



## Department for Education

### Building Bulletin 100

### Submission from CIBSE

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**This response is provided on behalf of the Chartered Institution of Building Services Engineers (CIBSE)**

CIBSE is a chartered professional body and licensed by the Engineering Council UK to register professional engineers.

The author of this response also serves as Chairman of the Building Regulations Advisory Committee (BRAC) in a personal capacity. As a member of BRAC the author chaired the 'expert group on structure of guidance to the building regulations'<sup>1</sup>. This was a report by an MHCLG expert group on how to re-structure current guidance which supports building regulations when it is reviewed, as recommended by Dame Judith Hackitt in her independent review.

The direct relevance of this report and role to this response is discussed more fully below.

**About the Chartered Institution of Building Services Engineers (CIBSE)**

The Chartered Institution of Building Services Engineers is an internationally recognised professional body established by Royal Charter that exists to 'support the Science, Art and Practice of building services engineering, by providing our members and the public with first class information' The provision of accurate, reliable trustworthy information is a fundamental raison d'être of CIBSE and indeed of any professional body.

CIBSE is the primary professional body and learned society for those who design, install, operate and maintain and refurbish the energy using systems, both mechanical and electrical, which are used in buildings. They are responsible for the systems installed in buildings that make them habitable, providing ventilation, cooling, light, lifts, hot and cold running water, fire protection and building control systems. CIBSE members work in the public and private sectors and in higher education. CIBSE has over 20,000 members worldwide.

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As an Institution CIBSE publishes Guidance and Codes which provide best practice advice and are internationally recognised as authoritative. The CIBSE Knowledge Portal, makes our Guidance available online and is the leading systematic engineering resource for the building services sector. Currently we have users in over 170 countries, demonstrating the breadth of the CIBSE membership. Our members therefore have a pervasive involvement in the use of engineering systems in the built environment, with a key contribution to both safety and sustainable development. Our focus is on adopting a co-ordinated approach at all stages of the life cycle of buildings, including conception, briefing, design, procurement, construction, operation, maintenance and ultimate disposal.

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<sup>1</sup> <https://www.gov.uk/government/publications/final-report-of-the-expert-group-on-structure-of-guidance-to-the-building-regulations>

## CONSULTATION RESPONSE

### **Executive Summary: Status of the Guidance**

The BRAC Expert Group conducted an extensive survey of users of the Approved Documents. This found that there is a widespread view that, in spite of the formal role of the ADs as guidance, they are viewed as setting out requirements to be followed.

Evidence from CIBSE members indicates that in practice, whilst BB100 may be intended to be non-statutory guidance, it is often applied within the education sector as a prescriptive set of requirements. Alternative solutions that meet the functional requirements are often rejected on the grounds that they do not follow BB100. Unless there is some significant communications activity to advise those on the client side that BB100 is really only non statutory guidance then it will become a de-facto prescription. That communication activity needs to be very open and public, so that the supply side can refer to it when faced with client responses that amount to “BB100 says you must do it that way” (or indeed “ADB says you must do it that way”).

### **Who is the guidance for?**

This sets out the goal of the guidance being used by school staff. The findings of the expert group indicate that the Approved Documents are very largely used only by experts.

Further, the risk of the BB being viewed as prescriptive increases with this wider audience, who are not familiar with the hierarchy of the Functional Requirements in the regulations, statutory guidance in ADB and this non-statutory guidance.

### **Relationship of the BB to the Building Safety Bill**

There is no reference in the BB to the Building Safety Bill. Whilst the timing of the consultation meant that it was not possible for those drafting the consultation to have clarity on the precise content of the Bill, there are some key aspects of the Bill that will apply to all schools, such as the requirements relating to competence of designers and contractors. In addition, the inclusion of boarding accommodation raises the prospect of the higher risk regime applying to any boarding provision over 18m or six storeys in height (which could apply to some boarding provision in older traditional buildings, but is likely to act as a limit on any new provision of that height).

Given the importance and significance of the Bill it ought to be recognised in the Bulletin in its final published form.

### **Relationship of BB100 to BS 9999**

BSi state that “BS 9999 gives recommendations and guidance on the design, management and use of buildings to achieve reasonable standards of fire safety for all people in and around them. It also provides guidance on the on-going management of fire safety within a building throughout its entire life cycle, including guidance for designers to ensure that the overall design of a building assists and enhances the management of fire safety.”

There are some 8 references to BS 9999 in the current draft. However, there are other places where it could reasonably be cited as providing a recognised statement of internationally adopted best practice. It is also widely used by UK designers working in the Gulf region and far east, where BS 9999 and the National Fire Protection Association Codes (NFPA) are widely adopted. Greater recognition of BS 9999 would be advantageous to both the DfE as client and to UK practices working on UK schools projects. BS 9999 also helps to inform the balance of precautions and protection adopted in any given project, helping to manage costs as well as achieving functional outcomes.

**Para 1.3.1**

This refers to Part B of the Regulations, to “this document” in line 4/5 and to “the document” line 6. For clarity “the document” should be “this document”. There is no mention here of AD B, which may be taken to suggest that its not relevant.

Part One begins by citing AD B and then states that the Bulletin contains guidance specific to schools. This leaves the status of the Bulletin, which as already noted is non-statutory guidance, in a potentially confusing place, as it appears that DfE are replacing the Statutory Guidance in AD B with this non-statutory guidance. It appears that BB100 is intended to do two things: to set out how Part B functional requirements may be met in schools and then to provide additional guidance on further measures which the DfE wish to see taken in school buildings. These are reasonable additional measures, and the comments here relate to providing clarity over their status to users of the document.

Users may want to understand “what am I asked to do to comply with Building Regulations in a school building?” and “what am I asked to do to improve, for example, property protection in a school building, beyond the requirements of Building Regulations?”

There may also be a need for explicit clarity where the Bulletin is setting a higher bar than the AD, for example, in making reasonable provision for escape, the AD allows single stairs in some buildings. The BB is (in our view appropriately) saying that single stair solutions are not considered reasonable provision in new school buildings. There needs to be real clarity about this. Whilst a single stair is currently deemed to be reasonable provision in the Statutory Guidance, the non statutory guidance is saying the opposite. There are other examples in the Bulletin, and all will benefit from this clarification.

**Para 1.5**

This refers to “supplementary advice”. Is that an accurate description and will it turn out in practice to be supplementary instruction? Again, clarity is needed. In designing the final Bulletin, any such genuinely supplementary advice should be visually distinguished in the text to make it clear that it has that status. And the distinction needs to be explained. (This is similar to the layout of the Approved Document, which uses green boxes to denote regulatory requirements and italic text to denote comment.

**Para 1.6**

Why is Regulation 7(1) (*which covers short lived materials and workmanship*) not included? If fire safety related workmanship is not adequate then the fire safety measure may fail. Please include Reg 7(1) here. Appendix F needs extending accordingly.

**Para 1.11 – certification**

Product certification without installer certification and a level of post installation audit or inspection is worthless. Good equipment, poorly installed, is unlikely to work and deliver the function or protection intended. A recent example in a residential building saw all valves in a fire suppression system incorrectly installed. It was only the main contractor’s subsequent inspection that revealed this. The installer was third party certified. There must be adequate inspection and checking of fire safety related work, including commissioning and testing of systems with their interactions with other safety systems also being checked and tested. Certification is a worthwhile step, but it is not a panacea.

It is recommended that DfE take account of the report, due shortly, from the independent review<sup>2</sup> of product testing being undertaken by the former Chief Construction Advisor, Paul Morrell.

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<sup>2</sup> <https://www.gov.uk/government/groups/independent-review-of-the-construction-products-testing-regime>

**Para 2.7**

Noting that this guidance covers all facilities and that other non DfE funded clients may take a different view (and would potentially need to justify that if not meeting the minimum recommended levels), if the “minimum recommended levels” are really the minimum required levels then this needs to be set out clearly. If this is not really advisory then it needs to be spelt out honestly to the supply chain.

**Para 3.4**

Bullet 1 – allowed where? This needs to be crystal clear. If allowed in AD B but not here, then what? This probably needs to read “...except where a single means of escape is allowed in this Bulletin”.

**4.3 Escape routes and travel distances**

This is a specific example where it should be permitted to use BS9999 for travel distances. If you sprinkle you can increase travel distances and achieve greater design flexibility and potentially achieve a safe outcome at lower cost.

**5.5 and 5.11 width and capacity of escape stairs**

Should permit the use of BS9999 for exit widths and stair widths, where additional fire suppression is installed.

**5.16 Evacuation lift**

This is now a “requirement”, although the Bulletin is called “guidance”. Guidance on self evacuation by the mobility impaired person rather than an operator that may have fled the building would be useful.

This is referenced in NFPA codes, which are widely recognised in many international jurisdictions where UK fire designers operate and also in relevant British Standards, BS 9999 and BS 9991. A draft standard, prEN 81-76. *Safety rules for the construction and installation of lifts. Particular applications for passengers and goods passenger lifts. Part 76. Evacuation of persons with disabilities using lifts* is also under development. Once published it may be the most relevant guidance for the UK.

It is also worth noting that there is a DPC BS 9991 out for comment at present which may be relevant in the case of standalone boarding provision.

**6.19 Emergency lighting of escape routes**

CIBSE provides guidance on this topic through the Society of Light and Lighting<sup>3</sup>. The guidance is currently in the final stages of being updated and should be published later this year.

**6.21 Lifts**

CIBSE publishes extensive guidance on lifts in its Guide D, Transportation Systems in Buildings 2020<sup>4</sup> which would be beneficial to reference here.

**6.22 Mechanical systems**

There is guidance on the issues of fire safety design and firestopping available from CIBSE in its Guide E, Fire Safety Engineering 2019<sup>5</sup>, and also the Federation of Interior Specialists, FIS, Firestopping of Service Penetrations<sup>6</sup>.

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<sup>3</sup> <https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q20000008K5McAAK>

<sup>4</sup> <https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q3Y0000001Z11QAN>

<sup>5</sup> <https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q0000000GiPUSQA3>

<sup>6</sup> <https://www.thefis.org/membership-hub/publications/best-practice-guides/firestopping-of-service-penetrations/>

### 11.3 Fire resistance standard

In line with the principles of the Expert Group this is a case where the guidance should be very clear and simple – All elements of the structure should be 60 minutes fire rated for all schools. As simple as that. Apart from the final bullet the exclusions should be omitted to avoid the risk of a lower rated part of the school collapsing earlier due to a lower rating. With a simple blanket requirement there is no room for doubt, interpretation or “value engineering”.

### 15.10 – 15.14 Firestopping

This should include reference to the FIS guidance referred to above. There is a serious concern about the effective firestopping of service penetrations, which if inadequate undermine the compartmentation and fire rating of the wider building. There is a need for greater focus on the effective installation of firestopping and thorough checking of finished work, with inadequate work being required to be replaced. BB100 should be highlighting the need for this work to be undertaken effectiely by competent installers.

### Para 16.2

The method of measurement should be specified – is it ground level at the lowest point to top surface of the floor of the top storey? It needs to be unambiguous.

### 17.1 Sprinklers

It is not clear why sprinklers are only advised for schools over 11m in height. The argument for sprinklers in all new school buildings is that they reduce the risk of damage due to accidents and malicious action, and that the costs of remediation added to the social cost of having part of a school out of commission for a time tips the argument in favour of sprinklers due to the avoided costs of repair and replacement in the proportion of schools where the systems operate and suppress a fire, as well as the reduced risk to firefighters. If BS 9999 was used then there will be scenarios where the installation of sprinklers in buildings below the 11m threshold would be justified.

In addition, the guidance to install sprinklers in boarding accommodation and in special schools, para 27.7 and 28.5 could very usefully be included here for the avoidance of doubt on this topic that might arise if this guidance is split into three separate locations in the document. Again, the Expert Group principle of simplification and clarity also supports this.

### Para 18.3

Please clarify that the relevant period is 60 minutes. Appendix B is a large appendix: is this paragraph referring to Table B4?

### Para 18.6

If 11.3 states a 60 minute resistance, then it would be far more straightforward to say quite simply here that the external walls of the building should have a fire resistance of 60 minutes. Clear, simple and unambiguous.

### 18.9 External Walls

Since both options are the same, simplify to “All external surfaces shall be Class B-s1,d0 or better.” The table is pointless – a simple clear and unambiguous statement will do far better.

Since arson is a significant challenge and cost and external walls are easier to set fire to than other elements, why choose to use combustible materials in external walls? Why not Class A s1, d0, or as Regulation 7(2) for schools, due to the greater risk of and social impact of fires?

**Part Two****Para 25.2**

30-minutes is a low standard for an oil filled transformer room (see table 29 of BS9999)

Differentiate between cold kitchen (reheat only) and hot kitchen

Differentiate between refuse storage and normal storage areas.

**Para 25.9**

Add “means of automatically shutting off the fuel supply to gas cookers in the event of a fire”

**Para 26.7**

If carry down is in a PEEP or GEEP it needs to be part of a regular fire drill, as carry down needs to be practiced by the people named in the PEEP/GEEP. This may be overtaken by Home Office guidance on PEEPs, which were recently the subject of a consultation. DfE should consult with HO on this topic, as it is currently a very sensitive issue, as evidenced by the recent withdrawal of PAS 79-2 on fire risk assessment owing to controversy relating to the clauses dealing with evacuation.

**Part Four – Fire Safety Management**

Whilst it is understandable that this is a short section, that brevity could easily lead to the conclusion that this is a minor item in the Bulletin. It is important to stress that Regulation 38 is a statutory requirement, compliance with which is essential to the safe operation of the building. Failure to comply with Regulation 38 has so far gone largely unchallenged, but under the new Building Safety Regime that is expected to change. This section should be reviewed and discussed with MHCLG and the HSE to consider how it can be constructed to convey the degree of change in approach that the new Building Safety Regime will require.

Reference should be made to Section 9 of BS9999 for comprehensive guidance on managing occupied buildings.

Regulation 38 is also the subject of provisions in the Building Safety Bill, which may have a bearing on this guidance. It is also important to note that responsibility under the Regulatory Reform Order (and the Fire Safety Act, as it now is) is ongoing through the operational life of the building, and not just at the design and construction stages.

**Appendix B Evacuation lifts.**

Why is BS5588 Part 8 referenced when it was withdrawn in 2008?

Annex G.2 of BS9999 only refers to assisted evacuation lifts and not self evacuation lifts. See comment on para 5.16

**END**

Please do not hesitate to contact me for more information on this response. CIBSE wishes to support the further development of the Code following this consultation.