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

Call for Evidence:
Technical Review of Approved Document B (Fire Safety)
Ministry of Housing, Communities and Local Government
2nd Floor SW, Fry Building
2 Marsham Street
London
SW1P 4DF

United Kingdom

Sent via email to: ADBconsultation@communities.gsi.gov.uk

1 March 2019

To the Ministry of Housing, Communities and Local Government,

Please find attached the National Fire Chiefs Council (NFCC) response to the consultation paper '*Technical review of Approved Document B of the building regulations: a call for evidence'.*

The NFCC welcomes this call for evidence on the full technical review of Approved Document B (ADB). 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 with input from the NFCC's Fire Engineering and Technical Standards (FETS) Group and national sprinkler leads through the Protection and Business Safety Committee, and national water officers group reporting to the NFCC Operations Committee. The Committees are comprised of specialists from across the UK fire and rescue services.

In the wake of the fire at Grenfell Tower, it is vital that we use this time to examine the shortcomings that contributed to the terrible events of 14 June 2017. A thorough technical review of the guidance is needed, and recommendations made by Dame Judith Hackitt need to be fully considered and implemented.

Key areas where we consider ADB requires fundamental review and/or improvements include:

- the use of Automatic Water Suppression Systems (AWSS) in the built environment
- the scope of the guidance, and what it can be used for (e.g. restricting what a 'common building' is to an upper height threshold such as 50m)
- provisions for firefighting access and facilities
- provisions for water for firefighting
- requirements for residential care homes
- consideration of the needs of vulnerable persons especially in specialised housing.

Assumed compliance by following the guidance is also a key area that needs to be challenged. Re-education is needed regarding the intent of the guidance, and further reference should be made back to the functional requirements, with emphasis provided on the overall need for buildings to be safe. As highlighted by Dame Judith Hackitt, a cultural shift is required and there is a lot more that needs to be done to ensure buildings are safe, now and into the future.

Due to the historic lack of regular review, the guidance often lags behind common practice and developing construction methods and contains solutions which may be out of date. We want to see a regular review period applied to the guidance and we support the recommendation by Dame Judith Hackitt that there should be no more than five years between reviews; this aligns with recommendation 6.2b.

When a revised ADB is issued, suitable transitional arrangements to prevent 'gaming' are required. These should include a time limit from plans submission to completion, to deter people from 'working the system'.

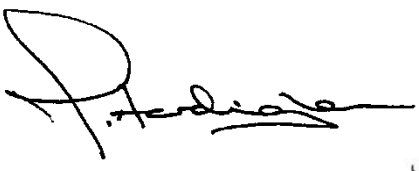
We trust the attached submission is helpful and welcome further discussions following the outcome of the consultation.

Yours sincerely,

Roy Wilsher

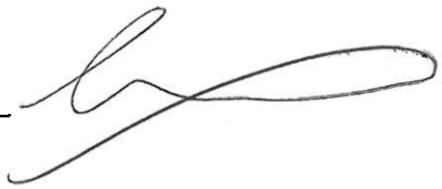
Chair, National Fire Chiefs Council

Mark Hardingham



NFCC Protection and Business Safety Committee Chair

Chris Lowther



NFCC Operations Committee Chair

Introduction

The National Fire Chiefs Council (NFCC) welcomes the full technical review of Approved Document B (ADB). The NFCC is the professional voice of the UK fire and rescue services and is comprised of a council of UK Chief Fire Officers.

ADB supports the Building Regulations for fire safety and is used for large numbers of new and refurbished building designs. It is viewed as the benchmark for the development of other standards, as well as being used for comparative analysis as part of an approach described by BS7974. Ensuring the guidance provides appropriate safety for both members of the public and firefighters is therefore critical.

Executive summary

Independent Review of Building Regulations and Fire Safety

Reviewing ADB is one aspect of the work identified by Dame Judith Hackitt. There is much that needs to be done to ensure the safety of building occupants, now and in the future.

We have urged caution that the recent ban on combustible materials is not viewed as 'job done'. We see no justification for controlling or restricting fire spread on buildings above 18m yet providing no control below that threshold regardless of the type and vulnerability of the occupants.

The functional requirements of the Building Regulations already expect that the external walls of a building will adequately resist the spread of fire. Those requirements are not related themselves to building height, and we are of the opinion that nor should any solutions adopted be (by either law or guidance).

If a threshold is retained, control over combustible items below 18m should be instigated. Options to achieve this could be to require items below the threshold to use products of limited combustibility, for the façade to undergo large scale testing in accordance with BS8414[1]/BR135[2] and make amendments to the testing/classification to incorporate measures for smoke production and flaming droplets.

Functional requirements, context and status

NFCC support the overall functional requirements of the Building Regulations. The purpose of the guidance in supporting the functional requirements is, unfortunately, not clearly understood.

Fire services report that interpretation within industry is often that 'compliance' with the guidance is all that needs to be demonstrated without reference back to the functional requirements. Guidance is often deemed to be the 'maximum' benchmark for fire

[1] Fire performance of external cladding systems
[2] Fire performance of external thermal insulation for walls of multi storey buildings

safety, with some under the impression a solution is appropriate, simply because the guidance doesn't explicitly say that it isn't.

Some designers seek 'convenient interpretations', where they exploit a lack of clarity to justify clearly inappropriate solutions. One example is those arguing about the terms 'filler' and 'insulation' to suggest ADB does not say you can't have Category 3 ACM on buildings. Some attempt compliance by stealth, designing just below thresholds to avoid certain measures. Designers can be very open about this, saying things like 'we have reduced the floor to ceiling height of several floors to bring it below 30m so we can avoid the cost of sprinklers'.

The intent of ADB should be to provide for more common building situations, and to set the minimum benchmark. The behaviours reported above are not consistent with the functional requirements of the building regulations.

Assumed compliance by following the guidance is therefore a key area that needs to be challenged. As highlighted by Dame Judith Hackitt, a cultural shift is required with re-education on the actual intent of the guidance. Further reference should be made back to the functional requirements, with emphasis provided on the overall need for buildings to be safe.

We wish to see a regular review of the guidance. As recommended by Dame Judith Hackitt, there should be no more than five years between reviews.

Scope and limitations

We would like to see much clearer detail regarding the scope of the guidance, and further limitations beyond which ADB cannot be applied (e.g. an upper height limit of 50m). Fire services have experience of the guidance being applied to buildings that would be more appropriately designed using a fire engineered approach from first principles in terms of fire safety, such as extremely tall buildings in excess of 200m.

Further limitations could include an upper height threshold (as above), limitations for compartment sizes, depth of basements, and building use or exclusions for certain purpose groups considered high risk or vulnerable. Buildings where extensive mixed use beyond what would be considered ancillary should also be outside the scope.

Competency

Competency of users is a key area of concern. We have noted a growing desire for the guidance to be made more accessible so it can be interpreted by those without fire safety education or technical understanding. The guidance is not designed to be a textbook and nor should it be, but while commentary is beneficial to confirming the intent of the guidance, it should not need to explain the fundamentals of fire safety principles. Similarly, seeking to simplify the guidance so it can be used by persons with less understanding or competence can result in technical aspects being misinterpreted.

We support clarification, but caution against simplification alone. Fire safety is a complex area. To apply the guidance requires a full appreciation of the principles of fire safety design and an understanding of how the guidance has been developed. The guidance should be applied by competent persons, with regard for how the different parts of the guidance interact, and not considered in isolation.

Person-centred approach

The way in which people live in and use buildings has evolved. Greater reliance on technologies is an integral part of our lives. The pace and change of technology has changed the materials used to construct buildings. This is coupled with an aging population, a desire for more support to be provided at home rather than in a residential care setting, and a demand for more environmentally sustainable and energy efficient buildings.

Most fire fatalities occur within the home and often involve the most vulnerable in society. The guidance requires reconsideration towards a person-centred approach. Greater active and passive measures such as sprinklers and appropriate means of escape (for e.g. not allowing escape windows) would assist in this regard.

The guidance in respect of residential care homes and other premises built to house those with a specific need e.g. specialised housing, warrants a careful review, and we recommend that fire suppression be included in all care homes regardless of size. More detail on the management of progressive horizontal evacuation is needed, and linked smoke detection should be fitted in all rooms where there are vulnerable people.

Evacuation strategies must ensure equity in terms of disabled and vulnerable people and consider individuals' rights to not incur any further deterioration in their health and to maintain their dignity during this process. Increased provisions should be made for both refuge areas and evacuation lifts.

Stay Put

The consultation has asked questions about the resilience of the Stay Put strategy when fire protection systems fail.

Stay put is an evacuation strategy borne out of an established principle of residential building design which if designed, built and maintained correctly should protect occupants to stay in their flat whilst a fire occurs elsewhere in the building. Such design principles are based on a reliance that occupants not affected by fire or smoke are usually safer within their own flat and therefore can remain there during a fire elsewhere in the building. While ADB does not use the term 'Stay Put' or describe the evacuation strategy in any detail the evacuation process is borne from these design principles.

Designing and constructing buildings to resist the spread of fire has been largely effective for decades. Standards which require fires to remain confined to the room of origin not only protects the lives of residents and firefighters, but also property, the

environment and our communities. Furthermore, relying on evacuation as a sole safety strategy for a building would discriminate against disabled and vulnerable people.

A Stay Put strategy is the correct advice in a purpose-built block of flats that is built and maintained correctly. Appropriate construction, management and maintenance of buildings is therefore clearly critical in this context.

It is right that a wholesale review of ADB considers if the design principles which underpin Stay Put are the only way of supporting safety within these buildings. Several suggestions are made in this submission to reinforce standards and consider additional layers of protection. This should consider all options such as appropriate height thresholds, the number of staircases, the vulnerability of occupants, additional use of evacuation lifts, and the more widespread use of critical life safety systems such as automatic water suppression.

Design for the Fire Service – B5

A full review is required of firefighting 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, water provisions, when firefighting shafts are provided, and ventilation provisions in basements.

Changes in operational procedures and the equipment carried by fire services over decades have not been accompanied by reviews of design provisions in guidance. Fire services have also reported a need to review some primary legislation relating to water supplies, which we would welcome further discussion on.

NFCC would like to see powers for the fire service to seek improvements in fire service access and facilities throughout the life of a building. Currently, if fire service requirements are missed during planning, fire authorities have no ability to require improvements to address this. We would like to see this change.

There remains a need to review legislation relating to water supplies for firefighting operations. Coupled with unclear guidance, this presently results in an inconsistent approach which has a direct relation to the time of fire service intervention. Water supplies are critical for enabling firefighters to undertake their duties and keeping them safe.

Sprinklers and other Fire Suppression systems

The NFCC wants to see a greater inclusion of Automatic Water Suppression Systems (AWSS) in the built environment. Sprinklers save lives, protect property, reduce the impact of fire on the environment and support UK businesses by reducing interruption.

A greater inclusion of AWSS will assist search and rescue operations and reduce the risk to firefighters by restricting the development of a fire. AWSS is beneficial in nearly all buildings but in particular, NFCC wants to see:

- Sprinklers become a requirement in all new high-rise residential structures above 18 metres.
- Student accommodation should be included.

- Where high-rise residential buildings currently exceed 30 metres there should be a requirement to retrofit sprinklers when these buildings are scheduled to be refurbished.
- Sprinklers should be retrofitted where high-rise residential buildings over 30 metres are served by a single staircase, regardless of future refurbishment.
- High-rise residential buildings over 18metres should be retrofitted on a risk assessed basis.

Fire can often start on balconies or exacerbate vertical fire spread on the outside of high-rise buildings. Any revision to building regulations should feature balcony coverage as a requirement. Suppression coverage for warehouses should be fully reviewed due to the potential risks posed to attending firefighters. NFCC recommends lowering the threshold for the requirement to fit sprinklers in large structures such as warehousing to 4,000 square metres. The guidance should also reiterate the importance of suppression for schools.

Many requirements in Wales and Scotland now surpass those in England, such as domestic sprinklers in new social housing developments and suppression systems in new homes. Scotland has announced changes to reduce some height related requirements from 18 metres to 11 metres and, where possible, extend mandatory installation of sprinklers in flats, regardless of height, and in larger multi-occupancy dwellings and those which provide care. NFCC would like to see improved consistency of public safety standards across the UK.

General

General comments

The NFCC welcomes a full wholesale review of ADB. The review should go back to first principles of fire safety and include consideration of all the assumptions the guidance currently relies upon. Reconsideration is needed as to what a ‘common’ building is.

Any changes made as part of the review should also take into consideration how buildings are to be managed once in occupation. This needs to be thought of in terms of current challenges posed by the interface between the Fire Safety Order and the Housing Act, any likely changes being considered to primary legislation, and inclusive of regular review periods to ensure guidance is kept up to date.

Functional requirements, context and status

NFCC support the overall functional requirements of the Building Regulations. The purpose of the guidance in supporting the functional requirements is, unfortunately, not well understood. It is a common mistake for people to consider the guidance as being the actual Building Regulations, which is not the case.

Fire services have reported a growing interpretation within the industry that ‘compliance’ with the guidance is all that needs to be demonstrated without reference back to the functional requirements. Guidance is often deemed to be the ‘maximum’ level in terms of benchmarking fire safety design, with some designers under the impression a solution is appropriate, simply because the guidance doesn’t explicitly say that it isn’t. Fire Services have also reported that some designers are seeking ‘convenient interpretations’ of the guidance for their own ends.

We believe the intent of ADB is to provide for some more ‘common’ building situations, and that it sets the minimum standard. The Building Act 1984 says that in terms of a potential contravention of the Building Regulations, showing compliance with guidance (such as ADB) tends towards negative liability. Fire Services have noted some within the industry have interpreted ‘tending towards negative liability’ means that if they follow the letter of the guidance (without reference back to the functional requirements) that this equates in absolute terms to compliance with the Building Regulations.

Our understanding is that following the guidance (particularly if the assumptions made in doing so are not well understood) does not through ‘negative liability’ show that the Building Regulations have been fully complied with in respect of fire safety.

Given that ADB has not been updated for some time and, taking into account our comments suggesting the extensive areas in need of review, we feel that relying upon ‘compliance’ with ADB when the solution might be unsafe is flawed.

Assumed compliance by following the guidance is therefore a key area that needs to be challenged. As highlighted by Dame Judith Hackitt, a cultural shift is needed. To achieve this, re-education is needed regarding the intent of the guidance and how it should be used.

For instance, there are Responsible Persons (that despite Government advice to remove identified non-compliant ACM cladding at the earliest opportunity, and that this cladding does not comply with Building Regulations), are still of the opinion that these systems are compliant. NFCC notes that B4(1) is clear the external walls of the building should adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building. We cannot understand some seeking an interpretation of the guidance to support a view that the guidance somehow condoned the use of highly combustible ACM, whilst this clearly does not meet the functional requirements.

The guidance would therefore benefit from further clarity over its intent and status, including any new limitations that are placed on the scope of ADB as part of this review. Further reference should be made back to the functional requirements, with emphasis provided on the overall need for buildings to be safe.

Previous reviews of other guidance documents (such as the update from BS5588 to BS9999) have resulted in the loss of important context. It would be helpful to publish supporting information documenting the rationale behind the provisions, in a form which can be read alongside the technical guidance. This could usefully include key scenarios so that people understand how the requirements have been arrived at.

Review timescales

Due to the historic lack of regular review, the guidance often lags behind common practice and developing construction methods and contains solutions which may be out of date. We want to see a regular review of the guidance, as recommended by Dame Judith Hackitt. There should be no more than five years between reviews; this aligns with recommendation 6.2b raised by Dame Judith Hackitt.

Sequence

At the time of writing, the outcome of the ADB Clarification consultation is unpublished. Some comments on the format of ADB may be repeated here, as we are unclear if comments from our previous submission[3] have been incorporated.

A rethink of how the information is presented, and the order of the sections will ensure they follow a more logical sequence. For example, fire service access is currently located towards the back of the guidance. However, this has a direct impact on where stairs and exits/entrances are located which need to be considered at the beginning of a design process. Logically B5 (or aspects therein) should feature at the front of the

[3] https://www.nationalfirechiefs.org.uk/write/MediaUploads/Position%20statements/Protection/NFCC_Clarification_of_ADB_response_)_octoer_2018.pdf

guidance. Greater use of flowcharts or more visual ways of presenting the key information could make the guidance more user friendly.

We would welcome a format of residential and non-residential volumes. This may also help with clarity of future legislation governing occupation. The inclusion of the intention of the requirements supports clarity in terms of the expectation of satisfying the Building Regulations. While additional plain English language is useful, it must be ensured this does not change the principles or technical requirements of the guidance.

Reviewing ADB is one aspect of the work identified as necessary by Dame Judith Hackitt. There is much more to be done to ensure the safety of building occupants, now and in the future. In respect of this review, we recommend this coincides with the review of other Approved Documents to ensure these guidance documents complement each other. We also recommend the procedural guidance[4] is reviewed.

When a revised ADB is issued, suitable transitional arrangements to prevent 'gaming' are required. These should include a time limit from plans submission to completion, to deter people from 'working the system'. NFCC understands there was an increase in plans being submitted before the change to sprinklers in all domestic premises in Wales was introduced, and then a considerable delay before these homes were built, with some still not built.

Scope of fire safety requirements

Property protection

Whilst NFCC appreciate ADB is primarily a life safety document, further emphasis on environmental impacts and property protection could have significant flow-on benefits, particularly for communities and the safety of firefighters.

Historically sign-posting to other design guides (such as BB100 for Schools) has been ineffective from a property protection perspective as practitioners ignore those parts which are not deemed mandatory (life safety) issues. Opportunities to address this are discussed later in this submission.

NFCC would like to see a greater use of Automatic Water Suppressions Systems (AWSS) in the built environment, and suggest the government engage with the insurance industry to understand if there are further opportunities to improve incentives for the installation of suppression systems. This should take account of available evidence and potential benefits AWSS can provide for:

- Safety of firefighters
- Community resilience
- Property protection
- Environmental protection
- Business continuity
- Heritage preservation

[4] Building Regulations Fire Safety Procedural Guidance

Restricting what is a 'Common' Building

The Government should consider restricting what can be deemed a 'common' building situation for the purposes of ADB. ADB should also specify what it does cover (rather than what it does not cover) to remove ambiguity.

We would like to see much clearer detail regarding the scope of the guidance to prevent inappropriate use, and further limitations beyond which ADB cannot be applied (e.g. an upper height limit of 50m).

Fire services have experienced practitioners applying ADB to buildings for which the requirements were not envisaged, where other design guides may be more appropriate, or where it would be more appropriate to design using a fire engineered approach from first principles in terms of fire safety. Examples include extremely tall buildings (in excess of 200m in height), schools and hospitals. For example, the guidance gives design information for buildings up to and including 30m in height for areas such as fire resistance periods. Because the guidance does not provide information as to what to apply for buildings of 60m (for example), then the default figure detailed for 30m in height is used. While this might be an appropriate figure, this is often proposed without any assessment or justification to confirm its suitability.

Options for consideration could include a combination of the following:

- Limitations based on height (e.g. an upper height limit of 50m)
- Limitations to ensure particularly deep basements are outside the scope of the guidance
- Limitations on compartment sizes
- Additional design guidance within ADB on requirements for extremely tall buildings
- Incorporating the content of other design guides (such as BB100, BS9999 and BS9991) as explicit volumes of ADB, with a new volume for super tall buildings
- Enhanced requirements to comply with other design guides in full
- Additional requirements to test designs against the functional requirements of the Building Act
- A list of what purpose groups apply
- Buildings where extensive mixed use beyond what would be considered ancillary should also be outside the scope of the guidance.

NFCC notes other countries now have specific design requirements for extremely tall buildings, and recommends further research is conducted into the standards applied internationally. For instance, Scottish technical handbooks (the ADB equivalent for Scotland) are limited to buildings up to 60m in height. Guides BS9991 and BS9999 include thresholds of 50m. Buildings above these types of heights containing sleeping risk are not common and require properly designed solutions from a first principles fire engineering approach.

If a height limitation is considered, further analysis is required. 50m thresholds have historically been based on hydraulic limitations of pumping water up dry risers and may no longer reflect the capacity of more modern pumps, or the type of equipment in

use by fire services. Additionally, the older figures probably incorporate benefits from a pressure-fed supply, which in all likelihood is no longer present at the same pressures, or in some cases may not be relevant for open circuit pumping.

The scope of the guidance should also clearly detail that it is for more common/traditional building methods. The technological advances in modern methods of construction, for instance, may not be suitable for use in conjunction with ADB without additional measures or further research to demonstrate their suitability. This would ensure that more consideration of the structural fire safety design by a competent person is undertaken where a more modern or innovative construction methodology is being used.

Currently, ADB provides sign-posts to other guidance for specialist buildings, but there are no requirements to follow these in full. This encourages 'cherry-picking', and the experience of fire services is that practitioners ignore those parts of guidance which are not deemed mandatory (life safety) issues.

The implications of incorporating other design guides would need to be carefully considered, such as the risk of losing key supporting information to contain the length of the guidance. Previous reviews of other guidance documents (such as the update from BS5588 to BS9999) have resulted in the loss of important context.

Non-worsening provisions

Non-worsening provisions in paragraph 20 are resulting in lost opportunities to improve building safety. This requires a practical solution. NFCC recommend the Government investigate options to trigger improvements to fire safety provisions 'so far as is reasonably practicable' when major refurbishments are undertaken. This already exists in similar jurisdictions. A good case study of this is the total refurbishment of Lakanal House following a multiple fatal fire, which overlooked opportunities to improve the fire safety for the building, despite significant investment in the refurbishment works.

There also remains a disconnect with the Building Regulations 2010 requirements and the Regulatory Reform (Fire Safety) Order ("the FSO") expectations of continuous improvement through the fire risk assessment process. Regulation 4(3) of the Building Regulations 2010 states that where the work did not previously comply with Schedule 1 that when the new work is complete it should be no more unsatisfactory in relation to that requirement than before the work was carried out. This is interpreted as allowing fire precautions to be removed and replaced on a like-for-like basis - effectively meaning a building can be refurbished many times but the general fire precautions may never get improved to modern standards.

Negative liability

Consideration may need to be given to the impact of s.7(1)(b) of the Building Act 1984 (the Act) if the suggestion to incorporate other design guides is adopted. Currently other design guides (such as BB100) cannot be relied upon in the same way as proof of compliance tending to negative liability, as these other guides are not currently approved documents. NFCC does not offer a view at this stage on s.7(1)(b) or on the

status of such guides but recommends that as part of a wholesale review of the guidance this is considered.

Purpose groups

NFCC recommends the Government establish a working group to review the purpose groups. Several issues highlight that the current groups require clarification. Fire services are aware of abuse of the current purpose groups, and some are no longer reflective of modern use. The table in BS9999, although improved in some ways, is also open to abuse. As with other comments we have made, the purpose groups guidance should reflect the language of the functional requirements to the effect that everything still must be safe.

Issues experienced by fire services include:

- Residential care – clearer definitions are required about what constitutes residential care, specialised housing, and Houses in Multiple Occupation (HMOs). This is discussed further below.
- Private holiday rentals – trends such as the increase in private holiday rentals have led to varying standards across holiday accommodation.
- Self-storage – changes in the way people use self-storage (such as for highly combustible materials or acting as small commercial operations within units) are leading to increased fire loadings.
- Warehouses – changes within the retail market, such as the growth of online shopping and large distribution centres are leading to increases in populations, robotics and fire loadings within warehouses, with some containing up to 2,000 workers. There has also been an increase in large retail outlets that require customers to follow defined paths. The increased use of automation can hamper fire service operations without fully removing the possible life risk, exacerbating the problems of access and searching this type of premises.

NFCC recommends a mapping exercise to ensure any updates are taken account of across BS9999, BS9991, and Article 50 guides or industry best practice – or that these guides are combined – to ensure ‘cherry picking’ is discouraged.

Mixed use buildings – there is currently ambiguity over which standards to apply when buildings are mixed use; parts of buildings naturally require specific solutions for specific areas however often the overall building is not then considered holistically. The NFCC recommends:

- Consideration is given to requiring the higher of the available standards where mixed use applies.
- Any changes to the purpose groups should be carefully considered against the interdependency of each functional requirement.
- ADB could be clarified with commentary about the holistic interdependencies of B1 – B5; this could be aided by a design flowchart like the concept of figure 5 from BS9999.

Specialised housing and care homes

Most fire fatalities occur within the home and often involve the most vulnerable in society. Ensuring that their needs are carefully considered in the design of buildings where they are likely to live is crucial. At present there is little guidance within ADB which provides specific design recommendations in relation to accommodation such as specialised housing. The guidance needs to recognise that the needs of individuals can vary greatly hence the NFCC guidance on specialised housing referring to the person-centred approach.

While ADB, in its present form, does not align itself to adopting this approach the purpose groups could be reviewed and greater active/passive measures such as the inclusion of fire suppression, as well as appropriate means of warning and escape e.g. not using an escape window (which is currently permissible for certain situations), would assist in this regard.

Clearer definitions are required about what constitutes residential care. The Government should consider whether residential care facilities, specialised housing and HMOs require their own specific design guide/volume of ADB, as the current provisions are not fit for purpose.

Fire services are aware of new builds designed as purpose-built blocks of general needs flats, being marketed and filled with people receiving care. Other ambiguities are also evident across the market, such as retirement homes which include supported living. In Scotland, there has been experience of people buying care homes and then licensing them as HMOs.

The FSO is inadequate to deal with this trend, which will continue to increase as the population ages. Potentially vulnerable consumers who choose to live in buildings marketed for the purpose of providing care should reasonably expect to be provided with a higher level of safety than a general needs building. Further consideration should be given to how to protect potentially vulnerable residents.

The guidance relating to residential care homes warrants a careful review, and we advocate that fire suppression should be included in all care homes regardless of their size. More detail regarding the management of a progressive horizontal evacuation is needed to ensure that the implementation of the design principles will be effective.

A review on the provision of smoke alarms in domestic dwellings is needed. By themselves these cannot prevent all fire deaths, especially for people with mobility difficulties or people who may not be able to respond to them. They can also be vulnerable to poor installation or deliberate damage. However, smoke detection plays a key part in providing early warning and combating the risk from fire. In some cases, fire detection alone cannot reduce the fire risk to acceptable levels; in these cases, a combination of linked smoke detection, telecare and automatic fire suppression may be needed.

Where there are vulnerable people it is important that as a first step in reducing fire risk, linked smoke detection is fitted in all rooms where a fire could start, and that the residents can hear the alarm throughout the property. Fire services have reported that

this is not often the case in such properties. This is particularly pertinent where someone has either; behaviours that increase the risk of a fire starting, they are unlikely to react quickly to a smoke alarm or they cannot move quickly to escape.

Trigger Heights and Thresholds

Trigger heights and thresholds require review, and consideration to how they interact, particularly:

- The current 18m threshold.
- The height at which firefighting facilities are required, which we suggest should begin at 11m or 3 floors for some of the provisions.
- Compartment sizes, access to perimeters, hose length distances, and maximum suppression sizes (particularly for warehouses and factories).

Currently, there is an anomaly for protection of buildings between 11m and 18m. Front line equipment carried by services is fit for external firefighting and rescue up to 11m in floor height. Above 11m, internal protection should be strengthened, whether this is achieved through ventilation and passive measures, or through increased use of suppression.

For instance, use of sprinklers at 18m may lessen the need for other measures at this height. NFCC would welcome further discussion with Government as this review progresses on how requirements may interact.

Measurement of buildings

There is significant scope for ‘gaming’ how buildings are measured. ADB should be clarified to specify that where trigger heights exist (e.g. 18m) this should include the number of floors, using wording which would require the higher of the specified requirements. For instance, ‘18m or 6 floors, whichever threshold is reached first’.

By combining building height and number of floors as a measure, this would prevent the current practice of designing a building up to a current threshold without having to put in the additional measures (e.g. designing a block of flats to 29.9m rather than 30m to explicitly avoid the requirement for sprinklers).

Additionally, measurement of height should include all habitable floors. Fire services have experienced several issues with duplexes, triplexes, and plant on top of buildings which lack adequate firefighting facilities, creating significant risk. This is also an issue for mezzanine floors, including within warehouses. These are all habitable floors that require protection and firefighting facilities.

As covered above, further analysis of the appropriate thresholds for dry and wet risers should be undertaken to determine what is fit for purpose. Current 50m thresholds may no longer reflect modern equipment.

Age distribution

Consideration should be given to how ADB can better protect vulnerable residents in the future and meet the needs of an aging population, and other shifting trends. As noted above, the way in which people live in and use buildings has evolved. Greater reliance on technologies is an integral part of our lives. The pace and change of technology has changed the materials we use to construct buildings. This is coupled with a desire for more support to be provided at home rather than in a residential care setting, and a demand for more environmentally sustainable and energy efficient buildings. The increased use of short term lets for holiday rentals can significantly change the demographic of a block.

This is not just an issue for residential buildings. Research has found buildings are likely to be frequented by an increasing proportion of persons with reduced mobility[5], and design guidance related to egress and safe evacuation in the main has its origins in outdated studies conducted with populations who were able-bodied and fit.

Most fire fatalities occur within the home and often involve the most vulnerable in society. The guidance requires reconsideration towards a person-centred approach. Greater active and passive measures such as sprinklers and appropriate means of escape (for e.g. not allowing escape windows) would assist in this regard.

The guidance in respect of residential care homes warrants a careful review, and we recommend that fire suppression be included in all care homes regardless of size. More detail on the management of progressive horizontal evacuation is needed, and linked smoke detection should be fitted in all rooms where there are vulnerable people.

Increased use of evacuation lifts should be considered. These would not only benefit an aging population, but also higher rates of obesity and other vulnerabilities mean that increasingly many people face difficulty going down stairs in an evacuation.

Smoke and Toxicity

Further investigation is needed into the impact of toxicity on safe travel distances. Increased levels of toxicity may reduce this for the elderly and very young.

Modern construction products, and the introduction of modern materials within a premises has resulted in a toxicant hazard which is significantly different to when the original guidance was written. Further research should identify a more realistic scenario and how that impacts on the toxicity and therefore the tenability within the modern built environment. There could also be benefit to including a more defined outline of tenability within the guidance, inclusive of visibility, heat and toxicity.

Recent experience with ACM type systems suggests that with new products coming onto the market, ensuring adequate product testing standards are available and adhered to is vital, particularly if new restrictions are introduced.

---

[5] Boyce, K., *Safe evacuation for all - Fact or Fantasy? Past experiences, current understanding and future challenges*, Fire Safety Journal (2017)

Additionally, further controls on toxicity may have flow-on benefits by encouraging greater use of non-combustible materials in the built environment.

Construction technologies, designs, construction details.

The NFCC support the principle of encouraging innovation; ADB needs to be cognisant of changing building technologies. However, new products and designs must be fit for purpose and fully understood before they are used.

This should be underpinned by:

- Robust testing regimes to understand fire performance, with suitable tests being available for new types of products.
- Competent actors in the system, including those testing products, interpreting results, and those designing and installing systems.
- A robust system of building control, third party checks and accreditation.
- Strong sanctions to enforce compliance with the Building Act, particularly regulation 7
- Sufficient building records, so that the design and materials of a building and how they impact on the fire safety strategy is fully understood by those managing the building.

Fire services have experienced many instances of products being used without being adequately understood, examples include:

- Use of cross-laminated timber to construct unlined smoke shafts.
- Products being used for purposes where currently no tests exist to establish their safety.
- Installation of concrete blocks against timber frames resulting in unseen cavities.
- Modular construction issues, such as modules which are not adequately protected, or installed the wrong way around.

Other – Consultation

Fire services have experienced issues with building consultations being passed at inappropriate times, either after a building is already occupied, or where building control bodies are not happy with designs and expect the fire service to problem solve and fix designs for them. Fire services may only be consulted on one revision of the plans and are often not included in the resolution of any issues identified.

Additionally, services report issues where developers can choose their own regulator. Whilst not directly related to ADB, these issues reiterate the importance of the reliance on all parts of the system operating effectively.

Consideration should also be given to reviewing and amending the procedural guidance to Part B to define that any alteration to the plans / fire strategy to those that were originally consulted upon with the fire service by way of Article 45 consultation, must be regarded as requiring a new consultation.

Other – Regulation 38

Requirements for regulation 38 need clarification and strengthening. Regulation 38 should be bought forward and emphasised within ADB, and not simply appear as an appendix. There is a need for clearer guidance, better definitions and more terms to be defined. There would be huge benefits to requiring the information to be held digitally.

Clarification is required of what is complex and what is simple. The distinction may discourage necessary information from being provided for some buildings. This could be revised, or better replaced with a requirement to provide an appropriate level of information.

There should be monitoring and enforcement of compliance with regulation 38. To the best of fire services' knowledge, no enforcement of regulation 38 has ever taken place.

ADB should also be clear that building information requires ongoing updating. This should apply to maintenance and should apply to the shell and core, not just the fit-out. Additionally, the information needs to flow through to all people with responsibility for the building, not just the owner/responsible person. This could be further reinforced within the management and risk assessment requirements for buildings, such as within the Fire Safety Order.

B1 – Means of warning and escape

Means of escape from blocks of flats

Stay Put

The consultation has posed questions about the resilience of the Stay Put strategy when fire protection systems fail.

Stay put is an evacuation strategy borne out of an established principle of residential building design which if designed, built and maintained correctly should protect occupants to stay in their flat whilst a fire occurs elsewhere in the building. Such design principles are based on a reliance that occupants not affected by fire or smoke are usually safer within their own flat and therefore can remain there during a fire elsewhere in the building. While ADB does not use the term 'Stay Put' or describe the evacuation strategy in any detail the evacuation process is borne from these design principles.

Designing and constructing buildings to adequately resist the spread of fire has been generally successful from a fire safety perspective in the vast majority of cases, and has been shown to be largely effective for decades following the introduction of buildings of this kind from the late 1950s onwards.

Requiring standards which ensure fires remain confined to the room or flat where they start not only protects the lives of residents and firefighters in those buildings, but has in-built benefits to protecting property, the environment and communities.

Furthermore, relying on evacuation as a sole safety strategy for a building would discriminate against disabled and vulnerable people.

NFCC has been clear that a Stay Put strategy is the correct advice in a purpose-built block of flats that is built and maintained correctly. Appropriate construction, management and maintenance of buildings is therefore clearly critical in this context. Experience of fire services is there are known problems with a lack of maintenance in some property types.

As such, it is right that a wholesale review of ADB considers if the design principles which enable Stay Put are the only way of supporting safety within these buildings. In addition to considering how to ensure fire spread is inhibited, consideration should be given to other measures which would provide additional layers of protection. This should consider all options such as appropriate height thresholds, the number of staircases, the vulnerability of occupants, additional use of evacuation lifts and the more widespread use of critical life safety systems such as automatic water suppression.

NFCC would also support a review of the assumptions in 0.13, and inclusion of reinforcement of the requirement to maintain buildings adequately. This could include reference back to the provisions of the FSO that if buildings are not adequately maintained over time owners and responsible persons could be subject to making improvements.

The consultation document also touches on common alarm systems. We note there would be several risks inherent in introducing alarm systems which could put people at risk, including potential misuse, the threat of criminality, and the possibility of undermining evacuation strategies and firefighting operations. If this is a measure the Government plan to introduce, a working group should be established to consider this in detail, with a view to developing guidance or a required standard governing their use.

Number of staircases

NFCC notes many other countries have requirements for multiple staircases and agree the government should consider this and the available evidence from other jurisdictions as part of the review. Options for change could include set thresholds, or a requirement that fundamental consideration must be given to the number of staircases once set thresholds are reached (e.g. buildings over 50m).

Effectiveness of single staircase designs relies on buildings being properly built and maintained and robust strategies and planning. Having two staircases will significantly enhance the complementary nature of evacuation strategies and firefighting operations.

The increased use of social media means that people are more likely to become aware of fires in their buildings than previously was the case. This is changing the behaviour of high-rise building occupants and has the potential to increase the number of people attempting to use the staircase.

NFCC also recommends consideration is given to minimum staircase widths, firefighting provisions around shafts and lobbies, and travel distances.

Means of escape for disabled people

Refuges and the use of evacuation lifts

NFCC supports a review of the means of escape not just for disabled people, but for vulnerable people more broadly. This should consider whether refuge requirements are adequate, as well as the increased use of evacuation lifts.

Relying on evacuation as a safety strategy potentially discriminates against disabled and vulnerable people. Therefore, ensuring buildings are built and maintained properly to enable the Stay Put principle is critical. Evacuation strategies must ensure equity in terms of disabled and vulnerable people, and consider individuals' rights to not incur any further deterioration in their health and to maintain their dignity during this process. Increased provisions should be made for both refuge areas and evacuation lifts.

As noted, there are now more people receiving care in their homes, an aging population, rising levels of obesity and known mental health challenges within communities. Expecting large proportions of the population therefore to be able to descend staircases, particularly in very tall buildings, is increasingly unrealistic.

Assumptions within ADB may no longer be fit for purpose, in the context of increased modern fire loadings in typical households, potential hoarding issues and increasing vulnerabilities within the population. Further research may be warranted to establish if hoarding is an increasing problem, based on the experience of fire services, and to clarify if normal use in modern society represents an increased hazard compared to previous occupation.

Increased use of refuge floors (that can provide up to four hours of protection) as seen in other countries should be considered. Additionally, the NFCC suggests that the use of refuges in carparks is reviewed to ensure the guidance remains fit for purpose, taking account of operational rescue tactics, and the facilities in place for mobility impaired persons to safely evacuate from an area typically with little management control.

Fire services are also aware of refuges constructed in places that may be inappropriate, for example, alternating male and female toilet blocks on different floors.

B2 – Internal fire spread (linings)

Experience of fire services is that people are building increasingly large balconies. Clarification should be included that balconies need to be included within the calculation of travel distances. Consideration should also be given to the increased fire risk from the construction of balconies using combustible materials.

Additionally, NFCC submit that the floor of the balcony should be an extension of the compartment, and that compartmentation should be continued between shared balconies. This requires further guidance and should be referenced.

B3 – Internal fire spread (structure)

Compartmentation

The review should consider whether maximum compartment sizes are required, and if these should vary for different purpose groups. Firefighting activities require a place of relative safety 45m from the perimeter, and services have experienced challenges with compartment sizes particularly in warehouses. Place of relative safety should also be better defined within the guidance. Issues such as this impact far beyond a single section of ADB, reiterating our comments that the guidance must emphasise that all of the functional requirements must be met as part of a holistic package. It is not acceptable to take each section in isolation without considering the wider implications of the proposed designs.

Warehouses in the UK are permitted significantly greater volumes than most of the rest of the world. As such, when they are involved in fire they are often involved in some of the largest losses in financial terms. They are also damaging to the environment, the local economy and cause tremendous local disruption due to the fire size. They also present significant hazards for firefighters.

There is significant research that has been undertaken by the BRE, Greater Manchester Fire and Rescue Service and Fire Brigades Union, and also independent research by the Centre for Economics and Business Research. The research conclusions are consistent and categorical in that smaller volumes with sprinkler protection will reduce fire losses, reduce disruption and environmental impact, reduce business loss and also allow safer conditions for firefighters.

Penetrations

The government should consider improvements that have been made to BS9999 and BS9991 and consider adopting these (e.g. limitations around the number of 40mm penetrations).

Historically, fusible link dampers have been typically installed as part of a safety design, but these haven't been replaced with equivalent or commensurate dampers when alterations have taken place. Guidance documents must be clear that reduction of provision is not allowed, linked back to non-worsening provisions.

Sprinklers and other Fire Suppression systems

The NFCC wants to see a greater inclusion of Automatic Water Suppression Systems (AWSS) in the built environment in the UK. As part of an appropriate package of fire safety measures, sprinklers save lives, protect property, reduce the impact of fire on the environment and support UK businesses by reducing interruption.

A greater inclusion of AWSS will also assist search and rescue operations and reduce the risk to firefighters, by restricting the development of a fire. AWSS is beneficial in nearly all buildings but in particular, NFCC wants to see a greater inclusion of sprinklers in:

- Housing for vulnerable persons
- Care facilities
- Large volume warehousing
- Factories
- Car parks
- Waste and recycling facilities; and
- High-rise accommodation, where NFCC recommends that:
    - Sprinklers become a requirement in all new high-rise residential structures above 18 metres.
    - Student accommodation should be included.
    - Where high-rise residential buildings currently exceed 30 metres there should be a requirement to retrofit sprinklers when these buildings are scheduled to be refurbished.
    - Sprinklers should be retrofitted where high-rise residential buildings over 30 metres are served by a single staircase regardless of future refurbishment.
    - High-rise residential buildings over 18 metres should be retrofitted on a risk assessed basis.

NFCC calls for more research into fires in car parks, the design of car parks and then establishing improved requirements for suppression in car parks within ADB. Car parks should not be classified as low risk within the guidance, particularly in basements. Current guidance does not take into consideration the fire loading of modern vehicles, electric vehicles, car stackers, LPG vehicles and the risk of running fuel fires from plastic fuel tanks.

A lack of extension of sprinklers to be installed in car parks underneath another occupancy has been a chronic issue experienced by fire services. Further detail, research and evidence is provided in the appended table and in NFCC's AWSS position statement.

Sections 0.16 and 0.17 require a review of the definitions that impact separated parts (such as floors and walls) to ensure sprinklers are installed throughout buildings. Fire services have experienced people attempting to apply lesser standards of protection to parts of buildings based on the principle of separation, where this may be inappropriate, such as no suppression coverage for commercial areas and car parks beneath residential flats.

Suppression coverage for warehouses should also be fully reviewed due to the potential risks posed to attending firefighters due to the size, scale and the way these buildings are now used. NFCC recommends lowering the threshold for the requirement to fit sprinklers in large structures such as warehousing to 4,000 square metres.

Other – Cavity barriers

Fire services encounter several issues with the construction of cavity barriers, particularly with respect to the quality of workmanship and installation. There should be greater controls across the wider regulatory system to address this, such as greater use of third-party accreditation and checking, and initiatives to address competency issues in the sector.

Structural fire protection for misting systems

Whilst 5306 Part 0 may cover structural protection for misting systems, ADB only refers to sprinklers. Several compensations have been allowed for the use of sprinklers systems. Further examination is needed to consider how many of these may still be appropriate, and if alternative active systems should be included.

B4 – External fire spread

Space separation

Requirements for space separation require review taking account of how much heat is given off by modern building materials, such as increased radiation from newer types of insulation. A review of the data underpinning the figures within ADB is needed. Fire services have experience of recent fires that have melted roads on the opposite side of the street.

B5 – Access and facilities for the fire service

Access and facilities for the fire service require a fundamental review. Many of the assumptions within ADB are based on post-war building studies, and do not take account of modern building trends, current operational deployment and tactics, and possible variations between fire services such as in attendance times or available resources. All areas require careful consideration to consider if they are still fit for purpose. Examples where changes are needed include firefighting shafts, curb distances and horizontal access.

ADB needs to recognise that firefighters may need to conduct rescues or firefighting activities from anywhere on site. For instance, horizontal mains are not an appropriate building solution, as they do not take account of the need for the fire service to move equipment. The same wording as in 7974 (part 5, 7.7.2.6) should be used to restrict the use of horizontal mains.

ADB should also be future proofed to recognise the increasing trend of extended basements. Pavement lights are not a suitable solution. Accommodation in basements is increasing, and consideration should be given to these being sprinklered. Fire services have also seen basement carparks with no access ramps, where all access is via an automated car lift; this provides no access for the fire service. Requirements for ten air changes may no longer be suitable to ensure that tenable conditions are maintained or that structural elements are not adversely affected. An approach similar to that in BS7346-7 which outlines that the design

objectives of the system should be specified, and provides specific design criteria for firefighting may be more appropriate.

The focus should be kept on keeping access simple, intuitive, and consistent between properties.

Provisions for water for firefighting

NFCC recommends the provisions for water for firefighting are fundamentally reviewed, including consideration for:

- An express requirement that all buildings, no matter the size or usage, have an adequate water supply for firefighting. This would normally be provided by the provision of hydrant(s) attached to a suitable size main delivering an appropriate flow rate for firefighting, but may also be complemented or provided by suppression systems, storage tanks, open water sources, or a combination.
- Better specification of appropriate pressures and flow rates.
- Direct reference to water supply and details of hydrants included on completion certificates.
- Clarification of suitable hose laying routes within ADB.
- A review of roles and responsibilities.

The provisions for the supply of water for firefighting are too vague and are deficient in ensuring appropriate supplies of water for firefighting are achieved. This is particularly highlighted by the lack of fire hydrant and other water supply provisions in Volume 1, Dwelling Houses. Volume 1 does not prescribe a level of water for firefighting provision like that which is prescribed within Volume 2 (Buildings other than Dwelling Houses).

Whilst it may not be an issue when building small to medium sized dwellings in areas with existing infrastructure, for new development sites of multiple dwelling houses on new or brown field sites where a new water main must be laid, appropriate provisions need to be made.

Volume 1 and 2 state *'The building shall be designed so as to provide reasonable facilities to assist firefighters in the protection of life'.* This is open to interpretation as it does not qualify what is reasonable or if this requirement extends beyond the fabric of the building to hydrants, fire suppression systems, water storage tanks and open water supplies. This lack of clarity coupled with a lack of responsibility on developers to provide appropriate water provisions creates a significant challenge for fire services.

The only mention of the requirement of water supplies for firefighting is within Volume 2, and only then when a building has a compartment of 280m^2 or greater and is more than 100m away from the nearest existing fire hydrant or is fitted with a fire main.

It is noted with great concern that there is no requirement to assess the suitability of the existing hydrant for firefighting, feeding a dry riser, etc. The presence of a hydrant

within 100m is deemed to be enough to meet the standards, whereas the reality is it may not deliver the required flow rate as outlined in the national guidance document on water for firefighting 2007.

In addition to housing estates being built without provision for water for firefighting and those dwellings being inhabited, which is a major concern, this lack of provision of water for firefighting has resulted in other challenges. A considerable number of farms have been converted into small/medium industrial complexes and, because the unit size is below that stipulated, no water for firefighting has been provided. This puts firefighters and occupants at increased life risk, especially as these sites are almost exclusively in rural areas where water undertaker mains coverage is typically very sparse.

The deregulation of the water industry has led to major challenges in ensuring appropriate provisions of water for firefighting. Fire services have seen a sharp increase in the numbers of self-lay or inset companies laying water mains with little or no involvement of the water undertaker, and no consultation with the fire service.

This can be compounded by the use of 63mm pipes which are unsuitable for affixing hydrants. There is an increased cost if hydrants must be retrofitted. Currently this is falling on fire services when the main is adopted by the water undertaker. There may also be challenges installing hydrants to an appropriate main for firefighting, which could ultimately lead to a new main being required, the installation costs for which potentially get charged back to fire services. The costs can be into the hundreds of thousands of pounds which, for one site alone, could exhaust or even significantly exceed the annual budget for hydrant repair and installation for almost all fire services.

Another area of ambiguity is the requirement for access for a fire appliance within 45m of the building. Guidance is required within ADB on hose laying distances to avoid convenient interpretations, and should stipulate suitable routes for firefighters to lay a hose (for instance, not point to point on a map, or on the other side of a motorway).

The Water Industry Act 1991 places a duty on water undertakers to install hydrants where requested by the fire service, but the cost for these falls to the fire service for statutory hydrants, not to the developer. The costs associated with providing appropriate water supplies, including hydrants, should be part of the development costs and not be the responsibility of fire services.

The Town and Country Planning Act 1990 (TCPA) provides recourse for developers to be subjected to planning obligations or to make contributions to the cost of any infrastructure required to service a new development. This legislation has been successfully applied to the provision of hydrants by a small number of fire services, however, it requires close working with the local Planning Authority as this is a planning condition.

The application of this can be arduous for fire services, such as the London Fire Brigade, which has 33 Planning Authorities covering its grounds. The provision of hydrants and the financial burden of installing them on such new development sites is falling to fire services which, in turn, puts strain on already stretched public funds. This seems outside of the spirit of the legislation, especially given the size and profitability of these developments. The installation of an appropriate number of hydrants would add a negligible additional cost to the development.

Assuming the water mains serving the development are either owned by the local water undertaker or adopted by them, the fire service would then take on the responsibility for the inspection and maintenance of any hydrants attached to those mains. It would therefore be welcomed if the provisions for infrastructure such as hydrants on new developments could be consolidated into the Building Regulations.

ADB should require all buildings, no matter the size or usage, to have an adequate water supply for firefighting. This would normally be provided by the provision of hydrant(s) attached to a suitable size of water main delivering an appropriate flow rate for firefighting but may also be complemented or provided by fire suppression systems, storage tanks, open water sources, or a combination thereof. The consolidation of s.106 of the TCPA into the Building Regulations would significantly assist in achieving this aim. In addition, fire services must become statutory consultees on water provisions for firefighting.

Finally, there is also concern that legislation and / or Government set performance targets may be driving behaviour of water undertakers that leads to a significant reduction of water available in the network for firefighting. Whilst there are clear responsibilities for water undertakers to support fire services by boosting water supplies at incidents, in reality this takes time to implement and may not be achievable based on the age and configuration of the water undertaker network. Water undertakers are still most concerned about taking customers out of supply or possible discoloration issues, even if the Fire and Rescue Service Act 2004 Chapter 21, part 5 Section 40 states they cannot suffer penalties for discharging responsibilities under this legislation. It would therefore be helpful if the relevant part of the aforementioned legislation could also be captured in the Water Industry Act.

NFCC notes a number of the suggestions to address water for firefighting would require amendments to primary legislation and would welcome further discussion with Government on these points.

Annex A

Respondent Details

Name	Mark Hardingham
Position (if applicable)	Protection and Business Safety Committee Chair
Organisation (if applicable)	National Fire Chiefs Council
Address (including postcode)	99 Vauxhall Road, Birmingham, B7 4HW
Email address	mark.hardingham@suffolk.gov.uk
Telephone number	07827 281979
Please state whether you are responding on behalf of yourself or the organisation stated above	Responding on behalf of the National Fire Chiefs Council (NFCC)

Please indicate whether you are applying to this consultation as:

- Other interested party (please specify)
  The National Fire Chiefs Council is the professional voice of the UK fire and rescue services, and is comprised of a council of UK Chief Fire Officers.

Table 1

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
General	Review period	General comment	To ensure that the technical guidance remains current, a defined review period needs to be detailed.	ADB has been subject to sporadic review historically rather than a committed program of continual technical review and development. This matter was raised as part of the Independent Review of Building Regulations and Fire Safety. We would advocate a period of no more than five years between reviews.	ADB should be more able to keep up to date with fire safety developments and address technical matters which are raised and considered appropriate for review.	Independent review of Building Regulations and Fire Safety
General	Format	General comment	We welcome the clarified version proposal of two volumes for the Approved Document but it must be ensured that all relevant technical details are supplied in each volume particularly where a provision is predicated on another from a different section of the guidance.	On certain schemes, for example student accommodation blocks, services have experienced a ‘mix and match’ approach whereby a block would be built with a single staircase as if it was a purpose-built block of flats but then have an evacuation strategy that was more akin to residential (other) purpose group. Although the clarified ADB has not yet been published it is our understanding that flats design will be moved to Volume 1. Whilst we support this concept, it must be ensured that all the relevant requirements and provisions from B1 to B5 have been transferred.	That design teams should have to provide much clearer detail in terms of a decision on the purpose group and which volume of ADB they will be using for the proposals.	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
General	Format	General comment	Opportunity to restructure the guidance into a more logical order which includes fire service access as an initial consideration.	Some designs appear to follow the sequence of ADB literally which means that fire service access is left till later in the process. There is therefore a question as to whether the layout should form an order to coincide with how a building would be designed e.g. select a purpose group, suitable fire service vehicle access and water provisions, assessment of external fire spread and suitable structure, firefighter access into the building and the means of vertical escape etc.	Could ensure the more holistic approach to the guidance that should be adopted.	
General	Format	General comment	Usability of the guidance needs to be further considered, in particular where cross referencing of guidance takes place.	Key parameters such as when sprinklers should be fitted should be in clear, unambiguous tabular form. If there is a provision in one part of the document that might impact on another, then greater use of hyperlinks or other technology should be considered to ensure that this isn't missed. An index would also be beneficial to the user.	This would assist in terms of the cross referencing that is needed when using the guidance due to the parts being inter-related. We are not advocating repeating provisions but a mechanism to assist/remind the user of other provisions would be helpful.	
General	Structure	General comment	Greater emphasis is needed to Regulation 38 and the golden thread of design information.	At present Regulation 38 detail (fire safety information) is in Appendix G towards the back of the guidance. Fire services report that Regulation 38 is poorly complied with in terms of the information that is provided to the Responsible Person and what is then subsequently communicated to any residents/occupants. This has been highlighted in the Independent Review recommendations as a key area where improvement is needed.	By bringing the section to the front end of the document the importance of the development of this information is highlighted to the user.	Independent review of Building Regulations and Fire Safety
General	Testing, classification and certification of products	Consultation question	The technical review process should consider whether the current testing regime provides sufficient reassurance in terms of the products and assemblies referred to as part of the guidance.	This issue was raised as part of the Independent review of Building Regulations and fire safety and remains an area of concern. Fire services are aware of products which are marketed with claims of passing fire safety tests without providing detail around the scope, applicability and the limitations on the testing undertaken. Products should be clearly identified as to what tests they have passed and the limitations of their applicability. Any use of a product in a situation beyond which it has been tested for should be considered and justified by a competent person. All information about products and their use should be included as part of the Regulation 38 package. In terms of the testing itself, some products are being used having passed 'standard' BS476 (or European equivalent) fire tests however there is a question as to whether these fire tests need further development for particular products (i.e. furnace test standards for structural steel/concrete members being used for Cross Laminated Timber members). Fire tests should be undertaken on complete assemblies (e.g. a fire door with associated frame and all door furniture). A small change in door furniture, in theory, negates the certificate, although that doesn't necessarily mean that the small change renders the assembly as not fit for purpose. It is unlikely (and costly) for a manufacturer to test with all possible door furniture, however significant changes (such as installation in an inappropriate frame)	To provide greater reassurance about the overall fire performance of a system and how this supports the design. Clearer details in regard to certification will also support the Regulatory oversight and the Regulation 38 process.	Independent review of Building Regulations and Fire Safety

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				will not only negate the certificate but might compromise the fire integrity of the door.		
General	Testing, classification and certification of products	General comment	Guidance is needed which ties together standards which may sit in isolation to ensure that the process supports the overall design.	One example would be external fire spread assessments where BS8414 and BR135 are used. BS8414 solely discusses the test process whereas BR135 describes the classification system. Currently these are not reviewed together therefore determining an appropriate test to BS8414 is very dependent on accompanying appropriate classification criteria in BR135. An overarching guidance document which covers the overall process would be beneficial in this regard.	That the current approach is afforded suitable guidance to ensure that the process is fit for purpose.	
General	General introduction	General comment	There should be a clear commentary/intent at the front of each section which is designed to prevent any ambiguity in what the designer has to achieve to satisfy the requirement.	One example would be the current height threshold for a single staircase of 11m. This height interrelates to B5 in terms of an assumption that external rescue is achievable. This is not detailed within the guidance clearly and knowledge is often missing in this regard. Fire services have received schemes for single staircase buildings where there is no external access for firefighters to pitch a ladder. The guidance does not detail this need and therefore designers (and some regulators) do not check this provision.	This would aid both designers and regulatory bodies in determining if the proposals satisfy the functional objectives by having a clearer understanding of the intent of the provisions.	
General	General introduction	General comment	The guidance is written in such a way that interdependency of the parts must be understood and taken into account in the design.	Designers still have an approach of ‘cherry picking’ which if done incorrectly in terms of this guidance could mean a lesser safety standard. Example would be a change in B1 may mean that the B5 provisions no longer work if they have been reviewed in isolation.	If the guidance could contain more explicit detail around use and application of the guidance, coupled with competence of the user then this would be positive. This issue is another area where the guidance is misused which will at least be addressed in the guidance.	
General	General introduction	ADB Vol2 0.13	Greater reference to the importance of meeting the functional requirements and other relevant legislation such as the Regulatory Reform (Fire Safety) Order 2005 should be made.	We have experience of several submissions where design proposals are made which would result in a building that would be extremely difficult to subsequently manage. Therefore, we would question how such a design has met the functional requirements of the Building Regulations or the Regulatory Reform (Fire Safety) Order 2005 in terms of management.	The cross reference to other relevant legislation will be a positive reminder of the need to consider any further impact these may have on the design development.	
General	General introduction	General comment	The guidance should provide more detail on the expected benchmark in relation to when the ‘non-worsening’ condition is applied to existing buildings in relation to material alterations.	There remains a disconnect with the Building Regulations 2010 requirements and the Regulatory Reform (Fire Safety) Order (“the FSO”) expectations of continuous improvement through the fire risk assessment process. Regulation 4(3) of the Building Regulations 2010 states that where the work did not previously comply with Schedule 1 that when the new work is complete it should be no more unsatisfactory in relation to that requirement than before the work was carried out. This is interpreted as allowing fire precautions to be removed and replaced on a like for like basis - effectively meaning a building can be refurbished many times but the general fire precautions may never be improved up to modern standards. Guidance should make it clear that it only applies to compliant building work (in relation to the period when the work was carried out)	Supports identifying the appropriate benchmark level with further commentary which could relate to the Regulatory Reform (Fire Safety) Order would be beneficial in this regard to ensure that the right level of fire safety design is achieved in refurbished buildings.	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				and not to subsequent alterations and changes which did not have Regulatory oversight.		
General	General introduction	General comment	Clear detail about who should be applying the design guidance should be included taking into account the relative complexity and risk of the design. This should include any appropriate cross reference to outcomes as a result of changes to regulate competency across the sector, as recommended by the Independent Review of Building Regulations and Fire Safety.	Competence has been a key feature in terms of the Independent review of Building Regulations and fire safety. We have seen many schemes where ADB is being applied incorrectly through a lack of understanding of the fire safety principles. While competence levels should be relative to the complexity of any design/scheme there is a minimum competence level which should be clearly detailed.	Sets agreed standards of competence to ensure the effective design and implementation of fire safety measures.	Independent review of Building Regulations and fire safety
General	Interaction of Approved documents and control of works	General comment	Where works undertaken can impact the fire safety provisions, such as compartmentation, then these should be controlled under the Regulations.	There is a wider issue around the control of works that are carried out by third party installers in relation to, for example, telecoms and data service providers. Their installation often passes through compartmentation or via area such as smoke ventilation shafts having a potential direct impact on the fire safety provisions.	Oversight on works that could directly impact the fire safety provisions within a building should be referenced and appropriately controlled.	
General	Measuring the height of a building	General comment	We would welcome an unambiguous and consistent approach to measuring the height of a building.	Dependent on what aspect of fire safety is being considered the current guidance refers to different height parameters. This can be confusing and subject to debate. We have had proposals for blocks of flats where the upper floor is the top level of a penthouse, this floor is over 30m in height and sprinklers have not been installed.	Consistent method of measuring would ensure clarity of the guidance.	
General	General introduction	Alternative approaches – cross referencing other industry guidance	Greater emphasis should be made on which industry guidance is considered appropriate in terms of fire safety design.	ADB Volume 2 (0.27) provides a cross reference to Building Bulletin (BB) 100 for schools. We would welcome the guidance, in this instance, stating that BB100 should be used as the most appropriate guidance for schools. Many school schemes have been consulted on by fire services whereby BS9999 has been used for the design. Unlike BB100, BS9999 would not indicate that a water suppression system should be considered as part of the design. Not providing suppression appears to be a key driver in terms of design guide choice.	This would assist in ensuring that school designs in particular meet the expected fire safety standard. It would also ensure that the risk benefit analysis for including a suppression system is followed.	
General	General introduction	Alternative approaches – gaps in guidance	Without a clearly defined scope or, alternatively, signposting towards key guidance documents suitable for particular building types, some designs are simply slipping through the net or having inappropriate provisions being installed. ADB must clearly signpost appropriate design guidance if it does not cover the building type.	Prime example is Houses in Multiple Occupation (HMOs). While we acknowledge this is a term for licencing, further consideration needs to be given to the appropriate design guidance for these buildings. Fire services receive numerous consultations on both new HMOs and houses converted into HMOs. At present these are being submitted with designs in accordance with LACORs – which is guidance that was created for existing buildings only.	HMOs can house some of our most vulnerable members of society and as such should be afforded the appropriate level of fire safety protection. There are sufficient proposals for this type of building use that it warrants clarity and supporting design guidance.	During 2015/16 in London, the accidental dwelling fire deaths occurred in 10 (48 per cent) properties that were social housing properties. This figure includes two properties that provided sheltered housing for residents. Nine (43 per cent) of fatal fires occurred in privately owned housing, and a further two deaths (10 per cent) occurred in privately rented accommodation – including one death in a poorly maintained unlicensed house in multiple occupation with inadequate fire safety measures and the other with fire safety deficiencies that may have led to rapid fire spread.

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
General	Scope	ADB 0.21	There needs to be a clearly defined scope as to what types of buildings and construction methods *are* covered by the guidance. We would also suggest that a clear height and depth limitation is provided. Note: The use of 'exclusion' lists may create the opportunity for loop holes.	BS9991 clause 0.7, for example, now includes a reference to the guidance being generally suitable for buildings up to 50m in height and that more design considerations should be given to those over this height. For instance, within London the LFB have reported they have seen schemes for extremely tall towers where ADB is used as part or solely for the design. When questioned they have been advised that these types of scheme are 'common' in London. Fire services have also received schemes where modern methods of construction are proposed, and it is unclear if the view is that ADB covers its use or not or whether additional measures might be needed to demonstrate compliance with the Building Regulations. Therefore ADB should detail main methods of construction that in MHCLGs opinion *are* appropriate for use in combination with the guidance.	This would prevent the abuse of ADB where it is being used for building types and construction methodologies which may not have been considered when the guidance is developed. A regular review period would allow others to enter the scope as appropriate.	
General	Scope of fire safety Requirements	Consultation question	Whilst NFCC appreciate ADB is primarily a life safety document, further emphasis on environmental impacts and property protection could have significant flow-on benefits, particularly for communities and the safety of firefighters. Other Approved Documents have elements of sustainability and resilience in them but ADB has very little. Simple changes in the documents, including a greater emphasis of the role sprinklers can play will greatly improve the sustainability and resilience of buildings as well as making them safer. The residential built environment should also look at the impact of an ageing population. UK Fire statistics have shown that older persons are statistically more likely to be killed or injured in fires. Fire deaths have started to increase for the first time since the year 2000. The reviewed building regulations should recognise the role sprinklers have to play to protect people in care and housing for vulnerable persons. Fire statistics also recognise the dangers to individuals in flats and houses in multiple occupation. Sprinklers can have a key role in providing long-term sustainable solutions to protect life. Additionally, the removal of Local Acts has resulted in a lack of Legislative protection for significant metropolitan areas (financial and business districts) and other key building stock such as key community assets like schools, community halls etc. Therefore while ADB should remain a 'life safety' document, we agree that guidance should be supported with Legislative control.	Please see far right column.	Greater inclusion of sprinklers in the built environment will reduce property loss. Sprinklers have been shown to be 99% effective and 94% reliable and reduce fire damage by three quarters in dwellings and by half in other types of buildings. Sprinklers have also been shown to reduce injury severity. There has not been a single recorded death in a building where sprinklers are fitted in buildings other than dwellings. There have only been five recorded deaths in dwellings where sprinklers have been installed. There have been clear cost benefit analysis performed showing the benefit of sprinkler systems. Inclusion of sprinklers in projects do have cost implications but with early design interventions and value design using relaxations already allowed in ADB can offset these.	National Fire Chiefs Council Sprinkler Position Statement Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom. Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: Supplementary Report Cost Benefit of Sprinklers in Residential Buildings. BRE report 264227 An Environmental Impact and Cost Benefit Analysis of Fire Sprinklers in Warehouses. A BRE Report. Cost Benefit Analysis of Residential Sprinkler Systems in Wales. The Impact of Automatic sprinklers on Building Design

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
					Typical capital cost increases for including sprinklers is 1%-6% widely reported. An independent report by WSP shows the greater benefits and advantages of including sprinklers in building design with a commercial emphasis. In environmental terms sprinklers are shown to reduce CO2 emissions in a fire by up to 21% and reduce the use of water in firefighting by up to 17%	Assessing the Role for Fire Sprinklers
General	Purpose Groups	Consultation question	Consultation poses a question regarding whether a risk profile approach as adopted in BS9999 would be a more appropriate method than the current purpose groups.	A risk-based approach as per BS9999 could provide a means of considering the occupancy group in more detail if the methodology reflected vulnerability, but this is not currently the case. However, using a risk-based approach may lead to more (inappropriate) interpretation of the guidance. We therefore suggest retaining the purpose group principle may be more fit for purpose. The purpose group approach in ADB should provide a clear starting point on which to develop the design using the guidance. It is unambiguous and not open to interpretation or debate.	ADB should be for a distinct scope of buildings and therefore an approach allowing numerous building types to be considered under the guidance could lead to potential misapplication. A clear purpose group would support clarity on the design approach and not leave the guidance open to misuse.	
General	Purpose groups	ADB 0.21	ADB is often used for mixed or multi use buildings where the ancillary use goes beyond for example, plant or a car park.	Blocks with extensive mixed use should be outside the scope of ADB as often they have interconnecting parts which add to the complexity of the fire safety design. Fire services have received numerous schemes where mixed use strategies have been adopted using the guidance in ADB beyond, what is in our opinion, the scope of the document.	A clear scope on what (and/or extent of) mixed use is covered by the guidance would ensure that where an alternative approach (i.e. fire engineering) is appropriate, it is used. This again will prevent the misuse of the guidance.	
General	Purpose groups	ADB Vol2 Table D1	Purpose groups need to ensure that they remain fit for purpose in accordance with modern living, modern fire loads, fire risks and human behaviours.	Evidence exists from both fires, auditing and building regulations consultations fire services have been involved in. Fire services have reported particular concerns over the designs for accommodation which are specifically for more vulnerable occupancy types e.g. older people or the very young, known mobility issues or other factors such as drug or alcohol dependencies. Schemes are often designed using blocks of flats guidance which does not typically consider aspects such as any additional support needed for escape etc. When designed there is an anticipation that the needs of the occupants may increase over time and this does not appear to be considered and should not solely rely upon increasing management controls.	The review of the purpose groups in conjunction with a clear scope will support the guidance in terms of ensuring clarity on what it covers. It will also ensure that the guidance per building type is still appropriate	Fires such as: Croydon Surgard fire 31/12/18 Andover Ocado fire 07/02/19

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				In particular, the following occupancies/uses and their associated purpose groups should be reviewed: • Self-storage facilities • Housing that will accommodate people with vulnerabilities (or are anticipated to house vulnerable people during their life e.g. extra care or homes designed specifically for older people) • Warehousing that does not fit the 'traditional' model • Holiday rentals and short term lets of private accommodation • Nursery accommodation • Cluster flat guidance New purpose groups may need to be formed rather than combining some of these more unique building types. A new purpose group looking at vulnerable people in particular may be appropriate for consideration, with appropriate accompanying guidance. We also suggest that Residential (institutional) purpose group is removed from the guidance as there is insufficient design detail, to support its inclusion at present.		
General	Purpose Groups	Sprinklers	Fire services have reported numerous cases that developers have tried to avoid fitting sprinklers in high-rise accommodation built for students due to a loop hole in the purpose groups. This loop-hole seems to suggest that the clause requiring sprinklers in flats over 30 metres doesn't apply to flats for housing students. As Home Office analysis shows that younger people, particularly living alone are vulnerable to fire, then this loop hole must be closed.	Focus on trends of fires and fire related fatalities.	The inclusion of sprinklers in accommodation for students (and not just high-rise) will reduce the impact of fire on the student population.	Focus on trends of fires and fire related fatalities.
General	Specialised housing and care homes Trigger heights and thresholds		Home office research has identified upward pressures on fire deaths is being caused by the ageing population and overcrowding.	Home Office research into the impact of an ageing population and other factors into the recent reversal of the rate of fatalities has identified clear demographics, which are of a concern.	Wales and Scotland have identified the benefits of protecting both the most vulnerable and the general population (In Wales) through a much broader inclusion of sprinklers in housing. The impact of the ageing population is already being felt and Government needs to act now to ensure that homes provide the best possible protection for occupants. Especially those that are immobile. Early detection through smoke detection has a roll to play but it does not protect those who are incapacitated and immobile so not able to self-evacuate.	Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom. Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: Supplementary Report. Focus on trends of fires and fire related fatalities.
General	Age Distribution	Consultation question	Home office research has identified upward pressures on fire deaths is being caused by the ageing population.	Home Office research into the impact of an ageing population and other factors into the recent reversal of the rate of fatalities has identified clear demographics, which are of a concern. It specifically identifies the ageing population as a significant factor and also	Wales and Scotland have identified the benefits of protecting both the most vulnerable and the general	Efficiency and Effectiveness of Sprinkler Systems in the

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				associated mobility issues and mental health factors such as dementia.	population (In Wales) through a much broader inclusion of sprinklers in housing. The impact of the ageing population is already being felt and Government needs to act now to ensure that homes provide the best possible protection for occupants. Especially those that are immobile. Early detection through smoke detection has a roll to play but it does not protect those who are incapacitated and immobile so not able to self-evacuate.	United Kingdom: Supplementary Report Focus on trends of fires and fire related fatalities.
General	Specialised Housing and care homes	Consultation question	The consultation raises whether the existing guidance needs to be reviewed. At present we believe the guidance in regard to sheltered accommodation and residential care homes is lacking in sufficient detail to address the different models of this type of accommodation. We are therefore advocating a full review of this aspect of the guidance.	At present there is little guidance within ADB which provides specific design recommendations in relation to accommodation such as specialised housing. The guidance needs to recognise that the needs of individuals can vary greatly hence the NFCC guidance on specialised housing making reference to the person-centred approach. While the guidance in its present form does not align itself to adopting this approach, the purpose groups could be reviewed in this regard and greater active/passive measures such as the inclusion of fire suppression within the accommodation as well as appropriate means of warning and escape e.g. not using an escape window (which is currently permissible for certain situations) would assist in this regard. The guidance in ADB relating to residential care homes in particular warrants a careful review and we advocate that fire suppression should be included in all care homes regardless of their size and that more detail regarding the management of a progressive horizontal evacuation is needed to ensure that the implementation of the design principles will be effective.	A review of this area of ADB is urgently needed due to the nature of the occupants within these types of buildings. It is imperative that the guidance supports a design which considers the needs of vulnerable occupants and that the design provides a suitable basis on which an evacuation strategy can be developed and managed.	
General	Sprinklers and other fire suppression systems	General comment	Residential (other) over 18m. All high rise accommodation where people sleep should be afforded the protection of water suppression.	Within the current guidance there is no requirement for residential (other) buildings e.g. hotels, student accommodation etc. to be sprinklered regardless of the height. All sleeping risk where people are in a 'high rise' building should be afforded that additional protection of automatic fire suppression systems. It has remained unclear to us why this has not been included in the guidance to date.	By including suppression systems in high rise buildings where people sleep this will afford a better level of protection. In addition, the changing building models where there are more high-rise student accommodation blocks, as one example, means that our risk landscape may be changing and not being fully accounted for.	
General	Sprinkler coverage in Residential blocks of flats	ADB Vol2 8.14	Where sprinklers are provided within a block of flats, we believe that this should be throughout the building including ancillary areas such as car parks.	Fire services report that on most schemes received which relate to a block of flats with ancillary areas at the lower levels (retail or car park areas) the interpretation of the guidance is that the sprinklers only need to be provided within the individual flats and no other areas. In the clarified version of volume 1, sections 0.13/0.14 this	That a more holistic view on the design is taken in regard to the development of purpose built blocks of flats which considers ancillary	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				remains an unresolved issue in terms of the intent of the guidance on this particular matter as the wording has not changed.	spaces at the lower levels in terms of matters relating to potential fire spread from one area of the building to another and the potential conflict that this creates in the design where sprinklers are not provided throughout the building.	
General	Other issues - Sprinkler coverage in car parks	The NFCC has concerns in respect of the lack of provision of sprinklers in car parks. This was highlighted in two significant incidents in recent years. January 2018. Destruction of 1600 vehicles in a Liverpool car park fire. December 2006. Fatality in a flat as a result of a fire in an underground car park spreading up the outside of the building in Bristol.	Evidence derived from global research and research conducted by the BRE, which demonstrates the effectiveness of sprinklers controlling fires in car parks shows that the incidence of fatalities and injuries is zero and the property loss is around 95% lower than that of an uncontrolled fire. NFCC's position in relation to car parks is as follows: • NFCC recommend consideration is given to installing sprinklers in open sided car parks to protect property, including the fabric of the building. While there have been few incidences of fatalities in car parks there have been recorded fatalities to firefighters due to structural collapse abroad. • NFCC strongly recommends enclosed car parks should be fitted with sprinklers, as is common in Europe and also recommended by NFPA 88 in the USA. • NFCC strongly recommends basement car parks, and in particular those with associated accommodation above, are fitted with sprinklers. This is a common requirement in Europe and recommended by NFPA 88 in the USA. Research undertaken by the BRE in 2010 also support this approach.	Fire Spread in Car Parks	Inclusion of sprinklers in certain types of car parks will greatly improve property protection and also reduce the risk to firefighters.	Fire Spread in Car Parks
General	Sprinklers and other fire suppression systems	General comment (also related to B5)	To aid firefighting operations and increase firefighter safety, consideration should be given to the potential fire loading within the buildings e.g. large single storey warehousing or carparks where sprinklers would not be included and where hose distances could be extensive.	Several recent large compartments fires in warehouses and carparks have proved problematic for firefighters to get suitable access and water provisions to enable effective firefighting for a fire of this severity.	This should help to reduce large fires within this property type, increase the safety of firefighters and people in and around the building and reduce the impact on the environment.	
General	Sprinklers and other fire suppression systems	ADB Vol2 3.52	We believe that residential care homes regardless of their size should be fitted with an automatic fire suppression system.	All residential care homes and anywhere that vulnerable people live should be protected by a suppression system. There have been high profile cases such as the RosePark fire which reinforces this position. This is coupled with findings fire services report regarding the ongoing maintenance and management of these types of premises.	Reduction of life risk for some of our most vulnerable members of our community.	https://www.london-fire.gov.uk/news/2019-news/february/fire-safety-failures-in-over-half-of-care-homes-audited-in-new-brigade-report/

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
General	Sprinklers and other suppression systems	Vulnerable homes – suppression inclusion	There should be greater provision for including water suppression where vulnerable people live.	An increased emphasis on sprinklers for vulnerable people will encourage developers to consider installation, particularly for futureproofing domestic dwellings. The annual review of 2014/15 accidental dwelling fire data supports the need to consider personal fire risk profile along with vulnerability when ensuring an adequate level of fire protection. Home fire safety visits including fire prevention advice and the fitting of smoke detection have been proven to reduce fire risk, but some people will continue to undertake behaviours that put them at high fire risk. For a proportion of these people specific tailored advice and the use of fire-retardant bedding will reduce the fire risk to acceptable levels, but where these behaviours are combined with a limited ability to respond and/or impaired mobility automatic fire suppression systems offer the only effective risk reduction alternative. For these people automatic fire suppression systems such as sprinklers and water mist systems have the potential to prevent death and injury. Officers continue to work with manufacturers to refine solutions that are not actuated in non-fire situations but activate in time to prevent death or serious injury.	That the safety of vulnerable people will be improved and that this will support the drive for independent living in the home environment.	14/15 Review of Accidental Dwelling Fires and Fatalities 2014-15 – LFB report FEP 2484
General	Trigger heights and thresholds	General comment	We believe that all current trigger heights and thresholds in the guidance should be reviewed to ensure that they remain at the appropriate level.	We believe that it is appropriate to review all thresholds within the guidance due to the various areas we are highlighting within this return in relation to many of the pre-existing trigger points.	The review will ensure that the guidance reflects the anticipated level of provision it is seeking to provide for each condition.	
General	Trigger heights and thresholds	ADB 0.21 (also see comment above)	We believe a height limit (such as 50m) should be considered as part of a review which seeks to limit the use of the guidance.	BS9991 clause 0.7, for example, now includes a reference to the guidance being generally suitable for buildings up to 50m in height and that more design considerations should be given to those over this height. For example, the LFB report that within London they have seen schemes for extremely tall towers where ADB is used as part or solely for the design. When questioned they have been advised that these types of scheme are ‘common’ in London.	We believe that the impact of the change will be positive in that it will mean greater use of fire engineering and BS7974. We firmly believe that ADB was not intended to be used for very tall towers and therefore this practice should be stopped. It also means that if fire engineering has to be used that competent professionals should be brought on board to develop the design.	BS9991 clause 0.7
General	Trigger heights and thresholds	ADB 0.21	We believe that there should be a depth limitation also. We would suggest that if it is felt that the guidance does not cover firefighting in deep basements these should be removed from the scope of the guidance.	Firefighting in basements is particularly hazardous due to the build-up of heat and smoke within this space. This risk is likely to be proportionate in some way to the depth of the basement(s). This warrants a full review to ensure that potential use of the guidance beyond common building situations is restricted.	The change would be minimal in terms of the number of projects this would impact nationally however in terms of safety standards particularly for the safety of firefighters this would mean greater consideration would need to be given to the design for very deep basements.	
General	Trigger heights and thresholds	ADB Vol2 8.14	Further consideration needs to be given to lowering the threshold where an automatic fire suppression system should	The current 30m threshold for the inclusion of automatic fire suppression in peoples’ homes is not appropriate particularly when	Changing this provision to ensure more homes have	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
			be included for residential accommodation. If the existing thresholds remain then we would advocate a lower height, e.g. 18m is more appropriate at which suppression should be included (albeit trigger heights should be reviewed as per our other comments).	countries like Scotland have included lower thresholds. A lower threshold should be included in the guidance which considers the level of protection that should be afforded and other related matters such as time to intervention by the fire service for example. It will also address some of the concerns raised in relation to greater protection for vulnerable people in their homes.	automatic fire suppression fitted will, represent a significant improvement in safety provisions.	
General	Trigger heights and thresholds	ADB Vol2 17.2	We question the validity of the 18m threshold for a firefighting shaft and advocate a full review of B5 (comments made separately).	Our understanding is the 18m threshold for a firefighting shaft may have been linked to external firefighting and rescue capabilities using a wheeled escape ladder (incorporating an additional ladder attachment). These ladders are no longer in use, but the design guidance has not changed in this interim period. Many front-line appliances longest ladders will reach a maximum working height of 11m (13.5m ladder allowing for a pitch). Furthermore, where fire mains are provided there is no requirement to provide vehicle access for high reach appliances. Therefore, high reach appliance capability should not be factored into the design guidance other than where perimeter access may be being considered.	The guidance for firefighting access must keep in line with the equipment and operational procedures adopted by the fire and rescue service. The trigger points for internal firefighting operations in this regard therefore need a full review.	.
General	Trigger heights and thresholds	ADB Vol2 12.7 and Diagram 40	We question the validity of the 18m threshold for a change in the performance of the external wall performance.	The performance of various products being used on external walls has been identified as part of the building safety program. Performance tests of some of the materials being routinely used on buildings demonstrate the rapidity of potential fire spread and its potential risk on occupants and impact on accompanying evacuation strategies. This coupled with other comments on fire services' initial external firefighting capabilities in terms of equipment height. If B5 is relied upon as an integral consideration for the fire performance of materials permissible on external walls, then B4 warrants a full review.	We have highlighted the need for further consideration in regard to buildings under 18m and the fire performance of their external walls. Not setting the appropriate standard in this regard could have a direct impact on public and firefighter safety.	
General	Trigger heights and thresholds	General comment	Where thresholds are introduced these should detail that a combination of height and number of floors is included.	Fire services have experience where designers have used a height of, for example, 29.9m for a block of flats to explicitly avoid the inclusion of sprinklers. Fire services also have examples of the same type of approach for avoiding other measures in ADB.	That the practice of 'compliance by stealth' whereby measures are actively avoided is addressed.	
General	Smoke and Toxicity	General comment	Toxicity is, as identified, a complex area and designs should be based on the occupants, as far as reasonably practicable, not being exposed to smoke or fire products. This must remain a key principle in ADB however further understanding of the movement of toxic products, and the potential impact on the health and safety of both occupants and firefighters is needed.	While it can be obvious how particulates which are visible in smoke are moved and managed by the design of ventilation systems and other design elements such as passive fire protection, it is far less clear how the associated 'non-visual' toxic products are behaving. Therefore, a much greater understanding of the toxic products is needed to ensure means of escape routes and firefighting access routes remain tenable. It is unclear how, in designs such as enclosed corridors, the variety of modern building materials have impacted the potential build-up of toxic products. This is not only during a fire but post fire when a building may be being re-occupied and may still be contaminated.	A wider understanding of fire and combustion products and all its associated toxic products is imperative is ensuring that our building design provides safe escape routes for occupants.	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				Controlling the movement of these contaminants as well as the smoke products which are visual is imperative. We also need to have a greater understanding of how products that have been exposed to fire may react if exposed again in any further incidents and how the natural process of degradation impacts their chemical makeup. While primary concern would be the common means of escape this could also be relevant to escape within dwellings which have an open plan arrangement. Aspects such as post fire decontamination of voids, extract shafts etc. should also be reviewed to consider if the permissible design of these areas could impact the subsequent performance and behaviour in terms of this specific issue.		
General	Smoke and Toxicity		The increasing profile of fire loading in homes is a factor in both the materials used, which creates toxicity and also the quantity of materials creating smoke volume.	Further research should be undertaken to more fully understand the impact of both occupant and firefighter safety in homes. Fire Research Report	Sprinklers have shown to have a significant impact in both reducing the extent of fire damage in both homes and other buildings. Sprinklers have also shown that they have a significant impact in both reducing the incidence of smoke inhalation and being overcome by the products of combustion.	Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom. Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: Supplementary Report Fire Research Report
General	Construction Technologies and Designs	General comment	We understand and acknowledge the benefits of Modern Methods of Construction, particularly as sustainable construction methods, and can see how a range of approaches can support the production of the volume of homes needed now and in the future. We would also agree that there is an absolute need for these homes to be of good quality and, as such, the potential impact of fire needs to be carefully considered so that they can be built to last.	The wider industry has forged ahead with increasingly innovative construction methods and materials. In the experience of fire services this has sometimes resulted in a building being proposed using MMC materials where the potential fire performance has not been fully appreciated. We therefore ask that any MMC where the fire performance is not clearly understood and demonstrated by appropriate fire testing that this should remain outside the scope of ADB.	Therefore, reassurance is needed that fire performance of elements and systems have been fully considered, have been tested appropriately and provide the appropriate level of safety for both members of the public and firefighters alike.	
General	Construction Technologies and Designs	Timber Frame Structures	These buildings continue to give concern in relation to the incidence of fire. A good example is July 2017 when Weybridge Community Hospital was lost due to a fire in a distribution board. The timber frame construction led to the fire destroying the building in around forty minutes. The increased use of timber frame construction in dwellings and more significantly other buildings such as hospitals, care homes and high-rise residential buildings causes the NFCC concern.	Existing research indicates that the presence of sprinklers would reduce the impact of a fire in timer framed buildings, but further research should be carried out in this area. The BRE have conducted some useful research in this area identifying the issues with some modern building construction techniques.	Research indicates that the effectiveness and reliability of sprinkler systems would provide greater resilience of timber framed buildings to the impact of fire.	National Fire Chiefs Council Sprinkler Position Statement Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom. Potential Perils of Modern Building Construction

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
General	Construction details	General comment	While we agree that ADB is a design guide and not a construction guide, there is clear reliance on construction quality to underpin the effectiveness of the design. ADB should support this by clear signposting to the use of competent contractors and should also consider whether there are alternative, perhaps more innovative ways of delivering fire protection measures where we know compliance is often poor e.g. cavity barrier provision	Fire services have numerous examples of newly built premises with significant passive fire protection deficiencies. This is also a highlighted issue in the Independent Review of Building Regulations and fire safety. The construction detailing must be in accordance with the design and be of the appropriate quality as the evacuation strategies and management plans are developed on the basis of the integrity of the building.	Change to improve the quality of construction will have a significant positive impact on the life safety of both occupants and firefighters. Changing the design and subsequent method of delivering fire protection could improve compliance.	Independent review of Building Regulations and Fire safety Fire services have fire data on this particular issue should evidence be needed.
General	Other issues - please specify theme	Cross referenced standards	Consideration will need to be given to any transitional period whereby the standards e.g. British Standards will need to be reviewed and updated to support any changes in ADB	The current guidance refers to British Standards which have been withdrawn for several years. This means that while the industry guidance moves forward, designers can legitimately refer to old guidance as part of their design development.	Regular review periods of ADB would mean that any cross-referenced standards could be continually checked also to ensure that the guidance keeps in line with industry e.g. British Standard reviews etc.	
Requirement B1: Means of warning and escape	Means of escape from blocks of flats	General comment	A thorough review of the design principles for blocks of flats needs to be undertaken. This should include the layers of protection, numbers of staircases in terms of height thresholds, the vulnerability of occupants and how their escape is suitably supported and ensured.	It is right that a wholesale review of ADB considers if the design principles which enable Stay Put are the only way of supporting safety within these buildings. In addition to considering how to ensure fire spread is inhibited, consideration should be given to other measures which would provide additional layers of protection. This should consider all options such as appropriate height thresholds, the number of staircases, the vulnerability of occupants, additional use of evacuation lifts and the more widespread use of critical life safety systems such as automatic water suppression.	A holistic review of the provisions for blocks of flats in terms of all of the sections of ADB is needed to reassure members of the public that these buildings remain safe in the event of a fire.	
Requirement B1: Means of warning and escape	Fire detection and alarm	ADB Vol1 B1/1.11-1.12	Guidance states that automatic fire and detection should be provided in circulation spaces and at least one alarm on every floor – we have evidence to show that this does not supply early enough warning and would like smoke detectors to be placed in all areas of risk, and heat detectors in the kitchen. In addition, carbon monoxide detectors should be provided for all new builds.	Automatic fire and detection systems cannot prevent all fire deaths – especially for people with mobility difficulties or people who may not be able to respond to them. They can also be vulnerable to poor installation or deliberate damage. However, smoke detection does play a key part in providing early warning of a fire and combating the risks of, and from, fire. In some cases detection alone cannot reduce the fire risk to acceptable levels and in these cases a combination of linked smoke detection, telecare and automatic water suppression systems may be needed. For example, in 2013/14, 40 per cent of accidental dwelling fires attended by the LFB did not have working automatic fire and detection systems. Whilst this is a relatively high proportion, the proportion of dwellings fires attended without working systems has been falling over time. Five years ago, the proportion was around 55 per cent. Where there are vulnerable people it is important that as a first step in reducing fire risk, linked smoke detection is fitted in all rooms where a fire could start, and that the resident can hear the alarm throughout the property, yet this was seldom the case. This is particularly pertinent where someone meets any of three following criteria: •They have behaviours that increase the risk of a fire starting	Review of the provision of automatic fire detection and alarm systems are a critical part in improving the opportunity to raise the alarm and support timely evacuation. By reviewing the coverage this could improve the level of safety provision.	13/14 Review of Accidental Dwelling Fires and Fatalities for 201314 - FEP 2302

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				•They are unlikely to react quickly to a smoke alarm •They cannot move quickly to escape.		
Requirement B1: Means of warning and escape	Fire detection and alarm	ADB Vol2 B1/1.4	Guidance states that all new flats should be provided with a fire detection and fire alarm system in accordance with BS 5839-6: 2004 to a minimum of at least a Grade D Category LD3 system. However BS 5839-6: 2004 (and BS 5839-6: 2013) recommends a minimum of Grade D Category LD2 system.	Fire services have experience of designers proposing Grade D Category LD3 systems in accordance with BS 5839-6 for new flats, despite this contradicting the recommendations within BS 5839-6.	Review of the provision of automatic fire and detection systems are a critical part in improving the opportunity to raise the alarm and support timely evacuation. By reviewing the coverage this could improve the level of safety provision.	13/14 Review of Accidental Dwelling Fires and Fatalities for 201314 - FEP 2302
Requirement B1: Means of warning and escape	Fire detection and alarm	ADB Vol2 B1/1.7	Sheltered Housing is briefly mentioned here and there is a suggestion that there should be a link to a central warden, monitoring point or alarm receiving centre. This is vague and does not take into consideration other types of specialised housing and the trend for reducing warden-controlled buildings. Fire services have evidence to show that telecare is an important part of the design of buildings and should be linked to detection, particularly in specialised housing.	13/14 – Evidence provided by LFB: Telecare equipment with linked automatic fire detection has the potential to reduce the number of people killed by fire by detecting fire early and immediately summoning assistance. However, to do so it must be linked to the correct standard of fire detection equipment and have a resilient method of summoning assistance. Telecare equipment was installed in seven cases (23 per cent of fatal fires in buildings) but it only raised the alarm in two. Where people had telecare equipment their address would have been registered with the provider and thus it would have been easy to confirm the address - if the telecare monitoring equipment had raised the alarm. Although a monitored telecare system with linked smoke detection in all areas of risk can initiate a call to Brigade quickly some people still require assistance to escape. Where someone meets the Authority's 'priority person' criteria, has limited mobility, aged over 60 and continues to smoke, automatic monitored fire suppression systems must be recommended. 15/16 There can be a delay in calling the Brigade to a fire for several reasons, such as stopping to fight the fire or no fire warning equipment being present. Below are the factors that contributed to delayed calls to fire fatalities for 2015/16. •Being overcome by smoke and fire before the fatality could call the Brigade (13) •Stopping to fight the fire (1) •Ineffective emergency procedures (1) •Faulty fire alarm equipment (1) It is not always possible to ensure that Brigade assistance is called as soon as a fire starts, however automatic fire alarm equipment, monitored alarms and automatic water suppression system can	For sheltered housing the method of fire detection and alarm and how warning is raised to both the occupants and others needs to be reviewed to ensure an effective method is referenced.	13/14 Review of Accidental Dwelling Fires and Fatalities for 201314 – LFB report FEP 2302 15/16 Review of Fire Fatalities and Accidental Dwelling Fires – LFB report FEP 2618

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				reduce risks considerably when fitted according to the fire risk and characteristics of the occupiers. In 2015/16, there was a 10 minute or more delay in calling the Brigade after ignition of the fire in just under half of all accidental fires in the home (41 per cent, or 2,169 fires). In total, 16 of the 36 fire fatality incidents experienced a delayed call, eight of these being accidental dwelling fires. There was a delay in calling the Brigade after ignition of the fire of over one hour or more in three of these incidents. For all fire fatalities in accidental fires in the home there was a delay of 10 minutes or more on 52 per cent of occasions (11 fatalities). It is a reasonable assessment that based on the nature of their injuries 14 of the 21 accidental dwelling fire fatalities (59 per cent) were unlikely to survive by the time the Brigade was called. Where there are vulnerable people involved there must be a resilient method of automatically summoning assistance. If assistance is not readily available for those with severe mobility impairment, automatic fire suppression such as sprinklers may be essential if there are additional high fire risk behaviours such as smoking in bed. For specialised housing, staff availability onsite must be taken into account when deciding whether a monitored fire alarm system is an adequate safeguard.		
Requirement B1: Means of warning and escape	Fire detection and alarm	ADB Vol2 B1/1.36	Consideration should be given as to whether it is still appropriate to recommend that automatic fire detection systems are not normally needed in non-residential occupancies.	The general expectation of the public is that, other than small simple buildings, all buildings will be provided with automatic fire detection systems.	Review of the provision of automatic fire and detection systems are a critical part in improving the opportunity to raise the alarm and support timely evacuation. By reviewing the coverage this could improve the level of safety provision.	
Requirement B1: Means of warning and escape	Means of escape from blocks of flats	Automatic Suppression	NFCC recommend that sprinklers are a requirement in all new high-rise residential structures above 18m (or as appropriate with respect to any changes that may be made following the full review of relevant trigger heights and thresholds). Student accommodation should be included in this category of building. In respect of existing high-rise residential buildings, where these currently exceed 30m there should be a requirement to retro fit sprinklers when these buildings are scheduled to be refurbished. Sprinklers should be retrofitted where high rise residential buildings over 30 metres are served by a single staircase.	The benefits of sprinklers and the ability to install such systems (including retrofits) can be found in the review of a retrofit to a low-rise block of flats and a high-rise block of flats completed in South Yorkshire. Many local authorities are now proactively having policies to install sprinklers in new builds or retrofit in existing stock, due to the benefits.	Independent research has found that sprinklers are 100% effective in flats. Further research into how safe these systems make residents showed that in flats where sprinklers are installed you are four times safer.	National Fire Chiefs Council Sprinkler Position Statement Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom. Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: Supplementary Report

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
Requirement B1: Means of warning and escape	Occupant risk	ADB Vol1 B1.ii	The risk to the occupants is mentioned, but not the risk that occupants present themselves. Vulnerability is also not fully explained.	More specific consideration needs to be given in terms of what constitutes a vulnerable person, specifically in relation to fire fatalities and the design process. It is not only the vulnerable that experience accidental fires in the home. Fire services often work with partners to raise awareness of the risk of fire amongst the whole population. When the priority person characteristics of age, smoking and living alone for people that survive a fire are compared to those for people that do not survive a fire there is a clear contrast. The majority of the fire fatalities had a combination of characteristics that would delay their reaction or escape. Logically those who can respond to a fire and escape quickly are more likely to survive whilst those with some kind of impairment do not. Evidence provided by the LFB showed the percentage of people recorded as casualties that survived an accidental dwelling fire and had a vulnerability (as identified during accidental dwelling fire reviews) was 35 per cent - 41 out of 116 casualties. The percentage of people with a vulnerability that became a fire fatality (as identified during fatal fire reviews) was 70 per cent - 21 of 30. This reinforces the priority person approach to risk but also supports the case for work targeting people who are less likely to die in a fire but are still at risk of having a fire. Design guidance needs to be written in such a way that it considers 'vulnerability' as a broad term which directly relates to the provisions detailed within the guidance.	Greater consideration needs to be given to the nature of vulnerabilities of any occupants and this relates to various comments in this consultation return: purpose groups, suppression systems, means of escape design etc. More needs to be done to protect vulnerable people particularly with the drive for people to remain in their homes and live independently.	13/14 Review of Accidental Dwelling Fires and Fatalities for 201314 – LFB report FEP 2302
Requirement B1: Means of warning and escape	Means of escape for disabled people	General comment	Evacuation strategies for disabled people should be reviewed to ensure that it affords a safe and dignified means of leaving any building (including residential purpose groups). This should include greater use of evacuation lifts coupled with safe refuges (including a method of communication) where people can wait for the lift to arrive.	The approach to the evacuation strategy design for disabled occupants, in our experience, tends to have little thought and a single refuge is put in per floor with the subsequent strategy to be developed by the Responsible Person. There is little thought given to the provision of evacuation lifts unless they are prompted to consider this. Clear guidance on expectations for design provisions should be included which should also consider the likely numbers and particular needs if these are known at the design stage. It is important however that an evacuation lift is accompanied with a safe refuge where people can await the arrival of the lift. Further consideration should also be given for schemes where there is a mixed use, for example a residential block of flats with a car park area. Each would have a different evacuation strategy and are currently expected to have different provisions to support the evacuation of any disabled occupants. We also advocate a further review in terms of the expectations for supporting the evacuation of any disabled occupants who may reside in a block of flats. Little (if no) provision is currently made in this regard and this needs to be reviewed.	More inclusive design approach which considers the needs of the end user and provides a greater reassurance that any disabled occupants will be afforded an equivalent level of escape opportunity as other occupants. Preferably with minimal need for reliance on others to do so therefore allowing for a safe and dignified exit.	
Requirement B1: Means of warning and escape	Fire Alarm	ADB Vol2 Section 1	Consideration should be given to ensuring that more guidance is given in terms of the expectations on the provision of fire detection and alarm systems specifically for each occupancy type.	We are of the opinion that further guidance should be developed which considers specific purpose groups and the needs of each occupancy type.	Need to ensure that the guidance supports the functional objective by providing more specific recommendations which are fit for each occupancy type.	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
Requirement B1: Means of warning and escape	Means of escape from flats	ADB Vol2 2.12a	Further guidance is needed to ensure that the window escape is suitable. This should account for the type of occupancy (e.g. aging population), the use of the space under the window and the provision for onward escape.	Fire services have had a number of proposals where the area below the escape window is not under the control of the flats above and there have been various furniture, such as iron railings, making any escape more hazardous. Other submissions have proposed the window in an enclosed courtyard without onward escape.	Need to ensure appropriate means of escape for all occupants	
Requirement B1: Means of warning and escape	Means of escape from flats	ADB Vol2 2.12a	Consideration should be given to the height that window escape is suitable for. Current guidance allows for occupants to escape from a window ledge height of 5.6m.	Fire services are of the opinion that window escape from height is not suitable for many sections of the population, for example; young children, the elderly and disabled persons.	Need to ensure appropriate means of escape for all occupants	
Requirement B1: Means of warning and escape	Means of escape from flats	ADB Vol2 2.13	There is currently no further restriction in ADB on the travel distances beyond the protected entrance halls.	Fire services have had a number of flat designs where the rooms off of the protected entrance halls have excessive travel distances in a single direction e.g. large penthouses with circa 18-20m travel within a room. These rooms may also include inner rooms and roof terraces.	Need to ensure that the overall travel distances within flats are restricted.	
Requirement B1: Means of warning and escape	Means of escape from flats	ADB Vol2 2.13b	To ensure a suitable means of escape, further guidance should be given to the location of cooking facilities and white goods within open living style flats. This should account for the human behaviour e.g. willingness to pass a fire; cumulative radiated heat, toxicity and time period at which they will be exposed; the fire spread; the visibility.	The layouts within open plan flats and studio style flats (diagram 3 ADB Vol2) and the location of the cooking facilities remains a constant source of debate. The term ‘remote’ is interpreted differently and the justification for the location of the cooking facilities varies wildly in terms of analysis. Cooking remains the most common cause of fire in residential dwellings. Around 46% of fires in dwellings are started by cooking appliances. In sheltered and extra care housing, the proportion is much greater at 79%. (ref 55.1 specialised housing guide)	To provide appropriate provisions for the means of escape for occupants with a clearer definition of where sources of fire i.e. cooking facilities should be located.	
Requirement B1: Means of warning and escape	Means of escape from flats	ADB Vol2 Diagram 7	Clarification on the size of a sterile lobby in Diagram 7 a is needed as designers often propose extensive lobby sizes to increase floor plate areas	Guidance should be provided with detail on the size of a sterile lobby. The size needs to consider the impact firefighting operations may have on the travel distance for occupants who may decide they wish to leave their flats on the affected floor (i.e. when hoses breach the lobby door the length of the corridor and lobby becomes smoke-filled). The lobby also typically contains the service risers which albeit fire services would consider a potential fire hazard; designers argue this point.	Providing a size limitation on the protected lobby in this regard would be beneficial to prevent inappropriate interpretations of the guidance.	
Requirement B1: Means of warning and escape	Means of escape from flats	ADB Vol2 Diagram 9b	Consideration should be given to including guidance, or explicitly excluding, open plan flats with suppression as an option for diagram 9b layouts where the lobby to the stair is removed.	Fire services have reported proposals which seek to apply the diagram 9b arrangement with the common lobby omitted but then use an open plan arrangement within the flat. While this might be permissible the automatic fire suppression system standard can vary significantly (as does the coverage proposed) and no consideration is given to the potential impact of the smoke on the common staircase as no internal lobby exists. In addition, where diagram 9b is being adopted we believe that the internal doors within the flat should be fitted with self-closing devices.	Guidance should consider current trends in building design and ensure that it includes appropriate guidance.	
Requirement B1: Means of warning and escape	Means of Escape from Flats	ADB Vol2 2.26a	We question the effectiveness of natural vents located on external walls of high buildings and would welcome further consideration.	Fire services have attended a number of fires where these vents have proven inefficient and/or failed to adequately vent smoke and heat from the stair or corridor. Their overreliance on ideal wind conditions and direction make them susceptible. It is imperative especially for taller buildings that any ventilation systems are always reliable.	To determine that the ventilation systems in the guidance all offer the appropriate level of provision.	BRE research BD2410

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
Requirement B1: Means of warning and escape	Means of Escape from Flats	ADB Vol2 2.26biii	We question the principal of suggesting that the smoke vent doors should be a minimum of $E30s_a$	As the fire floor vent will be open and the shaft is designed to be transporting hot gases, we question how the compartmentation is to be maintained on other floor levels with a single $E30s_a$ vent protecting them. Therefore, the vent rating should be the equivalent of the shaft walls.	To ensure that the compartmentation of the shaft is maintained thus protecting means of escape routes particularly in buildings where there may be a delayed evacuation strategy adopted.	
Requirement B1: Means of warning and escape	Means of Escape from Flats	ADB Vol2 2.27	Reference to appropriate guidance for mechanical smoke ventilation systems where BS EN 12101-6: 2005 is not appropriate should be provided; at the moment this is not covered.	Similar guidance to that provided in BS 9991: 2015 Section 14.2.4 and Annex A on mechanical smoke ventilation systems should be provided.	To ensure that mechanical smoke ventilation systems are designed to appropriate standards.	
Requirement B1: Means of warning and escape	Means of Escape from Flats	ADB Vol2 2.30	Limitation on the sharing of escape routes with ancillary accommodation. We generally support the intent of this paragraph and believe it should be extended to ensure that where there is only one escape route, ancillary accommodation does not have the opportunity to impact it.	Fire services report that most schemes they review include ancillary accommodation accessed from the only escape route at the same level as flats, or from the only escape route from a single stair to outside. As this is such a common occurrence either the guidance should be more explicit in this regard in terms of not supporting the approach or consider whether alternative provisions which might allow this layout are included in the guidance.	It is our opinion that the aim of this provision is to protect the means of escape for occupants. This is also important during the firefighting phase where the door may be held open to enable firefighter access to the ancillary accommodation, which could result in smoke in the corridor or stair.	
Requirement B1: Means of warning and escape	Means of Escape from Flats	ADB Vol2 2.38	We support this paragraph and believe that it should be clarified that providing the same standard of lobby protection as the stair it serves includes any smoke ventilation provisions.	Fire services report that they regularly receive schemes where the proposed level of smoke ventilation to lobbies serving the final escape route from a stair does not match the level of protection provided to the stair.	To ensure that the route from the stair to outside is sufficiently protected to support means of escape.	
Requirement B1: Means of warning and escape	Means of Escape from Flats	ADB Vol2 2.44	Current designs for residential blocks of flats typically include the single escape staircase serving basement levels. This is not currently accounted for in the guidance.	The guidance should either continue to maintain that single stairs should not serve basements or alternatively acknowledge the desired design layout and ensure that there is robust guidance for ensuring that the staircase integrity is maintained. Fire services report that they see a variety of different layouts and remain concerned with the approach particularly where it is a tall block and the basement areas are not afforded with automatic fire suppression, or the car park ventilation system is not provided with the appropriate level of redundancy even though it is relied upon to protect the lobby from smoke ingress. Separating doors within the staircase are often put in the wrong location such that firefighting operations and hose lines would hold them open thus negating any protection that this door might have afforded the upper portion of staircase.	Guidance should consider current building trends and provide appropriate guidance which ensures a consistent approach which affords the appropriate level of safety is afforded.	
Requirement B1: Means of warning and escape	Design for horizontal escape – buildings other than flats	ADB Vol2 3.1	We support the second paragraph that states the guidance is directed mainly at smaller, simpler types of design. Additional clarification on the types of buildings the guidance is appropriate is needed.	Fire services report receiving several design submissions where the guidance is applied to larger, more complex types of design without additional consideration as to whether it is appropriate.	The guidance would be applied to the building types it is intended for.	
Requirement B1: Means of warning and escape	Other issues – Balcony and podium escape	General comment	Fire services report that proposals are common which contain podiums, balconies and terraces. There is limited guidance to specifically address design features in term of the means of escape, fire spread and firefighting access.	Alternative proposals such as podiums should either be specifically excluded from ADB or guidance should be developed which includes reference to this type of arrangement. For instance, LFB	Consider whether the guidance needs to include alternative building design layouts within the guidance to	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				report there are several building in London built to a bespoke design which would have benefitted from a more prescriptive approach.	encompass modern styles of layouts.	
Requirement B1: Means of warning and escape	Design for Vertical Escape	ADB Vol2 Table 2	ADB is a design guide and in many cases the actual travel distance may not be known. Consideration for providing direct distances should be given.	This aspect of the guidance is poorly adhered to and therefore consideration should be given to including the direct distances within table 2 (for example) and the note indicating that the actual distance could be used as an alternative.	This will provide versatility to the building ensuring that any layout be within recommended limits and assist the responsible person carrying out a suitable Fire Risk Assessment.	
Requirement B1: Means of warning and escape	Design for Vertical Escape	ADB Vol2 4.6b	This point needs to be clarified, as the current comment (b ii) refers to an alternative means of escape over 11m. This can only practically be via a second stair.	The guidance needs to be clarified in this regard as it appears to contradict itself within the same section.	Clarification point on the guidance.	
Requirement B1: Means of warning and escape	Design for Vertical Escape	ADB Vol2 4.35	This is generally the section referred to for the provision to protect the staircase from the adjoining carpark at the lower levels and basement areas. However, we question whether the proposed 0.4m^2 vent is adequate for large modern carpark fires especially during the firefighting phase. We would welcome further consideration on this technical aspect.	In many designs the lobby protection between the car park and staircase serving the upper levels is provided with an alternative means of venting due to the practical challenge of fitting the 0.4m^2 vent in. There is a question whether the vent size remains adequate but also whether the guidance should acknowledge typical designs and offer an alternative solution in this regard. Whatever guidance is provided this must ensure that the staircase is sufficiently protected from the ingress of smoke and this needs to consider typical fires from car parks including modern cars and other relevant factors.	Unknown until further studies have been carried out but it may provide a safer and more suitable design for the occupants on floors above by the guidance being reviewed to ensure it remains fit for purpose in this regard.	
Requirement B1: Means of warning and escape	Design for Vertical Escape	ADB Vol2 4.42	We support this paragraph and agree that if escape stair is the only escape from the upper storey, the basement should be served by a separate stair. Although in the opinion of fie services this requirement is clear, services have reported receiving a number of design submissions where this provision is not followed and would welcome further guidance.	Some fire services report the majority of schemes they review include the single stair serving car parks and other spaces at ground and basement levels. As this is such a common occurrence either the guidance should be more explicit in this regard in terms of not supporting the approach or consider whether alternative provisions which might allow this layout are included in the guidance.	The aim of this provision is to protect the means of escape for occupants on the upper levels. This is also important during the firefighting phase where the door may be held open to enable firefighter access to the basement, which could result in smoke in the stair.	
Requirement B2: Internal fire spread (linings)	Lining performance	Table 10 classification of linings	Table 10 indicates that ‘garages’ can have European class C-s3, d2 linings. This has been interpreted to include car parking areas in residential areas.	We understand that some car parking areas have been fitted with European class C-s3, d2 linings due to the interpretation of table 10. We do not believe that the intent of this table was for car parks to be treated in this way. This could have a direct impact on both means of escape and firefighting in these areas.	Review of Table 10 in terms of particular provision for car parking areas. This should tighten what appears to be a loophole in the guidance.	
Requirement B2: Internal fire spread (linings)	Other issues- Linings and suppression		Linings require control as they have been shown to adversely affect or compromise means of escape.	There is no available specific research on the benefits or performance of sprinklers in respect of internal linings.	Existing research in respect of efficiency and effectiveness suggests that sprinklers have a role to play in allowing relaxations in respect of linings.	Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom.
Requirement B3: Internal fire spread (structure)	Compartmentation	ADB Vol2 7.7 note 2	Clause 7.7 on raised storage areas in volume 2 includes a note 2 which requires clarification as it details local agreement on varying the maximum dimensions but does not	The note should include a specific reference to discussion and agreement with the local fire service.	Ensure that the fire service are included in discussions where variations could impact	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
			explicitly detail that these discussions should take place in conjunction with the fire service.		the firefighter access arrangements.	
Requirement B3: Internal fire spread (structure)	Compartmentation	ADB Vol2 7.9	Where a building is to be converted then the standard should afford the appropriate level of protection.	Consideration should be given to whether the guidance remains at the appropriate level. We would therefore question this particular provision as to whether it is appropriate for modern fire loads and whether the package of measures suggested by the guidance is sufficient.	Review will determine if this provision affords the right level of safety provision.	
Requirement B3: Internal fire spread (structure)	Compartmentation	ADB Vol2 Table 12	Compartment sizes in table 12 must ensure that they remain current and account for modern fire loading and uses.	The maximum compartment sizes should be assessed to account for modern working arrangements and potential fire loading, which may not have been accounted for when the table was designed e.g. large quick turnover distribution warehouses used for distribution of products sold online which contain a higher life risk due to its occupancy numbers. In the past 5 years there has been at least one high profile fire of this type which caused considerable damage. Consideration could be given to a volumetric control limit in this regard.	The guidance must ensure it remains current in terms of the way in which we use buildings and that compartment sizes are appropriate to ensure that the subsequent fire risks and potential spread remains at the appropriate level.	
Requirement B3: Internal fire spread (structure)	Compartmentation		Warehouses are allowed dramatically greater volumes than most of the rest of the world. As such when they are involved in fire they are often involved in some of the largest losses in financial terms. They are also damaging to the environment and cause tremendous local disruption due to the fire size. They are also hazardous for firefighters.	There is significant research that has been undertaken by the BRE, Greater Manchester Fire & Rescue Service and Fire Brigades Union, and also independent research by cebr.	The research is unanimous and categorical in that smaller volumes with sprinkler protection will reduce fire losses, reduce disruption and environmental impact, reduce business loss and also allow better conditions for firefighters to operate in.	The Financial and Economic Impact of Warehouse Fires. https://www.bre.co.uk/news/Study-shows-that-on-average-fire-sprinklers-are-a-sound-investment-for-larger-warehouses-942.html
Requirement B3: Internal fire spread (structure)	Sprinklers and Other Fire Separation systems	General comment	Sprinklers already have been shown to be extremely reliable and efficient. The current building regulations have onerous requirements for the life safety provisions when allowing sprinklers to be used as a compensatory feature for relaxations. These life safety requirements are onerous and expensive and will only provide a marginal improvement in reliability for systems which are already 94% reliable. Consideration should be given to a more risk assessed approach. For example, if there is a need for continuous operation of a building through periods of maintenance, then the zoning restrictions and duplication aspects of life safety may be necessary. See comments provided elsewhere on suppression systems.		Relaxations of certain requirements, where appropriate could reduce the cost of sprinkler systems and allow greater use. This will allow advantages to be taken of sprinklers property protection, harm reduction and environmental benefits to be maximized.	Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom.
Requirement B3: Internal fire spread (structure)	Compartmentation	General comment	Consideration of how compartmentation is maintained in blocks of flats where adjoining balconies serving separate dwellings are present.	Adjoining balcony areas between flats are often not designed in a way which would prevent fire spread between the two areas and potentially between the two flats. Some designs incorporate a non-fire rating screen with no consideration for the potential for fire spread between the spaces.	Would reduce the potential for fire spread between flats and prevent a weak area for potential fire spread.	
Requirement B3: Internal fire spread (structure)	Compartmentation	Table 14 and ensuring that the intent of the guidance is supported by the	At present there does not appear to be a limitation on the number of penetrations through a compartment wall/floor when considering the provisions of table 14. This needs to be	This issue has come up in discussion with numerous building control bodies in terms of the lack of restriction in this regard.	Ensuring that the integrity of a compartment wall or floor is	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
		detail of the guidance in terms of the number of penetrations in a compartment wall/floor	addressed to ensure that the integrity of the compartmentation is maintained.		not impacted by lack of restriction in this regard.	
Requirement B3: Internal fire spread (structure)	Concealed spaces (cavities)	General comment	Review should be undertaken to ensure that all options detailed within this section offer the equivalent level of protection to the opening.	The cavity closer provisions should all demonstrate the same level of protection. The area around windows in particular has, in our experience, afforded a means of fire spread into a cavity where the design or installation have not been undertaken appropriately. There is also evidence on several schemes that designers seem to see little benefit in the cavity barriers around openings seeking to omit these. The guidance should consider this area further and ensure that potential routes of fire spread into external wall structures are mitigated appropriately in the guidance. This may not only relate to cavity barrier provision but the guidance in relation to the performance of the external wall when considering items such as service fittings such as electrical sockets, light switches etc.	Guidance should consider how the potential means of fire spread into an external wall is mitigated.	
Requirement B3: Internal fire spread (structure)	Other issues – preventing fire spread through shafts in purpose-built blocks of flats	General comment	A review should be conducted about the potential route of fire spread through service risers incorporated within a building. Main service risers, ventilation shafts (both 'normal' and smoke/fire) need to be considered in terms of how they prevent a breach of compartmentation between flats.	Fire services have significant evidence that fire stopping of service risers is a particular issue along with the question over fire resistance ratings of smoke vent doors. How can a vent door be rated the same as a service riser door when at least one vent door is designed to be open? Fire services also have evidence of fire and smoke spread via bathroom and kitchen ventilation routes. Should service risers be stopped at floor level and not be designed as an open (protected) shaft throughout a building?	There is a need to limit the potential fire spread pathways within residential blocks of flats if the integrity of the compartmentation principles is to be maintained.	
Requirement B3: Internal fire spread (structure)	Section 11 Special Provisions For Carparks and Shopping Complexes & Appendix A	ADB Vol2 11.2 & Table A2	We question the general principles in the current guidance with regards to the fire loading being well defined and a low probability of fire spread.	Recent high-profile car-park fires has provided some evidence that the current levels of fire resistance should be evaluated. We believe that further consideration should also be given to modern vehicles including, the fire load (the vehicle size and construction materials) and the type of fuel (alternative fuel together with charging points). We also question whether the minimum periods of fire resistance are still suitable taking into account modern building designs, construction materials and contents e.g. tall residential towers are above an open sided carpark with potentially a much lower period of fire resistance to its structure. Guidance might also benefit from particularly excluding car stacking system	There may be some expectation for testing of fire sizes which supports industry guidance to form the basis of the recommendations.	
Requirement B3: Internal fire spread (structure)	Special Provisions For Carparks and Shopping Complexes	Currently no provision	Where car parks connect to residential developments, specific requirements for the separation between the two parts, both internally and externally should be fully considered.	This is generally for carparks under residential developments where a carpark fire producing high temperatures and large smoke plumes has affected the residential areas above.	The guidance being updated in this regard will ensure that any potential fire spread/impact from this commonly used design is mitigated.	
Requirement B4: External fire spread	External wall performance	ADB Vol2 12.7 and Diagram 40	We question the validity of the 18m threshold for a change in the performance of the external wall performance.	The performance of various products being used on external walls has been identified as part of the building safety program. Performance tests of some of the materials being routinely used on buildings demonstrating the rapidity of potential fire spread and its	We have highlighted the need for further consideration in regard to buildings under 18m and the fire performance of	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				potential impact on occupants and accompanying evacuation strategies. This coupled with our comment on our initial external firefighting capabilities in terms of equipment height. If B5 is relied upon as an integral consideration for the fire performance of materials permissible on external walls, then B4 warrants a full review.	their external walls. Not setting the appropriate standard in this regard could have a direct impact on public and firefighter safety.	
Requirement B4: External fire spread	External wall performance	ADB Vol2 12.7 and Diagram 40	We question the validity of the 18m threshold for the ban on combustible materials in external wall systems for only certain types of buildings.	Further review of the current scope of the ban on combustible materials in the external wall system needs to be undertaken in terms of the other building types not included in the current ban.	The performance of the external wall system and the expectations in terms of the guidance in relation to compliance with the Building Regulations need to be further considered. Not setting the appropriate standard in this regard could have a direct impact on public and firefighter safety.	
Requirement B4: External fire spread	External wall performance	General comment	Guidance should be included around items such as balconies, photovoltaic cells, green walls etc.	Fire services have experience of numerous fires where rapid and extensive external fire spread has occurred via balconies, green walls etc. The MHCLG consultation and resulting ban has demonstrated evidence in this area. The guidance needs to consider balcony construction in relation to buildings of any height and how their design meets the Building Regulations in terms of limiting fire spread and how it supports the evacuation strategy for the building.	To reconcile the detail with the ban and ensure that the scope of the ban and how this area should be approached is clear	https://www.gov.uk/government/consultations/banning-the-use-of-combustible-materials-in-the-external-walls-of-high-rise-residential-buildings
Requirement B4: External fire spread	Other issues- Balconies	General comment	Balconies: Balcony fires are posing more of a threat. As they increase as features of low, medium and high-rise flats, the impact of external fire spread is growing.	Fire safety issues with Balconies: BRE	Sprinklers are proven to reduce the impact of building fires starting or involving balconies. The fire in Lewisham in June 2018 is an excellent example of how a fire that started on a balcony and threatened to spread uncontrolled was actually mitigated by sprinklers.	Fire safety issues with Balconies: BRE
Requirement B4: External fire spread	External wall performance	General comment	Specific guidance should be included regarding any means of external fire spread and how this should be considered. Specific example would be expansion joints.	Fire services have experienced a number of fires which have involved expansion joints between buildings which have been extremely difficult to tackle from a firefighting perspective. This is an issue regardless of the height of the building due to the difficulty faced with accessing these areas.	Any means of potential external fire spread which has been identified needs to be covered by the guidance particularly where firefighting access is likely to be difficult.	
Requirement B5: Access and facilities for the fire service	Guidance	General comment: Introduction or provide an additional section	Whilst this section provides some useful information which in our view should remain, we also would welcome additional commentary to account for modern firefighting procedures, equipment and technologies, which should be standardised in all buildings. Examples are: • Information to be provided on arrival of the fire service, for example in the form of a premises information box	In general, the larger the fire, the more resources are required. It stands to reason that, in most cases, the faster firefighters can get to the scene of operations and commence firefighting and rescues, the probability of saving life will increase and the physical damage to property will reduce.	Standardisation of controls may have an impact on industry and the information for the fire service can generally be provided during the handover of information (Regulation 38). However, the	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
			• The controls for fixed installations such as corridor ventilation should be simple and intuitive in their use, located in a prominent position and be of a standard consistent design. • Modern systems which assist firefighting operations, such as intelligent fire alarm and wayfinding systems should be encouraged and required once recognised as common practice and demonstrated to work effectively. • Staircases in large buildings should be numbered to assist firefighters during operations. • Individual floor levels should be numbered with a visible plate in each stair. The number at each floor plate level should be the same number in each stair and lift. To keep up to date with technologies, this section should undergo a regular review, our recommendation is a minimum of every 5 years.	In providing accurate information as to the location of the fire, the provision for suitable water supplies and consistent operation of controls should decrease operational intervention times.	speed to commence firefighting operations is essential to save life and prevent the fire from developing. Any information or technology that can assist firefighters will be beneficial in this regard.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	General comment	We would advocate a full review of the guidance relating to firefighting water provision as it currently does not provide sufficient detail or clarity. It also provides loop holes which are currently being exploited in terms of some of the provisions.	There remains a need to review Legislation relating to water supplies for firefighting operations. Coupled with unclear guidance, this presently results in an inconsistent approach which has a direct relation to time of fire service intervention. Water supplies are critical not only for firefighting safety but to effect fire and rescue service duties, and the guidance presently does not provide sufficient support in this regard.	A more consistent approach which will place a greater importance on the need to ensure available water supplies for firefighters to undertake their duties.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	Volume 1, B5. (1) and B5. (2)	Provision of water for firefighting	Specific examples of the following can be provided upon request: 1) developments that have been completed and often inhabited without appropriate water provisions for firefighting 2) properties that have been converted from farms to industrial usage without any hydrant provisions 3) developments using 63mm water mains which are unsuitable for fire hydrants 4) developments with appliance accessibility issues 5) low water pressure and supply issues.	* Clear and consistent standards of water provision for firefighting regardless of the building type. * Shift of responsibility for fire hydrant installation at new development sites from the Fire and Rescue Service to the developer. * Address the issue re Fire and Rescue Services not being statutory consultees on water provisions for firefighting meaning properties and developments would be built with appropriate firefighting facilities including water supplies. * Referral to the relevant British Standards would ensure more transparency and more consistency.	Can be provided on demand as necessary
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 15.7	Further information should be provided on how the distance from the hydrant to the building is measured. Consideration should be given to detailing that it should be providing a route suitable for laying the hose between the hydrant to the	Fire services have experienced several cases where buildings have been proposed up to 100m from existing hydrants, measured as a direct distance. Due to a lack of clarity in the ADB document, proposals and even installations have been made where hydrants	Providing hydrants at a reasonable distance will ensure firefighters can get water to the scene of operations in a suitable time	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
			proposed vehicle parking position. (This requirement should be duplicated in the dwellings Volume).	are positioned to the other side of obstructions such as fast roads, walls or other obstructions unsuitable for laying hose.	frame. This will impact on the fire development preventing spread and escalation of the incident.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 15.8	The guidance detailing alternative water supplies requires review and removal. Any option within the guidance should be a reasonable alternative offering a comparable level of provision.	The practicalities and time that it will take firefighters to set into alternative water supplies makes it, in our opinion unsuitable for most fires where fast intervention is essential. Alternative water supplies should only be used in specific cases where property protection is the focus. Where they are used, further guidance should be provided which should include; the time it takes to set up firefighting operations, providing a suitable parking position of the fire appliance, the distance from the pumping appliance to the water source and the distance from the water source to the access point. A standard fire service open water drill compared to a conventional drill working from a hydrant could give an indication of the additional time that it will take firefighters to achieve an adequate water supply when considering this particular issue.	Water supplies are generally provided to new buildings and developments and hydrants can be added at this stage at little cost.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	Water supplies	Greater guidance about water provision should be incorporated to ensure that this important aspect of B5 is suitably covered	Greater detail is needed in terms of what reasonable water provisions are which should include reference to areas such as; 1) The need for firefighters to be able to lay hose between the water source and the premises – therefore the route needs to be suitable and safe to do so. 2) That the water supply should be fit for purpose in terms of delivery with specific recommendation on flow rates 3) To British Standards for areas such as hydrant equipment (BS750/BSEN14384/BS5834-4/BS3251 and BS3251)	Water supplies would be more consistent and provide a reliable source for firefighting operations.	
Requirement B5: Access and facilities for the fire service	Fire Mains and Hydrants	General comment	The guidance should be explicit in regard to the distance for the appliance parking position to any building and why this is the case.	Fire services have received several consultations where horizontal mains have been proposed which do not offer an overall comparative level of provision. Fire appliances carry equipment which needs to be physically transported therefore the guidance needs to make it clear that it is not merely about the transportation of water into the building that is the main factor.	Designers will be clearer as to why the guidance details vehicular access provisions.	
Requirement B5: Access and facilities for the fire service	Fire Mains and Hydrants	Provision of fire mains	The guidance should consider the risk of falling debris needing to be assessed when selecting fire main positioning. Additional fire mains or a method to protect fire crews accessing the building may therefore be necessary.	This provision is in the current BS 9990 “In selecting positions for inlet connections, account should be taken of the positions of fire hydrants, the parking locations for fire appliances, and the effect that falling debris and other possible occurrences during a fire might have on the continuing viability of the location”. This is a recommendation we support and advocate that it should be included in ADB	This should not only improve firefighter safety provisions but will support the operational incident management by minimising the risks needing to be considered.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 16.2a	The current document does not specify a distance between the perimeter of the building and the fire appliance parking position. We would recommend that a reasonable distance over suitable terrain is specified which takes into account firefighting access points into the building, the visibility between the appliance and the access point and the amount of heavy and cumbersome equipment that will need to be carried to the entry point.	Fire services have experience on several proposals where the vehicle parking position is too far from the entrance door. This results in Firefighters traveling long distances delaying the response time.	This is more of a clarification as the B5 functional requirement has not changed in this regard.	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 16.2a and Table 19	We would support a review of perimeter access and how this practically works for crews particularly in relation to access and effectiveness of intervention. Whatever is provided needs to supply firefighters with reasonable access which considers the shape of the building's foot print.	The vehicle access requirements in the current document are based on a percentage of the perimeter of the building, designed to a rectangular shape. This limits the direct distance for firefighters to operate internally to approximately 67m. However, a building with an 'L' shaped footprint can considerably increase firefighter travel distances within the building. Fire services have received projects where this has been an issue – warehousing in particular.	Possible additional costs for compensatory features such as suppression but with added benefits to improve safety for firefighters, aid property protection and business resilience.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 16.3	The current ADB allows the provision of a dry rising main for flats as an alternative to providing access to within 45m of all points within each dwelling. We consider that this alternative approach significantly increases the time it will take for firefighters to fight the fire and perform rescues. We therefore consider that a suitable automatic fire suppression system could be a reasonable compensatory feature. Its aim would be to suppress the fire and allow time for firefighters to secure a suitable water supply using the dry rising main.	Initial firefighting attack to a building where access is designed to within 45m of all parts of the dwelling could be with a hose reel branch deployed directly from the fire appliance. Fire crews will don Breathing apparatus and be in the building actively firefighting and performing rescues within minutes of turning up to the scene. Initial firefighting attack (if using a dry riser) will require pumping appliance to be set into the hydrant, water can then be pumped via laid hose to charge the dry rising main. Firefighters will then access the stair and ensure that the valves are in place and closed at all levels. Firefighters will don breathing apparatus at the bridgehead and ascend to the fire floor. Entry will be made to the flat and firefighting operations will commence using a 45mm hose. This process will take considerably longer than where access is provided to within 45m.	There will be an additional cost to the design for the suppression system. However, occupants will have the protection of a suppression system to aid their escape. It is also expected that firefighters will be attending smaller fires causing less damage from smoke, fire and water.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 16.11	The provision for a turning circle after a maximum of 20m is a reasonable distance to enable movement of appliances and to assist other emergency service vehicles such as ambulances to access the scene. However, there are instances where this could be altered, and we would welcome early consultation with the fire service to this point.	One example is where the reversing distance is within the 20m maximum, but the fire appliance would be required to reverse onto a fast road e.g. dual carriageway.	There would be little change to the design of the building as the majority of consultations will just require alternative landscaping.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 17.2	We question the validity of the 18m threshold for a firefighting shaft and advocate a full review of B5 (comments made separately).	Our understanding is that the 18m threshold for a firefighting shaft was linked to external firefighting capabilities using a wheeled escape ladder (incorporating an additional ladder attachment). These ladders are no longer in use, but the design guidance has not changed in this interim period. Many front-line appliances' longest ladder will reach a maximum working height of 11m (13.5m ladder allowing for a pitch). It is essential that clarity around any threshold is also included to ensure that designers understand the reasoning behind it. Fire services report receiving numerous schemes where buildings are above the threshold height, but designers argue that putting a separating door in the staircase to access, for example a triplex apartment, the need for a firefighting shaft is negated because the whole of the top of the building is private and the highest common area may be under 18m.	The guidance for firefighting access must keep in line with the equipment and operational procedures adopted by the fire and rescue service. The trigger points for internal firefighting operations in this regard therefore need a full review.	
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	Design and construction of firefighting shafts	The guidance needs to be explicit in regard to what are considered to be the appropriate materials used in constructing firefighting shafts.	Fire services have received proposals for both timber and fully glazed firefighting shafts (including doors, floors, lift cars and separating walls). Because the guidance isn't explicit in this regard (we believe this is based on assuming that the shafts will be 'traditionally' constructed) this is considered a loop hole being exploited. The protection of a firefighting shaft should be considered	Tightening up of the acceptable materials will maintain firefighters' safety by ensuring the integrity of their access and egress route.	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
				sacrosanct due to the unknown timeline that firefighters will be working within a building tackling a fire/incident. It is imperative that the shaft not only provides a safe access into the building but continues to provide a safe egress route. Firefighters should also be able to work within this environment 'with the understanding that the shaft is robust enough to offer the level of protection expended and to handle the activities going on within and around it. Therefore, we are of the opinion that a firefighting shaft should be constructed fully of non-combustible materials and a strict limitation be placed on the amount of glazing that can be used within in.		
Requirement B5: Access and facilities for the fire service	Access and Facilities for the fire and rescue service	ADB Vol2 16.2, 16.3 & 17.9	Hose measuring distances need to be provided with better supporting guidance.	ADB currently states that hose distance should be measured on a route suitable for laying hose. However, this wording is not clear and further guidance should be provided to consider the radius of the hose when negotiating bends and when internal layouts are not known. We would recommend that distances are measured from the centre of the walkways, doors and stairs to consider the radius and a 2/3rds of the distance measure in a direct line (similar to the measurement of travel distance) to account for when the layout is not known.	In order to maintain safe working conditions in a fire scenario, firefighters need to reach all parts of the floor plate with the protection of water delivered by their hose. The length of this hose will therefore restrict the distance that a firefighter can enter the building. By providing an improved system for measurement should ensure that firefighters can reach all points of the floor plate with suitable protection.	
Requirement B5: Access and facilities for the fire service	Access to buildings for firefighting personnel	ADB Vol1	A requirement should be made for the provision of hydrants for domestic dwellings.	Guidance should be included that details the hydrant provision for individual dwellings and/or where large developments are provided.	Need to ensure suitable water provisions for all buildings.	
Requirement B5: Access and facilities for the fire service	Access to buildings for firefighting personnel	ADB Vol2 Diagram 52 note 2	We question the effectiveness of vents located on external walls of firefighting shafts in high buildings and would welcome further consideration of suitable smoke control provision in tall buildings or deep basements.	Although this provision is not common there is still a possibility to design a tall building with this type of vent which may be affected by external influences such as wind making them ineffective.	This will provide safer firefighting provisions and confidence that the stair will be protected.	
Requirement B5: Access and facilities for the fire service	Access to buildings for firefighting personnel	ADB Vol.2 17.3	Buildings in Purpose Group 7(a) should be considered for inclusion of a firefighting shaft where the criteria of floor height of more than 7.5m and a storey of 900 sq, m. or more in area is met.	Buildings in this category can present similar difficulties in terms of safe access, fire loading, and hazards as those in Purpose Groups 4, 5, 6.	Increased firefighter safety. Currently, potentially hazardous occupancies can be classified as Purpose Group 7(a) and do not attract recommendations for firefighting shaft.	Iron Mountain fire (2006)
Requirement B5: Access and facilities for the fire service	Access to buildings for firefighting personnel	General comment	The entrapment of firefighters due to the premature collapse of cabling has been demonstrated to be a significant risk.	The guidance should refer to the risk and refer to the relevant provision in BS7671 in this regard.	Ensure that provisions directly related to firefighter safety are included in the guidance in ADB.	Shirley Towers fire 2010
Requirement B5: Access and facilities for the fire service	Basements	ADB Vol2 18.3	Ventilating basements indirectly by opening connecting doors may directly subject firefighters to exceptional temperatures and ultimately put their safety at risk. While this may be reasonable for post fire smoke clearance, it does not support	At present, firefighters must physically open the doors which puts them directly in the path of the hot gasses. This can also affect the	Increased firefighter safety whilst operating in complex basements.	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
			the commentary in B5.i.e, 18.1 and 18.2 concerning the difficult conditions that may be encountered in accessing basements. Consideration should be given to providing a means for firefighters to ventilate basements remotely and ventilation arrangements should be simple and intuitive.	ventilation arrangements within the compartment which could dramatically affect the conditions firefighters are operating in.		
Requirement B5: Access and facilities for the fire service	Basements	ADB Vol2 18.4	Clarity on when basement venting is needed should be provided and this should ensure that interpretation of the guidance is avoided.	Some find the wording of this section confusing and we would advocate that the wording in BS9999 2017: 27.2.1 is adopted instead. The guidance should also ensure that it is understood that sub compartmenting the basement does not impact the need to provide ventilation if the overall floor area is over 200m^2	Clarity is required in the guidance to ensure compliance.	
Requirement B5: Access and facilities for the fire service	Basements	ADB Vol2 18.7 to 18.12	Further consideration needs to be given to the suitability of break out panels for ventilation provisions.	A mechanical solution (with its accompanying suppression provision) would represent in most cases, for firefighters, a superior level of protection due to its automatic action and control of the fire development. In the experience of fire services, break out panels are difficult to locate and allow build-up of smoke and heat prior to fire service arrival. We consider that a mechanical system is far more advantageous in the early stages where search and rescue may be needed (in terms of time). Alternatively, a natural solution may still be effective for certain basement design, but this should not include break out panels as an option. Fire service experience has shown that break out panels can be difficult to locate, difficult to break and may in time have been subject to surrounding pavement works which have impacted the ability to use them effectively.	Review should look to ensure a safer environment for firefighters and the most effective way of venting basement areas.	
Requirement B5: Access and facilities for the fire service	Basements	ADB Vol2 17.2	We are unclear where the 10m depth for a firefighting shaft has been derived from. Firefighting in basements is a particularly onerous scenario and this warrants a full review including the appropriate ventilation provisions to protect the firefighting shaft(s).	Firefighting in deep basements is considered a particularly hazardous environment and therefore the appropriate levels of protection need to be afforded to attending crews. Further clarity around where the depth threshold came from would be appreciated along with guidance that includes greater measures expected where there is a deep basement proposed.	Review to particularly consider the risks for firefighters in deep basements and to ensure that the guidance offers the appropriate standard of protection.	
Requirement B5: Access and facilities for the fire service	Other issues - please specify	Vol1 & Vol2	There is a need to ensure that the appropriate guidance is included in both volumes of ADB.	Although the clarified ADB has not yet been published it is our understanding that flat requirements will be moved to Volume 1. In this regard ventilation provisions should also be included.	Ensure consistency of approach and that the guidance includes all relevant areas.	
Requirement B5: Access and facilities for the fire service	Other issues - please specify	ADB Vol2	Further guidance should be included as to where rising main outlets are located. This should accord with firefighting operational procedures.	The location of the outlets should accord with firefighting operational guidance. This needs to be considered as part of the full B5 review we are calling for as the outlet location can be critical in terms of the protection afforded to the staircase in regard to the potential ingress of smoke. This is likely to be impacted by the effectiveness of the ventilation system, where hose lines are running and the presence of active and passive fire safety measures. If it is determined that for residential buildings that the outlets should remain within the staircase enclosure, then they should be fitted on the full landings and in a position where the hose is able to move through the door (accounting for hose bend radius etc.)	Part of the full review of B5 but needs to ensure that water supplies are located in a position where they can be both effective for fire crews and minimise any impact on escaping occupants (or any occupants that may be remaining in the building)	

Area of fire safety	ADB area	Relevant section of ADB (if applicable): volume/paragraph/ diagram number	What issues need to be resolved and why should they be reviewed?	What evidence already exists?	What are the potential impacts of change?	Details of evidence provided
Requirement B5: Access and facilities for the fire service	Car Parks	Vol 1 & Vol 2	The inclusion of car park electrical charging points for electric vehicles is becoming common practice; the guidance documents do not set out any parameters for firefighters to interact with these points in order to isolate the power supply making firefighting safer.	The car industry is focused on making cleaner fuels for or road vehicles and the design of new residential dwellings are including many spaces dedicated to electric vehicles. This is coupled with other factors such as the ultra-low emission zone and other similar drivers for charging points. The isolation of these chargers is not discussed within the design document and the inclusion of a remote isolation point should be included in all new design of car parks with electric vehicle charging facilities.	Guidance will better reflect modern building design if active measures were given consideration in the guidance and clarity around expectations in relation to the design for fire fighter safety.	
Requirement B5: Access and facilities for the fire service	Other issues - please specify	Vol1 & Vol2	Review of firefighting access design where active measures are proposed as part of the design. Clarity around how these should complement, and not hinder attending fire crews would be welcomed.	Designs often include active systems such as fire curtains and suppression systems which may operate during the firefighting phase. This can dramatically affect the conditions increasing the risk to firefighters. We have also received designs where fire curtains are proposed in locations which descend across firefighting routes which will impact the ability of crews to move quickly through a building.	Guidance will better reflect modern building design if active measures were given clearer consideration in the guidance and clarity around expectations in relation to the design for fire service access.	
Appendix A	Performance of Materials, Products and Structures	ADB Vol2 Table A6	Table A6 needs to cross reference 2.26iii Smoke Shafts	We have had several designs where smoke shafts are proposed using combustible materials which is inappropriate.	Ensuring the integrity of the smoke ventilation shafts is imperative in maintaining escape routes and protection of the firefighting shaft	
Appendix E	Definitions	Appendix E	Clarity around certain definitions are needed to prevent interpretations that are inappropriate. Inclusion of definitions which are missing from the guidance also.	Examples would include ‘remote’ in terms of cooking facilities in a kitchen being remote from an escape route (2.13b). There is a clear drive for open plan flat designs to reflect modern living and the accompanying discussions of what ‘remote’ is. The size of a protected lobby (maximum and minimum) should also be included to ensure that the lobby is sufficient size to provide requisite protection to the staircase. Ancillary accommodation should also be defined as there is reference to the term within the guidance.	To provide greater clarity around the guidance and prevent interpretations on the guidance which are inappropriate	