

PAS 79-1:2020

Fire risk assessment – Part 1: Premises other than housing Code of practice



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Contents

Foreword	iii
Introduction	vi
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 The concepts of fire risk and fire hazard	10
5 Principles and scope of fire risk assessments	11
6 Responsibility for adequacy of the fire risk assessment	15
7 Competence of fire risk assessors	17
8 Benchmark standards for assessment of fire precautions	19
9 Assessment of premises design and fire precautions that do not conform to current standards	22
10 Documentation of fire risk assessments	25
11 Nine steps to fire risk assessment	27
12 Information about the premises, the occupants and the processes	29
13 Identification of fire hazards and means for their elimination or control	32
14 Assessment of the likelihood of fire	35
15 Assessment of fire protection measures	36
16 Assessment of fire safety management	49
17 Assessment of likely consequences of fire	54
18 Assessment of fire risk	56
19 Formulation of an action plan	57
20 Periodic review of fire risk assessments	60
Annexes	
Annex A (informative)	
Model pro forma for documentation of a fire risk assessment	62
Annex B (informative)	
Fire hazard prompt-list	86
Annex C (normative)	
Key factors to consider in assessment of means of escape	89
Annex D (informative)	
Model pro forma for documentation of a review of an existing fire risk assessment	92
Annex E (informative)	
Exemplar of a completed fire risk assessment.....	102
Bibliography	128
List of figures	
Figure 1 – Schematic of fire risk assessment process	13
Figure 2 – Decision tree for action plan when existing premises do not conform to current standards	24
Figure 3 – Example of timeline comparison between ASET and RSET ...	55
List of tables	
Table 1 – An example of a simple risk level estimator	56
Table B.1 – Fire hazards, elimination or control measures and relevant codes of practice	87
Table C.1 – Key factors and specific issues to consider in means of escape	90

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Foreword

Publishing information

The development of this PAS was facilitated by BSI Standards Limited and published under licence from The British Standards Institution. It came into effect on 31 December 2020.

Acknowledgement is given to Colin Todd, as the technical author, and the following organizations that were involved in the development of this PAS as members of the steering group:

- CBRE PMFM UK
- Consumer and Public Interest Network
- Fire Industry Association
- Institution of Fire Engineers
- Lendlease
- Metro Safety Ltd
- National Fire Chiefs Council
- National Residential Landlords Association
- National Security Inspectorate
- National Social Housing Fire Strategy Group
- NHS England/NHS Improvements
- Savills (UK) Limited
- Scottish Fire and Rescue Service
- University College London

Acknowledgement is also given to the members of a wider review panel who were consulted in the development of this PAS.

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This PAS is not to be regarded as a British Standard. It will be withdrawn upon publication of its content in, or as, a British Standard.

The PAS process enables a code of practice to be rapidly developed in order to fulfil an immediate need in industry. A PAS can be considered for further development as a British Standard, or constitute part of the UK input into the development of a European or International Standard.

At the time of publication of this PAS, there are, potentially, certain restrictions in the measures that can be taken by a fire risk assessor to comply with the recommendations of this PAS, arising from the COVID-19 pandemic. For example, in a hospital, health and safety considerations might take precedence over fire risk assessment, such as to preclude the level of inspection of certain areas of the hospital recommended in this PAS.

Supersession

Together with PAS 79-2, this part of PAS 79 supersedes PAS 79:2012, which is withdrawn.

Relationship with other publications

PAS 79 is published in two parts:

- Part 1: *Premises other than housing – Code of practice*;
- Part 2: *Housing – Code of practice*.

PAS 9980, which is in the course of preparation at the time of publication of this current PAS, will give recommendations for fire risk appraisal and assessment of external wall construction and cladding of blocks of flats.

Information about this document

PAS 79 was first prepared, in 2005, by BSI in association with C.S. Todd & Associates Ltd, with the support and encouragement of the Institution of Fire Engineers and the Northern Ireland Fire Safety Panel, the latter of which represents building control and licensing authorities in Northern Ireland and the Northern Ireland Fire & Rescue Service. It was subsequently revised in 2007 and 2012. Those revisions and this current revision were, again, drafted by C.S. Todd & Associates Ltd.

This is a full revision of the document, and introduces the following principal changes.

- PAS 79 has been split into two parts, with PAS 79-1 dealing with non-housing premises and PAS 79-2 dealing with housing premises.
- The scope of this new Part 1 of PAS 79 excludes blocks of flats, sheltered housing, extra care housing, supported housing and certain houses in multiple occupation (i.e. those falling within the scope of the relevant fire safety legislation), all of which are addressed in a new Part 2 of PAS 79.
- PAS 79-1 is a code of practice, whereas PAS 79:2012 was a guide. PAS 79:2012 was already written in the form of a code of practice, and the change in status is simply to recognize this, noting that guides are not usually of such a nature as to sustain a reliable claim of compliance.
- The technical content has been subject to amendment in the light of experience in the use of PAS 79:2012.
- There is new guidance on the consideration to be given to external wall construction and cladding, which takes into account knowledge, current at the time of publication, arising from the fire disaster at Grenfell Tower, a high-rise block of flats in London, in 2017.
- There is recognition of pre-occupation fire safety assessments, a term now defined in this PAS, and a clarification to avoid confusion between those assessments and the fire risk assessment to which this PAS refers.
- There is even greater emphasis on competence of fire risk assessors and reference to future competence standards in consequence of the Hackitt Review of building regulations and fire safety, which was ordered by the Government following the fire at Grenfell Tower. It is also noted in this PAS that fire safety specialists with experience only in the design of new buildings might not possess an appreciation of standards against which older buildings were designed and the possible continued acceptability of such standards.
- Changes to, and publication of relevant new, British Standards have been taken into account.

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at bsigroup.com/ standards, or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

Use of this document

As a code of practice, this PAS takes the form of guidance and recommendations. It should not be quoted as if it were a specification, and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this PAS is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the drafting of this PAS that the execution of its provisions will be entrusted to appropriately qualified and competent people, for whose use it has been produced.

The copyright for Annex A, Annex D and Annex E of this PAS, and for the electronic copies of the separately available pro formas (including the modified versions for use in Scotland and Northern Ireland), is owned by C.S. Todd & Associates Ltd. Purchasers of this PAS are authorized to use the pro formas contained within Annex A and Annex D, and the separately available electronic copies, and to make an unlimited number of copies for their own use, without infringement of copyright. However, following the recommendations given in this PAS does not necessitate use of these pro formas.

This PAS is not intended to constitute a textbook on fire safety, and it is not to be regarded as a substitute for knowledge of fire safety principles and the practical use and application of fire protection measures or an understanding of the premises, their features, usage and occupancy. In carrying out the fire risk assessment, there is likely to be a need for reference to other codes of practice and guidance documents on specific aspects of fire prevention, fire protection and management of fire safety, a number of which are listed in the Bibliography. Moreover, this PAS is not intended to provide guidance on the detailed requirements of the relevant fire safety legislation. Such guidance can be found in the relevant government guidance documents listed in the Bibliography.

Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

The word “should” is used to express recommendations of this PAS. The word “may” is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word “can” is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this PAS. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

It is envisaged that, when a fire risk assessment is audited for compliance with this PAS, the audit will be based on the recommendations only.

Contractual and legal considerations

This PAS does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

Attention is drawn to the legislation described in the Introduction to this PAS and to guidance available from the Ministry of Housing, Communities and Local Government, Scottish Government and the Northern Ireland Fire & Rescue Service.

Introduction

Employers and other persons who have control of premises are required by legislation to carry out an assessment of the fire risks to occupants of buildings, and to other people in the vicinity of the buildings. This is to ensure that these people are safe from fire and its effects. This assessment is usually referred to as a “fire risk assessment” or “FRA”. For the purposes of this PAS, a fire risk assessment carried out in the structured manner described herein is referred to as “the fire risk assessment” or “the FRA”.

In England and Wales, the requirement to carry out an FRA is set out in Article 9 of the Regulatory Reform (Fire Safety) Order 2005 (the “Fire Safety Order”) [1], which requires that the responsible person, on whom the Fire Safety Order imposes requirements, make a suitable and sufficient assessment of the risks to which relevant persons are exposed for the purpose of identifying the general fire precautions they need to take to comply with the requirements and prohibitions imposed on them by or under the Fire Safety Order. (For the purpose of the Fire Safety Order, a “relevant person” is any person who is or might be lawfully on the premises, and also any person in the immediate vicinity of the premises who is at risk from a fire on the premises, but not firefighters at the time of a fire.)

The same duty is imposed on every person, other than the responsible person, who has, to any extent, control of the premises so far as the duty relates to matters within their control. (This normally includes, for example, the landlord or managing agents of commercial premises in multiple occupation.)

Guidance on the requirements of the Fire Safety Order, and on the FRA required by it, was produced by the then Department for Communities and Local Government (DCLG) (now the Ministry of Housing, Communities and Local Government) between 2006 and 2008, and remains current ([2] to [15]). The guidance in this PAS is more detailed in respect of the FRA process than that published by DCLG, but does not conflict with that guidance. However, the government guidance documents provide more detailed technical information on the fire safety measures that are needed to meet legislation.

While, in England and Wales, the Fire Safety Order requires that the FRA is “suitable and sufficient”, this requirement is not explicitly stated in the equivalent legislation in Scotland or Northern Ireland, though, clearly, all assessments need to be fit for purpose.

In Scotland, the duty to carry out an FRA is imposed on every employer by section 53(2)(a) of the Fire (Scotland) Act 2005 [16]. The Act requires that the risk assessment identifies any risks to the safety of the employer’s employees in respect of harm caused by fire in the workplace. Section 54(2)(a) of the Act also imposes a duty, on any person who has control to any extent of relevant premises, to carry out an FRA, and this FRA is required to identify any risks to the safety of relevant persons in respect of harm caused by fire in the relevant premises; the term “relevant persons” is defined in much the same manner as it is defined in the Fire Safety Order in England and Wales. As in England and Wales, the guidance in this PAS is more detailed in respect of the FRA process than the guidance in the Scottish Government guidance documents, but does not conflict with them. However, the Scottish Government guidance provides more technical information on the fire safety measures required under the Scottish fire safety legislation.

In Scotland, further requirements in respect of the FRAs required by the Fire (Scotland) Act 2005 [16] are imposed by the Fire Safety (Scotland) Regulations 2006 [17]. Guidance on the requirements of this legislation, and the FRA required by it, is published by Scottish Government ([18] to [21]).

In Northern Ireland, the requirements for FRAs are identical to those in Scotland, but are imposed by Articles 25(2)(a) and 26(2)(a) of the Fire and Rescue Services (Northern Ireland) Order 2006 [22]. Further requirements in respect of the FRAs are imposed by the Fire Safety Regulations (Northern Ireland) 2010 [23]. Guidance on the requirements of this legislation, and the FRA required by it, is published by the Northern Ireland Fire & Rescue Service ([24] to [35]). Again, PAS 79 does not conflict with this guidance, which gives greater technical information on fire safety measures required by legislation.

Fire and rescue authorities can advise on the fire safety legislation that applies to any premises, and on means for compliance. If in doubt regarding the requirements of legislation, consultation with the fire and rescue authority is strongly recommended. Advice can also be obtained from a suitably qualified and experienced fire risk assessor or fire safety practitioner. A number of bodies maintain a register of persons who they consider competent to carry out FRAs. These include relevant professional bodies, and certification bodies accredited by UKAS¹⁾ to provide assessment and certification services. Registration of a fire risk assessor on such a register can give the dutyholder confidence in the education, training and experience of the fire risk assessor if the dutyholder wishes to use the fire risk assessor's services.

Legislation requires "suitable and sufficient" assessments to ensure that organizations comply with health and safety legislation. Accordingly, an organization could choose to carry out, and document, a single combined health, safety and fire risk assessment. In practice, this approach is normally only adopted in the case of very small premises, and most organizations choose to carry out a separate FRA, independent of their health and safety risk assessment. The reason for this is that, for most premises, different skills, experience and expertise are required for each of the two forms of risk assessment.

The term "suitable and sufficient" (as used in the Fire Safety Order) is not defined in legislation. Moreover, throughout the UK, the relevant fire safety legislation (see 3.77) requires that the "significant findings" of the risk assessment, and any group of persons "especially at risk", be recorded if the organization employs five or more people (in the entire organization, and not just in the premises in question), or if legislation requires licensing, registration or certification of the premises, or if an alterations notice (requiring that the relevant enforcing authority is notified of proposals to carry out certain alterations to the premises) is in force. Again, the terms "significant findings" and "especially at risk" are not defined in the relevant legislation. However, the "significant findings" ought to indicate measures taken and measures that will be taken for compliance with the legislation.

Nevertheless, it follows that the adequacy of any FRA is a matter for subjective judgement. This can lead, and has led, to inconsistency in interpretation, creating some difficulties for organizations, their advisers and enforcing authorities. These difficulties have been exacerbated, even for fire safety specialists, by a distinct move, in recent years, towards "risk-proportionate" fire precautions, and away from the more traditional "prescriptive" approach in which there was often a more rigid application of codes of practice without full consideration of fire risk.

This shift was designed to benefit those who own and manage premises, since it provides a better match between risk and precautions, more akin to that found in the field of general health and safety. It therefore precludes unnecessary expenditure in circumstances in which the risk does not justify it. Equally, it ensures adequate protection (possibly to an even higher standard than applied under prescriptive codes) when warranted by the fire risk. Ultimately, the final arbiter as to whether fire precautions satisfy legislation can, however, only be the Courts.

There is, therefore, no single correct or incorrect method of carrying out and recording the significant findings of an FRA. Rather, there are many approaches that can lead to a suitable, and satisfactorily documented, FRA, which, at first sight at least, bear little similarity. Nevertheless, the prerequisites for a suitable and sufficient FRA are implicit in legislation and, accordingly, close scrutiny of most adequate FRAs will reveal consideration of many common factors.

This PAS does not purport to contain a methodology or documentation that is necessarily superior to all others. It takes into account the fire safety legislation that is current at the time of publication. The fire risk assessment methodology is intended to facilitate protection of people from fire. Guidance on fire precautions to protect property, and to protect against interruption to business, from fire can be obtained from property insurers, and many suitably qualified and experienced fire safety consultants can advise on these issues as well as on life safety.

¹⁾ UKAS is the sole national accreditation body recognized by government to assess, against internationally agreed standards, organizations that provide certification, testing, inspection and calibration services.

The objectives of this PAS are:

- to provide organizations and their advisers with a methodology that can assist them in meeting their legislative responsibilities to undertake FRAs;
- to provide a framework for the assessment of fire risk;
- to promote better understanding of fire risks and fire safety by organizations and non-fire specialists;
- to enable common relevant terminology to be adopted by those who carry out FRAs;
- to provide an understanding of the principles and scope of FRAs;
- to establish a pragmatic, holistic and risk-proportionate approach towards assessment of fire prevention measures, fire protection measures and management of fire safety, for the purpose of conducting FRAs, based upon a fundamental understanding of fire safety principles;
- to establish a satisfactory basis for documentation of FRAs;
- to provide a benchmark for a suitable and sufficient FRA;
- to promote a consistent approach to carrying out and documenting an FRA that is likely to be satisfactory to enforcing authorities; and
- to dispel misconceptions as to the nature and scope of an FRA (see Clause 5).

The person on whom a duty is imposed to carry out the FRA is described in different ways in different legislation across the UK. For example, as noted above, in England and Wales, the Fire Safety Order describes the person as the “responsible person”, whereas this term is not used elsewhere in the UK. Moreover, this duty can be imposed on more than one person within the same premises (e.g. in commercial premises in multiple occupation, the duty might be imposed on every tenant, the landlord and the managing agents). In this PAS, the term “dutyholder” is used to describe any person on whom the relevant fire safety legislation imposes a requirement to carry out an FRA.

This part of PAS 79 is only concerned with non-domestic premises. PAS 79-2 provides recommendations for FRAs in housing premises. Therefore, in the case of mixed use premises (e.g. commercial and residential), it is necessary to refer to the recommendations of both PAS 79-1 and PAS 79-2.

1 Scope

This part of PAS 79 gives recommendations and corresponding examples of documentation for undertaking, and recording the significant findings of, fire risk assessments in non-domestic premises and parts of non-domestic premises for which fire risk assessments are required by legislation.

In the case of mixed-use premises, comprising, for example, shops or offices on lower levels of the building, with flats on the uppermost levels, PAS 79-2 is applicable in relation to the flats.

NOTE 1 *In such mixed-use premises there might be a need for fire protection systems that would not normally be applicable in commercial premises, such as evacuation alert systems for use by the fire and rescue service (see PAS 79-2:2020, 3.22).*

This part of PAS 79 is applicable to peer-to-peer rented accommodation to the extent that such accommodation falls within the scope of the relevant fire safety legislation (see 3.77) and to premises used solely for short-term letting of flats (with letting periods ranging from one day to six months).

This part of PAS 79 is not applicable to premises during the construction phase²⁾, but is applicable to vacant premises, for which a fire risk assessment is required. It is also applicable to residential care homes.

This part of PAS 79 is not applicable to:

- a) a single-family private dwelling;
- b) a shared house or a house in multiple occupation;
- c) the common parts of blocks of flats or maisonettes, sheltered housing and extra care housing; and
- d) supported housing.

NOTE 2 *Recommendations for fire risk assessments for all forms of the housing described above, other than a single-family dwelling, or a shared house in England and Wales, are given in PAS 79-2.*

NOTE 3 *Attention is drawn to Health Technical Memorandum 05-03 Part K [36], which provides guidance, for complex healthcare premises in England and Wales, on fire risk assessments in areas to which patients have access. In Scotland, equivalent guidance is given in Scottish Health Technical Memorandum 86 [37].*

NOTE 4 *For residential care premises in Northern Ireland, attention is drawn to Health Technical Memorandum 84 [38], which provides guidance on fire risk assessment in these premises.*

The methodology in this PAS provides a structured approach to fire risk assessment for people with knowledge of the principles of fire safety; it is not a guide to fire safety.

The recommended approach to carrying out fire risk assessments is intended to determine the risk-proportionate fire precautions required to protect occupants of non-domestic premises, including employees, contractors, visitors and members of the public, and to protect people in the immediate vicinity of the premises. The fire risk assessment is not necessarily sufficient to address the safety of firefighters in the event of a fire on the premises, as firefighters are not “relevant persons” within the meaning of the relevant fire safety legislation.

The recommended methodology is not intended to address protection of property (the premises and their contents) or the environment, or to address protection of a business, process or activity against interruption. Premises with special hazards, with the potential for high risk to life (e.g. chemical or nuclear hazards), require consideration of additional factors associated with these hazards and their means of control, and are beyond the scope of this PAS. However, in all such cases, this part of PAS 79 might form the basis for development of an appropriate fire risk assessment process and the documentation of the significant findings of the process.

²⁾ Fire risk assessments are required for construction sites. Nevertheless, these fire risk assessments are outside the scope of this PAS, as many of the matters relating to management of fire safety, which are addressed in this PAS, are not applicable to a construction site.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document³⁾. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 4422, *Fire – Vocabulary*⁴⁾

BS 5839-1:2017, *Fire detection and fire alarm systems for buildings – Part 1: Code of practice for system design, installation, commissioning and maintenance*

3 Terms and definitions

For the purposes of this PAS, the terms and definitions given in BS 4422, BS EN ISO 13943 and the following apply.

3.1 access room

room that forms the only escape route from an inner room (see 3.55)

3.2 action plan

measures, including management procedures, identified in the course of a fire risk assessment that need to be implemented to ensure that the required level of fire safety is achieved or maintained

NOTE *The required level of fire safety is normally defined within the organization's fire safety policy, but is never of a lower standard than that required by legislation.*

3.3 alarm receiving centre

continuously manned premises, remote from those in which a fire alarm system is fitted, where the information concerning the state of the fire alarm system is displayed and/or recorded, so that the fire and rescue service can be summoned

3.4 alternative escape routes

escape routes sufficiently separated either by direction and space, or by fire-resisting construction, intended to ensure that if one is affected by fire the other will still be available

3.5 automatic door release mechanism

device that can be used for holding a door in the open position, against the action of a door closer, and automatically releasing under specified conditions

³⁾ Documents that are referred to solely in an informative manner are listed in the Bibliography.

⁴⁾ This PAS also gives informative references to BS 4422:2005.

3.6 available safe escape time (ASET)

time available between ignition of a fire and the time at which tenability criteria (for safety of life) are exceeded in a specific space in a building

NOTE *To ensure the safety of occupants, the required safe escape time (RSET) (see 3.78) needs to be shorter than the ASET.*

3.7 class A fire

fire involving solid materials, usually of an organic nature, in which combustion normally takes place with the formation of glowing embers

NOTE *These are normally carbonaceous fires.*

3.8 class B fire

fire involving liquids or liquefiable solids

3.9 class C fire

fire involving gases

3.10 class D fire

fire involving metals

3.11 class F fire

fire involving fats and cooking oils

3.12 combustible

capable of burning in the presence of oxygen in a standard test condition

3.13 compartmentation

subdivision of a building by fire-resisting walls and/or floors for the purpose of limiting fire spread within the building

3.14 competent person

person, suitably trained and qualified by knowledge and practical experience, and provided with the necessary instructions, to enable the required task(s) to be carried out correctly

NOTE *The relevant fire safety legislation requires nomination of various competent persons to carry out a number of different defined tasks.*

3.15 dampers

3.15.1 fire damper

mobile closure or intumescent device within a duct, which is operated automatically and is designed to prevent the passage of fire and which, together with its frame, is capable of satisfying for a stated period of time the same fire resistance criterion for integrity as the element of the building construction through which the duct passes

3.15.2 fire/smoke damper

combined fire and smoke damper

NOTE *See fire damper (3.15.1) and smoke damper (3.15.3).*

3.15.3 smoke damper

mechanical device which, when closed, prevents smoke passing through an aperture within a duct or structure

NOTE *In any particular premises, smoke dampers might be automatically operated, or manually operated, or a combination of the two, and their normal position might be either open or closed.*

3.16 dead end

area from which escape from fire is possible in one direction only, or in directions less than 45° apart that are not separated by fire-resisting construction

NOTE *A dead end is not created solely by structural enclosure. It can, for example, be created by barriers such as steps, narrow escape routes, convoluted escape routes or heavy doors.*

3.17 dry fire main

water supply pipe installed in a building for firefighting purposes, fitted with inlet connections at the fire and rescue service access level, and with landing valves at specified points, which is normally dry but is capable of being charged with water, usually by pumping from fire and rescue service appliances

3.18 dutyholder

person on whom legislation imposes a requirement to carry out a fire risk assessment

NOTE 1 The term “dutyholder” only has meaning within this PAS, and is used for convenience. It is not a term used in this context within fire safety legislation, in which the dutyholder could be a number of different parties according to circumstances, e.g. in England and Wales, the responsible person, to which the Fire Safety Order [1] makes reference, is one such dutyholder.

NOTE 2 The dutyholder can be determined from the relevant fire safety legislation.

NOTE 3 The dutyholder is normally an organization, such as an employer, rather than a specific named person.

NOTE 4 There might be more than one dutyholder within any premises. For example, in multi-tenanted office premises, normally each tenant, and the landlord or managing agents, are dutyholders.

3.19 emergency escape lighting

part of the emergency lighting that provides illumination for the safety of people leaving a location or attempting to terminate a potentially dangerous process before doing so

3.20 emergency lighting

lighting provided for use when the supply to the normal lighting fails

3.21 escape route

route forming part of the means of escape from any point in a building to a final exit

3.22 false alarm

fire signal resulting from a cause(s) other than fire

3.23 final exit

termination of an escape route from a building, giving direct access to a street, passageway, walkway or open space, and sited to enable the rapid dispersal of persons from the vicinity of a building so that they are no longer in danger from fire and/or smoke

3.24 fire audit

systematic examination to determine whether standards of fire safety conform to those required in order to achieve the organization's fire safety policy and objectives

3.25 fire door

door or shutter provided for the passage of people, air or objects which, together with its frame and furniture as installed in a building, is intended (when closed) to resist the passage of fire and/or gaseous products of combustion, and is capable of meeting specified performance criteria to those ends

3.26 fire drill

periodic test of the evacuation procedure involving participation of the occupants of a building and, where relevant and practicable, any other actions required as part of the fire procedure

NOTE This is sometimes known as an evacuation drill, e.g. in BS 4422:2005.

3.27 fire equipment sign

safety sign that indicates the location or identification of fire equipment or how it is to be used

3.28 fire exposure

extent to which people, animals or items are subjected to the conditions created by fire

3.29 fire hazard

source, situation or act with potential to result in a fire

NOTE Examples of fire hazards include ignition sources, accumulation of waste that could be subject to ignition, and disposal of a lit cigarette close to combustible materials.

3.30 fire hazard identification

process of recognizing that a fire hazard exists and defining its characteristics

3.31 fire load

quantity of heat that could be released by the complete combustion of all the combustible materials in a volume, including the facings of all bounding surfaces

3.32 fire precautions

physical, procedural and managerial measures taken to reduce the likelihood of ignition occurring and/or to mitigate the consequences if ignition does occur

3.33 fire prevention measures

measures to prevent the outbreak of fire

3.34 fire procedure

predetermined actions to be taken in the event of fire

3.35 fire protection measures

design features, systems, equipment or structural measures to reduce danger to people and property if fire occurs

***NOTE** Examples of such measures include means of detecting, extinguishing or containing fires.*

3.36 fire resistance

ability of an item to fulfil for a stated period of time the required load-bearing capacity and/or integrity and/or thermal insulation, and/or other expected duty specified in a standard fire resistance test

***NOTE** This is not the time that the item can withstand exposure to any specific real fire without loss of its required performance.*

3.37 fire risk

combination of the likelihood of the occurrence of fire and consequence(s) likely to be caused by a fire

***NOTE** In the context of this PAS, the relevant consequences of a fire are those involving injury to people (number and severity of injuries), as opposed to damage to property.*

3.38 fire risk assessment (FRA)

process of identifying fire hazards and evaluating the risks to people arising from them, taking into account the adequacy of existing fire precautions, and deciding whether or not the fire risk is acceptable without further fire precautions

***NOTE 1** A fire risk assessment is a legal requirement for virtually all non-domestic premises.*

***NOTE 2** Where the fire risk is not acceptable without further fire precautions, a fire risk assessment includes an action plan that sets out reasonably practicable measures to reduce the risk.*

3.39 fire risk assessor

person who carries out, and documents the significant findings of, a fire risk assessment

***NOTE** The fire risk assessor is expected to be a competent person (see 3.14), and the fire risk assessor has a duty of care to the dutyholder on which legislation imposes a requirement for the fire risk assessment. However, the ultimate responsibility for the adequacy of the fire risk assessment rests with the dutyholder (which could be an organization – see 3.18 and related notes) rather than with the fire risk assessor (see Clause 6).*

3.40 fire safety engineer

person suitably qualified and experienced in fire safety engineering

3.41 fire safety engineering

application of scientific and engineering principles to the protection of people, property and the environment from fire

3.42 fire safety induction training

formal training, normally given verbally to new employees as soon as practicable after their employment, with the objective of imparting sufficient information on the relevant fire risks, fire prevention measures, fire protection measures and fire procedures in the building to ensure the safety of employees from fire

***NOTE** Fire safety induction training also assists in preventing employees from inadvertently putting other occupants of the premises at risk from fire.*

3.43 fire safety management

task(s) carried out by a defined individual or individuals with appropriate powers and resources to ensure that the fire safety systems, passive, active and procedural, within the building are working properly at all times

3.44 fire safety manager

person nominated to monitor and control the management of fire safety

3.45 fire safety manual

record of all design, procedural and management issues and events that relate to the fire safety of a building

3.46 fire safety objective

specified (or specifiable) goal intended to be achieved by a fire protection measure(s)

3.47 fire safety policy

documented strategy that sets the standards of fire safety that an organization is committed to maintaining

NOTE For example, the starting point of a fire safety policy is expected to be that the organization complies with all legislative requirements in respect of fire safety.

3.48 fire safety refresher training

training given to employees periodically to ensure that they remain aware of the fire risks, fire prevention measures, fire protection measures and fire procedures in the building

3.49 fire scenario

detailed description of conditions, including environmental conditions, of one or more stages from prior to ignition to after completion of combustion in an actual fire at a specific location

3.50 fire stopping

sealing or closing an imperfection of fit between elements, components or constructions of a building, or any joint, so as to restrict penetration of smoke and flame through the imperfection or joint

3.51 fire strategy

set of fire safety objectives and the measures to be taken to meet those objectives

3.52 fire warden

individual charged with specific responsibilities in the event of fire, normally involving a check to verify that a particular area of the building has been evacuated

NOTE The fire warden is sometimes described as a fire marshal.

3.53 ignition

initiation of combustion

3.54 ignition source

source of energy that initiates combustion

3.55 inner room

room from which the only escape route is through another room

NOTE The room that provides the escape route from an inner room is known as an access room (see 3.1).

3.56 integrity

ability of a separating element, when exposed to fire on one side, to prevent the passage of flames and hot gases or the occurrence of flames on the unexposed side, for a stated period of time in a standard fire resistance test

3.57 lifts

3.57.1 evacuation lift

lift used as part of the evacuation sequence for persons with disability and persons requiring assistance, which has appropriate structural, electrical and fire protection and is capable of being taken under control by a trained and authorized person

3.57.2 fire-fighting lift

lift which has protection, controls and signals which enable it to be used under the exclusive control of the firefighters, but that are less stringent than those of a firefighters lift

NOTE Where the term "fire-fighting lift" is used in this PAS, it refers to a lift installed in accordance with BS 5588-5, which was first published in 1986. "Fire-fighting lifts" were superseded by "firefighters lifts" with the publication of BS EN 81-72.

[SOURCE: BS 8899:2016, 3.6]

3.57.3 firefighters lift

lift which has protection, controls and signals which enable it to be used under the exclusive control of the firefighters

NOTE Where the term "firefighters lift" is used in this PAS, it refers to a lift installed in accordance with BS EN 81-72, which was first published in 2003.

[SOURCE: BS EN 81-72:2020, 3.5, modified – note added]

3.57.4 firemen's lift

lift installed before fire-fighting lift standards were made available, incorporating only simple means to recall the lift to a designated floor, with no complex lift controls or protection measures for fire and rescue service use

NOTE 1 This is also known as a fire service lift.

NOTE 2 Where the term "firemen's lift" is used in this PAS, it refers to a lift installed in accordance with BS 2655 or BS 5655 for use by the fire and rescue service. "Firemen's lifts" were superseded by "fire-fighting lifts" with the publication of BS 5588-5.

[SOURCE: BS 8899:2016, 3.8]

3.58 maintained emergency lighting

lighting system in which all emergency lighting lamps are illuminated at all material times

3.59 mandatory sign

safety sign that indicates a specific course of action is to be taken

3.60 manual call point

component of a fire detection and fire alarm system that is used for the manual initiation of a fire alarm signal

3.61 material alteration

alteration that changes (usually lowering or with the potential to lower) the standard of fire protection originally provided

3.62 means of escape

structural means whereby a safe route for use in the event of fire is provided for persons to travel from any point in a building to a place of ultimate safety without external assistance

3.63 non-combustible

not capable of undergoing combustion under specified conditions

3.64 non-maintained emergency lighting

lighting system in which all emergency lighting lamps are illuminated only when the supply to the normal lighting fails

3.65 occupant(s) especially at risk

building occupant(s) who, as a result of their physical or mental state, age or location in the building, are at greater risk from fire than a non-disabled, fully alert adult afforded adequate means of escape and other fire precautions, whether on a short-term or long-term basis

3.66 panic bolt

mechanism, consisting of a minimum of two sliding bolt heads that engage with keepers in the surrounding door frame or floor for securing a door when closed, which can be released by hand or body pressure on a bar positioned horizontally across the inside face of the door

3.67 panic latch

mechanism for securing a door when closed, with a latch bolt that can be released by hand or body pressure on a bar positioned horizontally across the inside face of the door

3.68 peer-to-peer rented accommodation

accommodation rented by means of a decentralized platform whereby two individuals interact directly with each other, without intermediation by a third party

NOTE For the purposes of this PAS, the term "peer-to-peer rented accommodation" includes letting arranged through an agent.

3.69 phased evacuation

system of evacuation in which different parts of the building are evacuated in a controlled sequence of phases, those parts of the building expected to be at greatest risk being evacuated first

3.70 place of relative safety

place in which there is no immediate danger, but in which there could be future danger, from fire or the effects of fire

3.71 place of ultimate safety

place in which there is no immediate or future danger from fire or the effects of fire

3.72 pre-occupation fire safety assessment

process of identifying fire precautions in a newly constructed or refurbished building, taking into account the approved fire strategy, and deciding whether or not the new or refurbished premises are likely to be fit for occupation

NOTE A pre-occupation fire safety assessment is not to be confused with the fire risk assessment required by fire safety legislation and described in this PAS, which can only properly be carried out after a building has been handed over to the end user.

3.73 products of combustion

solid, liquid and gaseous materials resulting from combustion

3.74 progressive horizontal evacuation

process of evacuating people into an adjoining fire compartment on the same level, from which they can later evacuate to a place of ultimate safety

3.75 protected

enclosed in fire-resisting construction

3.76 refuge

area that is both separated from a fire by fire-resisting construction and provided with a safe route to a storey exit, thus constituting a temporarily safe space

NOTE 1 Refuges are relatively safe waiting areas for short periods. They are not areas where disabled occupants are left indefinitely until rescued by the fire and rescue service or until the fire is extinguished. It is the organization's responsibility to provide assistance, and to incorporate the arrangements for this within the premises' fire procedures. (This is not to be confused with the use of refuges in progressive horizontal evacuation, e.g. in hospitals, from which people might not need to escape, but from where there is the potential for further escape if that becomes necessary.)

NOTE 2 In Scotland, a refuge is known as a "temporary waiting space" (TWS).

3.77 relevant fire safety legislation

legislation that sets out obligations relating to fire risk assessment

NOTE The relevant legislation is:

- (in England and Wales) the Regulatory Reform (Fire Safety) Order 2005 (as amended) [1];
- (in Scotland) combination of the Fire (Scotland) Act 2005 (as amended) [16] and the Fire Safety (Scotland) Regulations 2006 [17];
- (in Northern Ireland) the Fire and Rescue Services (Northern Ireland) Order 2006 [22], together with the Fire Safety Regulations (Northern Ireland) 2010 [23].

3.78 required safe escape time (RSET)

time from ignition until the time at which all the occupants of a building, or a specified part of a building, are able to reach a place of safety

3.79 safe condition sign

safety sign that indicates an evacuation route, the location of safety equipment or a safety facility, or a safety action

NOTE A fire exit sign is an example of a safe condition sign.

3.80 shared house

type of house in multiple occupation, normally let to an identifiable group, such as students, work colleagues or friends, in which there is a significant degree of social interaction

3.81 simultaneous evacuation

system of evacuation in which an entire building is evacuated immediately on receiving an evacuation signal or instruction

3.82 smoke alarm

device containing within one housing all the components, except possibly the energy source, necessary for detecting smoke and for giving an audible alarm

NOTE 1 Smoke alarms can also give a visual alarm.

NOTE 2 The term "smoke alarm" is normally reserved for devices intended for domestic use.

3.83 sprinkler system

system comprising thermosensitive devices designed to react at a predetermined temperature by automatically releasing a stream of water and distributing it in a specified pattern and quantity over a designated area

3.90 wet fire main

water supply pipe installed in a building for firefighting purposes and permanently charged with water from a pressurized supply, fitted with landing valves at specific points

3.84 structural fire protection

features in layout and/or construction that are intended to reduce the effects of a fire

3.85 third-party fire risk assessor

independent fire risk assessor, who is not an employee of the dutyholder, but who is contracted to carry out a fire risk assessment on behalf of a dutyholder on whom legislation imposes a requirement for a fire risk assessment

***NOTE** A fire safety consultant is an example of a third-party fire risk assessor.*

3.86 tolerable level

<of fire risk> level at, or close to, that acceptable to a dutyholder, taking into account the requirements of fire safety legislation, the nature of the premises, the fire hazards in the premises (see 3.29), the nature of the occupants, the cost of additional fire precautions and any other relevant factors

3.87 travel distance

actual distance to be travelled by a person from any point within the floor area to the nearest storey exit, having regard to the layout of walls, partitions and fixings

3.88 voice alarm system

sound distribution system that broadcasts speech messages and/or warning signals in an emergency

3.89 water mist system

distribution system connected to a water supply, with atomizing media where required, that is fitted with one or more nozzles capable of delivering water mist intended to control, suppress or extinguish fire

***NOTE** Water mist systems can discharge water or a mixture of water and some other agent or agents, e.g. inert gases or additives.*

4 The concepts of fire risk and fire hazard

COMMENTARY ON CLAUSE 4

It is important that, in the fire risk assessment (FRA), confusion does not result from loose, inexact or conflicting use of terminology. Particular care needs to be taken to avoid improper use of the terms “fire hazard” (see 3.29) and “fire risk” (see 3.37). BS 4422:2005 defines a fire hazard as potential for injury and/or damage from fire. In the field of health and safety, a hazard is often defined as a source, situation or act with a potential for harm in terms of human injury or ill health, or a combination of these. In this PAS, a fire hazard is defined as a source, situation or act with potential to result in a fire. Thus, the presence of uncontrolled fire hazards affects the likelihood of fire, rather than the consequences of fire. This is consistent with both BS 4422 and the concept of hazard in the field of health and safety.

BS 4422:2005 defines fire risk as the product of the probability of occurrence of a fire to be expected in a given technical operation or state, and the consequence or extent of damage to be expected on the occurrence of fire. Accordingly, for the purpose of this PAS, fire risk is defined as the combination of the likelihood of the occurrence of fire and consequence(s) (number and severity of injuries) likely to be caused by a fire. This, again, is consistent with the broader concept of risk in the field of general health and safety.

This clear distinction between fire hazard and fire risk is of great value in any analytical approach to fire safety, but particularly in an FRA. As stated above, fire risk is the product of multiplying the probability of fire by a measure of the consequences of fire if it does occur. Thus, for example, even though the likelihood of fire occurring might be low, the fire risk could still be high as a result of potential for serious injury to occupants in the event of fire. For example, the potential for serious injury could result from inadequate provision of fire exits and/or inadequate means of giving warning to people in the event of fire. Such circumstances would be likely to be regarded intuitively, even by a lay person, as high risk, and accordingly this definition of fire risk is likely to be relatively intuitive even to non-fire specialists.

4.1 In the FRA, there should be a clear distinction between the concepts of fire hazard and fire risk.

4.2 In the FRA, the terms “fire hazard” and “fire risk” should be used only in a context consistent with definitions 3.29 and 3.37.

4.3 In documenting the significant findings of the FRA (see Clause 10), there should be distinct, and separate, consideration of fire hazards, situations and measures that affect the consequences of fire, such as fire protection measures (see 3.35), and the overall fire risk.

5 Principles and scope of fire risk assessments

COMMENTARY ON CLAUSE 5

The FRA is a systematic and structured assessment of the fire risk (see Clause 4) in the premises for the purpose of expressing its current level, determining the adequacy of existing fire precautions (see 3.32) and determining the need for, and nature of, any additional fire precautions. Any such additional fire precautions required are set out in the action plan (see 3.2), which forms part of the documented FRA (see Clause 10). The objective of the action plan is to set out measures that will ensure that the fire risk is reduced to, or maintained at, a tolerable level (see 3.86).

The FRA is not any of the following:

- a) a full audit of areas of the building that are not readily accessible or visually obvious (e.g. ceiling and roof voids and service risers), though a sample inspection of such areas is normally appropriate;
- NOTE 1** A degree of sampling is particularly important if the evacuation strategy is predicated on a high standard of compartmentation (e.g. in the case of progressive horizontal evacuation in a care home).
- b) a means for verifying compliance with current building regulations;
- c) a disabled access audit;
- d) a means for identifying latent defects in construction or compartmentation (see 3.13);
- e) a means for verifying that the fire resistance of structural elements of the building is adequate;
- f) an examination of the potential for structural collapse of the building in the event of fire;
- g) a fire strategy report;
- h) a pre-occupation fire safety assessment (see 3.72);
- i) a means for snagging of new construction;
- j) a guide to legislation for the responsible person; or
- k) a fire risk appraisal and assessment of external wall construction and cladding.

NOTE 2 PAS 9980, which is in the course of preparation at the time of publication of this current PAS, will provide recommendations for a fire risk appraisal and assessment (an "FRAA") of external wall construction and cladding of blocks of flats. The scope of PAS 9980 might be extended in future editions of that PAS. In the meantime, the principles that will underly the methodology for

an FRAA set out in PAS 9980 will be applicable to a broader range of building types, including non-residential buildings, subject to appropriate use of the guidance in PAS 9980 and cognizance of the differences between such other buildings and multi-storey, multi-occupied residential buildings.

NOTE 3 A standard scope of services, suitable for use in a contract between a responsible person and a fire risk assessor, is published by the Fire Industry Association [39].

The FRA needs to involve a genuine and open-minded approach to the assessment of fire risk and fire precautions. It is not, for example, appropriate to use the FRA to justify a decision regarding fire precautions that has already been made without due consideration of risk, or to justify significant departures from universally recognized industry good practice (e.g. the frequency of testing and maintenance of fire protection systems recommended in relevant British Standards).

It follows from the definition of fire risk that the FRA involves consideration of relevant fire hazards and the means for their elimination or control, i.e. fire prevention measures. This contrasts with the approach adopted in now repealed fire safety legislation, which tended to concentrate on fire protection measures (see 3.35), rather than fire prevention measures (see 3.33).

This approach to fire risk assessment tends to parallel that adopted in health and safety risk assessments, whereby the objective of the risk assessment is not limited to merely preventing harm to people as a result of a hazard, but begins with endeavours to eliminate or reduce the hazard itself. Thus, the FRA begins with endeavours to reduce the likelihood of fire. In this sense alone, fire risk assessment is a more holistic approach to the control of fire risk than that adopted under 20th century fire safety legislation.

The likelihood of fire is rarely reduced to zero. Accordingly, there is normally need for fire protection measures, such as means of escape (see 3.62), measures that assist in the use of escape routes (see 3.21), means of giving warning of fire and means for fighting fire. However, these fire protection measures, by definition, only have a bearing on fire safety after fire has occurred and, therefore, fire prevention has failed.

Most of the visible fire precautions in premises are fire protection measures, and it is with these measures and structural fire precautions that the fire safety provisions within building regulations are primarily concerned. However, in modern premises, the risk to people (and property) from fire is often governed more by the quality of fire safety management (see 3.43) than the level of fire protection. Indeed, significant factors in most non-domestic, multiple fatality fires, particularly those involving, say, ten deaths or more, are failures in fire safety management, rather than failures in the design of premises or fire protection measures.

Thus, in contrast with the approach to compliance with building regulations, it is absolutely essential that every FRA gives thorough attention to fire safety management and, therefore, to matters such as the fire strategy for the premises, fire procedures (see 3.34), staff training, fire drills, testing and maintenance of fire protection equipment, inspection of means of escape, control over alterations, control of work by contractors, etc. Good fire safety management also contributes to the prevention of fire by incorporating policies and measures that reduce the likelihood of fire.

It follows, therefore, that the FRA can only validly be carried out on premises that are in use (or partial use), so that the actual working conditions, practices and procedures can be taken into account. The FRA required by the relevant fire safety legislation (see 3.77), to which this PAS refers, cannot be carried out at the design stage of new premises, nor is it a means for “snagging”, or verifying the adequacy of, fire precautions in newly constructed premises prior to occupation. Parts of the FRA can be used for such a purpose, in order to review fire protection measures at the design stage, and to assist in ensuring that the premises, once constructed, are adequately safe from fire for occupation, but such an exercise would not constitute a suitable and sufficient FRA, as management issues and operational issues cannot be properly addressed. Equally, it is sometimes necessary to carry out an FRA for a building that is only in partial use, subject to a further FRA(s) being carried out when the building is subject to a further level of, or total, occupation.

NOTE 4 This does not imply that there is no need for an FRA for vacant premises. For example, when premises become vacant for any period during the life of the building, they are not excluded from the scope of fire safety legislation.

Notwithstanding the above, on completion of a new building, or of major refurbishments, major alterations, etc., there can be benefit in carrying out a “pre-occupation fire safety assessment” (see 3.72).

Pre-occupation fire safety assessments are carried out if the end user wants to establish that the construction stage of the building has been completed, the fire strategy has been implemented correctly, and the necessary fire safety design measures have been incorporated, prior to handover and subsequent occupation. This information is usually communicated in the findings of a pre-occupation fire safety assessment. It is important that a pre-occupation fire safety assessment is not confused with the FRA to which this PAS refers; the former is undertaken simply to ensure a smooth transition from the design and construction phase to the operational phase of new or refurbished premises. However, even a pre-occupation fire safety assessment does not necessarily identify latent defects in construction.

The fire prevention measures, fire protection measures and components of fire safety management can be treated as variables, the standard of which can be reduced or increased, according to the fire risk, in order to provide an integrated package of measures that limits fire risk to a tolerable level. However, some factors that have a major impact on fire risk are not variable, but are “given” factors for the premises in question. Usually, basic information on such factors can be treated as significant findings of the FRA, and accordingly, such information needs to be recorded.

Such factors include, but are not limited to:

- 1) the height of the premises (e.g. single storey or multi-storey, low-rise or high-rise, the presence of basements);
- 2) the construction of the premises [e.g. largely non-combustible (see 3.63) or mainly combustible (see 3.12), timber-framed or modern methods of construction];
- 3) the activities and processes carried out on the premises [e.g. handling of highly flammable materials, creation of combustible wastes, use of ignition sources (see 3.54)];
- 4) the complexity of the premises (e.g. simple, straightforward escape routes or complex, convoluted internal layout);
- 5) the approximate floor area of the premises;
- 6) the approximate number of occupants of the premises;
- 7) the maximum numbers of members of the public likely to be present (unless small in number);
- 8) the nature of the occupants, particularly any condition that generates a need for support (e.g. very young or advanced age, mobility impairments, hearing or visual impairments, mental health or cognitive impairments), and the impact of that on evacuation strategies and staffing levels;

- 9) the familiarity of the occupants with the premises (e.g. fully familiar, slightly familiar or totally unfamiliar);
- 10) the state (or likely state) of the occupants (e.g. awake or asleep, alert or under the influence of alcohol or drugs);
- 11) the history of fires on the premises; and
- 12) the incidence of malicious fire raising and vandalism in the surrounding areas.

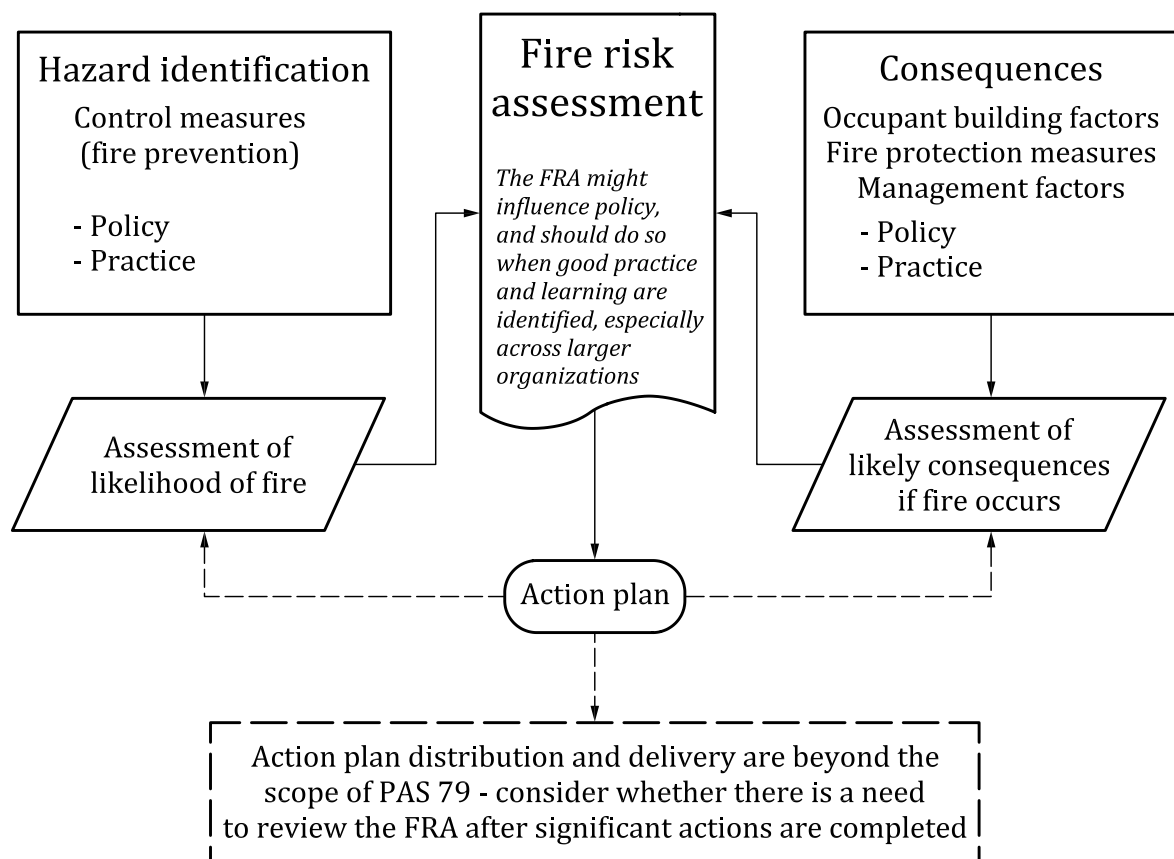
Although the above factors cannot (or cannot readily) be changed, their effect on fire risk (primarily as a result of their effect on the consequences of a fire) needs to be taken into account in the FRA, so that they are reflected in the level of fire risk expressed in the FRA. The level of fire precautions then needs to be proportionate to the level of risk.

Since the likelihood (i.e. probability) of fire and the consequences of fire, if it does occur, are largely

independent factors (see Clause 4), they need to be considered separately in the FRA (see Figure 1). For example, in single-storey, open plan premises with an abundance of readily available fire exits, a high probability of fire (e.g. as a result of numerous small fires in an industrial process) does not imply serious consequences to occupants (in terms of injury) in the event of fire.

On the other hand, in large, multi-storey premises with minimal fire load (see 3.31) and few ignition sources (e.g. a store for metal components), if there are inadequate means of escape and inadequate means of warning people in the event of fire, the consequences to occupants in the event of fire could be serious. Equally, in each of these examples, poor standards of fire safety management could affect both the probability of fire and the consequences of fire.

Figure 1 – Schematic of fire risk assessment process



Once the level of fire risk is determined, any need for improvements in fire precautions can be identified. The separate consideration of probability of fire and consequences of fire is then of value, since, if the fire risk is unacceptably high, the source(s) of the high fire risk can be identified by separating the fire risk into its two component factors. It can then be determined whether the problem is primarily one of high likelihood of fire, necessitating fire prevention measures in the action plan, or serious consequences in the event of fire, necessitating fire protection measures, or a combination of the two.

The determination of the likelihood of fire, the consequences of fire, and hence the fire risk, can normally be subjective in nature, and is not normally quantified numerically. Numeric methods, including calculation of probabilities and use of fire scenarios (see 3.49), need normally be used only in specialist industries (such as the chemical industry) with potential for very high fire risk, or be used in the formulation of designs based on complex fire safety engineering (see 3.41). Moreover, care is necessary to ensure that simple points schemes, which purport to evaluate fire risk numerically, are not misleading (see Clause 18). It is very difficult in such schemes to allocate appropriate and proportionate weightings to different factors, and it is difficult to take into account the synergistic relationship between various, at first sight independent, fire precautions and effects thereof.

Equally, if significant capital expenditure on fire precautions is recommended in the action plan (see 3.2), it needs to be possible to justify the expenditure by articulation of a realistic and credible scenario, in which unacceptable fire risk to occupants would occur. In such cases, it is not, for example, acceptable simply to justify significant capital expenditure on the basis of a departure from current guidance or practice, particularly in the case of premises designed and constructed prior to the introduction of such guidance or practice.

Where, originally, the premises have been designed by a competent fire engineer on the basis of fire safety engineering (e.g. complex premises, such as a large shopping centre), and have been approved under relevant building regulations, it is not generally necessary to check this design from first principles in the course of the FRA. It is, however, necessary to verify that features and facilities that form part of the design are being properly maintained and managed.

The action plan (see Clause 19) needs to contain measures that are reasonably practicable, risk-proportionate and normally prioritized, while resulting in compliance with legislation and the organization's fire safety policy (see 3.47). The nature of the measures specified needs to be such that they are likely to receive

acceptance by management and other occupants who might be affected by them.

In the case of mixed-use premises, comprising both commercial occupancies and housing (e.g. flats located above shops), the scope of the FRA needs careful consideration; unless there is adequate compartmentation between the shops and the flats, the occupants of the flats are relevant persons, within the meaning of the relevant fire safety legislation, because the residents are in the immediate vicinity of the shop and are at risk from a fire in the shop. The safety of the residents in the event of a fire in a shop then needs to be considered in the FRA for the shop.

5.1 As a general rule, the FRA should be carried out only when the premises are in normal use. If, in the case of new or refurbished premises, there is a need to carry out an FRA before the premises are fully occupied and in normal use, a further FRA should be carried out soon after the premises are in normal use.

NOTE Where any premises stand unoccupied, the dutyholder still has a responsibility, under the relevant fire safety legislation, to ensure that an FRA is carried out.

5.2 Every documented FRA should explicitly set out the significant findings of the assessment, including information on the scope of the FRA.

5.3 Within every documented FRA, it should be clear that appropriate consideration has been given to the following matters, regarding which there should be, at least, basic information and, where relevant, comment:

- a) occupants and potential occupants;
- b) fire hazards and means for their elimination or their control;
- c) relevant fire protection measures (see 3.35) and the arrangements for relevant inspection, testing or maintenance of these measures;
- d) relevant aspects of fire safety management; and
- e) any fire strategy adopted within the premises as part of a fire engineering solution, or alternative to prescriptive codes of practice for compliance with building regulations, such as special managerial arrangements.

5.4 Every documented FRA should contain an expression of the level of fire risk, determined from the information recommended in 5.2 and 5.3.

NOTE The level of fire risk may normally be expressed subjectively (e.g. trivial, tolerable, moderate, substantial, intolerable).

5.5 Every documented FRA should contain an action plan (see Clause 19), unless it is expressly confirmed within the FRA that no additional fire precautions are necessary.

6 Responsibility for adequacy of the fire risk assessment

COMMENTARY ON CLAUSE 6

Regardless of whether the FRA is carried out by, for example, staff of an organization, or by a third-party fire risk assessor (see 3.85), the ultimate responsibility for the adequacy of the FRA rests with a dutyholder (see 3.18), namely the person defined by legislation as responsible for ensuring that the FRA is carried out and that the fire precautions are adequate.

In a workplace, this dutyholder is the employer, but, in addition, other persons, such as those having control of the premises, might also be required to carry out an FRA. For example, in some premises, such as commercial premises in multiple occupation, the landlord or managing agent normally also has responsibilities under legislation, and, in order to discharge their duty, it is likely that they will need to carry out an FRA to determine the adequacy of those fire precautions for which they are responsible (e.g. fire precautions in the common parts and fire protection systems that are premises-wide, such as the premises' fire alarm system). It is also necessary to ensure adequate cooperation amongst dutyholders to verify that, jointly, they coordinate the measures required to satisfy legislation.

Where legislation imposes a requirement on any dutyholder for an FRA to be carried out, it needs to be clearly understood by the dutyholder that the responsibility for the adequacy and accuracy of the FRA, and of the information contained therein, rests with that dutyholder, rather than with the fire risk assessor (see 3.39), regardless of whether the fire risk assessor is an employee of the organization or a third party (e.g. a consultant). However, there is also a legal responsibility on the part of the fire risk assessor in contract law; criminal responsibility can also arise on the part of the fire risk assessor under the relevant fire safety legislation if the FRA carried out by the fire risk assessor is inadequate to such an extent that one or more relevant persons are, consequently, exposed to the risk of death or serious injury in the event of fire.

It is important that any person on whom the duty to carry out an FRA is imposed understands and acknowledges their responsibility for the FRA. While they can use the services of a third party to carry out the FRA, the ultimate responsibility for the adequacy of the FRA cannot be delegated, making it important that dutyholders satisfy themselves

regarding the competence of the fire risk assessors (see Clause 7). Dutyholders in England and Wales have been prosecuted for failures to ensure that a suitable and sufficient FRA has been carried out, in some cases in conjunction with the third-party fire risk assessor with whom they contracted to carry out the FRA, and, in other cases, without any legal proceedings against the fire risk assessors.

Where, within an organization, there is a competent person (see 3.14 and Clause 7) able to carry out the FRA, it is appropriate for that person to carry out, or oversee any third party that carries out, the organization's FRAs. If FRAs are carried out by a third party, such as a consultant, it is essential that the organization for whom the FRA is carried out understands the role of the third party and the resulting FRA; the role is to facilitate the FRA and to advise on fire precautions, but, as noted above, the responsibility for the adequacy of the FRA and the adequacy of fire precautions rests with the organization.

Notwithstanding the above, if a third-party fire risk assessor (such as a consultant) carries out an FRA that is, subsequently, deemed (e.g. by a court) to have been inadequate at the time it was carried out, such as to, thereafter, place occupants of the premises at risk of serious injury or death in the event of fire, the fire risk assessor might then be exposed to civil or criminal liability. This is because, if, under a contract, a person has responsibility for the safety of premises, they can be regarded as "a person having control of the premises", on whom the relevant fire safety legislation imposes duties in respect of the FRA. This situation might, for example, arise if the fire risk assessor were seriously negligent in the scope of the matters considered in the FRA, their endeavour to obtain relevant information, or their examination of fire precautions (including managerial issues, such as evacuation procedures and staff training). Equally, it is not expected that, in the FRA to which this PAS applies, intrusive investigations of structural fire precautions (e.g. involving opening up of the structure or removal of a section of ceiling) and testing of active fire protection measures (see 3.35) are carried out (see also Clause 15). However, where doubt exists as to the adequacy of structural fire precautions, either through material changes to the building over time, or due to its age and historical nature, it might be necessary to make a recommendation for an in-depth

assessment of compartmentation, which might be by other specialists.

Where the FRA is carried out for an organization by a third party, it is essential that the organization commits itself to the FRA from the outset. This means that the organization needs to provide information and support for whoever carries out the FRA, as much of the essential information required in order to carry out the FRA will reside within the organization and cannot be obtained by a third party without the organization's cooperation. The organization also needs to give practical support to the fire risk assessor by ensuring that the fire risk assessor has access to appropriate people from whom information is to be obtained and has sight of relevant documentation, and by facilitating access to all areas of the premises.

Where practicable, to ensure acceptance of the action plan, the recommendations in the action plan need, in the course of the FRA, to be discussed with the management of the premises in question to ensure that the documented FRA is delivered to the appropriate person(s), namely the person(s) on whom the findings impact and who can arrange for implementation of the action plan. The ownership of the FRA by the dutyholder will then continue throughout the life of the premises, so that, for example, the FRA is subject to review at an appropriate frequency and when changes take place (see Clause 20).

The FRA constitutes an underpinning for an organization's compliance with fire safety legislation and its own fire safety policy. It is essential that the organization does not treat the FRA as a mere formality or "tick box" exercise, nor treat the documented FRA as a formal document that is an end in itself and is simply stored away until the fire and rescue authority request sight of it.

6.1 Where, within an organization, an employee of the organization is competent to carry out the FRA, where practicable that person should carry out, or oversee any third party that carries out, the organization's FRA.

6.2 The dutyholder should take all reasonable steps to ensure that every fire risk assessor who carries out FRAs on their behalf is competent to carry out this task, regardless of whether the fire risk assessor is an employee of the dutyholder or a third party, such as a consultant (see Clause 7).

6.3 The dutyholder should ensure that, to the extent possible (see 6.4), the fire risk assessor has access to appropriate people and relevant documentation, is provided with all relevant information and has access to all areas of the relevant premises, or part(s) of the premises, at the time of the FRA.

NOTE *This includes access to certain locked areas, such as plant rooms and at least a sample of service risers, and, where practicable, to a sample of any roof voids in which cavity barriers, compartment walls or automatic fire detectors are necessary.*

6.4 If adequate information and access cannot be provided at the time of the FRA, the action plan should identify further investigation or checking of areas to be carried out subsequently by the dutyholder or a competent person instructed by the dutyholder.

6.5 The dutyholder should ensure that the documented FRA is studied carefully by appropriate people in the organization to verify the accuracy of documented information, to understand the contents, particularly the fire hazards, fire safety measures and any shortcomings in fire protection measures or fire safety management, and to implement the action plan.

6.6 After the FRA has been carried out, it should be subject to regular review, particularly when changes that could affect fire risk occur or when there is any other reason to suspect that the FRA is no longer valid (see Clause 20).

7 Competence of fire risk assessors

COMMENTARY ON CLAUSE 7

The FRA, and its periodic review (see Clause 20), is a foundation for continued adequacy of fire precautions on an ongoing basis, after compliance with building regulations. It is, therefore, essential that FRAs are only carried out by competent persons (see 3.14). Legal liability can arise on the part of the dutyholder and the fire risk assessor if an FRA is not suitable and sufficient. If the inadequacy of the FRA puts one or more relevant persons at risk of serious injury or death in the event of fire, an offence is committed by the dutyholder. The same offence could also be committed by the fire risk assessor.

At the time of publication of this PAS, the competence of fire risk assessors is under much scrutiny following the Hackitt Review of building regulations and fire safety [40]. As a result of this, a new competence standard will be developed by the Fire Sector Federation during the expected life of this PAS. It is important that users of this PAS make themselves aware of developments in this respect. For fire risk assessors, this is necessary to avoid their FRAs being deemed inadequate, thereby leaving occupants of buildings exposed to risk, and consequent liability for the fire risk assessor in both civil and criminal law. For dutyholders, for the same reasons, there is, as discussed in Clause 6, a need to ensure the competence of those engaged by them to carry out FRAs for which the dutyholder will, ultimately, be responsible.

Competence does not necessarily depend on the possession of specific qualifications, although such qualifications might contribute to the demonstration of competence. In the case of small simple premises, where the fire risk assessor might, for example, be a non-specialist employee of the occupier, it is possible that, provided the fire risk is relatively low, the following attributes of the fire risk assessor might be sufficient in conjunction with a study of suitable guidance documents:

- a) an understanding of relevant current best fire safety practices in premises of the type in question;
- b) an awareness of the limitations of the fire risk assessor's own experience and knowledge; and

- c) a willingness and ability to supplement existing experience and knowledge, when necessary, by obtaining external help and advice.

Higher risk or more complex premises require a higher level of knowledge and experience on the part of the fire risk assessor. For complex premises, there is a need for the specific applied knowledge and skills of an appropriately qualified specialist. In such cases, evidence of specialist training and experience, or membership of a professional body, can assist in demonstrating competence. In this connection, risk is not directly associated with, for example, the height of a building; a two-storey residential care home is likely to present a greater risk to occupants from fire than a 20-storey office building.

Significant experience of inadequate FRAs, carried out by those who are not competent to do so, has, since the introduction of current fire safety legislation in Great Britain in 2006, caused increasing concern amongst regulators, enforcing authorities and the fire safety profession. As a result, a "Fire Risk Assessment Competency Council" was formed in 2010 with the objective of setting a competence standard for third-party fire risk assessors, who carry out FRAs for clients on a commercial basis. The Fire Risk Assessment Competency Council comprised representatives from central government, the then Chief Fire Officers' Association (CFOA) (now the National Fire Chiefs Council), the professional bodies within the fire safety profession, relevant trade associations and other relevant stakeholders. In 2011, the Fire Risk Assessment Competency Council published their competence standard for fire risk assessors⁵⁾. The intention was that this standard would provide a basis for consistent evaluation of the competence of fire risk assessors by those professional bodies engaged in registration of competent fire risk assessors, and by third-party certification bodies that operate certification schemes for fire risk assessors. As noted above, a new competence standard will be published under the auspices of the Fire Sector Federation.

⁵⁾ Available at <http://www.cfoa.org.uk/19532>.

In general, other than in the case of simple, low-risk premises, fire risk assessors, particularly those offering their services on a commercial basis (e.g. consultants), need a good understanding of the relevant fire safety legislation, fire behaviour, the behaviour of people in fire, and the practical application of the principles of fire safety.

The competence of fire risk assessors arises from a sound underpinning combination of education, training, knowledge and experience in the principles of fire safety. In this connection, education is likely to involve formal education of a relatively academic nature, often culminating in a qualification (although not necessarily to degree level). Training involves training of a practical nature, often given on the job. Knowledge can be obtained by academic study, training, working alongside others, short courses, continuing professional development or any combination of two or more of these..

It is not implied that education, training and experience in the principles of fire safety need each be extensive, provided that the combination of each results in adequate knowledge. Moreover, a high level in respect of any one of these might compensate for a lower level in another.

A number of bodies maintain a register of persons who they consider competent to carry out FRAs. These include relevant professional bodies, and certification bodies accredited by UKAS to provide assessment and certification services. Registration of a fire risk assessor on such a register can give confidence in the education, training and experience of the fire risk assessor to those who wish to use the fire risk assessor's services.

7.1 All FRAs should be carried out by a competent person (see 3.14).

7.2 The fire risk assessor need not possess any specific academic qualifications, but should:

- a) understand the relevant fire safety legislation;
- b) have a thorough knowledge and understanding of government, and other, guidance document(s) relevant to the premises in question;
- c) have appropriate education, training, knowledge and experience in the principles of fire safety;
- d) have an understanding of fire development, the response of building construction and materials to fire and the behaviour of people in fire;
- e) have an understanding of occupants especially at risk from fire who are likely to be present in the premises for which the FRA is carried out;

- f) understand the fire hazards, fire risks and relevant factors associated with occupants especially at risk within premises of the type in question;
- g) understand the causes of fire and means for their prevention;
- h) understand the design principles of fire protection measures relevant to the buildings being assessed;
- i) have an understanding of critical management arrangements, emergency and evacuation planning, and staff requirements for all occupancy types;
- j) have an understanding of evacuation strategies and their application to buildings;
- k) have a good appreciation of fire precautions in older existing buildings, as opposed to an understanding of only current standards under building regulations;

NOTE 1 *This is particularly critical for occupants with vulnerabilities or dependencies that generate a need for support, and the impact of that on evacuation plans and staffing levels.*

NOTE 2 *Fire safety specialists experienced only in the design of new buildings might not necessarily possess an appreciation of standards in buildings constructed before current building regulations came into force, nor of the extent to which such standards continue to be acceptable.*

- l) have appropriate training and/or experience in carrying out FRAs; and
- m) have evidence of continuing professional development that includes assimilation of lessons learned from past multiple fatality fires, particularly those involving premises in which people were at higher risk (e.g. sleeping or vulnerable people).

8 Benchmark standards for assessment of fire precautions

COMMENTARY ON CLAUSE 8

The assessment of fire precautions in the FRA does not merely involve rigid comparison of existing fire precautions with standards set out in prescriptive codes of practice. Similarly, the action plan is not based on rigid adherence to prescriptive norms found in codes of practice. To adopt such an approach would not necessarily result in risk-proportionate fire precautions.

Nevertheless, in assessing or formulating measures to eliminate or control fire hazards (see 3.29), it is often appropriate, in the case of certain fire hazards, such as potential electrical faults, to adopt guidance in recognized codes of practice. This is particularly the case where these codes of practice are well established, universally recognized, produced by authoritative bodies with specialist knowledge regarding the hazard in question, and based on sound scientific or engineering principles (as opposed to arbitrary judgements). The view of the Health and Safety Executive is that it is not appropriate to use risk assessment to justify departures from practices that are universally accepted as appropriate within an industry sector [41].

Thus, for example, in considering the fire hazard created by defective electrical wiring, it is normally appropriate to control the hazard by inspection and testing of the fixed electrical installation in accordance with BS 7671 and with guidance produced on this subject by the Institution of Engineering and Technology [42]. It is normally inappropriate for the fire risk assessor to advocate control measures that conflict with such guidance.

However, in the case of other fire hazards, such as use of portable heaters or control of combustible waste, the knowledge, experience and judgement of the fire risk assessor is much more important. Although there is ample guidance on such matters in various publications, the guidance is less universally recognized, more general in nature and not exactly applicable in every situation.

In the case of fire protection measures, a plethora of standards exist. For some specific fire protection systems, a single, universally accepted standard exists and is based on sound engineering principles. This is the case in respect of, for example, fire detection and fire alarm installations (BS 5839-1) and automatic sprinkler installations (BS EN 12845). These standards are invariably adopted in the design of new installations in non-domestic premises.

However, in many codes of practice, certain parameters, such as the sound pressure levels of a fire alarm system, the illuminance levels of emergency escape lighting and periods of fire resistance, are acknowledged to be relatively arbitrary in nature. Thus, minor variations from numerically expressed limitations or performance levels need not necessarily have any significant effect on fire risk. Nevertheless, where the action plan includes recommendations for upgrading any aspect of fire precautions (e.g. improvement in the sound pressure levels of a fire alarm system or the illuminance levels of an emergency escape lighting installation, or replacement of a fire door), it is appropriate to adopt the relevant recommendations of the appropriate current code of practice within the action plan.

Traditionally, the design of various other fire protection measures recommended within the relevant code of practice is often based more on custom and practice, and on arbitrary recommendations, than on scientific and engineering principles. Moreover, various conflicting recommendations often occur within different codes of practice on the same subject, such as those relating to structural fire protection (see 3.84). In addition, sometimes different recommendations apply to new and existing premises. For example, recommendations within guidance that supports building regulations often differ from recommendations within guidance that supports legislation applicable to existing premises. Typically, guidance on fire protection measures for new premises (e.g. guidance that supports building regulations) is more onerous than guidance on fire precautions in existing premises (e.g. guidance that supports the relevant fire safety legislation). This makes rigid adherence to any particular code of practice even less appropriate.

It also follows that use of guidance that supports building regulations for the purposes of an FRA for existing premises, constructed before the introduction of the current building regulations, is inappropriate and would often result in an unduly harsh assessment of risk in conjunction with an action plan that is not risk-proportionate. This is an error sometimes found in FRAs and ought to be challenged by dutyholders if encountered.

A classic example of this concerns means of escape (see 3.62). Different maximum travel distances (see 3.87) are recommended in different codes of practice dealing with different premises, and even in different codes of practice that can be applied to the same premises. Yet, travel distance is a fundamental component in the design of means of escape. Nevertheless, for example, different maximum travel distances are given in different relevant codes of practice and guidance documents, such as BS 9999 and government guidance throughout the UK on compliance with building regulations. Even within government guidance, for example, for shops, the maximum travel distance recommended in government guidance in Scotland is 32 m, while elsewhere in the UK the figure is 45 m. Many similar variations exist in the more detailed recommendations of various codes of practice; in some cases, these variations are arbitrary in nature rather than based on fire safety engineering principles.

This has led to a school of thought amongst some experts that the application of prescriptive codes of practice within the FRA is inappropriate. However, while there is a need for risk-proportionate fire precautions, rather than rigid application of prescriptive norms, prescriptive codes of practice have achieved their objective; for example, it is rare for multiple fatality deaths to occur in non-domestic premises that conform to the relevant prescriptive code of practice, unless a number of failures in fire safety management have occurred.

This might be as a result of the continual development of the well-established codes of practice over many years, and of the fact that, when codes of practice have been found to be deficient following a serious multiple fatality fire, the codes have been amended, or new codes have been developed, to address the deficiency. After many revisions and amendments, prescriptive codes of practice arguably result in a level of fire precautions that is sufficient to reduce fire risk to a tolerable level, and in fire protection measures that are relatively forgiving in the event of inadequate fire prevention measures and shortcomings in fire safety management.

However, although it has always been intended that codes of practice are simple benchmarks, in respect of which there is flexibility in application, there is a perception (sometimes, but not always, correctly) that there has been inflexible application of codes of practice. This has arguably tended to result in unnecessary restrictions on the design and use of premises, and in over-extensive fire precautions.

The “one size fits all” nature of prescriptive codes can also result in lower standards of fire protection measures than warranted by the fire risk. An example of this is the assumption within many codes of practice that automatic fire detection is never necessary in premises in which no one sleeps, other than as compensation for reduction or variation in the standards of other fire protection measures, to operate other fire protection measures or for protection of inner rooms. However, the FRA might well determine that there is a need for some automatic fire detection in such premises. Additionally, prescriptive standards can become outdated and fire protection measures designed in accordance with such standards might not be sufficient.

At the design stage of premises, the alternative to application of all recommendations within a prescriptive code of practice is the application of fire safety engineering (see 3.41), usually in conjunction with many, but not all, of the recommendations from the codes of practice. However, formulation of fire protection measures from a first principles approach to fire safety, for example using fire safety engineering, is complex, time-consuming and demands the expertise of specialists, such as a fire safety engineer (see 3.40). It is not usually an appropriate approach to the FRAs required by legislation, albeit that the principles of fire safety engineering, applied subjectively, can be relevant.

For example, when fire occurs, a key factor in the safety of occupants is the required safe escape time (RSET) (see 3.78). Control of maximum travel distance and minimum exit widths, using the same figures for all premises of the same purpose group, is an imprecise way of ensuring that RSET is suitably limited, and only addresses the time between response of occupants to an alarm signal and the point at which they reach a place of relative safety (often described as “evacuation time”). This approach ignores time for detection of fire, the subsequent time interval before an alarm signal is given to occupants and the time for occupants to recognize the alarm signal. Moreover, it takes no account of the time for occupants to respond to the fire alarm signal (which can sometimes be longer than the combination of all other time intervals and the evacuation time).

However, calculation or prediction of these time intervals is extremely difficult. Furthermore, a knowledge of RSET in isolation is of little value. It is more appropriate to compare RSET with the available safe escape time (ASET) (see 3.6).

This PAS is intended to be suitable for use by, for example, fire risk assessors with a background in application or enforcement of traditional prescriptive fire protection codes of practice. Accordingly, it is assumed that published guidance will be a starting point or benchmark for assessment of the adequacy of fire precautions in the premises. It is, however, further assumed that the fire risk assessor is capable of exercising judgement to determine whether the recommendations of such guidance ought to be relaxed, or added to, in order to determine the appropriate level of fire precautions and to formulate a risk-proportionate action plan.

Nevertheless, it is also expected that a competent fire risk assessor will not simply apply guidance and codes of practice “blindly”, without proper consideration of the risk. Guidance on the relevant fire safety legislation makes it clear that the guidance is not intended to be applied prescriptively.

In Scotland, a Determination by the Chief Inspector of Fire and Rescue Authorities, in respect of a dispute between a dutyholder and the enforcing authority, has reinforced this point. Although such a Determination only applies to the specific case, the Determination in question makes the following general points:

“While it is totally appropriate to compare existing fire safety measures against suitable benchmarks, using these benchmarks as prescriptive standards is inappropriate. The benchmarks in the Scottish Government’s guides are not meant to be prescriptive or minimum standards to be applied. This is stated in each guide and was specifically reinforced in Scottish Fire and Rescue Service Circular 17/2007 which says ‘the benchmarks in the sector specific guides are not designed to be used as prescriptive standards’.”

A subsequent Determination by the Secretary of State in England noted that:

“There is no requirement under the Fire Safety Order for a Responsible Person to comply with provisions relating to new buildings and alterations under the Building Regulations.”

8.1 Assessment of fire precautions should take into account guidance within relevant, recognized codes of practice, particularly those produced by the relevant government departments in support of the relevant fire safety legislation, albeit that rigid, prescriptive application of these is not appropriate. While fire precautions recommended in the action plan should also take account of such codes of practice, the recommendations in the action plan should be risk-proportionate, which might necessitate measures of a standard above or below that recommended in the relevant code of practice.

NOTE 1 Different guidance documents apply to England and Wales, Scotland and Northern Ireland.

NOTE 2 Attention is drawn to the fact that, in some specialized sectors, the sector itself produces guidance on fire safety in the premises of that sector. Examples are prisons, for which the HM Prison and Probation Service produces guidance [43], and schools, the design of which is addressed in guidance produced by the Department for Children, Schools and Families [44], though the latter applies only to the design of new or altered premises.

8.2 Departures from the recommendations of recognized codes of practice should be based on the judgement of the fire risk assessor, and should take into account relevant fire safety, or fire safety engineering, principles, while adopting a pragmatic approach that is based on assessment of risk.

NOTE 1 It is of benefit, particularly to those who subsequently audit the FRA, such as enforcing authorities, if significant departures from recognized codes of practice, deemed acceptable by the fire risk assessor, are recorded and justified in the documented FRA (see Clause 10). It is then clear that there has been appropriate consideration of the matter and that it has not simply been overlooked.

NOTE 2 Departures from the recommendations of recognized codes of practice might arise from a fire engineering solution described in the fire strategy for the building. An understanding of the fire strategy, if available, is likely to be valuable in any FRA.

9 Assessment of premises design and fire precautions that do not conform to current standards

COMMENTARY ON CLAUSE 9

NOTE This clause does not apply to new, or very recently constructed, buildings in which there are defects in construction; the clause is limited to older buildings that were designed in accordance with previous standards, and so might not conform to current standards.

Often, the design of premises for which an FRA is to be carried out, and the design, or extent, of the fire precautions in the premises, do not conform to current standards as set out in either guidance for new premises (e.g. in England and Wales, Approved Document B [45]) or government guidance on compliance with the relevant fire safety legislation in existing premises.

For example, there might have been significant changes to guidance on means of escape since the premises were constructed; an example of this is alternative escape routes involving escape over a flat roof in circumstances that would not be acceptable under current guidance, but were acceptable in the past. Alternatively, there might have been major changes in guidance on the design of one (or more) of the fire protection systems; for example, prior to 2002, it was acceptable for the wiring of fire detector circuits in conventional fire alarm systems to be non-fire-resisting.

Guidance on the extent to which a fire protection measure is provided might also have changed. Indeed, it might even be the case that a fire protection system that is now required by legislation was not required at the time that the premises were constructed. For example, prior to 1988, compliance with BS 5839-1 did not necessitate the provision of fire detectors in hotel bedrooms, while, in Scotland, the requirement to provide sprinkler protection of care homes was first introduced into the Building (Scotland) Regulations (as amended) [46] in 2004.

It is not necessarily (and is often not) the case that failure to comply with current guidance necessitates upgrading of fire precautions to meet current standards, particularly those imposed in the design of new premises under building regulations. It is almost a truism that standards, in their development over a period of time, improve levels of safety, but this does not necessarily imply that older standards are unsafe.

In some cases, upgrading to current standards would, in any case, not just fail to meet the test of reasonable practicability (see Clause 19); upgrading might be architecturally impossible. For example, in England and Wales, in certain premises over 18 m in height in which people sleep, the use of combustible materials in the external wall construction is now extremely restricted by the Building Regulations 2010 [47] (as amended by the Building (Amendment) Regulations 2018 [48]). It would not be possible to apply this requirement retrospectively to all existing buildings.

It is an inherent part of the FRA process in such cases to determine whether departures from current guidance, including guidance that supports the relevant fire safety legislation, create sufficient risk to warrant upgrading of fire precautions to current standards. Obviously, this involves subjective judgements, but a departure from prescriptive guidance is not, alone, sufficient justification for upgrading work.

Figure 2 is intended to assist in a logical approach in the case of older premises, constructed before recognized current guidance was published. The first step is to determine whether the fire precautions satisfy the standards that were applicable at the time of construction. This might bring to light original building defects. More likely, it might identify aspects in which, perhaps over many years, the originally required fire precautions have been compromised.

In such cases, the first measures that need to be specified in the action plan are measures to restore the conditions stipulated by the original standard. An exception to this is where the original standard is no longer applicable. For example, if, in a flat within an office block in England or Wales, provided as overnight accommodation for visiting staff, self-closing devices have been removed from internal doors, it might not be necessary to restore these, as Approved Document B [45] no longer advocates these as necessary in new flats for compliance with current building regulations.

The next step, having confirmed that the premises met the provisions of the original standard (or having recommended measures to restore those provisions), is to confirm whether the premises would meet the current standards. Sometimes, even when the premises were constructed before these standards were introduced, fortuitously, they do actually conform to current standards.

The crux of the FRA process is often to determine whether departures from current standards create unacceptable risk (i.e. whether the departure from current standards really matters to any degree). Obviously, extremes exist in this respect. For example, a hotel constructed in the 1970s, and certificated under the then current Fire Precautions Act 1971 [49], would arguably not have been required to be provided with any automatic fire detection whatsoever. Today, such a situation would be regarded as very high risk, and there would be a need to recommend the installation of automatic fire detection as an urgent priority (with interim measures if the premises are to be occupied by sleeping guests).

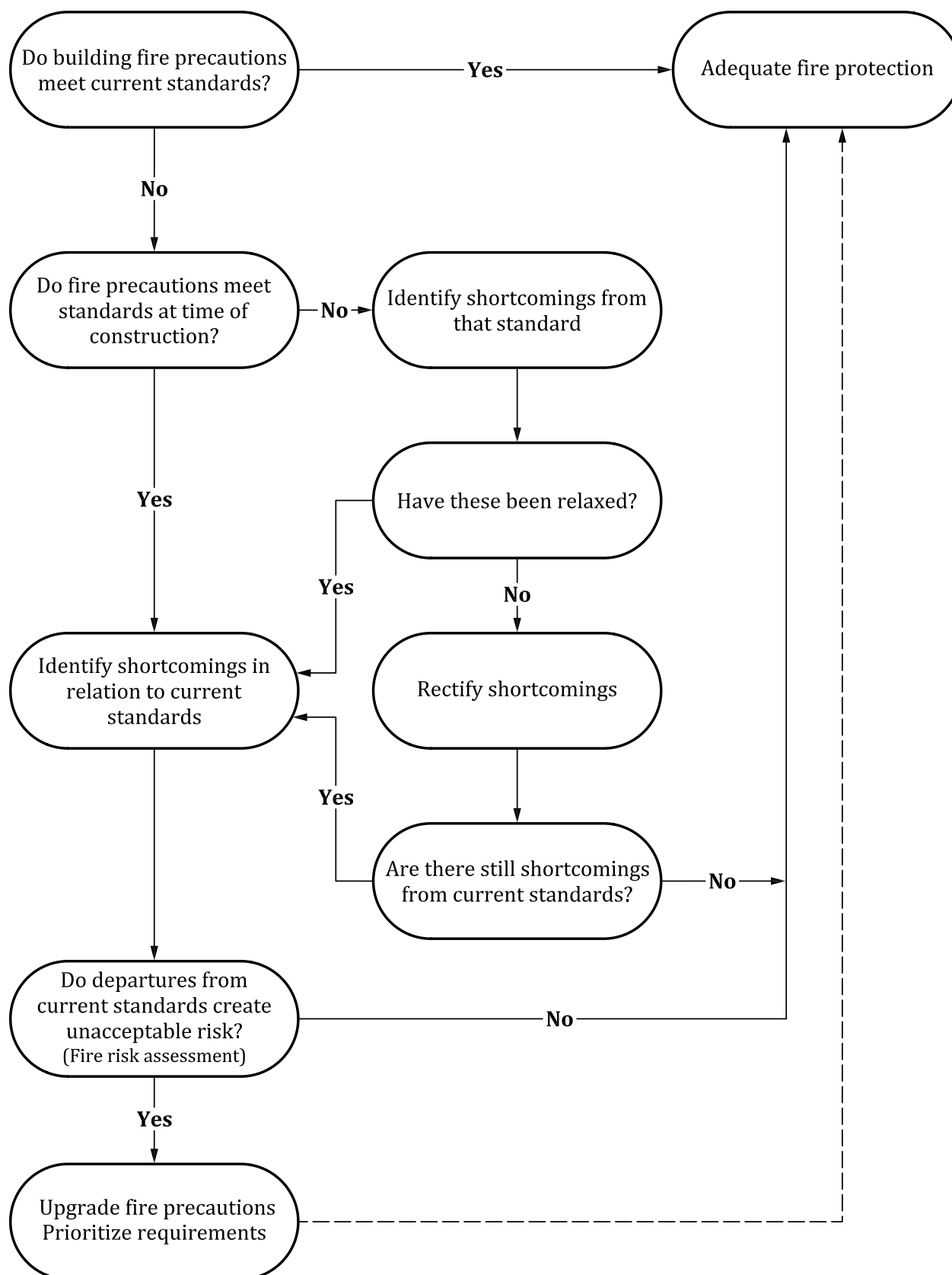
On the other hand, in 1999, the level of illuminance of emergency escape lighting on defined escape routes, specified in the relevant British Standard, was increased by a factor of five in the process of European harmonization. The original level of illuminance of a system installed prior to 1999 might remain acceptable until a new system is installed, in which case the current standard would be adopted.

Between these two extremes there are many “shades of grey”. In making judgements, all the circumstances of the case need to be taken into account. For example, in the case of a care home for partially sighted people, it might be appropriate to upgrade an old emergency escape lighting system to meet the current standards of illuminance.

A common perplexity relates to the fitting of intumescent strips and smoke seals to fire-resisting doorsets that were manufactured or installed before the strips and seals were considered necessary. Again, extremes exist, requiring careful judgement on reasonable practicability for all cases between these extremes. In a care home in which it is known that evacuation of residents via escape corridors will take a prolonged period of time, the retrofitting of the strips and seals to bedroom doors might be one of several possible mitigating measures. However, in cellular office premises with extensive automatic fire detection, fitting of intumescent strips and smoke seals to the doors of stairways is likely to be regarded by the fire risk assessor, in many circumstances, as unnecessary. Sometimes, where upgrading is not reasonably practicable, it is appropriate to acknowledge the departure from current standards, so that, at some future time (e.g. when refurbishment takes place), the current standard can be adopted.

9.1 In carrying out an FRA of premises constructed before the introduction of current standards, the fire risk assessor should have at least a basic understanding of the standards that were applicable to the premises at the time of construction.

9.2 In formulating an action plan for the premises described in 9.1, the fire risk assessor should follow the logic set out in Figure 2. It should not be assumed that prescriptive application of current standards is necessary, but, where the continued adoption of the original standard is considered to create significant risk, measures that are reasonably practicable should be recommended in the action plan (see Clause 19). These should accord with either prescriptive or performance-based standards and ultimately the functional requirement.

Figure 2 – Decision tree for action plan when existing premises do not conform to current standards

10 Documentation of fire risk assessments

COMMENTARY ON CLAUSE 10

There is no single correct means of documenting an FRA, nor are there specific, definitive requirements within legislation for the content of a documented FRA, only that the “significant findings” and any group of occupants especially at risk be recorded. The fire risk assessor therefore needs to make a judgement as to what constitutes “significant findings” and “occupants especially at risk”.

Clause 12 gives details of the information that needs to be taken into account in the FRA and the matters on which judgements need to be made. Such information needs to be documented, along with other relevant factual information (e.g. managerial responsibility for fire safety). In the case of certain matters, particularly the “given” factors taken into account in assessment of the fire risk (see Commentary on Clause 5), information about the factors (e.g. number of storeys of the premises) needs to be recorded.

In the case of other matters, such as certain fire protection measures (e.g. emergency escape lighting), it might be sufficient to acknowledge that appropriate consideration has been given to the matter (see 5.3), without necessarily recording, where relevant, more than a brief summary about its provision and location. Indeed, unnecessary detail might not be conducive to ensuring that the appropriate person(s) studies the document properly or takes note of significant findings. However, if, for example, the design of a fire precaution (e.g. means of escape) departs significantly from a recognized norm, but the departure is considered acceptable by the fire risk assessor, it is of value to document the justification for this. It is also relevant to record measures that need to remain in place to address specific risks or to compensate for shortcomings in other fire protection measures.

Since the purpose of an FRA is to lead to the safety of occupants of the premises from fire, the important issues are the scope of the FRA, the competence with which relevant matters have been considered and the content of the documented significant findings. The format of the record is then very much a secondary consideration, although there needs to be evidence for those who audit the FRA (e.g. an enforcing authority) that the requirements of the relevant fire safety legislation have been addressed when the FRA was

carried out. In this connection, objections to any specific format are not legitimate.

One suitable format for documentation is given in Annex A to this PAS. However, as there is evidence to suggest that PAS 79 is becoming, to some extent, an industry standard, it needs to be noted that Annex A is informative, not normative. Accordingly, provided that the recommendations in the PAS, including those within the normative annex, are followed, there will be compliance with this PAS even if Annex A is not used.

10.1 A documented FRA should meet the recommendations given in 5.2 to 5.5.

NOTE Annex A contains a pro forma that is considered to be a suitable and sufficient means for documenting the FRA. The pro forma contained in Annex A is only a model, in that, if completed by a competent person (see Clause 7), the scope of the documented FRA will normally conform to the recommendations of this PAS. Equally, the format of a documented FRA may vary from that shown in Annex A, provided that all recommendations of this PAS are satisfied.

10.2 It should be confirmed that there are means for identifying persons especially at risk, and that there are suitable arrangements for providing assistance to them in the event of fire.

NOTE 1 It is necessary for such arrangements to be reviewed periodically.

NOTE 2 It is the responsibility of the dutyholder to provide relevant information to the fire risk assessor on occupants identified as being especially at risk.

10.3 For persons known to be especially at risk, sufficient information should be recorded about the nature of that risk to enable verification as to whether measures to address the risk are in place [e.g. PEEPs and GEEPs (see Commentary on Clause 15) or other fire protection measures].

NOTE For example, it is not sufficient to record the presence of disabled people without some reference to the nature of their disabilities; Deaf and hard of hearing people, for example, need different provisions for their safety to persons with impaired mobility. This principle is particularly important in the case of premises in which the majority of occupants are disabled people (e.g. a care home).

10.4 If any fire protection measure obviously and significantly departs from the standard recommended in a relevant guidance document or prescriptive code of practice, but no upgrading of the measure is recommended in the action plan, the acceptance of the existing standard should be justified within the documented FRA.

***NOTE** The departures to which 10.4 refers are primarily those affecting provisions for means of escape and functional aspects of fire protection systems; it is not, for example, intended that justification of the continued use of a fire alarm system or emergency escape lighting system designed in accordance with a superseded standard would normally be necessary.*

10.5 The FRA should record:

- a) the name of the fire risk assessor(s) and any relevant qualifications or certification that they hold;
- b) the date(s) on which the FRA was carried out and the date that the FRA was published;
- c) the name(s) of the principal person(s) who was consulted (e.g. for supply of relevant information) at the time of the FRA; and
- d) the name of the person (if any) who checked the FRA report and any relevant qualifications or certification that they hold.

***NOTE** This might be the same person who carried out the FRA and who wrote the report, but it needs to be made clear.*

10.6 The FRA should record any significant areas of the premises to which access was not possible at the time of the FRA.

10.7 The FRA should record the date by which it is to be subject to review (see Clause 20).

11 Nine steps to fire risk assessment

COMMENTARY ON CLAUSE 11

To promote a structured approach to fire risk assessment (see Clause 5), this clause sets out nine steps in the FRA process, somewhat akin to the five steps to risk assessment often adopted in a health and safety risk assessment. Some guidance documents suggest five steps in an FRA; this PAS is consistent with such guidance, but breaks down the process into more detail. The number of steps defined is irrelevant; the important matter is that an appropriately structured approach is adopted and that all relevant issues are addressed.

- a) The first step is to obtain relevant information about the premises, the processes carried out on the premises, and the occupants of the premises. Information about previous fires is also of value, particularly where the organization has multiple sites with common operations. This information is described in Clause 12 as the “given” factors in the FRA. Much of the relevant information can usually be obtained by interviewing a relevant representative(s) of the management, prior to carrying out a physical inspection of the premises. At that stage, it is important that relevant information is obtained about the occupants of the premises, particularly those especially at risk in the event of fire. For example, in a residential care home, it would be necessary to obtain information about the residents’ disabilities, so that the effect of these on evacuation time can be taken into account, by reference, also, to the number of staff available to assist with evacuation during the night. Other than in the case of small, simple premises, the fire strategy for the building (if a documented fire strategy exists) is likely to be of value to the fire risk assessor. The term “fire strategy”, in this context, includes the fire safety information that, for a modern building, is included in the package of information that, in England and Wales, is handed over to the dutyholder as part of compliance with Regulation 38 of the Building Regulations 2010 [47]. In Scotland, similar information is contained within the Fire safety design summary [50] that is necessary for compliance with Regulation 41(bd) of the Building (Procedure) (Scotland) Regulations 2004 (as amended) [51].
- b) The second step is fire hazard identification (see 3.30) and the determination of existing measures for the elimination or control of the identified fire hazards. This normally involves a combination of interviewing the management and inspection of the premises.
- c) The third step is to make a (subjective) assessment of the likelihood of fire. This is based primarily on the findings of step two (see Figure 1). However, the assessment of the likelihood of fire also takes into account any relevant information obtained in step one.
- d) The fourth step is to determine the physical fire protection measures (see 3.35) relevant to the protection of people in the event of fire. The relevant information can, again, be obtained partly from the initial discussion with management, but is primarily obtained by inspection of the premises, so that the level of fire protection can be determined.
- e) The fifth step is to determine relevant information about fire safety management (see 3.43). This primarily involves discussion with management, but might also involve examination of documentation, such as records of testing, maintenance, training and drills.
- f) The sixth step is to make a subjective assessment of the likely consequences to occupants in the event of fire (see Figure 1). This assessment needs to take account of the fire risk assessor’s opinion of the likelihood of various fire scenarios (see 3.49), the extent of injury that could occur to occupants in these scenarios, and the number of people who are likely to be affected. This assessment is principally based on the fire risk assessor’s findings in steps four and five, but takes account of information obtained in step one.
- g) The seventh step is to make an assessment of the fire risk and to decide if the fire risk is tolerable (see Figure 1). The fire risk is assessed by combining the likelihood of fire and the consequences of fire (see Clause 18).
- h) The eighth step is to formulate an action plan (see 3.2), if this is necessary to address shortcomings in fire precautions in order to reduce the fire risk. Even if fire risk is assessed as tolerable, there is often a need for minor improvements in fire precautions. (See Clause 19 for formulation of an action plan.)

- i) *Thereafter, in the ninth step, a period of time after which the FRA is to be reviewed needs to be determined (assuming that earlier review is not necessitated by changes to the premises and that there is no reason to suspect that the FRA is no longer valid) (see Clause 20).*

The nine steps set out above, while in a logical, structured order, are not necessarily set out in the chronological order in which the steps are carried out on site. For example, some information relevant to control of fire hazards, the determination of fire protection measures and the management of fire safety is normally most appropriately obtained in a single meeting that is held prior to inspection of the premises.

11.1 In all FRAs carried out in accordance with this PAS, the fire risk assessor should explicitly take the following nine steps:

NOTE 1 *Explicitly, in this context, means that, in the documented FRA, it needs to be clear that each of the nine steps has been taken by the fire risk assessor.*

- a) obtain information on the building, the fire strategy for the building (where a documented fire strategy exists), the premises, the processes carried out on the premises and the people present, or likely to be present, on the premises, and any recent history of fires (see Clause 12);

NOTE 2 *The relevant fire safety legislation requires that consideration be given to the risk to people in the immediate vicinity of the premises from fire, as well as risk to people within the premises.*

- b) identify the fire hazards and means for their elimination or control (see Clause 13);
- c) assess the likelihood of fire, at least in subjective terms (see Clause 14);
- d) determine the fire protection measures currently in the premises (see Clause 15);
- e) obtain relevant information about fire safety management (see Clause 16);
- f) make an assessment of the likely consequences to people in the event of fire, at least in subjective terms (see Clause 17);
- g) make an assessment of the fire risk (see Clause 18);
- h) formulate and document an action plan, in which recommended actions are prioritized (other than in the case of an action plan comprising only minor matters that can be actioned without delay) (see Clause 19); and
- i) define the date by which the FRA is to be reviewed (see Clause 20).

11.2 The FRA should be reviewed after a period of time defined in the FRA, or such earlier time as significant changes take place or there are other reasons to suspect that the FRA is no longer valid (see Clause 20).

12 Information about the premises, the occupants and the processes

COMMENTARY ON CLAUSE 12

This clause sets out various “given” factors that have a major impact on fire risk. It is relevant to document information about these factors in the FRA. The manner in which the factors are to be taken into account in the FRA process is described.

Firstly, the number of floors below ground and the number of floors above ground need to be determined. In assessing the fire risk, it needs to be borne in mind that basements can present particular difficulties for firefighting and, hence, rescue. Mitigating factors would be, for example, low population within basement floors, occupation solely, or primarily, by trained staff, and the presence of fire protection measures, such as automatic sprinkler protection, automatic fire detection and means for removal of smoke.

Tall buildings (and deep basements) can result in somewhat prolonged evacuation times for occupants. In the former case, external rescue by the fire and rescue service is more difficult from floors above the height of normal fire and rescue service ladders, and even more difficult in the case of very tall buildings with floors beyond the reach of a turntable ladder or hydraulic platform. The time for occupants to descend (or ascend) staircases can be significant. Again, robust protection of staircases, automatic fire detection and automatic sprinkler protection mitigate the risk.

The area of each floor can also be a relevant factor. Evacuation of a very large floor area is likely to take longer than evacuation of a much smaller floor area, and the number of occupants is likely to be greater. Where floor space factors have been used to determine the number of occupants, it can sometimes be appropriate to include the factors and calculations in the risk assessment. Similarly, complex escape routes might take longer to negotiate than simple ones, and might present greater difficulties for disabled people. The construction of the premises also needs to be taken into account. This can have an effect on fire development, particularly if combustible building construction is likely to be involved in the fire prior to evacuation of occupants.

The general use to which the premises are put (the occupancy) is also relevant. From a knowledge of the occupancy, conclusions can normally be drawn regarding the activities carried out, the nature and state of occupants, whether members of the public are on the premises, etc. These are relevant factors in the assessment of fire risk.

A further important consideration is the maximum number of occupants that can reasonably be expected at any one time. It is important that the number recorded in the FRA is a reasonably foreseeable maximum, so that it forms a basis for any calculations of required exit capacity, etc. (see Clause 15).

Where practicable, it is of value for the number of occupants to be subdivided into employees and members of the public. Employees can be, and are more likely to be, trained in procedures to follow in the event of fire, and they are normally familiar with the premises. On the other hand, members of the public are likely to be unfamiliar with the premises and will not have received any formal instruction in fire procedures, etc. This has a bearing on the likely consequences in the event of fire. The ratio of staff to members of the public can also have a bearing on the effectiveness of evacuation procedures, particularly where the members of the public might need assistance or shepherding to evacuate. Other occupants who might need to be taken into account include cleaners, contractors and visitors.

Particular account needs to be taken of occupants who could be especially at risk in the event of fire.

NOTE 1 *The relevant fire safety legislation requires that, other than in the case of certain very small businesses, FRAs record any group of persons especially at risk.*

Particular care needs to be taken to ensure that due account is taken of disabled occupants, who are often especially at risk in the event of fire in view of the possible need for assistance with evacuation or special warning of fire. All forms of disability need to be taken into account, including mobility impairment, deafness, blindness, sensory/neurological processing difficulties and mental illness.

In certain premises, such as residential care homes, great care is necessary to ensure that due account is taken of the effect of the physical and mental capacity of occupants, and of the assistance required (and available at all times) for their evacuation, on the evacuation time and the appropriate evacuation strategy. Temporary disability can also result in the need for a special evacuation strategy. In the case of occupants with mobility impairments, account also needs to be taken of the need for any active and passive fire protection measures to protect the escape routes for these occupants for sufficient time for them to reach a place of relative (or ultimate) safety (see 3.70 and 3.71 respectively).

In residential care homes, the evacuation of highly dependent or non-mobile residents into an adjacent sub-compartment takes significant time and physical staff effort. At night, with only a few staff to move residents physically, experience and research have shown that it is likely to take about 2 min per resident, so in the region of 10 min to 20 min for all residents in a sub-compartment, depending on the number of bedrooms in the sub-compartment. This necessitates consideration of the number and physical capabilities of staff available at night, in combination with the number and nature of residents in a sub-compartment and the consequent time needed to evacuate the sub-compartment. In the case of premises with progressive evacuation strategies for people with support needs, it might not be possible to move people vertically without additional assistance.

It is also appropriate to regard sleeping occupants as especially at risk in the event of fire. They are less likely to be aware of the fire, might not be roused immediately by the fire alarm signal, might be disorientated when first aroused from sleep (particularly if under the influence of alcohol or drugs) and might be reluctant to evacuate. Generally, in premises that incorporate sleeping accommodation, there is a need for a high standard of automatic fire detection and emergency escape lighting (see Clause 15).

It is also possible that occupants working alone in remote areas of the premises could be especially at risk in the event of fire. Their location at the time of a fire might be unknown to other occupants of the premises, and there might be no one to assist them if they were trapped by the fire or overcome by smoke. If, for example, people were working on the roof of the building, the fire alarm signal might not be sufficiently audible, and their means of escape might be restricted.

Other occupants especially at risk include any occupants for whom immediate escape might not be possible, or who might not be adequately warned of fire. For example, it is not unknown for cleaners, or others, working on the premises during the night, to have restricted means of escape, which might not be acceptable.

The most important purpose of considering and recording occupants especially at risk in the event of fire is to ensure that adequate provisions are in place to protect such occupants from fire. Having recorded such occupants within the FRA, it needs to be clear within the documented significant findings that there are provisions to ensure the safety of these occupants.

Young persons (i.e. those under 18 years of age) need special consideration. Their inexperience, lack of awareness of risks and immaturity makes them especially at risk from fire.

NOTE 2 *The relevant fire safety legislation requires that, in carrying out an FRA, particular account needs to be taken of various factors relating to the risk to young persons from fire.*

It is relevant to take account of any fire, however small, that is known to have occurred within recent years. Factors to consider include the circumstances of the fire, including the cause, and any remedial action taken to prevent a reoccurrence. Information of this type can be of use in identifying fire hazards that would not otherwise be obvious from an inspection of the premises. Where FRAs are carried out throughout the estate of one organization, review of the fire loss experience throughout the estate can sometimes reveal significant trends or identify remedial action that might be appropriate throughout all premises to rectify a latent hazard.

Occurrence of vandalism, malicious fire-raising and general antisocial behaviour in the area of the premises can sometimes be relevant in an FRA, as it might imply an increased likelihood of malicious ignition of, for example, waste and other combustible materials in the immediate vicinity of the premises, such as to necessitate enhanced security measures or control over combustible materials external to the premises.

12.1 In carrying out the FRA, the fire risk assessor should take account of the following information:

- a) brief details or brief description of the principal dutyholder;
- b) the height of the uppermost storey of the premises, or part of the premises, that is the subject of the FRA, or the number of storeys above and below ground;
- c) brief details of construction, with information about any aspects that make a significant contribution to risk;

NOTE 1 *Where it is obvious that the external walls of the building have any form of cladding (i.e. are not of conventional masonry construction), or have been overclad (e.g. with rainscreen cladding) since the time of original construction, it is appropriate to note this in the documented FRA. It might be necessary to make a recommendation in the action plan that external wall construction and any cladding be subject to a fire risk appraisal and assessment by others to determine whether it represents a fire hazard.*

NOTE 2 *Certain modern methods of construction, such as timber frame construction, are worthy of note (though often impossible to identify by visual inspection), as the risk arising from defects in compartmentation can often be exacerbated by this form of construction. However, there is normally a need for reliance on information from the dutyholder to establish that this form of construction exists; it is the responsibility of the dutyholder to provide such information to the fire risk assessor.*

- d) the activities and processes carried out on the premises and any significant changes due to the time of day;
- e) approximate number of occupants;
- f) a breakdown of the number of occupants into number of staff and number of members of the public or other persons;

NOTE 3 *In certain premises, such as residential care homes, where the number of staff available to assist occupants with evacuation is critical to fire safety, there is a need to take into account the number of staff during the day and the number of staff at night.*

- g) whether the premises will be occupied by members of the public (or a significant number of persons unfamiliar with the design and layout), and, if so, the approximate number of members of the public (if known);

NOTE 4 *It is expected that in, for example, premises licensed for entertainment, and other premises to which the public resort in large numbers, a maximum safe occupancy will be justified in the FRA.*

- h) approximate gross floor area of the premises, or a typical floor of the premises, or part of the premises, that are the subject of the FRA;

NOTE 5 *It is not usually necessary to record more than one measure of the size of a building (e.g. if the largest floor area of the premises or demise under assessment is recorded, there is usually no need to record the dimensions of any other floors). Where whole buildings are being assessed, it is often sufficient to record the dimensions of the building footprint.*

- i) in the case of premises in multiple occupation, the nature of the other occupancies (if known);
- j) occupants especially at risk (see 3.65) in the event of fire (e.g. sleeping occupants, disabled occupants, those working in remote areas and young persons);
- k) any fires that have occurred in recent years (if known);
- l) any further relevant information that has a bearing on fire risk (other than the information described in 5.3) or on the validity of the FRA;
- m) information on any enforcement, alterations, or prohibition notices that apply to the premises; and

NOTE 6 *An alterations notice can be issued by an enforcing authority under the relevant fire safety legislation, requiring the enforcing authority to be notified of proposals to carry out material alterations to, or a change in use of, the premises.*

- n) any other matters that are considered relevant by the fire risk assessor and that were taken into account in the FRA (e.g. hours of work or relevant working practices); these may be set out in a section recording other relevant information that is not readily addressed under other headings.

12.2 While it is not normally necessary to document the manner in which every factor referred to in 12.1a) to 12.1n) affects the FRA, there should normally be explicit information within the assessment regarding appropriate measures to protect occupants who are especially at risk in the event of fire.

13 Identification of fire hazards and means for their elimination or control

COMMENTARY ON CLAUSE 13

In this step of the FRA, the fire risk assessor identifies all reasonably foreseeable and significant fire hazards and examines the measures in place for their elimination or control. By definition, this means considering potential ignition sources (see 3.54), as well as situations and unsafe acts that have the potential to result in a fire. It is necessary, therefore, for the fire risk assessor to be aware of the common causes of fire in the type of premises under assessment, and to have an understanding of the work processes on the premises under assessment, as well as an understanding of the policies and procedures that contribute to prevention of fire. At the conclusion of this step of the FRA, the fire risk assessor is normally in a position to assess the likelihood of fire (see Clause 14).

It is assumed that the fire risk assessor is already familiar with the common causes of fire and is either aware of recognized good practice in the elimination or control of fire hazards [i.e. is aware of recognized fire prevention measures (see 3.33)], or has access to appropriate codes of practice. Normally, the documented FRA comprises a pro forma, which incorporates a prompt-list of fire hazards that need to be considered in the FRA. A suitable prompt-list of fire hazards, typical measures for their elimination or control, and relevant codes of practice that give further guidance, are set out in Annex B.

The list of fire hazards in the prompt-list in Annex B is not necessarily exhaustive, and other fire hazards might need to be taken into account, particularly those relating to specific work processes or activities carried out on the premises. For example, significant ignition sources, perhaps associated with mechanical, chemical or electrical processes, might be identified in the FRA, and care needs to be taken to ensure that any unacceptable practices or measures for control of such ignition sources are identified, and, where relevant, are recorded within the documented FRA (see Clause 10). It might also be appropriate to record relevant control measures. On the other hand, fire hazards with negligible potential for harm need not be documented or given further consideration.

Equally, special, technical and organizational measures to prevent fire, or reduce the intensity of a fire, involving a work process (e.g. use of plant or machinery), are outside the scope of the general fire precautions required by the relevant fire safety legislation, and, hence, are not within the scope of the FRA; this is with the proviso that they fall within the scope of other legislation, such as the Health and Safety at Work, etc. Act 1974 [52] (or secondary legislation made thereunder) and that the effect of the relevant hazards on means of escape is taken into account.

It is inherent in the definition of fire hazard (see 3.29) that fire hazards are not limited to ignition sources per se. Various situations and unsafe acts can constitute fire hazards. For example, combustible storage or rubbish does not, in itself, constitute a source of ignition. However, if, for example, the storage or rubbish is positioned close to the windows of premises, it might be ignited maliciously, or accidentally by discarded cigarettes or matches (e.g. if a designated smoking area were located in close proximity), and the resultant fire could then spread into the premises via the windows. Such a situation would, therefore, constitute a fire hazard. It is also relevant to take into account that not only can poor housekeeping affect the likelihood of fire, but, because inappropriate quantities of inappropriately stored combustible material can contribute to fire development, poor housekeeping can also affect the consequences of fire.

Some fire hazards are very specific to certain occupancies and might need activity or process risk assessments, quite separate from the FRA. It might not be the role of the fire risk assessor to carry out this more specific or specialist risk assessment; those managing the premises or employed by the dutyholder might have greater competence than the fire risk assessor to carry it out. Equally, it might be appropriate for the fire risk assessor to verify that such a risk assessment has been carried out and suitable control measures implemented or, otherwise, to recommend, in the action plan, that it be carried out.

For example, in residential care homes, there has been a significant number of deaths of residents as a result of smoking by these residents. In England, there have been several successful prosecutions as a result of failure of the responsible person (the care home operator) to carry out residents' smoking risk

assessments and to make suitable arrangements for a deceased resident to have smoked safely. In the FRA for a care home, it is expected that the fire risk assessor will verify that there are suitable policies regarding smoking by residents, that a smoking risk assessment is carried out for every resident who smokes (e.g. as part of a care plan) and that the responsible person has formulated arrangements for each of these residents to smoke safely. It is not expected that the fire risk assessor will actually carry out the smoking risk assessments, nor that the detailed arrangements for each resident will be considered in the FRA.

Similarly, in carrying out the FRA, there is a need to take account of any effects of dangerous substances, such as flammable or highly flammable materials, oxidizing agents or materials that promote very rapid fire development, on the risk from fire. In particular, such substances need to be considered in relation to the effect that their storage or use has on the appropriate general fire precautions required by the relevant fire safety legislation, such as means of escape, fire warning arrangements, fire suppression systems, fire extinguishing appliances and emergency procedures.

Moreover, the use and storage of dangerous substances is controlled under other legislation (the Dangerous Substances and Explosive Atmospheres Regulations or "DSEAR" [53]), which requires that a risk assessment is carried out. It is not expected that the fire risk assessor is competent to carry out this risk assessment, but, in carrying out the FRA, it needs to be confirmed that a DSEAR risk assessment has been carried out. (In this connection, it is worthy of note that diesel fuel is classified as a dangerous substance for the purpose of the relevant fire safety legislation, though the fire hazard is such that, in practice, few special fire precautions are necessary.) Equally, for small quantities of dangerous substances, such as cans of thinners in an engineering workshop, it is expected that the FRA will take into account simple "housekeeping" issues, such as arrangements for storage and arrangements for disposal of thinner-soaked rags.

Electric vehicle charging points are provided within parking facilities in some buildings. These can result in an additional fire hazard, and in a risk to both members of the public and firefighters, if they are the source of a fire or are involved in a fire. Accordingly, these and similar facilities, such as battery storage banks, need to be noted in the FRA.

It is often appropriate to consider the means for control or elimination of fire hazards in two distinct phases, which can be regarded as policy and practice (see Figure 1). For example, in the case of a fire hazard

created by faulty electrical appliances, one control measure might be a policy that portable electrical appliances are subject to periodic inspection and testing. The "practice" stage comes when the premises are inspected and observations can be made as to whether there is adherence to the policy. It might then be found that, for example, some appliances are overlooked in the programme of inspection and testing, or it might be noted that, contrary to policy, some staff bring their own electrical appliances, such as radios, heaters and fans, into the workplace, without these appliances being subject to inspection or test.

13.1 The FRA should address means for elimination or control of, at least, the common causes of fire, and shortcomings in such measures should be addressed within the action plan (see Clause 19).

13.2 Every FRA should include the following potential sources of fire:

- a) malicious ignition;
- b) electrical faults;
- c) smoking;
- d) cooking (if any is carried out);
- e) inadequate control over the use of portable heaters;
- f) contractors' activities and "hot work";
- g) inadequate maintenance of heating installations; and
- h) lightning.

NOTE 1 It is possible that there will be a need for consideration of other fire hazards, including those associated with work processes and energy-using appliances. However, the relevant fire safety legislation excludes from the definition of general fire precautions (in England and Wales), and the definition of fire safety measures (in Scotland and Northern Ireland), "process fire precautions", namely special, technical and organizational measures required in work processes to reduce the likelihood of fire or the intensity of fire, provided that such measures are required by health and safety legislation. In this connection, work processes include work involving, or in connection with, the use of plant or machinery and the use or storage of dangerous substances (as defined in the relevant fire safety legislation). Nevertheless, the effects of use or storage on the general fire precautions (fire safety measures) that are within the scope of the relevant fire safety legislation still need to be taken into account.

NOTE 2 There is benefit to the dutyholder if the fire risk assessor draws to the dutyholder's attention the hazard associated with certain white goods, and the availability of recall information on such products.

13.3 Assessment of fire hazards should not be limited to those comprising specific sources of ignition. Situations, such as poor housekeeping and unsafe acts, that could lead to a fire (and development of a fire) should also be taken into account.

NOTE *In residential care homes, a known fire hazard arises from any smoking by residents, particularly in the presence of white soft paraffin emollient creams or oxygen.*