the BIS Innovation and Growth Team recognised the need to broaden and deepen the understanding of low carbon building performance in all parts of the industry. Achieving deeper understanding requires a shift in emphasis within built environment education. For new entrants and for existing practitioners there is a need to review existing provision and the marshalling of existing resources to ensure that low carbon performance has a higher priority. To achieve the improvement required, the Sector Skills Councils, Universities and colleges, professional bodies and the education funding agencies should develop and maintain education and training to support the production of low and zero carbon buildings.

Research and development

182. Given the level of change that is anticipated over the next 5 to 10 years it is crucial that the industry, supported by government (e.g. through the Technology Strategy Board's Building Performance Evaluation programme) invest in research and development programmes. Examples of topics to be covered might include:

    a. Improving the evidence base on energy and carbon performance of buildings

    b. Production and process control to enable the development, monitoring and review of the PAS for new homes and consider how this might be further developed and applied in the non-domestic sector

    c. Measurement and testing processes. The range of the available testing methods is limited and needs further development if it is to be used effectively to verify as-built performance and provide feedback while minimising the cost burden to developers. For example the testing of whole house heat loss and effective measurement of services as-installed performance

    d. Buildings in use: although the developer cannot control directly the way a building is used, the way a building is designed and constructed can have a profound influence on energy and carbon performance and better data is needed to improve guidance on user issues.

[56] http://www.bis.gov.uk/assets/biscore/business-sectors/docs/l/10-1266-low-carbon-construction-igt-final-report.pdf

183. To enable industry to make the adjustments necessary, the feedback from research and development programmes should be disseminated widely across the industry and fed into education and training programmes. To this end, such a dissemination framework could be based on the development and maintenance of the PAS for new homes and on the outcomes from the research and development programme set out above.

The building control system

184. Many of the proposals for improvements to Part L set out in this consultation would have an impact on the nature of the building control system as a whole, which is the subject of a parallel consultation. In particular the proposed introduction of a process control route to compliance for new homes could have embedded within it a strong element of certification by third parties and self-certification based on lodged performance evidence. Similarly, the proposals for a review and strengthening of accredited competency schemes would enable the application of third party verification through Appointed Persons and similar mechanisms.

185. In considering responses to this Part L consultation, Government will take account of relevant responses to the parallel consultation on the building control system. When responding to the Part L consultation proposals, consultees are asked to consider their response in the context of these wider proposals. These include potential changes to local authority and Approved Inspector processes, potential removal of the Warranty Link Rule, strengthening of enforcement procedures and the potential for the introduction of Appointed Persons and/or specialist third party certification schemes. Full details can be found in consultation section four.

Chapter 6

Future thinking

186. The aim of this chapter is to provide a context for the 2013 changes, and an indication of some of the issues which are not being considered directly in this review, but which may be developed in more detail in future reviews.

Zero carbon homes

187. The Government's March[57] and May[58] 2011 statements on a zero carbon homes standard, to apply from 2016, said that the Government would use the recommendations of the Zero Carbon Hub as a starting point for future consultation to identify cost-effective levels for on-site carbon emission levels ('carbon compliance' targets).

188. These Zero Carbon Hub recommendations were published in February 2011[59], and have been used to inform the 2013 review. As explained in the previous chapter, the proposed carbon compliance limits have been used as a guide on where to set 2013 standards for new homes, and the Hub's recommendations (and industry's commitment) to move to an as-built performance standard are a key input to the discussion on compliance and performance.

189. The Hub report also presented a number of other recommendations. Some of these will require further technical modelling as part of the next Building Regulations review, including rebasing absolute targets to take account of changes in (for example) costs, SAP and CO_2 emission factors. Others will require further policy consideration by Government in preparation for 2016, including a decision on whether it is legally workable and/or appropriate to allow standards to be averaged across a whole development.

190. Our initial view is that the most pressing of these issues is the treatment of apartments in high rise blocks (over four storeys). The Hub's February 2011 proposals made no recommendation on 2016 carbon compliance levels for these homes, partly because of the difficulty of finding cost-effective standalone renewable energy

[57] http://cdn.hm-treasury.gov.uk/2011budget_growth.pdf page 117

[58] http://www.communities.gov.uk/statements/newsroom/1905627

[59] http://www.zerocarbonhub.org/definition.aspx?page=8

generation technologies which could be used in such buildings[60]. To move this work forward, it may be that Government needs to decide whether it is acceptable either for 'zero carbon' on-site standards for these homes to remain around current/2013 performance levels, and/or whether it may be necessary to find a different approach to setting standards – by treating these as non-domestic buildings, for example. Government will consider this issue further in the coming months.

191. Beyond the on-site carbon compliance standards, Government is developing an approach to 'allowable solutions' which will allow developers to support off-site carbon reduction measures (such as district heating schemes) where it is not technically feasible or commercially viable to abate all carbon emissions through on-site means. By supporting investment in local priorities for renewable energy and energy efficiency, this approach could empower communities and drive local sustainable growth and carbon reduction. In May 2011 the Government set out some general principles on this, and in response the Zero Carbon Hub has brought together cross-sector thinking on how allowable solutions can be made to work in practice. We plan to set out further thinking on allowable solutions in spring 2012.

Changes to future energy standards in the Code for Sustainable Homes

192. The Code is due for revision to bring it up to date with the changing policy background, and in particular to align it with the developing zero carbon homes policy. The Government intends to consult on a revised Code in spring 2012, and to publish a final version alongside the final 2013 Part L changes. This will take into account further work clarifying the specifics of carbon compliance targets, any results arising from this Part L consultation, and also relevant proposals about the Code arising from Sir John Harman's review of housing standards.

193. At present, to achieve Code Level 4, developers would need to demonstrate a 25% improvement on 2010 standards[61], and to meet Code level 5, they would need to demonstrate a 100% improvement on 2010 standards (i.e. zero 'regulated' emissions from the building). The Hub's current recommendations for carbon compliance targets (10-14kgCO_2/m^2/year) lie somewhere between a 25 and 100% improvement (possibly between 25 and 35% improvement depending on house type), and are expressed in a different metric (absolute targets by house type, rather than a relative improvement). Although the Hub have acknowledged that these recommendations will need further refinement, this raises the question of whether

[60] In fabric performance terms, these buildings are already achieving much higher levels of performance than many other dwelling types, as they have a naturally efficient form. However, given the very small area of roofspace per dwelling (averaged across the block) the potential for photovoltaics (i.e. the proxy renewable technology used by the Hub) is much lower than in other dwelling types.

[61] ENE1 Energy and Carbon Dioxide emissions, p32: http://www.planningportal.gov.uk/uploads/code_for_sustainable_homes_techguide.pdf

the ENE1 scale should be amended to better align the Hub's recommendations, so that these directly equate to a particular Code level (either a new level, or by recalibrating existing levels, for example) rather than to an undefined point on the ENE1 scale.

194. The Government's definition of zero carbon homes includes an element of off-site carbon abatement. The focus of the Code is on promoting ambitious approaches to fabric efficiency and on-site low carbon energy and heat generation technologies. Building to the Code should help test on-site solutions and provide learning in the run-up to 2016. However, this raises questions on whether the ENE1 requirements for Levels 5 and 6 should be retained as 'gold standard' on-site abatement targets or whether the Code should in future be amended to reflect only the levels of *on-site* emissions reduction that are/will be required by the Building Regulations, and whether off site solutions should be included.

195. These issues will be considered further in the consultation on the future of the Code.

196. Where local planning authorities wish to set environmental targets for new homes at a level higher than Building Regulations, the National Planning Policy Framework requires that these should be subject to viability testing. Notwithstanding legitimate local aspirations to seek higher sustainability standards, this is to ensure that necessary development is not hindered through unrealistic policy expectations.

197. Finally, in setting additional carbon policy aspirations relating to new housing, authorities need to take care to avoid confusing the Code and zero carbon policy. The Government's policy aim for all homes to be zero carbon from 2016 only overlaps with one small part of the Code – the energy section. The Code however remains a voluntary scheme, and there is no Government policy promoting any specific Code levels, let alone Code Level 6 (aside from Homes and Communities Agency funded schemes to be built at Code Level 3). A Code home incorporates many more sustainability features than just energy related equipment, and is significantly more expensive to build.

Zero carbon non-domestic buildings

198. Since December 2010, when the Government confirmed its commitment to zero carbon for new non-domestic buildings from 2019, DCLG has been carrying out technical analysis on possible regulatory performance standards for energy efficiency and carbon compliance. Research was published in July 2011, and this has been discussed in detail with industry partners, including at a UK Green Building Council seminar in August 2011[62].

[62] http://www.ukgbc.org/site/event/show-event-details?id=529

Metrics

199. As discussed above, one of the options for 2013 is to introduce 'absolute' energy (but not carbon) targets for new homes, in line with the Zero Carbon Hub's recommendations. Many of the benefits of this approach could apply equally to non-domestic buildings in principle – e.g. having an internationally understood metric, and driving efficient built form. However, technical modelling and discussions with industry have revealed that absolute regulatory performance standards could be problematic for non-domestic buildings.

200. For 2019 zero carbon standards, the Government proposes to retain the current approach of setting standards relative to concurrent notional buildings for the following reasons:

    a. the flexibility of the current approach allows the standards to reflect the huge variety of non-domestic building types, and also uses within those types (so an absolute 'office' standard might fail to reflect the differences in intended use/ occupation pattern between two very similar buildings)

    b. it is debateable whether the Building Regulations are the right tool to drive efficient built form in the non-domestic sector, when the use of regulation will make building more costly and potentially even impossible. For example, some buildings may need to be a particular form for legitimate functional or environmental reasons (e.g. a hospital needing adequate circulation space, or an office which uses a constrained site, but is close to a transport hub and reduces car use).

201. This is the approach which we consider to be most appropriate for a regulatory build standard. Where industry see the value in using different (e.g. absolute) metrics in voluntary rating schemes or declarations of in-use energy consumption then they should be free do so.

Energy efficiency standards

202. At present the only control on the efficiency of fabric and services in non domestic buildings is through the backstop standards in technical guidance (Criterion 2). While these are generally followed, and seen as 'de facto' regulation, strictly speaking they are only guidance, and as 'worst acceptable' values they are some way back from what would be required to secure compliance with regulatory CO_2 targets. One of the underpinning principles of zero carbon buildings has been to take a 'fabric first' approach and require a high (but cost-effective) level of fabric efficiency, and we have therefore been considering whether a stronger regulatory basis is needed for these standards.

203. The Department considers that this issue needs further work, and there is no clear way forward on how to approach energy efficiency standards for zero carbon non-domestic buildings. Setting standards in regulation would provide assurance that a baseline level of fabric efficiency would be achieved, and avoid renewable energy systems being used to meet the regulatory CO_2 target at the expense of reasonably efficient fabric. On the other hand, backstop values mean that designers can flex the specification they use, using (for example) lower fabric standards in buildings with high heat gain. DCLG will continue to consider this issue as part of future Building Regulation reviews.

CO_2 targets

204. Budget 2011 announced that the definition of zero carbon for new homes would be limited to emissions potentially covered by the Building Regulations – space heating, hot water and fixed lighting, for example. Following extensive discussions with industry[63], the Government has decided that the same principle should apply to non-domestic zero carbon standards, on the basis that:

    a. this is fair and consistent for developers, in particular for those building mixed-use developments

    b. it will avoid double-counting of energy use between the zero carbon standards and energy/carbon trading schemes such as the Carbon Reduction Commitment, and reduce the overlap with the EU Emissions Trading Scheme

    c. it is a workable approach for a point-of-build standard, and avoids the need for regulation to cover multiple different standards for all the different non-domestic building types and uses

205. We are assuming that the National Calculation Methodology will continue to take account of plug-in loads where these affect fuel and power use (e.g. through heat gains). The Department has seen no evidence that excluding unregulated energy will impact on the efficiency of building design, or result in perverse outcomes. We will consider whether the way in which SBEM calculates these loads needs to be reviewed.

206. Further work is needed to understand where the appropriate boundary between on-site and off-site solutions lies. The capability for different non-domestic buildings to incorporate renewables cost-effectively varies significantly with building form, intended use, location, aspect and other factors. Lower/less demanding on-site limits would not decrease the level of carbon saved (as 100% of regulated building emissions must be abated in all cases) but this could increase flexibility for

[63] This has been discussed with industry partners over summer 2011, but the issue also has a long history in relation to the non-domestic zero carbon standards, and was covered in the previous administration's consultation on policy options in November 2009. The response to that consultation on this issue was very mixed.

developers/designers/portfolio owners to assess where and how it was most cost-effective to abate these emissions. Higher/more demanding on-site limits could drive the market to innovate to find cost effective ways to deliver regulatory targets, but could also force some buildings towards non cost-effective renewables. This issue will be considered further in future reviews of the Regulations and in development work on any allowable solutions regime.

The recast Energy Performance of Buildings Directive

207. In June 2010 the recast of the 2002 Energy Performance of Buildings Directive (Directive 2010/31/EU) was published in the Official Journal of the EU. The recast Directive includes a number of new provisions relating to energy performance standards for new and existing buildings, and changes to the Building Regulations[64] will be a part of the UK's transposition of the Directive. Some of the technical requirements are covered in the draft amendments to the technical guidance and National Calculation Methodology which accompany this consultation.

208. The Directive also introduces new requirements in relation to 'nearly zero energy' buildings. A 'nearly-zero energy building' is defined in Article 2.2 as a building with very high energy performance, as determined in accordance with Annex 1 of the Directive[65]. It is the Government's view that the existing commitments to zero carbon buildings satisfy the Directive's requirement for Member States to ensure that all new buildings are 'nearly zero energy' buildings from 2020, and our definition of zero carbon can be equated to 'nearly zero energy'. Indeed the Building Regulations already provide the basic structure for compliance with the definition of 'nearly zero energy', as they cover all the parameters in Annex 1 of the Directive. The calculation of 'high' (but also 'cost-optimal') energy performance levels for buildings will be done as part of the development of the zero carbon standards and periodic Building Regulations reviews.

209. The second part of Article 2.2 sets an aspiration for 'nearly zero energy' buildings to have their remaining energy demand met by renewable generation. Again it is our intention that the zero carbon standards will meet this aspiration. Zero carbon buildings will have to meet on-site carbon emission standards which (though the Building Regulations are technology-neutral) will be met in most cases through a combination of energy efficiency measures and building-integrated renewables. While the allowable solutions regime is still in development, potentially it may include support for renewable energy schemes.

[64] Note that the Building Regulations under discussion here apply to England. Wales, Scotland and Northern Ireland are making separate arrangements for the relevant aspects of transposition.

[65] See Article 2.2 for the definition of a 'nearly zero energy building' and Article 9 for the main provisions: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:153:0013:0035:EN:PDF

210. The Directive also requires Member States to set out intermediate targets for improving the energy performance of new buildings by 2015. The phased introduction of zero carbon standards has already begun in England, with the Part L 2010 changes, with this review marking the next step towards 2016 and 2019. Given this timetable is established within industry we do not see any benefit in changing this to exactly meet the timescales set out in the Directive.

211. The Recast provides that Member States may decide not to apply the requirements for nearly-zero energy buildings in specific and justifiable cases where the cost-benefit analysis over the economic lifecycle of the building in question is negative. This fits well with our current approach to cost benefit analysis and standards will continue to be set on the basis of cost-effectiveness.

212. To meet the transposition requirements in Article 28 of the Directive, the regulations will be amended by July 2012. Further detail on how zero carbon equates to nearly zero energy status (and the timescales for delivery) will be set out in the national action plan required by Article 9, which also needs to be developed and submitted to the Commission by July 2012.

Impacts of a changing climate

213. The 2010 Future Thinking Paper[66] flagged some of the ways in which the changing climate could have impacts for the Building Regulations. One of the issues under consideration is the potential effect that tighter envelopes could have upon indoor air quality and indoor temperatures, as we take action to improve energy performance and reduce carbon emissions. This is why the ventilation standards in Part F were improved in 2010 and new requirements and guidance for installation and commissioning of ventilation systems were introduced. We are aware of industry work on ventilation systems and indoor air quality in homes and will be considering the need for further research.

214. As part of Government's wider built environment resilience work we are currently reviewing the evidence on overheating in homes – with a focus on the causes and impacts of overheating and initial consideration of potential policy options. We will publish initial findings in early 2012.

215. This work will help inform whether there is a case for intervention, including possible future changes to other parts of the Building Regulations and/or changes to the National Calculation Methodology and SAP, alongside potential non-regulatory approaches. We will want to consider the issue of internal temperature in the round – including the potential impacts of cooling demand on energy efficiency, as well as immediate health impacts from overheating.

[66] http://www.communities.gov.uk/documents/planningandbuilding/pdf/partlf2010consultationvol1.pdf

Non-domestic standards – increasing the scope of the regulations

216. Currently Part L and the associated compliance tools address most, but not all, of the energy demands for building services. Notable exceptions include vertical transport.

217. As identified in the 2010 Part L Future Thinking Paper, vertical transport (lifts, escalators) is a significant energy consumer in some building types, accounting for up to 15% of energy costs[67]. This, coupled with a significant increase in high rise developments, means that they are an increasing contributor to energy use and we need to consider whether and how to ensure that reasonable energy efficiency is attained in practice. A European standard for these is currently in development[68], and having discussed with industry, it is considered better to wait until this is published before considering introducing performance standards into statutory guidance.

218. However, the Approved Documents now draw attention to lifts, escalators and moving walkways, pointing out that although they are not fixed building services controlled by the Building Regulations, building owners should pay attention to their energy performance.

Future SBEM issues

219. Currently the methodology of calculation of the energy performance of buildings for non-domestic buildings include the Government owned SBEM or approved Dynamic Simulation Models. The differing results between SBEM and approved Dynamic Simulation Model packages have been reduced as a result of successive SBEM updates. As long as comparative target setting procedures/metrics (as proposed for Part L 2013) are retained, this is tolerable. However, as performance standards move towards zero carbon (i.e. an 'absolute' 100% reduction in regulated emissions) the variability in results may become unacceptable.

220. Looking beyond 2013, the industry working group have recommended that consideration be given to moving towards a single core calculation procedure as the way of demonstrating compliance for all types on non-domestic building. In developing this with industry we would need to consider the level of complexity required for regulatory purposes, and the importance of providing space for the market to compete (e.g. with added value functionalities). This is an area for consideration by the proposed SBEM Integrity Group.

[67] CIBSE Guide F *Energy efficiency in buildings*, 2006.

[68] BS EN ISO 25745-1 – Energy performance of lifts, escalators and moving walks – Part 1: Energy measurement and conformance

Annex A

Building Regulations Advisory Committee Technical Working Party

- **Chair**, Lynne Sullivan, Sustainable by Design
- John Tebbit, Construction Products Association
- Nick Cullen, Hoare Lee
- Dave Mitchell, Home Builders Federation
- Trevor Haynes, Birmingham City Council
- Adrian Levett, Consultant, Consumer Protection
- Thiru Moolan, Building Control, Wandsworth

Devolved Administration Observers

- Welsh Government
- Northern Ireland Government
- Scottish Government

Government Observers

- Department for Communities and Local Government
- Department for Business, Innovation and Skills
- Department of Energy and Climate Change
- DCLG contractors (an AECOM consortium including Europe Economics, the Zero Carbon Hub and the Building Research Establishment)

Working Group 1 (Domestic Standards and Calculation Methods)	**Working Group 2 (Non Domestic Standards and Calculation Methods)**
Association for Environment Conscious Building / Good Homes Alliance Building Research Establishment British Electrical and Allied Manufacturers Association British Rigid Urethane Foam Manufacturers' Association, British Plastics Federation, European Phenolic Foam Association British Woodworking Federation Builders Merchant Federation Chartered Institution of Building Services Engineers Construction Products Association Cyril Sweett Department of Energy and Climate Change Federation of Environmental Trade Associations Glass and Glazing Federation Heating and Hot Water Industry Council Heating Equipment Testing and Approval Scheme Home Builders Federation House Builders Association Insulating Concrete Formwork Association Local Authority Building Control Mineral Wool Insulation Manufacturers Association Modern Masonry Alliance National Federation of Roofing Contractors NHBC Renewable Energy Association Royal Institute of British Architects The Association of Controls Manufacturers The Electric Heating & Ventilation Association The Lighting Association UK Timber Frame Association Zero Carbon Hub	British Electrotechnical and Allied Manufacturers Association British Plastics Federation British Retail Consortium British Rigid Urethane Foam Manufacturers' Association / European Phenolic Foam Association BSRIA Building control Building Control Alliance Building Controls Industry Association Building Research Establishment CEN, European Committee for Standardization Chartered Institution of Building Services Engineers Construction Products Association Energy Systems Trade Association, Modular and Portable Building Association Engineered Panels In Construction Federation of Environmental Trade Associations ICOM Energy Association Institution of Environmental Science Lighting Industry Federation Metal Cladding and Roofing Manufacturers Association National Association of Rooflight Manufacturers Renewable Energy Association Royal Institute of British Architects Zero Carbon Hub

Working Group 3 (Part L Compliance and performance)	**Working Group 4 (Retrofit and the Green Deal)**
Air Tightness Testing and Measurement Association Association for Conservation of Energy Association of Building Engineers Association of Consult Approved Inspectors BRE, Building Research Establishment British Board of Agrément British Rigid Urethane Foam Manufacturers' Association/ European Phenolic Foam Association / British Plastics Federation BSRIA Chartered Institution of Building Services Engineers Competent Persons Forum Construction Products Association Federation of Environmental Trade Associations Home Builders Federation LABC, Local Authority Building Control Malcolm Bell, author of Elm Tree Mews Report as a Zero Carbon Hub Advisor Modern Masonry Alliance Modular and Portable Building Association Robust Details Limited The British Electrotechnical and Allied Manufacturers Association Timber Research and Development Association Zero Carbon Hub	Association for the Conservation of Energy British Council of Offices British Property Federation Centre for Sustainable Energy Chartered Institution of Building Services Engineers Confederation of British Industry Consumer Focus Existing Homes Alliance Forum for the Future Fuel Poverty Advisory Group Heat and Hot water Industry Council Homes and Communities Agency LABC, Local Authority Building Control Leasehold Advisory Service Local Government Association National Association for Estate Agents National Housing Federation National Landlords Association National Organisation of Residential Associations Residential Landlords Association Royal Institute of British Architects Royal Institution of Chartered Surveyors The Association of Residential Letting Agents UK Business Council for Sustainable Energy Which?

DCLG officials attended the meetings of working groups and both BRAC technical working party meetings as observers. DCLG's contractors (the AECOM consortium) attended some of working group 1 and 2's meetings, and both BRAC technical working party meetings as observers. DECC officials attended working group 1, 3 and 4 meetings as observers.

Annex B

Response form 1

Section two:
Part L (Conservation of fuel and power)

Form 1: Consequential improvements for existing buildings

We are seeking your views on the following questions on the Government's proposed changes to Part L of the Building Regulations. This form is to be used to respond to the proposals in Chapter 4 and the changes to Approved Documents L1B and L2B relating to the proposed requirements for consequential improvements in existing buildings. The closing date for the submission of this form is **27 March 2012**.

If possible, please could you respond by email to:

building.regulations@communities.gsi.gov.uk

Alternatively, responses can be sent by post to:

Building Regulations Consultation
Building Regulations and Standards Division
Department for Communities and Local Government
Zone 5/G9
Eland House
Bressenden Place
London SW1E 5DU

About you:

(i) **Your details**

Name:	
Position:	
Name of organisation (if applicable):	
Address:	
Email:	
Telephone number:	

(ii) **Are the views expressed on this consultation an official response from the organisation you represent or your own personal views?**

Organisational response ☐ Personal views ☐

(iii) **Are your views expressed on this consultation in connection with your membership or support of any group? If yes please state name of group:**

Yes ☐ No ☐

Name of group:

(iv) **Please tick the *one* box which best describes you or your organisation:**

Builders/Developers:	**Property management:**
Builder – Main contractor ☐	Housing association (registered social landlord) ☐
Builder – Small builder (extensions/repairs/maintenance, etc) ☐	Residential landlord, private sector ☐
Installer/specialist sub-contractor ☐	Commercial ☐
Commercial developer ☐	Public sector ☐
House builder ☐	**Building Control Bodies:**
Building Occupier:	Local authority building control ☐
Homeowner ☐	Approved Inspector ☐
Tenant (residential) ☐	**Specific Interest:**
Commercial Building ☐	Competent person scheme operator ☐
Designers/Engineers/Surveyors:	National representative or trade body ☐
Architect ☐	Professional body or institution ☐
Civil/Structural engineer ☐	Research/academic organisation ☐
Building services engineer ☐	**Energy Sector** ☐
Surveyor ☐	**Fire and Rescue Authority** ☐
Manufacturer/Supply Chain ☐	**Other** (please specify) ☐

(v) **Please tick the *one* box which best describes the size of your or your organisation's business?**

Micro – typically 0 to 9 full-time or equivalent employees (incl. sole traders) ☐

Small – typically 10 to 49 full-time or equivalent employees ☐

Medium – typically 50 to 249 full-time or equivalent employees ☐

Large – typically 250+ full-time or equivalent employees ☐

None of the above (please specify) ☐

(vi) **Are you or your organisation a member of a competent person scheme?**

Yes ☐ No ☐

Name of scheme:

(vii) **Would you be happy for us to contact you again in relation to this consultation?**

Yes ☐ No ☐

DCLG will process any personal information that you provide us with in accordance with the data protection principles in the Data Protection Act 1998. In particular, we shall protect all responses containing personal information by means of all appropriate technical security measures and ensure that they are only accessible to those with an operational need to see them. You should, however, be aware that as a public body, the Department is subject to the requirements of the Freedom of Information Act 2000, and may receive requests for all responses to this consultation. If such requests are received we shall take all steps to anonymise responses that we disclose, by stripping them of the specifically personal data – name and e-mail address – you supply in responding to this consultation. If, however, you consider that any of the responses that you provide to this survey would be likely to identify you irrespective of the removal of your overt personal data, then we should be grateful if you would indicate that, and the likely reasons, in your response, for example in the relevant comments box.

Questions:

Consequential improvements in existing homes

1. Do you agree with the proposal to require consequential improvements upon extensions or increases in habitable space in existing homes below 1000m^2? Please explain your view.

   Yes ☐ No ☐ Don't know ☐

   Comments

2. The consultation explains that the regulatory requirement for consequential improvements upon domestic extensions or increases in habitable space would be limited to measures which were 'technically, functionally and economically feasible', with guidance setting out a value for the consequential works. Should this be set as:

   A minimum 10% of the value of the principal works ☐

   A maximum 10% of the value of the principal works ☐

   Another % value (please explain below) ☐

   Another approach (please explain below) ☐

   Don't know ☐

   Comments

3. The consultation proposes that the measures eligible for use as consequential improvements should be the list in SAP which is used to generate Green Deal assessments and Energy Performance Certificate recommendations and to determine eligibility for the Green Deal. Do you agree?

   Yes ☐ No ☐ Prefer a different list (please specify) ☐

   Don't know ☐

   Comments

4. Do you agree with the proposal to introduce consequential improvements upon replacement of a domestic boiler in existing homes?

   Yes ☐ No ☐ Don't know ☐

   Comments

5. Do you agree with the proposal to introduce consequential improvements upon replacement of multiple windows in existing homes?

   Yes ☐ No ☐ Don't know ☐

   Comments

6. What threshold number of replacement windows do you think is most appropriate to trigger consequential improvements:

50% of the windows in the home ☐

50% of the windows in one elevation ☐

Another approach (please explain below) ☐

Don't know ☐

Comments

7. If a requirement for consequential improvements is triggered upon replacement of a domestic boiler, do you think that requirement should be for the homeowner to:

Install the whole package of low-cost measures as outlined in the consultation proposals ☐

Install one or some of these measures (please specify) ☐

Install different measures (please specify) ☐

Take a different approach completely (please specify) ☐

Don't know ☐

Comments

8. If a requirement for consequential improvements is triggered upon replacement of domestic windows, do you think that requirement should be for the homeowner to:

Install the whole package of low-cost measures as outlined in the consultation proposals ☐

Install one or some of these measures (please specify) ☐

Install different measures (please specify) ☐

Take a different approach completely (please specify) ☐

Don't know ☐

Comments

9. The proposals assume that doing the principal and consequential works at the same time, rather than separately, will reduce hassle and cost. Do you agree with this assumption? Please explain your view.

Yes ☐ No ☐ Don't know ☐

Comments

10. What effect do you think the requirements for consequential improvements may have on the demand for repair, maintenance and improvement activity? Please use evidence to explain your answer.

Increase demand ☐

Reduce demand ☐

No effect ☐

Don't know ☐

Comments

11. The Impact Assessment makes a number of assumptions in relation to the introduction of consequential improvements in existing homes, including figures on costs, numbers of extensions and replacements and other issues. Do you think these assumptions are fair and reasonable? Please justify your views.

Yes ☐ No ☐ Don't know ☐

Comments

12. Overall, do you think the impact assessment is a fair and reasonable assessment of the potential costs and benefits of the proposed options for consequential improvements in existing homes? Please justify your view and provide alternative evidence if necessary.

Yes ☐ No ☐ Don't know ☐

Comments

13. Please provide your views on any other costs, benefits or impacts associated with the proposals for consequential improvements which you think have not been discussed or monetised in the impact assessment.

Comments

Consequential improvements in existing non-domestic buildings

14. Do you agree with the proposal to introduce consequential improvements upon extensions or increases in habitable space in non-domestic buildings under 1000m2? Please explain your view.

Yes ☐ No ☐ Don't know ☐

Comments

15. The consultation explains that the regulatory requirement for consequential improvements upon non-domestic extensions and increases in habitable space would be limited to measures which were 'technically, functionally and economically feasible', with guidance setting out a value for the consequential works. Should this be set as:

A maximum of 10% of the value of the principal works ☐

A minimum of 10% of the value of the principal works ☐

Another % value (please explain below) ☐

Another approach (please explain below) ☐

Don't know ☐

Comments

16. The consultation proposes that for non-domestic buildings, any measure from list which is used to generate Green Deal assessments, the list in SBEM used to generate Energy Performance Certificate recommendations and the existing list of typical consequential improvement measures from Approved Document L2B should be eligible to be a consequential improvement. Do you agree?

Yes ☐

No ☐

Prefer a different list (please specify) ☐

Don't know ☐

Comments

17. Subject to further work on specific triggers, do you agree with the concept of introducing consequential improvements on replacement of certain fixtures or fittings in non-domestic buildings under 1000m^2?

Yes ☐ No ☐ Don't know ☐

Comments

18. Do you agree that the current requirements for consequential improvements on initial provision of a fixed building service or increase in capacity of a fixed building service in buildings larger than 1000m^2 should be retained unchanged?

Yes ☐ No ☐ Don't know ☐

Comments

19. We would welcome comments on whether there are specific replacement works which could be used to trigger consequential improvements for non-domestic buildings, and any views on the illustrative case studies in the impact assessment.

Comments

Process and compliance issues

20. In the case of domestic and non-domestic extensions and increases in habitable space in buildings under 1000m^2, do you think that the proposed process for building occupiers to assess what consequential improvements are/are not required, and to demonstrate this to building control, is adequate? Please explain your view.

Yes ☐ No ☐ Don't know ☐

Comments

21. In the case of replacement of a domestic boiler, do you think that the proposed process for building occupiers to assess what consequential improvements are/are not required, and to demonstrate this to building control, is adequate? Please explain your view.

Yes ☐ No ☐ Don't know ☐

Comments

22. In the case of replacement domestic windows, do you think that the proposed process for building occupiers to assess what consequential improvements are/are not required, and to demonstrate this to building control, is adequate? Please explain your view.

Yes ☐ No ☐ Don't know ☐

Comments

23. Do you think that the proposed role for building control bodies in the delivery of consequential improvements and compliance checking is appropriate and workable? Please explain your view.

Yes ☐ No ☐ Don't know ☐

Comments

24. Do you think the proposed role for Competent Persons schemes, Gas Safe engineers, builders and other installers in the delivery of consequential improvements is appropriate and workable? Please explain your view.

Yes ☐ No ☐ Don't know ☐

Comments

25. Would you prefer requirements for consequential improvements for existing homes and non-domestic buildings to be introduced:

On a phased basis between 2012 and 2014 (the Government's preferred option) ☐

All at once in October 2012 ☐

At a different date or dates (please explain below) ☐

Don't know ☐

Comments

26. If you have any other comments or suggestions on the proposals for consequential improvements, please make them here:

Comments

Annex B

Response form 2

Section two:
Part L (Conservation of fuel and power)

Form 2: New build standards and performance standards for works in existing buildings

This form is to be used to respond to the proposals in Chapters 3, 4 and 5, the associated changes to the Approved Documents, and changes to the Building Services Compliance Guides and National Calculation Methodology. These changes relate to the proposals on performance standards for new buildings and for building work in existing properties, and the proposals on compliance and performance. The closing date for the submission of these forms is **27 April 2012**.

If possible, please respond by email to:

building.regulations@communities.gsi.gov.uk

Alternatively, responses can be sent by post to:

Building Regulations Consultation
Building Regulations and Standards Division
Department for Communities and Local Government
Zone 5/G9
Eland House
Bressenden Place
London SW1E 5DU

About you:

(i) **Your details**

Name:	
Position:	
Name of organisation (if applicable):	
Address:	
Email:	
Telephone number:	

(ii) **Are the views expressed on this consultation an official response from the organisation you represent or your own personal views?**

Organisational response ☐ Personal views ☐

(iii) **Are your views expressed on this consultation in connection with your membership or support of any group? If yes please state name of group:**

Yes ☐ No ☐

Name of group:

(iv) **Please tick the *one* box which best describes you or your organisation:**

Builders/Developers:	**Property management:**
Builder – Main contractor ☐	Housing association (registered social landlord) ☐
Builder – Small builder (extensions/repairs/maintenance, etc) ☐	Residential landlord, private sector ☐
Installer/specialist sub-contractor ☐	Commercial ☐
Commercial developer ☐	Public sector ☐
House builder ☐	**Building Control Bodies:**
Building Occupier:	Local authority building control ☐
Homeowner ☐	Approved Inspector ☐
Tenant (residential) ☐	**Specific Interest:**
Commercial Building ☐	Competent Person scheme operator ☐
Designers/Engineers/Surveyors:	National representative or trade body ☐
Architect ☐	Professional body or institution ☐
Civil/Structural engineer ☐	Research/academic organisation ☐
Building services engineer ☐	**Energy Sector** ☐
Surveyor ☐	**Fire and Rescue Authority** ☐
Manufacturer/Supply Chain ☐	**Other** (please specify) ☐

(v) **Please tick the *one* box which best describes the size of your or your organisation's** business?

Micro – typically 0 to 9 full-time or equivalent employees (incl. sole traders) ☐

Small – typically 10 to 49 full-time or equivalent employees ☐

Medium – typically 50 to 249 full-time or equivalent employees ☐

Large – typically 250+ full-time or equivalent employees ☐

None of the above (please specify) ☐

(vi) **Are you or your organisation a member of a competent person scheme?**

Yes ☐ No ☐

Name of scheme:

(vii) **Would you be happy for us to contact you again in relation to this consultation?**

Yes ☐ No ☐

DCLG will process any personal information that you provide us with in accordance with the data protection principles in the Data Protection Act 1998. In particular, we shall protect all responses containing personal information by means of all appropriate technical security measures and ensure that they are only accessible to those with an operational need to see them. You should, however, be aware that as a public body, the Department is subject to the requirements of the Freedom of Information Act 2000, and may receive requests for all responses to this consultation. If such requests are received we shall take all steps to anonymise responses that we disclose, by stripping them of the specifically personal data – name and e-mail address – you supply in responding to this consultation. If, however, you consider that any of the responses that you provide to this survey would be likely to identify you irrespective of the removal of your overt personal data, then we should be grateful if you would indicate that, and the likely reasons, in your response, for example in the relevant comments box.

Questions:

Because this is the second half of the Part L consultation response form, the numbering of questions continues from the previous form.

New homes

27. Do you agree with the proposal for a 'hybrid' approach to standard setting for new homes in 2013? Please justify your choice and provide any views on the change from relative to absolute standards for new homes.

Yes ☐ No ☐ Don't know ☐

Comments

28. The proposals explain the Government's preference for the 'FEES plus efficient services' CO_2 target. No firm preference is expressed for the energy demand targets. What is your preferred option for the standards for new homes from October 2013:

No change ☐

The 'FEES plus efficient services' CO_2 target with energy targets set at 39/46 kWh/m^2/year ('full FEES') ☐

The 'FEES plus efficient services' CO_2 target with energy targets set at 43/52 kWh/m^2/year ('interim' FEE targets) ☐

The 'Halfway point' CO_2 target with energy targets set at 39/46 kWh/m^2/year ('full FEES') ☐

The 'Halfway point' CO_2 target with energy targets set at 43/52 kWh/m^2/year ('interim' FEE targets) ☐

Something else (please explain below) ☐

Don't know ☐

Comments

29. Do you agree that the limits on design flexibility 'backstop' values for fabric elements and fixed building services in new homes should be retained as reasonable provision in the technical guidance?

Yes ☐ No ☐ Don't know ☐

Comments

30. The proposals explain the options for the fuel factor for new homes. No firm preference is expressed. Which option for 2013 standards do you prefer and why:

Retain the fuel factor at current levels ☐

Reduce the fuel factor ☐

Remove the fuel factor ☐

Don't know ☐

Comments

31. The Impact Assessment makes a number of assumptions on fabric/services/renewables costs, new build rates, phase-in rates, learning rates, etc for new homes. Do you think these assumptions are fair and reasonable? Please justify your views.

Yes ☐ No ☐ Don't know ☐

Comments

32. Overall, do you think the impact assessment is a fair and reasonable assessment of the potential costs and benefits of the proposed options for new homes? Please justify your view and provide alternative evidence if necessary.

Yes ☐ No ☐ Don't know ☐

Comments

New non-domestic buildings

33. The proposals explain the Government's preference for a 20% aggregate improvement in CO_2 performance standards for new non-domestic buildings from October 2013. Which option do you prefer and why:

No change ☐

11% aggregate improvement ☐

20% aggregate improvement ☐

Don't know ☐

Comments

34. Do the proposed 2013 notional buildings as set out in the changes to the National Calculation Methodology seem like a reasonable basis for standards setting? Please provide comments on the method used to develop the notional buildings and particular elements of one or more of the notional buildings, if relevant.

Yes ☐ No ☐ Don't know ☐

Comments

35. What information do you have on how the proposed changes in standards for new non-domestic buildings might have different impacts on different categories of building?

Comments

36. The Impact Assessment makes a number of assumptions on fabric/services/ renewables costs, new build rates, etc for new non-domestic buildings. Do you think these assumptions are fair and reasonable? Please justify your views.

Yes ☐ No ☐ Don't know ☐

Comments

37. Overall, do you think the impact assessment is a fair and reasonable assessment of the potential costs and benefits of the proposed options for new non-domestic buildings? Please justify your view and provide alternative evidence if necessary.

Yes ☐ No ☐ Don't know ☐

Comments

38. Do you agree in broad terms with the proposed process for considering the introduction of new technologies into SBEM via an 'Appendix Q'? Please provide suggestions for an alternative approach where relevant.

Yes ☐ No ☐ Don't know ☐

Comments

Performance standards for works to existing buildings

39. Do you agree with the proposal to raise performance standards for domestic replacement windows from October 2013? Please explain your answer.

Yes ☐ No ☐ Don't know ☐

Comments

40. Do you agree with the proposal to raise performance standards for domestic extensions from October 2013? Please explain your answer.

Yes ☐ No ☐ Don't know ☐

Comments

41. Do you agree with the proposal to raise performance standards for non-domestic extensions from October 2013? Please explain your answer.

Yes ☐ No ☐ Don't know ☐

Comments

42. Do you agree with the proposal to include the Lighting Energy Numeric Indicator (LENI) methodology as an alternative way of meeting the minimum energy performance requirements for lighting installations?

Yes ☐ No ☐ Don't know ☐

Comments

43. Do you think that the impact assessment is a fair and reasonable assessment of the potential costs and benefits of raising the performance standards for replacement domestic windows and domestic/non-domestic extensions? Please justify your view and provide alternative evidence if necessary.

Yes ☐ No ☐ Don't know ☐

Comments

Compliance and performance

44. Do you think that the introduction of quality assurance processes and regulatory incentives to encourage their development and use will help mitigate the risks of a difference between the as-designed and as-built performance of new homes? Please suggest an alternative if you do not agree.

Yes ☐ No ☐ Don't know ☐

Comments

45. If a new process is developed (in addition to individual developers' schemes) do you think that such a quality assurance process should be codified in the form of:

A BSI Publicly Available Specification ☐

Another form (please specify) ☐

Don't know ☐

46. Do you agree with the indicative contents outlined for a quality assurance process? Please explain your answer and what you think the standard should cover.

Yes ☐ No ☐ Don't know ☐

Comments

47. If a quality assurance process is developed by a combined industry/government group, who do you think should be represented on such a group?

Comments

48. What do you think is the best way for developers to demonstrate that the 'PAS' quality assurance process has been adopted?

Yes ☐ No ☐ Don't know ☐

Comments

49. What do you think is the best way for developers to demonstrate that an alterative, equivalent quality assurance process has been adopted?

Yes ☐ No ☐ Don't know ☐

Comments

50. Where no formal quality assurance process is followed, which of the following would you support as an alternative:

3% confidence factor applied to Dwelling Emission Rate ☐

Another % confidence factor (please specify) ☐

A different approach (please explain below) ☐

Do not agree with the concept of the quality assurance process and confidence factors ☐

Don't know ☐

Comments

51. The consultation discusses compliance and performance issues for new non-domestic buildings. We would welcome any suggestions for improving Part L compliance and as-built energy performance for non-domestic buildings and any comments on the discussion.

Comments

52. The consultation sets out a training strategy and target groups for the dissemination of the new Part L requirements. Do you agree with the proposed approach? Please explain your answer, provide an alternative approach if relevant, and indicate if you/ your organisation would be willing to play a part in dissemination activities.

Yes ☐ No ☐ Don't know ☐

Comments

53. If you have any comments on the proposed changes to Approved Document L1A Conservation of fuel and power in new dwellings that are not covered by the questions above please add them here. Please make it clear which issue each comment relates to by identifying the relevant paragraph number.

Comments

54. If you have any comments on the proposed changes to Approved Document L2A Conservation of fuel and power in new buildings other than dwellings that are not covered by the questions above please add them here. Please make it clear which issue each comment relates to by identifying the relevant paragraph number.

Comments

55. If you have any comments on the proposed changes to Approved Document L1B Conservation of fuel and power in existing dwellings that are not covered by the questions above please add them here. Please make it clear which issue each comment relates to by identifying the relevant paragraph number.

Comments

56. If you have any comments on the proposed changes to Approved Document L2B Conservation of fuel and power in existing buildings other than dwellings that are not covered by the questions above please add them here. Please make it clear which issue each comment relates to by identifying the relevant paragraph number.

Comments

57. If you have any comments on the proposed changes to the National Calculation Methodology that are not covered in the questions above please add them here. Please make it clear which issue each comment relates to by identifying the relevant paragraph number.

Comments

58. If you have any comments on the proposed changes to the Domestic Building Services Compliance Guide that are not covered in the questions above please add them here. Please make it clear which issue each comment relates to by identifying the relevant paragraph number.

Comments

59. If you have any comments on the proposed changes to the Non Domestic Building Services Compliance Guide that are not covered in the questions above please add them here. Please make it clear which issue each comment relates to by identifying the relevant paragraph number.

Comments

60. If you have any other comments on the proposals or suggestions on possible changes to Part L of the Building Regulations, please make them here:

Comments

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