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National Fire
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The professional voice of the
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Response to the PD 7974-5 Application of fire safety engineering principles to the design of buildings. Part 5: Fire and rescue service intervention (Subsystem 5) Draft for Public Consultation

27th December 2019

To FSH24 British Standards Institute,

**PD 7974-5 Application of fire safety engineering principles to the design of buildings. Part 5: Fire and rescue service intervention (Subsystem 5) Draft for Public Consultation**

Please find attached the National Fire Chiefs Council (NFCC) response to the Drafts for Public Consultation for *PD 7974-5 Application of fire safety engineering principles to the design of buildings. Part 5: Fire and rescue service intervention (Subsystem 5)*.

The NFCC is the professional voice of the UK fire and rescue services and is comprised of a council of UK Chief Fire Officers. This submission was put together through the NFCC's Protection and Business Safety Committee, which I Chair. The Committee is comprised of protection and fire safety specialists from across the UK.

The NFCC supports the use of performance-based building design that encompasses a fire engineering approach. However, we have been calling for fundamental review of the guidance to B5 of the Building Regulations (access and facilities for the fire service), as the current guidance is woefully out of date. As that current guidance is relied upon for PD5 for a comparative approach to performance, we feel that any review and revised publication of this Published Document (PD) should only follow revision of the base B5 guidance in Approved Document B (ADB), BS 9999 and BS 9991.

If this PD is published now it will be seen as 'state of the art' guidance for access and facilities for the fire service. This may also infer that BSI has thoroughly reviewed the current base guidance and is satisfied with its appropriateness and currency. We suggest that is a dangerous position for BSI to take, particularly given that the base guidance will be subject to scrutiny in phase 2 of the Grenfell Tower Inquiry.

**Fire and Rescue Service Access and Facilities**

As part of our response to the Technical Review of Approved Document B, (ADB) NFCC called for a full review of all aspects of building design relating to fire and rescue service access and facilities. Firefighters should be offered the highest level of protection when entering buildings and afforded the best opportunity to save lives. This should consider vehicular access, perimeter access and access into buildings, water provisions, all aspects of firefighting shafts, and ventilation provisions in basements and car parks.

Over recent decades, changes in the equipment fire services use and the potential numbers of firefighters available, and significant changes in the built environment (e.g. buildings getting larger, more complex and using modern methods of construction) have not been matched by changes in design guidance. Where guidance such as that provided within ADB, BS 9999 and BS 9991 has not kept pace with those changes, they are now out of date, and in some areas no longer fit for purpose.

Whilst the review of ADB is ongoing, NFCC would question whether it is appropriate to issue an update to the current PD when the current base standard in guidance requires fundamental review.

Additionally, the most recent government consultation on ADB was specifically considering three areas, two of which were directly related to access and facilities for the fire service. It would seem inappropriate for PD 7974-5 to be reviewed and published yet remain out of sync with the short-term amendments to ADB.

We suggest either:

- PD 7974-5 is fundamentally reviewed to consider all aspects of access and facilities for the fire service, although we caution that may require significant research; or

- The review of PD 7974-5 is withheld until such time as the fundamental review of facilities for fire and rescue services has been undertaken.

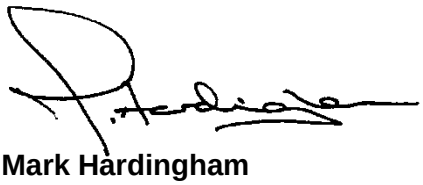
There remains a need to separately review legislation relating to water supplies for firefighting operations. Coupled with unclear guidance which has not been reviewed since 2007, this presently results in an inconsistent approach which has a direct relation to the time of fire service intervention. Water supplies are critical for assisting firefighters in the protection of life.

**Modelling Fire Service Response as Part of Building Design**

One of the key features of this Published Document is the modelling of fire service response levels in order to tackle a modelled incident within a building. In recent times Fire and Rescue Services have had to adapt the provision of their response capability to account for changes in funding and to the risk within their communities. This has led to changes in the attendance to different types of operational risk. NFCC is concerned that by designing buildings to account for a particular level of fire service attendance at the time the Qualitative Design Review takes place, could lead to a building that becomes unsafe or unable to meet its design performance at a future time. If a fire service changes its appliance provision to the area in which a building is located, it may mean that the performance criteria for the building are no longer met. Any design would need to factor in a level of conservatism which may lead to a performance-based design having no advantages over following the recommendations of more prescriptive guidance.

NFCC recognises the need for standards to be refreshed on a regular basis. However, this review may be better timed to be released following the work to review the firefighting access provisions in Approved Document B which may cause the published document to deviate from other guidance in the area.

Yours sincerely,



**Mark Hardingham**

**NFCC Protection and Business Safety Committee Chair**

**Template for comments observations**

| Date: 11th Decembet 2019 | Document: PD 7974-5 |
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| Organization | Line number (e.g. 17) | Clause/ Subclause (e.g. 3.1) | Paragraph/ Figure/ Table/ (e.g. Table 1) | Type of comment[2] | Comments | Proposed change | Accepted/Rejected (with rationale) *BSI use only* |
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| NFCC | | 3.1.3 | | te | Bridgehead definition should be amended to account for current FRS operating procedure | Part of a building, usually two-floors below the fire… | |
| NFCC | | 5.1 | Last paragraph | ed | The term PBD is not defined until subclause 6.3 (and its first uses encompass a tautological 'design') | Either move the commentary for this from the second paragraph of 6,3 to this section, or better still create a definition for it within the glossary | |
| NFCC | | 6.3 | Commentary – second para | ed | There is a repetition of the explanation for Pre-determined attendance | Delete 'predetermined attendance (PDA)' and replace with 'PDA' | |
| NFCC | | 6.4 | | ge | While the attendance of additional appliances may be a valid consideration, how will this be quantified/ considered as part of an analysis? In our view there are too many variables (dependent on the fire scenario that the first attending crew(s) could face) for additional appliances to be practically and accurately factored into an analysis | In our view this clause should be removed. | |
| NFCC | | 6.8 | | ge | While we entirely agree that this document must refer to the physiology of fire fighters and the limitations associated with this, we would caution against the detailed references and examples to the Fire Research Technical Note. Although we agree that a general reference to the Technical Note would be appropriate (perhaps as a Note), it must be acknowledged that fire fighting physiology as a broad subject matter would appear to need revisiting by fire services/ the fire industry in the context of modern working practices and equipment. At present, while the Fire Research Technical Note does provide a useful (and one of the only) benchmark, it is our view that it should not be entirely relied upon, as the underlying research is circa 10yrs old. Therefore it would seem more appropriate to not restrict the guidance given in 7974-5 in case new research comes to light. Being that the Fire Research Technical Note is also freely available, | Rationalise the text in this clause so that the broad issues/concerns are clearly identified, and that a general reference to the Fire Research Technical Note is made. It is then down to the engineer/ design team using Part 5 to refer to the Fire Research Technical Note if they so wish, or apply other references, which can then be discussed as part of the QDR with the relevant fire service. | |

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| | | | | | it would also seem logical not to repeat text/examples from this document into Part 5. | | |
| NFCC | | 7.3.2 | | te | The requirement for floor level signage has been the focus of a recent governemtn consultation with a view to revising ADB. Not withstanding this consultation, this paragraph should at least be reviewed to ensure that the aspects of that consultation are considered where relevant and more detailed requirements given for the nature ot the signage that is intedned | Review the section in terms of the recent Sprinklers and other fire safety features in high rise block of flats consultation and provide an outline of the types of signage that should be provided e.g. photoluminescent signage specifications, or signage in addition to emergenct lighting. | |
| NFCC | | 7.4.1.1 | | te | Following on from the end of the last paragraph, if smoke control is intended as a means for improving tenability for firefighting this should be outlined as a specific design objective for the system | Add in “Where a smoke control system is provided to improve tenability for firefighting and rescue operations, this aim should be included as a specific design objective for the system”. | |
| NFCC | | 7.4.2 | | ge | 7.4.2 Automatic Fire Suppression – in most cases where an engineered solution is being applied to a building, the FRS are likely to ask for AFSS to be installed, particularly for any building with a sleeping risk | Add in “The fire and rescue service are likely in many cases to recommend the installation of automatic fire suppression at the QDR such as where sleeping accommodation or higher risk areas, such as commercial kitchens are present” | |
| NFCC | | 7.4.3 | | ge | Keeping in mind that automatic fire suppression systems are usually the most desirable and effective method of addressing property protection/ loss control concerns, we are surprised that the standard has not put weight behind their use/ highlighted further the benefits they bring to life safety, fire fighter safety, property protection, and the environment. In addition, based on clauses later on in the standard relating to water supplies for fire fighting, the revised standard could also be applied (rightly or wrongly) in a manner which results in a building strategy that omits the use of sprinklers where they may have been desirable before, in favour of (for example) providing bigger | Expand this clause to further highlight the benefits of automatic fire suppression, perhaps referring back to the subsystem inputs earlier in the standard. In our experience, the use of automatic fire suppression has been one of the most critical factors in justifying engineered design schemes applying 79745, thus it is felt that more emphasis should be placed on their application. | |

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| | | | | | fire mains and putting more onus on fire fighters controlling and extinguishing a fire. This could therefore present issues for the relevant fire service involved, and almost 'promote' the omission of automatic fire suppression which in our view would be a retrograde step. | | |
| NFCC | | 7,.4.3 | | ge | Last line - suggest providing examples of alternative fire suppression systems. In relation to the 'adequate technical review' whom is being expected to complete this? | Outline the requirements of what a technical review consists of and the expectation of by whom it should be carried out. | |
| NFCC | | 7.7.1 | | ge | This paragraph mentions the introduction of 'engineering measures' to improve site and building access for firefighters. Short of providing additional access to the site and doors into the building, it is unclear what these 'engineering measures' might be. | Give examples of the types of 'engineering measures' that the panel have in mind to improve access. | |
| NFCC | | 7.7.2.1 | | ge | Bullet points 1 and 2 - while valid considerations for attending fire crews, we do not feel that it is practical for designers/QDR teams to confidently assess how many fire appliances will need to park outside a building and the distance these should be from 'a risk', due to the different variables related to the potential fire scenario occurring and how it might develo | Remove the first two bullet points | |
| NFCC | | 7.7.2.1 | | te | In addition to the consideations outlined the QDR should take into account the local requirements of fire and specialist appliance sizes | Add additional bullet point:<br>f) size and weight of specialist appliances that may be required at the incident should be considered, details of which should be obtained from the local FRS | |
| NFCC | | 7.7.2.2 | | te | Hose laying distances should be kept to a 'minimum'. This term is ambiguous and should be qualified further. Prescriptive guidance in this area give maximum criteria for these distances. The section on firefighting physiology also gives details on how do define distances in terms of work that | Specify wither what a 'minimum distance' is, or give parameters for gauging this. | |

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| | | | | | firefighters can do. This should be used to define a way of qualifying 'minimum' as without this, a minmum could be used subjectively by designers | | |
| NFCC | | 7.7.2.3 | | ge | Last paragraph - this text does not seem to account for the fact that some fire services twin hose as part of standard procedures in the way that it is phrased, and that positioning a hydrant to with 18m of the fire appliance is often unachievable | Reword text to, "The process is quickest if the distance for the connection is less than the length of one length of firefighting hose…" | |
| NFCC | | 7.7.2.6 | 3rd paragraph | Te | FRS experience is that horizontal mains are usually specified when the overall design is poor and design and access has not been considered at a project's inception. As such, it should be specified that a horizontal main should not be used as a way of excusing poor planning and design | Add in after "…support of the local fire and rescue service. Fire and rescue services are unlikely to accept this solution if it is being used as means of compensating for poor planning and design". | |
| NFCC | | 7.8.3.2 | 8th paragraph | te | The mention of 'additional measures' should again specifically mention firefighting as part of the design criteria. | Add in "…provided to assist fire-fighters (e.g. smoke control with firefighting specified as part of the system design brief)". | |
| NFCC | | 7.8.4 | 1st paragraph | te | The difference between the two specified access distances is not defined and could cause confusion. It is presumed that the 45m is for non-sprinklered buildings and 60m for those with sprinklers, in common with other guidance in this area | Add in "…within 45m or 60m, (where AFSS is installed) of any part of the floor area of the building. These distances should be measured on a route suitable for laying hose. If this route is not known, the distance should be taken at two-thirds of the direct route distance." | |
| NFCC | | | Figure 5 | te | The last process box in the flow chart asks a question that is a repeat of earlier information and makes no sense at this point in the process. It would be better to ask the question as to whether the additional appliances that had been called can meet the design objectives as this is what has been asked for in the preceeding process boxes | Suggest rewording bottom brocess box to read "can the additional appliances achieve design objectives?" | |
| NFCC | | | Figure 9, Note 3 | te | Additional wording should be added to note 3 for consideration if a building is close to a wholetime staffed fire station<br>…..vicinity of the building or the building is sited close to a crewed fire station. | Add in …"vicinity of the building or the building is sited close to a wholetime crewed fire station." | |

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| NFCC | | General | | ge | The NFCC supports the use of performance-based building design that encompasses a fire engineering approach. However, we have been calling for fundamental review of the guidance to B5 of the Building Regulations (access and facilities for the fire service), as the current guidance is woefully out of date. As that current guidance is relied upon for PD5 for a comparative approach to performance, we feel that any review and revised publication of this Published Document (PD) should only follow revision of the base B5 guidance in Approved Document B (ADB), BS 9999 and BS 9991.<br><br>If this PD is published now it will be seen as 'state of the art' guidance for access and facilities for the fire service. This may also infer that BSI has thoroughly reviewed the current base guidance and is satisfied with its appropriateness and currency. We suggest that is a dangerous position for BSI to take, particularly given that the base guidance will be subject to scrutiny in phase 2 of the Grenfell Tower Inquiry.<br><br>Whilst the review of ADB is ongoing, NFCC would question whether it is appropriate to issue an update to the current PD when the current base standard in guidance requires fundamental review.<br><br>Additionally, the most recent government consultation on ADB was specifically considering three areas, two of which were directly related to access and facilities for the fire service. It would seem inappropriate for PD 7974-5 to be reviewed and published yet remain out of sync with the short-term amendments to ADB.<br><br>We suggest either: | We recommend either:<br><br>• PD 7974-5 is fundamentally reviewed to consider all aspects of access and facilities for the fire service, although we caution that may require significant research; or<br><br>• The review of PD 7974-5 is withheld until such time as the fundamental review of facilities for fire and rescue services has been undertaken. | |

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| | | | | | • PD 7974-5 is fundamentally reviewed to consider all aspects of access and facilities for the fire service, although we caution that may require significant research; or<br>• The review of PD 7974-5 is withheld until such time as the fundamental review of facilities for fire and rescue services has been undertaken.<br><br>Notwithstanding this we have provided further comments below to be considered if the committee and FSH 24 decide to proceed with publication of a revised edition at this time. However, our individual comments should be viewed in the context of our overall point of view as set out above. | | |
| NFCC | | 8.3.1 | Last para | ge | Additional comment should be made to encourage designers to consider what affect changes in FRS appliance provision and staffing patterns could have on the safety of a building for its future safety. A design should be designed with sufficient conservatism that changes in FRS provision would not affect its safety. | Add in "…modelling. The margin of error should also consider what effects changes of FRS provision in the local area could have on safety throughout the building's lifespan, with designs having sufficient conservatism built in to tolerate this." | |
| NFCC | | 8.3.3 | | te | In the Application of attendance time modelling section, it would be useful to include addition information for designers to understand how firefighters deal with fires in high rise buildings | Add in "'In some cases, such as high rise or large and/or complex buildings, the attendance time should incorporate the arrival of sufficient resources to begin initial firefighting. These resources would likely be required to attend from several locations and as such time will be increased." | |
| NFCC | | 8.3.3 | Last para | Te | This paragraph outlines that a responsible person should reassess a building if FRS provision changes in future to see what implications this could have for a building. However, there is no advice as to what measures could be introduced | Give an indication of the actions that a responsible person should consider in order to assess the implications. | |

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| | | | | | to mitigate this. Designs should not be built which have a critical reliance on FRS attendance | | |
| NFCC | | 8.4 | | ge | Additional comment should be made to encourage designers to consider what affect changes in FRS crewing provision and staffing patterns could have on the safety of a building for its future safety. A design should be designed with sufficient conservatism that changes in FRS provision would not affect its safety.<br>Task analysis needs to acknowledge that it is likely that the future availability of firefighters is unlikely to stay at the same levels as today e.g. some FRS already consider pumping appliances crewed by only 3 firefighters; or equally, some services are starting to utilise smaller appliances | Add in "The margin of error for task analysis should consider what effects changes of FRS provision in the local area could have on safety throughout the building's lifespan, with designs having sufficient conservatism built in to tolerate this." | |
| NFCC | | 8.5.2 | | te | Suggest adding in information for additional building features which may assist firefighting activity | g) Where risers are situated in protected stairwells, consideration for the passing of hose through doors without allowing smoke to enter the stairwell should be considered. This may be by the addition of hinged portals or rebates at the foot of such doors. | |
| NFCC | | | Figure 13 – Note 3 | | Suggest rewording to this note to the following: | *Exposure to extreme conditions for up to 1 min may be tolerable if the outcome is to save life. However, damage to personal protective equipment can occur under these conditions and, as such, this would be an extremely exceptional circumstance* | |

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