NFCC
National Fire
Chiefs Council

The professional voice of the
UK Fire & Rescue Service

National Fire Chiefs Council
West Midlands Fire Service
99 Vauxhall Road
Birmingham
B7 4HW

Telephone +44 (0)121 380 7311
Email info@nationalfirechiefs.org.uk

Department for Education
20 Great Smith Street
London
SW1P 3BT
United Kingdom

Sent via email to: BB100.consultation@education.gov.uk

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Consultation: Building Bulletin 100: Fire Safety Design for Schools

The National Fire Chiefs Council (NFCC) is pleased to respond to the consultation published on 27 May 2021 *Building Bulletin 100: Fire Safety Design for Schools.*

NFCC is the professional voice of the UK fire and rescue services (FRSs) and is comprised of a council of UK Chief Fire Officers. This response was put together by NFCC's Protection Policy and Reform Unit (PPRU).

This response was drafted in consultation with our members across the FRSs, and reflects their expertise and competence on the subject matter.

General Comments

NFCC believes that school and educational buildings are vital community assets, and their design should include fire safety measures which aim to minimise the effects of fires that may occur within them.

NFCC have called for automatic water suppression systems to be mandatory in all new and refurbished school buildings. We acknowledge that deaths and injuries in school fires are rare and, whilst sprinklers would provide additional life safety benefits, the greatest gains to be made are in protecting the property which will in turn secure the continued education of children. In the event of a fire, sprinklers should ensure minimum disruption and allow use of the premises to return to normal as quickly as possible. In an example provided by one of our member FRSs, they have had 75 fires in the 7 years to 2020, of those only the 2 schools with sprinklers resulted in just minor damage when they had significant fires with the fire contained within the rooms of origin.

Whilst there are proposals in this consultation that we would support, we are calling on the Department for Education (DfE) to think again on sprinklers and work with us to make our schools safer. This new guidance falls well short of our expectations for design guidance in schools in only requiring their installation in specific circumstances. The original guidance, when first released in 2007, acknowledged the important role of sprinklers and stated that “all new schools should have fire sprinklers installed except in a few low-risk schools”. We believe the current guidance is a retrograde step and represents a real lessening of standards in this area.

NFCC are concerned that the current draft of BB100 does not appear to mandate the use of this design guidance in all new school buildings. Without this requirement, it will still be possible for designers and developers to circumvent the improvement in areas such as automatic fire suppression systems and evacuation lifts by using other building design guidance. As long as designers are permitted to use alternative guidance – i.e. Approved Document B (ADB) or BS9999 – then the vast majority of times designers/developers/fire engineers will work to the guidance that gets them more for less. Government must ensure clarity is given in regard to this issue and ensure that there is not a weakening of standards by stealth.

School fires can be devastating, and the use of sprinklers are proven to not only minimise the disruption to a pupil’s education, but also the impact on their family, the community and the wider education establishment. The loss of a community asset such as a school does unintentionally impact disproportionately upon lower socio-economic areas. This was an issue that was highlighted during the COVID pandemic and the need for students to home school, with students from lower socio-economic areas having less access to online tools, such as laptops and internet, and even being affected by the loss of free school meals. Schools are important community assets that need protecting.

School fires can be large and devastating which take up a large amount of resources from FRSs and other first responders. The installation of sprinklers or other suppression systems can help contain fires, reducing resources and the risk to firefighters.

Impact Assessment

NFCC are calling for the publication of the impact assessment that informed the changes in the current draft of BB100 in order to better understand the rationale of the proposed changes. Whilst mandating sprinklers and non-combustible external walls in certain context may seem like an improvement to safety standards, it is rare that a school building is built that meets the 11m and 18m height thresholds. To this extent, without details of the proposed impact that this will have on safety, these ‘improvements’ seem tokenistic at best.

If a cost benefit analysis has been carried out for the implementation of automatic fire suppression systems in all schools, NFCC would strongly suggest Government should publish the analysis so that the fire safety community can understand what has been considered and challenge this if necessary.

As highlighted earlier, the installation of automatic fire suppression systems in schools should not just be for reasons of minimising risk to life and property protection, but to also minimise the wider costs of disruption to education that occur when a school is badly damaged or lost to fire. This would include the cost of temporary accommodation whilst replacement schools are built, transportation costs to alternative accommodation, and the cost to local authorities of building new schools. Government must also consider the potential for disruption to affect educational attainment for all those at the school; whilst buildings can be replaced, the effects of this educational disruption on the children involved will have repercussions for the rest of their lives.

Sprinklers

NFCC have consistently called for the installation of sprinklers in schools alongside partners in the built environment, including calling for the retrofitting of sprinklers in existing school buildings when relevant refurbishment takes place.

The requirements in this revision of BB100 fall well short of industry advice in only requiring installation in a limited set of circumstances. The original guidance, when first released in 2007, acknowledged the important role of sprinklers and stated that *"all new schools should have fire sprinklers installed except in a few low-risk schools".* This current revision represents a retrograde step by the DfE in its approach to property protection of buildings that represent a vital asset to all communities.

These new sprinkler proposals are immensely disappointing and, if implemented, represent a missed opportunity to make our schools safer. The Government should be looking to emulate the policies in both Scotland and Wales where sprinklers are mandatory in all new and substantially refurbished schools.

The requirement to install sprinklers in schools for those with special educational needs is an improvement, but there should be an additional consideration and clarity of how this is defined. Every child has the right to a mainstream education, which means that there are many mainstream schools which include facilities to teach those with special educational needs. The guidance needs to be clear on the parameters for requiring sprinklers in these settings. Whilst there is ambiguity in such matters, it is likely that designers will seek to omit these requirements.

NFCC would also welcome clarity around why the provision for sprinklers in schools is detailed as a requirement for satisfying the requirements of B4 of the Building Regulations. If the perception of sprinklers in schools is to prevent external fire

spread, then the link of the provision of B4 creates a loophole that allows designers to seek to use fire engineering in order to design out the requirement (especially for school buildings not close to other buildings) and is counterproductive to the original intention and reasoning for the provision.

NFCC would recommend that Government necessitates the provision as an overarching requirement, as the benefits from sprinklers span all of the five (B1 to B5) functional fire safety requirements of the Building Regulations. With reference to B5, the role sprinklers play in firefighter safety cannot be underestimated. Having the expectation of sprinklers in the wrong area dilutes the importance of suppression, and may infer that the sole reason for the sprinklers is to address that area alone (i.e. address B4 issues). FRSs have seen examples of this with design teams attempting to design out sprinklers on the basis of where the reference to them appeared in ADB.

Combustible Cladding

In addition to falling short on sprinklers, this new guidance still allows for the use of combustible materials on external walls. The banning of combustible cladding in new school buildings above 18m in height is tokenistic as very few schools are designed to this height.

Reliance on an arson assessment is not resilient for the lifespan of a building where socio-economic factors in the community may change. It would be better to ensure higher standards in all circumstances, which would also help future proof the buildings in the event of community circumstance changes. NFCC would also highlight that there is no guidance, specification or expectance of competency for those carrying out arson risk assessments. Where guidance is not explicit and clear, experience has shown that developers will be inclined to ignore or 'game' requirements in order to build more for less.

Yours sincerely,

Gavin Tomlinson
Chief Fire Officer
Protection and Business Safety Committee Chair
National Fire Chiefs Council

Jonathan Dyson
Asst Deputy Chief Fire Officer
North Yorkshire Fire and Rescue Service
Sprinkler Lead – National Fire Chiefs Council

Building Bulletin 100: Revision Questions

Fire Suppression Systems

Question 1. *BB 100 recommends that automatic fire suppression systems should be installed in all new school buildings that have a storey with a finished floor level over 11m above ground level. Do you agree with this recommendation? If not, please explain why.*

Unsure. This recommendation should go further as with sprinklers installed in all new and significantly refurbished school buildings.

The consultation does not outline or justify the rationale for the height threshold. The 11m threshold in other building design guidance relates to the FRS's ability to use ladders in order to rescue persons trapped in the building. This threshold should be contextualised in the current consultation to understand why it has been chosen given the differing nature of school buildings and their needs to those in residential guidance. The impact assessment should contain rationale linked to school buildings and the increased risk that comes with taller buildings.

Fires do not discriminate based on building height, and accordingly, NFCC would recommend the requirement for sprinklers be extended to include all schools. Recognising both the practicalities and potential cost implications of providing sprinklers, a more realistic requirement would be to extend the requirement for sprinklers to include all but the very smallest school buildings.

A recent search of planning databases by Zurich insurers showed that there are currently no schools planned that would meet this threshold, so the effects of this change are likely to be limited and appear to be a tokenistic gesture towards being able to state the consultation 'mandates' sprinklers and thus improves safety.

The DfE's own study on educational absences[1] highlights the detrimental effects that time away from school has on a child's education. The mandatory requirement for sprinklers in all schools would be the best way to ensure that, where a fire that breaks out in a school, it leads to a minimal amount of disruption to pupils' education.

Question 2. *BB 100 recommends that automatic fire suppression systems should be installed in all new special school buildings. Do you agree with this recommendation? If not, please explain why.*

Yes. NFCC believes that sprinklers should be installed in all new and significantly refurbished school buildings. Every child has the right to a mainstream education and as such mandating sprinklers in all schools would mean better protection where there are localised adaptations in schools which accommodate special educational needs of pupils in a mainstream setting.

[1] The link between absence and attainment at KS2 and KS4 (publishing.service.gov.uk)

Whilst the installation of sprinklers in all new schools for those with special educational needs is a positive step, we are concerned that, without a clear definition of when a school design specifically mandates the need, this may lead to the recommendation being ignored. There are many examples of schools across the country where the requirements of those with special educational needs are included in a mainstream school, as these schools would not be classified as special educational needs schools there would be no mandate for sprinklers. Should a fire occur, those students with additional needs may not be able to be accommodated in other schools as these adaptations may not be replicated. Any school that provides specialist facilities to cater for pupils' special educational needs should be required to provide the highest standard for life and property protection, given the difficulties finding appropriate alternative placements for affected pupils.

Guidance in this area should involve a more holistic consideration of the expected risk and the management thereof. There is a reference to the possibility of progressive horizontal evacuation strategies being used in special schools, but no additional guidance is presented about what this may entail and how it should be managed. For clarity, it may be better to either collate the requirements relating to special educational needs schools in an annex, or append them to existing design guidance, such as BB104.

Question 3. *BB 100 recommends that automatic fire suppression systems should be installed in all new boarding accommodation. Do you agree with this recommendation? If not, please explain why*.

Yes. NFCC believes that sprinklers should be installed in all new and significantly refurbished school buildings.

The revised BB100 should provide guidance on how to safely design boarding accommodation and mandate that this is the only guidance that should be used when designing boarding school accommodation. At present, the guidance understandably directs designers towards ADB for detailed information with designing accommodation in accordance with the guidance for Purpose Group 2 (a), albeit with the additional caveat that sprinklers should be provided. Whilst NFCC support the recommendation to include suppression in all boarding school accommodation, the danger is that designers will rely entirely on ADB for guidance and thereby circumvent the requirement for sprinklers as ADB would not ordinarily require them.

Additional guidance should also be outlined that sets out minimum management expectations for boarding accommodation, with a requirement that sleeping accommodation should be designed so that an evacuation can be safely managed by staff in the event of a fire at night. Additional consideration should be given in guidance as to age groups present in boarding accommodation, as management

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may vary depending upon the independence of pupils' present (recent research[2] has shown that children under the age of 11 are not as responsive to traditional fire alarm signals when asleep).

The current risk assessment guidance does not address sleeping accommodation, and additional guidance must be provided to reflect the expectations in this area. NFCC would like to see expectations and requirements relating to boarding accommodation either collated into an annex or published as separate guidance.

Question 4. *BB 100 offers some relaxations of requirements in school buildings fitted with automatic fire suppression systems, such as larger fire compartment sizes. Is there scope for easing requirements further in such buildings, or are the current relaxations sufficient?*

Where sprinklers are fitted throughout the whole of a school building, NFCC would have no objection to the principle that certain requirements, such as compartment sizes, are relaxed. However, before such criteria are set, there should be an understanding of the potential risk of any such proposed requirements, particularly with regard to the property protection of school buildings, in addition to life safety. In addition to such relaxations where sprinklers are present, the DfE should mandate the use of BB100 as the only means for showing compliance with the Building Regulations to be used for all new and refurbished school buildings.

NFCC believes that there should be explicit provisions made requiring schools be designed with the fundamental fire design objective to protect them as a community asset.

<u>Fire Detection and Alarm Systems</u>

Question 5. *Do you agree that this minimum level of provision is right for these types of schools? If not, please explain why.*

The guidance for a minimum level of fire detection and alarm system provision can be seen as bringing schools up to a modern standard, to which they should have already been designed.

School buildings are often complex in layout and design, and the proposal for mandating fire detection and alarm systems should be seen as the minimum standard. However, there is a danger in setting a minimum requirement of an L3 system in mainstream schools of this being seen as the 'required standard' and designers not addressing the risks and needs of specific schools. This system would not require coverage in toilet accommodation, which has been known to be an area where fire setting by pupils can occur. Rather than setting a minimum category of

[2] 'Children sleep through alarms' BBC programme finds – BBC News

system, it may be better to set out the expectations of the areas that should be covered by such a system.

If the proposal is aimed at mitigating the effects of fire in terms of property protection, then there should be a greater consideration of aspects such as voids, which can allow fires to develop undetected. It is likely that the greatest need for alert would come whilst the school is unoccupied, so additional consideration should be given to the need for all buildings to be connected to an Alarm Receiving Centre (ARCs). However, this approach may still meet with issues around FRS call challenging procedures for signals received from ARCs.

If property protection is the main reason for the improvements in fire alarm and detection system standards, NFCC believes that it would be more cost effective to recommend the mandatory installation of sprinklers in all school buildings. Although cheaper than sprinklers, fire alarm systems still represent a cost and, if the intention is to help protect the property (as opposed to the occupants), then a relaxation in requirements for a fire alarm system could ensure that alarms are not used as reasoning to not install sprinklers.

NFCC would like to see further guidance added with regard to the specification of fire detection and alarm systems in order to minimise false alarms. A system that does not take account of the risks within the building may be prone to false activations, which may lead to educational disruption. It is presumed that this should have been considered as part of the impact assessment for these changes and the details of this should be published, especially considering the installation of more detectors will lead to the potential for more false alarms.

Vertical Means of Escape

Question 6. *The new version of BB 100 says "new, multi-storey school buildings must have at least two staircases and single escape stairs are not acceptable". Do you agree with this recommendation? If not, please explain why.*

Yes. NFCC supports the proposal to improve the means of escape in school buildings. In most school buildings of any significant size, it is likely that a design would already require the installation of a second staircase in order to meet travel distance requirements.

Whilst supporting the proposal, NFCC would be interested to understand the basis for the decision and see the accompanying impact nalysis in order to understand the decision-making process.

In the design guidance for vertical means of escape, NFCC would also note that it should be considered that any reliance on external staircases should be removed from new school buildings. Whilst they will be required in existing and refurbished buildings, external escape routes should not be specified for new buildings as they require ongoing maintenance, can be traumatic for children, and represent

opportunity for misuse and accidents. Additionally, external escape may also prove unsuitable for buildings which are used out of hours for members of the public. For newly constructed school buildings, there is no reason additional staircases should not be properly incorporated into the building's design as an internal staircase.

Question 7. *Do you agree that evacuation lifts should be provided in new multi-storey schools, rather than standard passenger lifts and that the level of provision recommended is reasonable? If not, please explain why.*

Yes. NFCC agrees that evacuation lifts should be provided in all new multi-storey schools but would like to see the recommendation within the proposed text strengthened. At present the recommendation in paragraph 5.15 states only that lift provision is 'best practice'. The expectation of lift provision should be made explicit; where ambiguities exist, experience shows that designers and developers tend towards leaving out requirements and 'gaming' the guidance.

The proposed provision of lifts does raise some inconsistencies within the guidance. There is now a requirement to provide a minimum of two means of escape in terms of staircases in all multi-storey schools, but there is a lesser provision for the means of escape for those who may be unable to use those staircases. The DfE should publish the equality impact assessment of these changes to better understand why the proposals offer a lesser standard of safety to those needing assistance to evacuate.

The proposals in their current form also encompass some gaps in provision. NFCC would seek clarity around issues including what the expectation of lift provision for a two-storey school with more than 900 pupils is, or what is the expectation for a three-storey school with less than 900 pupils. There is no reason for such ambiguity in what is ultimately a simple requirement stating how many evacuation lifts are required. This point should be clarified and may be simplified by bringing the requirement into line with the requirement for multiple staircases in multi-storey schools.

<u>Compartmentation</u>

Question 8*. Do you agree that the recommended compartment sizes in BB 100 should be increased to match the recommendations in AD B for educational buildings? If not, please explain why.*

NFCC believes that the consideration of compartment sizes in schools requires further research to understand the implications of the proposals. Publication of the impact analysis for these changes would help in this understanding. Life safety is not the predominate fire safety issue currently facing schools. The biggest concern is the potential loss of a school in the event of a fire and follow-on consequences that would be associated with that loss. Any relaxation in maximum compartment sizes where sprinklers are not provided will lead to more instances of total loss in the event

of a fire. Accordingly, NFCC would view a relaxation in compartment sizes in non-sprinklered buildings as a backward step in fire safety and does not agree with the recommendation.

The DfE should mandate that BB100 is the only design guidance that can be used for school buildings. Whilst we recognise both the intention and benefits of trying to align fire safety requirements across different guidance documents, BB100 is a very specific guide aimed at very specific buildings, and it is felt that schools can stand alone in terms of design guidance. The rationale behind the use of alternative design guidance is disingenuous, as at present the main reason for using BS 9999 to design schools is that it omits the requirement to install sprinklers.

Inclusive Design and Special Schools

Question 9. *Do you consider this guidance is detailed enough? If not, please explain why.*

No. Whilst the guidance gives welcome consideration to aspects of design for special schools, it does not provide comprehensive advice on how aspects relating to egress are managed and implemented.

There is reference to the need for Personal and General Emergency Evacuation Plans to be carried out, but no additional guidance is given on how to do this, or where to seek further advice. As a minimum, the HMG Guide to Means of Escape for Disabled People should be referenced, although it may be useful to contain specific management guidance within BB100 relating to how this can be managed within a school environment.

There should also be more of an emphasis on the fact that many of the provisions that are directed towards special educational needs schools will also be applicable to mainstream schools, both for pupils and where the local community will use the building outside of school time.

There is mention of the potential use of progressive horizontal evacuation within schools. This requires additional guidance to set out the expectation for implementing such a system and what standards the building should achieve where it is proposed to use this evacuation strategy.

Boarding accommodation

Question 10. *Do you consider this guidance is detailed enough? If not, please explain why.*

Yes. The guidance on boarding accommodation largely relies on existing guidance contained within ADB with additional requirements, as stated within the question. Whilst it is acknowledged that boarding accommodation is not widespread and therefore relying on appropriate existing guidance, as opposed to creating a full new

suite of guidance, is not cause for objection, it may be more accessible for designers if recommendations relating to boarding accommodation are contained in a separate annex.

As stated elsewhere, there is concern that, without mandating the use of BB100 as the relevant design guidance for boarding accommodation, designers will choose to design such accommodation in accordance with other design guidance, such as ADB. This would mean that the requirements in this proposal are ignored, and accommodation built without the additional safeguards of measures, such as fire suppression systems and non-combustible external wall systems.

There should also be additional guidance as to requirements for the management of this occupancy, so that designers do not develop buildings with unrealistic expectations.

Cladding

Question 11. *Do you agree with these requirements? If not, please explain why.*

No. NFCC believes that all school buildings should be built with external wall systems that achieve Class A2-s1,d0 or better. The current proposal gives the impression of an improvement of safety, but the criteria for buildings over 18m will rarely, if ever, be used as school buildings are not generally developed to this height.

The requirements for a 'security risk assessment' are ill-defined, with no indication of how this should be carried out, what criteria should be used or the competency of those doing the work. There is also no consideration of how socio-economic changes in communities may affect security during the lifespan of the building. Experience with the sprinkler assessment toolkit has shown that there is a tendency to 'game' such assessments in order to produce favourable results.

Given that the main concern of safety in this area is the protection of the school as a community asset, NFCC believes that the higher class of safety for external walls should be mandated in all school buildings.

Fire Safety Management

Question 12. *Do you agree with this approach and do you think the guidance is sufficient? If not, please explain why.*

NFCC agrees that a building design document should not be the focus of providing building management advice. However, it is still necessary to include some advice in this area to ensure that designers understand how such buildings are used and managed.

There are also concerns that by omitting the existing guidance contained in the previous iteration of BB100, there is the potential for gaps in advice for schools in areas such as Personal Emergency Evacuation Plans and evacuation strategies.

BB100 will form the most up to date guidance for schools and it would be most appropriate for the guidance to outline the management expectations of such buildings in line with DfE policy. It is uncertain as to whether there will be a specific guide for educational premises, and guidance which is within the DfE portfolio is the most appropriate place to lay out the expectations for safety in schools, particularly with regard to special educational needs and boarding accommodation.

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