Building Control

Effects of recent and future changes

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Background

Geoff Wilkinson
MBEng MIFireE MRICS MIOD MCMI ICIOB FRSA FFB

The Architects’ Journal
the home of British architecture
Agenda

Political Background
Future of Building regulations
Recent Changes
The Stunell Review

Regulations – Where would we be without them

Copyright Al Murray
Policy Drivers

New Ministers, new priorities:

- Decentralisation, Localism and the “Big Society”
- Smaller role for Government
- Empower the individual
- Deregulate and streamline wherever possible
- Regulate only when essential after all other options rejected
- Regulation must be effective and deliver what it sets out to do
- Increased compliance
- Greenest Government ever
- Reduce burdens to business
- One-In-One-Out
• Key objectives
  • Improve Compliance
  • Reduce Burdens
  • Embrace “Localism” and the “Big Society”

• Drawing upon:
  • Previous work such as the Future of Building Control
  • Our Building Regulations-focused invitation for ideas/views/evidence – c200 responses (half system/half technical)
  • Evidence from other exercises – Your Freedom etc
  • Correspondence, enquiries and other forms of engagement with business partners, householders etc
  • International Comparisons – research, CEBC etc
Government under increasing pressure to demonstrate compliance -

EAC’s report, Greener homes for the future? “....we are very dismayed by the lack of urgency – especially considering how vital building control inspections will be to the entire zero carbon policy – shown by the Government in addressing the weaknesses in the current system.”

Building control industry must demonstrate that they are up to the job and that standards are being met

Changes to BCPSAG – new chair (Alan Crane), membership expanded to include BCA and better represent the users of building control (consumers, house builders, developers, designers, etc), building capacity

Continue to publish reports of existing KPIs until new performance mgmt system is in place (2011)
Background

New Future for Building Control
Better integration of Building Control & Planning, further e-enabling of BC

Regulations and Guidance
Periodic review, new look ADs, project guides

Modernising Inspection and Enforcement
Risk based inspection, better enforcement

Disputes and Complaints
Alternative to determinations, improved complaints procedures

Alternative Ways to Comply
Competent persons schemes, pattern books

Strengthening Performance Management
Benchmarking, performance indicators, training

Evidence of Compliance
Evaluating and compliance
The picture is similar in building control. Paul Timmins, chairman of the Association of Consultant Approved Inspectors (ACAI) - the professional body for the private sector of building control - says a third of building control officers (BCOs) now work in the private sector. This proportion is likely to grow as many public-sector BCOs are nearing the end of their careers, with around half of those in London councils due to retire by 2012.
Are current rules being enforced?

But Liberal group leader Cllr Steve Radford said the problems at the Muirhead Avenue scheme suggested council completion certificates were “worthless”.

Cllr Radford said: “It worries me that as a council we have no reason to believe this is true of just one development.”

The council insists that building firm Bramall Construction did not notify them when they were supposed to inspect.

But officers still signed off the development, even though information obtained through the Freedom of Information Act showed the officer whose name was on the certificate had not attended. The council blamed the error on a fault with its computer system which didn’t record the names of inspecting officers properly.
We need to be clear with customers that the building control service will:

• provide a checking service to help achieve compliance with building standards

• support and advise customers on how to end up with the result they want, but will not be a substitute for professional design and construction advice

• help with aspects of quality (workmanship and materials) where these affect compliance with building standards, but not where they do not affect compliance

• ensure that all building standards which are set in the interests of the wider public good have been complied with at completion.
We need to be clear with customers that the building control service will not:

• be responsible for compliance – *that is the duty of the person carrying out the work*. If work is found not to comply with building standards the person responsible could be prosecuted and the owner of the building may be required to put the work right.

• manage every stage of the construction process on-site – that is a matter for the contracts and arrangements between the client and builder.

• address issues such as the finish and aesthetics of the final project where these are not relevant to compliance with building standards – these are a matter for designers, developers, builders and, to some extent, new home warranty providers.

• deal with contractual problems between client and builder – this is a matter of contract law.
Changes to how Building Control Operate

− Focus on raising compliance and protecting the public – as well as raising an income

− Building control to have a relationship with the customer and not only the builder; architect, etc. – so the latter understands why they would want to buy the service and how it adds value

− Will enable building control bodies to better target their inspections on more challenging or riskier projects

− Challenge building control to demonstrate their added value; to think creatively about how to raise compliance

− Sets expectation for planning and building control departments to work closer together – and let’s not forget Health & Safety (LACE)
## Risk assessment Inspection regimes

### Table 2: Indicative number of site visits (excluding enforcement visits)

<table>
<thead>
<tr>
<th>Project risk level</th>
<th>Extension or annex</th>
<th>New build</th>
<th>Conversion/ material change of use</th>
<th>Roof space/loft conversion</th>
<th>Underpinning</th>
<th>Other structural alteration*</th>
<th>Garage conversion to habitable use</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>9 to 11</td>
<td>9 to 11</td>
<td>8 to 10</td>
<td>6 or 7</td>
<td>5 or 6</td>
<td>5 or 6</td>
<td>5 or 6</td>
</tr>
<tr>
<td>Medium</td>
<td>6 to 8</td>
<td>6 to 8</td>
<td>5 to 7</td>
<td>4 or 5</td>
<td>4</td>
<td>3 or 4</td>
<td>4</td>
</tr>
<tr>
<td>Low</td>
<td>3 to 5</td>
<td>3 to 5</td>
<td>3 or 4</td>
<td>2 or 3</td>
<td>2 or 3</td>
<td>2</td>
<td>2 or 3</td>
</tr>
</tbody>
</table>

+ or - 50%
LA Fee Scales

<table>
<thead>
<tr>
<th></th>
<th>Cheap</th>
<th>Dear</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garage&lt;40 incl VAT</td>
<td>£124.24</td>
<td>£215.25</td>
<td>£91.01</td>
</tr>
<tr>
<td>Garage 40-60 incl VAT</td>
<td>£255.32</td>
<td>£365.22</td>
<td>£109.90</td>
</tr>
<tr>
<td>Extension less10 incl VAT</td>
<td>£263.00</td>
<td>£412.17</td>
<td>£149.17</td>
</tr>
<tr>
<td>Extension 10-40 incl VAT</td>
<td>£385.00</td>
<td>£542.62</td>
<td>£157.62</td>
</tr>
<tr>
<td>Extension 40-60 incl VAT</td>
<td>£466.08</td>
<td>£690.00</td>
<td>£221.92</td>
</tr>
<tr>
<td>Loft conversions including vat</td>
<td>£347.25</td>
<td>£699.14</td>
<td>£351.89</td>
</tr>
</tbody>
</table>

For other residential (institutional and other) the charge could be 2 X the charge.

For assembly and recreational usages the charge could be 1.5 X the charge.

For industrial and storage usages the charge could be 0.5 X the charge.

Charges for pre application advice
Enforcement and Penalties

Move towards shifting the balance towards ensuring compliance

Reduce use of Building Notice

Consultation on stop notices and penalty fines

Extension of competent persons schemes
Rewriting the building regulations approved documents clear simple AD’s
Producing guides to key British standards (8300)
Generating new BSI design guides (designing for working at height)
Producing guidance on health and safety for the HSE (published soon)
Producing DVD’s (5 in the series so far)
Relaunching the PQP card (pr to start soon)
Technical Guidance from the task force
Knowledge communities guidance and good practice
CONIAC CDM Review
SFARP definition
Slips and Trips designer guide
Appropriate persons for fire risk assessment steering group
CEN TC 395 action committee
Project Guides

CPA loft conversion guide
Building Regulations 2011

How and when the Approved documents get changed

The role of BRAC

Questions in House
Public Outcry
European Drivers
British Standards
Research

Recent updates

Part G – Water Efficency
Part J – Combustion Appliances
Part F – Ventilation
Part L – Conservation of Fuel and Power
Setting out future plans

Introduce planned and regular review of building regulations and guidance. Changes made at same time every 3 years, making it easier for industry and building control to plan and prepare.

‘two-cycle rule’ – no Part revised more frequently than once every 2 cycles – 6 years. Part L and F are the exceptions.

6-months standstill period between publication of new Parts and guidance and their coming into force date

Publish Periodic Review programme at key points – now, 2010, 2013, etc.

...easy in principle....the challenge will be managing expectations, stakeholders and pressures
<table>
<thead>
<tr>
<th>Evaluation and review (assessment of current regulations, and the drivers for change prior to decision to embark on fuller review - gathering evidence and identifying the options including alternative approaches)</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Revision activity (further investigations and development of options after agreement that revision is needed)</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Parts A &amp; C Parts F &amp; L Part H PART E Parts K, M, N, P Regulation 7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public consultation</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts F &amp; L Part J</td>
<td></td>
<td></td>
<td>Parts A &amp; C Parts F &amp; L Part H PART E Parts K, M, N, P Regulation 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Introduce revised regulations and guidance</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
</table>
## Table 2.1: Periodic Review Stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate</td>
<td>A regular cycle of assessing implementation of current regulations and evaluating any other technical developments that might require changes.</td>
</tr>
<tr>
<td>Review</td>
<td>Gathering evidence, analysing options, determining the broad cost-benefit case for changes and considering alternative approaches.</td>
</tr>
<tr>
<td>Revise</td>
<td>Consult on proposed changes, determine final changes, make new regulations and publish new guidance.</td>
</tr>
<tr>
<td>Implement</td>
<td>Communicate changes, training and dissemination, roll-out of supporting tools.</td>
</tr>
</tbody>
</table>

**Break-point 1:** Decision to proceed  
**Break-point 2:** Decision to proceed
Building Regulations 2011

Comment during the consultation period

<table>
<thead>
<tr>
<th>Respondent Types</th>
<th>Number</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply chain/manufacturers</td>
<td>197</td>
<td>59</td>
</tr>
<tr>
<td>Architects, consultants &amp; engineers</td>
<td>51</td>
<td>15</td>
</tr>
<tr>
<td>Property developers &amp; builders</td>
<td>27</td>
<td>8</td>
</tr>
<tr>
<td>Other, research &amp; academic groups</td>
<td>27</td>
<td>8</td>
</tr>
<tr>
<td>Regional &amp; local authorities</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>Special interest/lobby groups</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Energy sector</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Social Housing Agencies</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Householders/individuals</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>336</strong></td>
<td><strong>-</strong></td>
</tr>
</tbody>
</table>
Some recent changes

• The Regs
• Part G
• Part F
• Part J
• Part L
• BS8300
• BS9999
The Building and Approved Inspectors (Amendment) Regulations 2010

2010 No. 719

BUILDING AND BUILDINGS, ENGLAND AND WALES

The Building and Approved Inspectors (Amendment) Regulations 2010

Made 11th March 2010

Laid before Parliament 11th March 2010

Coming into force in accordance with regulation 8(7) to (9)

The Secretary of State made the following Regulations in exercise of the powers conferred by sections 1, 5(3), 34 and 35 of, and paragraphs 1, 2, 4, 6, 7, 8, 9 and 10 of Schedule 1 to, the Building Act 1994; have consented, in accordance with section 60(3) of that Act, the Building Regulations Advisory Committee and such other bodies as appear to the Secretary of State to be representative of the interests concerned.

Citation and commencement:

1. (1) These Regulations may be cited as the Building and Approved Inspectors (Amendment) Regulations 2010.

(2) Regulations 2 and 3 to 36 shall come into force on 11th March 2010.

(3) Regulations 2 (for the purposes of regulations 13 and 14), 15 and 34 shall come into force on 31st March 2010.

(4) Regulations 2 (for all other purposes), 3, 12, 13 to 20 and 25 to 36 shall come into force on 31st March 2010.

Amendment of the Building Regulations 2000

2. The Building Regulations 2000(b) are amended as follows.

Amendment of regulation 9

3. In regulation 9(a) (except building and works)—
Part G

G1 Cold water supply
G2 Water efficiency
G3 Hot water supply
G4 Sanitary conveniences
G5 Bathrooms
G6 Kitchens and food prep
The New AD’s

- Regulations vs. Guidance:
  - The Approved Document, as well as containing guidance, also contains extracts from the Regulations.
  - For example: The requirement that the Water Calculator is used – referred to with Regulation 17K, is a regulatory requirement.
  - No flexibility or demonstration via other route can apply.
  - Look for bits in green

---

**WATER EFFICIENCY**

**The Requirement G2 and regulation 17K**

This Approved Document deals with the following requirement from Part C of Schedule 1 and regulation 17K to the Building Regulations 2000 (as amended).

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Limitation of application</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2:</td>
<td></td>
</tr>
<tr>
<td>Water efficiency</td>
<td></td>
</tr>
<tr>
<td>G2. Reasonable provisions must be made by the initial building of dwellings and fixed appliances that are used exclusively for the prevention of undue consumption of water.</td>
<td></td>
</tr>
<tr>
<td>Water efficiency of new dwellings 17K...</td>
<td></td>
</tr>
<tr>
<td>The potential consumption of wholesome water by persons occupying a dwelling to which this regulation applies must not exceed 122 litres per person per day, calculated in accordance with the methodology set out in Document &quot;The Water Efficiency Code for New Dwellings&quot;.</td>
<td></td>
</tr>
<tr>
<td>(2) This regulation applies to a dwelling if—</td>
<td></td>
</tr>
<tr>
<td>(a) new; or</td>
<td></td>
</tr>
<tr>
<td>(b) formed by a material change of use of a building which is the meaning of regulation 17K(1)(b).</td>
<td></td>
</tr>
</tbody>
</table>

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**Building Regulations 2011**

**The New AD’s**

- Regulations vs. Guidance:
  - The Approved Document, as well as containing guidance, also contains extracts from the Regulations.
  - For example: The requirement that the Water Calculator is used – referred to with Regulation 17K, is a regulatory requirement.
  - No flexibility or demonstration via other route can apply.
  - Look for bits in green
Appliances - What if not installed or Builder changes spec?

Dishwasher – assume 1.25lt per place setting
Typically varies between 13-22 lts

Washing Machines – assume 8.17lt per kg
Typical 6.2 to 11.8lt

Labelling?
97 German litres or 167 UK litres.

Continental bath volumes are quoted allowing for bather displacement. This confusion is being exploited, probably in innocence.
Father’s Day Sale  Save $10 on all orders over $100

Bottomless Bath Drain Cover - For A Deeper Bath

- Bottomless Bath
- Experience a deeper, warmer bath
- Covers overflow drain to allow up to 60% more water into your tub
- Each package contains one 4" Diameter Bottomless Bath
- Available in clear only

<table>
<thead>
<tr>
<th>Item</th>
<th>Ships In</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottomless Bath Drain Cover - For A Deeper Bath</td>
<td>Usually ships in 2-3 business days.</td>
<td>Retail Price: $8.99</td>
<td>0</td>
</tr>
</tbody>
</table>
Other Issues – Unintended Consequences

Nick Grant – study
http://elementalsolutions.co.uk/publications.htm

Spray taps not suitable with most combi boilers
Low flow taps not suitable with older combi boilers
Modern large capacity combi boilers not always suitable flow rates
Changes to BS 6465
Changes to BS 6465

Old 1994 Guidance

### Table 4 — Staff toilets in offices, shops, factories and other non-domestic premises used as place of work

<table>
<thead>
<tr>
<th>Number of persons at work</th>
<th>Number of WCs</th>
<th>Number of washing stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6 to 20</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>26 to 50</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>51 to 75</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>76 to 100</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Above 100</td>
<td>One additional WC and washing station for every unit or fraction of a unit of 25 persons</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of persons at work</th>
<th>Number of WCs</th>
<th>Number of washbasins</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6 to 15</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>16 to 30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>31 to 45</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>46 to 60</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>61 to 75</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>76 to 90</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>91 to 100</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Above 100</td>
<td>8, plus 1 WC and washbasin for every 25 persons</td>
<td></td>
</tr>
</tbody>
</table>

New 2006 Guidance
## Building Regulations 2011

### Changes to BS 6465

Old Guidance

<table>
<thead>
<tr>
<th>Appliances</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC</td>
<td>In single-screen cinemas, theatres, concert halls and similar premises without licensed bars: 1 for up to 250 males plus 1 for every additional 500 males or part thereof</td>
<td>For single-screen cinemas, theatres, concert halls and similar premises without licensed bars: 2 for up to 40 females 3 for 41 to 70 females 4 for 71 to 100 females plus 1 for every additional 40 females or part thereof</td>
</tr>
<tr>
<td>Urinal</td>
<td>In single-screen cinemas, theatres, concert halls and similar premises without licensed bars: 2 for up to 100 males plus 1 for every additional 80 males or part thereof</td>
<td></td>
</tr>
<tr>
<td>Wash basins</td>
<td>1 per WC and in addition 1 per 5 urinals or part thereof</td>
<td>1. plus 1 per 2 WCs or part thereof</td>
</tr>
<tr>
<td>Bucket/cleaner’s sink</td>
<td>Adequate provision should be made for cleaning facilities including at least one cleaner’s sink</td>
<td></td>
</tr>
</tbody>
</table>
Changes to BS 6465

New 2006 Guidance

### Table 8
Minimum provision of sanitary appliances for assembly buildings where WC use is not concentrated in intervals

<table>
<thead>
<tr>
<th>Sanitary appliance</th>
<th>Male visitors</th>
<th>Female visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC</td>
<td>1 per 250 males; plus 1 for every additional 500 males or part thereof; Male WC provision should be half female WC provision where urinals are not used</td>
<td>2 for up to 40 females; 3 for up to 70 females; 4 for up to 100 females; plus 1 for every additional 50 females or part thereof</td>
</tr>
<tr>
<td>Urinal</td>
<td>1 per 50 males up to 100 males; plus 1 for every additional 100 males or part thereof</td>
<td>–</td>
</tr>
<tr>
<td>Washbasin</td>
<td>1 per WC and in addition, 1 per 5 urinals or part thereof</td>
<td>1, plus 1 per 2 WCs or part thereof</td>
</tr>
<tr>
<td>Cleaners’ sink</td>
<td>As 5.5</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE** Where the building type or form of entertainment is subject to an entertainment licence, the scale of provision and the location and arrangement of the toilets needs to be agreed with the licensing authority.
### Changes to BS 64645

#### New 2006 Guidance

Table 7 **Minimum provision of sanitary appliances for assembly buildings where most toilet use is during intervals**

<table>
<thead>
<tr>
<th>Sanitary appliance</th>
<th>For male visitors</th>
<th>For female visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC</td>
<td>2 for up to 250 males; plus 1 for every additional 250 males or part thereof</td>
<td>2 for up to 20 females; plus 1 for every additional 20 females or part thereof up to 500 females; and 1 per 25 females or part thereof over 500 females</td>
</tr>
<tr>
<td>Urinal</td>
<td>2 for up to 50 males; plus 1 for every additional 50 males or part thereof</td>
<td>-</td>
</tr>
<tr>
<td>Washbasin</td>
<td>1 per WC and in addition, 1 per 5 urinals or part thereof</td>
<td>1, plus 1 per 2 WCs or part thereof</td>
</tr>
<tr>
<td>Cleaners’ sink</td>
<td>As 5.5</td>
<td></td>
</tr>
</tbody>
</table>
Parts L1 and 2
Commencement of work

Some categories in the transitional provisions specify a date by which work must have commenced. In the Department’s opinion the commencement of work would usually be marked by work such as:

- excavation for strip or trench foundations or for pad footings;
- digging out and preparation of ground for raft foundations;
- vibrofloatation (stone columns) piling, boring for piles or pile driving;
- drainage work specific to the building(s) concerned.

In some cases applications will be in respect of a number of buildings on a site, for example a number of houses. The Department’s opinion is that in such cases it is generally the commencement of work on the first of the buildings within the application which determines whether all the building work can take advantage of the transitional provisions, not each individual building.
The Building and Approved Inspectors (Amendment) Regulations 2010

The new Regs

(5A) This paragraph applies to any extension of a building falling within class VII in Schedule 2 except a conservatory or porch—

(a) where any wall, door or window separating the conservatory or porch from that building has been removed and not replaced with a wall, door or window; or

(b) into which the building’s heating system has been extended.
The Building and Approved Inspectors (Amendment) Regulations 2010

The new Regs

20D.—(1) This regulation applies where a building is erected and regulation 17C applies.

(2) Not later than the day before the work starts, the person carrying out the work shall give the BCB authority a notice which specifies—

(a) the target CO2 emission rate for the building, (TER)
(b) the calculated CO2 emission rate for the building as designed, (DER) and
(c) a list of specifications to which the building is to be constructed.
(3) Not later than five days after the work has been completed, the person carrying out the work shall give the BCB—

(a) a notice which specifies—

(i) the target CO2 emission rate for the building (TER),
(ii) the calculated CO2 emission rate for the building as constructed, and
(iii) whether the building has been constructed in accordance with the list of specifications referred to in paragraph (2)(c), and if not a list of any changes to those specifications; or

(b) a certificate of the sort referred to in paragraph (4) accompanied by the information referred to in sub-paragraph (a).
The Building and Approved Inspectors (Amendment) Regulations 2010

The new Regs

(4) A BCB is authorised to accept, as evidence that the requirements of regulation 17C have been satisfied, a certificate to that effect by an energy assessor who is accredited to produce such certificates for that category of building.

(5) In this regulation—“energy assessor” means an individual who is a member of an accreditation scheme approved by the Secretary of State in accordance with regulation 17F; and “specifications” means specifications used for the calculation of the CO2 emission rate.
The main change is that the notional building will be based on a set of parameters that deliver the targeted national improvement by approximately equalizing the marginal abatement cost across all sectors.

In other words the 25% improvement will be based on a combination of improved u values, effective use of design to limit solar gain, efficient design and running of M and E systems and the increased use of renewable energy sources.
'As far as designers and builders are concerned, the use of compliance tools will appear no different.

The NCM software will generate a Target Emission Rate (TER) the only difference being in the algorithms that generate the TER.

Consequently, the change in approach would principally affect those involved in developing compliance tools, rather than the users of those tools.'
Demonstrating Compliance:
The “5 criteria” for compliance still apply;

1. CO² Target
2. Limits on design flexibility
3. Control over solar gain
4. As built CO² target to be achieved
5. Information to operate system efficiently
The New AD’s

• Regulations vs. Guidance:

• The Approved Document, as well as containing guidance, also contains extracts from the Regulations.

• For example: The requirement that the target CO² emission rate for the building shall not be exceeded – referred to with Regulation 17C, is a regulatory requirement.

• No flexibility or demonstration via other route can apply.

• Look for bits in green

L1. Reasonable provision shall be made for the conservation of fuel and power in buildings by:

(a) limiting heat losses and uses—

(i) through thermal elements and other parts of the building fabric; and

(ii) from pipes, ducts and vessels used for space heating, space cooling and hot water services;

(b) providing fixed building services which—

(i) are energy efficient;

(ii) have effective controls; and

(iii) are commissioned by testing and adjusting as necessary to ensure they use no more fuel and power than is reasonable in the circumstances; and

(c) providing to the owner sufficient information about the building, the fixed building services and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and power than is reasonable in the circumstances.
Criterion 1-5 have been slightly adapted to help clarify and emphasise the purpose of them

Criterion 1 - is a regulation

Criterion 2 - discourages excessive trade-offs which are inappropriate.

Criterion 3 - air conditioning not to be factored in

Criterion 4 - “confidence factors” improve quality and narrow the gap between design intent and performance.

Criterion 5 - No change
Criterion 1 - Design Standards, Achieving the TER:

The TER for individual dwellings must be calculated using SAP2009 – accredited assessors should be used as an EPC will be required at completion.

The 2010 Target Emissions Rate (TER) is 25% below the 2006 TER.
• Most of the changes occur within the SAP software rather than in the Approved Document. A designer must now use the accredited software – hand calculations are not permitted

• Building Control must be presented with a preliminary calculation **before construction starts** based on the plans and specifications

• The calculation will give an indication of whether a design is compliant and will produce a list of those features of the design that are critical to achieving compliance

• The list will be used to prioritise a risk-based inspection regime
### Table 1: Part L1A
Comparison of limiting U-value 2006 v 2010 (W/m²K)

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>2010</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>0.20</td>
<td>0.25</td>
</tr>
<tr>
<td>Wall</td>
<td>0.30</td>
<td>0.35</td>
</tr>
<tr>
<td>Floor</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Party wall</td>
<td>0.20</td>
<td>Not given</td>
</tr>
<tr>
<td>Windows/Pedestrian doors</td>
<td>2.0</td>
<td>2.2</td>
</tr>
</tbody>
</table>

### Table 2
U-values for party walls

<table>
<thead>
<tr>
<th>PARTY WALL CONSTRUCTION</th>
<th>U-VALUE (W/m²K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>0</td>
</tr>
<tr>
<td>Unfilled cavity with no effective edge sealing</td>
<td>0.5</td>
</tr>
<tr>
<td>Unfilled cavity with effective sealing all around exposed edges and in line with insulation layers in abutting elements</td>
<td>0.2</td>
</tr>
<tr>
<td>Fully filled cavity with effective sealing at all exposed edges and in line with insulation layers in abutting elements</td>
<td>0</td>
</tr>
</tbody>
</table>

### Table 3: Part L2A
Limiting U-values (W/m²K)

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>U-VALUE 2006/2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>0.25</td>
</tr>
<tr>
<td>Wall</td>
<td>0.35</td>
</tr>
<tr>
<td>Floor</td>
<td>0.25</td>
</tr>
<tr>
<td>Party Wall</td>
<td>Not Given</td>
</tr>
<tr>
<td>Windows/Pedestrian doors</td>
<td>2.2</td>
</tr>
</tbody>
</table>
Achieving the target:

- **Design freedom:**
- Provided the dwelling satisfies the limits on design flexibility as set out in Criterion 2, the compliance procedure allows the designer full flexibility to achieve the TER. It enables the designer to utilise the fabric and system measures and the integration of low and zero carbon technologies in whatever mix is appropriate to the scheme.
Criterion 2 – Limits on design flexibility:

- The upper limits set for area-weighted U values are basically unchanged. The emphasis instead is on reducing the heat loss:

- Table 2 sets out the worst acceptable standards for elements.

<table>
<thead>
<tr>
<th>Table 2 Limiting fabric parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>0.20 W/m²·K</td>
</tr>
<tr>
<td>Wall</td>
<td>0.30 W/m²·K</td>
</tr>
<tr>
<td>Floor</td>
<td>0.25 W/m²·K</td>
</tr>
<tr>
<td>Party wall</td>
<td>0.20 W/m²·K</td>
</tr>
<tr>
<td>Windows, roof windows, glazed rooflights, curtain walling and pedestrian doors</td>
<td>2.00 W/m²·K</td>
</tr>
<tr>
<td>Air permeability</td>
<td>10.00 m³/h·m² at 50 Pa</td>
</tr>
</tbody>
</table>
Criterion 3 – Solar Gains:

- SAP has been updated

- If a dwelling has mechanical cooling the assessment should be based on the design without the cooling system operating, but with an appropriate assumption about effective air change rate through openable windows

- Guidance on daylighting – glazing less than 20% of total floor area may result in poor levels of daylighting which could result in increase use of electric lighting

- Regionalised and monthly calculations are included to give a more accurate result
Criterion 4 – Building Performance:

The purpose here is to ensure that the dwelling as constructed is consistent with the DER – Closing the performance gap

EAC’s report, Greener homes for the future? “....we are very dismayed by the lack of urgency – especially considering how vital building control inspections will be to the entire zero carbon policy – shown by the Government in addressing the weaknesses in the current system.”

Building control industry must demonstrate that they are up to the job and that standards are being met

This section has been expanded and now covers:

- Party Walls
- Thermal Bridging
- Air Permeability
- Commissioning of Building Services
# Party Walls

<table>
<thead>
<tr>
<th>Party wall construction</th>
<th>U-value (W/m²K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>0.0</td>
</tr>
<tr>
<td>Unfilled cavity with no effective edge sealing</td>
<td>0.5</td>
</tr>
<tr>
<td>Unfilled cavity with effective sealing around all exposed edges and in line with insulation layers in abutting elements.</td>
<td>0.2</td>
</tr>
<tr>
<td>A fully filled cavity with effective sealing at all exposed edges and in line with insulation layers in abutting elements.</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Thermal Bridging

3 Methods:

**Best**
Approved Accredited Details scheme approved by Secretary of State (similar to Robust Details scheme) – use the calculated value. **Not yet available**

**Middle**
Design to BR 497 – increase value by 25% at design stage BER, & give a method statement of construction to BC

**Least**
Un-accredited details – use the default 0.15 value for design stage BER
C14 At the time of publication of this circular letter no accredited construction details schemes have been approved by the Secretary of State. Until such time that accredited construction details schemes have been approved, the calculated value of linear transmittance may be used in SAP without any performance penalty being added where this has been calculated by a suitably experienced and qualified person and the builder has provided information about the way the detail is to be constructed to the Building Control Body.

C15 Upon approval of accredited construction details schemes a further circular letter will be issued to reinstate the margins to be applied to the calculation of thermal transmittance as set out at paragraph 5.12(b) to Approved Document L1A and paragraph 5.7(b) to Approved Document L2A.
## Pressure Testing

<table>
<thead>
<tr>
<th>Number of instances of the dwelling type</th>
<th>Number of tests to be carried out on the dwelling type</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 or less</td>
<td><strong>Two</strong> tests of each dwelling type</td>
</tr>
<tr>
<td>Greater than 4, but equal to or less than 40</td>
<td><strong>Three</strong> tests of each dwelling type</td>
</tr>
<tr>
<td>More than 40</td>
<td>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%</td>
</tr>
</tbody>
</table>
Commissioning and Handover

Domestic Building Services Compliance Guide

Commissioning plan with deposit of plans

BCB to use to aid inspection regime
Should list specific tests
BCB may ask to be in attendance to witness

Handover pack for new home owner similar to CIBSE TM 31 to be produced – what is reasonable?

EPC to include section 2 – what can be done to improve and input calculations
Criterion 5 – Energy efficient operation:

The data used to calculate the TER and the DER should be included in the log book.

The occupier should also be provided with the recommended report generated in parallel with the “on-construction” Energy Performance Certificate.

This report will inform the occupier how the energy performance of the dwelling might be further improved.

Until the Building Control Body receives commissioning data they will not issue a completion certificate.
SAP 2009 – Changes Behind the Black Box
2006 Part L compliance

110m² three-storey mid terraced house
TER 17.09  DER 16.90 (just passes)

Specification
Floor 0.25
Walls 0.3
Roof 0.15 (average)
Windows 1.8
Doors 2.0
Natural ventilation
Air pressure test 7
90% efficient mains gas boiler
150litre cylinder, 50mm insulation
Usual controls on heating and hot water
0.08 w/m²k thermal bridging value
2010 Part L compliance using 2009 SAP

Based on 2006 specification TER 13.75 DER 17.32 (fails by a large margin)

**Specification** to create a pass without renewables:
Floor 0.17
Walls 0.17
Roof 0.12
Windows 1.4
Doors 1.35
Air pressure test 5
91.3% efficient mains gas boiler
150l cylinder 80mm insulation
100% dedicated low energy lighting

TER 13.75 DER 13.71
The Building Regulations 2000

Conservation of fuel and power

APPROVED DOCUMENT

L1B  Conservation of fuel and power in existing dwellings

Coming into effect 1 October 2010

2010 edition
Profile of Energy Performance of Domestic Stock: 2004

The number of dwellings are shown in blue boxes.

Based on English House Condition Survey (EHCS) 2004, DCLG
Main Changes

A new Conservatory definition

Historic Building Exemption are expanded and clarified

Renovation of Thermal Elements
- now defined as >50% of the element or >25% of the total envelope in context e.g. If removing plaster from room – then the element is the area of external wall to the room, for external render its area of that elevation.

Don’t forget consequential improvements only apply if the building is greater than 1000m2
## U Values for extensions

<table>
<thead>
<tr>
<th>Element</th>
<th>2010</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls</td>
<td>0.28</td>
<td>0.30</td>
</tr>
<tr>
<td>Pitched roof</td>
<td>0.16</td>
<td>0.16</td>
</tr>
<tr>
<td>Pitched roof</td>
<td>0.18</td>
<td>0.20</td>
</tr>
<tr>
<td>Flat roof</td>
<td>0.18</td>
<td>0.20</td>
</tr>
<tr>
<td>Floors</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td>Swimming pool basin</td>
<td>0.25</td>
<td>-</td>
</tr>
<tr>
<td>Windows and doors</td>
<td>1.6 / 1.8</td>
<td>1.8 / 2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Replacement Fitting</th>
<th>2010</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window, roof window, rooflight</td>
<td>WER Band C / 1.6</td>
<td>Band E / 2.0</td>
</tr>
<tr>
<td>Doors</td>
<td>1.8</td>
<td>2.2 – 3.0</td>
</tr>
</tbody>
</table>
Listed Buildings

The relaxation under Regulation 9 has been further clarified and now states that the exemption only occurs where compliance would unacceptably alter the character or appearance of the building and

- is a listed building
- in a conservation area
- a scheduled monument

Even when exemption applies the aim should be to improve energy efficiency as far as practical

Eg heating, lighting, etc
Renovation of Thermal Elements

now defined as 50% of the element or 25% of the total envelope in context. **e.g.** if removing plaster from room – then element is the area of external wall to the room, for external render it’s area of that elevation

50% of individual element

25% of envelope

Examples

Flat roof = Flat roof only not total roof

Internal re-plastering = internal not external elevation

Will it be enforced? – Penalty and fines may Change that.
Building Regulations 2011

- Approved Document F 2010
• Background

• Typically, over 80% of our time is spent indoors

• We want the air we breathe to be healthy

• This is especially important for vulnerable groups

• Ventilation dilutes and removes pollutants from the indoor air to provide a healthy indoor environment
• Why change Part F?

• The proposed changes in Part F are particularly to harmonize with changes to Part L – Balancing Act between Energy and Air Quality
Accidental Brilliance - Difference between expected performance and actual performance

2006 allowed for minimum air permeability of 3-4 m$^3$h$^{-1}$m$^{-2}$, but

~30% of new dwellings tested < 5 m$^3$h$^{-1}$m$^{-2}$

~3-5% of new dwellings tested < 3 m$^3$h$^{-1}$m$^{-2}$

Future changes to Part L are expected to push buildings to become tighter
Ventilation report:
• Report published in March 2009 “investigation of Ventilation Effectiveness.

• Carried out by Faber Maunsell Ltd and UCL.

Aims of report:
• Investigate the effectiveness of ventilation systems for dwelling – ADF 2006 of B/Regs.

• Proposed method of improving the effectiveness if and where required.
Difference between design ventilation and leaky

- Potential air leakage paths
- Intended ventilation/openings

Figure 1 A draughty leaky house

Figure 2 A comfortable well sealed, well ventilated house
The key is to build tight and ventilate right.
Airtightness does not generally increase U values, but ensures the calculated U value is achieved.

Measurements were taken at an air temperature difference of +20°C (68°F) indoors and −10°C (14°F) outdoors, a pressure difference of 20 Pa (equivalent to wind force 2-3) using conventional, fibrous insulating material.

U-value with airtight vapour barrier = 0.30 W/m²K

U-value with 1mm gap in vapour barrier = 1.44 W/m²K

A gap as small as 1mm in the vapour barrier can reduce the U-Value by a factor of 4.8

Measurement carried out by: Institut für Bauphysik, Stuttgart.
Difference between design ventilation and leaky

\[10 \text{m}^3/\text{h/m}^2\text{ at a pressure of 50pa}\]

Equivalent to a hole through the building fabric the size of a 20p every square metre!
## Revised Part F Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Limits on application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Means of ventilation</strong></td>
<td>Requirement F1 does not apply to a building or space within a building:</td>
</tr>
<tr>
<td>F1(1). There shall be adequate means of ventilation provided for people in the building.</td>
<td>a. into which people do not normally go; or</td>
</tr>
<tr>
<td>F1(2). Fixed systems for mechanical ventilation and any associated controls must be commissioned by testing and adjusting as necessary to secure that the objective referred to in sub-paragraph (1) is met.</td>
<td>b. which is used solely for storage; or</td>
</tr>
<tr>
<td></td>
<td>c. which is a garage used solely in connection with a single dwelling.</td>
</tr>
</tbody>
</table>

All the rest is guidance except -
Building Regulations 2011

Requirements in the Building (Approved Inspectors etc) Regulations 2000

Mechanical ventilation air flow rate testing

12AA.—(1) This regulation applies where paragraph F1(1) of Schedule 1 imposes a requirement in relation to the creation of a new dwelling by building work.

(2) The person carrying out the work shall, for the purpose of ensuring compliance with paragraph F1(1) of Schedule 1—

(a) ensure that testing of the mechanical ventilation air flow rate is carried out in accordance with a procedure approved by the Secretary of State; and

(b) give notice of the results of the testing to the building control body.

(3) The notice referred to in paragraph (2)(b) shall—

(a) record the results and the date upon which they are based in a manner approved by the Secretary of State; and

(b) be given to the approved inspector not later than five days after the final test is carried out.

Commissioning

12C.—(A1) This regulation applies to building work which is the subject of an initial notice, and in relation to which paragraph F1(2) of Schedule 1 imposes a requirement, but does not apply to the provision or extension of any fixed system for mechanical ventilation or any associated controls where testing and adjustment is not possible.

(1) This regulation applies to building work which is the subject of an initial notice, and in relation to which paragraph L1(b) of Schedule 1 imposes a requirement, but does not apply to the provision or extension of any fixed building service where testing and adjustment is not possible or would not affect the energy efficiency of that fixed building service.

(2) Where this regulation applies the person carrying out the work shall, for the purpose of complying with paragraph F1(2) or L1(b) of Schedule 1, give to the approved inspector a notice confirming that the fixed building services have been commissioned in accordance with a procedure approved by the Secretary of State.

(3) The notice shall be given to the approved inspector—

(a) not later than the date on which the notice required by regulation 15(4) is required to be given; or

(b) where the regulation does not apply, not more than 30 days after the completion of the work.
3 ways to comply

Comply with Ventilation rate requirements

Follow system guidance for buildings with or without basements

Alternative systems demonstrating equal performance
• Method 1 compliance

Table 5.1a Extract ventilation rates

<table>
<thead>
<tr>
<th>Room</th>
<th>Intermittent extract</th>
<th>Continuous extract</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum rate</td>
<td>Minimum high rate</td>
</tr>
<tr>
<td>Kitchen</td>
<td>30 l/s adjacent to hob; or 60 l/s elsewhere</td>
<td>13 l/s</td>
</tr>
<tr>
<td>Utility room</td>
<td>30 l/s</td>
<td>8 l/s</td>
</tr>
<tr>
<td>Bathroom</td>
<td>15 l/s</td>
<td>8 l/s</td>
</tr>
<tr>
<td>Sanitary accommodation</td>
<td>6 l/s</td>
<td>6 l/s</td>
</tr>
</tbody>
</table>

Total extract rate should be at least the whole dwelling ventilation rate given in Table 5.1b.

Table 5.1b Whole dwelling ventilation rates

<table>
<thead>
<tr>
<th>Number of bedrooms in dwelling</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole dwelling ventilation rate (l/s)</td>
<td>13</td>
<td>17</td>
<td>21</td>
<td>25</td>
<td>29</td>
</tr>
</tbody>
</table>
Building Regulations 2011

- **Changed ventilation guidance**
  - Dwellings designed to an air permeability of 5m³/hr/m² or tighter

- **1 Background ventilators and intermittent extract**
  - Increased sizing of trickle ventilation by about 30%

- **2 Passive stack ventilation**
  - All Passive Stack Vents to be 125 mm duct diameter and increased
  - Sizing of trickle ventilation
- **3 Continuous mechanical extract**
- Need for trickle vents in habitable rooms

- **4 Continuous mechanical supply and extract with heat recovery**
- Increased air flow rate requirements
Air transfer:

- Approved Document F – 2006 recommended an internal door under-cut of 10mm above floor finish.

- Approved Document F – 2010 recommends that an undercut of 20mm above the floorboards, or other surfaces, if the finish has not been fitted.
Installation and commissioning:

- Commissioning of natural ventilation openings will be based on visual checks.
- Mechanical ventilation undertaken by air flow measurements.
- Owners to have information on operating and maintaining the system.
- Guide proposes an installation and commissioning checklist, that should be completed as of the installation handover and signed and approved by a person “qualified” to do so.
Alternative Methods

Show how you conform to the performance standards in Appendix A

Mould/Moisture
Nitrogen
Carbon Monoxide
Volatile organic Compounds
Body Odour

<table>
<thead>
<tr>
<th>Moving average period</th>
<th>Room air relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 month</td>
<td>65%</td>
</tr>
<tr>
<td>1 week</td>
<td>75%</td>
</tr>
<tr>
<td>1 day</td>
<td>85%</td>
</tr>
</tbody>
</table>
Noise limits for domestic continuous mechanical ventilation:

- Not an issue for Building Regulations but noise generated by ventilation fans may disturb occupants and discourage their use.

- New section in AD giving ‘advice’ of 30 dbl in bedrooms in this respect – not a requirement under Part F.
Replacement windows:

- Approved Document F state that it would be good practice to fit trickle ventilators where the original windows were not fitted with ventilators.

- Where trickle ventilators were originally fitted they must be replaced by a ventilator of at least the same size. Where size is not known then assume 5000mm² for habitable rooms.
Then you add the users
Revisions to Part J AD 2010
• The major issues identified in the consultation included:
  • air supply for combustion in air-tight homes
  • better guidance on biofuel technology
  • carbon monoxide (CO) alarms
  • concealed flues
  • plumbing from condensing boilers
  • bunding of domestic oil tanks.
Costs of the Change

Small transition costs mainly for Building Control inspectors.

Some significant ongoing costs, primarily incurred by households.

Breakdown of Total Cost (PV):

- CO alarms: £44.8 million
- Ventilation: £15.9 million
- Oil tank bunding: £236.3 million

Significant benefits accruing to society resulting from avoided deaths and injuries.
Hidden danger

13/11/2009

A year ago the Health and Safety Executive warned that 1,200 homes with concealed flue boiler systems could be ‘immediately dangerous’. Martin Hilditch charts the action taken by developers since then to deal with this unseen threat.

Investigators from the Health and Safety Executive dropped a bombshell on the housing industry last year: thousands of people across the UK could be living in homes that pose an immediate threat to their lives. It is difficult to imagine a more stark warning.

HSE investigators had a few months earlier launched a probe into gas safety following the death of 26-year-old dance teacher Eloise Littlewood in the new build flat she part-owned with Notting Hill Housing at the Bedfont Lakes development in west London.
Concealed Flues

Where a flue is within a void access is required at strategic locations to check continuity, support, condensate, and drainage.
CO Detection

Looked at provision in all cases but Part J only requires detection in Solid Fuel situations
CO2 Detection

How CLG costs things

Familiarisation cost for BC inspectors

4000 x £35 = £140,000

Familiarisation for installers

1300 x £11.32/hr = £15,000
CO Detection

How CLG costs things

Mains wired option

Average unit cost £23.62

Electrician cost

New Build £11.31 (0.5 hours’ labour at £12.62 per hour plus materials at £5)
Existing buildings £45.24 (2 hours’ labour at £12.62 per hour plus materials at £20)
CO Detection

Detector Locations
Open Flued Appliance

Due to ‘accidental brilliance’ buildings are more airtight than anticipated in 2006 regs

Accordingly combustion air not sufficient in buildings tighter than 5m$^3$/hr/m$^2$ so increased requirements apply.
### Table 1 Air supply to solid fuel appliances

<table>
<thead>
<tr>
<th>Type of appliance</th>
<th>Type and amount of ventilation (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open appliance, such as an open fire with no throat, e.g. a fire under a canopy</td>
<td>Permanently open air vent(s) with a total equivalent area of at least 50% of the cross sectional</td>
</tr>
<tr>
<td>as in Diagram 23.</td>
<td>area of the flue.</td>
</tr>
<tr>
<td>Open appliance, such as an open fire with a throat as in Diagrams 22 and 29.</td>
<td>Permanently open air vent(s) with a total equivalent area of at least 50% of the throat opening</td>
</tr>
<tr>
<td>Other appliance, such as a stove, cooker or boiler, with a flue draught stabiliser.</td>
<td>Permanently open vents as below: If design air permeability &gt; 5.0 m²/(h·m²) then 300 m²/kW for first 5 kW of appliance rated output, 850 m²/kW for balance of appliance rated output. If design air permeability ≤ 5.0 m²/(h·m²) then 850 m²/kW of appliance rated output.</td>
</tr>
<tr>
<td>Other appliance, such as a stove, cooker or boiler, with no flue draught stabiliser.</td>
<td>Permanently open vents as below: If design air permeability &gt; 5.0 m²/(h·m²) then 550 m²/kW of appliance rated output above 5 kW. If design air permeability ≤ 5.0 m²/(h·m²) then 550 m²/kW per kW of appliance rated output.</td>
</tr>
</tbody>
</table>
Biofuels

- Biofuels - now defined to include solid biofuels (wood pellet etc)
- Requirements for Solid Biofuels more relaxed than coal so allows for
  smaller diameter flues and no requirements for hearths
  (NB watch clean air act & Manufacturers recommendations)
Bunding

Highly topical BP Gulf spillage
– devastating consequences

Almost 1 Million UK homes still use oil heating

111 serious pollution incidents from Oil Spills per year

Estimated that just 10% are bunded
Bunding required where the tank

a. has a total capacity of more than 2500 litres; or
b. is located within 10 m of inland freshwaters or coastal waters; or

c. is located where spillage could run into an open drain or to a loose fitting manhole cover; or
d. is located within 50 m of sources of potable water, such as a wells, bore-holes or springs; or
e. is located where oil spilled from the installation could reach the waters listed above by running across hard ground; or
f. is located where tank vent pipe outlets cannot be seen from the intended filling point.
Pluming and Neighbour disputes

There are times when a white plume or discharge can be seen coming from the flue terminal on condensing boilers. This is due to the flue gases being cooler than in noncondensing boilers Part J now gives advice on considerate positioning.
A “CP” facility should be provided to:

- Major transport terminal or interchanges.
- Motorway services.
- Sport and leisure facilities, including large hotels.
- Cultural centres, museums, concert halls, art galleries.
- Stadia and large auditoria.
- Shopping centres and shopmobility centres
- Key buildings within town centres, eg libraries, town halls.
- Educational establishments.
- Health facilities, hospitals, health centres and community practices.
BS 8300: 2009
BS 8300: 2009

www.changing-places.org
BS 9999

Code of practice for fire safety in the design, management and use of buildings

An Overview

Came into effect on 6th October 2008
Risk Profile Concept

The guidance on the provision of means of escape and on construction has been developed to reflect

- the nature of the occupants
- the use of the buildings as well as the likely fire growth
- resulting risks associated with that use
### Table 2 – Occupancy Characteristics

<table>
<thead>
<tr>
<th>Occupancy characteristic</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Occupants who are awake and familiar with the building</td>
<td>Office and industrial premises</td>
</tr>
<tr>
<td>B</td>
<td>Occupants who are awake and unfamiliar with the building</td>
<td>Shops, exhibitions, museums, leisure centres, other assembly buildings, etc.</td>
</tr>
<tr>
<td>C</td>
<td>Occupants who are likely to be asleep:</td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>Long-term individual occupancy</td>
<td>Individual flats without 24 h maintenance and management control on site</td>
</tr>
<tr>
<td>Cii</td>
<td>Long-term managed occupancy</td>
<td>Serviced flats, halls of residence, sleeping areas or boarding schools</td>
</tr>
<tr>
<td>Ciii</td>
<td>Short-term occupancy</td>
<td>Hotels</td>
</tr>
<tr>
<td>D A)</td>
<td>Occupants receiving medical care</td>
<td>Hospitals, residential care facilities B)</td>
</tr>
<tr>
<td>E C)</td>
<td>Occupants in transit</td>
<td>Railway stations, airports</td>
</tr>
</tbody>
</table>

A) Currently occupancy characteristic D, medical care, is dealt with in other documentation and is outside the scope of this British Standard.

B) Under some circumstances, residential care facilities may be classified as occupancy characteristic Cii.

C) This occupancy characteristic is included for completeness within this table but is not referred to elsewhere in this British Standard.

Please note that this code does not Hospitals that are covered under HTM 05-02
# Table 3 – Fire growth rates

<table>
<thead>
<tr>
<th>Category</th>
<th>Fire growth rate</th>
<th>Examples</th>
<th>Fire growth parameter&lt;sup&gt;A) &lt;/sup&gt; kJ/s³</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slow</td>
<td>Banking hall, limited combustible materials</td>
<td>0.002 9</td>
</tr>
<tr>
<td>2</td>
<td>Medium</td>
<td>Stacked cardboard boxes, wooden pallets</td>
<td>0.012</td>
</tr>
<tr>
<td>3</td>
<td>Fast</td>
<td>Baled thermoplastic chips, stacked plastic products, baled clothing</td>
<td>0.047</td>
</tr>
<tr>
<td>4</td>
<td>Ultra-fast</td>
<td>Flammable liquids, expanded cellular plastics and foam</td>
<td>0.188</td>
</tr>
</tbody>
</table>

<sup>A)</sup> This is discussed in PD 7974-1.
### Occupancy risk profiles

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Risk profile</th>
<th>Occupancy</th>
<th>Risk profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration office</td>
<td>A2</td>
<td>Indoor games/training rooms in schools</td>
<td>B2</td>
</tr>
<tr>
<td>Amusement arcade</td>
<td>B2</td>
<td>Kitchen</td>
<td>A3</td>
</tr>
<tr>
<td>Archive/library reading area</td>
<td>B3</td>
<td>Licensed betting office (public area)</td>
<td>B1</td>
</tr>
<tr>
<td>Art gallery</td>
<td>B1/B2</td>
<td>Lobbies</td>
<td>B1</td>
</tr>
<tr>
<td>Assembly hall</td>
<td>B2</td>
<td>Lounge (other than dwelling)</td>
<td>B2</td>
</tr>
<tr>
<td>Banking hall</td>
<td>B1</td>
<td>Machinoprinting room</td>
<td>A3</td>
</tr>
<tr>
<td>Bar</td>
<td>B2</td>
<td>Mechanical plant room</td>
<td>A4/A4</td>
</tr>
<tr>
<td>Bazaar</td>
<td>B2/B3</td>
<td>Meeting room</td>
<td>B2</td>
</tr>
<tr>
<td>Bedroom/study bedroom</td>
<td>C62</td>
<td>Museum</td>
<td>B2</td>
</tr>
<tr>
<td>Bed-sitting room</td>
<td>C62</td>
<td>Office (closed-plan or office less than 60 m²)</td>
<td>B2</td>
</tr>
<tr>
<td>Billiard or snooker room</td>
<td>B2</td>
<td>Office (open-plan exceeding 60 m²)</td>
<td>A2</td>
</tr>
<tr>
<td>Bingo hall</td>
<td>B2</td>
<td>Reading room</td>
<td>B2</td>
</tr>
<tr>
<td>Bowling alley</td>
<td>B2</td>
<td>Reception area</td>
<td>B1</td>
</tr>
<tr>
<td>Business centre</td>
<td>B2</td>
<td>Restaurant</td>
<td>B2</td>
</tr>
<tr>
<td>Canteen</td>
<td>A2</td>
<td>Shop sales area</td>
<td>B3</td>
</tr>
<tr>
<td>Classroom</td>
<td>A2</td>
<td>Shop sales area</td>
<td>B3</td>
</tr>
<tr>
<td>Club</td>
<td>B2</td>
<td>Showrooms</td>
<td>B3</td>
</tr>
<tr>
<td>Committee room</td>
<td>A2</td>
<td>Skating rink</td>
<td>B1</td>
</tr>
<tr>
<td>Common room</td>
<td>A2</td>
<td>Stage and grandstands</td>
<td>B1</td>
</tr>
<tr>
<td>Computer room</td>
<td>B2</td>
<td>Staff room</td>
<td>A2</td>
</tr>
<tr>
<td>Consumer or shopping mall</td>
<td>B2</td>
<td>Storage and warehousing</td>
<td>A2/A3/A4/A4</td>
</tr>
<tr>
<td>Conference room</td>
<td>B2</td>
<td>Studio (radio, television, film, recording),</td>
<td>A2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>non-public</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crush hall</td>
<td>B2</td>
<td>Studio (radio, television, film, recording),</td>
<td>B2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>public</td>
<td></td>
</tr>
<tr>
<td>Dance area</td>
<td>B2/A3</td>
<td>Teaching laboratories</td>
<td>A2</td>
</tr>
<tr>
<td>Deposit/strong room</td>
<td>A2/A3</td>
<td>Theatre/cinema/concert hall auditoria</td>
<td>B2</td>
</tr>
<tr>
<td>Design studio/drafting office</td>
<td>A2</td>
<td>Theatre stages</td>
<td>A2/A3</td>
</tr>
<tr>
<td>Dining room</td>
<td>B1</td>
<td>Trading floor</td>
<td>B2</td>
</tr>
<tr>
<td>Dormitory</td>
<td>C62</td>
<td>Trading gallery</td>
<td>B2</td>
</tr>
<tr>
<td>Exhibition areas</td>
<td>B2/B3</td>
<td>Venue for pop concerts</td>
<td>B1</td>
</tr>
<tr>
<td>Factory production area</td>
<td>A2/A3</td>
<td>Waiting area/visitors lounge</td>
<td>B1</td>
</tr>
<tr>
<td>Filing room/store</td>
<td>A3</td>
<td>Waiting room</td>
<td>B1</td>
</tr>
<tr>
<td>Foyers</td>
<td>B1</td>
<td>Workshop</td>
<td>A3</td>
</tr>
<tr>
<td>Gymnasium/leisure centre</td>
<td>B2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Variation of risk profile

- Sprinklers (suppression – not extinction)
- Fire growth reduced (normally 1 level)
- May apply only to the part of building covered
  - Effective fire resistant separation required
- The outcomes could be:
  - Unsprinklered shop was B3 & with sprinklers becomes B2
  - Unacceptable B4 situation becomes B3 with sprinklers
Diagram 1

Windows

Elevation

Dead end

Staircase

Central area

Plan

18m

45m

18m

Building size - 126m x 30m
Height to top floor - 19.2m

BS 9999 Example 1 – 5 Storey Shop Premises
Example 1 - To convert and extend existing office to a shop

**Existing Floor area:** 126m x 30m currently has 2 stair cores

**Floor to ceiling height:** 4.6m (suspended ceiling to go in 500mm below soffit)

**Floor to floor dimension:** 4.8m

**5 floors:** Height of top occupied storey 19.2m (Building height 24m)

Step 1

**Occupancy characteristic** (Table 2): B

**Fire growth rate** (Table 3): From 2 or 3 depending on shop contents.

**Risk profile** (Table 5 – superscript B not C): Assume B2 (white goods) for this example
Travel Distance

ADB says base standard:-
Travel Distance: 18m and 45m single/multidirectional
Fire alarm: BS5839 says Category Manual
Structural fire resistance (with no sprinklers): 90 minutes

BS9999 says base standard:-
Start travel distance is: 20m and 50m (increase in 2m and 5m on example)
Fire alarm: (Table 8) says Category Manual
Structural fire resistance (Table 25 independent of ventilation): 90 minutes
Step 2. Effect of adding a voice alarm (BS5839 Pt8)

(Para. 19.2) A flat 15% increase in travel distance and the same percentage reduction in door, stair and corridor widths is granted.
Extra travel distance: 20m goes to 23m and 50m goes to 57.5m
Extra floor space: 150sq/m in dead end zones and 750sq/m in central zone

Step 3. Effects of ceiling height
Diagram 1 indicates ceiling height (4.1m) as greater than 4m but below 5m so Table 16 allows 10% increase in travel distance and the same percentage reduction in door, stair and corridor widths.

Cumulative extra travel distance 23m goes to 25.3m and 57.5m goes to 63.25m
Refer now to Absolute maximums (Table 17): 24m and 75m

BS9999 24m and 63.25m Vs ADB 18m and 45m
BS 9999 vs Approved Document B
Future changes to expect

Balconies + Decks
Gates
Structural Eurocodes
Effects of reduced water use on drains
Flooding
Fires on Timber Frame sites
Life times homes (disabled access)
Next phase of Part L
Stunell Review (Vultures out?)

Conservatives advised to scrap Building Regulations
Stunell Review (Vultures out?)

Here are the highlights (15/12) announcement of the future plans for the building regs

**Part A**
There are no plans for the wholesale revision of Part A but CLG will look at how Part A and the Approved Document might be updated, with references reflecting the standards based on Eurocodes.

Within the overall context of removing the burden of compliance CLG will also look to introduce a scheme of third-party certification (similar to the scheme in place in Scotland) as an alternative to the need for Building Control applications and checks.
Part B
CLG are dismissing the idea of extending the requirements to make sprinklers mandatory.

Despite a number of recent fires in timber-framed construction, these relate to risks during the construction phase, which is not within the scope of the Building Regulations. Whilst statistics do suggest that timber-framed buildings suffer greater fire damage than other building types, this has not resulted in a higher risk of injury. As a result there will be no need for changes to the Building Regulations.

The issue of equality was raised over fire safety for people with disabilities in the case of fire. It was suggested that the existing provision was unacceptable as it permitted an approach that could leave a person with a disability within a building (albeit within a safe refuge) in the event of a fire evacuation. The Department does not have any evidence that the approach is, in practice, any less safe, and will keep the issue under review.
Part C
CLG have expressed concern over existing provisions relating to radon gas. They will therefore examine alternative options for addressing the health risks from radon and the costs and benefits of these.

Part G
The Department received representations that the guidance on toilet provision discriminates against women. There is no factual evidence to support this so a study is to be commissioned – or put another way the CLG spokeswomen had nothing to go on ;).

Part L
The plans for part L have been clearly spelt out in the past and the report reinforces plans for the next phase to be introduced in April 2013. That notwithstanding, CLG recognised issues with the complexity of guidance, some of which was considered to be beyond the understanding of many. It was suggested that a key consequence of this complexity was that compliance suffered as people failed to understand what was required. CLG will review this complexity and hope to address the issue through simplified guidance.
CONTEXT OF PROPOSED CHANGES

80% cut in greenhouse gas emissions by 2050

Homes = 27% of UK’s CO2 emissions

The route to Zero Carbon

• 2010 - 25% reduction from 2006 levels
• 2013 - 44% reduction from 2006 levels
• 2016 - Zero Carbon new homes in England from 2016
• Different targets for Scotland, Wales and Northern Ireland
Zero Carbon

Not just regulated energy use as currently defined eg fabric losses, fixed heating etc but also need to offset energy in use as well eg cooking, TV, computers. Therefore not 100% reduction but more like 150% reduction!

Costs of the journey

<table>
<thead>
<tr>
<th>CSH Level</th>
<th>Additional cost over 2006 BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3-4%</td>
</tr>
<tr>
<td>4</td>
<td>6-8%</td>
</tr>
<tr>
<td>5</td>
<td>25-30%</td>
</tr>
<tr>
<td>6</td>
<td>30-40%</td>
</tr>
</tbody>
</table>
Not just increasing fabric insulation
Part M
By far the biggest area of response (600+) related to Changing Places and we can expect these to form part of the next version of Part M when its published in 2013.

There was also support for the Building Regulations being used to deliver standards for new housing that might more widely support independent living in older age, with specific reference to inclusion within the Regulations of Lifetime Homes Standards.

Part P
This requirement was criticized for penalising those who want to comply, whilst doing nothing to improve compliance amongst those who wish to avoid the rules. The requirement for part P certification is therefore to be reviewed.
Other matters

Parts MKN
In addition, as part of its everyday business, the Department receives queries from building control bodies and industry that suggest there is scope for rationalisation of Parts M, K and N. They will look at the opportunities and benefits that might be achieved with rationalisation, addressing areas of potential conflict and overlap. Though they are at pains to point out that this is not intended though to open these Parts to wider review.

Enforcement
CLG have committed to explore options to further improve enforcement (for example potential increases in the level of fines, introduction of civil sanctions) and incentives for responsible businesses.

They will also review the system including expanding roles for Appointed Persons, third party checking mechanisms and the role of insurance and warranties.
Contact

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