

Building a Safer Future

Independent Review of Building Regulations and Fire Safety: **Interim Report**

December 2017

Dame Judith Hackitt DBE FEng

Cm 9551



Building a Safer Future

Independent Review of Building Regulations and Fire Safety: Interim Report

Presented to Parliament
by the Secretary of State for Communities and Local Government
by Command of Her Majesty

December 2017



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Foreword



A personal view from Dame Judith Hackitt

In the early hours of 14 June 2017, a fire spread through Grenfell Tower. Seventy-one people died, many homes were destroyed and countless lives have been affected. The fire appeared to be accelerated by the building's exterior cladding system, leading to a national programme of extensive testing of the cladding on other high-rise buildings. This revealed widespread use of aluminium composite materials which did not meet the limited combustibility requirements of building regulations guidance, and raised concerns for the safety of others.

Further concerns soon came to light about the adequacy of the structural design of cladding systems when materials fell from a building in Glasgow. A subsequent series of fire and rescue service audits of tower blocks led to the temporary evacuation in London of the Chalcots Estate, Camden, and resulted in the discovery of structural safety issues with four buildings at the Ledbury Estate, Southwark.

With these events unfolding, I was asked by the Secretary of State for the Department for Communities and Local Government (DCLG) and the Home Secretary to conduct an Independent Review of Building Regulations and Fire Safety with a particular focus on their application to high-rise residential buildings.

I have been asked to present timely recommendations to provide assurance to everyone, and in particular to residents of high-rise buildings, that urgent steps are being taken to improve the safety of buildings and to address what could be seen as evidence of systemic failings in the regulatory system and deeper problems in the industry.

This tragic incident should not have happened in our country in the 21st century. We now all have the opportunity to respond in a way that will lead to lasting change that makes people safer in the

future. I have seen the improvements in safety in the oil and gas industry that followed the Piper Alpha oil production platform disaster in 1988 and I hope this review can have a similar impact.

This review is work in progress and a final report will follow in spring 2018. The review is future-focused and has not been charged with investigating the specific circumstances at Grenfell – these are matters for the ongoing police investigation and the Grenfell Tower Inquiry. It is key that we share what we have learned to date and outline the direction of travel over the next few months. There has been an outstanding response from stakeholders through meetings, written responses to our call for evidence and subsequent roundtable discussions. From the very earliest stages of the process, the people we have spoken to have indicated that the current regulatory system falls short of what is required to be effective. While some have argued for specific short-term measures, most have recognised that the current overall system is not working effectively and needs to be overhauled.

As the review has progressed, it has become clear that the whole system of regulation, covering what is written down and the way in which it is enacted in practice, is not fit for purpose, leaving room for those who want to take shortcuts to do so.

This should not be interpreted as meaning that buildings are unsafe. Major building failures, including large-scale fires, are very rare and there are many construction firms, building owners, landlords and others in the system who do the right thing and recognise their responsibilities. The unprecedented verification, interim mitigation and remediation work undertaken by fire and rescue services, local authorities and building owners since the summer have ensured that measures are in place to assure residents of high-rise buildings of their safety. My focus is to create a better system for the future which will be easier to work with, deliver better solutions everywhere and rebuild confidence.

I have set out to look at the whole system, including the people working within it, and how the various parts interact to deliver outcomes on the ground. This includes the roles and responsibilities of people designing, planning and constructing buildings; the roles and responsibilities of different enforcing bodies and those who set standards; and the roles and responsibilities of all those who interact with the system during the use of a building, which often involves highly complex ownership models. The regulatory system comprises all of these elements, not just what is written in statute.

One of the major outputs at this stage of the review is a map, which shows how the current regulatory system should work in practice. Carrying out this system mapping has been fundamental to understanding where the current weaknesses are and in providing the basis for developing a simpler and more effective framework for the future. This approach could have more widespread application across other regulatory frameworks, with the potential to deliver better overall results than other regulatory reviews conducted to date.

As an engineer, much of my career has been spent working in the chemicals industry where any project undertaken has to be specified, designed to that specification and properly reviewed; any changes have to be properly managed, reviewed and recorded. At the end of the project, a full record of what has been built must be handed over to those who will operate the project. This same philosophy continues throughout the life cycle of the entity that has been built, when any further changes or improvements are made.

After some four months leading this review, it is clear that this same systematic, controlled approach to construction, refurbishment and management of occupied buildings is not by any means universal. There is plenty of good practice but it is not difficult to see how those who are inclined to take shortcuts can do so. Change control and quality assurance are poor throughout the process. What is initially designed is not what is being built, and quality assurance of materials and people is seriously lacking.

I have been shocked by some of the practices I have heard about and I am convinced of the need for a new intelligent system of regulation and enforcement for high-rise and complex buildings which will encourage everyone to do the right thing and will hold to account those who try to cut corners.

During close to a decade as Chair of the Health and Safety Executive, I saw the construction industry respond to the challenge of improving its performance in managing the safety of its workforce on projects of all sizes. With an effective regulatory framework in place, the industry was willing and able to show leadership, to take responsibility for delivering a culture change and to move away from simply accepting that construction is a dangerous sector to work in. A cultural and behavioural change of similar magnitude is now required across the whole sector to deliver an effective system that ensures complex buildings are built and maintained so that they are safe for people to live in for many years after the original construction. The mindset of doing things as cheaply as possible and passing on responsibility for problems and shortcomings to others must stop. Everyone's focus must be on doing the right things because it is their responsibility as part of a system which provides buildings that are safe and sustainable for those who will live in and use them for many decades.

Changes to the regulatory regime will help, but on their own will not be sufficient unless we can change the culture away from one of doing the minimum required for compliance, to one of taking ownership and responsibility for delivering a safe system throughout the life cycle of a building.

At the heart of this required change is a shift of ownership. Despite being advised at the outset that the regulatory system for building was outcomes and performance-based, I have encountered masses of prescription which is complex and in some cases inconsistent. The prescription is largely owned by government, with industry – those who should be the experts in best practice – waiting to be told what to do and some looking for ways to work around it.

We know that many owners and landlords are taking responsibility and initiating remedial work where required. But even now I am aware that some building owners and landlords are waiting for direction from this review on what materials should be used to replace cladding that has been identified as inadequate. I would urge them not to wait but to consider what materials have already been identified and tested as safe. They must also take steps to ensure that those whom they commission to carry out any remedial works are competent to do the work and that the work is quality assured.

A systemic review of the regulations by a non-expert in construction was never going to recommend detailed changes to the technical requirements – this is beyond my area of competence. Any attempt to modify details of the regulation without addressing the clear systemic failings would be akin to adding a paint job and decorations to a fundamentally non-roadworthy vehicle. My goal is to ensure that we create, within a much more robust overall system, a process that ensures there is effective oversight of materials, people and installation.

I have been deeply affected by the residents of high-rise buildings I have met and I have learned so much from them. These buildings are their homes and their communities. They are proud of where they live, but their trust in the system has been badly shaken by the events of the last few months. We need to rebuild that trust.

I have also met some stakeholders during this process who think that there is one ‘fix’ typified by the ‘if we just do this one thing, it will all be better’ response. Some of this is driven by vested interest, but also by a desire to ‘do something’ quickly. I believe we must be very wary of this type of thinking, and the evidence tells me that this is not what residents want.

I have been impressed by the reasonableness and pragmatism of the residents I have met despite what has happened. If we are to regain their trust and create a better system for the future, we must do so by engaging them in deciding what solution is right for them in their particular situations, all of which are different given the histories of the many different buildings. There is no doubt that residents want timely resolution of issues but they are also realists and know that things must be prioritised – that means listening to them, involving them and respecting their views.

This interim report provides a summary of what has been learned so far, the proposed direction of travel for the next phase of work and the rationale for that. It also identifies some early actions which can and should be taken to support the future direction of travel; these will help to ensure delivery in an appropriately timely manner. There is a strong desire among all of those with whom I have engaged thus far to learn the lessons of the tragic event which took place at Grenfell Tower and to build a better system for the future. Our challenge now is to turn that into a reality and not to allow ourselves to move on without achieving lasting change.

Your comments and feedback on this interim report would be very welcome and we are planning to build in ways to gather those views as we move on to the next stage of the review. Most immediately, I intend to hold a summit of key stakeholders early in 2018. Many of the interim findings in this report already identify areas of work which it is appropriate to ask others to lead on in parallel with phase two of the review itself.

I would also like to thank the team of staff in DCLG and the Home Office who are providing outstanding support in this review. Despite the circumstances which led to this team being brought together, there is a strong sense that we can make a difference if we are bold enough to make the changes which are needed.

“Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius – and a lot of courage – to move in the opposite direction.” E.F. Schumacher



DAME JUDITH HACKITT

Summary

Summary of the report

Aim

The Independent Review of Building Regulations and Fire Safety aims to make recommendations that will ensure there is a sufficiently robust regulatory system for the future and provide further assurance to residents that the buildings they live in are safe and will remain so.

This interim report sets out the findings to date and the direction of travel for the final report.

Interim report key findings

The work of the review to date has found that **the current regulatory system for ensuring fire safety in high-rise and complex buildings is not fit for purpose**. This applies throughout the life cycle of a building, both during construction and occupation, and is a problem connected both to the culture of the construction industry and the effectiveness of the regulators.

The key reasons for this are:

- Current regulations and guidance are too complex and unclear. This can lead to confusion and misinterpretation in their application to high-rise and complex buildings.
- Clarity of roles and responsibilities is poor. Even where there are requirements for key activities to take place across design, construction and maintenance, it is not always clear who has responsibility for making it happen.
- Despite many who demonstrate good practice, the means of assessing and ensuring the competency of key people throughout the system is inadequate. There is often no differentiation in competency requirements for those working on high-rise and complex buildings.
- Compliance, enforcement and sanctions processes are too weak. What is being designed is not what is being built and there is a lack of robust change control. The lack of meaningful sanctions does not drive the right behaviours.
- The route for residents to escalate concerns is unclear and inadequate.

- The system of product testing, marketing and quality assurance is not clear.

Direction of travel

The Independent Review will now undertake its second phase of work and publish a final report in spring 2018. This will include targeted work in partnership with the sector and other stakeholders. This interim report sets the direction for change that will underpin that report and covers six broad areas.

Regulation and guidance

- The rules for ensuring high-rise and other complex buildings are built safe and remain safe should be more risk-based and proportionate. Those responsible for high-risk and complex buildings should be held to account to a higher degree.
- There should be a shift away from government solely holding the burden for updating and maintaining guidance, towards greater responsibility for the sector to specify solutions which meet the government's functional standards.
- Regulations and guidance must be simplified and unambiguous.

Roles and responsibilities

- Primary responsibility for ensuring that buildings are fit for purpose must rest with those who commission, design and build the project. Responsibility and accountability must rest with clearly identifiable senior individuals and not be wholly dispersed through the supply chain.
- Roles and responsibilities across the whole life cycle of a building must be clearer.

Competence

- There is a need to raise levels of competence and establish formal accreditation of those engaged in the fire prevention aspects of the design, construction, inspection and maintenance of high-rise residential and complex buildings.

Process, compliance and enforcement

- There needs to be a golden thread for high-rise residential and complex buildings so that the original design intent, and any subsequent changes or refurbishment, are recorded and properly reviewed, along with regular reviews of overall building integrity.
- There is a need for stronger and more effective enforcement activity, backed up with sufficiently powerful sanctions for the few who do not follow the rules.

Residents' voice and raising concerns

- Residents need to be reassured that an effective system is in place to maintain safety in their homes.
- There must be a clear, quick and effective route for residents' concerns to be addressed.

Quality assurance and products

- Products must be properly tested and certified and there is a need to ensure oversight of the quality of installation work.
- Marketing of products must be clear and easy to interpret.

Conclusion

In summary, this is a call to action for an entire industry and those parts of government that oversee it. True and lasting change will require a universal shift in culture. The industry has shown this is possible in the way the health and safety of construction workers has seen a positive transformation in culture and practice over the last decade. This change needs to start now. A summit will be called in early 2018 with key stakeholders to discuss taking this work forward.

Chapter 1 Findings and direction of travel

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Background

1.1

The government announced an independent forward-looking review of building regulations and fire safety on 28 July 2017. This review was commissioned by the Secretary of State for the Department for Communities and Local Government (DCLG) and the Home Secretary as part of the ongoing response to the Grenfell Tower disaster.

1.2

As set out in the review's terms of reference,¹ published on 30 August, this review is running in parallel with the work of the Grenfell Tower Inquiry. The review is independent and covers the system of regulation for all high-rise residential buildings. It will, however, provide useful background and input into the Inquiry.

1.3

The review team was formed in August 2017, led by Dame Judith Hackitt DBE FREng, and charged with providing an interim report in 2017 and a final report by spring 2018. The production of this interim report marks the first key milestone in the review. It is an important opportunity to share the findings so far and to indicate the proposed direction of travel for the final report.

¹ Independent Review terms of reference available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/640790/Hackitt_Review_terms_of_reference.pdf

Review methodology

1.4

From the outset, the work of the review has taken a systemic view of fire safety, focused on the overall regulatory system and not on the detail of specific requirements. In order to do this, the review has used a range of techniques:

- Research into the history of the regulatory system. A short summary is included at Chapter 2.
- An in-depth mapping exercise, developed through a series of workshops, covering the regulatory system throughout the life cycle of a building. This sets out how the current system is supposed to work, and how it actually works in practice, from initial planning and design through to construction, completion, handover, ongoing use and improvement/modification. The map includes other relevant areas of legislation which overlap with building regulations and fire safety regulations, including the Housing Act 2004, the Health and Safety at Work etc. Act 1974 and Construction (Design and Management) Regulations 2015. This is included at Chapter 3.
- A call for evidence was issued in September and received more than 250 responses. These responses are well considered and offer hundreds of suggestions for improvements to the system. A summary and analysis are included at Chapter 4.
- The review has engaged with a large number of stakeholders (see Appendix C for details).

In addition, the themes arising from the call for evidence have been explored at a series of roundtable events which took place during November. An overview is included at Chapter 4.

- A series of meetings and visits have taken place to gather information on other international regulatory regimes for fire safety and to gain a better understanding of regulatory systems in other sectors with comparable levels of safety risk. More detail is set out in Chapter 5.

1.5

The terms of reference of the review² set out that it should have a ‘particular focus’ on high-rise residential buildings, while recognising that it will cover the regulatory system for all buildings. It became clear, when thinking about a proportionate approach for different types of building, that it would not always make sense to separate high-rise residential buildings from other large or complex buildings where many people live or stay. This report therefore refers to either high-rise residential buildings or to ‘complex and high-risk’ buildings. This latter category includes other buildings for which exceptional events could lead to the risk of large-scale fatalities; for example, other purpose-built flats, student accommodation and sheltered housing. The review will provide a more precise definition of ‘complex and high-risk’ categories for future government use in its final report.

² Independent Review terms of reference available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/640790/Hackitt_Review_terms_of_reference.pdf

Findings to date

- 1.6**
The overall conclusion is that the current regulatory system is not fit for purpose in relation to high-rise and complex buildings. The following sections highlight the major concerns based on the evidence gathered to date.
- 1.7**
It became clear quite early in the review that there is a need for significant improvement in the current system in a number of areas. These relate to matters of:
- regulation and guidance;
 - roles and responsibilities;
 - competence;
 - process, compliance and enforcement;
 - residents' voice and raising concerns; and
 - quality assurance and products.
- 1.8**
The Building Regulations 2010 are clear about the outcomes to be achieved but not about where responsibilities lie.
- 1.9**
There is widespread confusion about what constitutes the regulations and what is guidance. The guidance on ways to meet the Building Regulations, set out in the Approved Documents, are frequently referred to as 'the regulations'.
- 1.10**
The Approved Documents are not produced in a user-friendly format. The current format of covering each requirement (fire safety, thermal insulation, noise abatement, etc.) in separate sections leads to multiple, separate specifications for overlapping or common elements of a building, with no easy means for these to be integrated into a single, compliant specification.
- 1.11**
Key definitions are unclear; for example, 'high rise', 'persons carrying out the work', 'limited combustibility' and 'material alteration', leaving too much open to interpretation.
- 1.12**
The Building Regulations Advisory Committee (BRAC) for England has a statutory role to advise government on the Building Regulations. Its focus over recent years has been mainly on energy efficiency and the deregulatory agenda and less on fire safety and other aspects of the regulations. While this has been in line with prevailing government policy and the trend in the evidence base of a declining number of fire deaths year on year, it is not clear whether BRAC's role is to proactively advise on initiatives and priorities or purely to take direction from government.
- 1.13**
There is a general lack of clarity around, or statement of, roles and responsibilities throughout the system.
- 1.14**
Even where there are requirements for key activities to take place it is not always clear who has responsibility for making these happen.
- 1.15**
There is no requirement for identifiable, named dutyholders responsible for ensuring and proving compliance with the Building Regulations.
- 1.16**
'Responsible persons' under the Regulatory Reform (Fire Safety) Order 2005 are frequently not identified when the building is due to be handed over following construction and therefore people are not aware of their responsibilities and often assume they are for someone else to do.

Regulation and guidance

Current regulation and guidance is both complex and unclear

Roles and responsibilities

Clarity of roles and responsibilities within the system is poor

1.17

There is a widespread culture in relation to building and fire standards of waiting to be told what to do by regulators rather than taking responsibility for building to correct standards. The approach is very much driven by aiming for minimum compliance, not ensuring safety for the lifetime of the building.

1.18

Even where regulations or guidance call upon people to consult with others in the system as part of meeting the requirements of the legislation, there is no clear understanding of the need to do that at an appropriate time or to take account of views expressed.

Competence

The means of assessing and ensuring appropriate levels of competence throughout the system are unclear and inadequate

1.19

The competence of those involved in the design, construction, ongoing operational management and maintenance of complex and high-risk buildings has been called into question. While there are many instances of competent people planning, building and maintaining buildings in a conscientious way, there is no consistent way to assess or verify their competence. Numerous examples have been quoted, demonstrating lack of competence among designers, builders, fire engineers, fire consultants, fire risk assessors, building control inspectors and others, which compromises the fire safety of buildings.

1.20

In particular, for fire risk assessors undertaking risk assessments on complex and high-risk buildings there are no statutory registration or accreditation requirements.

1.21

Private sector Approved Inspectors are required under legislation and their code of conduct to demonstrate and maintain relevant qualifications and experience and are subject to audit by an independent body, whereas there is no such statutory competence framework for Local Authority Building Control inspectors (LABCs).

1.22

Some safety-critical tradespeople, for example gas engineers, must be registered for different types of work, but others do not have such requirements.

1.23

This is one area where England and Wales appears to be lagging behind many other parts of the world that require key personnel throughout the system to be properly trained, assessed and in many cases licensed to carry out specific roles.

Process, compliance and enforcement

Enforcement and sanction measures are poor and do not provide adequate means of compliance assurance, deterrence or redress for non-compliance

1.24

There is widespread deviation from what is originally designed to what is actually built, without clear and consistent requirements to seek authorisation or review, or to document changes made. The current trend for 'design and build' contracts (where a main contractor is appointed to design and build the project rather than the client appointing separate designers and contractors) has been identified as being particularly problematic in facilitating evolutionary design, which fails to be properly documented or reviewed.

1.25

There is no requirement in the Building Regulations for existing buildings to be brought up to the latest fire safety standards, as long as during any refurbishment the existing provisions are not made worse.

1.26

Across the life cycle of a complex and high-risk building, the different regulations that apply can overlap, and have varying approaches to responsibility and demonstrating compliance.

1.27

There is evidence of a number of key control stages of the process not being followed as intended; for example, the handover of fire safety information and the issuing of Completion Certificates.

1.28

There are wide differences of view regarding the benefits of the partial privatisation model introduced into building control which offers a choice between LABCs and private sector Approved Inspectors. The latter are perceived to be less independent of the clients and have no means of enforcement action available to them other than to refer cases to LABCs. This referral process is rarely used.

1.29

While informal enforcement activity by building control bodies generally leads to compliance, where non-compliance is identified, LABCs are deterred from taking formal enforcement actions by the cost of pursuing cases through the courts, and the historical failure of the courts to impose robust sanctions.

1.30

Some instances of non-compliance are not picked up at all because key work is encapsulated within the fabric of the building before being inspected. The review has heard repeatedly that construction often begins before the full plans have been approved by building control.

1.31

The information flow and documented evidence provided by developers to building control bodies does not provide an adequate public record to ensure building safety throughout the life of the building.

1.32

Information provided to residents of complex and high-risk buildings on the key fire safety measures, their importance and residents' responsibilities is highly variable and too often non-existent.

1.33

Fire and rescue service³ personnel may raise concerns about compliance with the Fire Safety Order which are not acted upon because of cost, because the building work is too far advanced to make changes or because their advice is ignored.

1.34

Once a building is occupied there is a requirement for a fire risk assessment to be carried out regularly by a 'responsible person', but no requirement for this to be reported to a regulator or for this to be shared with residents.

Residents' voice and raising concerns

The route for residents' concerns to be raised and addressed is unclear and inadequate

1.35

Multiple occupancy residential buildings often have complex ownership and management models involving managing agents, varying leasehold contracts, residents' associations

and so on, making it difficult to identify who to contact to raise concerns or to get responses to concerns when raised.

1.36

Roundtable discussions with residents have shown wide variation in practice by landlords from the very good to non-existent. We have heard from residents who are afraid to raise concerns for fear of eviction, and about the particular difficulties of reporting on things which involve the activities of other residents – their neighbours.

1.37

Many of the problems which are reported and fixed, for example propping open of fire doors or obstructions in access ways, very quickly revert to being a problem and there is no effective means of ensuring that residents meet their responsibilities to their fellow residents.

1.38

Regulators often face similar problems in getting concerns and defects addressed following investigation.

Quality assurance and products

Current methods for testing, certification and marketing of construction products and systems are not clear

1.39

DCLG's Building Safety Programme identified more than 200 high-rise residential buildings across England fitted with aluminium composite materials cladding systems that are likely to present a fire hazard. There does not appear to be a single, simple reason to explain why so many buildings are affected.

1.40

Products are marketed with specification data presented in ways which can easily be misinterpreted.

1.41

Individual elements are being used as part of compound systems that are not being fully tested as systems.

1.42

The widespread use of desktop studies to assess equivalence of products and systems

³ Fire and rescue services are the delivery body of fire and rescue authorities (the statutory enforcing authority for the Regulatory Reform (Fire Safety) Order 2005). In this report we use the term fire and rescue services.

is not properly managed or controlled in terms of both the circumstances in which they can be used and the qualifications and experience of those undertaking them.

1.43

Test results, desktop studies, and the details of those who produce them, are not made public.

1.44

A number of people engaged in the system have said that the test conditions used do not adequately reflect real-life conditions.

1.45

The integrity and efficacy of product and system classifications are highly dependent on correct installation by competent and knowledgeable persons.

International regulatory regimes

There are some lessons to be learned and applied from other international regulatory regimes

1.46

Fires in high-rise buildings have occurred elsewhere in the world and a number of corrective measures have been put in place or are under consideration. The review will use examples of what has worked well in other countries to support the work during phase two.

1.47

A number of other regulatory regimes have more stringent standards for fire protection and require key roles within the system to be formally licensed.

1.48

Other countries have been more proactive in requiring formal accreditation of those engaged in all aspects of high-risk buildings.

1.49

Some countries have been more proactive in calling for the retrospective upgrade of existing buildings.

Other regulatory systems

There could be greater alignment of the regulatory regime for building and fire safety with other regulatory systems

1.50

A number of respondents have cited the greater clarity and effectiveness of UK health and safety legislation in relation to construction and, in particular, the Construction (Design and Management) Regulations 2015 which is due to the clearer assignment of roles and responsibilities.

1.51

There has been a widespread call for greater consistency of use of terms to identify key responsibilities within the system.

1.52

There is also significant scope for greater collaboration, intelligence sharing and combined inspections by regulators.

Direction of travel for phase two of the review

1.53

The review's findings to date indicate that there is a clear need for a full overhaul of the regulatory system to address the wide-ranging issues outlined. This includes roles and responsibilities, competence and the lack of a joined up, effective system to deliver and sustain complex and high-risk buildings which are fit for purpose.

1.54

Phase two of this review will focus on defining a revised regulatory system which will be simpler, clearer to all involved and deliver better overall outcomes. It will be important for this revised system to continue to allow innovation in building design and construction and not introduce disproportionate delays or cost into building processes. Any additional time spent at the front end of designing and specifying a building is likely to yield significant benefits in time, cost and safety in construction and throughout the building's life cycle.

1.55

The revised system must be risk-based and proportionate and therefore not burden low-risk, small-scale or simple projects with requirements which are intended for complex and high-risk buildings where both the risk and consequences of catastrophic events are intrinsically considerably higher.

1.56

Many of the findings to date clearly identify the need for a major cultural shift across all of those who are part of the system within the construction, operation and maintenance of complex and high-risk buildings. The focus must shift from achieving lowest cost to providing buildings which are safe and fit for people to live in for years to come. Work on developing some elements which will be required within a new system can be started now and can be delivered by a range of organisations. This is not simply a task for central government through revised legislation.

1.57

The following section sets out the direction of travel in more detail. The challenge for phase two of the review will be to establish how the aspirations set out below can best be delivered and to bring forward recommendations to support this delivery. Stakeholders should prepare themselves for an early call to action to create a more effective regulatory system. The review is keen to work with residents and other stakeholders on shaping these recommendations.

Direction of travel – Regulation and guidance

1.58

The regulatory system needs to become more risk-based. Simple guidance which covers all elements of what is required to build simple residential dwellings would be much more accessible and user-friendly than the current detailed, tram-lined system of guidance. These simple types of dwellings are also handed over at the end of the process to a single owner.

1.59

In the case of complex and high-risk buildings with complex ownership and occupancy models, a more rigorous risk-based process must be put in place to ensure that building integrity is maintained throughout the life cycle. It is important that the construction and maintenance of these buildings is treated proportionately and that those responsible for such buildings are held to account to a higher degree.

1.60

To implement a risk-based system it will be necessary to define what we consider to be 'complex and high-risk buildings'. It is envisaged that this would include buildings where multiple people live or stay and for which exceptional events could lead to the risk of large-scale fatalities.

1.61

The current system of building regulation relies heavily on central government to keep all regulations and supporting documents up to date, advised by BRAC, a statutory body with wide representation. It is inappropriate for the burden of keeping up to date with technology to rest solely with government in this way. It is clearly the role of government to set the basic framework of standards which must be achieved and to make it clear who has responsibility for delivering those standards of performance throughout the life cycle. However, it should not be for government to lead on the specification of the detailed solutions as to how those standards will be met. The scope of BRAC's role in the future should be considered in this context.

1.62

Most responses to the call for evidence have indicated that there is a need for Approved Document B to be simplified and brought up to date. The usability of all of the Approved Documents could be significantly improved by more fundamental changes to their structure which would also close a number of the current gaps which are left open to interpretation and confusion.

1.63

Recommendation: The government should consider how the suite of Approved Documents could be structured and ordered to provide a more streamlined, holistic view while retaining the right level of relevant technical detail, with input from the Building Regulations Advisory Committee. Given that reframing the suite of guidance may take some time, in the meantime I would ask the government to consider any presentational changes that will improve the clarity of Approved Document B as an interim measure.

Direction of travel – Roles and responsibilities

1.64

Primary responsibility for ensuring that buildings are built to the correct standards and are fit for purpose must rest with those who commission the work and those who design and build the project. Those commissioning must ensure that those they commission to do the work have the right levels of competence and are appropriately supervised.

1.65

Responsibilities must not be dispersed through the chain as they are now. Even in an environment where there are multiple layers of sub-contracting

there must be a clear, responsible dutyholder who is held to account for the performance or non-performance of all of those to whom sub-contracts are let at all stages in the life of a building.

1.66

It has also been observed that the use of 'value engineering' is almost always about cutting cost out of a project, at times without due reference to key specification requirements. Such processes must be undertaken by those with the responsibility and the competence to ensure the integrity of the building design and function, especially when considering the equivalence of substituted materials.

1.67

Given the extent of innovation which is taking place in industry there should be greater industry responsibility for demonstrating that all buildings are designed and built to be fit for purpose, including the introduction of new techniques and materials into construction.

1.68

The role of regulators should be to seek assurance that standards are being adhered to throughout all stages of construction and use. It is for industry to demonstrate to the regulators that compliance with those standards is being achieved, including through innovation. Where there is failure to comply there must be a more effective means of ensuring not only that the deficiencies are put right but that those who were responsible for compliance with the standards are held accountable for their failure.

1.69

After completion and handover of a building there must be clear responsibility assigned to a known person or persons for ensuring that the building remains fit for purpose throughout its life cycle. Where and when ownership changes, responsibilities must also be formally handed over.

1.70

The assignment of responsibilities in blocks of flats, where there are boundaries between areas which are the responsibility of residents and those which fall to landlords or owners, must be clarified. The definition of the 'common parts' of such buildings, and clarification of who is qualified and able to properly inspect both common areas and individual properties, are critical elements of maintaining overall building integrity but are currently unclear due to the confusing overlap between the Housing Health and Safety Rating System Regulations 2005 and the Fire Safety Order.

Direction of travel – Competence

1.71

Those working on complex and high-risk buildings need to have the appropriate qualifications and experience and be able to evidence that qualification and experience. The design, construction, inspection and maintenance of complex buildings would normally require a higher degree of competence and expertise than that of small-scale or simple buildings.

1.72

The task of raising levels of competence and establishing formal accreditation of those engaged at every stage of design, construction, inspection and maintenance of complex and high-risk buildings can and should be led by those professional bodies which cover the sector. The system needs to be designed to ensure that competence is measured, is made transparent to those engaging the individuals and has a means of recourse in the event that work delivered is substandard. This is a challenge to the current less rigorous and disjointed approach to registration or certification which allows many individuals to practice with questionable qualifications or without a requirement for competence to be assessed and accredited.

1.73

Recommendation: There is a need to be certain that those working on the design, construction, inspection and maintenance of complex and high-risk buildings are suitably qualified.

The professional and accreditation bodies have an opportunity to demonstrate that they are capable of establishing a robust, comprehensive and coherent system covering all disciplines for work on such buildings. If they are able to come together and develop a joined up system covering all levels of qualification in relevant disciplines, this will provide the framework for regulation to mandate the use of suitable, qualified professionals who can demonstrate that their skills are up to date. This should cover as a minimum:

- engineers;
- those installing and maintaining fire safety systems and other safety-critical systems;
- fire engineers;
- fire risk assessors;
- fire safety enforcing officers; and
- building control inspectors.

I would ask these bodies to work together now to propose such a system as soon as practicable. I will launch this work at a summit in early 2018.

Direction of travel – Process, compliance and enforcement

1.74

The current interaction of different regulatory regimes leads to a complex system with different bodies responsible for enforcement and a varied approach to assurance and demonstrating compliance. The whole process needs to be streamlined and made consistent.

1.75

There is a need to ensure that the right people are engaged and consulted at the earliest stages of complex projects and that their views are taken into account at the design stage. This is particularly important in relation to fire safety.

1.76

Recommendation: Consultation with the fire and rescue services is required on plans for buildings that are covered by the Fire Safety Order, but does not work as intended. Consultation by building control bodies and by those commissioning or designing buildings should take place early in the process and fire and rescue service advice should be fully taken into account. The aim should be to secure their input and support at the earliest stage possible so that fire safety can be fully designed in.

1.77

There needs to be a golden thread for all complex and high-risk building projects so that the original design intent is preserved and recorded, and any changes go through a formal review process involving people who are competent and who understand the key features of the design.

1.78

When a building or part of a building is completed, there is a need for the project as built to be documented. A thorough, independent review needs to take place and a handover process completed before the building, or part of the building, can be occupied. Phased occupation of buildings does occur and, where it does, this must be handled rigorously with a clear handover process. During the next phase of work the review will conduct further research into the potential for Building Information Modelling (BIM) to transfer the documentation process onto a digital platform.

1.79

Recommendation: Building developers need to ensure that there is a formal review and handover process ahead of occupation of any part of a new high-rise residential building. While there are legitimate reasons to allow

occupation in a phased way, the practice of allowing occupancy of buildings without proper review and handover presents barriers to the implementation of any remedial measures identified as part of the completion process.

1.80

Recommendation: There is a need for building control bodies to do more to assure that fire safety information for a building is provided by the person completing the building work to the responsible person for the building in occupation. Given the importance of such information for ongoing maintenance and fire risk assessment, proof should be sought that it has been transferred.

1.81

Once a complex and high-risk building is occupied and in use, there must be a clearly identified responsible person who continues to monitor the condition of the building and is responsible for all changes and maintenance work carried out within it. It must be clear to occupants and anyone who works in the building who that responsible person is, and they must be held to account. Residents must be provided with clear guidance on how to proceed if they choose to carry out work themselves or bring in contractors to their own flats.

1.82

Future modification and upgrade to complex and high-risk buildings must be subject to the same rigorous processes as during original construction and must be undertaken with reference to the original design criteria. Changes must be formally reviewed by competent professionals, documented after completion and formally handed over.

1.83

Complex and high-risk buildings must also be subject to regular and thorough reviews of their overall integrity, even if they are not subject to major change. The integrity of such buildings can be compromised by a series of minor changes which lead to a cumulative degradation of protection. It is envisaged that these reviews would be the responsibility of the building owner but must be reported to the regulator and accessible information about them made available to residents. It may also be of interest to those who underwrite the risk for such buildings.

1.84

Recommendation: It is currently the case under the Fire Safety Order that fire risk assessments for high-rise residential buildings must be carried out 'regularly'. It is recommended that the

responsible person ensures these are undertaken at least annually and when any significant alterations are made to the building. These risk assessments should be shared in an accessible way with the residents who live within that building and notified to the fire and rescue service.

1.85

The lifetime of a building in use is orders of magnitude more than the time spent on its construction. Integrity must be maintained throughout the life cycle. Technology does not stand still and as new methods of improving the safety of buildings become available it is not sufficient for regulation only to make these a requirement for buildings of the future. There is a responsibility to give due consideration to what it is reasonable and practicable to do to upgrade and improve the fire safety of existing facilities throughout their lifespan, not merely to ensure that they do not deteriorate beyond how they were originally designed and built.

1.86

There needs to be a demonstration that there are sufficient layers of protection to ensure that building safety does not rely heavily on compartmentation. There is a high risk of compartmentation being breached during building use, whether as the result of residents' own actions or of maintenance work carried out in the whole building. There are a range of fire protection measures that can be retrofitted to or amended in existing buildings; for example, extra staircases and smoke ventilation or sprinkler systems. Rather than prescribe one measure over others, it should be for building owners and landlords, with the right expert advice and the involvement of residents, to demonstrate that appropriate risk mitigation measures are in place.

1.87

There is a need for stronger and more effective enforcement within the system but this requires the necessary resources to be available and demonstrably independent. Those charged with enforcing must have appropriate enforcement powers accompanied by sanctions and penalties which are suitably severe.

1.88

The cost of achieving compliance must be significantly less than the sanctions which may be imposed on those who do not follow the rules and fail to achieve the standards set, in order to create the right incentive to comply and a deterrent to seeking to circumnavigate requirements.

1.89

The current model of partial privatisation with clients being able to decide whether to choose between the use of LABCs or Approved Inspectors does not resolve the enforcement issue, raises concerns about independence and adds pressure on the resources within local authorities. While there may be scope to continue with a partial privatisation of the market, it is essential that effective enforcement is ensured and the work of Approved Inspectors is demonstrably independent.

Direction of travel – Residents’ voice and raising concerns

1.90

Residents need to be reassured that an effective system is in place to maintain safety in the buildings which are their homes. Their trust in the current system has been shaken and needs to be rebuilt by a more transparent system in which residents feel included, not ‘done to’ by others without consultation.

1.91

Many residents have told us that they have good systems in place and good relations with their landlords. However, where this is not the case, there should be a clear, quick and effective route established for residents’ concerns on fire safety to be raised and addressed with an external enforcement body. Many have expressed the wish for this to include the fire and rescue services.

1.92

The results of regular surveys of building integrity must be shared with the residents and they should be consulted about plans to modify buildings. It is also important for residents to understand the various layers of protection which are fundamental to fire safety.

Direction of travel – Quality assurance and products

1.93

It is important that products are properly tested, certified and marketed clearly, and that desktop studies are only used when appropriate, to ensure that suitable materials are used on different types of buildings, delivering the multiple different standards required. During phase two of this review, the case must be examined for a requirement for product testing data to be made transparent and publicly available and for a much clearer system of product classification and labelling.

1.94

Recommendation: The government should significantly restrict the use of desktop studies to approve changes to cladding and other systems to ensure that they are only used where appropriate and with sufficient, relevant test evidence. Those undertaking desktop studies must be able to demonstrate suitable competence. The industry should ensure that their use of desktop studies is responsible and in line with this aim.

1.95

A number of respondents have called for a reinstatement of the former role of Clerk of Works or similar to act as the primary gatekeeper of quality assurance on significant projects. There is a need to ensure oversight of the quality of installation work carried out as well as of the materials delivered to site and used.

Interim recommendations and challenges

1.96

While there is more work to be done to develop some of the ideas highlighted here and turn them into final recommendations, there are already some clear actions and initiatives which can and should be taken now, which would be entirely consistent with the likely future direction of travel. These are brought together below.

1.97

By way of underpinning all of these interim recommendations, the industry must recognise the need for significant cultural and behavioural change, where the sector demonstrates similar responsibility for the buildings they create as they have shown they can take for the safety of people working on construction projects under the Construction (Design and Management) Regulations 2015. There is no reason why this culture change cannot begin voluntarily now ahead of the final recommendations and any legislative changes. There is already evidence of good practice despite the shortcomings in the system itself.

A. **The government** should consider how the suite of Approved Documents could be structured and ordered to provide a more streamlined, holistic view while retaining the right level of relevant technical detail, with input from the Building Regulations Advisory Committee. Given that reframing the suite of guidance may take some time, in the meantime I would ask the government to consider any presentational changes that will improve the clarity of Approved Document B as an interim measure. (Paragraph 1.63)

B. There is a need to be certain that those working on the design, construction, inspection and maintenance of complex and high-risk buildings are suitably qualified. **The professional and accreditation bodies** have an opportunity to demonstrate that they are capable of establishing a robust, comprehensive and coherent system covering all disciplines for work on such buildings. If they are able to come together and develop a joined up system covering all levels of qualification in relevant disciplines, this will provide the framework for regulation to mandate the use of suitable, qualified professionals who can demonstrate that their skills are up to date. This should cover as a minimum:

- engineers;
- those installing and maintaining fire safety systems and other safety-critical systems;
- fire engineers;
- fire risk assessors;
- fire safety enforcing officers; and
- building control inspectors.

I would ask these bodies to work together now to propose such a system as soon as practicable. I will launch this work at a summit in early 2018. (Paragraph 1.73)

C. Consultation with the fire and rescue services is required on plans for buildings that are covered by the Fire Safety Order, but does not work as intended. Consultation by **building control bodies** and by **those commissioning or designing buildings** should take place early in the process and fire and rescue service advice should be fully taken into account. The aim should be to secure their input and support at the earliest stage possible so that fire safety can be fully designed in. (Paragraph 1.76)

F. It is currently the case under the Fire Safety Order that fire risk assessments for high-rise residential buildings must be carried out 'regularly'. It is recommended that **the responsible person** ensures these are undertaken at least annually and when any significant alterations are made to the building. These risk assessments should be shared in an accessible way with the residents who live within that building and notified to the fire and rescue service. (Paragraph 1.84)

D. **Building developers** need to ensure that there is a formal review and handover process ahead of occupation of any part of a new high-rise residential building. While there are legitimate reasons to allow occupation in a phased way, the practice of allowing occupancy of buildings without proper review and handover presents barriers to the implementation of any remedial measures identified as part of the completion process. (Paragraph 1.79)

G. **The government** should significantly restrict the use of desktop studies to approve changes to cladding and other systems to ensure that they are only used where appropriate and with sufficient, relevant test evidence. Those undertaking desktop studies must be able to demonstrate suitable competence. **The industry** should ensure that their use of desktop studies is responsible and in line with this aim. (Paragraph 1.94)

E. There is a need for **building control bodies** to do more to assure that fire safety information for a building is provided by the person completing the building work to the responsible person for the building in occupation. Given the importance of such information for ongoing maintenance and fire risk assessment, proof should be sought that it has been transferred. (Paragraph 1.80)

Next phase of the review

1.98

The review intends to focus on developing recommendations that will deliver the direction of travel set out above ahead of the final report.

1.99

The review has heard a range of views from the call for evidence and from our stakeholder engagement to date. As well as continuing to draw upon this evidence, the next phase will involve targeted work in partnership with the sector and other stakeholders in order to make rapid progress towards recommendations for the system in the final report.

1.100

The next milestone will be a summit in early 2018. Key stakeholders will be invited to attend this event which will set the direction and ensure co-ordination of the work we need a number of them to engage in during the spring in support of the development of the review's final recommendations.

1.101

We would welcome feedback on this report which can be sent to BuildingRegulationsandFireSafetyReview@communities.gsi.gov.uk or in writing to:

Independent Review of Building Regulations and Fire Safety
3rd Floor Fry Building
2 Marsham Street
London SW1P 4DF

Chapter 2 A brief history of the current regulatory system

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Introduction

2.1

This chapter sets out a high-level history of the regulatory system, charting its developments and changes, contrasted with the latest fire incident trends. This overview provides useful background context on how the system has evolved, against which the mapping of the current system (Chapter 3) and the stakeholder engagement (Chapter 4) can be viewed.

Key findings

2.2

The legislative landscape has been built up in a piecemeal fashion – often by the government changing specific aspects in response to an event or disaster. In making recommendations for the future, this review is taking a systemic approach that looks at the full landscape as it is in order to design a system for the future that is more effective and more streamlined.

The evolution of building regulations and fire safety legislation

2.3

There is a long history of rules and restrictions in place in England to lower the risk of fire. In the aftermath of a disastrous fire in Southwark, London, during 1212, a council of 'reputable men' established a series of conditions that local buildings should meet, covering roofing materials, provisions for fire-fighting, distance between buildings and internal standards.¹ These policies are still recognisable today as the basic themes for fire safety concerns as they affect building specifications.

2.4

Following the Great Fire of London in 1666, the Rebuilding Acts (1667 and 1670) set standards for new construction in London to be based on stone instead of timber, with detailed requirements on the thickness of walls and heights of rooms within a building. Work was undertaken to widen streets to slow the spread of fire and reduce the time it would take for emergency help to arrive.

2.5

During the 18th and 19th centuries, in part inspired by a drive to raise standards of public health and factory conditions in industrialising Britain, a series of legislative initiatives set and improved building requirements with respect to fire hazards, created local requirements for specific cities, and established building control as an essential function in regulating new builds and major refurbishments.

2.6

Three key themes are evident in the history and evolution of the framework. First, government response to disasters driving changes in standards; second, the placing of responsibilities on different actors in the system – whether local authorities, fire authorities, building owners or 'responsible' persons; third, government initiatives to consolidate regulations and powers.

Recent milestone events in building regulations and fire safety

1965 – Building Regulations 1965

1968 – Ronan Point gas explosion

1969 – Rose and Crown Hotel fire

1970 – Report of the Departmental Committee on the Fire Service, Sir Ronald Holroyd

1971 – Fire Precautions Act 1971

1973 – Summerland fire, Isle of Man

1974 – Flixborough disaster

1974 – The Health and Safety at Work etc. Act 1974

1979 – Manchester Woolworths fire

1984 – The Building Act 1984

1985 – Bradford City stadium fire

1987 – The Fire Safety and Safety of Places of Sport Act 1987

1987 – King's Cross fire

1988 – Investigation into the King's Cross Underground fire, Desmond Fennell

1988 – The Furniture and Furnishings (Fire Safety) Regulations 1988

1988 – Piper Alpha disaster

1989 – The Fire Precautions (Sub-surface Railway Stations) Regulations 1989

1992 – The Workplace (Health, Safety and Welfare) Regulations 1992

1997 – The Fire Precautions (Workplace) Regulations 1997

1999 – Potential Risk of Fire Spread in Buildings via External Cladding Systems report, Environment, Transport and Regional Affairs Committee

¹ Transcribed in Henry Thomas Riley, ed. (1860) *Munimenta Gildhallae Londoniensis: Liber Custumarum*, Rolls Series, no.12, vol.2, 86–88, as discussed on <http://users.trytel.com/~tristan/towns/florilegium/community/cmfabr08.html>

1999 – The Fire Precautions (Workplace) (Amendment) Regulations 1999

2004 – Fire Services and Rescue Act 2004

2004 – The Housing Act 2004

2005 – Buncefield fire

2006 – The Regulatory Reform (Fire Safety) Order 2005

2007 – The Construction (Design and Management) Regulations 2007

2009 – Lakanal House fire

2017 – Grenfell Tower fire

2.7

The Holroyd report² of 1970 paved the way for the first major consolidation of fire legislation, creating the division of authority within the regulatory system that remains to this day. This report recommended differentiating powers relating to new and altered buildings to be enforced by building control, and those for occupied buildings to be enforced by the fire and rescue authorities. Since the Fire Services Act 1947, fire brigades have had a duty to provide advice on fire safety; in particular on fire prevention and means of escape. However, it was not until the Fire Precautions Act 1971 that safety provisions were enforced by brigades too. Designated buildings were required to apply for and hold a Fire Certificate, issued by the local fire and rescue service following a satisfactory inspection.

2.8

If the 11 fire deaths at the Rose and Crown Hotel, Saffron Walden (1969) helped to provide political impetus for the introduction of the Fire Precautions Act in 1971, then two other disasters illustrate how the regulatory system can evolve. In 1985, 56 people died in the Bradford City stadium fire, and, in 1987, 31 people died in the King's Cross fire. Reviews followed each tragedy, and the system was amended by new legislation in both cases – the Fire Safety and Safety of Places of Sport Act 1987 and the Fire Precautions (Sub-surface Railway Stations) Regulations 1989 respectively.

Case study: Summerland fire in Douglas, Isle of Man (1973)

The Summerland fire in Douglas, Isle of Man in 1973 was, at that time, the greatest loss of life on the British Isles since the Second World War. On 2 August 1973, a fire broke out at the relatively recently opened Summerland leisure complex. Around 3,000 people escaped and an estimated 50 people died.

The Summerland Fire Commission that followed concluded that there were many failings that contributed to the fire spread, including factors in the building's design and construction, defects in the means of escape and emergency lighting, the use of novel and improper materials, and lack of building control oversight. The commission also highlighted the role of miscommunication and how unclear responsibilities contributed to events:

“Mr De Lorca thought it was for Mr Harding to organise an evacuation procedure, but he never discussed it with him ... Mr Harding thought it was for the heads of departments to organise their own evacuation procedure but he gave them no instructions about it. Mr Paxton, the Deputy Managing Director ... thought it was for Mr Harding to organise an evacuation procedure and for Mr De Lorca to make sure he did it. Mr Dixon, the supervising Fire and Safety Officer ... thought it was Mr De Lorca's duty ... and no part of Mr Harding's duty.”³

2.9

Following a series of significant reviews of fire safety legislation in the 1990s⁴ and the growing complexity of the system over previous decades, the Regulatory Reform (Fire Safety) Order 2005 was introduced to clarify and change requirements for commercial buildings. Fire Certificates were abolished, with expectations placed firmly on “responsible persons” to manage the risk in their buildings by the completion of a fire risk assessment. As a result, fire and rescue services moved from a directive role in certain buildings to one of auditing.

2.10

The other major component of ensuring fire safety in occupied buildings comes through local authority powers established in the Housing Act

2 Holroyd, R. (1970) *Report of the Departmental Committee on the Fire Service*. Cmnd 4731. Her Majesty's Stationery Office.

3 Summerland Fire Commission (1974) *Report of the Summerland Fire Commission*. Government Office, Douglas, Isle of Man; as discussed in Turner, B.A., Pidgeon, N.F. (1998) *Man-Made Disasters*. Butterworth-Heinemann.

4 For example, Bickerdike Allen Partners (1990) *Fire and building regulation: a review*. Her Majesty's Stationery Office; Interdepartmental Review Team (1994) *Fire Safety Legislation and Enforcement*. The Department of Trade and Industry.

2004 and the Housing Health and Safety Rating System (HHSRS) Regulations 2005. Since the mid-19th century, local authorities have had the ability to regulate housing fitness and assess health and safety hazards. The Housing Act 1985 established a pass or fail Housing Fitness Standard test based on nine maintenance categories; however, this was seen as a blunt instrument, and so was replaced in 2005 with the HHSRS as a more powerful and objective assessment methodology. The HHSRS involves environmental health officers checking for the presence of 29 potential hazards, determining the likelihood of harm occurring if any of those hazards are present, and, if required, issuing sanctions to building owners where satisfactory remedial action is not taken.

2.11

On building regulations and control, the Public Health Act 1936 consolidated local requirements to create a national system of building control, providing a single set of standards for building work to comply with. However, the provisions were not mandatory, so local authorities across the country were able to maintain different approaches. It was not until the Building Regulations 1965 and the Building Control Act 1966 that all building work in England and Wales had to comply with a consolidated, mandatory and prescriptive set of rules.

High-rise residential buildings

2.12

Following the Second World War, high-rise blocks of flats were seen as a vital component of housing and development policy, encouraged by government subsidy provided in the Housing Subsidies Act 1956. Since the first tower block built in Harlow, Essex, at 10 storeys in 1951, best recent estimates are that around 800,000⁵ people live in high-rise residential buildings and that there are around 10,000 residential buildings over 18 metres in England.⁶

2.13

The gas explosion at the 22-storey tower block Ronan Point, Newham, London, was one of the first safety-critical defining events relevant to high-rise buildings. On 16 May 1968, a gas explosion in the kitchen of the 18th-floor flat led to the collapse of an entire corner of the building causing 4 deaths and 17 injuries.

2.14

The Griffiths Review⁷ was set up to consider the causes of the collapse, and determined that the building was structurally unsound, with consequences for other tower blocks of a similar type. Urgent appraisal and remedial strengthening work was carried out across the country, with many buildings condemned. The Griffiths Review concluded that Ronan Point was in fact in compliance with building regulations, remarking: “This is so manifestly an unsatisfactory state of affairs that it is necessary to enquire how it came about and to consider remedies for the future.” Changes in regulations were swiftly brought about (indeed, building regulations were amended in

many countries) and new British Standard structural design codes for concrete were introduced.⁸ Ronan Point itself was demolished in 1986.

2.15

In 1991, a non-fatal fire in Knowsley Heights, Huyton, Merseyside, became an important example and case study for fires in high-rise buildings, due to the rapid extent of flame growth on the building’s exterior cladding system. Subsequent research led to changes in the building regulations guidance, including a recommendation for ‘fire stopping’ measures between the cladding and the building itself.

2.16

Following the Knowsley Heights fire, as well as a fatal fire at Garnock Court flats, Irvine, Ayrshire (1999), a House of Commons committee was established to consider the particular risk of fire spread on external cladding systems.⁹ The committee’s recommendations led to updates of safety standards, an update to the BR 135 guidance,¹⁰ establishment of the full-scale fire methodology BS 8414, and their direct reference in Approved Document B as a route-way for cladding systems to show compliance.

2.17

On 3 July 2009, six people died in a fire at Lakanal House, Camberwell, London. In their analysis and understanding of the fire, the Chief Fire and Rescue Adviser,¹¹ and the Assistant Deputy Coroner,¹² separately highlighted a range of issues, including: inconsistent fire safety advice available to occupants in some high-rise buildings, and in particular the role of the ‘stay put’ policy; the use of sprinklers, smoke alarms and other provisions; the role of

5 DCLG (2015) English Housing Survey, dwelling sample.

6 This figure has been derived from Ordnance Survey and EPC data. It is for buildings where at least 90% of the address points in the building are residential or where a residential address is on the sixth floor or above.

7 Griffiths, H., Pugsley, A. and Saunders, O. (1968) *Report of the inquiry into the collapse of flats at Ronan Point, Canning Town*. Her Majesty’s Stationery Office.

8 Pearson, C. and Delatte, N. (2005) *Ronan Point Apartment Tower Collapse and its Effect on Building Codes*. Cleveland State University.

9 Environment, Transport and Regional Affairs Committee (1999) *Potential Risk of Fire Spread in Buildings via External Cladding Systems*. The Stationery Office.

10 Colwell, S. and Martin, B. (2003) *BR 135 – Fire performance of external thermal insulation for walls of multi-storey buildings*. 2nd edn. BRE Bookshop.

11 Knight, K. (2009) *Report to the Secretary of State by the Chief Fire and Rescue Adviser on the emerging issues arising from the fatal fire at Lakanal House, Camberwell on 3 July 2009*. Communities and Local Government Publications.

12 Letter from Assistant Deputy Coroner to RH Eric Pickles, 28 March 2013. Available at: www.lambeth.gov.uk/sites/default/files/ec-letter-to-DCLG-pursuant-to-rule43-28March2013.pdf

fire risk assessments, and their relationship to high-rise buildings' common parts; and Approved Document B, including calling for its simplification.

2.18

In response to the issues raised, the Department for Communities and Local Government (DCLG) funded the Local Government Association (LGA) to develop with the sector new guidance for purpose-built blocks of flats;¹³ and reviewed operational guidance and associated advice on 'stay put'. In February 2017, DCLG published a user survey for Approved Documents B and M as part of its work to improve the quality of its guidance.¹⁴

¹³ Local Government Association (2012) *Fire safety in purpose-built flats*. www.local.gov.uk/fire-safety-purpose-built-flats

¹⁴ DCLG (2017) *Usability Research – Approved Document B: Fire safety; Approved Document M: Access to and use of buildings*. www.gov.uk/government/publications/usability-research-building-regulations-approved-documents-b-and-m

Other developments around the management of risk – health and safety regulation

2.19

The Robens Report in 1972 significantly reshaped the occupational health and safety regulatory landscape.¹⁵ It was prompted not simply by the contemporary toll in workplace deaths and injuries (around 1,000 people died each year in workplace accidents) but by a need to look critically both at the existing regulatory approach and how those involved in the wider system worked together to best effect.

2.20

Robens' conclusions had far-reaching effects. He concluded that the law was too prescriptive and piecemeal, set different standards in different industries and left some industrial sectors virtually unregulated. His report recommended creating a new framework built on a fundamental principle that whoever created a risk had a duty to manage it.

2.21

At the heart of this goal-setting approach was the principle of proportionality. The legal standard was to reduce risks 'so far as is reasonably practicable', which meant that the level of risk had to be balanced against the measures needed to control it in terms of money, time or trouble. Equally important, a dutyholder did not need to take action if it would be grossly disproportionate to the level of risk.

2.22

Health and safety legislation has also developed in the wake of serious incidents. Two significant change events were Flixborough in 1974 and Piper Alpha in 1988: 28 people died at a chemical plant explosion at Flixborough in Lincolnshire after flammable materials were released from poorly modified process plant; and 167 offshore workers died on the Piper Alpha oil production platform following a major hydrocarbon release.¹⁶

2.23

The regulatory response to both these incidents, and other similar events elsewhere in Europe, was to raise the bar on expectations for operators of hazardous plant and to create the concept of the

'safety case' (also referred to as a safety report). In these regimes the regulator gives permission to a dutyholder to carry out certain categories of intrinsically high-hazard work in direct contrast to the 'permissive' default setting on most other regimes where the dutyholder needs no such formal approval. This approach therefore adds an extra layer to the general framework of health and safety law. By design, it is also more resource intensive, both for dutyholders and regulators, and therefore normally used sparingly and only in circumstances where the added assurance is warranted in terms of the heightened hazard potential.

2.24

In a safety case/report regime, the dutyholder provides information to the regulator to demonstrate that they have considered what could go wrong in an installation, the worst consequences and to show that they have both preventive and reactive measures in place to manage the risks. When the regulator is content that the dutyholder has fulfilled the relevant requirement(s) they 'permit' operation. The dynamic nature of business also means that the regulator cannot do this on a one-off basis. The dutyholder has to seek a reassessment for any significant changes and the regulator also reviews safety cases/reports on a routine cycle to ensure that they remain relevant and focused.

2.25

The general pattern of legislative oversight in other industries follows a broadly similar pattern of defining specific roles and responsibilities to embed goal-setting. A parallel example arises in construction where, in order to improve standards on building sites, the current regulatory framework (The Construction (Design and Management) Regulations 2015 (CDM)) introduced a 'whole life cycle' approach from design through to construction, refurbishment and demolition. CDM is explicit in assigning unambiguous responsibilities to key people within the system to maintain the importance of both accountability and continuity.

¹⁵ Lord Robens (1972) *Safety and Health at Work – Volume 1 – Report of the Committee 1970-72*. Her Majesty's Stationery Office.

¹⁶ See Lord Cullen (1990) *The public inquiry into the Piper Alpha disaster*. Her Majesty's Stationery Office.

Fire casualties since the 1980s

2.26

This review is set in a context of falling numbers of fire casualties since the early 1980s. There is a range of factors attributed to this decline, many unrelated to building design; for example, lower smoking rates, reduced flammability of products in the home, greater public awareness of fire hazards following outreach and awareness campaigns, the introduction of safety requirements for electrical installations in dwellings, and the increased use of smoke alarms.

2.27

This long trend of falling fire incidents and casualties may mean that building and fire safety regulations have not received the priority that might otherwise have been the case. Yet incident trends tell us little about the likelihood of disasters and catastrophic events occurring.¹⁷ This review will seek to put in place a system that provides assurance that the impact of any future disasters is minimised.

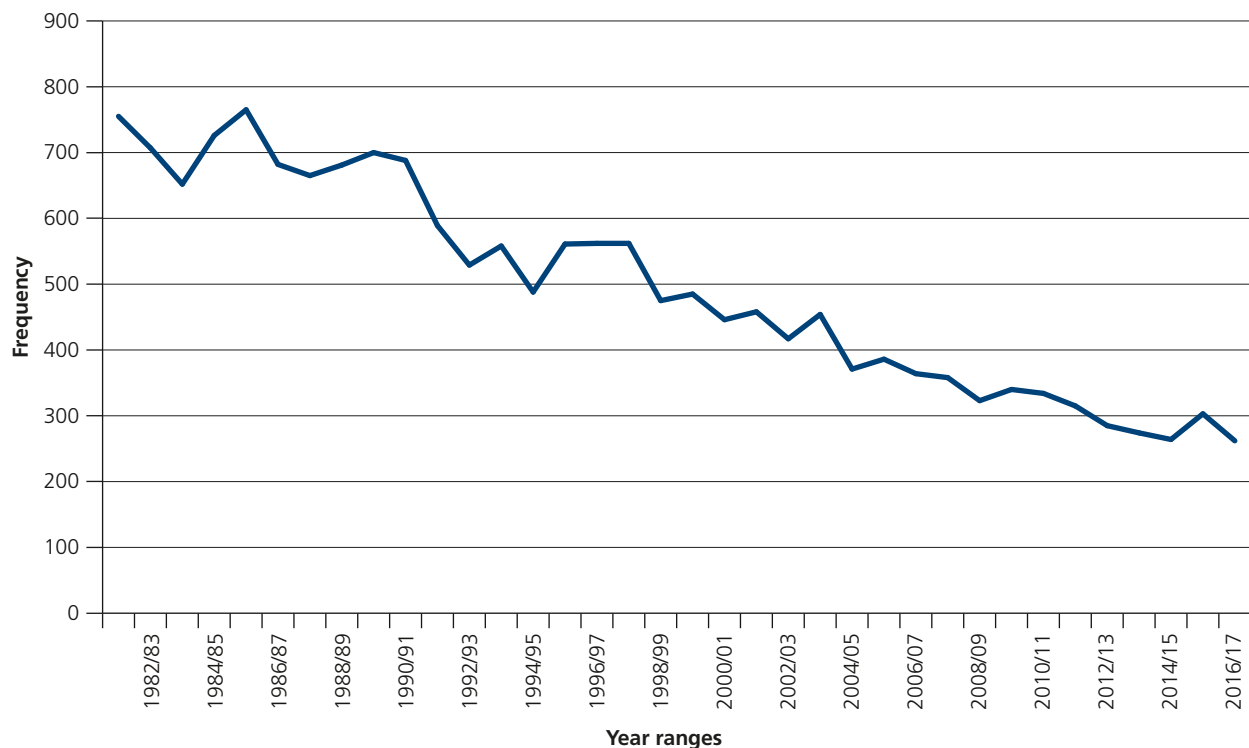


Figure 2.1: Total fire-related fatalities in England, 1981/82 to 2016/17¹⁸

¹⁷ As noted by, for example, Reason, J. (2015) *Organizational accidents revisited*. Routledge: "The road to hell is paved with falling LTI [lost time injury] rates."

¹⁸ Home Office data available at: www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables

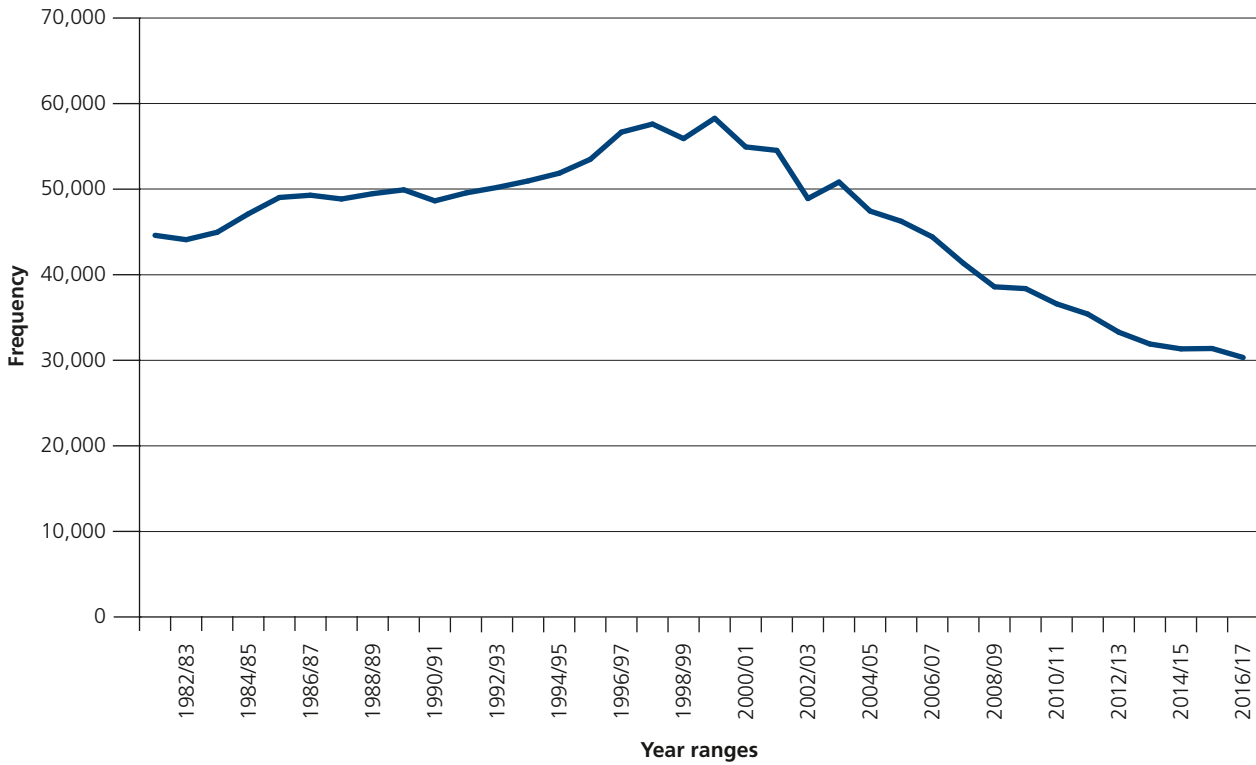


Figure 2.2: Total dwelling fires in England, 1981/82 to 2016/17¹⁹

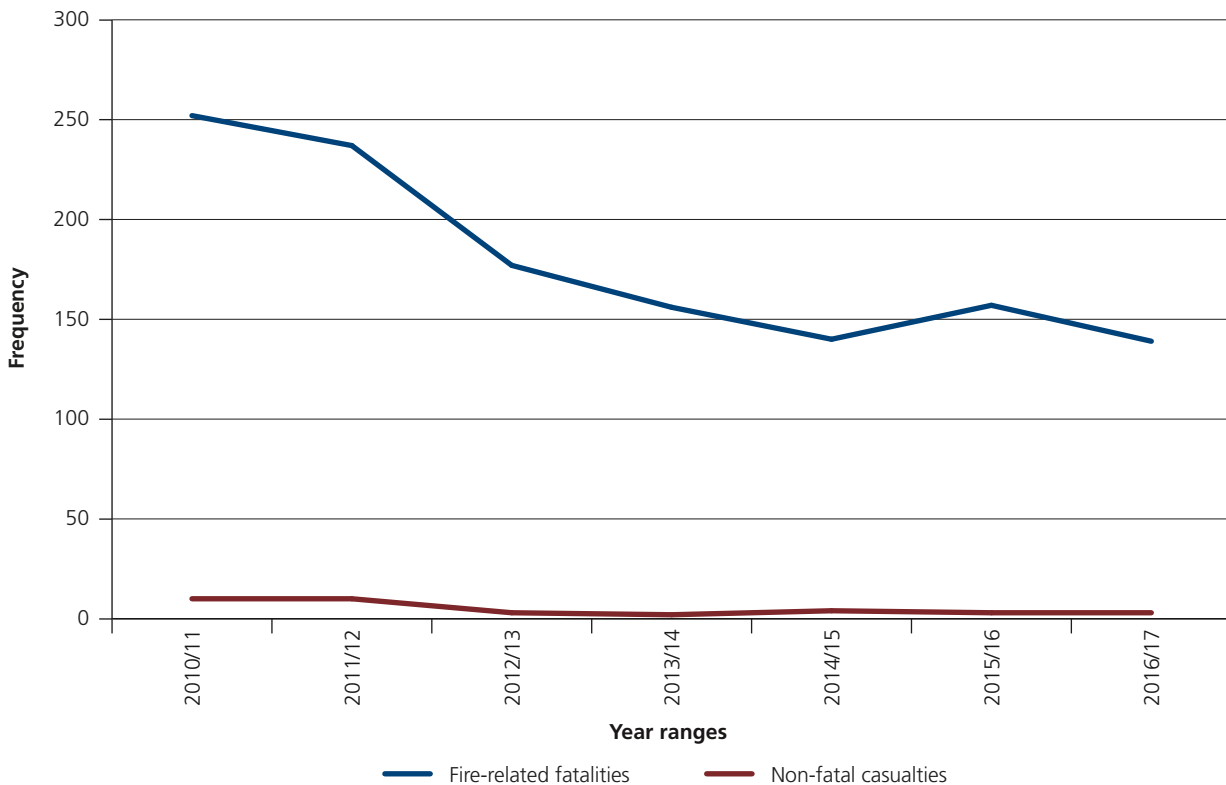


Figure 2.3: Fatalities and non-fatal casualties from fires in purpose-built high-rise flats (10+ storeys) in England, 2010/11 to 2016/17²⁰

19 Home Office data available at: www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables

20 Home Office data available at: www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables. Data only collected from 2009/10. Data for year ending June 2017 was published by the Home Office in November 2017, which included the casualties from the Grenfell fire.

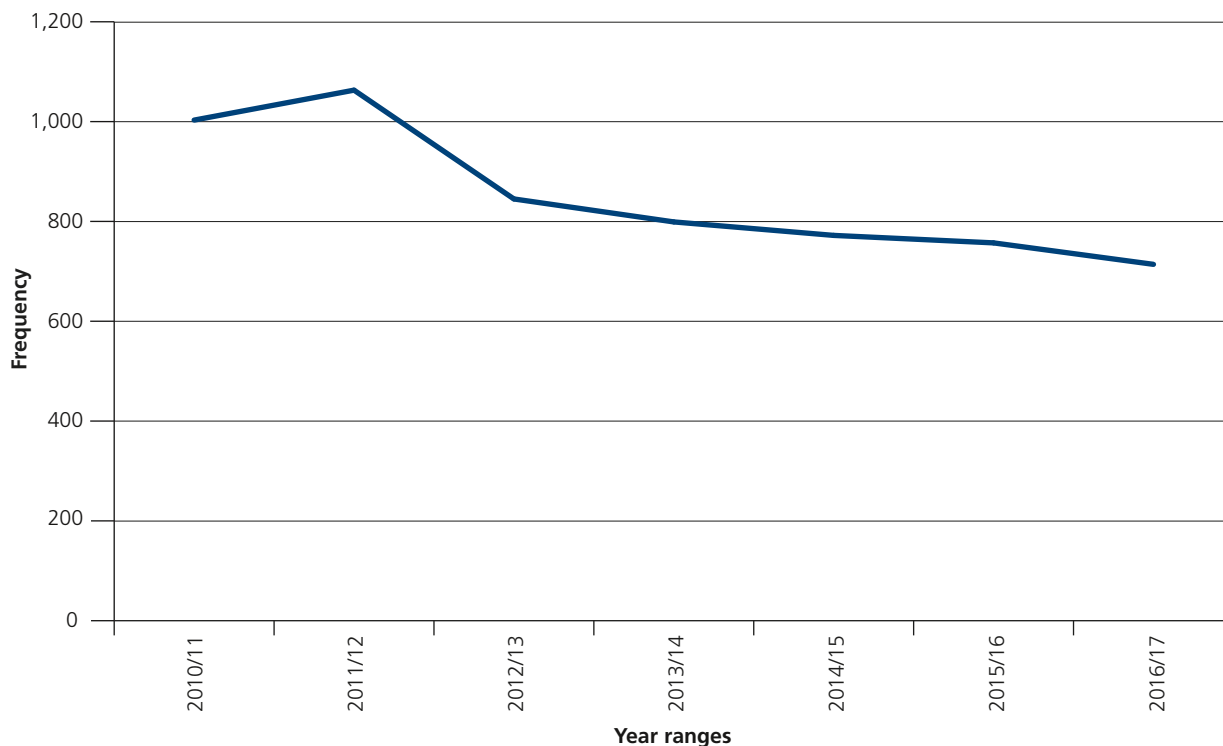


Figure 2.4: Total fires in purpose-built high-rise flats (10+ storeys) in England, 2010/11 to 2016/17²¹

21 Home Office data available at: www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables

Chapter 3 The current regulatory landscape

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Introduction

3.1

This chapter sets out a narrative description of the mapping work undertaken to support the Independent Review. This exercise has been an important building block in understanding the current environment within which buildings are constructed and maintained. It has also enabled the review to highlight areas where the current regulatory system appears weak, both in the way it is constructed and in the way it operates in practice.

Key findings

3.2

The overall system is highly complex with multiple requirements and accountabilities throughout the system. The mapping exercise has identified issues around the following:

- **There is a lack of clarity around key roles and responsibilities** – for example, there is:
 - (a) a notable absence of a clear dutyholder during the building design and construction process;
 - (b) a very stark handover of responsibility once building work is completed; and
 - (c) a confusing overlap during occupation between the Regulatory Reform (Fire Safety) Order 2005 and the Housing Act 2004.
- **There is an imbalance between building designers/contractors and regulators** – the need for building control bodies (BCBs) to compete for business can sit uncomfortably with a proper consideration of fire safety design. In addition, there appears a significant amount of leeway for building designers/contractors to take action before their plans are properly considered without a rigorous change control process necessarily being in place.
- **There are confusing differences between the two types of building control processes** – the partial privatisation of building control services has led to some processes appearing unnecessarily different and this makes it more challenging to improve building control standards.
- **There are competence issues throughout the system** – the competency of individuals and the way of verifying their competence can be an issue for those designing and constructing a fire-safe building, those with responsibility for maintaining fire safety in an occupied building and those with regulatory oversight.
- **The enforcement/sanctions regime is not strong enough to underpin compliance** – sanction regimes exist but they are patchy, infrequently used and do not effectively drive compliance.
- **There are significant limitations in driving improvements to existing buildings** – the non-worsening principle in the Building Regulations 2010, combined with the limitations of the Fire Safety Order, mean there is little in the law to require meaningful improvements to the fire safety of existing buildings.

Methodology

3.3

The mapping work has been done by talking to relevant policy experts in the Department for Communities and Local Government (DCLG) and the Home Office and through discussions about current processes with key external stakeholders.

3.4

In Appendix D we have included an outline map of the current regulatory system. It is not intended to cover all detailed scenarios and contains our view of the system to date. It provides a crucial overview that is central to the thinking of this Interim Report. Extracts from the map are shown throughout this chapter.

Background – mapping the regulatory system

3.5

Buildings are subject to a complex **system** of requirements throughout their life cycle, covering the phases of planning, design, construction, occupation, refurbishment (and demolition).

3.6

By ‘system’, we mean the totality of formal and informal rules, processes, roles, powers, cultures, competencies and responsibilities applicable to the various people and organisations undertaking building work. As Chapter 1 made clear, there is a particular focus in this review on this regulatory system insofar as it applies to high-rise residential buildings through the lens of fire safety.

3.7

The complexity of the regulatory system comes partly from the sheer scale of requirements. There are several thousand pages of primary and secondary legislation, statutory and approved guidance, industry advice and competence frameworks within which specific fire safety requirements sit.

3.8

In addition, this complexity has been driven by adding further detailed requirements over time in response to specific government requirements. The requirements are multi-purposed, supporting government objectives. Fire safety is one of a number of areas covered, including structural integrity, provision of sanitation, and proper electrical installations. All of this has made it more difficult to combine the many requirements into a coherent system.

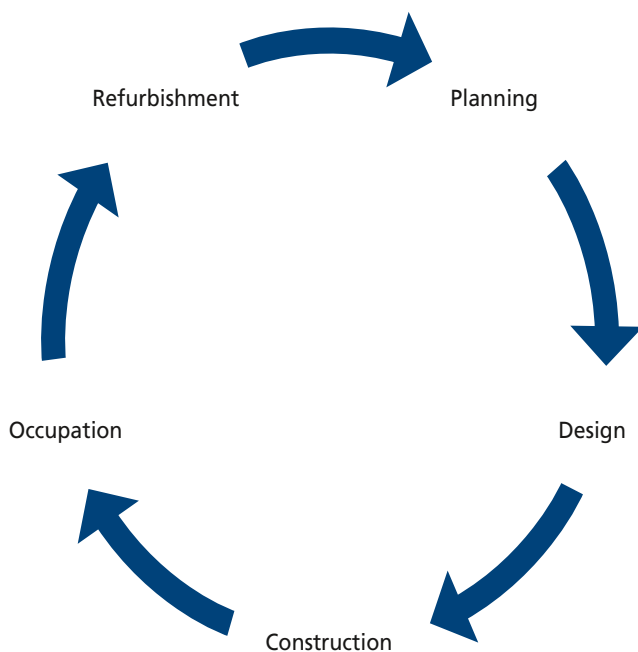


Figure 3.1: The life cycle of a building

3.9

The review has focused on the following four core elements of the current regulatory system:

Stage 1 – The fire safety aspects of the regulatory framework surrounding the requirement to **secure planning permission** for the development of a new building – as primarily set out in the Town and Country Planning Act 1990.

Stage 2 – The fire safety aspects of the regulatory framework surrounding the **creation of a new building** – as primarily set out in the Building Act 1984, the Building Regulations 2010 and the Approved Documents (including construction materials and workmanship).

Stage 3 – The fire safety aspects of the regulatory framework surrounding the **handling of refurbishments**.

Stage 4 – The fire safety aspects of the regulatory framework surrounding the **occupation (and ongoing maintenance) of the common parts/ whole of a building** – as primarily set out in the Regulatory Reform (Fire Safety) Order 2005, associated fire risk assessment documents and the Housing Act 2004 and Housing Health and Safety Rating System Regulations 2005.

3.10

There are also a number of other relevant regulatory requirements such as those governing fire safety on the building site where a high rise is being constructed or refurbished (as primarily set out in the Construction (Design and Management) Regulations 2015). Other regulations that help to manage the risk of fires occurring/spreading in some premises (including the Furniture and Furnishings (Fire Safety) Regulations 1988 or the Smoke and Carbon Monoxide Alarm Regulations 2015) have not been included in this mapping exercise thus far.

3.11

The following sections of this chapter set out these four areas in turn, describing how the current rules broadly work (with a specific focus on fire safety) with some key observations about where the theory and practice differ and where this impacts on fire safety.

Stage 1 – The fire safety aspects of securing planning permission

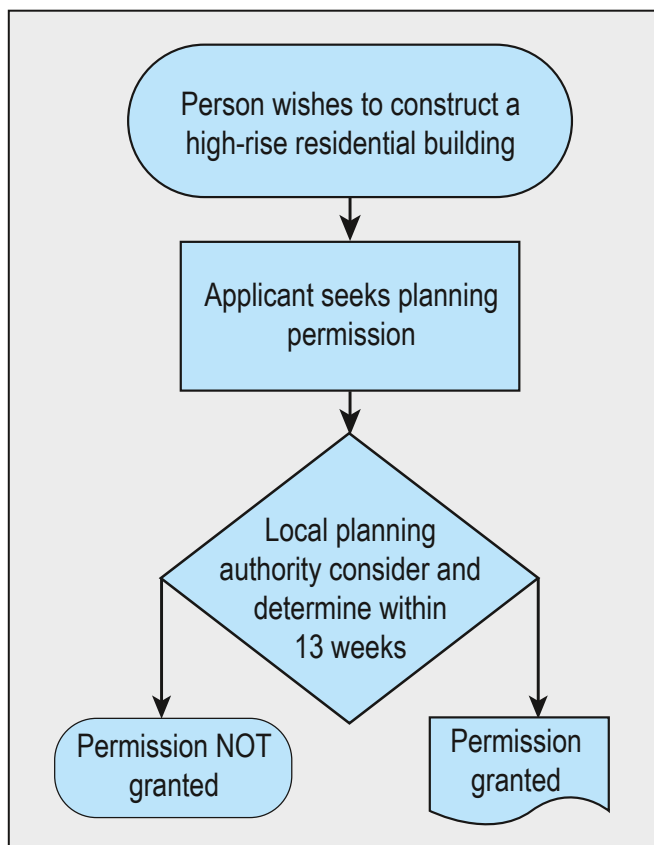


Figure 3.2: Securing planning permission for a high-rise building

3.12

An application for planning permission would be required for a new-build high-rise block of flats. The legislation underpinning the planning application process (primarily the Town and Country Planning Act 1990 and regulations) requires the client or those instructed by the client to make an application to their local planning authority (LPA). The law requires local authorities to determine planning applications in accordance with the provisions of the local development plan.¹ The LPA may consider aspects such as:

- the number, size, layout, siting and external appearance of buildings;
- the infrastructure needed to support the development, e.g. roads and water supply;
- the use of the buildings proposed; and
- the impact of the proposed development on the surrounding area, e.g. if it would create significantly greater traffic flows.

3.13

It is likely that most planning applications for new-build high-rise buildings will be classed as a 'major development', for which the decision-making period is 13 weeks. An appeal can be made against a refusal to grant planning permission.

3.14

The focus of the planning system is on the development and use of land. It is a general principle that planning should not seek to duplicate other regulatory regimes. In this context, fire safety considerations are not normally the subject of consideration at the planning application stage. An exception to this position is in relation to opportunities for emergency service vehicles to access buildings. Given the limited role of planning there is no requirement that the individuals making the application, or those considering it, have any specific fire safety-related knowledge. LPAs are required to consult certain bodies (known as statutory consultees) before granting planning permission for certain types of development. The two main regulatory authorities for the later stages in the building life cycle (BCBs and fire and rescue services) are not statutory consultees, as there is an understanding that fire safety issues will be picked up as part of the building control process.

¹ Unless material considerations indicate otherwise.

Findings

We understand that all LPAs will consider vehicle access arrangements, including for emergency vehicles, where it is appropriate to do so as part of a planning application. Most LPAs will have their own local guidance on vehicular access to new developments. This is in addition to the government-issued *Manual for Streets*, which provides guidance to practitioners involved in the design, planning and approval of new residential streets and modifications to existing ones. This may throw up observations about the adequacy of vehicle access by the fire and rescue services, which the LPA can take into account. Although fire and rescue services may be consulted, the review understands that direct engagement with these services varies from LPA to LPA, which can result in some layout issues not emerging until Stage 2.

Stage 2 – The fire safety aspects around the creation of new buildings, including building control oversight

3.15

Fire safety plays an essential part of the regulatory system surrounding the design and construction of high-rise residential buildings. That system has two key aspects:

- First, legislation and guidance lay out a detailed set of performance-based requirements that the building work needs to meet on a whole range of areas including fire safety. Guidance sets out at length how those requirements can be met.
- Second, legislation creates statutory bodies known as BCBs to ensure effective oversight of those carrying out the work.

Overview of regulatory requirements

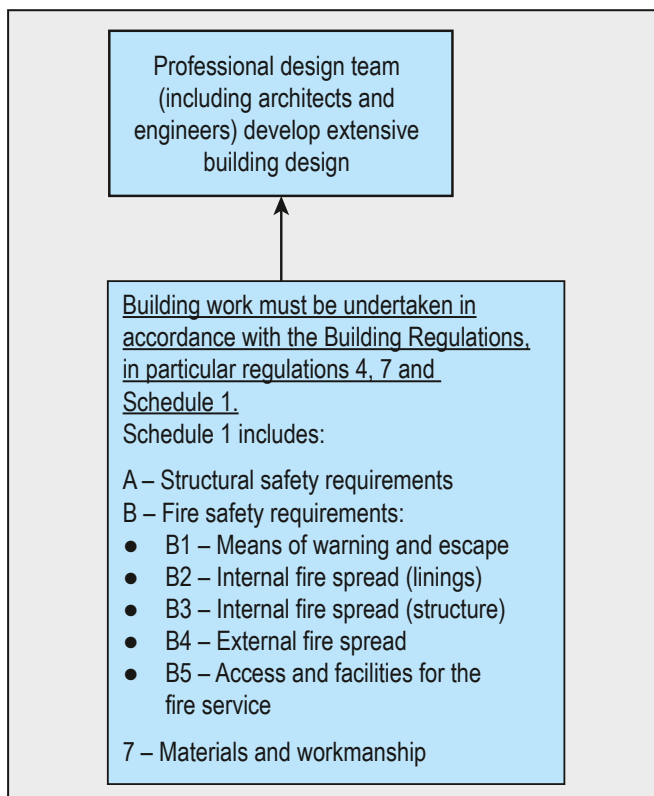


Figure 3.3: Regulatory requirements for new buildings

3.16

The Building Act 1984 is the key piece of legislation through which specific requirements relating to building standards are created. The Act says that on matters of building design, construction and demolition the government can make regulations for purposes such as:

- securing the health, safety, welfare and convenience of persons in or about buildings;
- furthering the conservation of fuel and power; and
- facilitating sustainable development.

3.17

These overarching purposes are translated into a set of functional requirements covering 15 different aspects of “building work”. “Building work”² includes:

- the erection of a new building;
- the “material alteration” of an existing building;
- refurbishment of a building;
- work required due to a material change of use; and
- specific changes such as installing a boiler or insulation material, replacing windows or completing electrical work in dwellings.

² Building Regulations 2010 regulation 3(1).

3.18

These 15 different sets of requirements are in Schedule 1 to the Building Regulations 2010 and cover requirements connected to many different aspects of a building's properties. Also critical is regulation 7, which covers the materials and workmanship that must underpin the building work.

The 15 sets of requirements under Schedule 1

Part A	Structure
Part B	Fire safety
Part C	Site preparation and resistance to contaminants and moisture
Part D	Toxic substances
Part E	Resistance to the passage of sound
Part F	Ventilation
Part G	Sanitation, hot water safety and water efficiency
Part H	Drainage and waste disposal
Part J	Combustion appliances and fuel storage systems
Part K	Protection from falling, collision and impact
Part L	Conservation of fuel and power
Part M	Access to and use of buildings
Part P	Electrical safety
Part Q	Security
Part R	Physical infrastructure for high-speed electronic communications networks

3.19

Each of these 15 areas in Schedule 1 contains a set of "performance-based requirements" (numbering around 75 in total). When building work is carried out it must meet all of the relevant requirements. Each of these requirements is intended to have equal importance.

3.20

Performance-based requirements are also known as 'goal-based' or 'substantive' or 'functional' requirements. These requirements set out the technical standards that building work must achieve once completed. This is in contrast to a 'prescriptive' system where there is a very specific list of instructions around precisely how any building must be constructed whatever purpose it is being used for and whoever will occupy it.

3.21

For example, the first performance-based requirement on fire safety is requirement **B1 – Means of warning and escape**. This says:

The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times.

3.22

The use of the words "appropriate", "safely" and "effectively" are all indicators of a performance-based approach. So, under this approach, there is a requirement placed on those designing/constructing/refurbishing the building to critically evaluate the viability of their plans against the requirements in Schedule 1. Therefore, in the context of requirement B1 – Means of warning and escape, it should be the case that those completing the building work have a fundamental understanding of the relevant fire phenomena, wider fire safety issues and how any complex design proposals may impact on the ability of the building to provide an adequate means of warning or escape.

3.23

The key purpose of setting performance-based requirements is to allow greater flexibility in building design, to encourage innovation and support cost-efficiency. It also ensures that different designs and safety requirements can come into play depending on the purpose of the building; for example, a large-scale care home utilised mostly by elderly and infirm people is likely to need additional safety features in comparison with a warehouse. Having a performance-based system, which relies on sophisticated judgements, places increased reliance on the competence of those undertaking the design and construction of buildings and the skills and rigour of the regulators verifying the quality of the work that is done.

3.24

There are five performance-based requirements associated with fire safety in Schedule 1. These are set out below.

PART B FIRE SAFETY

B1 – Means of warning and escape

The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times.

B2 – Internal fire spread (linings)

- (1) To inhibit the spread of fire within the building, the internal linings shall—
 - (a) adequately resist the spread of flame over their surfaces; and
 - (b) have, if ignited, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.
- (2) In this paragraph ‘internal linings’ means the materials or products used in lining any partition, wall, ceiling or other internal structure.

B3 – Internal fire spread (structure)

- (1) The building shall be designed and constructed so that, in the event of fire, its stability will be maintained for a reasonable period.
- (2) A wall common to two or more buildings shall be designed and constructed so that it adequately resists the spread of fire between those buildings. For the purposes of this sub-paragraph a house in a terrace and a semi-detached house are each to be treated as a separate building.
- (3) Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following—
 - (a) sub-division of the building with fire-resisting construction;
 - (b) installation of suitable automatic fire suppression systems.
- (4) The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.

B4 – External fire spread

- (1) The external walls of the building shall 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.
- (2) The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.

B5 – Access and facilities for the fire service

- (1) The building shall be designed and constructed so as to provide reasonable facilities to assist fire-fighters in the protection of life.
 - (2) Reasonable provision shall be made within the site of the building to enable fire appliances to gain access to the building.
-

3.25

This means that substantial building work (such as the construction of a high-rise residential building) is likely to include a range of fire protection measures which support the overall fire strategy for the building. This will include measures to support particular requirements, such as means of escape and also fire-fighting. See Appendix G for more details.

Regulatory requirements – Approved Documents and Schedule 1 compliance

3.26

Beyond the performance-based requirements set out above, the Building Act 1984 also enables government to create a suite of statutory guidance documents, known as Approved Documents.³ These provide specific examples of how each individual Schedule 1 requirement could be met.

3.27

DCLG has overseen the writing, publishing and maintenance of 21 Approved Documents on how the requirements in Schedule 1 can be met in common building scenarios. These documents are intended to be updated when necessary. However, in practice many of the Approved Documents have not been comprehensively reviewed and updated for some time. Recent updates have also had to satisfy the government's de-regulation agenda.

3.28

The guidance set out in the Approved Documents has a recognised status in law where enforcement action is taken against a person carrying out building work (because they have not met the requirements of Schedule 1). In this case section 7 of the Building Act 1984 makes it clear that – if the person can show that they have followed the guidance in the Approved Documents – then a court should consider that, on balance, they have met the Schedule 1 requirements.

3.29

There are two volumes on fire safety (one covering houses, the other covering all other building types, including high-rise residential blocks of flats), known together as Approved Document B. Approved Document B is the most commonly downloaded Approved Document, with nearly 270,000 downloads in the year to March 2015.⁴

3.30

Approved Document B sets out general minimum standards for common building scenarios. For example, on requirement B1 – Means of warning and escape, it sets out the maximum distance of travel from the entrance door of a flat to a common staircase or stair lobby (7.5 metres if the escape is in one direction only or 30 metres if the escape can be made in more than one direction). However, it does not seek to identify solutions for every possible building situation and every

possible group of building users. In other words, in prescribing one way of meeting the performance-based requirement of B1 it does not preclude other solutions that could be deemed to equally meet that requirement.

3.31

So any person using the Approved Document is presumed to understand the nature of the performance-based requirements. This is both to understand where their specific plans could simply utilise the generic approach of the Approved Document and to understand where their plans require more tailored fire-engineered solutions in order to meet the Schedule 1 Part B requirements.

Findings

Those designing or constructing buildings are often focused on simply meeting the minimum requirements set out in Approved Document B rather than focusing on the performance-based requirements. Many stakeholders observe that the Approved Document is seen as 'the regulations' or 'the requirements' per se. As a result, there is often little evidence that those designing or constructing a building have taken ownership of the principles of a safe building as opposed to using the Approved Documents as a tick box. Effectively, this turns a goal-based system with helpful pointers in these documents into a prescriptive system. It also raises significant issues around the extent to which central government can realistically oversee the updating of an extremely detailed and technical set of recommendations to guide an industry that is rapidly innovating.

Approved Document B is often confusing and contradictory to non-specialist readers.

³ Building Act 1984, section 6.

⁴ DCLG (2017) *Usability Research – Approved Document B: Fire safety; Approved Document M: Access to and use of buildings*. www.gov.uk/government/publications/usability-research-building-regulations-approved-documents-b-and-m

Regulatory requirements – Other routes to compliance with Schedule 1

3.32

Where those designing or constructing a building wish to adopt a less standardised and more innovative building design then they are less likely to rely on Approved Document B. Approved Document B recognises that alternative approaches may be adopted and, for example, includes guidance on a specific fire safety engineering approach. In this situation there are a range of other industry-wide British Standards documents that can be used to help to satisfy the Building Regulations requirements. These documents can be used in a more targeted way to help those providing fire safety advice to establish compliance for specific needs not discussed in Approved Document B. For example, as mentioned above, Approved Document B states the maximum travelling distance from the entrance door of a flat to a common stair/stair lobby (in the event of a fire) is either 7.5 metres or 30 metres depending on how many means of escape there are. However, this may not be possible due to particular design features in a new building. If this is the case, then these other documents can help design teams to think through how to compensate elsewhere in the fire safety design; for example, by putting in place sophisticated sprinkler systems to mitigate the risk. By taking a more holistic approach design teams can still make a case that they meet the B1 performance-based requirement.

3.33

The relevant British Standards documents on fire safety are intended to form a critical industry-led layer of knowledge and support and are highly valuable in underpinning the design work on more complex buildings. They are put together by the British Standards Institution (BSI) based on expert fire safety knowledge, agreed through committees and updated more regularly than the Approved Documents. They do not, however, have the same legal status as the Approved Documents. The key British Standards documents in respect of fire safety for a residential building are set out below.

Key alternative guidance sources

BS 9991: Fire safety in the design, management and use of residential buildings – code of practice

BS 9991 gives recommendations and guidance on the design, management and use of buildings to achieve reasonable standards of fire safety for all people in and around them. It also provides guidance on the ongoing management of fire safety within a building throughout its entire life cycle, including guidance for designers to ensure that the overall design of a building assists and enhances the management of fire safety.

This British Standard is applicable to the design of new buildings, and to alterations, extensions and changes of use of an existing building. It can be used as a tool for assessing existing buildings, although fundamental change in line with the guidelines might well be limited or not practicable. The recommendations and guidance given in this British Standard are intended to safeguard the lives of building occupants and fire-fighters. While some of the recommendations and guidance might also assist in the achievement of other fire safety objectives – such as protection of property, the environment, communities and business/service viability – additional measures might be necessary which are outside the scope of this British Standard.⁵

BS 7974: Application of fire safety engineering principles to the design of buildings – code of practice

This British Standard provides a framework for an engineering approach to the achievement of fire safety in buildings by giving recommendations and guidance on the application of scientific and engineering principles to the protection of people, property and the environment from fire. It also provides a framework for developing a rational methodology for the design of buildings.

This standard applies to the design of new buildings and the appraisal of existing buildings. The use of this standard will facilitate the practice of fire safety engineering and in particular it will:

- provide the designer with a disciplined approach to fire safety design;

⁵ British Standards Institution (2015) *BS 9991:2015 Fire safety in the design, management and use of residential buildings – code of practice*. <https://shop.bsigroup.com/ProductDetail?pid=000000000030351309>

- allow the safety levels for alternative designs to be compared;
- provide a basis for selection of appropriate fire protection systems;
- provide opportunities for innovative design; and
- provide information on the management of fire safety for a building.⁶

Findings

At best, this flexibility of approach gives designers wider scope to interpret the spirit of outcome-based regulation. In practice, some designers fail to properly utilise these British Standards documents to meet the performance-based requirements of Schedule 1 for various reasons including competence. As a result, they can end up cherry-picking requirements, using the British Standards documents to avoid meeting the minimum recommendations of Approved Document B without putting in place the compensating measures. This can mean building work ends up not complying with fire safety requirements of Schedule 1 of the Building Regulations.

Regulatory requirements – Who needs to meet the requirements of the Building Regulations?

3.34

From stakeholder discussions, there are a myriad of ways in which organisations and individuals come together to establish the requirements for, and the planning, design and construction of, a new or modified building. Building procurement always starts with a client with a set of objectives ranging in scope and detail, who will initially engage with professional designers and/or contractors to create proposals and associated budgets. Sometimes outline designs are prepared and planning permission obtained, followed by more detailed design and construction sometime later. Design and construction are separate processes with considerable overlap. Under some models of 'design and build', a client will primarily work with a contractor who will themselves employ designers, rather than the client selecting the designer directly. A large number of businesses and individuals can be involved in these key roles through lengthy supply

chains. Key roles in respect of fire safety will be the person providing fire engineering input (who may not be a fully qualified fire engineer) and those installing fire safety systems such as alarm systems or sprinklers.

3.35

The requirements of the Building Act and Building Regulations impose responsibilities in a less specific way. Under the legislation the responsibility for meeting the fire safety (and other) performance-based requirements fall on "the person intending to carry out the work" and "the person carrying out the work".⁷ This applies in both a new-build and a refurbishment scenario.

3.36

The "person intending to carry out the work/carrying out the work" must then have their work certified through the building control system. The role of the BCBs is to take all reasonable steps to satisfy themselves that "the persons carrying out the work" have met all the necessary performance-based requirements. However, the primary obligation for compliance falls on those designing/constructing the building, not on the regulator.

3.37

Some building work defined as low risk can be self-certified by an installer as compliant with Building Regulations requirements without BCB oversight as long as the individual has been assessed as competent in their field to self-certify (for example, domestic window replacement, external wall insulation or installations of boilers). This self-certification framework is operated through a system of authorised competent persons schemes. More than 3.5 million elements of building work were self-certified in this way in 2016.

6 British Standards Institution (2011) *Application of fire safety engineering principles to the design of buildings – code of practice*. <https://shop.bsigroup.com/ProductDetail/?pid=000000000030028692>

7 Building Regulations 2010 regulation 12 and 13.

Findings

The vagueness in the legislation around “persons intending to carry out work” and “persons carrying out work” are insufficiently focused and make it difficult to understand where accountability primarily lies for showing compliance. Having identifiable named dutyholders with a clear responsibility for ensuring and proving compliance with the requirements of Schedule 1 would appear to be a clearer way of maximising the focus on fire safety in a high-rise residential building. The specific requirements under the Construction (Design and Management) Regulations 2015 (see box below) provide an interesting counterpoint for consideration.

Professional competency is also clearly critical in providing sufficient reassurance around the fire safety of buildings. Fire engineering is critical throughout the design and building process, especially where there are deviations from Approved Document B. Fire engineering work is often carried out by other engineers who may lack the necessary skills in a way that would be unthinkable with, say, structural engineering work. The review also notes that those who install complex fire safety systems don’t need to prove their competence in the way that a gas installer would.

In combination, the lack of a clear dutyholder and the competency issues combine together to underpin concerns that there is no reliable, competent oversight that work will be completed in line with the Schedule 1 requirements or the Approved Documents. This does not mean that there are no competent people working in the system; there are very many. Rather the system does not do enough to provide assurance that standards will reliably be upheld.

Work undertaken via the competent person schemes can impact negatively on fire safety – particularly around breaches of compartmentation and fire stopping materials. This can be caused by those undertaking the work simply not understanding the knock-on consequences of their work.

An example of greater regulatory clarity: The Construction (Design and Management) Regulations 2015

These regulations set out clear roles and responsibilities on businesses to ensure that health and safety risks, including fire safety, arising from construction work activity are properly controlled. It particularly identifies three clear roles in the construction process and assigns specific interlocking accountabilities to these roles to support the safe delivery of the work being undertaken.

The client – who is accountable for ensuring that there are arrangements to enable the project to be managed effectively overall, including: appointing a principal designer and principal contractor with the requisite skills, knowledge, experience and organisational capability, and ensuring that they comply with their duties; allocating sufficient time and resources; providing pre-construction information; ensuring the creation of an overall health and safety file; and notifying the Health and Safety Executive (HSE) of the building site activity and key dutyholders where the work exceeds a defined threshold.

The principal designer – who is accountable for planning, managing, monitoring and co-ordinating information about health and safety risk during design and planning, including: ensuring designers comply with their duties to identify, eliminate and control foreseeable risks; providing relevant information to other dutyholders; providing information to the principal contractor to help them plan, manage and monitor the health and safety risk in the construction phase and preparing a health and safety file.

The principal contractor – who is accountable for planning, managing, monitoring and co-ordinating information about health and safety risk during the construction phase, including: liaising with the client and principal designer; preparing the construction phase plan; organising co-operation between contractors and co-ordinating their work; and providing the principal designer with relevant information for inclusion in the health and safety file.

These regulations are enforced predominantly by the HSE. Dutyholders are apparent and the relevant enforcing authority can take enforcement action where there are failures leading to significant risk (e.g. through Prohibition Notices or Improvement Notices and prosecution).

Findings

These regulations have assisted in driving culture change and raising safety standards on building sites. They appear to be an approach that is equally relevant for underpinning compliance with the Building Regulations.

Regulatory requirements – How are the building works checked?

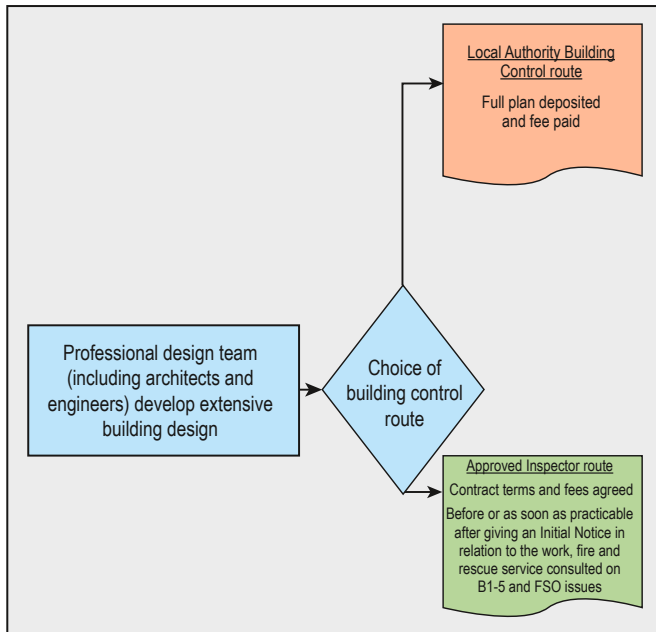


Figure 3.4: Choice of building control route

3.38

All significant new building work (from the building of a new high-rise residential building to a domestic loft conversion) requires building control oversight unless the work is very limited or can be covered by a competent person scheme.⁸

3.39

Those undertaking the building work can choose one of two BCBs – either through a Local Authority Building Control (LABC) or a private sector Approved Inspector (AI) to perform that oversight.

3.40

The Building Regulations 2010, together with the Building (Approved Inspectors etc.) Regulations 2010 and the Building (Local Authority Charges) Regulations 2010 set out many of the detailed rules that govern how building control systems operate.

3.41

Every local authority in England and Wales must provide a building control function. There are currently estimated to be around 3,000 LABC staff. In comparison AI services are provided by around 90 limited companies and 7 individuals. The latest estimates suggest that BCBs certify around 300,000 pieces of building work every year.⁹ Recent estimates suggest that LABC have a market share of 65–70%.¹⁰ There is no data on market share for building work on high-rise residential or other complex buildings only.

3.42

Partial privatisation and competition between public and private regulators was first introduced in 1985 through the creation of the role of AIs. The objective was to create a more commercial and customer-focused building control experience. When first established, the National House Building Council (NHBC) was the only AI. They had limited powers and could only provide building control services in respect of dwellings but no other types of building. Since April 2013, all AIs have been able to cover all types of building control work.

Findings

Overall standards of customer service have risen as a result of the introduction of AIs. However, the part-privatisation of this regulatory function has created a unique competitive environment and has introduced unintended consequences.

There can be a difficult trade-off between BCBs competing with one another for business with design and construction teams while ensuring rigorous and determined certification with all the requirements of the Building Regulations. This is particularly the case given tight margins on building work and the broader pressures on local authority resources. We have frequently heard that this leads to situations where BCB personnel can fail to ‘win business’ where they will not commit in advance to approval of more risky designs and that those who do win business can become far too embedded in supporting the building design process rather than being an impartial rigorous verifier of building safety.

⁸ Building Regulations 2010 regulation 3 and 9.

⁹ DCLG (2017) *Annual Report and Analysis of Building Control Performance Indicators – Building Control Performance Standards Advisory Group Report: 2015/16*. This report is not based on a 100% response rate so is likely to be an undercount.

¹⁰ Lychgate Projects (2017) *The contribution and value of LABC’s plan assessments*.

Similarly, there are obvious commercial considerations for any BCB (whether LABC or AI) refusing to sign off completed work where that would jeopardise their future business with the same client. We have heard repeated concerns expressed about the commercial pressures associated with rigorous enforcement of fire safety requirements.

3.43

There are no legislative requirements that set standards of competence or training for building control inspectors (or the types of jobs that they can take on). Instead, BCBs are expected to have staff that are competent to do the job.

3.44

Both the LABC¹¹ and AIs have tried to raise competence. The LABC partnership scheme enables local authorities to share expertise. LABC provides training for its members. Recently the LABC has also developed a set of standards and recently adopted an International Standard Organisation (ISO) standard, which aims to raise standards in Local Authority Building Control. They have also set up a range of formal qualifications with the University of Wolverhampton (launched this year), including a degree in building control surveying. However, at present there is no oversight of the quality of work of LABCs as there is in Scotland. The Construction Industry Council Approved Inspectors Register (CICAIR) assesses and registers all AIs to allow them to perform building control functions and audits their performance periodically. Re-approval is required on a five-yearly basis.¹²

Key facts on building control bodies¹³

BCBs (whether LABC or AI) are overwhelmingly small and medium-sized operations, with 62% having 15 employees or fewer.

In 2015/16, the average building control fee charged per application was £750 in the private sector and £432 in the public sector.

In 2015/16, domestic alterations, extensions and improvements made up 78% of building control applications and this represents 63% of fees charged.

The 2015/16 report highlighted another slight decrease in the skill level of BCB workforces. On average, 51% of staff were fully qualified with corporate membership of relevant professional bodies, down from 59% in 2012/13. In 2015/16, 18% of staff were reported to have experience of fire engineering/fire risk assessment and 10% experience of high-rise buildings.

The age profile of BCBs suggests that they may face significant problems replacing experienced staff as their workforce approaches state pension age: 26% of BCBs workforce are aged over 55.

Findings

For a performance-based regulatory system to work well and maximise the safety of high-rise residential and other complex buildings there needs to be sufficiently competent individuals undertaking the design and construction, and highly competent regulators with the right focus and powers to ensure compliance.

While both BCB routes are working on raising workforce skills, we have heard repeated concerns that they are clearly doing so against the backdrop of tight margins, an ageing workforce and limited experience of the most complex building types.

11 In this paragraph LABC should be taken to mean the not-for-profit membership organisation that represents all Local Authority Building Control teams in England and Wales.

12 An Approved Inspector can only act as a building control body if approved under the procedures specified in the Building Act and the Building (Approved Inspectors etc.) Regulations. CICAIR has been designated by the Secretary of State to act as the Approved Body on his behalf. CICAIR requires a Code of Conduct to be followed. Failure to meet the Code can lead to an Approved Inspector being removed from the register in which case they will not be able to operate.

13 Key data comes from DCLG (2017) *Annual Report and Analysis of Building Control Performance Indicators – Building Control Performance Standards Advisory Group Report: 2015/16*. These figures are not based on a 100% count of BCBs so should be taken as indicative.

Regulatory requirements – How are the building works checked in the Local Authority Building Control route?

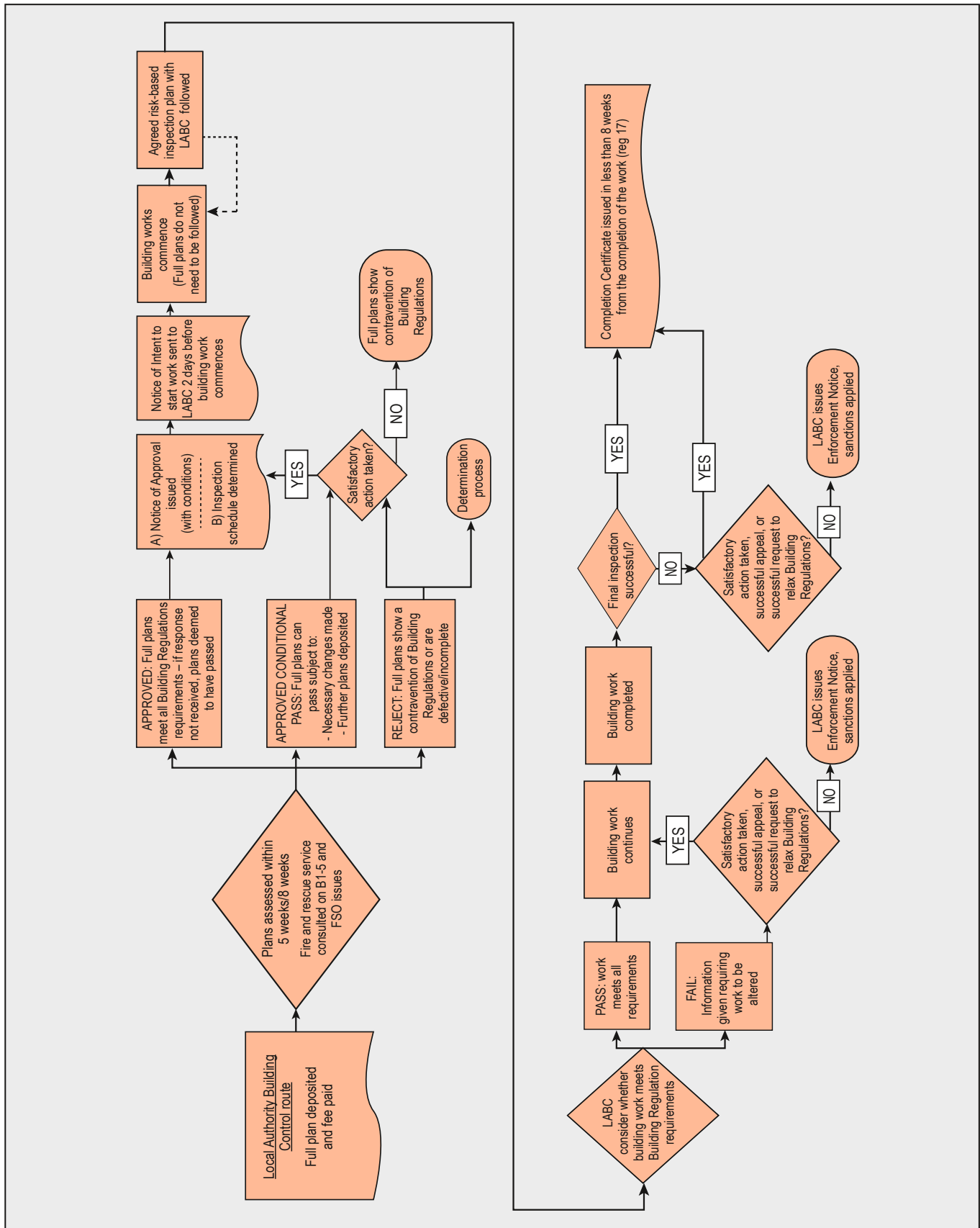


Figure 3.5: The Local Authority Building Control route

3.45

Where the person intending to carry out building work chooses the LABC route then all expected costs must generally be paid at the outset.¹⁴ The arrangements under which local authorities set their fees are controlled through regulations (which refer to certain factors which are allowed to be taken into account in calculating charges).¹⁵ All assessment, inspection and certification work is charged for, but the cost of any formal enforcement activity needs to be met from general local authority resources.

3.46

Where the LABC is chosen and a high-rise residential block of flats is to be built then **full plans** for the building work have to be submitted to the LABC.¹⁶ Full plans are required where the Fire Safety Order 2005 will apply, that is, where the building, once occupied, will have shared areas (“common parts”) as well as individual flats.

3.47

The full plans application should contain all the drawings and design specifications to prove that the proposed work will comply with all of the performance-based requirements set out in the Building Regulations. Typically, this would include all floor plans, elevations and sectional drawings, detailed specifications and associated specialist packages in respect of individual elements such as groundworks, structural details and mechanical and electrical works. It could also include structural fire engineer calculations.

3.48

The LABC must consider these plans against the Building Regulations requirements and respond within five weeks (or eight weeks if agreed)¹⁷ and determine whether the full plans submitted will either be:

- approved (i.e. they meet the Building Regulations performance-based requirements);
- approved with conditions (i.e. they pass as long as certain changes are made/more information is provided); or
- rejected (i.e. they clearly fail the performance-based requirements).

3.49

Where the construction work relates to a building where the Fire Safety Order 2005 applies, there is a statutory duty on the LABC to consult with the local fire and rescue service as part of this process.¹⁸ The statutory consultation normally takes place when the LABC is reasonably satisfied that compliance with the Building Regulations has been demonstrated (but before a formal notice to that effect is given).

3.50

The fire and rescue service is invited to comment (typically within 15 working days) on the fire safety aspects of the full plans and the extent to which they satisfy requirements B1-5 and the quality of the fire precautions that will be necessary once the building is in use. This is to maximise likely compliance with the provisions of the Fire Safety Order 2005 once the building is occupied, and to minimise the risk that there will be fire and rescue service requirements for immediate remedial work on occupation of the building.

3.51

Where there are more complex schemes, or where significant departures from Approved Document B are proposed, early advice from the fire and rescue service may also be requested by the LABC outside of the statutory consultation. In some cases, this can even be before the full plans are formally submitted. This initial/preliminary design stage advice is also referred to as ‘pre-consultation’.

3.52

The statutory consultation process is intended to allow both the LABC and the fire and rescue service to reach mutually compatible views on whether the proposals are satisfactory. In addition to making comments relating to the fire precautions, the fire and rescue service may also offer observations in relation to the Building Regulations, particularly in respect of requirement B5 – Access and facilities for the fire service.

¹⁴ Building (Local Authority Charges) Regulations 2010, regulation 8.

¹⁵ Building (Local Authority Charges) Regulations 2010, regulation 7.

¹⁶ Building Regulations 2010, regulation 12(3).

¹⁷ If these deadlines pass without a decision being made then the full plans are automatically deemed to “be approved” (Building Act 1984, section 16(11)).

¹⁸ Building Act 1984, section 15.

3.53

The LABC should have due regard to the observations raised by the fire and rescue service. Where there is a difference of opinion that cannot be resolved through discussion, the LABC may decide to approve the scheme regardless of any comments or observations and without the requirement for any further consultation (though any written comments from the fire and rescue service should be passed on).

Findings

Fire and rescue service views are not automatically endorsed and fire and rescue services do not have the power to require LABCs to reject applications whatever their level of expertise or the level of concern raised.

Some competence and capacity concerns have also been raised about fire and rescue services. Many fire and rescue services (particularly in high-density urban areas) have dedicated officers who are highly skilled and experienced in fire safety engineering. However, this is not the case everywhere. In addition, we have heard that overall numbers are under real pressure. This is likely to be made worse due to the age profile of fire and rescue service staff, with high proportions nearing retirement.

3.54

If content, the LABC will then issue a Notice of Approval for the full plans.¹⁹ In addition, the LABC will set out the schedule of stages of building work that need to be notified (i.e. where the LABC anticipates inspections will be undertaken on the building site on a risk-assessed basis).²⁰

3.55

Following approval, those intending to carry out building work effectively have permission to start building work.²¹ Two days before building work is due to begin, the person intending to carry out the work will need to issue a Notice of Intent to the LABC.²²

19 Building Act 1984, section 16(6).

20 Building Regulations 2010, regulation 16.

21 The local authority can, where it wishes, cancel the full plans approval if building work is not started on site within three years. It can also cancel an Approved Inspector's Initial Notice for the same reason.

22 Building Regulations 2010, regulation 16(1).

23 LABCs can, in law, reject full plans and require work to be regularised.

24 Value engineering is a systematic and organised approach to providing the necessary functions in a building project at the lowest cost. Value engineering promotes the substitution of materials and methods with less expensive alternatives, without sacrificing functionality.

Findings

The full plan approval stage is intended to be the fundamental starting point and the blueprint for all the work that is subsequently agreed. In practice:

- building work on the basis of those plans appears frequently to commence well before the full plans are approved;²³ and
- the agreed full plans do not have to be followed in practice and frequently are not followed as a result of business processes such as value engineering.²⁴ While there will always be some changes to plans, there are no statutory obligations to notify LABC of even potentially significant changes in plans or materials used on plans.

Both these factors appear indicative of a regulatory regime that is not being given due regard and which relies too much on the LABC to spot risks rather than for those constructing the building to remain fully accountable for the risks they may create and to manage them. This increases the risk that buildings end up falling short of the performance-based requirements.

3.56

Once construction has begun, engagement continues between those responsible for the building work and the LABC. The 'Building Control Performance Standards' document sets out best practice underpinning this engagement, covering matters such as communication, site inspection frequency and handling of complaints.

3.57

During this phase, the LABC will check that the building work complies with the requirements of the Building Regulations. Where there is any doubt about this, compliance actions will be taken by the LABC to ensure that changes are made.

3.58

The LABC will aim to keep an overview of work, both in terms of its compliance with specific performance-based requirements and also to look at the totality of the building being constructed. This total view is important because solutions for

fire safety, structural safety, energy conservation etc. can sometimes overlap with each other (especially where there are multiple inputs from unconnected specialists). Generally, this engagement process is intended to be co-operative with LABCs striving to identify practical and efficient remedies. Research from 2012 based on both LABCs and AI records suggests that this informal compliance activity is broadly effective, with very large numbers of informal enforcement activities each year.²⁵

3.59

Site visits are important, for example, to check ground conditions, installer teams and on-site quality. There is a large element of risk assessment in this, where the experience, construction skills, competence and management capabilities of the on-site team are taken into account. The 'Building Control Performance Standards' document²⁶ has recently changed the best practice approach to on-site inspections, from a minimum of once every 28 days to whatever is deemed to be the right level for the particular piece of building work. Throughout this process, there is no clear legal obligation on those undertaking the building work to inform the LABC of any significant changes to the approach towards building work, changes to detailed plans previously submitted or changes to materials used.

3.60

At the end of the building work, the LABC will undertake a final completion inspection as a precursor to occupation.²⁷ Based on this final inspection, all relevant plans and their prior engagement, the LABC will decide whether to issue a Completion Certificate. This can be issued where, "after taking all reasonable steps," the LABC is satisfied that the building work complies with the Building Regulations requirements. No further consultation with fire and rescue services is required by law at this stage.

3.61

The certificate is intended to be evidence, but not conclusive evidence, that the Building Regulations requirements²⁸ have been complied with. Compliance can only ultimately be determined by a court.²⁹

Findings

There is no formal **legal** requirement to inform LABCs of potentially significant changes to building work. This is problematic, particularly when combined with the competency issues raised previously and lack of clarity on who, in practice, needs to show compliance with the Building Regulations in the first place. More generally, the fact that building plans can change significantly means design changes that negatively impact on safety can be made without formal re-consultation (including with fire and rescue services).

On some projects, building work is completed and occupation commences before a Completion Certificate is issued. This is further evidence of a regulatory system not being shown sufficient regard in its attempts to make building work safe.

In contrast, we also understand that the issuing of a Completion Certificate by an LABC is often seen as 'proof' that those working on a building have built it to the required standards of Schedule 1. This misinterprets the role of BCBs (who, to the best of their ability, certify that work is to a required standard) and shifts responsibility for compliance away from those actually undertaking the building work.

3.62

Where a Completion Certificate cannot be issued due to failings under the Building Regulations, and satisfactory remedial action is not taken by those undertaking the building work, then sanctions and enforcement activity can be undertaken by the local authority. However, it is not possible for an LABC to take enforcement action against any building work by its own local authority. Where there is a breach of the Building Regulations under section 35, a person is liable on summary conviction by a Magistrates Court to an unlimited fine and a further fine not exceeding £50 for each day the default continues after conviction.³⁰ Under section 36 a person can be required to remove or alter offending work. There are time limits for bringing a prosecution under section 35, which is two years from the date of the completion of building work (and within six months of having sufficient evidence

25 Compliance Actions Survey 2012.

26 DCLG (2017) *Building Control Performance Standards*. www.gov.uk/government/uploads/system/uploads/attachment_data/file/585965/Building_Control_Performance_Standards_2017_Final.pdf

27 Building Regulations 2010, regulation 17A. Occupation can begin before building work is completed. However, developers are required to notify LABCs if the building is to be occupied before completion and a Completion Certificate in respect of fire safety should, in law, be issued.

28 Building Regulations 2010, regulation 17.

29 Building Act 1984, schedule 1, paragraph 4.

30 Building Act 1984, section 35.

to justify a prosecution).³¹ A section 36 notice must be served within one year of the date of building work being completed.³²

Findings

There is considerable informal enforcement activity by LABCs and AIs which appears effective in most cases. However, formal enforcement and sanctions activity is very limited – undermining the consequences associated with non-compliance.

The level of financial deterrent usually applied under section 35 is unlikely to prove an impediment to large or medium-sized developers. There is, therefore, little to drive compliant behaviour where an individual or organisation is unwilling to meet their legal responsibilities under the Building Regulations. It is also not clear whether the fairly tight time limits on bringing prosecutions under the Building Act are sensible, given that some fundamental problems may only come to light a number of years after the building has been completed.

3.63

Immediately prior to occupation, and as part of the Completion Certificate process, the relevant fire safety information relating to the building must be handed over to the “responsible person” who will take responsibility for the occupied building and will be responsible for ensuring the management and minimisation of fire risks under the Fire Safety Order.³³ This fire safety information is intended to provide critical information about the building design and the assumed fire strategy once the building is occupied.³⁴

3.64

In normal circumstances, the issuing of a Completion Certificate, the handover of fire safety information and the commencement of occupation will be the point at which the regulatory framework set out in the Building Regulations (with LABC-led oversight) ceases to apply and the Fire Safety Order (with fire and rescue service oversight) starts. It is therefore a fundamental cross-over point in the regulatory system.

Findings

The handover of fire safety information is of fundamental importance to ensure control of the building regulation process and to provide assurance for safety over the life of the building. If carried out well, this is a key element of a functioning system.

However, the review understands that there are very significant weaknesses in this handover process. The transfer of fire safety information frequently fails to occur in practice because of the absence of a responsible person, or because the responsible person is unaware of their responsibility or because of the poor documentation during the design and build process. We also understand that this failure is virtually never subject to enforcement activity. In addition, the transfer of such information has only been a requirement since 2006. Building work completed prior to this date had no statutory requirement to transfer such information on completion.

³¹ Building Act 1984, section 35A.

³² Building Act 1984, section 36(4).

³³ Building Regulations 2010, regulation 38.

³⁴ Appendix G of Approved Document B has clear instructions on what Fire Safety Information should include – for example – information on how the building will be evacuated, access and facilities to assist fire services, whether design variations are enabled or supported by fire-engineered solutions.

Regulatory requirements – How are the building works checked in the Approved Inspector building control route?

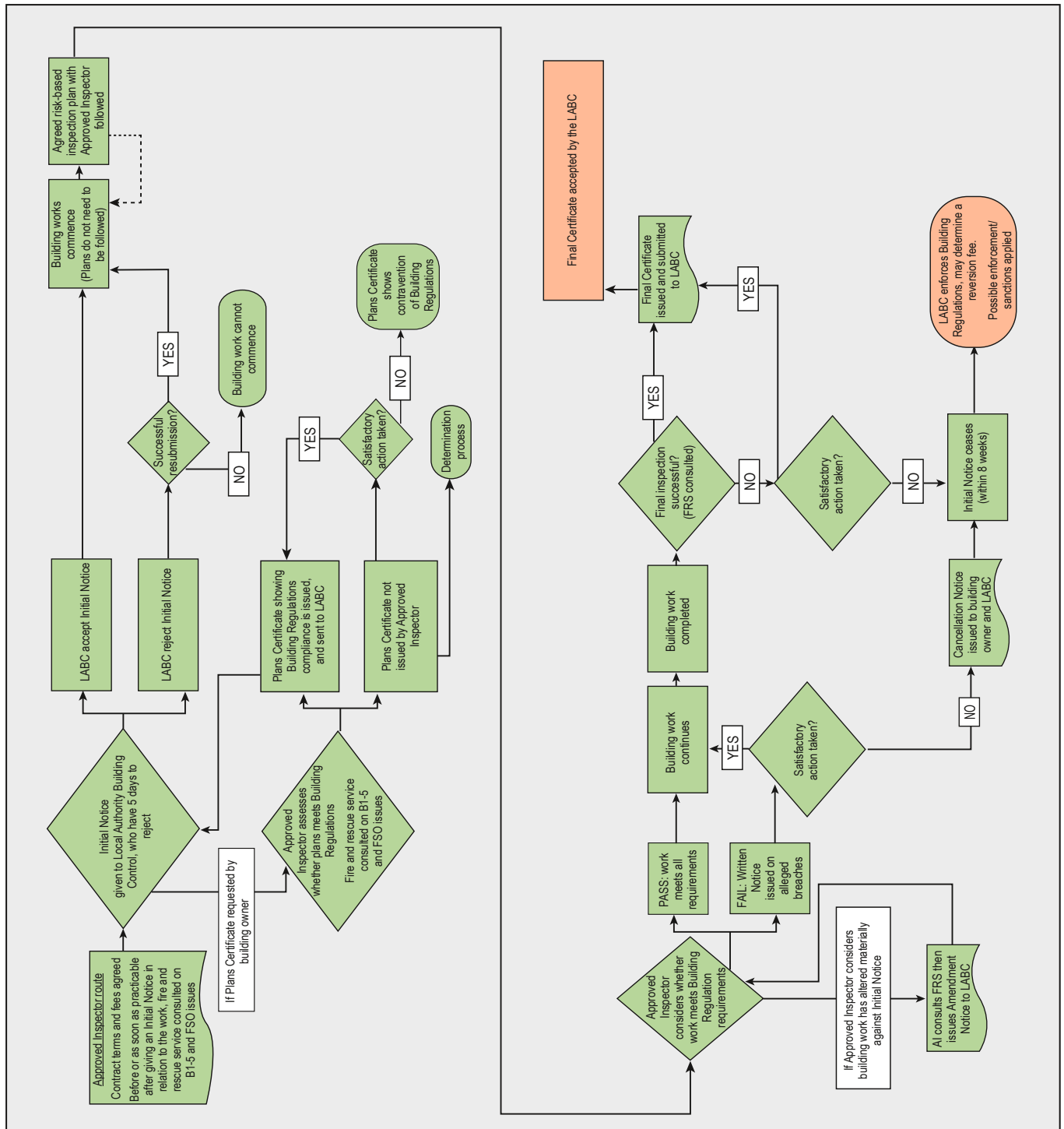


Figure 3.6: The Approved Inspector building control route

3.65

Unlike LABCs, an AI can choose whether to take on a job, and is able to charge whatever they wish for carrying out building control functions.

3.66

Where a client has engaged with an AI and agreed fees for using their building control services, the AI must inform the LABC that it is undertaking oversight of the building control process by submitting an Initial Notice.³⁵ The LABC has five days to decide if they are content with the notice

(this confirmation process is generally considered a formality).³⁶ Confirmation by the LABC means that they cannot intervene in the building control process³⁷ unless the AI withdraws from the project (at which point it would revert to the LABC).

3.67

At the same time as issuing the Initial Notice (or thereafter), the person carrying out the work has the ability to also apply for a formal Plans Certificate.³⁸ This is broadly equivalent to the full plan requirement on the LABC side and provides an additional level of formal assurance for the builder or client. Where completed, it must also be given to the LABC for information.

Findings

Only a small proportion of Initial Notices are followed by a formal Plans Certificate (CICAIR data indicates in the region of 10%). While we have been told that detailed plans are shared through the building process the lack of a statutory Plans Certificate process undermines the scope for an early detailed approval stage to be the fundamental starting point for the building project and the primary testing point of the likely safety of the building as construction is undertaken.

3.68

The AI is also required to consult the fire and rescue service in the same way as the LABC on giving an Initial Notice, as part of any Plans Certificate process and at the end of the building work.³⁹

Findings

There are frequent concerns about the timing of consultations by AIs with fire and rescue services (often late in the building process when it is very challenging to reverse works already well under way). In addition, many fire and rescue services report that there is usually only one period of consultation in practice.

As part of the mapping work, we have also heard numerous concerns about the degree and quality of detailed plans available for consideration and the degree of embedded working that fire and rescue services see between AIs and the design/construction team undertaking the building work. This raises questions of whether the AI is often too close to the design team.⁴⁰

3.69

In a similar way to the LABC route, the AI will engage in a risk-based inspection plan as construction develops. AIs are required, under their code of conduct, to abide by the 'Building Control Performance Standards'⁴¹ to ensure continued registration by CICAIR. For LABC staff, these standards are considered best practice.

3.70

At any point, the AI can issue a written letter or communication challenging breaches in the building work and seeking remedial action within an agreed period. In addition, where the person carrying out the work makes any significant change to the work, as described in the Initial Notice, the AI must give an Amendment Notice to the LABC describing the change.⁴² The AI should, by law, consult the fire and rescue service on any Amendment Notice.

3.71

At the end of the process, where the AI is satisfied that the work is completed, it will undertake a further consultation with the fire and rescue service and issue a final certificate and send it to the local authority. If the AI does not believe the works comply with the Building Regulations, they cannot issue the certificate. If disagreement arises between the client and the AI which cannot be resolved, they may cancel the Initial Notice and responsibility for certifying compliance with the Building Regulations will then revert to the LABC.

3.72

This reversion back to the LABC is necessary because, where an AI is the BCB, section 48 and 51(3) of the Building Act prohibits a local authority from taking enforcement for a breach of the Building Regulations where an Initial Notice is still in

36 Building Act 1984, section 47(2).

37 Building Act 1984, section 48(1).

38 Building Act 1984, section 50.

39 Building (Approved Inspectors etc.) Regulations 2010, regulation 12.

40 Notwithstanding the fact that, under regulation 9 of the Approved Inspector Regulations, an AI must have no professional or financial interest in the work they supervise unless it is minor work. This is backed up by the CICAIR Code of Conduct.

41 DCLG (2017) *Building Control Performance Standards*. www.gov.uk/government/publications/building-control-performance-standards

42 Building Act 1984, section 51A.

force or a final certificate has been given. However, AIs have no powers to bring a prosecution. Therefore, if an AI is unsuccessful in getting compliance they can cancel the Initial Notice and the work then reverts back to the LABC for it to use its enforcement powers.⁴³

Regulatory requirements – How are the building works checked? A comparison between the two BCB routes

3.73

It is clear that, while the overall remit that LABCs and AIs need to fulfil is the same, there are some similarities and a number of differences in requirements. Some of these are connected to the fact that, for example, formal enforcement action is a matter of public policy, undertaken only by public authorities.

Same processes for LABCs and AIs

- Work needs to be notified to a BCB.
- BCBs need to check plans.
- BCBs need to consult with fire and rescue service.
- BCBs do some inspections on site.
- BCBs issue sign-off certificates at the end of building work.

Different processes for LABCs and AIs

- The route for calculating local authority fees are set out in legislation and are normally required to be paid upfront. AIs can apply a more flexible and individual approach towards fees and their payment.
- Local authority staff do not require professional indemnity insurance. AIs do.
- Local authority staff do not have the ability to reject taking on clients and work. AIs do.
- Local authorities must, in law, be provided with full plans of proposed building works (where those works will be covered by the Fire Safety Order). AIs do not, in law, need to ask for detailed plans of building work at any stage – even for the most complex buildings.
- Local authorities must, in law, consult the fire and rescue service at the outset. AIs must also do so, in law, at completion of work before giving a final certificate.
- If an AI is unsuccessful in getting compliance, they can cancel the Initial Notice and the work then reverts back to the local authority for enforcement action.
- Formal enforcement can only be carried out by local authorities, not AIs.

Findings

The differences in processes between the two systems add to the complexity of and inconsistency in the regulatory environment and mean that there is no level playing field.

There are advantages and disadvantages of both systems but having parallel processes (frequently enshrined in primary legislation) makes it more difficult for government to raise standards in a consistent way.

The parallel routes also mean that the public record design and regulatory decision-making is inconsistent.

⁴³ Building Act 1984, section 52(1).

Regulatory requirements – How construction products and workmanship are deemed to comply with the Building Regulations

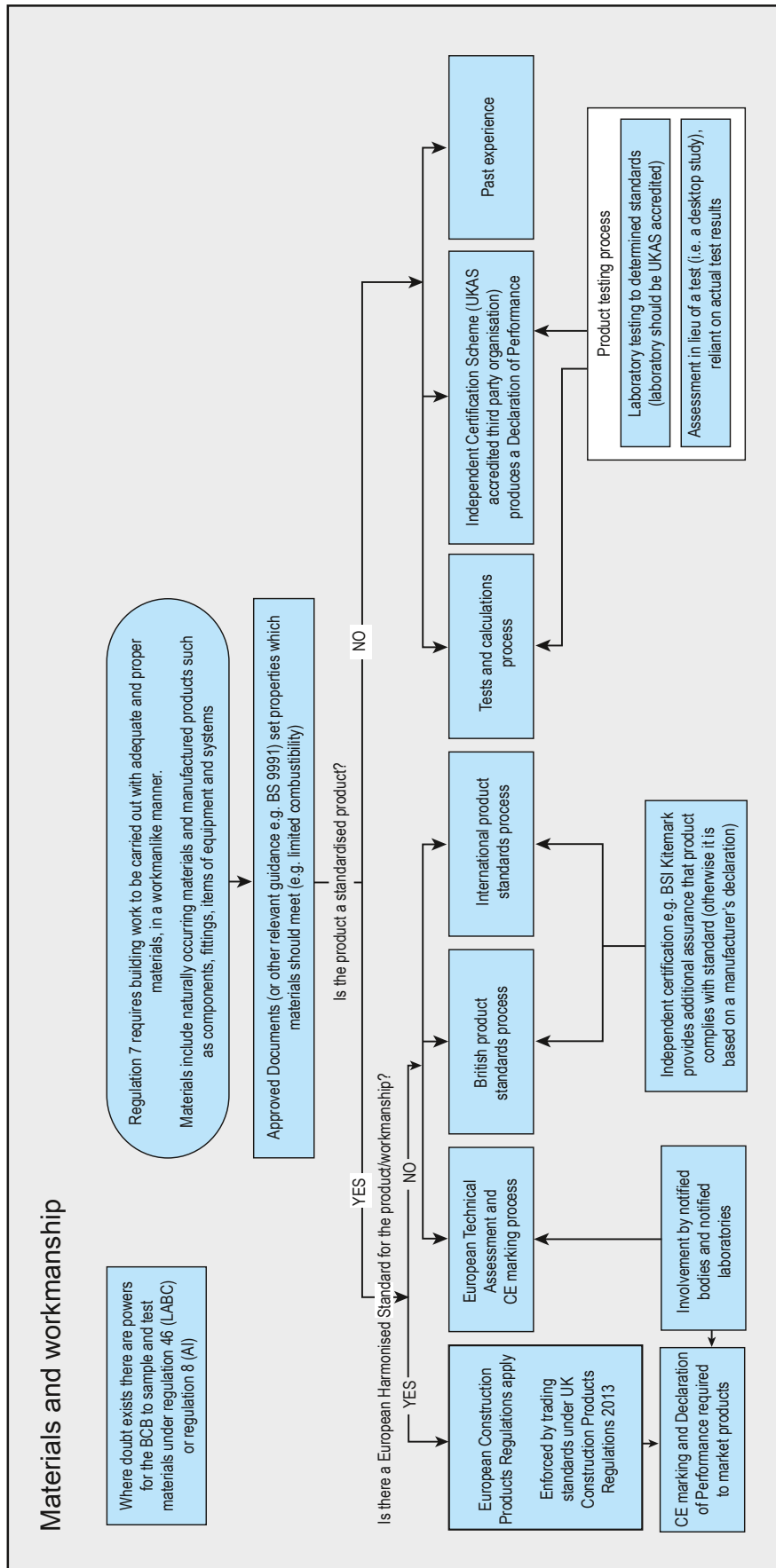


Figure 3.7: How construction materials meet the Building Regulations

3.74

Products used for the construction or refurbishment of a building have a critical impact on its safety. Incorrect installation of proper materials can also compromise safety. Regulation 7 (Materials and Workmanship) of the Building Regulations 2010 sets the general legal framework, and BCBs assess all building work for compliance.

3.75

Regulation 7 applies to all products used in building work. We have illustrated the process using a case study on concrete below.

Regulation 7: Materials and workmanship

Building work shall be carried out—

- (a) with adequate and proper materials which—
 - (i) are appropriate for the circumstances in which they are used,
 - (ii) are adequately mixed or prepared, and
 - (iii) are applied, used or fixed so as adequately to perform the functions for which they are designed; and
- (b) in a workmanlike manner.

3.76

Approved Document 7⁴⁴ (the Approved Document relevant to Regulation 7) defines materials to include:

- manufactured products such as components, fittings, items of equipment and systems;
- naturally occurring materials such as stone, timber and thatch; and
- backfilling for excavations in connection with building work.

3.77

Materials and workmanship need to be no more than necessary to satisfy the relevant Parts of the Building Regulations. The decision whether a product, a kit or a system and its application complies with the Building Regulations is for the BCB to make, using the guidance in Approved Document 7. However, it must be stressed that the responsibility for complying with the Building Regulations lies with the person doing the work.

Routes to compliance: products**3.78**

Approved Document 7 advises on the following routes which BCBs should consider appropriate to establishing a certain standard.

Route 1: Standardised products**3.79**

Harmonised European standards: Many materials are covered by the Construction Products Regulation (305/2011/EU-CPR), and are known as harmonised European products. They must have CE marking, which will reference the product standard. The product must also have a Declaration of Performance, which gives details of its performance in accordance with the measures stated in the standard. It is essential that the declared performance is suitable for the intended use.

3.80

Each harmonisation standard will set out conformity assessment and verification procedures. This is graded according to the performance criticality of the product. For many products, conformity assessments may require testing by a “notified body”. A notified body is an organisation designated by an EU country to assess the conformity of certain products before being placed on the market. Generally, products that are more critical to building safety have more assessment by the notified body, with less safety-critical products having only a manufacturers’ declaration.

3.81

Other products: If a material is not covered by a harmonised European standard, a non-harmonised European standard (e.g. EN 1329-1 for PVCu soil stacks), a British Standard (e.g. BS 4213 for cold water cisterns), or other international standard may be used to show compliance. Such specifications, including those prepared by ISO, or a national technical specification of a country other than the UK, may be used to demonstrate that a product not covered by a harmonised European standard meets the performance requirements of the Building Regulations. Manufacturers self-certify that their product conforms with the standard but third-party certification schemes, such as the BSI kitemark, are available to provide increased assurance of compliance.

Route 2: Non-standardised products – independent certification schemes

3.82

Certain products that are not covered by a harmonised European standard can use CE marking by obtaining a European Technical Assessment. This may involve testing by a technical assessment body.

3.83

There are many independent product certification schemes in the UK, for example, the British Board of Agrément (BBA), and elsewhere that may provide information on the performance of a product. Such schemes certify that a material complies with the requirements of a recognised standard and indicates its suitability for its intended purpose and use.

3.84

Certification bodies base their judgements on laboratory testing, or assessments and calculations in lieu of a specific test (often called desktop studies) – both valid routes to establish product properties. If a certification body is content with the performance of the product, they will produce a certificate, which can be used to demonstrate its suitability for certain uses, which must be checked against the requirements of the intended use.

3.85

Accreditation of a certification body by a national accreditation body belonging to the European co-operation for Accreditation (EA) provides a means of demonstrating that the certification body's certification scheme can be relied on. In the UK, most independent certification bodies are accredited by the United Kingdom Accreditation Service (UKAS) against the appropriate quality assessment standard for the work they are undertaking.

Route 3: Tests and calculations

3.86

Where there is no relevant standard, tests, calculations or other means may be used to demonstrate that the material can perform the function for which it is intended. UKAS or an equivalent national accreditation body belonging to the EA may accredit the testing laboratories; this accreditation provides a means of showing that tests can be relied on.

3.87

The Approved Documents outline many standard tests, for example under British Standards, that are routes to compliance. In some cases, assessments (often called desktop studies) carried out in lieu of test results, but based on real test results, can be undertaken to show that one tested product has similar properties to an untested product.

Route 4: Past experience

3.88

Past experience, such as use in an existing building, may show that the material can perform the function for which it is intended.

Conformity testing

3.89

Under regulation 46 of the Building Regulations, local authorities have the power to take samples as necessary to establish whether materials to be used in building work comply with the provisions of the regulations.

3.90

Regulation 46 does not apply to any work specified in an Initial Notice or to any work for which a final certificate has been given by an AI and accepted by the local authority. However, there is an equivalent power for an approved inspector to make tests and take samples in regulation 8(1) of the Building (Approved Inspectors etc.) Regulations 2010.

Materials susceptible to changes in their properties

3.91

There are special provisions for “short-lived materials”. For “materials susceptible to changes in their properties” certain environmental conditions can affect the performance of the materials over time. Such materials will meet the requirements of the regulations if the residual properties, including the structural properties, meet both of the following conditions:

- a. Residual properties can be estimated at the time of their incorporation in the work.
- b. Residual properties are shown to be adequate for the building to perform the function for which it is intended, for the expected life of the building.

Findings

There are several areas of concern with this system, as highlighted by the majority of our call for evidence entries. Contributors believe products are marketed with specification data presented in ways which can easily be misinterpreted. Indeed, individual elements are often used as part of compound systems that are not fully tested as systems. Further, assessments in lieu of tests, or desktop studies, are widely used to assess equivalence of products and systems, but this is not properly managed or controlled both in terms of the circumstances in which they can be used and the qualifications and experience of those undertaking them. Such assessments, and the details of those who produce them, are not made public, even to building control.

Routes to compliance: workmanship

3.92

The routes to demonstrating compliance in workmanship are similar to those for products:

- **Harmonised EU standards** may refer to the intended use of the product.
- **British Standards**, and other international standards, set standards on workmanship on building sites (such as BS 8000). Management systems can be covered by a quality management scheme (such as one that complies with the relevant recommendations of BS EN ISO 9000).
- **Independent certification schemes** can specify how workmanship will deliver a declared level of performance. The person carrying out the work should show that the workmanship will provide the appropriate level of protection and performance.
- **Competent person self-certification schemes** that register installers of materials can provide a means of ensuring that work has been carried out by knowledgeable contractors to appropriate standards.
- **Past experience**, such as use in an existing building, may show that workmanship is appropriate for the function for which it is intended.
- Finally, **tests** can be used to show that workmanship is appropriate. Regulation 45 of the Building Regulations, regulation 8 of the Approved Inspectors Regulations and section 33 of the Building Act 1984 give a BCB the power to carry out tests as they consider necessary to establish whether building work complies with the requirements of regulation 7.

Findings

The integrity and efficacy of product and system classifications are highly dependent on correct installation by competent and knowledgeable persons. The standards of workmanship for the installation of some safety-critical products (e.g. cladding) is not made explicit in the Approved Documents.

Case Study: Concrete

Materials

Concrete should comply with BS EN 197-1 and aggregates with BS EN 12620, both of which are harmonised European product standards so should have CE marking and a Declaration of Performance. Similarly, many common admixtures are also covered by harmonised European product standards.

Workmanship

Workmanship should comply with BS 8000-2, which is a British Standard. This standard covers matters such as handling and storage of materials, precautions against adverse weather, mixing, transporting, placing, curing and protection.

Stage 3 – The fire safety aspects around refurbishments and change of use, including building control oversight

3.93

The description of Stage 2 set out above applies to the construction of new buildings. Once a high-rise residential building is occupied and is being maintained, then Stage 4 below sets out the different regulatory system that applies through the Fire Safety Order and the Housing Act 2004.

3.94

However, when that building is refurbished, or where its use is changed, the Building Regulations (including building control arrangements) are re-engaged.⁴⁵ In general, once a decision is made that the Building Regulations are re-engaged, the same requirements set out above, including the building control process, apply. However, there are two sets of complex decision-making processes needed in a refurbishment scenario. This reflects the difficulties that occur when needing to make changes and apply modern understanding of building and fire safety to a building that may be 50 or 100 years old.

Decision 1 – Is this “building work”?

3.95

The Building Regulations set out a number of categories of building work which must meet the requirements in the regulations. The three types of work most likely to be within scope for refurbishments are:

- work that constitutes a material alteration;
- renovation of thermal element (exterior walls, roof and ground floor); and
- provision of a fixed building service (such as replacement windows and doors).

3.96

Under regulation 3 of the Building Regulations, a “material alteration” is only such if the proposed building work would potentially make a building less safe structurally, more at risk from fire, or less accessible for disabled people than required by the Building Regulations in force at the time the work was originally carried out.

3.97

Where the refurbishment fits within any of the categories of building work above, then Building Regulations requirements will apply and the BCBs and the building control oversight described above come back into play. Where the work is not building work, then there will be no BCB oversight.

Decision 2 – Is the non-worsening provision invoked?

3.98

The person doing the refurbishment work must then, alongside the BCB, make an assessment about the extent to which those parts of the building being refurbished will impact more generally on whole building. Very specifically, the ability of the existing building to meet the performance-based standards in Schedule 1 must be reconsidered. In many cases, an old tower block building from the 1960s will fall short of the expected modern minimum standards for meeting, say, requirement B1 (Means of warning and escape from fire). However, there is no requirement to generally improve the fire safety provisions in parts of the building not subject to building work, merely a requirement that the work should not make the building less compliant. This is called the “non-worsening provision”.⁴⁶

⁴⁵ Planning permission may also be required for making external alterations or additions to buildings.

⁴⁶ Building Regulations 2010, regulation 4(3).

3.99

If the alterations reduce the building's effectiveness in meeting any specific Schedule 1 requirements compared with before those adjustments were made, further changes will be required as part of the building work – but only to take the building back up to the same sub-optimal level that it was before and not to the latest minimum acceptable standards. This non-worsening rule applies to every aspect of building requirements, except for some energy-efficiency provisions.

Findings

While there is a rationale for non-worsening (and more generally for not imposing the latest modern building standards on old buildings, which may quickly make continued occupation, or any refurbishment activity uneconomical), it results in many buildings not having up-to-date arrangements for fire safety and no statutory assumption of continuous improvement over the life of a building. This seriously limits the scope of the law to improve fire safety in pre-existing buildings.

Stage 4 – The fire safety aspects of the regulatory framework surrounding the occupation of a building

3.100

Once a building starts to be occupied then the assumption (based on building control sign-off) is that the building meets the fire safety requirements of the Building Regulations (that are in place at the time of construction) and, as such, is safe to be occupied.⁴⁷

3.101

Once building work is completed and occupation begins, a different regulatory regime applies. These regimes are designed to ensure that premises are proactively managed and maintained to keep those working or living there, and others in the building, safe from the risk of a fire. In residential buildings, this includes ensuring that any hazards to the health and safety of residents, anywhere in, on or around the building, are assessed and removed.

3.102

For high-rise residential buildings, there are two key legal frameworks, each with different scope, requirements and enforcing authorities:

- The **Regulatory Reform (Fire Safety) Order 2005** – enforced by the fire and rescue service; and
- The Housing Act 2004 and, in particular, the **Housing Health and Safety Rating System (England) Regulations 2005** – enforced by local authority Environmental Health Officers (EHOs).

Quick overview of the two key regulatory frameworks

3.103

The Fire Safety Order requires a **“responsible person”** in every relevant premises to carry out, and regularly review, a fire risk assessment for that premise. In residential premises, the fire risk assessment must consider whether the fire safety measures in place in the **common parts** of the

building to which the Fire Safety Order applies are suitable and sufficient to minimise the life risk to those lawfully on, or in the vicinity of the premises and, where necessary, to implement and maintain improved fire safety measures that reduce the risk from fire to as low as reasonably practicable.

3.104

This system is fundamentally based on self-regulation (by the responsible person), in conjunction with any **competent person** they choose to employ. In the majority of premises to which the Fire Safety Order applies, including the common parts of high-rise blocks of flats, the local fire and rescue service will be the enforcing authority. It will audit or inspect premises for compliance with the Fire Safety Order’s provisions on the basis of its locally determined risk-based inspection programme.

3.105

In contrast, the Housing Health and Safety Rating System 2005 (HHSRS), formed through the Housing Act, is a largely reactive system that assesses likely harm to tenants over 29 identified hazards, including one for fire risk. The HHSRS provides local authorities (through EHOs) with a range of powers to investigate and, where necessary, require landlords (mostly private sector landlords) to improve standards and remove hazards. EHOs cannot take enforcement action against local authorities. The HHSRS looks at both the individual dwelling itself and the common parts of the building.

⁴⁷ In older buildings, the assumption is that the building has been maintained sufficiently to ensure that the fire safety features required at the time of construction remain to the same overall level and it is therefore as safe from fire now as it was then.

Definition of “common parts” under the Fire Safety Order

The Fire Safety Order is primarily designed for non-domestic premises and, as such, applies only to the “common parts” of a residential building; for example, common staircases, corridors and the external doors to each flat.

“Common parts” are outlined in article 2 of the Regulatory Reform (Fire Safety) Order 2005 (Fire Safety Order) in relation to domestic premises, that is, parts of the building “used in common” by the occupants of more than one dwelling. Under the Fire Safety Order, common parts do not include any aspects of fire safety within flats or on the outside of a building, such as cladding.

Unlike the Fire Safety Order, the HHSRS applies to all parts of residential buildings, including both individual flats and all the common parts of high-rise buildings.

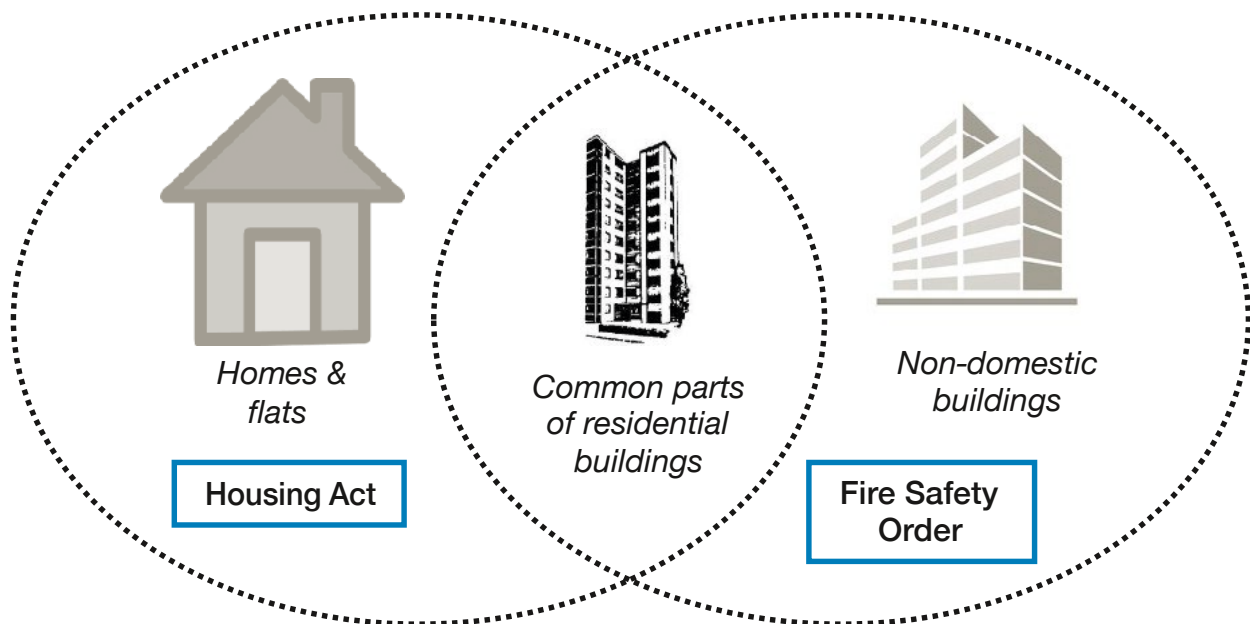


Figure 3.8: The interaction of the Housing Act and Fire Safety Order

Findings

There are two overlapping regulatory frameworks connected to ensuring fire safety in an occupied building. Although protocols⁴⁸ do exist to oversee joint working, the legislative overlap and mismatch across these two frameworks make it significantly more challenging for government to ensure that there is a sufficient holistic focus on the fire safety of all occupied buildings.

Specifically, the safety of the common parts from fire can sometimes rely on fire safety measures within the flats, into which there is no power of entry by the fire and rescue service or power to make requirements under the Fire Safety Order. However, there is such a power under the Housing Act. But a coherent fire safety regime is dependent on an understanding of what is happening both within flats and within the common parts.

There is also no recognition in the current system of differing levels of competence required for high-risk or complex buildings.

48 See in particular www.cieh.org/library/knowledge/housing/fire%20protocol%20final.pdf

The regulatory framework around the Fire Safety Order

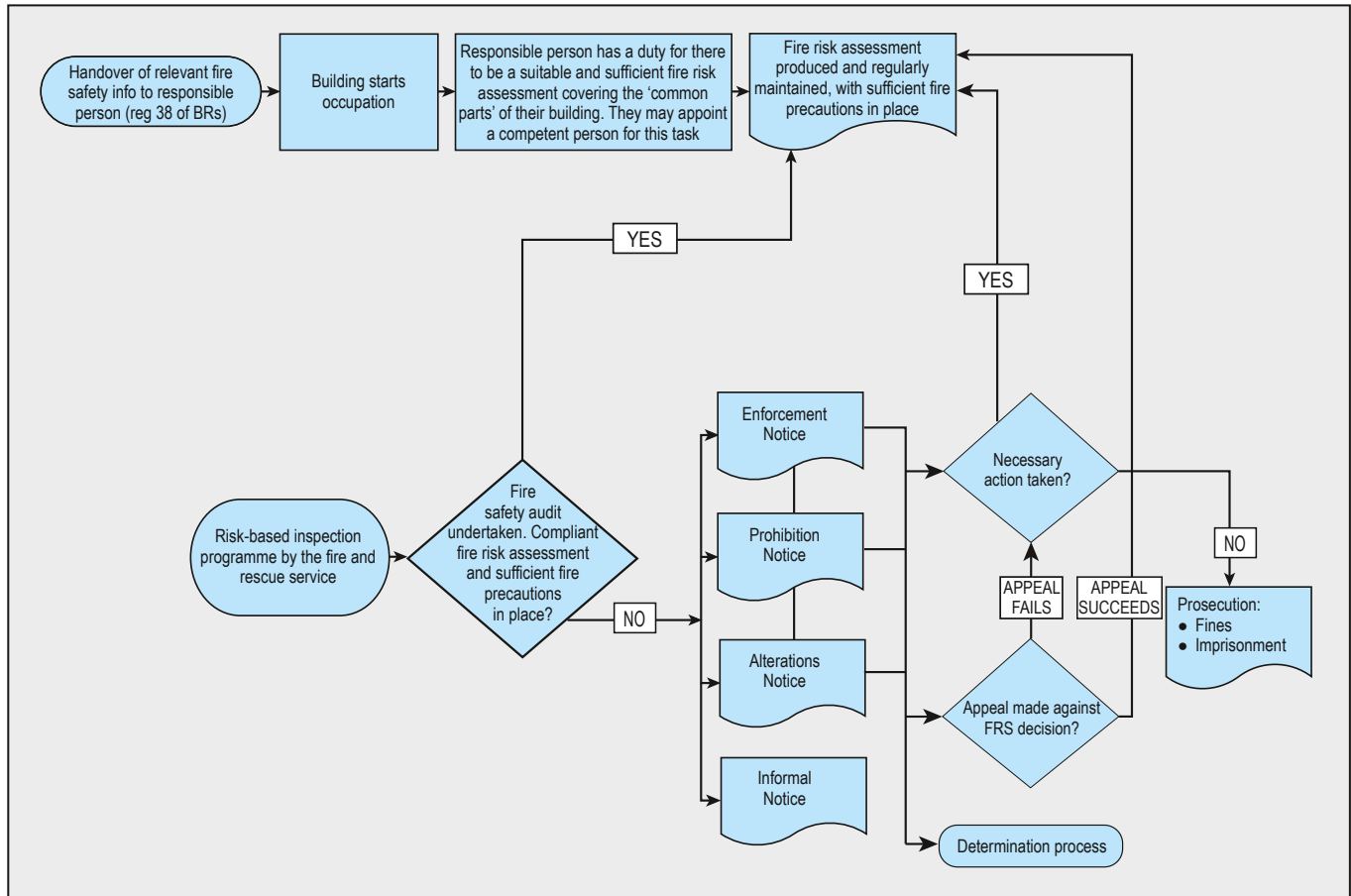


Figure 3.9: The regulatory framework around the Fire Safety Order

The role of the responsible person

3.106

A “responsible person” is required, under the Regulatory Reform (Fire Safety) Order 2005, article 9, to carry out, and regularly review, a fire risk assessment for the building. In the case of residential buildings, the responsible person is usually the building owner, landlord or managing agent. In many cases it will be a body corporate, rather than a named individual.

3.107

The responsible person must ensure that general fire precautions are in place to ensure the safety of residents and also any employees regularly on site. This duty is very similar to that imposed by the general duties of the Health and Safety at Work etc. Act 1974.

3.108

The Fire Safety Order is not prescriptive. The responsible person can decide the fire precautions that are to be put in place, based on the findings

of their risk assessment. This will vary according to the specific circumstances of the building and the individuals who reside in it (or commonly work in it).

3.109

The “fire safety information” that should be handed over by those undertaking the building work to the responsible person as part of the transfer of responsibility (see paragraphs 3.63 to 3.64 above) will be of critical importance in determining and maintaining an adequate fire risk assessment.

The role of the competent person

3.110

A responsible person must carry out a fire risk assessment. If they need help in assessing fire risks, the responsible person may appoint a person with expertise in assessing and controlling fire safety risks to assist (for example, a contractor or a fire risk assessor). The person employed to assist with the fire risk assessment can be referred to as a **competent person**. The responsible person retains responsibility for ensuring that the fire risk assessment is suitable and sufficient.⁴⁹

3.111

In 2013, the fire sector developed a set of criteria to enable responsible persons to demonstrate whether they had the competencies required to undertake a suitable and sufficient fire risk assessment (and to receive certification from company/UKAS accreditation schemes for doing so). It also produced guidance to help responsible persons choose a suitable and competent contractor or fire risk assessor to assist where necessary.⁵⁰

3.112

A responsible person must also, except in limited circumstances, appoint a competent person to assist him in practically undertaking the fire safety measures identified as necessary in the fire risk assessment. A competent person in this context is defined under the Fire Safety Order as someone who has sufficient training and experience to enable them to properly assist in the undertaking of preventative and protective measures. The level of necessary competence will vary according to the nature and complexity of the premises. The principle is that the appointed person has the appropriate level of competence for the role they undertake.

Findings

There are no minimum requirements for the competent person and no statutory accreditation or registration processes (although some voluntary schemes e.g. Warrington Certification Scheme do exist). While this makes sense for many small, low-risk premises, it is a particular issue for more complex high-rise residential buildings where there are likely to be more sophisticated fire safety strategies and more complex issues around evacuation in the event of a fire. Responsible persons frequently do little to verify competence.

Fire risk assessment

3.113

The key responsibility of the responsible person under the Fire Safety Order (whether undertaken by themselves or a competent person on their behalf) is to carry out a fire risk assessment and put in place fire prevention and mitigation measures that adequately reduce the life safety risk to those on or in the vicinity of the premises to as low as reasonably practicable.

3.114

The fire safety measures covering the common parts of residential buildings that must be adequate for compliance with the Fire Safety Order comprise the following:

- measures to reduce the risk of fire and the risk of spread of fire;
- the means of escape from fire;
- the measures necessary to assist people in the use of the escape routes, such as emergency escape lighting, fire exit signs and measures for smoke control;
- where necessary, fire extinguishing appliances;
- any fire alarm system necessary to ensure the safety of occupants;
- an emergency plan;
- maintenance of all of the above measures; and
- maintenance of measures required by legislation for use by fire-fighters.

3.115

The fire risk assessment must be regularly reviewed. For example, when refurbishment of a building occurs, the responsible person must ensure that their fire risk assessment is reviewed to mitigate the additional risks the alteration process may impose on the building and its residents.

3.116

When the Fire Safety Order was introduced, the government produced a suite of premises-specific guidance documents designed to help those responsible for compliance with the Order (particularly in small or low-risk premises) to understand their responsibilities and identify and implement appropriate fire precautions.⁵¹ These guidance documents have not been updated since that point.

3.117

The government subsequently encouraged specific sectors to develop their own fire safety guidance and to make this available. In 2008, LACORS (Local Authorities Coordinators of Regulatory Services – then part of the Local Government Association) produced ‘Housing – Fire Safety guidance’ (aimed primarily at those responsible for fire safety in houses of multiple occupation and converted flats). More recently, DCLG funded the Local Government Association to work with the housing and fire sectors to produce ‘Fire Safety in Purpose-built Blocks of Flats’, which was published in 2011.

⁵⁰ Fire Risk Assessment Competency Council (2014) *A Guide to Choosing a Competent Fire Risk Assessor*. www.london-fire.gov.uk/Documents/guidance-choosing-a-competent-fire-risk-assessor.pdf

⁵¹ For example: www.gov.uk/government/publications/fire-safety-risk-assessment-sleeping-accommodation

Findings

The Fire Safety Order has created some clarity around the role of the responsible person and their need to understand and manage the fire risks in their building. Nevertheless, feedback from the fire and rescue service inspections on high-rise buildings following the Grenfell Tower fire indicates that this system is not fully embedded. In a significant proportion of buildings visited, fire and rescue services had to issue notices covering areas such as poor compartmentation, and lack of effective fire-fighting equipment.

Inspections, sanctions and enforcement around fire risk assessments

3.118

Fire and rescue services are the enforcing authorities in the majority of premises to which the Fire Safety Order applies. Exceptions are as set out in article 25 of the Fire Safety Order.⁵² The National Framework for Fire and Rescue in England requires each fire and rescue service to have a locally determined, risk-based inspection programme and management strategy in place to ensure compliance with the Fire Safety Order within their area.

3.119

Fire and rescue services deliver their statutory duty to enforce the provisions of the Fire Safety Order by visiting premises and reviewing the adequacy of the fire risk assessment (to ensure that the fire precautions in place are adequate and appropriate to mitigate the risk to life to as low as reasonably practicable). In most cases, this will involve the inspection of records and fire safety measures.

3.120

There is no target for the number of fire safety audits that fire and rescue services must carry out each year. It is the responsibility of each fire and rescue service to allocate and manage its resources across prevention, protection and operational response to address and mitigate effectively the risks facing their communities. This includes considering how best to resource and deliver their statutory duty to enforce the provisions of the Fire Safety Order. Many fire and rescue services rely on an algorithm to identify the buildings to be visited.

This algorithm is based on national and local fire data supplemented by known risks in an area and any complaints or concerns raised.

3.121

The decision as to whether a particular building complies with the provisions of the Fire Safety Order is a matter of professional judgement for the fire and rescue service fire safety officer. Fire and rescue services have a range of powers to ensure that improvements to fire safety measures are made where the building is judged to fall short of Fire Safety Order requirements. If the measures in place are judged to be minor infractions that do not represent a significant risk, then the fire and rescue service can issue an informal (i.e. non-statutory) notice recommending that improvements be made. In cases where the failure to comply may expose employees and/or relevant persons to significant risk, fire and rescue services can issue three types of statutory notice:⁵³

- **Alterations Notice** – if the premises have high safety risks or will have high safety risks if the use of the premises changes.
- **Enforcement Notice** – if the fire and rescue service finds a serious risk that is not being managed. The notice will say what improvements are needed, and by when.
- **Prohibition Notice** – if the fire and rescue service thinks the fire risk is so great that use of the premises needs to be immediately prohibited or restricted.

3.122

Where statutory notices are not complied with then those responsible can be taken to court. Minor penalties can lead to fines of up to £5,000. Major penalties can lead to potentially unlimited fines and up to two years in prison in most serious, life-threatening cases.

⁵² The Regulatory Reform (Fire Safety) Order 2005, article 25, www.legislation.gov.uk/ukksi/2005/1541/article/25/made (or article 6 The Regulatory Reform (Fire Safety) Order 2005, www.legislation.gov.uk/ukksi/2005/1541/article/6/made).

⁵³ Part 3 of the Regulatory Reform (Fire Safety) Order 2005, and articles 29, 30 and 31 set out the different types of formal action (Alterations Notice, Enforcement Notice and Prohibition Notice), The Regulatory Reform (Fire Safety) Order 2005, article 25, www.legislation.gov.uk/ukksi/2005/1541/part/3/made

Findings

Prior to the Grenfell Tower fire, some (but not all) fire and rescue services assessed high-rise residential accommodation as not being higher-risk premises and therefore not a high priority for fire and rescue service audits and inspections. However, as risks change, the priorities for inspection also change. Therefore, as a result of the Grenfell Tower fire, the risk-based inspection programme has been updated to include a greater focus on high-rise buildings.

Fire and rescue services must combine two roles – advising responsible persons on how to fulfil their responsibilities under the Fire Safety Order, and also enforcing action against them where necessary. It is clear that fire and rescue services have found the contrasting advice and enforcement roles difficult to combine in practice.

We have heard that there are pressures on fire and rescue services – connected to declining numbers and an ageing workforce. This would impact on the ability of some fire and rescue services to fulfil their statutory duties and undertake their inspection responsibilities effectively.

The regulatory framework around the Housing Act 2004

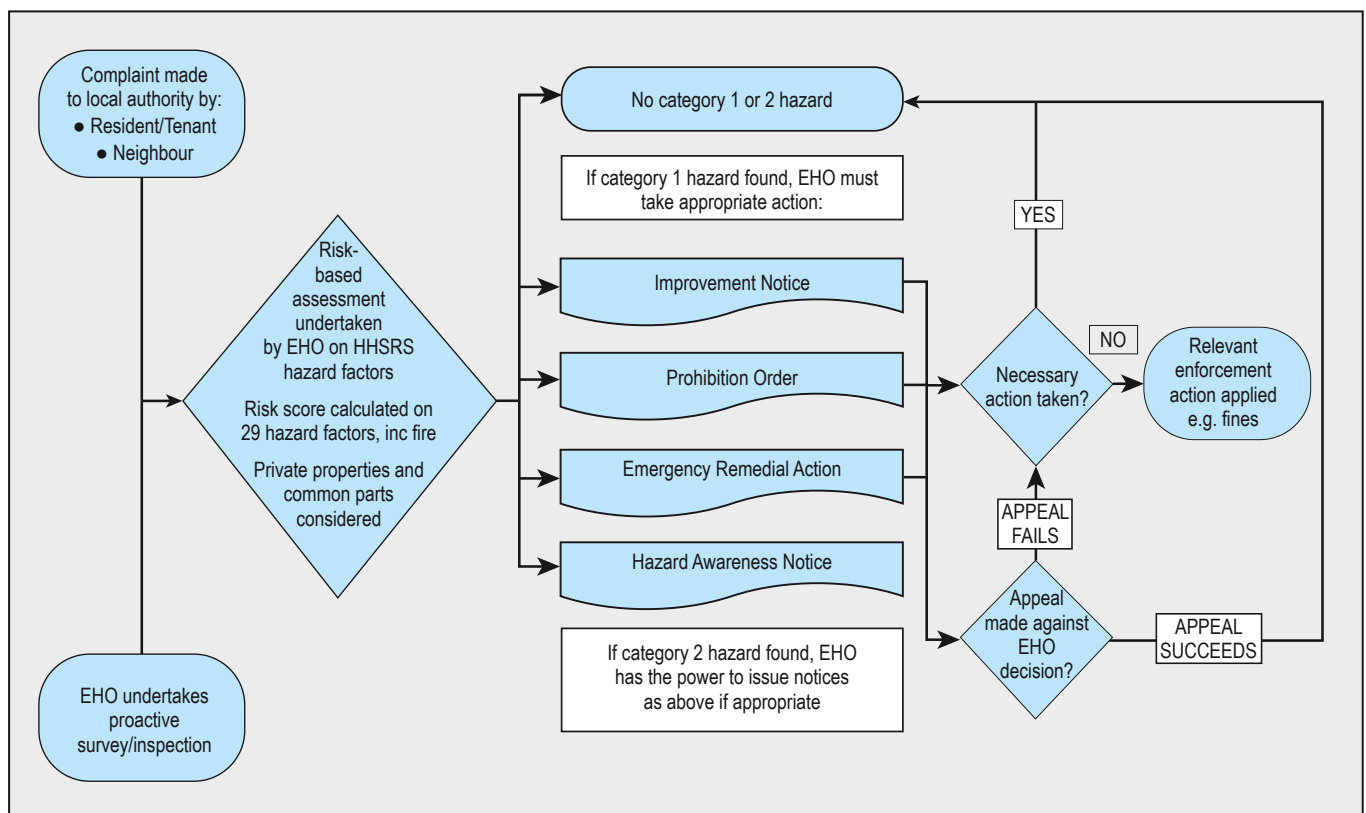


Figure 3.10: The regulatory framework around the Housing Act 2004

3.123

Local authority EHOs⁵⁴ have powers under the Housing Act to inspect any residential property in their area and require building owners to make improvements or remove hazards where necessary. A standard methodology – the HHSRS – is used to identify potential hazards and assess the potential for harm that may result from exposure to the hazard.

3.124

The HHSRS applies to all tenures but it is most frequently used in the private rented sector. It is a reactive system which is normally triggered by a complaint from a private sector tenant about the condition of the property. An inspection can also be, or may take place because the local authority has become aware of relevant issues which suggest that a property needs to be inspected. If necessary, local authorities have powers of entry which permit them to enter a property without the landlord's permission.⁵⁵

3.125

If an investigation is necessary under the HHSRS, an EHO will look at evidence of hazards across all 29 possible hazard factors.

HHSRS 29 hazard factors**Physiological requirements:**

1. Damp and mould growth
2. Excess cold
3. Excess heat
4. Asbestos and manufactured mineral fibre
5. Biocides
6. Carbon monoxide and flue combustion products
7. Lead
8. Radiation
9. Uncombusted fuel gas
10. Volatile organic compounds

Psychological requirements:

11. Crowding and space
 12. Entry by intruders
 13. Lighting
 14. Noise
- Protection against infections:**
15. Domestic hygiene, pests and refuse
 16. Food safety
 17. Personal hygiene, sanitation and drainage
 18. Water supply

Protection against accidents:

19. Falls associated with baths, etc.
20. Falls on level surfaces
21. Falls on stairs or steps
22. Falls between levels
23. Electrical hazards
24. **Fire**
25. Hot surfaces
26. Collision and entrapment
27. Explosions
28. Ergonomics – position and use of amenities
29. Structural collapse and falling elements

3.126

One of these hazard factors is the risk of fire. While it allows, in principle, for any fire risk to be assessed and then enforcement action to be taken, it is not primarily focused on building design or, for example, adequate fire prevention systems or means of escape, but more specific fire risks within a property (e.g. position of an open fire).

3.127

When an assessment is made it will be the job of the EHO to calculate whether there are any **category 1 hazards**: where a property contains potentially serious risks to the health and safety of the occupants. In such cases, the local authority must take appropriate action requiring the landlord/building owner to reduce or remove the risk. Where there is a **category 2 hazard**: less serious risk, local authorities may take action but are not obliged to do so.

⁵⁴ EHOs work to make sure that people's living and working surroundings are safe and hygienic, across a range of issues such food safety, environmental protection and pollution control, noise control, health and safety at work, public health and housing standards.

⁵⁵ Housing Act 2004, section 239.

Sanctions and enforcement under the Housing Act

3.128

There are a number of enforcement approaches an EHO can take against (almost always) a private sector landlord (EHOs are not empowered to take action against a local authority property):

- **Improvement Notice:** requires improvements in building conditions within a set period of time.
- **Prohibition Notice:** requires landlords to stop renting their property until necessary changes are made.
- **Emergency Remedial Action:** in extreme circumstances where building work is undertaken by the local authority and then the costs are recouped.
- **Demolition/Slum Clearance Order:** in extreme circumstances the local authority can also determine the building must be demolished.
- **Hazard Awareness Notices:** where warning signs must be put up. They have no sanction attached and do not require action to be taken, but are very rarely used for category 1 hazards.

3.129

Failure to comply with an Improvement Notice is a criminal offence for which local authorities can impose a financial penalty of up to £30,000 or prosecute in the courts, which have the power to impose an unlimited fine. A local authority can

also seek a Rent Repayment Order covering up to 12 months' rent. Ignoring a Prohibition Notice is also a criminal offence and the courts have the power to impose an unlimited fine.

Findings

The overlap and mismatch across these two regulatory frameworks make it significantly more challenging for government to ensure that there is a sufficient holistic focus on the fire safety of all occupied buildings.

The HHSRS has advantages given that it can look in both individual flats and common parts. However, it is a primarily reactive system covering a large number of housing hazards, meaning that local authorities are not necessarily using the powers to proactively manage fire risks. The prioritisation of the 29 different factors is highly subjective. In addition, expertise on fire safety issues and the breadth of a complex fire management strategy is likely to be better understood, on average, within a fire and rescue service rather than an EHO team.

There is no recognition in the current system of differing levels of competence required for increasing complexity of buildings and situations to be assessed.

Conclusion

3.130

The mapping work has shown that the overall regulatory system focusing on fire safety is highly complex with multiple requirements and diluted or unclear accountabilities throughout the system. The review will continue to refine the mapping and evidence base and use it to design a more effective and simpler system.

Chapter 4 Gathering stakeholder evidence

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Introduction

Background

4.1

Alongside the mapping work covered in Chapter 3, the review has used a number of techniques to gather and analyse a large volume of quantitative and qualitative data from a wide range of sources to inform its work.

4.2

One such technique was a call for evidence issued on 12 September 2017 with a closing date of 13 October 2017. In parallel, Dame Judith held a series of bilateral meetings with the construction industry, with fire safety organisations and relevant experts. Roundtable meetings were held with industry, with housing, landlord and tenant organisations, and in Manchester and London with residents of high-rise residential buildings.

4.3

This chapter sets out the feedback, input and findings of this range of engagement with stakeholders. It sets out in broad terms the responses received through the call for evidence, as well as feedback received through bilateral meetings and the roundtable events. It outlines also where this feedback has contributed to the review's emerging findings.

Key findings

4.4

The call for evidence received a sizeable response with comprehensive feedback and evidence. This highlighted widespread dissatisfaction with the current system and numerous recommendations for improvement, many of which overlap with issues thrown up by the mapping work. Many of these issues and concerns raised were similarly reflected in discussions with industry, including regulatory system experts and fire safety organisations.

4.5

The main points that have emerged from the call for evidence and discussion with industry and residents are:

- **The guidance could be clearer and more user friendly** – feedback showed a widespread misunderstanding of the role of guidance within the system and the scope for misinterpretation.
- **Roles and responsibilities are not clear** – there is a lack of definition and a lack of accountability for carrying out activity.
- **The handovers between different regulatory regimes are poorly defined and poorly executed.**
- **Competence is an issue** – there are no clear methods for assuring and demonstrating the competence of people working within the system.
- **Enforcement is poor** – partly because the process of enforcement is burdensome and costly for local authorities. Punitive measures could better hold to account those who fail to comply with regulations.
- **Products are an issue** – current testing and use of desktop studies are not sufficiently rigorous, and marketing does not reflect the complexity of the current testing.
- **Residents' voices are not heard** – there are inadequate channels for residents to have a voice on fire safety with their landlords or managing agents.
- **Communication is insufficient** – on fire safety in high-rise residential buildings, it falls short of what is needed to help residents feel safe.
- **Complexity of tenures can have a negative impact** – the complexity of tenures and the lack of a national representative tenants' organisation hinder a constructive relationship between building owners/landlords/managing agents and their tenants or leaseholders.
- **Residents' role** – residents want to play a greater part in contributing to how fire safety works in their own buildings.

Methodology

Call for evidence

4.6

The call for evidence was a series of 10 questions that, taken together, addressed the totality of the regulatory system for building regulations and fire safety. As with other chapters of this report, the term ‘regulatory system’ was interpreted to include “the current framework of building, housing and fire safety legislation and associated guidance which create a framework through which fire safety is embedded, assessed and assured through the full life cycle of a building”.¹

4.7

The particular focus of the review is the regulatory system insofar as it applies to high-rise residential buildings. However, respondents to the call for evidence were asked not to limit their responses to that type of building should they wish to make broader points. Respondents were asked to comment upon which parts of the system work well and which do not, as well as to make recommendations for improvements.

Bilateral meetings and roundtables

4.8

To conduct a series of bilateral and roundtable meetings, the review identified key stakeholders in the following groups: the building industry, fire safety organisations, technical experts, local authorities, housing organisations, landlord and tenant umbrella organisations, and residents themselves. With industry and fire safety practitioners and experts, the review sought to draw upon their expertise in the current building regulations and fire safety systems to identify strengths, key issues and concerns. By consulting a wide and diverse range of stakeholders, including through discussions with housing, landlord and tenant organisations, as well as residents, the aim was to obtain rich and robust data on what happens in practice on the ground and evidence that would inform the review’s findings.

¹ The call for evidence for the Independent Review of Building Regulations and Fire Safety, available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/644139/The_call_for_evidence_for_the_independent_Review_of_Building_Regulations_and_Fire_Safety.pdf

Headline statistics from the call for evidence

- There was a good response to the review's request for feedback, including through the call for evidence; there were more than 250 responses in total.
- Respondents made a combined total of more than 1,000 recommendations.
- Areas in which most recommendations were received included the clarity of legislation and guidance, and roles and responsibilities (indicating that respondents considered them to be areas in which positive change might be achieved).
- We received a relatively high level of responses from some organisation types, such as professional bodies.
- Response rates for other organisation types and for jurisdictions other than England were lower; where appropriate, other measures have been/ will be used to obtain evidence.
- As well as considering respondents' answers to specific questions, the review carried out a thematic analysis of responses, contributing to emerging findings and interim recommendations.

Evidence and emerging findings

4.9

This section sets out quantitative and qualitative evidence received through the call for evidence, as well as feedback from bilateral meetings and roundtables. These are grouped under main themes, in line with our call for evidence questions, but also incorporate other relevant feedback. The 10 questions posed in the call for evidence are at Appendix E. Where extracts are quoted from responses to the call for evidence, these are intended as examples of important points but should not be seen as demonstrating consensus among respondents.

4.10

Although there was no unanimity among respondents to the call for evidence and those consulted through bilateral meetings and roundtables, **there was broad consensus that the current regulatory system is unfit for purpose, particularly with regard to high-rise residential buildings.** While in some areas the system worked well and there were examples of good practice, **a clear need for reform was identified throughout the system.**

Q1. The overarching legal requirements

4.11

The majority of responses to the call for evidence and wider feedback indicated that regulation and guidance are not clear.

4.12

Many call for evidence respondents and others consulted explained that participants in the system generally find the legislation and guidance unclear. This included confusion between the two, with some referring to the Approved Documents as ‘the regulations’.

4.13

At the roundtables, some believed that Approved Document B was generally a good document in that it sets parameters and performance indicators for implementing the regulations. However, there was concern that it was not user friendly and could be arranged in a more integrated way. Others confirmed that it could be that some elements were contradictory, that terminology throughout was inconsistent and that it could be interpreted in different ways.

4.14

Some respondents highlighted that building in England can commence without some of the checks present in other jurisdictions, and that thereafter it can diverge from the original plans without any proper change control process and documentation.

4.15

There was widely held concern that implementing the rules was increasingly seen as a tick-box exercise, with building owners and industry focused on doing the minimum required to meet the rules rather than doing what was needed to ensure a building was safe in the immediate and long term.

*Quantitative analysis*²

- Approximately 50% of respondents indicated that legislation and guidance are unclear.
- Less than 10% of respondents indicated that legislation and guidance are clear.³

² Throughout, figures are expressed as an approximate percentage of those respondents who addressed the particular question (not all respondents answered every question), where they have done so in such a way that a clear ‘yes/no/mixed’ indication could be gleaned (in other cases, although the question has been addressed, the responses were more narrative, such that they were not amenable to summarising in that way).

³ The remainder have been initially assessed as ‘mixed’ (a similar approach has been taken where figures are quoted throughout this chapter).

Sample qualitative evidence

“It is also felt that over time the Building Regulations have become increasingly technical and complex, and personal experience suggests that even those involved in the design process appear to be struggling with the increasing complexity of regulatory requirements.”

*Barrow-in-Furness Borough Council
Development Services Group*

“For some, there is a lack of understanding about how all the strands of legislation and guidance fit together, and about the distinction between legal requirements and extensive guidance. It seems clear that some readers believe that the Approved Documents are the requirements ... There is a general sense that the Approved Documents do not provide sufficient clarity. Approved Document B is generally considered complex, difficult to follow, and in places contradictory. Difficulties in understanding, and even navigating, the documents lead to differences in interpretation.”

Construction Industry Council

Q2. Roles

4.16

The majority of the responses to the call for evidence and feedback from stakeholders indicated that that roles, responsibilities and accountabilities are unclear.

4.17

Many respondents to the call for evidence and others consulted explained that roles are undefined and unclear in the current system. There was widespread agreement that all parties needed to be clear about their roles and be accountable for their delivery.

4.18

Residents voiced frustration at the lack of clarity over who was responsible for fire safety in existing buildings, with many reporting a lack of engagement from their landlords or managing agents. Several noted that this may owe as much to the complexity of the regulatory framework and its lack of clarity about where accountability sits as to building owners or others deliberately not taking responsibility.

4.19

Many, including but not limited to fire safety organisations, felt that the role of fire safety engineers had been diluted, with limited consultation at the start of a project and an inability to speak with authority during design and construction. Residents regretted the loss of a defined and authoritative role for the fire and rescue services, and called for the latter to play a greater role in ensuring continued fire safety in existing buildings, with regular inspections and an ability to enforce its findings. A better defined and more authoritative role would ensure greater consistency in fire safety implementation across all multi-occupancy residential buildings.

4.20

There were mixed views on the role of Local Authority Building Control (LABC) and the extent to which it could act in both an implementation and enforcement role without a conflict of interest. There was a range of views also on the impact of privatisation of inspections and concerns that increased competition from Approved Inspectors drove down prices but did not necessarily result in better quality decisions.

Quantitative analysis

- Approximately 60% of respondents indicated that roles, responsibilities and accountabilities are unclear.
- Less than 10% of respondents indicated that they are clear.

Sample qualitative evidence

“There is evidently a lack of effective guidance on the roles and responsibilities of individuals at key stages of the building process. There are elements of legislation that attempt to define responsible individuals, but even these do not provide clear answers. The lack of clarity is demonstrated by the primary duty of the Building Act, which applies to ‘the person carrying out the work’. This is fundamental to compliance with Building Regulations, but who is that?”

Construction Industry Council

“The identification and responsibilities of a responsible person under the RRO [Regulatory Reform (Fire Safety) Order 2005] are often not well understood. In many cases there are multiple people and organisations dealing with the building and none of them accepting responsibility for being the ‘responsible person’.”

Fire Industry Association

“The lead designer (architect or engineer) is commonly no longer responsible for oversight of the design and the specification of materials and products from inception to completion of the project, with design responsibility often transferred to the contractor, numerous sub-contractor designed elements, and no single point of design responsibility. The frequent absence of the role of the clerk of works or site architect and the loss of independent oversight of construction and workmanship on behalf of the client means that the client often has little real control over construction quality and frequently is over-reliant on the building control process alone to ensure compliance with the Building Regulations.”

Royal Institute of British Architects

Q3. Responsibilities

4.21

Overall, responses to the call for evidence and what the review heard more widely indicated that, within the existing regime, overarching responsibility is unclear.

4.22

Many respondents reported that responsibilities are unclear to many participants in the system during phases such as design, build and occupation and at the handovers between them, including when responsibility passes to the ‘responsible person’ on occupation.

4.23

Feedback was received also about the extent to which ensuring compliance with the Building Regulations should rest with building control and/or those carrying out building work.

4.24

Others addressed the overlap of responsibilities such as consultation between building control

and fire and rescue services; in particular, whether this occurs sufficiently early for the fire and rescue service’s views to be properly taken into account.

4.25

Some acknowledged that industry, as well as building owners and landlords, needed to take their share of responsibility for ensuring that buildings were safe in the long term.

Quantitative analysis

- Around 65% of respondents indicated that overarching responsibility is unclear.
- Just under 10% of respondents indicated that it is clear.

Sample qualitative evidence

“The construction process involves many professionals who deliver various pieces of information at various stages of construction. Within the UK, this is generally delivered without a designated person who has responsibility for compliance with the Building Regulations. This can lead to fragmentation in the flow of information which can lead to areas of non-compliance, which may be exacerbated without the interventions of a BCB. The Construction Design and Management (CDM) regulations are a model that offers parallels, with a named professional (such as the Architect) at the start of the scheme given the responsibility of ‘Appointed Person’.”

National House Building Council

Q4. Competencies of key players

4.26

Broadly speaking, the majority of responses to the call and much of what was heard from others consulted indicated that those responsible for demonstrating and assessing compliance within the existing regime are not appropriately trained, accredited or adequately resourced.

4.27

Many respondents to the call for evidence and others expressed concern about the competence of principal actors within the process, in particular builders, inspectors and fire engineers, in what is necessarily a technical area, and one in which an inadvertent error could prove disastrous for fire safety.

4.28

The competence of building and fire safety professionals and how they are certified and accredited were seen as critical to proper implementation of the regulations and could in turn promote a change in culture and behaviours. There were examples of good practice, with Approved Inspectors requiring a specified level of expertise and overseen by an independent body, and work undertaken by the LABC⁴ on new qualifications. But, more generally, systems for ensuring that individuals had the right level of expertise and were formally registered and accredited with professional bodies were seen as inadequate and as carrying serious risks in situations where inadvertent errors could have a disastrous impact.

4.29

Residents in particular were dissatisfied by the level of competence demonstrated by those responsible for fire safety in their buildings, whether this was the landlord or managing agent, or those conducting fire risk assessments. The quality of fire risk assessments was often inadequate, with some conducted off site or through only cursory inspection of communal areas.

Quantitative analysis

- Approximately 55% of respondents indicated that those responsible for demonstrating and assessing compliance within the existing regime are not appropriately trained, accredited and adequately resourced.
- Less than 5% of respondents indicated that they are appropriately trained, etc.

Sample qualitative evidence

“The level of competency within the fire industry is widely varied ... In relation to fire engineering, the IFE offers Chartered Engineer status, but in practice, the majority of people who advertise themselves as ‘fire engineers’ or ‘fire experts’ do not have that status. Many other fire engineers rely on other qualifications, such as Chartered status through other (non-fire organisations) or fire brigade experience. So while they may (or may not) be competent, they have no third-party check of their competence as a fire engineer.”

International Fire Consultants Ltd

“Increased privatisation of the building control process has led to a reduction in building control capability and capacity, particularly in local authorities, which has been raised as a significant concern. Some contributors have advocated increasing local authority responsibility for building control, which would require increased training and capacity. It is important that building control bodies have the right competence and capability to assess compliance, including the fire safety, of complex buildings, and that this competency is clearly defined. These requirements for competency and training should be consistent across building control; currently, local authorities are not subject to formal qualification and training requirements, unlike Approved Inspectors under the Construction Industry Council Approved Inspectors Register.”

Royal Academy of Engineering

Q5. Enforcement and sanctions**4.30**

The majority of responses to the call for evidence and input from wider stakeholders indicated that the current checking and inspection regime is not adequately backed up through enforcement and sanctions.

4.31

Industry stakeholders said that those responsible for fire safety needed to take their responsibilities seriously, retain sufficient oversight and ensure adherence to regulations. Enforcement was patchy and inconsistent.

4.32

Many respondents to the call for evidence cited the differing responsibilities and authorities of Approved Inspectors and LABC, and the limited extent to which prosecution through the courts was seen as an effective option, with fines for non-compliance seen as less financially burdensome than compliance. Some suggested that withholding Completion Certificates would be an important tool for building control bodies in ensuring compliance, preventing occupation of a building before formal sign-off.

4 The not-for-profit membership organisation that represents all local authority building control teams in England and Wales.

4.33

Ownership throughout a building's life cycle from occupation through any refurbishments and change of use is seen as critical to ensuring fire safety in current housing stock. Formal documentation needs to be in place, reflecting changes to a building's structure or use throughout its life cycle, so that owners, landlord and fire and rescue services are able to judge where fire safety systems might have been compromised. There was concern that inspections and reviews are insufficiently frequent or timed inappropriately, resulting in potential breaches not being discovered; namely, when defective work might be obscured by subsequent work.

4.34

The principle of 'non-worsening' was discussed in some detail, with many wanting to see efforts to better reflect modern-day safety requirements when material changes were made but recognising the difficulties. Many questioned the feasibility of improved retrospective implementation on existing housing stock, although some flagged that retrospection could be legislated for, citing examples in other industries particularly where health and safety issues were an important feature.

Quantitative analysis

- Approximately 65% of respondents indicated that the current checking and inspection regime is not adequately backed up through enforcement and sanctions.
- Less than 5% of respondents indicated that it is adequately backed up.

Sample qualitative evidence

"Enforcement of the building regulations has been disincentivised by the introduction of competition between the public and private sectors ... since competition was first introduced, there has been a tendency for developers, contractors and householders to move away from local authority building control and appoint a private sector building control body in contract law. The private sector has no enforcement powers and the contract gives the client a significant degree of control over the level and type of work undertaken by the building control body."

London District Surveyors Association

"The response from contractors would often be to cover up areas quickly in order to avoid the risk of Building Control identifying problems that would then need rectifying."

Fire Industry Association

"Where enforcement powers are particularly deficient are, in our view, around enforcement of the Building Act 1984. The Act only allows the local authority to bring a case against a defendant who has undertaken unauthorised works within two years of completion, and the case must be taken against the person who carried out the works. Alternatively, or in addition, within a year of works being completed, the local authority could serve an enforcement notice demanding that the building owner undertakes works to address the infringement; with the threat that the council could undertake the work itself and subsequently recover costs. In reality, it is difficult for local authorities to prove, particularly without the co-operation of building owners or the relevant Approved Inspector (if applicable), exactly when the works were completed and who by."

London Councils

Q6. Tenants' and residents' voice and raising concerns in the current system

4.35

Overall, feedback from roundtables with residents and in the call for evidence indicated a mixed view of the effectiveness of the current means for residents to raise concerns about fire safety.

4.36

There was overwhelming agreement among residents and organisations representing tenants and leaseholders that options were limited, with many not knowing how to express concerns about fire safety in their buildings and to whom, or what to do if their landlord or managing agent failed to respond. There were good examples where landlords listened, and of the empowering role that tenant and residential associations could play in informing and supporting residents on fire safety. However, many felt that the complexity of tenures, the lack of a national representative tenants' organisation and inadequate enforcement where there were failings made it difficult to ensure

a genuinely constructive relationship between building owners/landlords/managing agents and their tenants or leaseholders.

4.37

Many residents were frustrated by the intermittent nature of information made available on fire safety in their buildings, including access to fire safety assessments when they were conducted. Managing agents were singled out as tending to ignore or dismiss requests for information and for giving insufficient or incorrect advice. There were calls for greater residents' participation in matters affecting their own buildings, including fire safety, although there was recognition that the mix of tenures meant that not all residents would see this as something in which they wished to be involved.

4.38

Many wanted to know what 'good' looked like and who was responsible for ensuring this. Residents gave several examples of instances where fire risk assessments had been either perfunctory or not completed on a regular basis, resulting in a detrimental cumulative impact on fire safety. There was a call for punitive measures aimed at holding to account those who failed to enforce required measures.

Quantitative analysis

- Less than 10% of respondents indicated that the current means for residents to raise concerns are adequate.

Sample qualitative evidence

"The opportunities that Registered Provider landlords offer for tenants to engage with them usually range from patchy to even worse. A small number of social housing landlords have good methods of engagement with their tenants – but very few offer extensive engagement opportunities, and even fewer have the skills to be able to use the voices they do hear from tenants in a positive and constructive fashion that enables a two-way dialogue. The worst landlords rely almost exclusively on digital means of communication with tenants – i.e. the only means that tenants have to communicate with their landlord may be by email or through a digital platform on the landlord's website, meaning (a) that whether and how the landlord responds is entirely in the gift of the landlord and (b) that there are no means for tenants to

engage with the landlord collectively with other tenants ...

"Happily, there are still a small number of good landlords who do work closely with their tenants. In such tenancies, tenants are enabled to shape, challenge and scrutinise how the landlord manages homes. This is particularly important in that with such landlords, tenants are potentially empowered to identify and challenge in relation to areas such as tenant safety. They are the eyes and ears of the landlord – making sure that issues that need addressing are brought to light quickly and acted upon."

A Voice for Tenants group

Q7. Quality assurance and testing of materials

4.39

Overall, respondents to the call for evidence and those consulted more widely indicated that the way building components are safety checked, certified and marketed in relation to building regulations requires change.

4.40

A large proportion of industry and fire safety experts cited confusion over product testing, labelling and certification as a significant contributory factor to fire safety systems being compromised. On testing, many expressed concern that test conditions do not necessarily reflect real-world conditions and that a failure to replicate defective installation when conducting tests can have a misleading effect on test results. There was also concern that products are marketed in a way that allows product data to be misinterpreted.

4.41

Desktop studies are considered by many to be the only cost-effective solution in some circumstances. However, many respondents were critical of the over-reliance upon desktop studies, given the limitations in their ability to accurately extrapolate performance in a fire (particularly where the performance of complete systems is extrapolated from performance testing of their component parts in isolation).

4.42

Call for evidence respondents raised concerns about the prevalence of product substitution as part of a process of 'value engineering', without any adequate control or oversight to ensure the replacement products performed as well as those

envisaged by the designer and approved by building control at the full plans stage. Some referred to the increasingly uncommon role of a clerk of works as a quality control function on site.

Quantitative analysis

- Around 75% of respondents indicated that the way building components are safety checked, certified and marketed in relation to building regulations requires change.
- Less than 15% of respondents indicated that change is not required.

Sample qualitative evidence

“Fire safety marketing information and test reports are accepted at times when there is insufficient scrutiny or a lack of expertise in relation to how they are applied and may impact on other materials or product components within a system. Many products are tested totally in isolation and do not account for the interaction with other elements. For a fire door to function, all of the components (seals, glazing, ironmongery) must be compatible. Many lack a formal process to check that products are as originally specified, or even whether the products that are delivered to site are as specification.”

British Woodworking Federation

“A register of products delivered and used in the construction process would provide a paper trail, would assist the control of materials and clearly identify if variations have been made to the previously approved specifications.”

Retired building control manager

“Of particular concern is the testing of materials. Under the current system a desktop report from an accredited testing body is sufficient where no fire test data is available for a particular system. These reports are a matter of opinion and cannot be verified by building control. This use of desktop studies as a substitute for a fire test should be stopped.” *London Councils*

Q8. Differentiation within the current regulatory system

4.43

A significant proportion of those who responded to the call for evidence and those consulted by the review saw advantages in creating a greater degree of differentiation in the regulatory system between high-rise multi-occupancy residential buildings and other less complex types of residential/non-residential buildings, but there was no overarching consensus on this point.

4.44

Many considered that the current system could be improved through the introduction of a system that differentiates on the basis of the risks associated with a proposed building. But a significant number of call for evidence respondents did not consider building height to be a sufficient basis upon which to make that differentiation.

Quantitative analysis

- Around 45% of respondents saw advantages in creating a greater degree of differentiation in the regulatory system between high-rise multi-occupancy residential buildings and other less complex types of residential/non-residential buildings.
- Approximately 20% felt there were disadvantages in creating a greater degree of differentiation on that basis.

Sample qualitative evidence

“In terms of differentiating residential high rises, advantages could be stricter, more robust fire safety for high-rise residential buildings, which could help prevent multiple fatalities and serious injury/illness, including post-traumatic stress. It could also mean that more was invested in fire prevention in such buildings. However, disadvantages could be wrongly implying that non-residential high rises were not a fire risk ... all high rises should be covered by effective fire safety regulation and enforcement.”

Institution of Occupational Safety and Health

“A greater degree of differentiation in the regulatory system could have the advantage of making differentiated safety requirements more visible and hence clearer to those with responsibilities under the regulations. It could also facilitate the mandating of stricter review or enforcement processes in relation to high-risk buildings, which may be valuable ... there are arguments for differentiation based on the number of storeys, such as under three storeys, as is the current definition of low-rise buildings, or under ten storeys, where fire rescue services have more straightforward access to buildings both to remove residents and fight fire. However, there are many risk factors that can affect fire safety in addition to height, including area, function, access, building complexity, and so on. Therefore, it may be more appropriate to differentiate buildings based on a thorough risk assessment of design, rather than on the number of storeys alone.”

Royal Academy of Engineering

Q9. International comparisons

4.45

Overall, within the call for evidence, responses indicated there is a considerable amount of good practice in the area of fire safety, outside England. In many cases, specific examples were provided.

4.46

In the review’s more detailed research on international systems, a more balanced approach emerged, with clear areas of good practice but limited evidence of where particular approaches had made a genuine difference to fire safety. More detailed information on this research is in Chapter 5.

4.47

In the call for evidence responses and the opinions expressed at roundtable events, the use of sprinklers outside England was raised. In particular, the mandatory installation of sprinklers in new residential buildings in Wales, and their use in Australia. A significant number were in favour of fitting sprinklers in all new builds, and a smaller

number supported the retro-fitting of sprinkler systems in some categories of existing buildings. However, it was also recognised that this could not be seen as a panacea, that there are practical challenges to their use in existing buildings and a need to consult with residents. Some stakeholders also raised the weaknesses of sprinkler systems; for example, their limited effectiveness at preventing external fire spread and the need for competent installation and effective maintenance.

Quantitative analysis

- Around 35% of respondents signposted and provided specific examples of good practice from other jurisdictions.
- Examples covered a broad range of countries, including New Zealand, Singapore, Australia, Scotland and Germany.

Q10. Other sectors

4.48

The views of the majority of those who responded to the call for evidence show that there is a considerable amount of good practice in the area of fire safety in other industries and sectors. Specific examples were provided in many cases.

4.49

Respondents highlighted useful parallels with other industries, including aviation and offshore oil and gas extraction, namely after the Piper Alpha disaster. They also cited the greater clarity and effectiveness of UK health and safety legislation in relation to construction, and in particular the Construction (Design and Management) Regulations 2015 which clearly define roles, assign responsibilities to them and do not allow these to be delegated away. The Gas Safe (CORGI) certification scheme was quoted as an example of good practice in requiring a registered installer to undertake installation and testing.

Quantitative analysis

- Around 25% of respondents signposted and provided specific examples of good practice from other industries and sectors.
- Examples covered a range of sectors including oil and gas, air and maritime, and offshore industries.

Sample qualitative evidence

“The railway industry requires that all combustible materials used on a passenger vehicle must meet fire safety criteria. A key lesson is that the railway vehicle manufacturer takes responsibility for the whole project, from concept design, to construction, and to approval by the authorising body ... With respect to the [Fire Safety Order], it would be worth examining the NI CQC which only permits registered Fire Risk Assessors to carry out an FRA on a care home.”

Institution of Fire Engineers

“As an example, in terms of [health and safety] legislation, asbestos is controlled effectively and efficiently by the HSE. This is regulated in terms of training, competence, qualification and certification. Only qualified companies/ individuals can carry out work, and all relevant construction staff are trained based upon their potential impact or exposure. The same principles can be applied/replicated to fire safety quite easily.”

Engineered Panels in Construction Limited

4.51

Many residents similarly recognised that much of what needed to change required a change in culture and behaviours, both on the part of owners and landlords, and residents themselves. The latter needed to understand the risks involved in certain practices, such as removing fire doors inside their flats and leaving obstacles in communal areas. Active residential associations could help with this but relied upon volunteers rather than the owner or managing agent being proactive in providing advice and information. Residents needed to feel they could speak out, both to their neighbours who might be putting fire safety integrity at risk, as well as to landlords and managing agents. A change in the urgency with which critical safety measures are addressed was also important to ensuring greater trust in the system.

Culture and behaviours

4.50

An area of concern not addressed specifically through the call for evidence questions but which was a recurring theme throughout responses and feedback received more widely, was the current culture of the building industry, with claims that this impacted negatively on fire safety. Some suggested that a failure to take responsibility for safety and a reliance on building control to identify any faults were seen as opportunities to absolve those carrying out building work. It was noted also that construction is an industry in which sub-contracting is common, and that this may lead to a lack of clarity about acceptance of multiple layers of responsibility.

Chapter 5 International systems for building regulation and fire safety

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Introduction

- 5.1**
The review is drawing upon international experience of building and fire safety regulatory systems and frameworks covering other industries where exceptional events can lead to the risk of large-scale fatalities. Our aim is to compare the system in England with those used elsewhere so as to identify best practice, learn from others' experiences and lessons, and examine whether and how we might seek to reflect best practice elsewhere in our own frameworks and implementation.
- Key findings**
- 5.2**
Our research into regulatory systems in other countries has enabled the review to present the following initial findings:
- a. The formal use of gateways or approval points at the design approval stage and at points during construction and handover appears to indicate better compliance in line with local building regulations and standards. However, there are claims that this can lead to project delays if approval systems are under-resourced.
 - b. Most countries we researched have a risk-based approach, defining buildings according to their function and/or level of risk. More complex buildings are required to comply with more stringent processes and standards. They may be subject also to more frequent and in-depth on-site inspections, and require additional approvals during construction.
 - c. Other countries define explicitly the competence required of those working on a build, often specifying the levels of expertise needed to meet the complexity of particular projects. Similarly, licensing and accreditation requirements often vary in line with the complexity of the building.
 - d. Examples in some countries indicated a correlation between compliance and enforcement; namely, that where there were more rigorous enforcement and sanction regimes there was greater compliance with regulations. More evidential data would be needed to make this finding more robust.
 - e. The countries examined included those with predominantly prescriptive or performance-based systems, single or multiple regulations, and either a centralised or devolved approach. Our research to date has not enabled us to draw links between the use of one or more of these alternatives and evidence that they work more effectively than others.
 - f. From the countries we have researched to date, few appear to have tackled successfully the issue of ensuring that existing housing stock meets modern-day fire safety standards. A number have work in progress to improve existing stock in a phased manner, but there are limited examples of good practice in this area.

Approach and methodology

5.3

In this first phase of the review, our focus has been on researching and mapping the core elements of building and fire safety systems in other countries.

5.4

In our preliminary research, we looked at a relatively wide range of countries where we might expect particular similarities to or differences from our approaches, owing either to a country's history or political set-up, or where culture and behaviours may be very similar to or different from our own. This initial work enabled us to select specific countries based on four criteria, where one or more applied:

- of a comparable size to the UK – either in land area or population;
- with a comparable number of multi-occupancy high-rise residential buildings;
- recent experience of large-scale fires in high-rise residential buildings; and
- experience of recent reviews of building and fire safety systems.

5.5

The countries we selected, whose building and fire safety regulatory systems we have researched in some detail, are:

- outside Europe – Australia, New Zealand, Singapore, Canada, United Arab Emirates (UAE), China, USA, Malaysia;
- within Europe – France, Germany, The Netherlands; and
- within the UK – Scotland, Northern Ireland, Wales.

5.6

We conducted this research by:

- working with the Royal Academy of Engineering to gather information on current frameworks and implementation through global expert contacts;
- using the review's call for evidence to gather information on systems and best practice in other countries;
- engaging in direct bilateral contact with governments and in-country fire safety experts;
- conducting desk research, including accessing readily available papers by academics and expert organisations; and
- participating at the first meeting of the EU's Fire Information Exchange Platform in Brussels.

Emerging findings

5.7

Our research has drawn out a number of common themes across building and fire safety regulatory frameworks and implementation.

Regulatory frameworks

Single or multiple regulations

5.8

Some countries have a combined single regulation covering all aspects of building systems (e.g. environmental, construction, fire safety), which could support a holistic or ‘whole system’ approach to new construction and refurbishments. Other countries (as is the case in England and Wales) have distinct areas of regulation, which interrelate so as to provide overall direction or guidance for construction and the full life cycle of a building.

5.9

There appear to be similar levels of complexity in regulatory frameworks, irrespective of a country’s use of a single or multi-faceted mechanism. Whether or not a single regulatory mechanism is used does not appear to impact on the extent to which it is implemented effectively. We found examples of both single and multiple mechanisms demonstrating effective practice, as well as areas of vulnerability. Single mechanisms were generally deemed to provide greater clarity on intent and purpose and to be easier to navigate, with positive expert feedback on the systems in The Netherlands and Australia. However, we found no substantive evidence that implementation was more consistent. In contrast, single regulatory frameworks were seen as slower to adapt to technological advances, while countries with multiple mechanisms in force, such as the USA and Canada, appeared better able to amend individual elements as new priorities or changes required this.

Case studies

The **UAE** has multiple regulations governing different aspects of construction and fire safety, with no single overarching document. There is also a clear differentiation between building and fire safety regulations, with different regulatory bodies. Concerns relate to a lack of clarity, inconsistencies and confusion over which codes and standards apply in which circumstances.¹

In **Australia**, the primary regulation governing buildings is the National Construction Code. This incorporates all areas of building regulation including energy efficiency, access, plumbing and fire safety into a single code.² The code is overseen by the Australian Building Codes Board and is a model code, implemented with or without modification by states and territories.

Performance-based or primarily prescriptive

5.10

The majority of countries researched have a mix of prescriptive and performance-based routes for regulation, although some have a stronger reliance on more prescriptive systems. Here we use the term ‘performance-based’ to refer to any functional, objective-based or performance-based system, recognising that all systems clarify the intent of regulation with policy-level goals and functional objectives but do not necessarily define detailed performance objectives aimed at providing a basis for evaluation.

5.11

In those countries where there exists a more prescriptive system, this may be where local culture and behaviours, including the wider approach to regulation, favour a more rules-based approach to government regulation. Alternatively, more prescriptive measures may have been introduced where events such as large-scale fires or other disasters demonstrated that current systems were not being implemented fully, whether owing

1 Information provided by Fellows of the Royal Academy of Engineering and their colleagues with experience of the building industry and fire safety in the UAE.

2 Information provided by the Australian Academy of Technology and Engineering and the Institution of Fire Engineers, Australia.

to the complexity of regulations, a general lack of understanding of responsibilities or concern about the level of competence of practitioners.

5.12

The 1980s and 1990s saw a marked shift in many countries, particularly in Europe but also beyond, towards more goals-based regulatory systems, often as part of wider political and social moves towards decentralisation and de-regularisation and aimed at encouraging innovation. More recently, a number of countries have introduced new prescriptive regulatory measures in a way that may, at first, appear to back-track on this earlier trend. However, this appears to be more of a direct response to large-scale fires and/or aimed at addressing areas where regulations or guidance have been found to have gaps or inconsistencies. We have heard that more prescriptive approaches have been established also in rapidly developing countries where the pace of change in the industry is rapid.

Case studies

The **US** regulatory system is primarily prescriptive with detailed provisions and guidance; a very high proportion of buildings are constructed and maintained based on the National Fire Protection Association's (NFPA) model codes and locally adapted codes. There are performance-based criteria also, with goals, objectives and necessary considerations set out in the NFPA codes. But these are used rarely; compliance with clear prescriptive criteria is generally seen as preferable to possibly lengthy approval processes for designs that fall outside these.³

Scotland has a performance-based regulatory system, reliant on building owners and approved certifiers ensuring that their design and construction meet defined end requirements.⁴

The **UAE** uses a prescriptive system, largely drawing on the USA's NFPA codes. Where these prescriptive requirements are not achievable, the UAE authority having jurisdiction will consider performance-based designs as an alternative.

Centralised or devolved promulgation

5.13

The countries researched include those which promulgate regulations at the national, regional or local level. Where central government retains the dominant role, we have seen examples of coherent and consistent implementation and enforcement. This tends to work particularly well in countries of smaller landmass or population size where a consistent approach across the country is practicable, such as in Scotland and Singapore. Where regional or local government leads delivery and enforcement, the regulatory system appears better able to adapt to regional diversity; for example, where differing climates or seismic risk may require very different building solutions, such as in the USA, Australia or Canada. In those countries where a more devolved system operates, central oversight is usually provided by the development and promulgation of a national model code, which can then be modified to suit local conditions, as is the case in Australia and the USA.

Case studies

In the **USA**, states and local jurisdictions establish an appropriate safety requirement on the basis of model codes developed independently by the NFPA. They adopt these codes or introduce more stringent codes (they cannot fall below this model code standard), and these become legally binding in the state or city concerned. State or municipal agencies are responsible for enforcement, with no defined federal state role. Those working on a new building have a good understanding of local regulations, including where these differ from the national model code.

Singapore has a centralised system with building regulations set and enforced by the Building and Construction Authority within the Ministry of National Development, while the Fire Code is enforced by the Civil Defence Force. The system is reported to be particularly effective in enforcement and in allowing residents to report failures or their concerns about fire safety.⁵

In **Canada**, provinces and territories interpret and implement national codes locally. Some use the codes as they are set centrally, while others modify them to suit the local context.⁶

³ Information provided by the NFPA.

⁴ Meacham, B.J. (ed.) (2010) *Performance-Based Building Regulatory Systems, Principles and Engagement – A Report of the Inter-Jurisdictional Regulatory Collaboration Committee*, www.wpi.edu/sites/default/files/docs/Departments-Programs/Fire-Protection/IRCC_Final_PDF.pdf

⁵ Information provided by officials and organisations with experience of the building industry and fire safety in Singapore.

⁶ Information provided by individuals working in Codes Canada, the Building and Development Branch of the Province of Ontario's Ministry of Municipal Affairs, and the Ontario Building Officials Association.

Differentiation of buildings

5.14

Most countries categorise buildings based on function, height, size and the level of risk. Different categories of buildings usually have differing requirements for fire safety, including for more complex or high-risk buildings such as high-rise residential buildings, schools and hospitals. Those working on buildings of a higher risk category are usually required to have a higher level of expertise, qualifications and accreditation, as is the case in China and the USA. Some countries also have different review or enforcement processes for buildings categorised as higher risk, carrying out more frequent and/or in-depth fire safety checks to reflect the complexity of the building.

Case studies

US national fire codes differentiate between buildings based primarily on function (e.g. group occupancy) and risk (most often structural design and the impact of any failure). Some model codes apply to all buildings, with others applying as appropriate according to eventual use and the level of risk. For example, healthcare buildings have a higher requirement and dependence on ‘defend in place’ principles (similar to England’s ‘stay put’ policy).⁷

In **Canada**, there are multiple levels of building categorisation based on function, floor area, material construction and whether the building is fitted with sprinklers. For buildings over 18 metres high, the code contains additional safety requirements including controlled smoke movement, sprinklers, lifts for fire-fighter access, central alarms and voice-controlled systems.

In **Germany**, the codes differentiate buildings on the basis of height and use. Categories 1, 2 and 3 encompass buildings up to a height of 7 metres (from the ground to the floor of the top storey), while categories 4 and 5 cover buildings up to 13 metres and up to 22 metres tall. All buildings with a height above 22 metres are formally defined as high-rise buildings, and for these, as well as buildings with certain functions such as hospitals, schools or shopping malls, additional requirements apply.⁸

Regulatory reviews

5.15

A number of countries have a formal schedule of regular reviews in place, usually in three- to five-year cycles, but this tends not to be the norm. Instead, many reviews are instigated after a large-scale fire or other disaster, for example following devastating fires in China and the UAE, or for reasons not always related specifically to fire safety, such as where technological advances in energy efficiency may require changes to other regulations. Where reviews conducted as a result of a large-scale fire result in changes to the fire safety regulatory system, these are frequently introduced through prescriptive measures either as a temporary or permanent ‘fix’, until a more overarching review is held.

Case studies

In **Scotland**, where no pre-determined schedule of reviews exists, reviews take place on an ad hoc basis in response to new developments or innovations, as well as in response to large-scale incidents.⁹

Canada publishes any proposed changes to codes annually and publishes updated and reviewed codes in five-year cycles.

In **Australia**, the national code was previously reviewed annually but this has recently been reduced to a review every three years. Codes were first merged into the single National Construction Code in 2011 and a review was last held in 2016. A task force set up in Victoria in July 2017 to assess fire safety in buildings with cladding across the state is in progress. This review will keep up to date with its findings as its work continues.

Retrospection

5.16

Very few of the countries researched have a clear regulatory mechanism for ensuring that significant changes to existing buildings require fire safety measures to be brought in line with requirements for new buildings. It is more usual for those responsible to be required to ensure that any material modification or change in use results in ‘no worsening’ of the fire safety system and its expected effectiveness in the building.

7 APEC and USAID (2013) APEC Building Codes, Regulations and Standards: Minimum, Mandatory and Green, www.cec.org/islandora-gb/islandora/object/islandora:12113/datastream/OBJ-EN/view

8 German Federal Institute for Materials Research and Testing and the German Fire Protection Association

9 Scottish Government (2017) *Building Standards: Performance Framework for Verifiers*, www.gov.scot/Topics/Built-Environment/Building/Building-standards/verification/verpf17

There are exceptions, namely in the USA and Hong Kong, where there is clear guidance on the threshold at which any changes to existing buildings must meet new fire safety standards, and in New Zealand. But we have found only limited evidence of this taking place routinely or consistently, and a number of countries are looking actively at this particular fire safety issue.

Case studies

In **New Zealand**, the Building Act 2004 requires that buildings must be brought to comply 'as nearly as is reasonably practicable' with the provisions of the Building Code where:

- a change of use of a building is intended, which involves the incorporation in the building of one or more household units where household units did not exist before, then the building in its new use must comply in all respects; or
- alterations to, or a change of use of, existing buildings are intended, then the means of escape from fire and access and facilities for people with disabilities must comply.

This requirement demonstrates a move to improve fire safety cumulatively in existing stock, particularly in that considered to be high risk. This is not a new legal concept, with similar requirements seen in other legal mechanisms for evaluating safety systems in New Zealand. However, implementation is not always consistent.¹⁰

In **Canada**, there are instances when the National Building Code is used to enforce the retrospective application of new rules to existing buildings, but this is not an expectation or requirement. The National Building Code could be interpreted to require the installation of fire alarms or sprinklers in an existing building where the authority having jurisdiction determines that there is an inherent threat to occupant safety, and issues an order to eliminate the unsafe condition. This will have been after a careful consideration of the level of safety needed and balancing the cost of implementing a requirement with the relative importance of that requirement to the overall code objectives.

Roles, responsibilities and accountability

5.17

Building regulations generally define roles and responsibilities throughout a building's construction and life cycle. The dutyholders vary, with accountability lying either with the building owner (e.g. in the USA), or transferring between the building owner, the design professional, the construction contractor or other individual involved at appropriate points during design and construction. In some countries, responsibility and accountability are clearly detailed for every stage of a building's life cycle, as is the case in Singapore, while in other countries the handover of responsibility at a particular point is not always explicit.

5.18

A lack of clarity around roles and accountability tends to impact on the extent to which enforcement is seen as effective. Feedback from a number of countries confirmed difficulties in responding to non-compliance. This tended to be the result of those responsible not being aware that they were liable rather than a blatant disregard for the rules.

Case studies

In **Germany**, the building owner has primary responsibility throughout and must submit all documentation for approval. But other individuals have responsibility for their areas of work; during construction the owner nominates to the building authorities a contact person responsible for construction. On completion, responsibility transfers back to the owner.

In **Scotland**, overall responsibility for ensuring that buildings are designed, built, maintained and operated in a compliant manner sits with the building owner. Individuals playing a particular role are responsible for applying for the relevant warrant or permit at particular points but liability remains with the building owner.¹¹

In the **UAE**, the national code requires the designation of a person, the 'Program Manager', who is responsible for the design and completion of the fire prevention programme. Usually, an accredited independent third party (fire consultant) is used to prepare fire safety strategies, training programmes, safety checklists and fire systems to be implemented

¹⁰ www.building.govt.nz/managing-buildings/change-of-use-and-alterations/anarp/

¹¹ Scottish Government (2017), *Investigation of Compliance Levels with the Building (Scotland) Regulations 2004 (including Schedule 3)*.

during construction or modification. The Program Manager is responsible for ensuring that the plan is prepared by the consultant, and implemented during construction.

Competence and accreditation

5.19

Generally, the required level of competence of individuals involved in a building's design, construction and inspection is explicit in building regulations or guidance. The majority of countries we researched require a certain level of competence, indicated by certification either through centrally administered examinations or existing professional qualifications, and in many cases accreditation to recognised professional bodies. In countries such as Germany, the USA and China, the level of certification and accreditation required is higher for work on more complex or higher risk buildings.

Case studies

In the **USA**, all individuals working on design and construction are required to have relevant qualifications, and different categories of certification and accreditation are required for different engineering specialisms. Accreditation requirements are determined at state level. A state-registered engineer is required to sign off building designs in their area of specialism only, and there are harsh fines (including loss of accreditation) for any individual who conducts this role improperly. State-level accreditation is not automatically transferable to other states; for example, California requires those working on building construction to be accredited within California given the very specific seismic risks in that state.

In **Dubai** in the **UAE**, fire safety professionals are licensed by the Civil Defence Force on the basis of written and oral examinations. Building codes also require companies to have a trade licence, which defines the category of work they may conduct, and for each category of work named qualified staff must be approved by the Dubai Municipality. A consultant with a trade licence to design low-rise buildings cannot be used to design a high-rise building. This results in credible companies requiring a mix of professionals so that they can bid for work across a wide range of construction projects.

In **China**, all building designs must be completed and signed off by a chartered engineer, either of first or second class depending upon the complexity of the build and level of risk involved. Similarly, all design companies are defined as first or second class, and must have a requisite number of first-class engineers to be able to operate on more complex builds. All designs must also undergo a peer review by a qualified individual registered with the government or go before an expert review panel if the design deviates from the national codes.¹²

Compliance and enforcement

5.20

Enforcement processes in the majority of countries researched include a review of the design and the issue of a permit before the start of construction, as well as at certain points throughout construction and at handover for final use. In some countries, a phased approach may be allowed so that review and approval of more complex designs may not necessarily hold up initial straightforward work, such as the construction of footings. Common practice across the countries researched includes a final review on completion of construction, and approval to allow the building to come into use.

5.21

In most countries, the most common 'sanction' (or regulatory response) to non-compliance detected during construction or on completion is the requirement for it to be rectified before approval. Sanctions to address non-compliance are evident in the building regulations in all countries researched, but information provided in this initial phase has been limited on the extent to which these are used and in what circumstances different sanctions apply (e.g. fines or a custodial sentence). There is limited evidence at this point also of the effectiveness of such sanctions, not only in addressing non-compliance of new or existing buildings, but also in deterring others from operating in a similar way.

¹² Information provided by multinational organisations with experience of working in the buildings industry in China.

5.22

A common concern across many of the countries researched is the extent to which any deviation from a design or use of materials, after approval and construction begins, requires a further review and new formal approval.

Case studies

In **Canada**, sanctions are determined by individual provinces. Orders can be issued to require changes to ensure compliance. In Ontario, for example, sanctions include fines of up to CAD50,000 for individuals and CAD100,000 for corporates, with up to one year's imprisonment also possible.

In **Scotland**, failure to comply with the Building (Scotland) Act 2003 can include fines, prevention of or restriction to the use of the building, and/or civil or criminal court proceedings.¹³

In the **UAE**, a building permit is required before work can begin. Non-compliance can result in substantial fines, which are applied frequently, or a custodial sentence, as well as the loss of a trade licence for the responsible individual and/or company.

privatisation reduces the independence of the review process and leads to a decreasing capacity and expertise in local authorities. There are notable concerns also that third-party inspections are open to abuse given the potential conflict of interests, with growing levels of mutual dependence between developers and contracted inspectors.

Case studies

The system in **Singapore** relies heavily on the private sector to design plans and independent third parties to review designs.

In **The Netherlands**, local authorities are responsible for the approval of designs allowing the issue of building permits, inspections at any point during construction and completion approvals. A draft law currently before Parliament sets out new processes on quality assurance that would increase the privatisation of building control.¹⁴ There are concerns among some that this may reduce the independence of building control.

Privatisation of inspector, review and enforcer roles

5.23

Enforcement processes in most countries are currently conducted by local authorities or bodies appointed by government. Increasingly, countries both in Europe and beyond are shifting towards privatisation of building reviews and control, although local authorities generally retain an enforcement role in some form. At the completion of work, third-party or peer reviews are increasingly common practice, including by private bodies, with clear processes for this in China and the UAE.

5.24

In our initial research, we have been unable to establish the extent to which increased privatisation and competition for regulatory inspections and reviews are resulting in a higher or lower level of standards, particularly where local authorities retain an enforcement role. Much of the feedback received indicates concerns that increased

¹³ Building (Scotland) Act 2003, www.legislation.gov.uk/asp/2003/8/contents

¹⁴ Information provided by the Department of the Built Environment, Eindhoven University of Technology, Fellows of the Netherlands Academy of Technology and Innovation and their networks in the Netherlands Normalisation Institute (NEN) and the Delft University of Technology.

Next steps

5.25

In the next phase of work, we will probe earlier responses from the countries surveyed, particularly in the areas set out above. We will commission more detailed information, including quantitative data on fire incidences, casualties and any trends, to help us identify where particular systems and/or changes to systems have resulted in genuine improvements to fire safety in high-rise residential buildings.

5.26

We will also commission research into the regulatory systems of other UK industries relying on a high level of safety, including where large-scale disasters may have led to a comprehensive review of the regulatory environment. The oil and gas industry (including its response to the Piper Alpha disaster), the rail industry, bridge construction and food standards may all offer examples of good practice and lessons on which we can draw.

5.27

Where we have indicated a number of areas in the regulatory system in England that require further investigation and analysis, we will use examples of what has worked well in other countries to support policy development in these areas.

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Appendix A: Biography of Dame Judith Hackitt DBE FREng

Dame Judith was Chair of the Health and Safety Executive from October 2007 to March 2016. She previously served as a Health and Safety Commissioner between 2002 and 2005. She was made a Dame in the 2016 New Year Honours for services to health and safety and engineering, and in particular for being a role model for young women. She was awarded a CBE in 2006.

In April 2016, she was appointed as Chair of EEF, The Manufacturers' Organisation.

Dame Judith is a chemical engineer and graduated from Imperial College in 1975. She worked in the chemicals manufacturing industry for 23 years before joining the Chemical Industries Association (CIA) in 1998. She became Director General of CIA (from 2002 to 2005) and then worked in Brussels for the European Chemical Industry Council (CEFIC).

She was elected Fellow of the Royal Academy of Engineering in July 2010 and currently chairs its External Affairs Committee. Dame Judith is a Fellow of the Institution of Chemical Engineers (IChemE) and a member of council. She was President of IChemE from May 2013 to May 2014.

Dame Judith is also Chair of Semta (the Science, Engineering and Manufacturing Technologies Alliance), and a non-executive director of the High Value Manufacturing Catapult.

Appendix B: Key terms

Adequate/appropriate/reasonable provision	Tests to judge the degree of compliance necessary with a requirement in the Building Regulations 2010. The Approved Documents set out what would be adequate/appropriate/reasonable in different circumstances.
Amendment Notice	A notice given by an Approved Inspector under section 51A of the Building Act 1984 to notify changes to the description of the building work to be carried out as specified in the Initial Notice.
Approved Document	A guidance document approved under section 6 of the Building Act 1984 to provide practical guidance on ways to comply with the requirements in the building regulations.
Approved Document B	Statutory guidance on ways to comply with the fire safety requirements in Part B of Schedule 1 to the Building Regulations 2010.
Approved Inspector (AI)	Bodies approved under section 49 of the Building Act 1984 to carry out building control functions as an alternative to Local Authority Building Control. Almost all are private sector bodies.
Building control	A statutory process of assessing plans for building work and building work on site to decide whether the plans and work comply with the requirements in the building regulations.
Building control body (BCB)	A local authority or an Approved Inspector.
Building Information Modelling (BIM)	A process of designing, constructing or operating a building or infrastructure asset using electronic object-oriented information or a discrete set of electronic object-oriented information used for design, construction and operation of a built asset.
Building work	Work on buildings within the scope of the Building Regulations 2010 as defined in regulation 3.
Competent person scheme	A scheme authorised under the Building Act 1984 by which registered installers have the right to self-certify the compliance of the work they do without the involvement of a building control body.
Competent person (Fire Safety Order)	Under the Regulatory Reform (Fire Safety Order) 2005, a competent person is defined as someone with sufficient training and experience or knowledge and other qualities to properly assist in the undertaking of preventative and protective measures (i.e. the measures identified in a fire risk assessment as the general fire precautions which must be taken to comply with the requirements of the Order).
Completion Certificate	A certificate given by a local authority under regulation 17 or 17A of the Building Regulations 2010 when the authority has taken all reasonable steps to assess the compliance of building work. A Completion Certificate is evidence, but not conclusive evidence, of compliance.
Design and build	A project where the main contractor is mainly responsible for both the design and build stages of a building project.
Desktop study	An assessment carried out in lieu of a physical test. The term is particularly associated with cladding systems.
Final Certificate	A certificate given by an Approved Inspector under section 51 of the Building Act 1984 stating that, having taken such steps as are reasonable within the limits of professional skill and care, the Approved Inspector's opinion is that the work complies with the requirements in the building regulations. A Final Certificate is evidence, but not conclusive evidence, of compliance.
Fire engineer	A person with the ability to apply scientific and engineering principles, rules and expert judgement, based on an understanding of the phenomena and effects of fire and of the reaction and behaviour of people to fire, to protect people, property and the environment from the destructive effects of fire.

Fire risk assessment	A systematic and structured examination of the likelihood of fire and the consequences to those who may be affected by a fire. Under the Regulatory Reform (Fire Safety Order) 2005, a fire risk assessment must evaluate the risk from fire to employees and other relevant persons (persons lawfully on the premises and/or persons in the immediate vicinity who are at risk from fire on the premises) for the purpose of identifying the general fire precautions that are needed to comply with the provisions of the Order.
Full plans application	An application made to a local authority under section 16 of the Building Act 1984 for the approval of the plans for building work. A full plans application must be made whenever the building is or would be subject to the Fire Safety Order 2005.
Initial Notice	A notice given by an Approved Inspector under section 47 of the Building Act 1984 to say that the Approved Inspector will be the building control body, rather than a local authority, for the building work described in the Initial Notice.
Material alteration	Under regulation 3 of the Building Regulations 2010, an alteration made to a building is material if the work would result in a building not complying with a requirement where it previously did or, where it did not comply with a requirement, was no less compliant than before the work was carried out.
Non-worsening of compliance	Under regulation 4(3) of the Building Regulations 2010, a requirement that the building as a whole after the work was carried out fully complied with all relevant requirements or, where it did not previously comply, is no less compliant than before the work was carried out.
Plans Certificate	A certificate given at the request of the person carrying out the work by an Approved Inspector under section 50 of the Building Act 1984 stating that, in the Approved Inspector's opinion, the work set out in the plans would comply with the requirements of the building regulations.
Responsible person	Under the Regulatory Reform (Fire Safety) Order 2005, a responsible person is generally an employer or, in premises which are not a workplace, the owner or other person who has control of the premises in connection with carrying on of a trade, business or other undertaking (whether for profit or not).
Section 36 notice	A notice served by a local authority under section 36 of the Building Act requiring a building owner to bring non-compliant work up to the required standard or to remove the non-compliant work.

Appendix C: Acknowledgements

Thank you to all the individuals and organisations who have engaged with the review to date. The organisations are listed below.

3C Shared Services Building Control
 A & F Consulting
 A2Dominion
 Academie des Technologies
 Access and Building Consultancy
 Acivico Ltd
 Adexsi UK Ltd
 Advanced Smoke Group
 Affinity Sutton
 Alarmscom
 All-Party Parliamentary Group on Fire Safety and Rescue
 All-Party Parliamentary Group on Leasehold and Commonhold Reform
 ARCH Tenants Group
 Architectural and Specialist Door Manufacturers' Association
 Arup
 Ascent Fire Safety
 Association for Specialist Fire Protection
 Association of British Insurers
 Association of Residential Managing Agents
 Association of Retained Council Housing
 Atelier Ten
 Atkins
 Australian Academy of Technology and Engineering
 Australian Institution of Fire Engineers
 AXA
 Balfour Beatty
 Barrow-in-Furness Borough Council
 Basildon Borough Council
 Bassetlaw District Council
 Belimo Automation UK Ltd
 Berneslai Homes
 Bespoke Building Control Ltd
 Bevan Architects
 Bolton at Home
 British Automatic Fire Sprinkler Association
 British Board of Agrément
 British Electrotechnical and Allied Manufacturers Association
 British Plastic Federation
 British Property Federation
 British Research Establishment
 British Rigid Urethane Foam Manufacturers' Association
 British Safety Council
 British Standards Institution
 Buckinghamshire Fire and Rescue Service
 Build UK
 Building and Development Branch in the Province of Ontario's Ministry of Municipal Affairs
 Building Engineering Services Association
 Building Regulations Advisory Committee
 Building Services Research and Information Association
 Buro Happold
 Business Sprinkler Alliance
 Butler & Young
 Cadent Gas Ltd
 Calderdale Council
 Carlion
 Catalyst Housing
 Centre for the Protection of National Infrastructure
 Centre for Window and Cladding Technology
 Centre Scientifique et Technique du Batiment
 Certsure LLP
 Chartered Institute for Environmental Health
 Chartered Institute of Architectural Technologists
 Chartered Institute of Environmental Health
 Chartered Institution of Building Services Engineers and the Society of Façade Engineering
 Chartered Trading Standards Institute Greater London

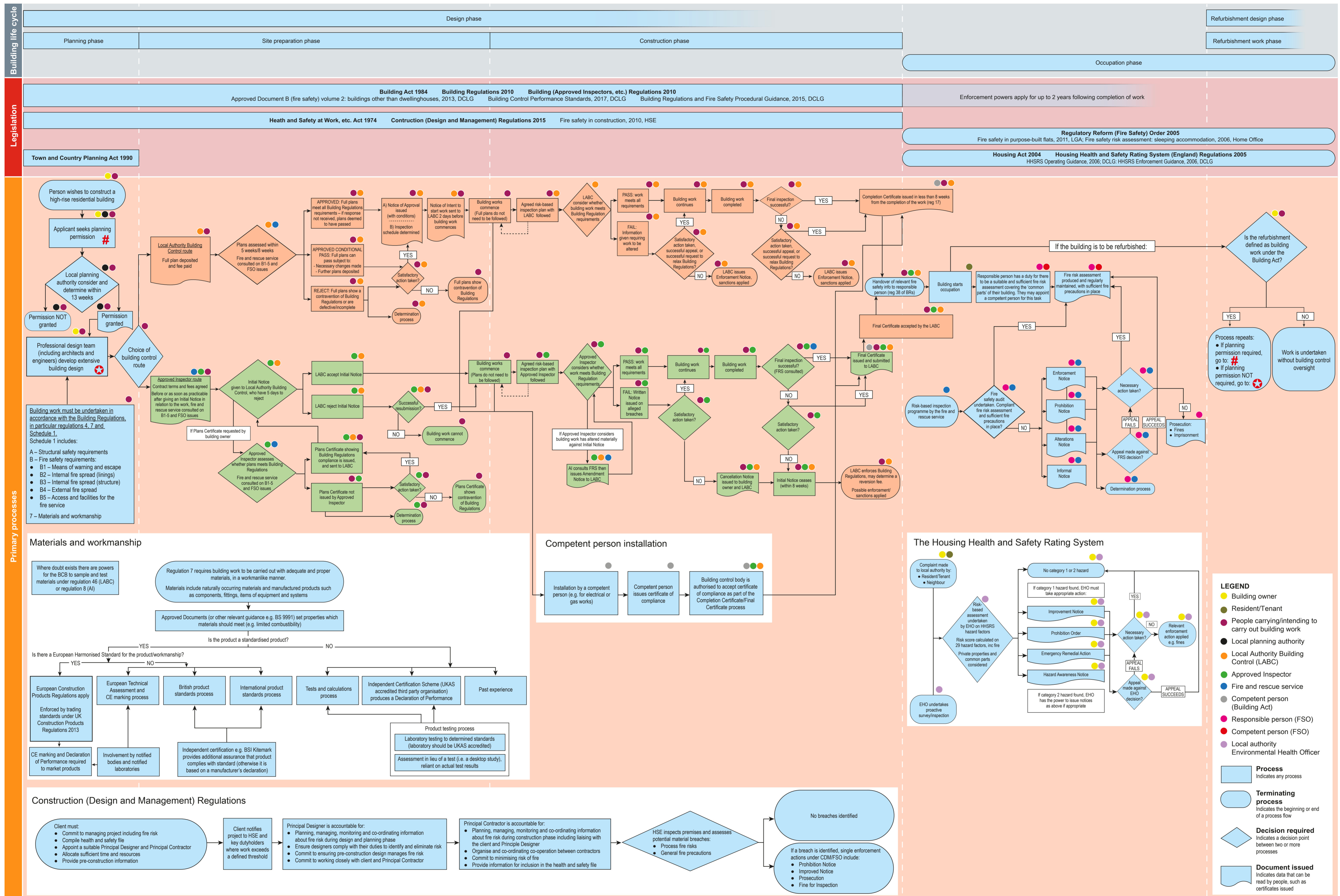
Chelmsford City Council
Cheshire Fire and Rescue
CICAIR
Citizens Advice Bureau
Clarion Housing Group
Coltraco Ultrasonics Ltd
Confederation of Co-operative Housing
Construction Industry Council
Construction Leadership Council
Construction Products Association
Council for Aluminium in Building
Crawley Homes
Croydon Council
Defence Infrastructure Organisation
Delft University of Technology
Department for Business, Energy & Industrial Strategy
Department for Education
Department of Finance, Northern Ireland
Department of Health
Department of the Built Environment, Eindhoven University of Technology
Design Fire Consultants
Devon and Somerset Fire and Rescue Service
Door and Hardware Federation
Ealing Council
East Sussex Fire and Rescue Service
Eastwood and Partners Consulting Engineers
Electrical Safety First
Engineered Panels in Construction Ltd
Essenden Design Ltd
European Fire Sprinkler Network
Exova Warringtonfire
Federation of Master Builders
Federation of Private Residents' Associations
Federation of Tenants and Residents Associations
Fellows of the Canadian Academy of Engineering
Fellows of The Netherlands Academy of Technology
Finishes and Interior Sector
Fire Brigades Union
Fire Cubed LLP
Fire Doors Complete Ltd
Fire Industry Association
Fire Ingenuity LLP
Fire Protection Association
Fire Protection Ltd
Fire Sector Federation
Fläkt Woods Ltd
Flamerisk Safety Solution Ltd
Fortis Living
FS Consulting
Genesis Housing
Gentoo Group
German Federal Institute for Materials Research and Testing
Glass and Glazing Federation
Greater Manchester Combined Authority
Greenfields Community Housing
Greenwich University
Grenfell Fire Forum
Grenfell Tower Inquiry
Grundfos
Guild of Architectural Ironmongers
Hackney Council
Hampshire Fire and Rescue Service
Harlow Council Building Control
Hazards Forum
Heatrae Sadia
Hertfordshire Fire and Rescue Service
Historic England
Home Builders Federation
Housing Ombudsman
HSH (Hyde Group)
HSS Engineers Bhd
Humberside Fire and Rescue Service
Hyndburn Borough Council
Independent Expert Advisory Panel
Institute of Residential Property Management
Institution of Civil Engineers
Institution of Fire Engineers
Institution of Occupational Safety and Health
International Fire Consultants
JACOBS
JGA Fire Engineering Consultants
Kent Fire and Rescue Service
Killa Design
Kingspan Insulation Ltd
Knauf Insulation UK
Laing O'Rourke
Lakanal House Group
Lambeth Council
Lancashire Fire and Rescue Service
Lareine Engineering
Lichfield District Council

Local Authority Building Control	Oxford City Council
Local Building Standards Scotland	PA Housing
Local Government Association	Parliamentary Office of Science and Technology
London & Quadrant	Passive Fire Protection Forum
London Borough of Camden	Peabody Housing
London Borough of Havering	Peaks and Plains Housing Trust
London Borough of Lambeth	Places for People
London Borough of Newham	Plymouth City Council
London Borough of Tower Hamlets	Plymouth Community Homes
London Borough of Westminster	Portsmouth City Council
London Councils	Powys County Council
London District Surveyors	Probyn Miers
London Fire Brigade	PRP Architects
London Housing Association	Residential Landlords Association
Manchester City Council	Retained Firefighters' Union
McAlpine	ROCKWOOL Group
MD Warranty Support Services Ltd	Royal Academy of British Architects
Meinhardt (UK) Ltd	Royal Academy of Engineering
Merseyside Fire and Rescue Service	Royal Berkshire Fire and Rescue Service
Metropolitan Housing	Royal Institute of Chartered Surveyors
Midland Heart	Salford City Council
Milton Keynes Council	Salix Housing
Mineral Wool Insulation Manufacturers Association	Scottish Fire and Rescue Service
Ministerial Building Safety Group	Scottish Government
National Association of Rooflight Manufacturers	Scottish Review Panel of Building Standards (Fire Safety)
National Federation of ALMOs	SE Controls
National Federation of Tenant Management Organisations	Sefton Council
National Fire Chiefs Council	Shelter
National Fire Protection Association	Shropshire Fire and Rescue Service
National Fire Sprinkler Network	Singapore Building & Construction Authority
National House Building Council	Smoke Control Association
National Housing Federation	Solihull Building Control
National Landlords Association	South Wales Fire and Rescue Service
National Tenant Organisations	South Yorkshire Fire and Rescue Service
National Trust	Southern Housing
Network Homes Ltd	Southwark Council
Newcastle City Council	Staffordshire Fire and Rescue Service
NIG Commercial	Strategic Housing
Nordic Fire Safety	Structural Safety
North Wales Fire and Rescue Service	Surrey, East Sussex, West Sussex Fire and Rescue Services
Northamptonshire Fire and Rescue Service	Swansea Council
Notting Hill Housing	TAROE Trust
Nuclear Industry Fire Safety Co-ordinating Committee	Technical University of Ostrava, Faculty of Safety Engineering
Ontario Building Officials Association	Tenos
Optivo Housing	

The Concrete Centre
The Hyde Group
TNL Consulting Ltd
Together Housing
Tower Blocks Network
Trenton Fire Ltd
TROX UK Ltd
UK Phenolic Foam Association
Unipol Student Homes
University of Aberdeen
University of Cambridge
University of Edinburgh
University of Warwick
Vale of Aylesbury Housing Trust

VK Architects & Engineers
Waltham Forest Housing Association Ltd
Wandsworth Council
Welsh Government
West Midlands Fire Service
West Yorkshire Fire and Rescue Service
Westminster City Council
WFP Fire & Security
Winchester City Council
Wintech
WM Housing Groups
Wythenshawe Community Housing Group
Zurich Insurance

Mapping the building and fire safety regulatory system – high-rise residential buildings



Appendix E: Call for evidence

The full call for evidence document can be found at:

www.gov.uk/government/uploads/system/uploads/attachment_data/file/644139/The_call_for_evidence_for_the_independent_Review_of_Building_Regulations_and_Fire_Safety.pdf

Reproduced below are the 10 questions contained in the call for evidence.

The overarching legal requirements

Q1 To what extent are the current building, housing and fire safety legislation and associated guidance clear and understood by those who need to follow them? In particular:

- What parts are clear and well understood by those who need to follow them?; and, if appropriate
- Where specifically do you think there are gaps, inconsistencies and/or overlaps (including between different parts of the legislation and guidance)? What changes would be necessary to address these and what are the benefits of doing so?

Roles and responsibilities

Q2 Are the roles, responsibilities and accountabilities of different individuals (in relation to adhering to fire safety requirements or assessing compliance) at each key stage of the building process clear, effective and timely? In particular:

- Where are responsibilities clear, effective and timely and well understood by those who need to adhere to them/assess them?; and, if appropriate
- Where specifically do you think the regime is not effective?
- What changes would be necessary to address these and what are the benefits of doing so?

Q3 Does the current system place a clear overarching responsibility on named parties for maintaining/ensuring fire safety requirements are met in a high-rise multi-occupancy building? Where could this be made clearer? What would be the benefits of doing so?

Competencies of key players

Q4 What evidence is there that those with responsibility for:

- Demonstrating compliance (with building regulations, housing and fire safety requirements) at various stages in the life cycle of a building;
- Assessing compliance with those requirements;

are appropriately trained and accredited and are adequately resourced to perform their role effectively (including whether there are enough qualified professionals in each key area)? If gaps exist how can they be addressed and what would be the benefits of doing so?

Enforcement and sanctions

Q5 Is the current checking and inspection regime adequately backed up through enforcement and sanctions? In particular:

- Where does the regime already adequately drive compliance or ensure remedial action is always taken in a timely manner where needed?
- Where does the system fail to do so? Are changes required to address this and what would be the benefits of doing so?

Tenants' and residents' voice and raising concerns in the current system

Q6 Is there an effective means for tenants and other residents to raise concerns about the fire safety of their buildings and to receive feedback? Where might changes be required to ensure tenants'/ residents' voices on fire safety can be heard in the future?

Quality assurance and testing of materials

Q7 Does the way building components are safety checked, certified and marketed in relation to building regulations requirements need to change? In particular:

- Where is the system sufficiently robust and reliable in maximising fire safety?; and, if appropriate
- Where specifically do you think there are weaknesses/gaps? What changes would be necessary to address these and what would be the benefits of doing so?

Differentiation within the current regulatory system

Q8 What would be the advantages/disadvantages of creating a greater degree of differentiation in the regulatory system between high-rise multi-occupancy residential buildings and other less complex types of residential/non-residential buildings? Where specifically do you think further differentiation might assist in ensuring adequate fire safety and what would be the benefits of such changes?

International comparisons and other sectors

Q9 What examples exist from outside England of good practice in regulatory systems that aim to ensure fire safety in similar buildings? What aspects should be specifically considered and why?

Q10 What examples of good practice from regulatory regimes in other industries/sectors that are dependent on high quality safety environments are there that we could learn from? What key lessons are there for enhancing fire safety?

Appendix F: Key legislation and publications used

Legislation

Housing Act 2004
 Regulatory Reform (Fire Safety) Order 2005
 Building Act 1984
 Building Regulations 2010
 Building (Approved Inspector, etc.) Regulations 2010
 Housing Health and Safety Rating System (England) Regulations 2005
 Health and Safety at Work etc. Act 1974
 Construction (Design and Management) Regulations 2015
 Furniture and Furnishings (Fire Safety) Regulations 1988
 Smoke and Carbon Monoxide Alarm (England) Regulations 2015
 Town and Country Planning Act 1990

Regulatory guidance

Department for Communities and Local Government, *Approved Documents*, various editions

Department for Communities and Local Government (2007) *Building Regulations and Fire Safety Procedural Guidance*, 4th edition

Scottish Government (2015) *The Scottish Building Standards Procedural Handbook*, 3rd edition

Publications

Bickerdike Allen Partners (1996) *Department of the Environment – Design principles of fire safety*. Her Majesty's Stationery Office

Bickerdike Allen Partners (1990) *Fire and building regulation: a review*. Her Majesty's Stationery Office

Billington, M.J., Barnshaw, S.P., Bright, K.T., Crooks, A. (2017) *The building regulations – explained and illustrated*. John Wiley and Sons Ltd.

Building Regulations and Fire Safety in Scotland, published by the Local Government and Communities Committee, October 2017

Call to Action: The EU Needs a Fire Safety Strategy, published by Fire Safe Europe

Cole, J. (2017) *Report of the Independent Inquiry into the Construction of Edinburgh Schools* www.edinburgh.gov.uk/news/article/2245/independent-report-into-school-closures-published

Colwell, S., Baker, T. (2013) *BR 135 – Fire performance of external thermal insulation for walls of multi-storey buildings*, 3rd edition. BRE Bookshop

Colwell, S., Martin, B. (2003) *BR 135 – Fire performance of external thermal insulation for walls of multi-storey buildings*, 2nd edition. BRE Bookshop

Department for Business, Innovation and Skills (2013) *Enforcement of the Regulatory Reform (Fire Safety) Order 2005* www.gov.uk/government/publications/regulatory-reform-fire-safety-order-2005-focus-on-enforcement-review

Department for Communities and Local Government (2009) *Initial Evaluation of the Effectiveness of The Regulatory Reform (Fire Safety) Order 2005*

Department for Communities and Local Government (2005) *Housing Health and Rating System – Enforcement Guidance* www.gov.uk/government/publications/housing-health-and-safety-rating-system-enforcement-guidance-housing-conditions

Department for Communities and Local Government (2005) *Housing Health and Rating System – Operating Guidance* www.gov.uk/government/publications/hhrs-operating-guidance-housing-act-2004-guidance-about-inspections-and-assessment-of-hazards-given-under-section-9

Environment, Transport and Regional Affairs Committee (1999) *Potential Risk of Fire Spread in Buildings via External Cladding Systems*. The Stationery Office

Griffiths, H., Pugsley, A.G. and Saunders, O. (1968) *Report of the Inquiry into the Collapse of Flats at Ronan Point, Canning Town*. Her Majesty's Stationery Office

- Haddon-Cave QC, C. (2009) *The Nimrod Review: an independent review into the broader issues surrounding the loss of the RAF Nimrod MR2. Aircraft XV230 in Afghanistan in 2006*. The Stationery Office
- Holroyd, R. (1970) *Report of the Departmental Committee on the Fire Service*. Her Majesty's Stationery Office
- Home Office (2006) *Fire safety risk assessment – sleeping accommodation* www.gov.uk/government/publications/fire-safety-risk-assessment-sleeping-accommodation
- HSE (2010) *Fire safety in construction – HSG168* www.hse.gov.uk/pubns/priced/hsg168.pdf
- Improving Building Standards*, a Consultation Paper from the Scottish Executive, July 2001
- Inge, J.R. (2007) *The Safety Case, its Development and Use in the United Kingdom*. Ministry of Defence
- Interdepartmental Review Team (1994) *Fire Safety Legislation and Enforcement*. The Department of Trade and Industry
- Knight, K. (2009) *Report to the Secretary of State by the Chief Fire and Rescue Adviser on the emerging issues arising from the fatal fire at Lakanal House, Camberwell on 3 July 2009*. Communities and Local Government Publications
- Local Government Association (2012) *Fire safety in purpose-built flats* www.local.gov.uk/fire-safety-purpose-built-flats
- Lord Cullen (1990) *The Public Inquiry into the Piper Alpha Disaster*. Her Majesty's Stationery Office
- Lord Robens (1972) *Safety and Health at Work – Volume 1 – Report of the Committee 1970–72*. Her Majesty's Stationery Office
- Pearson, C. and Delatte, N. (2005) *Ronan Point Apartment Tower Collapse and its Effect on Building Codes*. Cleveland State University
- Performance-Based Building Regulatory Systems, Principles and Engagement*, a Report of the Inter-jurisdictional Regulatory Collaboration Committee, February 2010
- Reason, J. (2015) *Organizational accidents revisited*. Routledge
- Safety in Tall Buildings and Other Buildings with Large Occupancy*, prepared by an international working group convened by The Institution of Structural Engineers, 2002
- Summerland Fire Commission (1974) *Report of the Summerland Fire Commission*. Government Office, Douglas, Isle of Man
- Todd, C.S. (2008) *A Comprehensive Guide to Fire Safety*. BSI
- Tricker, R., Alford, S. (2014) *Building regulations in brief*, 8th edition. Routledge
- Turner, B.A., Pidgeon, N.F. (1998) *Man-Made Disasters*. Butterworth-Heinemann
- White, N., Delichatsios, M. (2015) *Fire Hazards of Exterior Wall Assemblies Containing Combustible Components*. Springer

Appendix G: Typical fire safety measures in a building

Fire protection measures

Measure	Definition
Structural Fire Protection	<p>The protection provided to the building structure in order to maintain adequate performance when exposed to fire.</p> <p>Structural fire protection can be provided by several methods including application of insulation materials or coatings, but protection may also be inherent within the structural element itself.</p>
Compartmentation	<p>Construction provided to prevent the spread of fire to or from another part of the same building or an adjoining building.</p> <p>For example, compartment walls and floors with a rated period of fire resistance are provided to separate individual flats.</p>
Fire Stopping	A seal provided to close an imperfection of fit or design tolerance between elements or components, to restrict the passage of fire and smoke.
Fire Doors	A door (including the door leaf, frame, ironmongery, glazing etc.) which, when closed, resists the passage of fire/smoke to a specified level of performance.
Cavity Barriers	A construction provided to close a concealed space (e.g. an external wall cavity) against penetration of smoke or flame, or provided to restrict the movement of smoke or flame in such a space.
Fire Damper	<p>A device which operates to prevent the passage of fire through a duct or ventilation opening.</p> <p>Note – where there is a need to prevent the passage of smoke, the damper needs to satisfy additional criteria to be a fire and smoke damper.</p>
Fire Detection and Alarm Systems	<p>A system that detects fires and warns building occupants. Fire detection systems typically use automatic smoke or heat detectors, but can also include manual 'break-glass' call points. Means of warning is typically provided by sounders and sometimes visual alarm devices also.</p> <p>Fire detection systems can be used to actuate other fire protection systems including smoke vents, fire and smoke dampers, and release fire doors on hold-open devices.</p>
Fire Suppression Systems	<p>A system designed to suppress and control fires within a building.</p> <p>Sprinklers are a type of fire suppression system which releases water at the fire location to restrict fire growth and spread. Other fire suppression systems include gaseous and water mist systems.</p>
Smoke Control Systems	<p>Systems designed to control the movement of smoke within the building.</p> <p>Smoke control systems can include vents which open either automatically or manually in order to extract smoke. Powered smoke control uses fans to drive flow and remove smoke from a building.</p> <p>As well as extracting smoke, a smoke control system can often include other provisions as part of an overall smoke control strategy; examples include smoke barriers/curtains and inlet air vents.</p>
Pressurisation System	A type of smoke control which supplies clean air into an area being protected, typically a staircase. The creation of a positive pressure to the protected area helps prevent the movement of smoke into it from an adjoining fire-affected space.
Fire Extinguishers	Portable fire-fighting equipment, which requires manual intervention for application.
Emergency/Escape Lighting	Lighting provided to illuminate escape routes that will function if the normal lighting fails.
Evacuation Lift	A lift that may be used for the evacuation of people with disabilities, or others, in a fire.
Protected Stairway	A stairway that is adequately protected from the rest of the building by fire-resisting construction.

Measures to support fire-fighting

These are building features utilised by fire and rescue services in the event of a fire.

Measure	Definition
Fire-fighting Shaft	A fire-resisting enclosure containing a fire-fighting stair, fire mains, fire-fighting lobbies and, if provided, a fire-fighting lift.
Fire Main (also commonly termed dry/wet riser)	A pipe running up or through a building which can be connected to an external water source such as a fire and rescue service pumping appliance. It allows fire-fighters to connect hoses to outlets inside the building to fight fires. A dry fire main is normally empty until supplied with water. A wet fire main is permanently charged with water.
Fire-fighter's Lift	A lift that has protection, controls and signals which enable it to be used under the exclusive control of the fire-fighters.
Smoke Clearance System	A type of smoke control system provided to assist fire-fighters in removing smoke from the building in the aftermath of a fire.

Fire evacuation approach

This refers to the way people evacuate a building (in the context of residential buildings).

Approach	Definition (in the context of residential buildings)
Stay Put	An evacuation strategy based on the principle that only the residents of the flat of fire origin need to escape initially, while other residents may remain in their own flats.
Simultaneous Evacuation	Procedure in which all parts of a block of flats are evacuated following the giving of a common alarm of fire.
Phased Evacuation	This evacuation strategy is normally adopted for complex buildings and those with a fire control centre. In a phased evacuation the first people to be evacuated are all those on the storey most immediately affected by the fire, and those on other floors with impaired ability to evacuate. The remaining floors are then evacuated, usually two floors at a time, at phased intervals.

