

## CLG Part L and F Consultations, Summer 2009 A Summary of the Significant Proposed Changes

Consultation closes: 17 Sept 2009  
To be published: Spring 2010  
To take effect from: October 2010

### 1 General

#### 1.1 Structure of documentation

The consultation consists of three volumes and the consultation versions of SAP and SBEM. All are accessible via the CLG consultation page although you can easily miss the links to the downloadable SAP and SBEM programs. They are in the top right corner of the page as "SAP and SBEM software including helpline". The other link "DECC SAP consultation" is for the technical consultation on how SAP2009 is proposed to work. The link is: <http://www.communities.gov.uk/publications/planningandbuilding/partlf2010consultation>

The three volumes are:

##### Volume 1: Overall proposals

- Summary (who wrote this, dates, how to respond etc)
- Introduction
- Proposals for improving compliance
- Proposals for Accredited Construction Details
- Training and dissemination strategy
- Future thinking paper (looking at 2013 and zero carbon)
- Annex A – the legal aspects of consultations
- Annex B – the Impact Assessment
- Annex C – the response form with 113 questions

Volume 1 provides an overview of the proposals and the rationale supporting them. To establish the exact details it is necessary to read the proposed text given in Vol 2.

##### Volume 2: Proposed technical guidance for Part L

- Proposed AD L1A for new dwellings
- Proposed AD L1B for work in existing dwellings
- Proposed AD L2A for new buildings other than dwellings
- Proposed AD L2B for work in existing buildings other than dwellings



Air tightness testing by TRADA's sister organisation, Chiltern Dynamics

- Proposed changes to National Calculation Methodology
- Proposed Domestic Buildings Services Compliance Guide
- Proposed Non-Domestic Buildings Services Compliance Guide

##### Volume 3: Proposed technical guidance for Part F

- Proposed AD F
- Proposed Domestic Ventilation Installation and Commissioning Compliance Guide

## 1.3 The main goals for CLG

CLG forewarned us some years ago that there would be a significant amendments in 2010, 2013 plus our final goal of so called 'zero carbon' by 2016.

A reduction of permitted carbon emissions by 2010 was expected and is proposed for 2010. In broad terms the target is 25% lower than that at present.

There is an embarrassing issue that governmentt is increasingly aware of – which is that what is actually being built often falls well short of what the regulations intend. Two main reasons for this are:

- Poor compliance overall.
- Although the building design complies using the required tools, there is actually a shortfall in the compliance tool itself and therefore the actual delivered performance is less than that intended. See Vol 1, pg 22, para 2.15.

GLG has identified three strategic approaches for improving compliance and performance:

- Build in design confidence factors – ie use conservative results where appropriate.
- Set up systems of performance control eg RDL Part E scheme – to provide assurance using robust testing, inspection and sampling regimes.
- Measure and enforce. Not surprisingly experience shows that where we have actually demanded testing to prove compliance the actual performance has increased even though the target has remained unchanged.
- See tables 1 to 4, Vol 1, pgs 26-31 which show how these approaches are beginning to be applied in a more robust manner.

If we are to achieve very high levels of performance, we will need to be on top of all these issues.

## 1.4 Other related consultations

These include:

- SAP and SBEM – the software carbon target compliance tools. The consultations are running almost concurrently.
- Non-domestic targets for carbon emissions – due out later this year.
- Heat and Energy Savings Strategy – feedback currently being reviewed. This consultation looks into ideas on the existing building stock.

## 2 New buildings

### 2.1 General

The strategic approach remains unchanged, with the following recommended philosophy / sequence:

- Reduce the energy demands as much as practicable by minimising the rate of heat flow through the building envelope and from pipes, ducts and vessels; then
- Meet the remaining energy demands with high efficiency systems that are well controlled and properly commissioned; then
- Use a mix of energy supplies and / or renewable energy systems that deliver a low overall carbon impact; and finally
- Provide appropriate instructions and energy monitoring facilities, enabling occupiers to effectively manage their use of energy so as to reduce operating costs and environmental impact.

The 5 criteria remain the same in principle, but the targets / details have changed.

For further details see:

Vol 2, ADL1A, para 3.25

Vol 2, ADL2A, para 3.28a



Sigma Home by Stewart Milne Group

## 2.2 Criterion 1 – CO<sub>2</sub> target

The method for setting the target is very convoluted in 2006 and remains so in 2010. The 2002 version of Part L was largely elemental in approach – eg a wall needed to achieve a U-value of X etc.

The 2006 edition then set an overall target for the whole building, which was based on the 2002 requirements plus a 25% improvement factor. The concept of a 'notional 2002 complaint building' was developed to enable this to work. The target is calculated using SAP or SBEM software.

The overall functional requirement is not set in terms of kWh per m<sup>2</sup>, because the 2002 approach does not work this way – the energy consumption changes depending on the size / layout of the building. The suggested approach for 2010 is to apply an additional ~25% improvement factor on the 2006 requirements, which themselves were a 25% improvement on 2002.

The issues that are being considered are:

- Whether to develop a 2010 notional building – since it is all getting quite complicated. But the real problem is that we are always working in relative rather than absolute terms. The reference point is where we were (which isn't known by many) rather than where we are going (which is theoretically 'Zero'). If we are to achieve zero energy consumption buildings we had better start using absolute numbers quickly.
- Whether to apply a 25% reduction to all buildings or to use an aggregate approach – this is where the average reduction is 25% but with lower and higher targets set for different building types.
  - For non-domestic: three groups could be set: top lit (eg warehouse), side lit (office), no lighting (eg theatre). The toughest targets would be set for where no windows are fitted.
  - For domestic: two groups are being considered: electric heating (tougher target set) and non-electric heating.

The aggregate approach is argued on the grounds of cost justification (ie it isn't possible to justify hitting a 25% reduction for some types of building). This begs the question how we are going to justify building to 'Zero carbon'!

SAP, SBEM or some other agreed software must be used to demonstrate compliance. Hand written results are no longer allowed. See ADL1A 3.26 and 4.3.

Results from the SAP or SBEM calculations are now required at plans submission stage.

For further details see:

Vol 1, paras 1.14 – 1.33, 1.59, Table 2.2

Vol 2, ADL1A, paras 4.3, 4.9

Vol 2, ADL2A, paras 4.6, 4.12

See also Vol 2, chapter 5 for a more in depth discussion on this.

## 2.3 Criterion 2 – Design backstops / limiting factors

These are intended to prevent designers from creating buildings with poor thermal fabric, which may have been possible by providing large renewable energy supplies. The building fabric is usually with us far longer than any installed equipment and therefore logic dictates that poor performing fabric is not the way forward.

It is stated that the limits remain unchanged. This is incorrect because two have changed, namely high usage entrance doors and roof vents – both had an area weighted average limit of 6.0 U-value, which has been reduced to 3.0. In the 2010 revision, only the area weighted average figures are given – in the 2006 edition limits are given for individual elements. These are intended to prevent condensation – these are now only provided in Approved Document C (Site Preparation and Resistance to Contaminants and Moisture).

The reason for largely leaving the limits the same is because there are often other more cost effective ways of reducing energy consumption, eg better air tightness, reduced thermal bridging etc – rather than just decreasing the target U-values.

For further details see:

Vol 2, ADL1A, paras 4.23, Table 1

Vol 2, ADL2A, paras 4.23, Table 1

## 2.4 Criterion 3 – Limiting solar gains

The test remains unchanged, which is to use Appendix P of SAP to check if there is a high risk of high internal temperatures. However SAP has changed in that:

Change	Consequence
Each month's weather data is analysed, not just the average for each season.	If one month has a higher temp than the average, this will increase the likelihood of failing the test.
Weather data updated.	Possibly slightly higher temps for summer.
Weather data for region used, not average for England & Wales.	SE region will be using higher temperatures.

SBEM now has a routine for checking solar gains, which it did not have before. See ADL2A 4.54 for the procedure accompanying it.

Some had asked for anticipated 2030 temperatures to be used but this is not being proposed. This would also have increased the temperatures being used.

For further details see:

- Vol 1, para 1.38
- Vol 2, ADL1A, para 4.31
- Vol 2, ADL2A, para 4.53

## 2.5 Criterion 4 – Checking of build quality and commissioning

### 2.5.1 Party Walls

Recent energy consumption tests / research on completed dwellings has shown that party cavity walls are not zero heat loss as had been assumed. This is because where outside air is able to get into the cavity the air movement causes heat flux and this can significantly reduce the actual performance.

Where the wall is either solid (which may have acoustic performance issues – see 5.2a ADL1A) or fully filled then 0 can still be used as the U-value. For unfilled cavities with no edge sealing a U-value of 0.5 must be used. For unfilled cavities with effective sealing around the exposed edges a U-value of 0.2 must be used.

ADL2A now makes it clear that the thermal and air tightness barriers must be contiguous – meaning next to one another. This is necessary because experience has shown that where the two part significantly it allows air

movement and the associated heat flux to reduce overall thermal performance.

For further details see:

- Vol 1, Table 1.2
- Vol 2, ADL1A, para 5.2
- Vol 2, ADL2A, para 5.3b

### 2.5.2 Accredited Construction Details / Thermal bridging

There are 2 issues in relation to thermal bridges:

- The general thermal loss from repeating bridges eg timber studs at 600mm centres in timber frame. This should be taken account of in the area weighted average U-values used for wall panels and floors etc.
- The specific additional losses occurring at corner junctions, where the performance is worse than for standard repeating junctions. These are referred to as non-repeating linear thermal bridges. An additional increase in heat loss needs to be added to the standard U-value given (based on repeating thermal bridges only). This value is referred to as the psi or y-value. It is measured in  $W/m^2/K$ .

The handling of non-repeating thermal bridging is very simplistic in the 2006 edition. A number of suggested 'Accredited Details' are offered, which in general terms address the issue of minimising thermal bridging to some extent.

However the current ACDs suffer from a number of problems:

- It is not clear what level of performance is attributed to each ACD – in fact no stated levels of performance are given. The performance is not that high.
- There is no method of adding new details, due to no procedure or organisation handling the matter.

The new proposal is that there will be three options for the designer, with differing degrees of conservatism.

**Option 1:** With no calculated information available you can just accept a very high conservative psi value of 0.15.

**Option 2:** Use a suitably qualified person to calculate the actual psi values, which are multiplied by their linear length and increased by a conservative factor of 25% because there is no evidence in the field to substantiate it. Option 2 will require a new training programme and certification scheme for individuals wishing to provide this service.

**Option 3:** Use details which have been calculated and are audit tested under a new industry led regime similar to the Robust Details scheme for acoustic performance.

Option 3 requires one or more industry bodies to come forward with a technical and business plan. RDL are known to be interested in providing this service.

For further details see:

Vol 1, Paras 1.39, 1.40, 3.1 - 3.33, Tables 1.1 & 2.4

Vol 2, ADL1A, paras 5.3 – 5.5

### 2.5.3 Air tightness

The number of tests required on dwelling sites has increased. For dwelling sites using Accredited Construction Details, two of every type should be tested - not one of every type (which is currently the case).

In addition note that:

- The definition of a dwelling type is now more precisely handled and will give rise to more dwelling types needing to be tested.
- The ACD system of review is being revised (see above). It is not clear what the transition arrangements are – but it could be that fewer dwellings will be built to them and therefore more dwellings will need to be tested because the sampling regime for non-ACD properties is more onerous.

For dwelling sites using non-ACD details the sampling has increased as shown below.

Where a dwelling has not been tested the result to be entered into SAP is the actual tested result on the same dwelling type, plus an increase of  $2\text{m}^3/\text{hr}/\text{m}^2$ . There is therefore an incentive to test all buildings, particularly if  $2\text{m}^3$  makes a significant difference to the SAP result. The target therefore needs to be  $8\text{m}^3$  for tested dwellings, in order that non-tested dwellings are assigned

$10\text{m}^3$  at the most.

BINDT accredited builders can self-test. See ADL1A 4.8 and 5.8b. The Local Authority is to confirm that testers are registered to test the specific class of building concerned. This is not stated in ADL2A for some reason.

The provisions for developments with one or two properties remain unchanged. One option is to accept a poor default value of  $15\text{m}^3/\text{hr}/\text{m}^2$  – with much lower overall permitted emissions this will be harder to accept because of the necessary trade-offs elsewhere.

Short term modular buildings under  $500\text{m}^2$  floor area – there is a relaxation. They can prove compliance by showing pass data on other similar buildings (ADL2A, 5.9b).

The ATTMA publication *Measuring air permeability of building environments* is to be revised. The main change is that trickle vents are to be taped over during testing rather than just closing the unit. The effect of this is that poor fitting trickle vents will not contribute to a worse result – which seems illogical.

All other procedures remain the same, including what to do in the event of a failed test result (with the relaxation up to Oct 07 removed).

For further details see:

Vol 1, para 1.39, Tables 1.4 & 3.1

Vol 2, ADL1A, paras 3.1, 4.8, 5.6 – 5.15

No. of instances of the dwelling type	No. of tests to be carried out on the dwelling type	
	2006 ADL1A	2010 ADL1A
4 or less	1 test for each dwelling type.	2 tests for each dwelling type.
>4 to 40	2 tests for each dwelling type.	3 tests for each dwelling type.
40+	At least 5% of the dwelling type, unless the first 5 units of the type that are tested achieve the design air permeability, when the sampling frequency can be subsequently reduced to 2%.	At least 10% of the dwelling type, unless the first 5 units of the type that are tested achieve the design air permeability, when the sampling frequency can be subsequently reduced to 2%.

#### Revised air tightness test sampling plan for dwellings not using Accredited Construction Details

## 2.6 Providing information

The TER / DER report data is to be included in the log book provided to the building owner.

## 2.7 Conservatories - domestic

Currently conservatories under 30m<sup>2</sup> are exempt from the building regulations. This is to be removed.

The future (2013 and beyond) for conservatories is that they will need to improve / make a positive contribution to the energy consumption – in particular:

- They will be required to perform as the rest of the building.
- They may well capture and make use of beneficial solar gain (SAP will need to be modified to allow this to be accounted).

For further details see:

Vol 1, paras 1.46, 5.32, 5.33, Table 4.2

Vol 2, ADL1A, paras 3.32, 3.33

## 2.8 Shell and core developments

Where the shell is constructed by one contractor and then the building is fitted out by another at a later date, a separate SBEM submission is required at both stages. For the fit out the details entered for the core must be as built.

Presumably it will be necessary to test the air tightness twice, particularly if the fit out involves service penetrations.

For further details see:

Vol 1, Table 4.6

Vol 2, ADL2A, para 4.19h

## 2.9 Non-occupied buildings

Buildings which are not typically occupied but which use energy to condition the indoor climate must meet the requirements. This affects computer and cold stores for example.

For further details see:

Vol 2, ADL1A, para 3.5

## 2.10 Energy meters and centralised switching of appliances

For non-domestic buildings, energy meters are now required to facilitate benchmarking. They should allow:

- Consumption to be assigned to different end-use categories (eg lighting, heating etc)
- Renewable energy to be separated from standard energy.

Centralised switching should be considered in non-domestic buildings to ensure that all equipment is turned off. Eg at weekends.

For further details see:

Vol 2, ADL2A, para 4.31

## 2.11 Building services guides

New comprehensive guides for both domestic and non-domestic situations have been produced and are given at the back of Vol 2. They are both over 100 pages and therefore contain a lot of new guidance.

For further details see:

Vol 1, Tables 1.3, 2.5, 3.2, 4.5



'Winter gardens' may be the future for conservatories, according to CLG

## 4 Existing Buildings

### 4.1 Consequential improvements

Under the current guidance ‘consequential improvements’ are required when work is undertaken on existing buildings over 1000m<sup>2</sup>. The builder is required to improve some element(s) affecting the energy performance of the building to a value of at least 10% of the principal construction works.

There is no change here, which is a surprise because many expected the threshold to decrease from 1000m<sup>2</sup>. It therefore does not really apply to the domestic sector, except for extremely large properties.

For further details see:

Vol 1, Table 1.2

Vol 2, ADL1B, para 6.2

Vol 2, ADL2B, paras 6.1 – 6.10

### 4.2 Renovated elements

A tighter definition is now provided.

*Renovation in relation to a thermal element means the provision of a new layer in the thermal element or the replacement of an existing layer, but excludes decorative finishes and ‘renovate’ shall be construed accordingly.*

Some of the standards have been increased—see table 4.1 below. Column (a) gives the existing U-value. If the current performance of the element being renovated is below this value, then the whole element should be upgraded to the value given in Col (b).

For further details see:

Vol 1, Table 4.1

Vol 2, ADL1B, para 3.1, Table 5

Vol 2, ADL2B, para 3.1, Table 5

### 4.3 New thermal elements

The performance levels have been increased. See table 4.2 over.

In addition there is no longer a distinction between elements used in an extension and those used for replacement – which seems sensible.

For further details see:

Vol 2, ADL1B, Table 4

Vol 2, ADL2B, Table 4

### 4.4 New ‘controlled fittings’ – which includes doors and windows

In the 2006 edition the distinction is made between windows/doors fitted as part of an extension and those which were replacement. This distinction has been removed.

In addition the requirements for domestic buildings have become tougher as shown in table 4.3.

The requirements for non-domestic buildings are similar but with figures given for other items, eg curtain walling.

For further details see:

Vol 1, Table 4.3

Vol 2, ADL1B, paras 4.18, 4.19, Table 2

Vol 2, ADL2B, Table 3

Element	(a) Threshold U-value	(b) Improved U-value 2006 edition	(b) Improved U-value 2010 edition
Wall – cavity insulation	0.7	0.55	0.55
Wall – external or internal insulation	0.7	0.35	0.3
Floor	0.7	0.25	0.25
Pitched roof – insulation at ceiling level	0.35	0.16	0.16
Pitched roof – insulation at rafter level	0.35	0.2	0.16
Flat roof or roof with integral insulation	0.35	0.25	0.16

**Table 4.1—Proposed threshold and improvement target U-values which apply when renovating building elements.**

## 4.5 Historic buildings

These were pretty much exempted with a note to encourage people to do what they could.

Owners of historic buildings are now required to 'improve energy efficiency where and to the extent that it is reasonable and practically possible. The work should not prejudice the character of the building or increase the risk of long-term deterioration.'

For further details see:

Vol 1, Table 4.7

Vol 2, ADL1B, paras 3.6 – 3.8

## 4.6 Conservatories

Conservatories under 30m<sup>2</sup> will no longer be exempt from building regulations.

New minimum performance requirements are set as follows:

- Glazed areas - min WER Band C
- Doors - max 1.8 U-value
- Walls - min 0.8 U-value

Secure ventilation openings are required and should have an area at least equal to 5% of the combined area of the conservatory and adjoining room. In addition the free opening area at high level should be at least 0.5m<sup>2</sup>.

For further details see:

Vol 2, ADL1B, para 4.11

Element	2010 U-value required	2006 U-value required for extension	2006 U-value required for replacement
Wall	0.28	0.3	0.35
Pitched roof – insulation at ceiling level	0.16	0.16	0.16
Pitched roof – insulation at rafter level	0.16	0.2	0.2
Flat roof or roof with integral insulation	0.16	0.2	0.25
Floors	0.22	0.22	0.25
Swimming pool basins (new item)	0.25	N/A	N/A

**Table 4.2—Proposed tougher U-value requirements for new thermal elements.**

Fitting	2010 min performance	2006 min. U-value for extensions	2006 min. U-value for replacement
Window or rooflight	WER=Band C Or in exceptional one-off cases a centre pane U-value of 1.2 will be accepted.	1.8 Or WER = Band D Or centre pane = 1.2	2.0 Or WER = Band E Or centre pane = 1.2
Doors with >50% internal face glazed	1.8 U-value Or in exceptional one-off cases a centre pane U-value of 1.2 will be accepted.	2.2 Or centre pane = 1.2	2.2 Or centre pane = 1.2
Other doors	1.8	3.0	3.0

**Table 4.3—Proposed new requirements for windows and doors.**

## 5 Major changes to Part F

### 5.1 Different provision depending on level of air tightness

Because the levels of air tightness are increasing under Part L it is becoming necessary to modify the guidance given in Part F.

A distinction is made between buildings with measured air tightness under  $5\text{m}^3/\text{hr}/\text{m}^2$  and those above. Higher levels of ventilation are required for those below  $5\text{m}^3$ .

The tables given in Vol 3, pages 28 to 45 for the four permissible ventilation strategies provide the details.

For further details see:  
Vol 1, paras 2.42 – 2.45

### 5.2 Measured noise performance for continuously running ventilation equipment

Experience shows that people often turn off noisy ventilation equipment, thus rendering the building with inadequate ventilation. In response to this all equipment must be type tested and shown to meet specified noise limits.

This requirement does not seem to be clearly specified within the proposed guidance at present.

For further details see:  
Vol 1, paras 2.50 – 2.54  
Vol 3, pg 11, 24, and para 4.36

### 5.3 Installation and commissioning guide

A comprehensive guide to installation and commissioning has been published. This is in addition to the service guides for Part L. See Vol 3, chap 2.

Research conducted for CLG into the effectiveness of Pt F 2006 showed that actual performance varied very considerably from that which was intended. Better control and quality of installation and commissioning is seen as the most important improvement required and hence the publication of the guide.

For further details see:  
Vol 3, pgs 36-37, paras 2.46 – 2.49.



## Further help

TRADA members may contact the Members' Helpline for free on t: 01494 569601.

## Other Resources

TRADA Construction Briefing:  
*England & Wales Building Regulations: Part L1A  
Conservation of Fuel and Power: New Dwellings  
A Detailed Summary of the Requirements*  
[www.trada.co.uk](http://www.trada.co.uk)

TRADA Construction Briefing:  
*England & Wales Building Regulations: Part L1B  
Conservation of Fuel and Power: Existing Dwellings  
A Summary of the Requirements*  
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## TRADA Construction Briefings

This document is part of a series of briefings for TRADA members on the key elements of building regulations and codes and how they relate to timber construction. Copies of all briefings are available at [www.trada.co.uk](http://www.trada.co.uk).

## Feedback

We welcome feedback from readers and if you have any comments on the content of this briefing please contact Rupert Scott on [rscott@trada.co.uk](mailto:rscott@trada.co.uk).

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