

## 25<sup>th</sup>

# ANNUAL FIRE SAFETY CONFERENCE

23 & 24 February 2023  
Armagh City Hotel

## “The changing face of fire safety”

Marking **50** years of the Building Regulations in  
Northern Ireland

[www.buildingcontrol-ni.com](http://www.buildingcontrol-ni.com)



Department for Levelling Up,  
Housing & Communities

# ADB Technical Review

Carl Sherwood

23 February 2023



2018

- **Combustible materials ban for relevant buildings above 18 metres**
- Strengthened guidance on assessments in lieu of tests

2019

- Clarified ADB

2020

- Manual to the building regulations
- **Sprinklers in new blocks of flats above 11m +**
- Improved wayfinding signage for firefighters blocks of flats 11m +
- Secure information boxes

2022

- New B4 guidance for buildings 11-18m
- **FAQ**
- Evacuation alert systems in new residential buildings 18m +





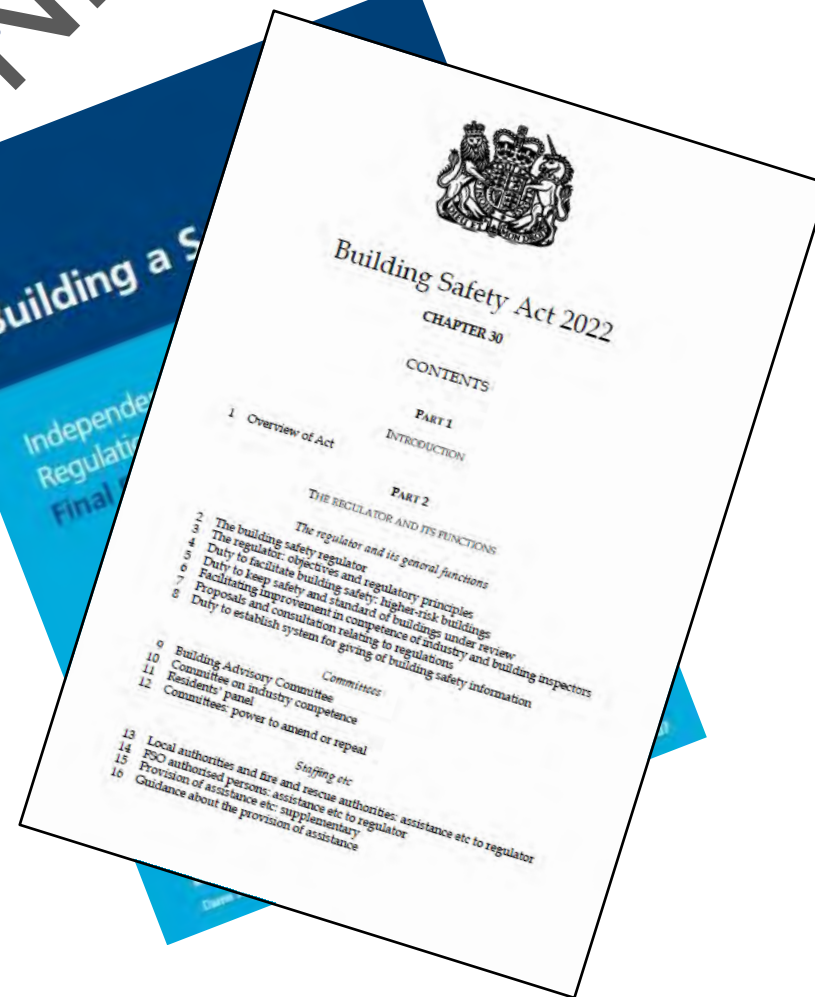
# Building Safety Act

The Act became law on 28 April 2022 and implements the recommendations of Dame Judith Hackitt's report on Building Regulations and fire safety.

The Act:

- Sets up a new **Building Safety Regulator** and paves the way for a new **National Regulator for Construction Products and New Homes Ombudsman**
- Seeks to improve the **competence** and **oversight** of both industry and regulators in the built environment sector
- Sets out a rigorous new legislative framework for the design, construction and management of high-rise residential buildings
- Improves routes to redress for past wrongdoing of industry actors and introduces new protections for leaseholders from unaffordable costs for historic remediation.

There is a major programme of secondary legislation through to 2024







# Review of Fire Safety guidance

Property protection

Trigger thresholds (inc. purpose groups)

Construction technologies \*

Balconies, Spandrels, Laminate Glazing

Specialised housing and care homes

Means of escape for disabled people (inc age distribution)

Means of escape in blocks of flats (joint DLUHC and Home Office)

Smoke and toxicity \*

Classification of external walls

Structural fire resistance

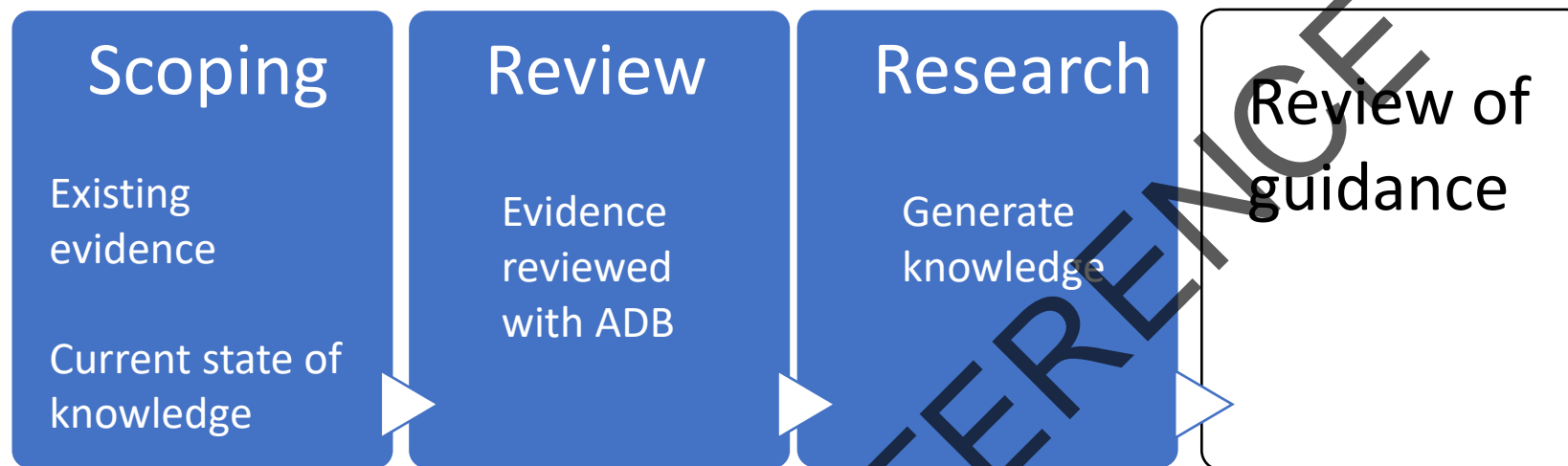
Generate robust evidence

Aim – up to date and  
effective minimum guidance  
for common building  
situations

BAC oversight and TSG  
guide



## Project stages



- Evidence based options for update of guidance
- Public consultation
- Impact assessments



## Structural fire resistance research:



- Origins in Post war building studies
- Intent - Burnout (1 hour)
- Adjusted grade based on risk
- Assumed “in-combustible” / non-combustible material
- Testing: elemental approach (simple connections)
- Largely inline with approach internationally

### USE OF COMBUSTIBLE MATERIALS

59. Although a relatively high standard of fire resistance may be obtained with certain combustible elements of structure by taking special precautions, their incorporation in buildings of Types 1-3 construction would defeat the object aimed at in those types. For example, a timber joist floor may be protected by means of pugging and special ceilings so that it affords 1 hour or more fire resistance under test conditions, but fire on the upper surface may ignite the structure and lead to a complete burn-out. We therefore consider that all structural parts of buildings of Types 1-3 construction which are required to have a specified grade of fire resistance should be of **incombustible material**, except that timber doors which attain the required grade may be used. ↑





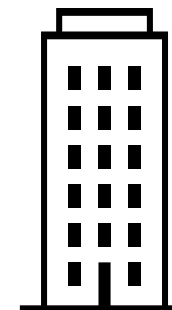
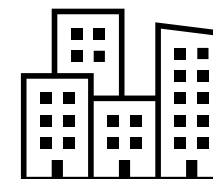
## Structural research:



The [approved documents](#) provide guidance for common building situations. They may not provide appropriate guidance if the case is unusual in terms of its [design, setting, use, scale or technology](#). Non-standard conditions may include any of the following:

- difficult ground conditions
- [buildings](#) with unusual occupancies or high levels of complexity
- very large or very tall [buildings](#)
- large timber [buildings](#)
- some [buildings](#) that incorporate modern construction methods.

- Newer forms of construction emerging
- Combustible
- Complex connections
- Expanded range of building situations (not common)
- Manufacturers and approvers are recognising
- How good are standard tests in these situations?





## Structural research:



DLUHC set direction

- Module scale (looks at system behaviour)
- Realistic fire exposure (includes decay)
- Identify possible failure mechanisms
- Independent work
- Establish limits of standard tests

Ongoing...





Two new FAQ additions:

## 1. Combustible construction (e.g. timber):

- Aims to prevent mis-application of ADB
- Particularly targeted at where consequence of failure are significant
- Reinforce message to designers the functional requirements must be met

### FAQs

- Ways for the department to highlight matters to designers
- Useful reference for BCB's and enforcement bodies
- More frequent updates

<https://www.gov.uk/guidance/approved-document-b-fire-safety-frequently-asked-questions>

#### 17. Can I apply the guidance in Approved Document B for combustible structures (e.g. timber) in meeting the requirements of the building regulations?

Designers should discuss and agree the design intent and the necessary evidence with the building control body before starting building work.

As set out within Approved Document B, the guidance is provided for common building situations. Tall, large, or complex buildings, where the structure is able to contribute as a source of fuel during a fire, are not common building situations and present additional considerations which designers should have regard to.

The designer should consider the type of construction, alongside factors influencing the consequences of fire spread and fire induced structural failure such as height, size, and use of the building, when considering whether it is appropriate to apply the provisions in Approved Document B.

Following the guidance in Approved Document B, including the minimum fire resistance periods and the standard test methods, may not be sufficient to meet the requirements of the building regulations, particularly in cases where the consequences of fire spread, and fire induced structural failure are more significant.

Where alternative methods of complying with the building regulation requirements are adopted, it is likely to require a detailed, evidence-based, understanding of fire performance for the specific design demonstrating how each of the building regulation requirements will be addressed directly.

Note 1: Whatever design method is applied, the functional requirements of the building regulations must be met for all building work. This applies to all those responsible for building work including the building owner, agents, designers, builders and installers.

Note 2: For relevant buildings, Regulation 7(2) and 6(3) control the use of combustible materials in and on external walls.





## FAQs

### 2. Traditional vs uncommon structural design approaches

#### Example – Volumetric modular

Standard structural fire resistance testing may not be suitable for some building situations

Additional considerations

Particularly targeted at where consequence of failure are significant – design, setting, use, scale

**18. Can I apply the guidance in Approved Document B for buildings with an unusual structural design approach (e.g. volumetric modular construction) in meeting the requirements of the building regulations?**

Designers should discuss and agree the design intent and the necessary evidence with the building control body before starting building work.

As set out in Approved Document B, the guidance is provided for common building situations. Tall, large, or complex buildings, where alternative structural failure mechanisms or unusual routes for internal fire spread might exist, are not common building situations and present additional considerations which designers should have regard to.

The designer should consider the type of construction, alongside factors influencing the consequences of fire spread and fire induced structural failure such as height, size, and use of the building, when considering whether it is appropriate to apply the provisions in Approved Document B.

Following the guidance in Approved Document B, including the minimum fire resistance periods and the standard test methods, may not be sufficient to meet the requirements of the building regulations, particularly in cases where the consequences of fire spread, and fire induced structural failure are more significant.

Where alternative methods of complying with the building regulation requirements are adopted, it is likely to require a detailed, evidence-based understanding of fire performance for the specific design demonstrating how each of the building regulation requirements will be addressed directly.

Note 1: Whatever design method is applied, the functional requirements of the building regulations must be met for all building work. This applies to all those responsible for building work including the building owner, agents, designers, builders and installers.



Further FAQs?

- Targeting misapplication
- Mis-understanding
- Or useful reference

We welcome feedback

Table B3 Specific provisions of the test for fire resistance of elements of structure, etc.					
Part of building	Minimum provisions when tested to the relevant European standard (minutes) <sup>(1)</sup>	Alternative minimum provisions when tested to the relevant part of BS 476 <sup>(2)</sup> (minutes)			Type of exposure
		Loadbearing capacity <sup>(3)</sup>	Integrity	Insulation	
1. <b>Structural</b> frame, beam or column.	R see Table B4	See Table B4	Not applicable	Not applicable	Exposed faces
2. <b>Loadbearing wall</b> (for a wall which is also described in any of the following items, the more onerous guidance should be applied).	R see Table B4	See Table B4	Not applicable	Not applicable	Each side separately
3. <b>Floors<sup>(4)</sup></b>					
a. between a shop and flat above	REI 60 or see Table B4 (whichever is greater)	60 min or see Table B4 (whichever is greater)	60 min or see Table B4 (whichever is greater)	60 min or see Table B4 (whichever is greater)	From underside <sup>(5)</sup>
b. in upper storey of two storey dwellinghouse (but not over garage or basement)	R 30 and EI 15	30 min	15 min	15 min	From underside <sup>(5)</sup>
c. any other floor – including compartment floors.	REI see Table B4	See Table B4	See Table B4	See Table B4	From underside <sup>(5)</sup>





### Other ongoing research...

Factors affecting burning behaviour:

- Form and geometry
- Treatments

Common assumptions around materials may be influenced heavily by such aspects





## **Current consultation**

December 2022- 17 March 2023

- a. Sprinklers in care homes
- b. Removal of the national classifications
- c. Staircases
- d. Call for evidence on paras 10.6 and 10.7 of Approved Document B

<https://www.gov.uk/government/consultations/sprinklers-in-care-homes-removal-of-national-classes-and-staircases-in-residential-buildings/sprinklers-in-care-homes-removal-of-national-classes-and-staircases-in-residential-buildings>



## Consultation

December 2022- 17 March 2023

### a. Sprinklers in care homes

- No blanket recommendation for sprinklers in care homes
- Brought forward from ADB technical research programme
- Well established evidence base on the effectiveness – depends of scenario
- Costs have changed - Further work will be carried out
- Non monetised benefits are recognised - rehoming, social and secondary health
- Threshold
- Allowances: >10 beds, self-closers, >1 bed per room

Welcome further evidence...





b. National classifications

- A dual approach – British and EN standards
- Original intent of a transition period
- Some national standards not updated
- ADB Clarification brought forward EN standards
- Alternative, not equivalent
- Proposal to remove national RTF and fire resistance
- Impact

Table B1 Reaction to fire classifications: transposition to national class	
BS EN 13501-1 classification	Transposition
A1	Material that, when tested to <b>BS 476-11</b> , does not either: a. flame b. cause a rise in temperature on either the thermocouple at the centre of the specimen or in the furnaces

**NOTE:** The national classifications do not automatically equate with the transposed classifications in the 'BS EN 13501-1 classification' column, therefore products cannot typically assume a European class unless they have been tested accordingly.



### c. Staircases

- Residential
- No minimum number in ADB
- Letter from BRAC
- Set a maximum height for using a single staircase in residential buildings
- Internationally varies 18m to 75m in height
- Concerns
- Benefits – not the same for all stairs:
- Scissor stairs
- Not monetised



*“some design proposals appear to be based on a misunderstanding of the applicability, and selective reading, of the Approved Documents”*

*“concerned that (HRBs) might be designed on the incorrect premise that the guidance in the ADs is adequate for all tall buildings and offers a ‘deemed to satisfy’ approach” - BRAC 25 March 2022*





**d. Paras 10.6 and 10.7 of Approved Document B**

- Ban supersedes for relevant buildings
- Call for evidence
- Intent - to determine the in-scope materials and how to improve the clarity
- Future consultation

**Materials and products**

10.6 In a building with a storey 18m or more in height (see Diagram D6 in Appendix D) any insulation product, filler material (such as the core materials of metal composite panels, sandwich panels and window spandrel panels but not including gaskets, sealants and similar) etc. used in the construction of an external wall should be class A2-s3, d2 or better (see Appendix B). This restriction does not apply to masonry cavity wall construction which complies with Diagram 8.2 in Section 8. Where regulation 7(2) applies, that regulation prevails over all the provisions in this paragraph.

10.7 In buildings that include a 'residential' purpose (purpose groups 1 and 2) with a storey 11m or more in height (see Diagram D6 in Appendix D) any insulation product, filler material (such as the core materials of metal composite panels, sandwich panels and window spandrel panels but not including gaskets, sealants and similar) etc. used in the construction of an external wall should be class A2-s1, d0 or better (see Appendix B). This restriction does not apply to masonry cavity wall construction which complies with Diagram 8.2 in Section 8. Where regulation 7(2) applies, that regulation prevails over all the provisions in this paragraph.



Thank you for your time today